TeSys™ IEC-Style
Contactors and Starters

Catalog

04

File 8502

CONTENTS

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Telemecanique

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Selection Guide

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Telemecanique

Conformity to Standards

The Telemecanique D-Line, F-line, and K-line contactors, overload relays and accessories satisfy most national, European, and international standards for promoting worldwide product acceptance. These product standards precisely define the performance of the designated products (such as IEC 60947 for low voltage equipment).

When used correctly, as designated by the manufacturer and in accordance with the regulations and rules of the art, these products will allow assembled equipment, machine systems or installations to conform to their appropriate standards (for example: IEC 60204, relating to electrical equipment used on industrial machines).

Telemecanique is able to provide proof of conformity of its production, in accordance with the standards selected by ourselves, due to our quality assurance system. On request, and depending on the situation, Telemecanique can provide the following:

- A declaration of conformity.
- A certificate of conformity (ASEFA/LOVAG).
- An approval certificate or agreement, in the countries where this procedure is required or for particular specifications, such as those existing in the merchant marine.

Code	Standards Body - Name	Abbreviation	Country
ANSI	American National Standards Institute	ANSI	USA
BS	British Standards Institution	BSI	Great Britain
CEI	Comitato Electtrotechnico Italiano	CEI	Italy
DIN/VDE	Verband Deutscher Electrotechniker	VDE	Germany
EN	Comité Européen de Normalisation Electrotechnique	CENELEC	Europe
GOST	Gosudarstvenne Komitet Standartov	GOST	Russia
IEC	International Electrotechnical Commission	IEC	Worldwide
JIS	Japanese Industrial Standard	JISC	Japan
NBN	Institut Belge de Normalisation	IBN	Belgium
NEN	Nederlands Normalisatie Institut	NNI	Netherlands
NFC	Union Technique de l'Electricité	UTE	France
SAA	Standards Association of Australia	SAA	Australia
UNE	Instituto Nacional de Racionalizacion y Normalizacion	IRANOR	Spain

European EN Standards

This is a group of technical specifications established in conjunction with, and approval of, the relative bodies within the various CENELEC member countries (EEC and EFTA). Arrived at by the principal of consensus, the European standards are the result of a majority vote. Such adopted standards are then integrated into the national collection of standards, and contradictory national standards are withdrawn. The European standards are now incorporated within the French standards and carry the prefix NF EN. Under the “Technical Union of Electricity” (UTE), the French version of the corresponding European standard carries a double notation: European reference (NF EN …) and classification (C …).

In addition, the standard NF EN 60947-4-1 relating to motor contactors and starters, effectively constitutes the French version of the European standard EN 60947-4-1 and carries the UTE classification C 63-110. This standard is identical to the British standard BS EN 60947-4-1 and the German standard DIN VDE 0660 Teil 102. Whenever reasonably practical, European standards reflect international standards (IEC).

For automation system components and distribution equipment, Telemecanique supplements the requirements of the French NF standards with those necessary for all other major industrial countries.

European Directives

The opening of the European market assumes a harmonization of the regulations pertaining to each member country of the European Community. The purpose of the European Directive is the elimination of obstacles hindering the free circulation of goods within the European Community, and its application applies to each member country.

Member countries are obliged to transcribe each Directive into their national legislation and to simultaneously withdraw any contradictory regulation. The Directives, in particular those of a technical content concerning us here, only establish the objectives to be obtained and are referred to as “essential requirements.”

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The manufacturer is obliged to ensure that all measures are taken to provide conformity to the regulations of the particular Directive applicable to his product. As a general rule, the manufacturer certifies conformity to the essential requirements of the Directive(s) for the product by affixing a CE marking. The CE marking will be affixed to Telemecanique products progressively throughout the transition period, as defined by the French and European regulations.

Significance of the CE marking:

- The CE marking is affixed to a product to signify that the manufacturer certifies that the product conforms to the relevant European Directive(s) and is obligatory for a product, subject to one or more of the European Directives, before it can be freely distributed within the European Community.
- The CE marking is intended solely for national market control authorities.
- The CE marking must not be confused with a conformity marking.

For electrical equipment, only conformity to standards signifies that the product is suitable for its designated function, and only the guarantee of an established manufacturer can provide a high level of quality assurance. For Telemecanique labelled products, one or several Directives are liable to be applied, in particular:

- The Low Voltage Directive 73/23/EEC amended by the Directive 93/68/EEC: the CE marking relating to this Directive could not be affixed before 1 January 1995 but was obligatory as of January 1, 1997.
- The Electromagnetic Compatibility Directive 89/336/EEC, amended by the Directives 92/31/EEC and 93/68/EEC: the CE marking on products covered by this Directive is obligatory from 1 January 1996.

ASEFA-LOVAG Certification

The function of ASEFA (Association des Stations d'Essais Française d'Appareils électriques — Association of French Testing Stations for Low Voltage Industrial Electrical Equipment) is to carry out tests for conformity to standards and to issue certificates and test reports. ASEFA laboratories are authorized by the National Testing Network (RNE).

ASEFA is now effectively a member of the European accord group LOVAG (Low Voltage Agreement Group). This means that any certificates issued by LOVAG/ASEFA are recognized by all the authorities forming the membership of the group and carry the same validity as those issued by any of the member authorities.

Quality Labels

When components can be used in domestic and similar applications, it is sometimes necessary to obtain a “quality label,” which is a form of certification of conformity.

Code	Quality Label	Country
CEBEC	Comité Electrotechnique Belge	Belgium
KEMA-KEUR	Keuring van Electrotechnische Materialen	Netherlands
NF-USE	Union Technique de l'Electricité	France
ÖVE	Österreichischer Verband für Electrotechnik	Austria
SEMKO	Svenska Electriska Materiel Kontrollanatalten	Sweden

Approvals

In some countries, the approval of certain electrical equipment is required by law. In this case, an approval certificate is issued by the official test authority. Each approved component must bear the relevant quality label when this is mandatory.

Code	Approval Authority	Country
ASE	Association Suisse des Electriciens	Switzerland
CSA	Canadian Standards Association	Canada
DEMKO	Danmarks Elektriske Materielkontrol	Denmark
FI	Sähkötarkastuskeskus Elinspektions Centralen (SETI)	Finland
NEMKO	Norges Elektriske Materiellkontroll	Norway
UL	Underwriters Laboratories Inc.	USA

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Note on approvals issued by the Underwriters Laboratories Inc. (UL) that there are two levels of approval:

Level of Approval	Symbol	Description
"Recognized"		The component is fully approved for inclusion in equipment built in a workshop, where the operating limits are known by the equipment manufacturer, and where its use within such limits is acceptable by Underwriters Laboratories Inc.The component is not approved as a "product for general use" because its manufacturing characteristics are incomplete or its application possibilities are limited. A "Recognized" component does not necessarily carry the approval symbol.
"Listed"		The component conforms to all the requirements of the classification applicable to it and may therefore be used both as a "product for general use" and as a component in assembled equipment. A "Listed" component must carry the approval symbol.

Marine Classification Authorities

Prior approval by certain marine classification authorities is generally required for electrical equipment which is intended for use on board merchant vessels.

Code	Classification authority	Country
BV	Bureau Veritas	France
DNV	Det Norske Veritas	Norway
GL	Germanischer Lloyd	Russia
LROS	Lloyd's Register of Shipping	Great Britain
NKK	Nippon Kaiji Kyokaï	Japan
RINA	Registro Italiano Navale	Italy
RRS	Register of Shipping	Russia

Product Approvals

The table below shows the approvals obtained or pending with the various approvals authorities as of 5/15/1995. For more detailed information, please consult your Local Square D Field Sales Office.

Existing and Pending Approval of Automation System Components (except control and signalling units)

Standard Version
X: Approved
O: Approval pending
Special Version
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	Approvals							Marine Classification Authorities							Quality Labels			
	ASE	CSA	DEMKO	FI	NEMKO	UL		BV	DNV	GL	LROS	NKK	RINA	RRS	KEMA	NF	ÖVE	SEMKO
	Switzerland	Canada	Denmark	Finland	Norway	U.S.A.		France	Norway	Germany	Great Britain	Japan	Italy	CIS	Netherlands	France	Austria	Sweden
AB1BB, AB1BC	X	X		X	X	X			X					X	X			
AB1BD	X													X				
AB1DV	X	X				X								X				
AB1FU	X	X	X		X	X			X					X				
AB1FV	X	X			X	X								X				
AB1NE, AB1SE	X	X		X	X	X								X				
AB1SV		X				X								X				
AB1TP	X	X		X	X	X			X	X	X		X	X	X			X
AB1TR	X													X				X
AB1VV	X	X	X	X	X	X			X	X	X		X	X	X		X	X
AB3RV		X																
ABA6, ABE6R		O					X											
ABR1, ABR2		X					X	X	X		X							
ABS1								X	X		X							
ABS2		X					X	X	X		X							
AK2BA01	X																	
AK2BA162U		X					X											
AK2SB	X																	
AK3JB4 (CMD)	X	X				X		X	X	X	X	X	O				X	
AK3JB8 (CMD)	X	X				X					X	X	O				X	

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	Switzerland	Canada	Denmark	Finland	Norway			France	Norway	Germany	Great Britain	Japan	Italy	CIS	Netherlands	France	Austria	Sweden
AK5		X			X		X		X		X							
ATP		O					X											
ATS23		X					X											
ATV16, ATV66		X					X											
CA2D	X	X	X	X	X		X	X	X					X				X
CA2KN	X	X	X				X	O	O	O	O		O	O				X
CA3D	X	X	X		X		X	X	X					X				X
CA3KN	X	X					X	O	O	O	O		O	O				X
CA4D	X	X		X			X	X						X				X
CA4KN	X	X	X				X	O	O	O	O		O	O				X
CCX 17		O					X		O									
DF6																X		
DK1								X						X				
FTX 417		O					X											
FTX 117		O					O											
GB2CB	X	X			X	X											X	
GB2CD					X	X												
GC1■			X		X										X	X	X	X
GC3					X											X		
GD2					X													
GV2M■		X	X		X		X	X	X	X	X				X		O	X
GV2P		X					X											
GV3		X					X				X						X	
GV7R		X					X	O	O	O	O		O					
GY1■					X											X	X	
GY3					X											X		
LA1D	X	X	X		X		X	X	X	O	O		X	X				X
LA1KN		X	X				X	O	O	O	O		O	O				X
LA1LB		X			X		X	O	X	O	O		X					X
LA1LC		X	X	X	X		X	X	X	X	X	X	X	X				
LA2D, LA3D		X	X		X		X	X	X	O	X		X	X				X
LA2K, LA4K		X					X	O	O	O	O		O	O				
LA4D	X	X					X	X		O	O		X	X				
LA8D	X	X		X	X		X	X		O	O		X	X				
LB•LB	X	X	X	X	X		X	O	X	O	O		X	O			X	X
LB•LC		X	X		X		X	X	X	X	X	X	X	X				
LB•LD	X	X		X			X	X	X	X		X	X	X				
LC1D	X	X	X	X	X		X	X	X	O	O		X	X				X
LC2D	X	X					X	X	X	O	O		X	X				
LC1F	X	X					X	X	X	O	O		X	X				
LC1K		X	X			X	X	O	O	O	O		O	O				X
LC2F		X					X	X	X	O	O		X	X				
LC2K, LC7K, LC8K		X				X	X	O	O	O	O		O	O				
LD1LB	X	X	X	X	X		X	O	X	O	O		X					X
LD1LC	X	X	X				X	X	X	X	X	X	X	X				

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	Switzerland	Canada	Denmark	Finland	Norway			France	Norway	Germany	Great Britain	Japan	Italy	CIS	Netherlands	France	Austria	Sweden
LD1LD	X	X					X	X	X		X	X	X	X				
LD4LC	X	X	X	X	X		X	X	X	X	X	X	X	X			X	
LD4LD	X	X		X	X		X	X	X	X	X	X	X	X				
LD5LB		X					X	O	X	O	O		X	O				
LD5LC	X	X					X			X	X	X	X	X			X	
LD5LD	X	X					X			X		X	X	X				
LE1D	X	X						X										
LN1D		X		X			X							X				
LP1D	X	X	X	X	X		X	X	X	O	X			X				
LP1K		X				X	X	O	O	O	O		O	O				
LP2D	X	X					X	X	X	O	O			X				
LP2K		X				X	X	O	O	O	O		O	O				
LP4D	X	X		X			X	X		O	O							
LP4K		X	X			X	X	O	O	O	O		O	O				
LP5D	X	X					X	X		O	O							
LP5K		X				X	X	O	O	O	O		O	O				
LR1F	X	X					X	X	X	X	X		X	X				
LR2D	X	X	X	X	X		X	X	X	O	O		X	X				
LR2F	X	X					X	X	X	O	O		X	X				
LR2K		X					X	O	O	O	O		O	O				
LR9F		X					X											
LS1D								X										
LT2S	X	X						X										
LT7F	X	X					X											
LT8	X	X							X									
RE1LA, RE1LC		X			X			X										
RE4, RE5		X					X			X								
RH•		X				X		X		X				X				
RM1XA		X																
RM3		X					X			X								
RS1, RS2																		
RTV74, RTV84		O					O											
RXN, RUW		O					O			O								
TSX 07		X					X		O									
TSX 1710/20		X					X	X	X	X			X	X				
K1, K2		X					X		X	X		X		X				
XA2B, BV, BW		X					X											
XACA (small hoist)		X	X		X		X					X	X	X				
XACA (all applications)		+	X		X		+					X	X	X				
XACB		X			X													
XACM		X																
XALB, XALJ, XALN		+		X	X		+		X					X				
XAPA		+		X					X		X			X				
XAPM		+		X			+		X	X	X			X				
XASE, XASP					X													

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	Switzerland	Canada	Denmark	Finland	Norway			France	Norway	Germany	Great Britain	Japan	Italy	CIS	Netherlands	France	Austria	Sweden
XBLA		X					X											
XBTA, XBTK, KL, KN		X					X	X	X									
XBTB, XBTC		+					+											
XBTH, XBTP, XBTE, XBTHM		X					X											
XBTM, ML		X					X	O	X									
XBTVA		+					+											
XB2B (pushbuttons)		X		X	X	X	X	X	X	X	X			X				X
XB2BV, BW (direct) (via transformer)		X	X	X	X	X	X	X	X	X	X			X				X
XB2BV, BW (reducer)		X	X	X	X	X	X	X	X	X	X			X				
XB2EV		X					X											
XB2M (pushbuttons)		X	X	X	X		X	X		X				X				
XB2MW (direct) (via transformer)		+	X	X	X		+			X				X				
XDA, XDL		X					X											
XD2A, XD2C, XD2E		+	X							X								
XD2PA, XD2GA		X					X				X							
XPEA				X														
XPEM		+		X														
XVAC, XVAL		X					X											
XVLA		X				X												
XY2CB, XY2CH		X																
XY2CE		+					+											
ZA2VA		X					X											
ZB2MW (direct) (via transformer)		+	X	X	X		+			X				X				

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Depending on the climatic and environmental conditions in which the equipment is placed, Telemecanique can offer specially adapted products to meet your requirements.

In order to make the correct choice of protective finish, two points should be remembered:

- The prevailing climate of the country is never the only criterion.
- Only the atmosphere in the immediate vicinity of the equipment should be considered.

"TC" Treatment for All Climates

"TC" is the standard treatment for Telemecanique equipment and is suitable for the vast majority of applications. It is the equivalent of treatments described as "Klimafest," "Climateproof," "Total Tropicalization," or "Super Tropicalization," and meets the following requirements:

- Publication UTE C 63-100 (method l), successive cycles of humid heat at + 40 °C (104 °F) and 95% relative humidity.
- DIN 50016 — Variations of ambient conditions within a climatic chamber:
  + 23 °C (73 °F) and 83% relative humidity,
  + 40 °C (104 °F) and 92% relative humidity.

It also meets the requirements of the marine classification authority BV-LROS-GL-DNV-RINA.

Characteristics

- Steel components are usually treated with zinc chromate and, when they have a mechanical function, they may also be painted.
- Insulating materials are selected for their high electrical, dielectric and mechanical characteristics.
- Metal enclosures have a stoved paint finish, applied over a primary phosphate protective coat, or are galvanized (for example, some prefabricated busbar trunking components).

Limits for Use of "TC" (All Climates) Treatment

- "TC" treatment is suitable for the following temperatures and humidity:

Temperature	20 °C (68 °F)	40 °C (104 °F)	50 °C (122 °F)
Relative Humidity	95%	80%	50%

- It may also be used where the above limits are only exceeded accidentally or for very short periods, or where temperature variations are not sufficient or fast enough to cause heavy condensation or dripping water on the equipment. "TC" treatment is therefore suitable for all latitudes, including tropical and equatorial regions, where the equipment is mounted in normal, ventilated industrial locations. Being sheltered from external climatic conditions, temperature variations are small, the risk of condensation is minimized, and the risk of dripping water is virtually non-existent.

Extension of Use of "TC" (All Climates) Treatment

In cases where the humidity around the equipment exceeds the conditions described above, where the equipment (in tropical regions) is mounted outdoors, or where it is placed in a very humid location (laundries, sugar refineries, steam rooms, and so forth), "TC" treatment can still be used if the following precautions are taken:

- The enclosure in which the equipment is mounted must be protected with a "TH" finish (see page 11) and must be well ventilated to avoid condensation and dripping water (for example, enclosure base plate mounted on spacers).
- Components mounted inside the enclosure must have a "TC" finish.
- If the equipment is to be switched off for long periods, a heater must be provided (0.2 to 0.5 kW per square decimeter / 15.5 square inch of enclosure), switched on automatically when the equipment is turned off. This heater keeps the inside of the enclosure at a temperature slightly higher than the outside surrounding temperature, thereby avoiding any risk of condensation and dripping water (the heat produced by the equipment itself in normal running is sufficient to provide this temperature difference).

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- For pilot devices, the use of “TC” treatment can be extended to outdoor use provided the enclosure is made of light alloys, zinc alloys, or plastic material. In this case, it is essential to ensure that the degree of protection against penetration of liquids and solid objects is suitable for the applications involved.

“TH” Treatment for Hot and Humid Environments

This treatment is for hot and humid atmospheres where installations are subject to condensation, dripping water, and the risk of fungi.

Plastic insulating components are also resistant to attacks from insects such as termites and cockroaches. These properties have led to this treatment being described as “Tropical Finish,” but this does not mean that all equipment installed in tropical and equatorial regions must have undergone “TH” treatment. On the other hand, certain operating conditions in temperate climates may well require the use of “TH”-treated equipment (see the Limits for Use of “TC” Treatment section on page 10).

The following are special characteristics of “TH” treatment:

- All insulating components are made of materials which are either resistant to fungi or treated with a fungicide, having increased resistance to creepage (Standards IEC 112, NF C 26-220, DIN 5348).
- Metal enclosures receive a top-coat of baked, fungicidal paint, applied over a rust inhibiting undercoat. Components with “TH” treatment may be subject to a surcharge (a large number of Telemecanique products are “TH” treated as standard and are, therefore, not subject to a price surcharge). Please consult our local representatives or agents.

Protective Treatment Selection Guide

Location	Environmental Conditions	Duty Cycle	Internal Heating of Enclosure when Not in Use	Type of Climate	Protective Treatment of	
					Components	Enclosure
Indoors	No dripping water or condensation	Unimportant	Unnecessary	Unimportant	“TC”	“TC”
	Presence of dripping water or condensation	Frequent switching off for periods of more than 1 day	No	Temperate	“TC”	“TH”
				Equatorial	“TH”	“TH”
			Yes	Unimportant	“TC”	“TH”
		Continuous	Unnecessary	Unimportant	“TC”	“TH”
Outdoors (sheltered)	No dripping water or dew	Unimportant	Unnecessary	Temperate	“TC”	“TC”
				Equatorial	“TH”	“TH”
Exposed outdoors, or near the sea	Frequent and regular presence of dripping water or dew	Frequent switching off for periods of more than 1 day	No	Temperate	“TC”	“TH”
				Equatorial	“TH”	“TH”
			Yes	Unimportant	“TC”	“TH”
		Continuous	Unnecessary	Unimportant	“TC”	“TH”

These treatments cover, in particular, the applications defined by methods I and II of guide UTE C 63-100.

Special Precautions for Electronic Equipment

Electronic products always meet the requirements of “TC” treatment. A number of them are “TH”-treated as standard.

Some electronic products (for example, programmable controllers, flush-mountable controllers CCX, and flush-mountable operator terminals XBT) necessitate the use of an enclosure providing a degree of protection to at least IP 54 (as defined by the standards IEC 60664 and NF C 20 040) for use in industrial applications or in environmental conditions requiring a “TH” treatment.

These electronic products, including flush-mountable products, must have a degree of protection to at least IP 20 (either provided by the enclosure itself or following installation) for restricted access locations where the degree of pollution does not exceed 2 (a test booth not containing machinery or other dust producing activities, for example).

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IEC Publication 60529 *Classification of Degrees of Protection Provided by Enclosures* provides a system for specifying the enclosures of electrical equipment on the basis of the degree of protection provided by the enclosure. IEC 60529 does not specify degrees of protection against mechanical damage of equipment, risk of explosions, or conditions such as moisture (produced, for example, by condensation), corrosive vapors, fungi, or vermin. NEMA Standards Publication 250, and UL 50 Standard does test for environmental conditions such as corrosion, rust, icing, oil, and coolants. For this reason, and because tests and evaluations for other characteristics are not identical, the IEC Enclosure Classification Designations cannot be exactly equated with NEMA Enclosure Type Numbers.

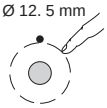
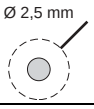
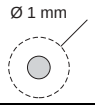
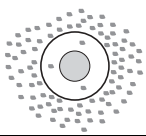
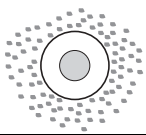
The IEC designation consists of the letters IP followed by, usually, two numerals (for example IP 55). The first characteristic numeral indicates the degree of protection provided by the enclosure with respect to persons and solid foreign objects entering the enclosure. The second characteristic numeral indicates the degree of protection provided by the enclosure with respect to the harmful ingress of water. See the tables below and on page 13 for what the two numbers mean.

In addition, a single-digit letter may follow the two numerals (for example, IP 20C). This letter indicates that the actual protection of personnel against direct contact with live parts is better than that indicated by the first numeral. So this example (IP 20C) indicates that the device is finger-safe (the '2') and tool-safe (the 'C') for tools 2.5 mm (or larger) in diameter. See the table on page 13 for what letters are permissible and what each indicates.

Finally, a third numeral may sometimes appear and corresponds to the degree of protection against mechanical impact. In accordance with standard NF C 20-010, the third numeral may either follow the two IP numerals (for example, IP 55-9) or be shown separately from the IP code. This numeral also corresponds to an external factor classification as defined in standard NF C 15-100. See the table on page 13 for what numbers are permissible and what each indicates.

NOTE: Any characteristic numeral which is unspecified is replaced by an X (for example, IP XXB).

IEC 60529 Classification Designations — First Characteristic Numeral

First Characteristic Numeral Corresponds to protection of the equipment against penetration of solid objects and protection of personnel against direct contact with live parts.		**Protection of the Equipment**	**Protection of Personnel**
0		Not protected	Not protected
1		Protected against the penetration of solid objects having a diameter greater than or equal to 50 mm (2").	Protected against direct contact with the back of the hand (accidental contacts).
2		Protected against the penetration of solid objects having a diameter greater than or equal to 12.5 mm (0.5").	Protected against direct finger contact.
3		Protected against the penetration of solid objects having a diameter greater than or equal to 2.5 mm (0.1").	Protected against direct contact with a 2.5-mm (0.1") diameter tool.
4		Protected against the penetration of solid objects having a diameter greater than 1 mm (0.04").	Protected against direct contact with a 1mm (0.04") diameter wire.
5		Dust-protected (no harmful deposits).	Protected against direct contact with a 1mm (0.04") diameter wire.
6		Dust-tight.	Protected against direct contact with a 1mm (0.04") diameter wire.

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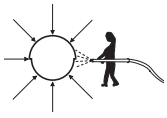
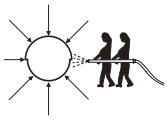
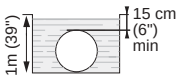
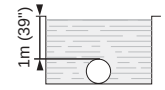
IEC 60529 Classification Designations — Second and Third Characteristic Numerals

Second Characteristic Numeral

Corresponds to protection of equipment against penetration of water with harmful effects.

0	Non-protected	
1		Protected against vertical dripping water (condensation).
2		Protected against dripping water at an angle of up to 15°.
3		Protected against rain at an angle of up to 60°.
4		Protected against splashing water in all directions.
5		Protected against water jets in all directions.
6		Protected against powerful jets of water and waves.
7		Protected against the effects of temporary immersion.
8		Protected against the effects of prolonged immersion under specified conditions.

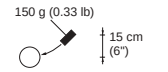
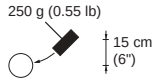
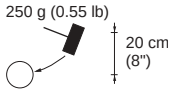
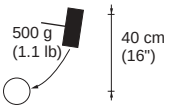
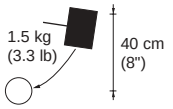
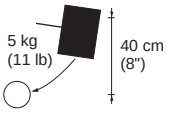
Additional Letter

Corresponds to protection of personnel against direct contact with live parts.

A	With the back of the hand.
B	With the finger.
C	With a 2.5-mm (0.1") diameter tool.
D	With a 1mm (0.04") diameter wire.

Third Characteristic Numeral

Corresponds to the degree of protection against mechanical impact. This numeral also corresponds to an external factor classification as defined in standard NF C 15-100.

0	Non-protected	
1		Impact energy: at least equal to 0.25 N•m (external classification factor AG1).
2		Impact energy: at least equal to 0.375 N•m.
3		Impact energy: at least equal to 0.5 N•m.
5		Impact energy: at least equal to 0.5 N•m.
7		Impact energy: at least equal to 6 N•m (external classification factor AG3).
9		Impact energy: at least equal to 20 N•m (external classification factor AG4).

The table below provides an equivalent conversion *from* NEMA Enclosure Type Numbers *to* IEC Enclosure Classification Designations. The NEMA Types meet or exceed the test requirements for the associated IEC Classifications; ***for this reason this table cannot be used to convert from IEC Classifications to NEMA Types.***

Conversion of NEMA Type Numbers to IEC Classification Designations

(cannot be used to convert IEC Classification Designations to NEMA Type Numbers)

NEMA Enclosure Type Number	IEC Enclosure Classification Designation	NEMA Enclosure Type Number	IEC Enclosure Classification Designation
1	IP10	4 and 4X	IP56
2	IP11	5	IP52
3	IP54	6 and 6P	IP67
3R	IP14	12 and 12K	IP52
3S	IP54	13	IP54

The comparison is based on tests specified in IEC Publication 60529, and is from NEMA Publication 250.

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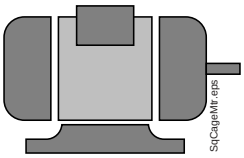

The tables below provide the average full-load currents of squirrel cage motors in accordance with IEC conventions. These are given only as a guide — they may vary depending on the type of motor and manufacturer. Refer to the actual motor nameplate for full-load current values.

Single-Phase Motors		
Power	**220 Vac**	**240 Vac**
Kilowatts	**A**	**A**
0.37	3.9	3.6
0.55	5.2	4.8
0.75	6.6	6.1
1.1	9.6	8.8
1.5	12.7	11.7
1.8	15.7	14.4
2.2	18.6	17.1
3	24.3	22.2
4	29.6	27.1
4.4	34.7	31.8
5.2	39.8	36.5
5.5	42.2	38.7
6	44.5	40.8
7	49.5	45.4
7.5	54.4	50

3-Phase Motors, 50/60 Hz						
Power	**230 Vac**	**400 Vac**	**415 Vac**	**440 Vac**	**500 Vac**	**690 Vac**
Kilowatts	**A**	**A**	**A**	**A**	**A**	**A**
0.37	2	0.98	–	0.99	1	–
0.55	2.8	1.5	–	1.36	1.21	–
0.75	3.6	1.9	2	1.68	1.5	–
1.1	5.2	2.5	2.5	2.37	2	–
1.5	6.8	3.4	3.5	3.06	2.6	–
2.2	9.6	4.8	5	4.42	3.8	–
3	–	6.3	6.5	5.77	5	3.5
3.7	15.2	–	–	–	–	–
4	–	8.1	8.4	7.9	6.5	4.9
5.5	22	11	11	10.4	9	6.7
7.5	28	14.8	14	13.7	12	9
9	–	18.1	17	16.9	13.9	10.5
11	42	21	21	20.1	18.4	12.1
15	54	28.5	28	26.5	23	16.5
18.5	68	35	35	32.8	28.5	20.2
22	80	42	40	39	33	24.2
30	104	57	55	51.5	45	33
37	130	69	66	64	55	40
45	154	81	80	76	65	46.8
55	192	100	100	90	80	58
75	248	131	135	125	105	75.7
90	312	162	165	146	129	94
110	360	195	200	178	156	113
132	–	233	240	215	187	135
–	480	222	260	236	207	–
160	–	285	280	256	220	165
–	600	–	–	–	–	–
200	–	352	340	321	281	203
220	720	388	385	353	310	224
250	840	437	425	401	360	253
280	–	–	–	–	–	–
315	–	555	535	505	445	321
–	1080	–	–	–	–	–
355	–	605	580	549	500	350
–	1200	–	–	–	–	–
400	–	675	650	611	540	390
450	1440	–	–	–	–	–
500	–	855	820	780	680	494
560	–	950	920	870	760	549
630	–	1045	1020	965	850	605
710	–	1200	1140	1075	960	694
800	–	–	1320	1250	1100	790
900	–	–	1470	1390	1220	880

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The table below provides the average full-load currents of squirrel cage motors based on NEC (National Electrical Code) Tables 430-148, 149, and 150. These values are given only as a guide — they may vary depending on the type of motor and manufacturer. Refer to the actual motor nameplate for full-load current values.

HP	110 to 120 Vac			220 to 240 Vac ♦			380 to 415 Vac		440 to 480 Vac			550 to 600 Vac		
	Single Phase	Two Phase	Three Phase	Single Phase	Two Phase	Three Phase	Single Phase	Three Phase	Single Phase	Two Phase	Three Phase	Single Phase	Two Phase	Three Phase
1/10	3.0	-	-	1.5	-	-	1.0	-	-	-	-	-	-	-
1/8	3.8	-	-	1.9	-	-	1.2	-	-	-	-	-	-	-
1/6	4.4	-	-	2.2	-	-	1.4	-	-	-	-	-	-	-
1/4	5.8	-	-	2.9	-	-	1.8	-	-	-	-	-	-	-
1/3	7.2	-	-	3.6	-	-	2.3	-	-	-	-	-	-	-
1/2	9.8	4.0	4.4	4.9	2.0	2.2	3.2	1.3	2.5	1.0	1.1	2.0	0.8	0.9
3/4	13.8	4.8	6.4	6.9	2.4	3.2	4.5	1.8	3.5	1.2	1.6	2.8	1.0	1.3
1	16.0	6.4	8.4	8.0	3.2	4.2	5.1	2.3	4.0	1.6	2.1	3.2	1.3	1.7
11/2	20.0	9.0	12.0	10.0	4.5	6.0	6.4	3.3	5.0	2.3	3.0	4.0	1.8	2.4
2	24.0	11.8	13.6	12.0	5.9	6.8	7.7	4.3	6.0	3.0	3.4	4.8	2.4	2.7
3	34.0	16.6	19.2	17.0	8.3	9.6	10.9	6.1	8.5	4.2	4.8	6.8	3.3	3.9
5	56.0	26.4	30.4	28.0	13.2	15.2	17.9	9.7	14.0	6.6	7.6	11.2	5.3	6.1
7-1/2	80.0	38.0	44.0	40.0	19.0	22.0	27.0	14.0	21.0	9.0	11.0	16.0	8.0	9.0
10	100.0	48.0	56.0	50.0	24.0	28.0	33.0	18.0	26.0	12.0	14.0	20.0	10.0	11.0
15	135.0	72.0	84.0	68.0	36.0	42.0	44.0	27.0	34.0	18.0	21.0	27.0	14.0	17.0
20	-	94.0	108.0	88.0	47.0	54.0	56.0	34.0	44.0	23.0	27.0	35.0	19.0	22.0
25	-	118.0	136.0	110.0	59.0	68.0	70.0	44.0	55.0	29.0	34.0	44.0	24.0	27.0
30	-	138.0	160.0	136.0	69.0	80.0	87.0	51.0	68.0	35.0	40.0	54.0	28.0	32.0
40	-	180.0	208.0	176.0	90.0	104.0	112.0	66.0	88.0	45.0	52.0	70.0	36.0	41.0
50	-	226.0	260.0	216.0	113.0	130.0	139.0	83.0	108.0	56.0	65.0	86.0	45.0	52.0
60	-	-	-	-	133.0	154.0	-	103.0	-	67.0	77.0	-	52.0	62.0
75	-	-	-	-	166.0	192.0	-	128.0	-	83.0	96.0	-	66.0	77.0
100	-	-	-	-	218.0	248.0	-	165.0	-	109.0	124.0	-	87.0	99.0
125	-	-	-	-	-	312.0	-	208.0	-	135.0	156.0	-	108.0	125.0
150	-	-	-	-	-	360.0	-	240.0	-	156.0	180.0	-	125.0	144.0
200	-	-	-	-	-	480.0	-	320.0	-	208.0	240.0	-	167.0	192.0
250	-	-	-	-	-	602.0	-	403.0	-	-	302.0	-	-	242.0
300	-	-	-	-	-	-	-	482.0	-	-	361.0	-	-	289.0
350	-	-	-	-	-	-	-	560.0	-	-	414.0	-	-	336.0
400	-	-	-	-	-	-	-	636.0	-	-	477.0	-	-	382.0
500	-	-	-	-	-	-	-	786.0	-	-	590.0	-	-	472.0

♦ To obtain full-load currents for 200 and 208 Vac motors, increase corresponding 220 to 240 Vac ratings by 15 and 10 percent, respectively.
To obtain full-load currents for 265 and 277 Vac motors, decrease corresponding 220 to 240 Vac ratings by 13 and 17 percent, respectively.

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Definitions of Utilization Categories

IEC contactors should be selected according to the utilization category which is a combination of application and duty cycle rates defined by the following:

- The type of application (inductive motor loads or resistive loads)
- The conditions under which making or breaking current takes place (motor starting or running, reversing, plugging or jogging, locked rotor or stalled motor)
- Number of making and breaking operations (or cycles) required for the life of the contactor

Utilization Categories for Contactors Conforming to IEC 60947-4

Type of Application	Utilization Category	Definition
AC Applications	Category AC-1	This category applies to AC loads with a power factor greater than or equal to 0.95 (cos φ ≥ 0.95). Application examples: heating, distribution.
	Category AC-2	This category applies to starting, plugging, and inching of slip ring motors. On closing, the contactor makes the starting current, which is about 2.5 times the rated current of the motor. On opening, it must break the starting current at a voltage less than or equal to the mains supply voltage.
	Category AC-3	This category applies to squirrel cage motors with breaking during normal running of the motor. On closing, the contactor makes the starting current, which is about 5 to 7 times the rated current of the motor. On opening, it breaks the rated current drawn by the motor; at this point, the voltage at the contactor terminals is about 20% of the mains supply voltage. Breaking is light. Applications examples: all standard squirrel cage motors — lifts, escalators, conveyor belts, bucket elevators, compressors, pumps, mixers, air conditioning units, and so forth.
	Categories AC-4 and AC-2	These categories cover applications with plugging and inching of squirrel cage and slip ring motors. The contactor closes at a current peak which may be as high as 5 or 7 times the rated motor current. On opening, it breaks this same current at a voltage which is higher as the motor speed lessens. This voltage can be the same as the mains voltage. Breaking is severe. Application examples: printing machines, wire drawing machines, cranes, hoists, metallurgy industry.
DC applications	Category DC-1	This category applies to all types of DC load with a time constant (L/R) of less than or equal to 1 ms.
	Category DC-3	This category applies to starting, counter-current braking, and inching of shunt motors. The time constant is less than or equal to 2 ms. On closing, the contactor makes the starting current, which is about 2.5 times the rated motor current. On opening, the contactor must be able to break 2.5 times the starting current at a voltage which is less than or equal to the mains voltage. The slower the motor speed, and therefore the lower its back e.m.f., the higher this voltage. Breaking is difficult.
	Category DC-5	This category applies to starting, counter-current braking and inching of series wound motors.The time constant is less than or equal to 7.5 ms. On closing, the contactor makes a starting current peak which may be as high as 2.5 times the rated motor current. On opening, the contactor breaks this same current at a voltage which is higher as the motor speed lessens. This voltage can be the same as the mains voltage. Breaking is severe.

Utilization Categories for Auxiliary Contacts and Control Relays Conforming to IEC 60947-5

Type of Application	Utilization Category	Definition
AC Applications	Category AC-14	This category applies to the switching of electromagnetic loads whose power drawn with the electromagnet closed is less than 72 VA. Application example: switching the operating coil of contactors and relays.
	Category AC-15	This category applies to the switching of electromagnetic loads whose power drawn with the electromagnet closed is greater than 72 VA. Application example: switching the operating coil of contactors.
DC Applications	Category DC-13	This category applies to the switching of electromagnetic loads for which the time taken to reach 95% of the steady state current (T=0.95) is equal to 6 times the power P drawn by the load (with P ≤ 50 W). Application example: switching the operating coil of contactors without economy resistor.

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Definitions of Utilization Categories

The following tables show the results of tests performed according to standard utilization categories conforming to IEC 60947 based on rated operational current (Ie) and rated operational voltage (Ve).

Contactors

			Making and Breaking Conditions (normal operation)						Making and Breaking Conditions (occasional operation)					
AC Supply														
Typical Applications		**Utilization Category**	**Making**			**Breaking**			**Making**			**Breaking**		
			I	**V**	**cos φ**	**I**	**V**	**cos φ**	**I**	**V**	**cos φ**	**I**	**V**	**cos φ**
Resistors, non-inductive or slightly inductive loads		AC-1	1 Ie	1.05 Ve	0.8	1 Ie	1.05 Ve	0.8	1.5 Ie	1.05 Ve	0.8	1.5 Ie	1.05 Ve	0.8
Motors	Slip ring motors: starting, breaking	AC-2	2 Ie	1.05 Ve	0.65	2 Ie	1.05 Ve	0.65	4 Ie	1.05 Ve	0.65	4 Ie	1.05 Ve	0.65
	Squirrel cage motors: starting, breaking while motor running	AC-3												
		Ie ≤ 100A	2 Ie	1.05 Ve	0.45	2 Ie	1.05 Ve	0.45	10 Ie	1.05 Ve	0.45	8 Ie	1.05 Ve	0.45
		Ie > 100A	2 Ie	1.05 Ve	0.35	2 Ie	1.05 Ve	0.35	10 Ie	1.05 Ve	0.35	8 Ie	1.05 Ve	0.35
	Slip ring motors: starting, plugging, inching	AC-4												
		Ie ≤ 100A	6 Ie	1.05 Ve	0.45	6 Ie	1.05 Ve	0.45	12 Ie	1.05 Ve	0.35	10 Ie	1.05 Ve	0.35
		Ie > 100A	6 Ie	1.05 Ve	0.35	6 Ie	1.05 Ve	0.35	12 Ie	1.05 Ve	0.35	10 Ie	1.05 Ve	0.35

DC Supply

Typical Applications	**Utilization Category**	**Making**			**Breaking**			**Making**			**Breaking**		
		I	**V**	**L/R (ms)**	**I**	**V**	**L/R (ms)**	**I**	**V**	**L/R (ms)**	**I**	**V**	**L/R (ms)**
Resistors, non inductive or slightly inductive loads	DC-1	1 Ie	1 Ve	1	1 Ie	1 Ve	1	1.5 Ie	1.05 Ve	1	1.5 Ie	1.05 Ve	1
Shunt wound motors: starting, counter-current braking, inching	DC-3	2.5 Ie	1.05 Ve	2	2.5 Ie	1.05 Ve	2	4 Ie	1.05 Ve	2.5	4 Ie	1.05 Ve	2.5
Series wound motors: starting, counter-current braking, inching	DC-5	2.5 Ie	1.05 Ve	7.5	2.5 Ie	1.05 Ve	7.5	4 Ie	1.05 Ve	15	4 Ie	1.05 Ve	15

Auxiliary Contacts and Control Relays

			Making and Breaking Conditions (normal operation)						Making and Breaking Conditions (occasional operation)					
AC Supply														
Typical Application		**Utilization Category**	**Making**			**Breaking**			**Making**			**Breaking**		
			I	**V**	**cos φ**	**I**	**V**	**cos φ**	**I**	**V**	**cos φ**	**I**	**V**	**cos φ**
Electromagnets	< 72 VA	AC-14	6 Ie	1 Ve	0.3	1 Ie	1 Ve	0.3	6 Ie	1.1 Ve	0.7	6 Ie	1.1 Ve	0.7
	≥ 72 VA	AC-15	10 Ie	1 Ve	0.3	1 Ie	1 Ve	0.3	10 Ie	1.1 Ve	0.3	10 Ie	1.1 Ve	0.3

DC Supply

Typical Application	**Utilization Category**	**Making**			**Breaking**			**Making**			**Breaking**		
		I	**V**	**L/R (ms)**	**I**	**V**	**L/R (ms)**	**I**	**V**	**L/R (ms)**	**I**	**V**	**L/R (ms)**
Electromagnets	DC-13	1 Ie	1 Ve	6 P ■	1 Ie	1 Ve	6 P ■	1.1 Ie	1.1 Ve	6 P ■	1 Ie	1.1 Ve	6 P ■

■ The value 6 P (in watts) is based on practical observations and is considered to represent the majority of magnetic loads up to the maximum limit of P = 50 W, that is 6 P = 300 ms = L/R. Above this, the loads are made up of smaller loads in parallel. The value 300 ms is therefore a maximum limit whatever the value of current drawn.

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How to Use the Electrical Life Curves

The contactor electrical life curves on the following pages may be used to estimate the number of make and break operations a contactor can achieve for a specific application. Compare the application to the utilization category definitions listed on page 16 and select the appropriate chart. Each chart shows the Number of Operations in Millions on the Y axis and the Current Broken in Amps on the X axis.

AC-1 The current broken should be the same as the make and maintain current.
AC-3 The current broken should be the same as the full load current rating (FLA) of the motor.
AC-4 The current broken should be the same as the locked rotor current (LRA) or 6 times full-load current of the motor.

Once the appropriate chart is selected, find the breaking current of the application on the X axis of the chart and draw a vertical line. Draw a vertical line at this point. Find the intersection of this vertical line and the life curve of a particular contactor. At the intersection point read the number of electrical operations off the Y axis. If longer electrical life is required, continue checking the intersection points until an acceptable contactor is found.

Operational Current and Power Conforming to IEC ($\theta \leq$ 55°C [131 °F]) for Category AC-3

Contactor Size			LC1 LP1 K06	LC1 LC1 K09	LC1 LP1 K12	LC1 LP1 D09	LC1 LP1 D12	LC1 LP1 D18	LC1 LP1 D25	LC1 LP1 D32	LC1 D38	LC1 LP1 D40
Max. operational current (AC-3)	≤ 440 Vac	A	6	9	12	9	12	18	25	32	38	40
Rated operational power P (standard motor power ratings)	220/240 Vac	kW	1.5	2.2	3	2.2	3	4	5.5	7.5	9	11
	380/400 Vac	kW	2.2	4	5.5	4	5.5	7.5	11	15	18.5	18.5
	415 Vac	kW	2.2	4	5.5	4	5.5	9	11	15	18.5	22
	440 Vac	kW	3	4	5.5	4	5.5	9	11	15	18.5	22
	500 Vac	kW	3	4	4	5.5	7.5	10	15	18.5	18.5	22
	660/690 Vac	kW	3	4	4	5.5	7.5	10	15	18.5	18.5	30
	1000 Vac	kW	–	–	–	–	–	–	–	–	–	22

Maximum Operating Rate in Operating Cycles/Hour ♦

On-load Factor	Operational Power				LC1 LP1 D09	LC1 LP1 D12	LC1 LP1 D18	LC1 LP1 D25	LC1 LP1 D32	LC1 D38	LC1 LP1 D40
≤ 85%	P	–	–	–	1200	1200	1200	1200	1000	1000	1000
	0.5 P	–	–	–	3000	3000	2500	2500	2500	2500	2500
≤ 25%	P	–	–	–	1800	1800	1800	1800	1200	1200	1200

Operational Current and Power Conforming to UL, CSA ($\theta \leq$ 55°C [131 °F])

Contactor Size			LC1 LP1 K06	LC1 LP1 K09	LC1 LP1 K12	LC1 LP1 D09	LC1 LP1 D12	LC1 LP1 D18	LC1 LP1 D25	LC1 LP1 D32	LC1 D38●	LC1 LP1 D40
Max. operational current (AC-3)	≤ 440 Vac	A	6	9	12	9	12	18	25	32	–	40
Rated operational power P (standard motor power ratings) 60 Hz	200/208 Vac	HP	1.5	2	3	2	3	5	7.5	10	–	10
	230/240 Vac	HP	1.5	3	3	2	3	5	7.5	10	–	10
	460/480 Vac	HP	3	5	7.5	5	7.5	10	15	20	–	30
	575/600 Vac	HP	3	5	10	7.5	10	15	20	30	–	30

♦ Depending on the operational power and the on-load factor ($\theta \leq$ 55 °C [131 °F]).
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In many applications there is a mixture of AC3 and AC4 duty. For these applications the electrical life of a particular contactor can be estimated by using the following formula:

$$E = \frac{AC3}{1 - \left(\frac{P}{100}\right) + \left(\frac{P}{100} \times \frac{AC3}{AC4}\right)}$$

Where: E = Estimated electrical life for mixed duty application
AC3 = Number of electrical operations taken from the 100% AC3 Duty Life Curve
AC4 = Number of electrical operations taken for the 100% AC4 Duty Life Curve
P = Proportion of AC-4 operations to total operations for the application, expressed as a percentage.

Example: A LC1D12 contactor for a motor load of 7.5 HP at 460 Vac, 11 A, 15% AC4 duty.

AC-3 breaking current is 11 Amps — From chart: AC3 = 2,250,000 operations
AC-4 breaking current is 66 Amps (approximate inrush) — From chart: AC4 = 90,000 operations

E = 2,250,000/[1 – (15/100) + (15/100) x (2,250,000 / 90,000)] = 489,130 operations for approximate electrical life

Operational Current and Power Conforming to IEC (θ ≤ 55°C [131 °F]) for Category AC-3

Contactor Size			LC1 LP1 D50	LC1 LP1 D65	LC1 LP1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 F185	LC1 F225	LC1 F265	LC1 F330	LC1 F400	LC1 F500	LC1 F630	LC1 F780	LC1 F800
Max. operational current (AC-3)	≤ 440 Vac	A	50	65	80	95	115	150	185	225	265	330	400	500	630	780	800
Rated operational power P (standard motor power ratings)	220/240 Vac	kW	15	18.5	22	25	30	40	55	63	75	100	110	147	200	220	250
	380/400 Vac	kW	22	30	37	45	55	75	90	110	132	160	200	250	335	400	450
	415 Vac	kW	25	37	45	45	59	80	100	110	140	180	220	280	375	425	450
	440 Vac	kW	30	37	45	45	59	80	100	110	140	200	250	295	400	425	450
	500 Vac	kW	30	37	55	55	75	90	110	129	160	200	257	355	400	450	450
	660/690 Vac	kW	33	37	45	45	80	100	110	129	160	220	280	335	450	475	475
	1000 Vac	kW	30	37	45	45	75	90	100	100	147	160	185	335	450	450	450

Maximum Operating Rate in Operating Cycles/Hour ♦

On-load Factor	Operational Power	LC1 LP1 D50	LC1 LP1 D65	LC1 LP1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 F185	LC1 F225	LC1 F265	LC1 F330	LC1 F400	LC1 F500	LC1 F630	LC1 F780	LC1 F800
≤ 85%	P	1000	1000	750	750	750	750	750	750	750	750	500	500	500	500	500
	0.5 P	2500	2500	2000	2000	2000	1200	2000	2000	2000	2000	1200	1200	1200	1200	600
≤ 25%	P	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	600	600

Operational Current and Power Conforming to UL, CSA (θ ≤ 55°C [131 °F])

Contactor Size			LC1 LP1 D50	LC1 LP1 D65	LC1 LP1 D80	LC1 D95 ●	LC1 D115	LC1 D150	LC1 F185	LC1 F225 ●	LC1 F265	LC1 F330	LC1 F400	LC1 F500	LC1 F630	LC1 F780	LC1 F800
Max. operational current (AC-3)	≤ 440 Vac	A	50	65	80	–	115	150	185	–	265	330	400	500	630	780	800
Rated operational power P (standard motor power ratings) 60 Hz	200/208 Vac	HP	15	20	30	–	30	40	50	–	60	75	100	150	–	–	350
	230/240 Vac	HP	15	20	30	–	40	50	60	–	75	100	125	200	300	450	400
	460/480 Vac	HP	40	50	60	–	75	100	125	–	150	200	250	400	600	900	900
	575/600 Vac	HP	40	50	60	–	100	125	150	–	200	250	300	500	800	900	900

♦ Depending on the operational power and the on-load factor (θ ≤ 55 °C [131 °F]).
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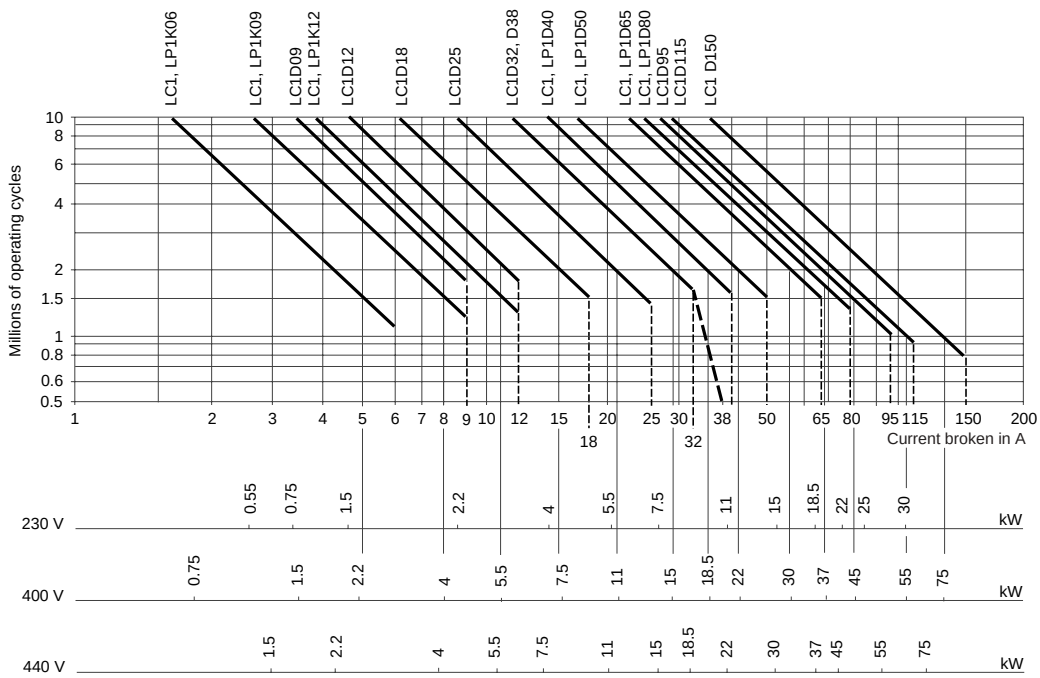
Use in Category AC-3 (Ve ≤ 440 Vac)

Control of 3-phase asynchronous squirrel cage motors with breaking while running.

The current broken (Ic) in category AC-3 is equal to the rated operational current (Ie) of the motor.

Use motor full-load current on horizontal axis for selection purposes.



NOTE: The dotted lines relate to LC1D38 contactors only.

Operational power in kW-50 Hz.

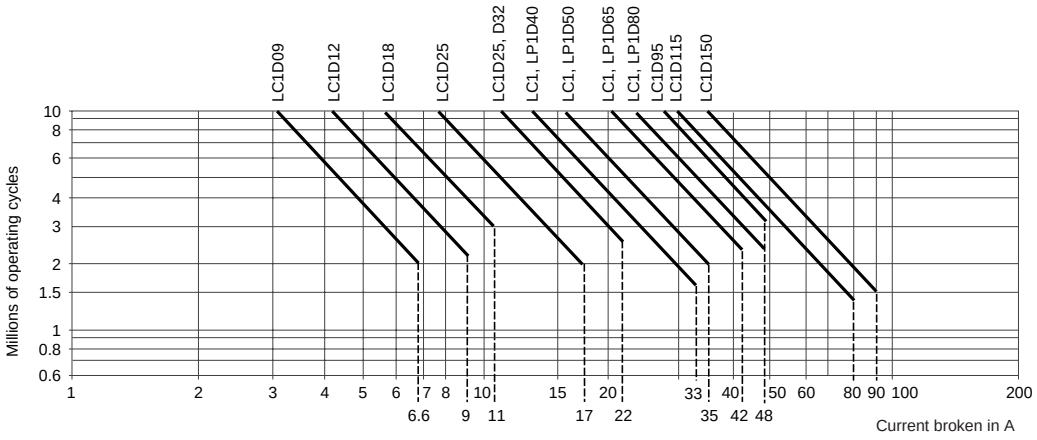
Example: Asynchronous motor with P = 5.5 kW – Ve = 400 V – Ie = 11 A – Ic = Ie = 11 A; or
Asynchronous motor with P = 5.5 kW – Ve = 415 V – Ie = 11 A – Ic = Ie = 11 A.
3 million operating cycles required.
The above selection curves show the contactor rating needed: LC1D18 or LP1D18.

Use in Category AC-3 (Ve = 660/690 Vac)

Control of 3-phase asynchronous squirrel cage motors with breaking while running.

The current broken (Ic) in category AC-3 is equal to the rated operational current (Ie) of the motor.

Use motor full-load current on horizontal axis for selection purposes.



NOTE: For Ve = 1000 Vac, use the 660/690 Vac curves without exceeding the corresponding operational current at the operational power indicated for 1000 Vac.

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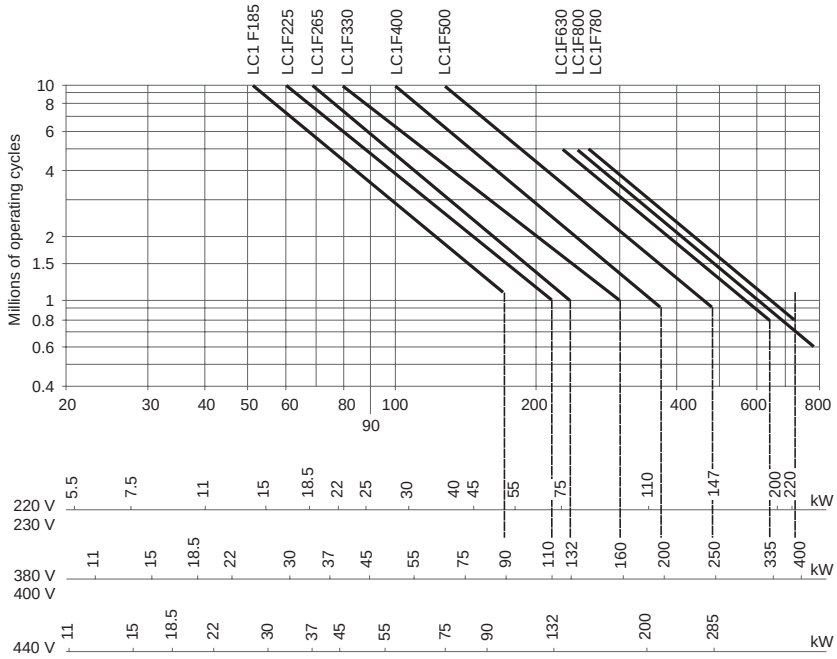
Use in Category AC-3 (Ve ≤ 440 Vac)

Control of 3-phase asynchronous squirrel cage motors with breaking while running.

The current broken (Ic) in category AC-3 is equal to the rated operational current (Ie) of the motor.

Use motor full-load current on horizontal axis for selection purposes.



Operational power in kW-50 Hz.

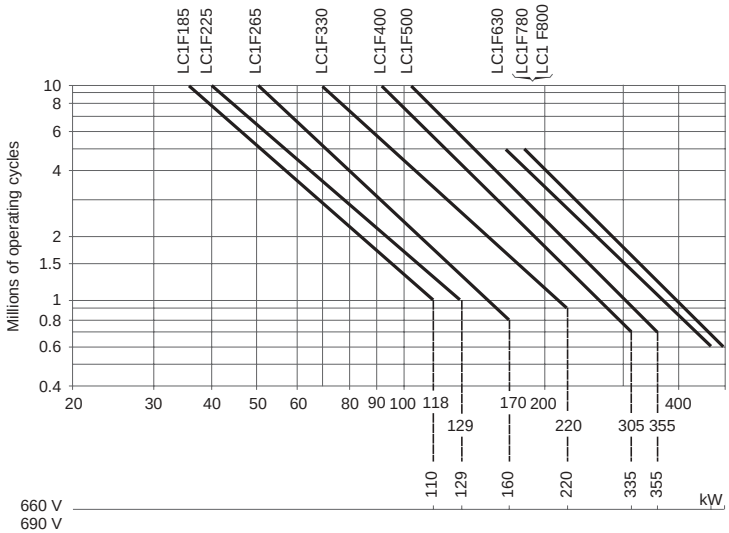
Example: Asynchronous motor with P = 132 kW – Ve = 380 V – Ie = 245 A – Ic = Ie = 245 A; or
Asynchronous motor with P = 132 kW – Ve = 415 V – Ie = 240 A – Ic = Ie = 240 A.
1.5 million operating cycles required.
The above selection curves show the contactor rating needed: LC1F330.

Use in Category AC-3 (Ve = 660/690 Vac)

Control of 3-phase asynchronous squirrel cage motors with breaking while running.

The current broken (Ic) in category AC-3 is equal to the rated operational current (Ie) of the motor.

Use motor full-load current on horizontal axis for selection purposes.



Example: Asynchronous motor with P = 132 kW – Ve = 660 V – Ie = 140 A – Ic = Ie = 140 A.
1.5 million operating cycles required.
The above selection curves show the contactor rating needed: LC1F330.

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Maximum Operational Current (Open-mounted Device)

Contactor Size			LC1 LC1	LC1 LP1	LC1 LP1	LC1 LP1	LC1 LP1	LC1 LP1	LC1 LP1	LC1	LC1 LP1
			K09	K12	D09	D12	D18	D25	D32	D38	D40
Maximum operating rate operating cycles/hour			600	600	600	600	600	600	600	600	600
Cabling to IEC 60947-1	cable c.s.a	mm^2 (AWG)	4 (#12)	4 (#12)	4 (#12)	4 (#12)	6 (#10)	6 (#10)	10 (#8)	10 (#8)	16 (#6)
	bar c.s.a.	mm	–	–	–	–	–	–	–	–	–
Operational current in A, in AC-1 according to the ambient temperature to IEC 60947-1	≤ 40 °C (104 °F)	**A**	20	20	25	25	32	40	50	50	60
	≤ 55 °C (131 °F)	**A**	20	20	25	25	32	40	50	50	60
	≤ 70 °C (158 °F)	**A** (to Vc)	♦	♦	17	17	22	28	35	35	42
Maximum operational power ≤ 55°C	220/230 Vac	**kW**	8	8	9	9	11	14	18	18	21
	240 Vac	**kW**	8	8	9	9	12	15	19	19	23
	380/400 Vac	**kW**	14	14	15	15	20	25	31	31	37
	415 Vac	**kW**	14	14	17	17	21	27	34	34	41
	440 Vac	**kW**	15	15	18	18	23	29	36	36	43
	500 Vac	**kW**	17	17	20	20	23	33	41	41	49
	660/690 Vac	**kW**	22	22	27	27	34	43	54	54	65
	1000 Vac	**kW**	–	–	–	–	–	–	–	–	70

♦ Please consult our local representatives or agents.

Increase in operation current by paralleling of poles: Apply the following multiplying factors to the current or power values given above. The factors take into account the often unbalanced current distribution between poles:

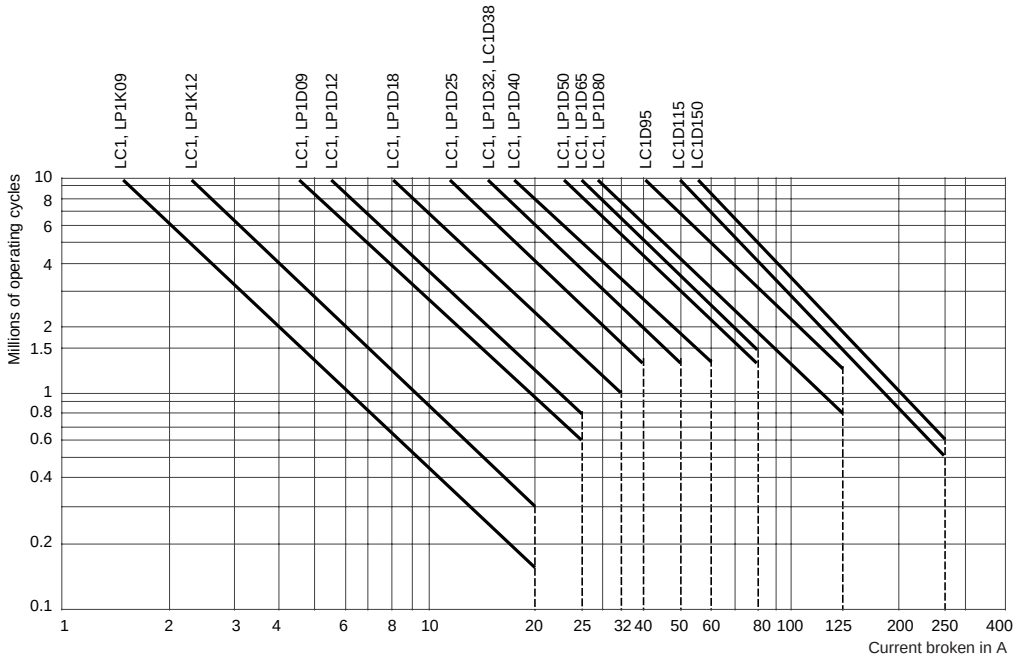
2 poles in parallel: K = 1.6
3 poles in parallel: K = 2.25
4 poles in parallel: K = 2.8

Use in Category AC-1 (Ve ≤ 440 Vac)

Control of resistive circuits (power factor ≥ 0.95).

The current broken (Ic) in category AC-1 is equal to the current (Ie) normally drawn by the load.

Use motor full-load current on horizontal axis for selection purposes.



Example: Ve = 220 V – Ie = 50 A (θ ≤ 40 °C) – Ic = Ie = 50 A.
2 million operating cycles required.
The above selection curves show the contactor rating needed: LC1D50 or LP1D50.

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Maximum Operational Current (Open-mounted Device)

Contactor Size			LC1 LP1 D50	LC1 LP1 D65	LC1 LP1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 F185	LC1 F225	LC1 F265	LC1 F330	LC1 F400	LC1 F500	LC1 F630	LC1 F780	LC1 F800
Maximum operating rate operating cycles/hour			600	600	600	600	600	600	600	600	600	600	600	600	600	600	600
Cabling to IEC 60947-1	cable c.s.a	mm^2 (AWG)	25 (#4)	25 (#4)	50 (#0)	50 (#0)	120 (250 MCM)	120 (250 MCM)	150 (300 MCM)	185 (350 MCM)	185 (350 MCM)	240 (500 MCM)	–	–	–	–	–
	Number of Bars		–	–	–	–	–	–	–	–	–	–	2	2	2	2	2
	bar c.s.a.	mm	–	–	–	–	–	–	–	–	–	–	30 x 5	40 x 5	60 x 5	100 x 5	60 x 5
		inches	–	–	–	–	–	–	–	–	–	–	1.18 x 0.2	1.57 x 0.2	2.36 x 0.2	4.0 x 0.2	2.36 x 0.2
Operational current in A, in AC-1 according to the ambient temperature to IEC 60947-1	≤ 40 °C (104 °F)	**A**	80	80	125	125	250	250	275	315	350	400	500	700	1000	1600	1000
	≤ 55 °C (131 °F)	**A**	80	80	125	125	200	200	275	280	300	360	430	580	850	1350	850
	≤ 70 °C (158 °F)	**A** (to Vc)	56	56	80	80	160	160	180	200	250	290	340	500	700	1100	700
Maximum operational power ≤ 55°C (131°F)	220/230 Vac	**kW**	29	29	45	45	80	80	90	100	120	145	170	240	350	550	350
	240 Vac	**kW**	31	31	49	49	83	83	95	110	125	160	180	255	370	570	370
	380/400 Vac	**kW**	50	50	78	78	135	135	165	175	210	250	300	430	600	950	600
	415 Vac	**kW**	54	54	85	85	140	140	170	185	220	260	310	445	630	1000	630
	440 Vac	**kW**	58	58	90	90	150	150	180	200	230	290	330	470	670	1050	670
	500 Vac	**kW**	65	65	102	102	170	170	200	220	270	320	380	660	750	1200	750
	660/690 Vac	**kW**	86	86	135	135	235	235	280	300	370	400	530	740	1000	1650	1000
	1000 Vac	**kW**	85	100	120	120	345	345	410	450	540	640	760	950	1500	2400	1500

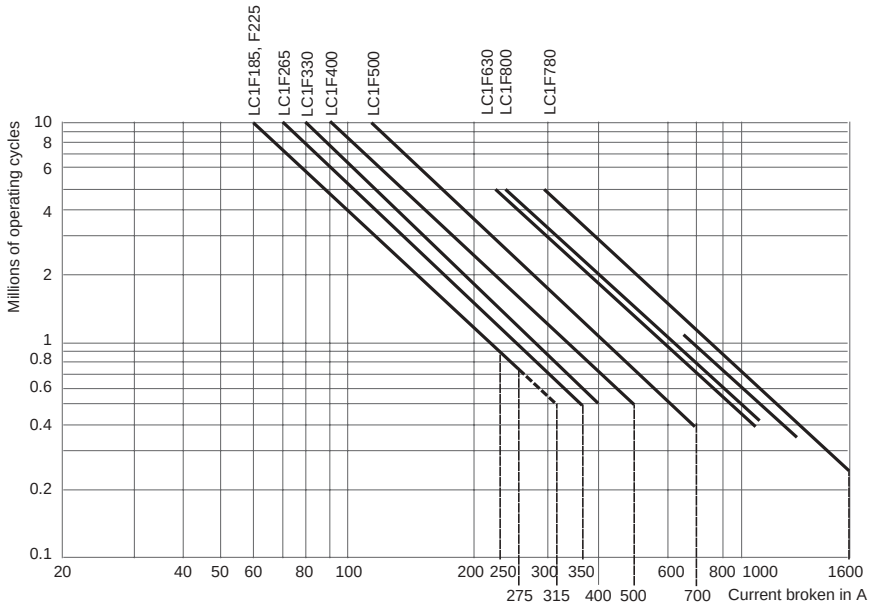
Increase in operation current by paralleling of poles: Apply the following multiplying factors to the current or power values given above.
The factors take into account the often unbalanced current distribution between poles:
2 poles in parallel: K = 1.6 3 poles in parallel: K = 2.254 poles in parallel:K = 2.8

Use in Category AC-1 (Ve ≤ 440 Vac)

Control of resistive circuits (power factor ≥ 0.95).

The current broken (Ic) in category AC-1 is equal to the current (Ie) normally drawn by the load.

Use motor full-load current on horizontal axis for selection purposes.



NOTE: The dotted lines relate to LC1F225 contactors only.

Example: Ve = 220 V – Ie = 500 A (θ ≤ 40 °C) – Ic = Ie = 500 A.
2 million operating cycles required.
The above selection curves show the contactor rating needed: LC1 F780.

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Utilization category AC-2 is for breaking the starting current of slip-ring motors, while utilization category AC-4 is for breaking the starting current of squirrel-cage motors.

Maximum Breaking Current for Categories AC-2 and AC-4

Contactor Size		LC1 LP1 K06	LC1 LP1 K09	LC1 LP1 K12	LC1 LP1 D09	LC1 LP1 D12	LC1 LP1 D18	LC1 LP1 D25	LC1 LP1 D32	LC1 D38	LC1 LP1 D40
In category AC-4 (Ie maximum) – Ve ≤ 440 Vac Ie maximum broken = 6 x I motor	**A**	36	54	54	54	72	108	150	192	192	240
– 440 Vac ≤ Ve ≤ 690 Vac Ie maximum broken = 6 x I motor	**A**	26	40	40	40	50	70	90	105	105	150
Depending on the maximum operating rate ♦ and the on-load factor, θ ≤ 55 °C [131 °F] ■											
From 150 & 15% to 300 & 10%	**A**	20	30	30	30	40	45	75	80	80	110
From 150 & 20% to 600 & 10%	**A**	18	27	27	27	36	40	67	70	70	96
From 150 & 30% to 1200 & 10%	**A**	16	24	24	24	30	35	56	60	60	80
From 150 & 55% to 2400 & 10%	**A**	13	19	19	19	24	30	45	50	50	62
From 150 & 85% to 3600 & 10%	**A**	10	16	16	16	21	25	40	45	45	53

♦ Do not exceed the maximum number of mechanical operating cycles.

■ For temperatures higher than 55 °C (131 °F), use a maximum operating rate value equal to 80% of the actual value when selecting from the above tables.

Plugging

The current varies from the maximum plug-braking current to the rated motor current. The making current must be compatible with the rated making and breaking capacities of the contactor. As breaking normally takes place at a current value at or near the locked rotor current, the contactor can be selected using the criteria for categories AC-2 and AC-4.

Permissible AC-4 Power Rating for 200,000 Operating Cycles

Operational Voltage		LC• LP• K06	LC• LP• K09	LC• LP• K12	LC• LP• D09	LC• LP• D12	LC• LP• D18	LC• LP• D25	LC• LP• D32	LC• D38	LC• LP• D40
220/230 Vac	**kW**	0.75	1.1	1.1	1.5	1.5	2.2	3	4	4	4
380/400 Vac	**kW**	1.5	2.2	2.2	2.2	3.7	4	5.5	7.5	7.5	9
415 Vac	**kW**	1.5	2.2	2.2	2.2	3	3.7	5.5	7.5	7.5	9
440 Vac	**kW**	1.5	2.2	2.2	2.2	3	3.7	5.5	7.5	7.5	11
500 Vac	**kW**	2.2	3	3	3	4	5.5	7.5	9	9	11
660/690 Vac	**kW**	3	4	4	4	5.5	7.5	10	11	11	15

Note: Tables continue on next page.

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Maximum Breaking Current for Categories AC-2 and AC-4

Contactor Size		LC1 LP1 D50	LC1 LP1 D65	LC1 LP1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 F185	LC1 F225	LC1 F265	LC1 F330	LC1 F400	LC1 F500	LC1 F630	LC1 F780	LC1 F800
In category AC-4 (Ie maximum) – Ve ≤ 440 Vac Ie maximum broken = 6 x I motor	**A**	300	390	480	570	630	830	1020	1230	1470	1800	2220	2760	3360	4260	3690
– 440 Vac ≤ Ve ≤ 690 Vac Ie maximum broken = 6 x I motor	**A**	170	210	250	250	540	640	708	810	1020	1410	1830	2130	2760	2910	2910
Depending on the maximum operating rate ♦ and the on-load factor, θ ≤ 55 °C [131 °F] ■																
From 150 & 15% to 300 & 10%	**A**	140	160	200	200	280	310	380	420	560	670	780	1100	1400	1600	1600
From 150 & 20% to 600 & 10%	**A**	120	148	170	170	250	280	350	400	500	600	700	950	1250	1400	1400
From 150 & 30% to 1200 & 10%	**A**	100	132	145	145	215	240	300	330	400	500	600	750	950	1100	1100
From 150 & 55% to 2400 & 10%	**A**	80	110	120	120	170	150	240	270	320	390	450	600	720	820	820
From 150 & 85% to 3600 & 10%	**A**	70	90	100	100	125	145	170	190	230	290	350	500	660	710	710

♦ Do not exceed the maximum number of mechanical operating cycles.

■ For temperatures higher than 55 °C (131 °F), use a maximum operating rate value equal to 80% of the actual value when selecting from the above tables.

Plugging

The current varies from the maximum plug-braking current to the rated motor current. The making current must be compatible with the rated making and breaking capacities of the contactor. As breaking normally takes place at a current value at or near the locked rotor current, the contactor can be selected using the criteria for categories AC-2 and AC-4.

Permissible AC-4 Power Rating for 200,000 Operating Cycles

Operational Voltage		LC• LP• D50	LC• LP• D65	LC• LP• D80	LC• D95	LC1 D115	LC1 D150	LC1 F185	LC1 F225	LC1 F265	LC1 F330	LC1 F400	LC1 F500	LC1 F630	LC1 F780	LC1 F800
220/230 Vac	**kW**	5.5	7.5	7.5	9	9	11	22	25	30	37	40	45	55	63	63
380/400 Vac	**kW**	11	11	15	15	18.5	22	40	45	55	63	75	80	100	110	110
415 Vac	**kW**	11	11	15	15	18.5	22	45	51	59	75	80	90	100	110	110
440 Vac	**kW**	11	15	15	15	18.5	22	45	51	63	75	80	100	110	132	132
500 Vac	**kW**	15	18.5	22	22	37	30	51	59	75	80	90	110	132	150	150
660/690 Vac	**kW**	18.5	22	25	25	30	45	63	75	90	110	129	140	160	185	185

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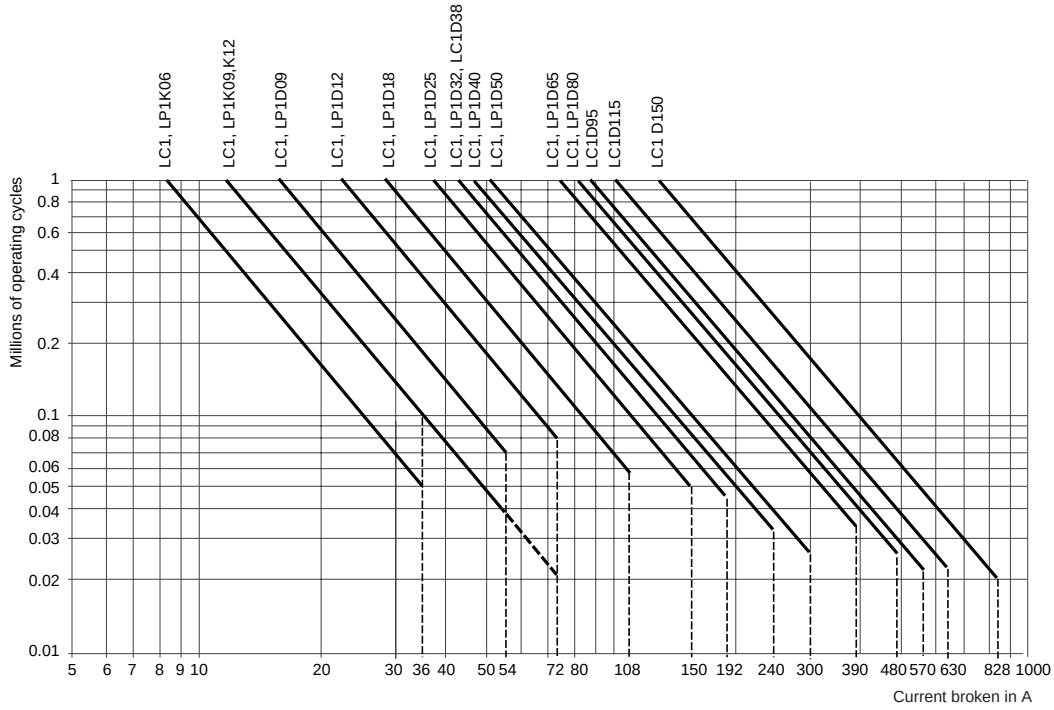
Use in Categories AC-2 or AC-4 (Ve ≤ 440 Vac)

Control of 3-phase asynchronous squirrel cage (AC-4) or slip-ring (AC-2) motors with breaking while motor stalled.

The current broken (Ic) in category AC-4 is equal to 6 times Ie, where Ie is the operational current of the motor.

Use motor-locked rotor current (6 times full-load current) on horizontal axis for selection purposes.



NOTE: The dotted lines relate to LC1K12 and LP1K12 contactors only.

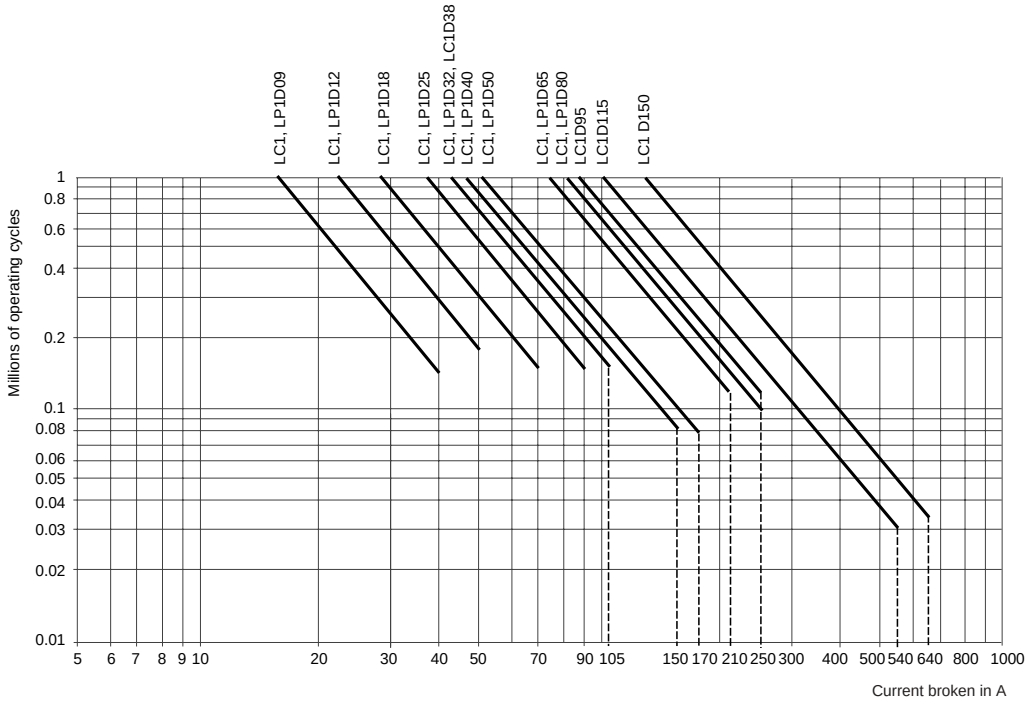
Example: Asynchronous motor with P = 5.5 kW – Ve = 400 V – Ie = 11 A Ic = 6 x Ie = 66 A; or
Asynchronous motor with P = 5.5 kW – Ve = 415 V – Ie = 11 A Ic = 6 x Ie = 66 A.
200,000 operating cycles required.
The above selection curves show the contactor rating needed: LC1D25 or LP1D25.

Use in Category AC-4 (440 Vac < Ve ≤ 690 V)

Control of 3-phase asynchronous squirrel cage motors with breaking while motor stalled.

The current broken (Ic) in category AC-4 is equal to 6 times Ie, where Ie is the operational current of the motor.

Use motor-locked rotor current (6 times full-load current) on horizontal axis for selection purposes.



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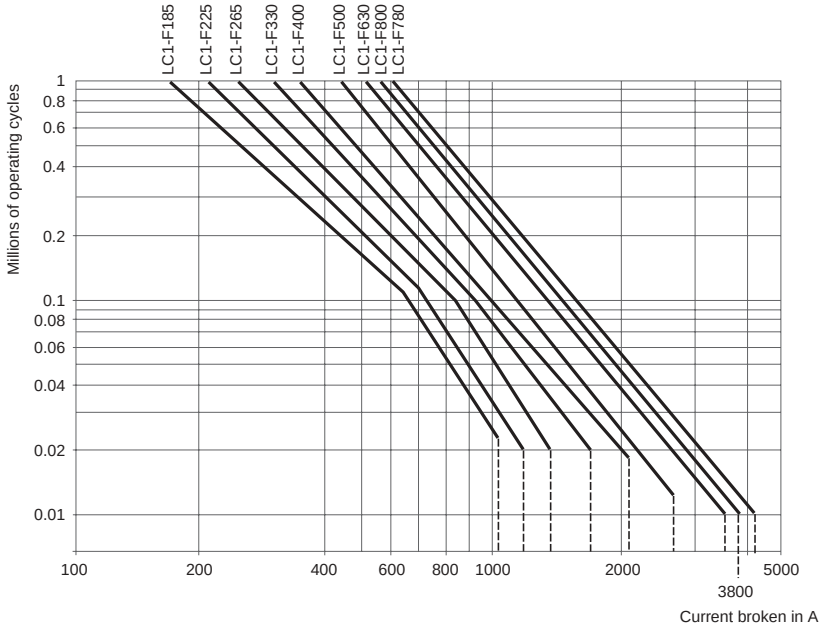
Use in Categories AC-2 or AC-4 (Ve ≤ 440 Vac)

Control of 3-phase asynchronous squirrel cage (AC-4) or slip-ring (AC-2) motors with breaking while motor stalled.

The current broken (Ic) in category AC-4 is equal to 6 times Ie, where Ie is the operational current of the motor.

Use motor-locked rotor current (6 times full-load current) on horizontal axis for selection purposes.



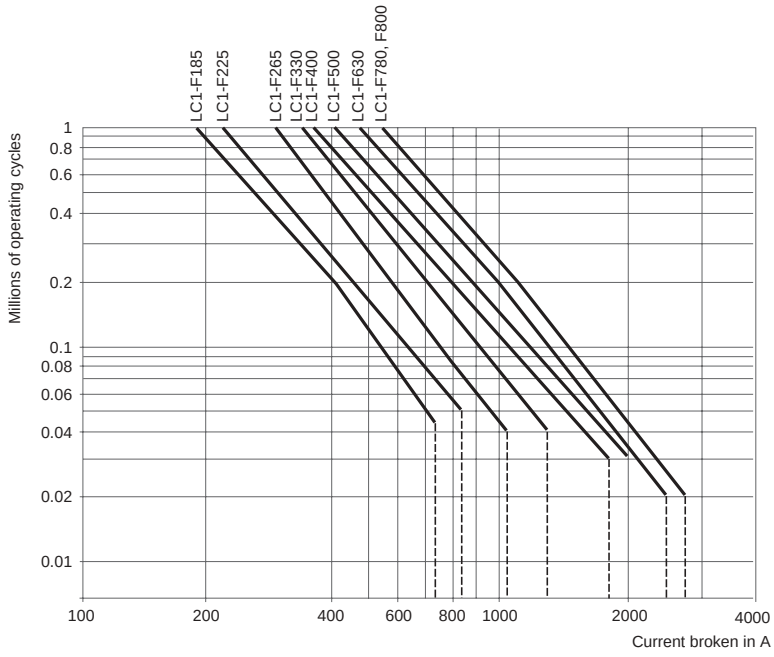
Example: Asynchronous motor with P = 90 kW – Ve = 380 V – Ie = 170 A Ic = 6 x Ie = 1020 A; or
Asynchronous motor with P = 90 kW – Ve = 415 V – Ie = 165 A Ic = 6 x Ie = 990 A.
60,000 operating cycles required.
The above selection curves show the contactor rating needed: LC1F265.

Use in Category AC-4 (440 Vac < Ve ≤ 690 V)

Control of 3-phase asynchronous squirrel cage motors with breaking while motor stalled.

The current broken (Ic) in category AC-4 is equal to 6 times Ie, where Ie is the operational current of the motor.

Use motor-locked rotor current (6 times full-load current) on horizontal axis for selection purposes.



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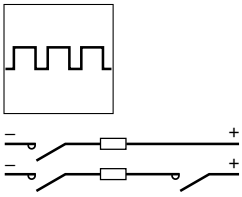
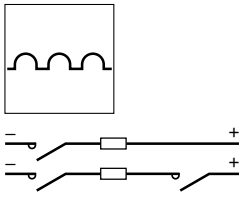


Rated Operational Current (Ie) in Amperes for Category DC-1

Resistive loads: time constant $\frac{L}{R}$ ≤ 1 ms, ambient θ ≤ 55 °C [131 °F]

Rated Operational Voltage Ve	Number of Poles Connected in Series	Contactor Rating ♦									
		LC1 LP1	LC1 LP1	LC1 LP1	LC1 LP1	LC1 LP1	LC1	LC1 LP1	LC1 LP1	LC1 LP1	LC1 LP1
		D09	D12	D18	D25	D32	D38	D40	D50	D65	D80
24 Vdc	1	15	15	15	30	30	30	40	50	50	70
	2	18	18	18	32	32	32	55	70	70	100
	3	20	20	20	32	32	32	55	70	70	100
	4	–	20	–	32	–	–	55	–	70	100
48/75 Vdc	1	12	12	12	25	25	25	25	25	25	25
	2	17	17	17	30	30	30	55	70	70	100
	3	20	20	20	32	32	32	55	70	70	100
	4	–	20	–	32	–	–	55	–	70	100
125 Vdc	1	6	6	8	8	8	8	8	8	8	8
	2	12	12	12	25	25	25	40	50	60	80
	3	15	15	15	27	27	27	45	60	65	85
	4	–	17	–	30	–	–	55	–	70	100
225 Vdc	1	4	4	5	5	5	5	5	5	5	5
	2	8	8	8	15	15	15	35	40	40	45
	3	10	10	10	22	22	22	40	50	50	55
	4	–	12	–	25	–	–	50	–	60	70
300 Vdc	3	–	–	–	–	–	–	–	–	–	–
	4	–	12	–	25	–	40	40	–	60	70
460 Vdc	4	–	–	–	–	–	–	–	–	–	–
900 Vdc	2	–	–	–	–	–	–	–	–	–	–
1200 Vdc	3	–	–	–	–	–	–	–	–	–	–
1500 Vdc	4	–	–	–	–	–	–	–	–	–	–



Rated Operational Current (Ie) in Amperes for Categories DC-2 to DC-5

Inductive loads: time constant $\frac{L}{R}$ ≤ 15 ms, ambient θ ≤ 55 °C [131 °F]

Rated Operational Voltage Ve	Number of Poles Connected in Series	Contactor Rating ♦									
		LC1 LP1	LC1 LP1	LC1 LP1	LC1 LP1	LC1 LP1	LC1	LC1 LP1	LC1 LP1	LC1 LP1	LC1 LP1
		D09	D12	D18	D25	D32	D38	D40	D50	D65	D80
24 Vdc	1	12	12	12	20	20	20	25	35	35	40
	2	15	15	15	25	25	25	30	45	45	60
	3	18	18	18	30	30	30	45	55	55	80
	4	–	18	–	30	–	–	50	–	60	90
48/75 Vdc	1	10	10	10	15	15	15	15	15	15	15
	2	12	12	12	20	20	20	25	40	40	50
	3	15	15	15	30	30	30	40	50	50	70
	4	–	15	–	30	–	–	50	–	60	90
125 Vdc	1	2	2	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	2	8	8	8	15	15	15	20	25	25	40
	3	12	12	12	20	20	20	30	35	35	60
	4	–	15	–	25	–	–	40	–	50	72
225 Vdc	1	0.75	0.75	0.75	1	1	1	1	1	1	1
	2	1.5	1.5	1.5	3	3	3	4	5	5	7
	3	6	6	6	10	10	10	20	25	25	35
	4	–	8	–	15	–	–	25	–	30	40
300 Vdc	3	–	–	–	–	–	–	–	–	–	–
	4	–	6	–	10	–	–	20	–	25	35
460 Vdc	1	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–
900 Vdc	2	–	–	–	–	–	–	–	–	–	–
1200 Vdc	3	–	–	–	–	–	–	–	–	–	–
1500 Vdc	4	–	–	–	–	–	–	–	–	–	–

♦ For rated operational currents of contactors **LC1** and **LP1K**, please consult your Local Square D Field Sales Office.

Continued on next page.

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Rated Operational Current (Ie) in Amperes for Category DC-1

Resistive loads: time constant $\frac{L}{R} \leq 1$ ms, ambient $\theta \leq 55$ °C [131 °F]

Rated Operational Voltage Ve	Number of Poles Connected in Series												
		LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1
		D95	D115	D150	F185	F225	F265	F330	F400	F500	F630	F780	F800
24 Vdc	1	70	200	200	240	260	300	360	430	580	850	1300	850
	2	100	200	200	240	260	300	360	430	580	850	1300	850
	3	100	200	200	240	260	300	360	430	580	850	1300	850
	4	–	200	–	240	260	300	360	430	580	850	1300	850
48/75 Vdc	1	25	200	200	240	260	300	360	430	580	850	1300	850
	2	100	200	200	240	260	300	360	430	580	850	1300	850
	3	100	200	200	240	260	300	360	430	580	850	1300	850
	4	–	200	–	240	260	300	360	430	580	850	1300	850
125 Vdc	1	8	180	180	210	230	270	320	380	520	760	1180	760
	2	80	180	180	210	230	270	320	380	520	760	1180	760
	3	85	200	200	240	260	300	360	430	580	850	1300	850
	4	–	200	–	240	260	300	360	430	580	850	1300	850
225 Vdc	1	5	160	160	–	–	–	–	–	–	–	–	–
	2	45	160	160	190	200	250	280	350	450	700	1000	700
	3	55	200	200	240	260	300	360	430	580	850	1300	850
	4	–	200	–	240	260	300	360	430	580	850	1300	850
300 Vdc	3	–	140	140	190	200	250	280	350	450	700	1000	700
	4	–	180	–	240	260	300	360	430	580	850	1000	850
460 Vdc	4	–	140	–	190	200	250	280	350	450	700	1000	700
900 Vdc	2	–	–	–	–	–	–	–	–	–	–	–	–
1200 Vdc	3	–	–	–	–	–	–	–	–	–	–	–	–
1500 Vdc	4	–	–	–	–	–	–	–	–	–	–	–	–

Rated Operational Current (Ie) in Amperes for Categories DC-2 to DC-5

Inductive loads: time constant $\frac{L}{R} \leq 15$ ms, ambient $\theta \leq 55$ °C [131 °F]

Rated Operational Voltage Ve	Number of Poles Connected in Series	Contactor Rating ♦											
		LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1
		D95	D115	D150	F185	F225	F265	F330	F400	F500	F630	F780	F800
24 Vdc	1	40	200	200	240	260	300	360	430	580	850	1300	850
	2	60	200	200	240	260	300	360	430	580	850	1300	850
	3	80	200	200	240	260	300	360	430	580	850	1300	850
	4	–	200	–	240	260	300	360	430	580	850	1300	850
48/75 Vdc	1	15	200	200	240	260	300	360	430	580	850	1300	850
	2	50	200	200	240	260	300	360	430	580	850	1300	850
	3	70	200	200	240	260	300	360	430	580	850	1300	850
	4	–	200	–	240	260	300	360	430	580	850	1300	850
125 Vdc	1	2.5	100	100	–	–	–	–	–	–	–	–	–
	2	40	140	140	160	180	250	300	350	500	700	1000	700
	3	60	200	220	240	240	280	310	350	550	850	1000	850
	4	–	200	–	240	240	280	310	350	550	850	1000	850
225 Vdc	1	1	100	100	–	–	–	–	–	–	–	–	–
	2	7	120	120	140	160	220	280	310	480	680	900	680
	3	35	140	140	160	180	250	300	350	500	700	1000	700
	4	–	180	–	240	260	300	360	430	580	850	1300	850
300 Vdc	3	–	100	100	140	160	220	280	310	480	680	900	680
	4	–	180	–	240	260	300	360	430	580	850	1300	850
460 Vdc	1	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	100	100	140	160	220	280	310	480	680	800	680
900 Vdc	2	–	–	–	–	–	–	–	–	–	–	–	–
1200 Vdc	3	–	–	–	–	–	–	–	–	–	–	–	–
1500 Vdc	4	–	–	–	–	–	–	–	–	–	–	–	–

♦ For rated operational currents of contactors **LC1** and **LP1K**, please consult your Local Square D Field Sales Office.

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Use in Category DC-1 to DC-5

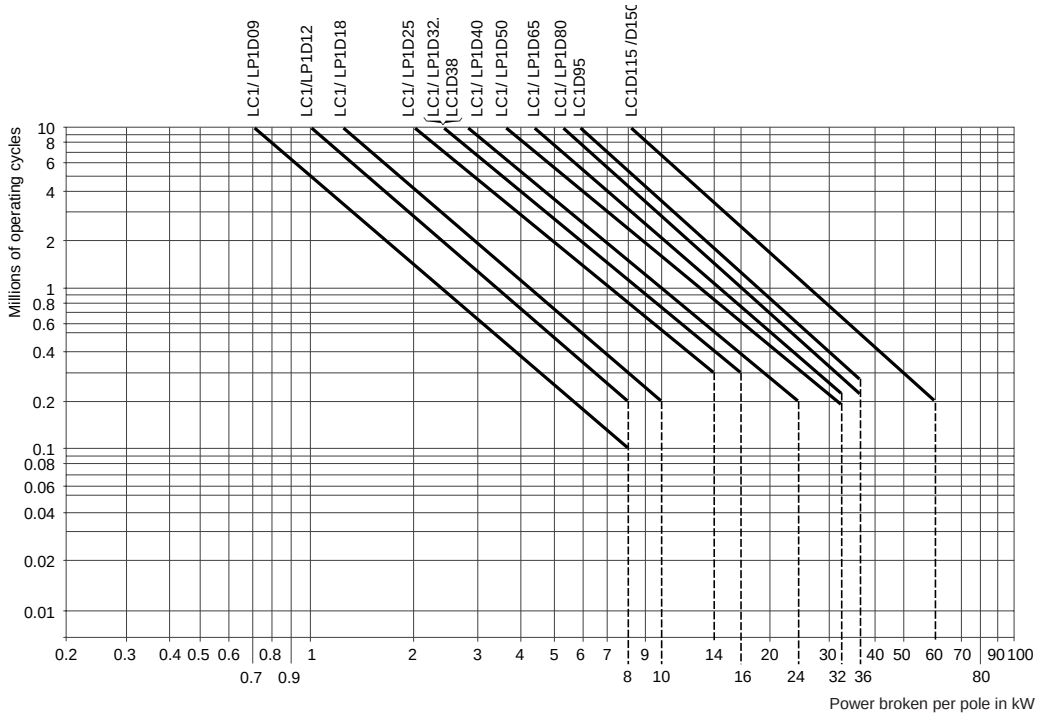
The criteria for contactor selection are:

- The rated operational current Ie.
- The rated operational voltage Ve (see page 31).
- The utilization category and the time constant L/R (see page 31)
- The required electrical durability.

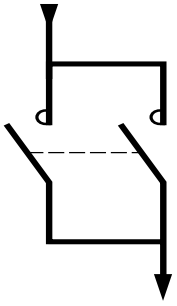
Maximum Operating Rate (Operating Cycles)

The following operating rate must not be exceeded: 120 operating cycles/hour at rated operational current Ie.

Electrical Durability



Example: Series-wound motor with P = 1.5 kW, Ve = 200 V, and Ie = 7.5 A.
Application: counter-current braking and inching (utilization category DC-5).
Select a contactor type LC1D25 or LP1D25 with 3 poles in series.
The power broken is: Pc total = 2.5 x 200 x 7.5 = 3.75 kW.
The power broken per pole is: 1.25 kW.
The electrical durability read from the curve above is ≥ 106 operating cycles.



Use of Poles in Parallel

Electrical durability can be increased by using poles connected in parallel. With N poles connected in parallel, the electrical durability becomes: electrical durability read from the curves x N x 0.7.

NOTE: Connecting the poles in parallel does not allow the maximum operational currents indicated on pages 28 and 29 to be exceeded.

NOTE: Ensure that the connections are made in such a way as to equalize the currents in each pole.

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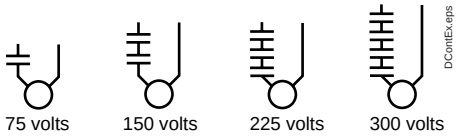
Telemecanique offers a line of contactors for applications involving DC control circuits. It does not matter whether the power circuit is AC or DC. There are two considerations when using these contactors in applications involving a DC power circuit:

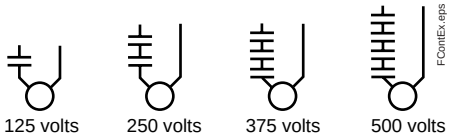
1. **Voltage per pole must not be exceeded.**

   On D-line contactors, you can use the AC inductive/resistive rating as long as the voltage does not exceed 75 volts per pole. On F-line contactors, the voltage must not exceed 125 volts per pole. However, by wiring the contacts in **series**, you can multiply the number of poles in series by the maximum voltage allowed per pole.

Example 1: D-Line contactors (9 - 38 amps)



Example 2: F-Line & D115, D150 contactors



On AC power circuits, follow regular procedures.

2. **L/R ≤ 15 ms without derating.**

   A time constant is defined as the length of time it takes the current to rise from 0 to 63.2% of its maximum value, or to decay to 36.8% of its maximum value. Time constants are measured in seconds. The inductance (L) is measured in henries and the resistance (R) is measured in ohms.

   In a pure resistive circuit, current reaches its maximum value when the circuit is energized. Because inductance opposes a change in current flow and tends to hold back current, the time constant will increase as the circuit inductance is increased. As the time constant exceeds 15 ms, the electrical life of the contactor is affected and a derating factor (normally one contactor size) is needed to compensate for this loss. In most applications this time constant will be under 15 ms. It is a good idea, however, to check with the motor manufacturer.

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Voltage Code Tables _ See notes pertaining to each product line at the end of this table.

Voltage	Frequency	K-line				D-line			F-line				
		LC1K LC2K Notes K1, K2	LC7K LC8K Note K4	LP1K LP2K Notes K2, K3	LP4K LP5K	LC1D09 - D38 LC2D09 - D38 Notes D1, D3	LC1D40 - D95 LC2D40 - D95 Note D1	LC1D115 - D150 Note D1, D2, D4	LC1F115 - F225 Note F1, F2	LC1F265 - F400 Note F1, F2	LC1F500 - F630 Note F1, F2	LC1F780 Note F1, F2	LC1F800 Note F1, F2, F3,
5	**Low Consump DC**	-	-	-	-	AL	-	-	-	-	-	-	-
	50/60	J7	-	-	-	J7	-	-	-	-	-	-	-
	50	-	-	-	-	-	J5	-	-	-	-	-	-
	DC	-	-	JD	-	JD	JD	-	-	-	-	-	-
12	Low Consump DC	-	-	-	JW3	JL	-	-	-	-	-	-	-
	Wide Range DC	-	-	-	-	-	JW	-	-	-	-	-	-
	50/60	Z7	-	-	-	-	Z7	-	-	-	-	-	-
	50	-	-	-	-	-	Z5	-	-	-	-	-	-
	60	-	-	-	-	-	Z6	-	-	-	-	-	-
20	DC	-	-	ZD	-	-	-	-	-	-	-	-	-
	Low Consump DC	-	-	-	ZW3	ZL	-	-	-	-	-	-	-
	50/60	B7 Note K2	B7	-	-	B7	B7	B7	-	-	-	-	-
	50	-	-	-	-	-	B5	B5	B5	-	-	-	-
	60	-	-	-	-	-	B6	B6	B6	-	-	-	-
	40-400	-	-	-	-	-	-	-	-	B7 Note F4	-	-	-
24	DC	-	-	BD Note K2	-	BD	BD	BD	BD	BD Note F4	-	-	-
	Low Consump DC	-	-	-	BW3	BL	-	-	-	-	-	-	-
	Wide Range DC	-	-	-	-	-	BW	-	-	-	-	-	-
	50/60	C7	-	-	-	CC7	-	-	-	-	-	-	-
36	DC	-	-	CD	-	CD	CD	CD	-	-	-	-	-
	Wide Range DC	-	-	-	-	-	CW	-	-	-	-	-	-
	50/60	D7	D7	-	-	D7	D7	D7	-	-	-	-	-
42	50	-	-	-	-	-	D5	D5	D5	-	-	-	-
	60	-	-	-	-	-	-	-	-	-	-	-	-
	50/60	E7	E7	-	-	E7	E7	E7	-	-	-	-	-
	50	-	-	-	-	-	E5	E5	E5	-	-	-	-
	60	-	-	-	-	-	E6	E6	E6	-	-	-	-
	40-400	-	-	-	-	-	-	-	E7	E7	E7	-	-
48	DC	-	-	ED	-	ED	ED	ED	ED	ED	ED	-	-
	Low Consump DC	-	-	-	EW3	EL	-	-	-	-	-	-	-
	Wide Range DC	-	-	-	-	-	EW	-	-	-	-	-	-
60	50/60	-	-	-	-	EE7	-	-	-	-	-	-	-
	DC	-	-	ND	-	ND	ND	ND	-	-	-	-	-
	DC	-	-	SD	-	SD	SD	SD	-	-	-	-	-
72	Low Consump DC	-	-	-	SW3	SL	-	-	-	-	-	-	-
	Wide Range DC	-	-	-	-	-	SW	-	-	-	-	-	-
96	Low Consump DC	-	-	-	-	DL	-	-	-	-	-	-	-

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Voltage Code Tables (Continued) _ See notes pertaining to each product line at the end of this table.

Voltage	Frequency	K-line				D-line			F-line				
		LC1K LC2K Notes K1, K2	LC7K LC8K Note K4	LP1K LP2K Note K2, K3	LP4K LP5K	LC1D09 - D38 LC2D09 - D38 Notes D1, D3	LC1D40 - D95 LC2D40 - D95 Note D1	LC1D115 - D150 Note D1, D2, D4	LC1F115 - F225 Note F1, F2	LC1F265 - F400 Note F1, F2	LC1F500 - F630 Note F1, F2	LC1F780 Note F1, F2	LC1F800 Note F1, F2, F3,
100	50/60	-	-	-	-	K7	K7	-	-	-	-	-	-
	DC	-	-	KD	-	-	-	-	-	-	-	-	-
110	50/60	F7	F7	-	-	F7	F7	F7	-	-	-	-	-
	50	-	-	-	-	-	F5	F5	F5	-	-	-	-
	60	-	-	-	-	-	F6	F6	F6	-	-	-	-
	40-400	-	-	-	-	-	-	-	F7	F7	F7	F7	-
	DC	-	-	FD	-	FD	FD	FD	FD	FD	FD	FD	FW
	Low Consump DC	-	-	-	FW3	FL	-	-	-	-	-	-	-
	Wide Range DC	-	-	-	-	-	FW	-	-	-	-	-	-
110/127	40-400	-	-	-	-	-	-	-	-	-	-	-	FE7
115	50/60	FE7	FE7	-	-	FE7	FE7	FE7	-	-	-	-	-
	50	-	-	-	-	-	FE5	FE5	FE5	-	-	-	-
	40-400	-	-	-	-	-	-	-	FE7	FE7	FE7	FE7	-
120	50/60	G7	G7	-	-	G7	G7	G7	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-
	60	-	-	-	-	-	G6	G6	G6	-	-	-	-
	40-400	-	-	-	-	-	-	-	G7	G7 Note F5	F7	F7	-
	DC	-	-	-	-	-	-	-	-	-	-	-	FW
	Low Consump DC	-	-	-	GW3	-	-	-	-	-	-	-	-
125	DC	-	-	GD	-	GD	GD	GD	GD	GD	GD	GD	-
127	50/60	FC7	-	-	-	FC7	-	FC7	-	-	-	-	-
	60	-	-	-	-	-	G5	FC5	G5	-	-	-	-
	40-400	-	-	-	-	-	-	-	G7	G7	G7	G7	-
155	DC	-	-	PD	-	-	-	-	-	-	-	-	-
174	DC	-	-	QD	-	-	-	-	-	-	-	-	-
200	50/60	-	-	-	-	L7	L7	-	-	-	-	-	-
	DC	-	-	LD	-	-	-	-	-	-	-	-	-
200/208	50/60	L7	-	-	-	-	-	-	-	-	-	-	-
	60	-	-	-	-	-	-	-	L6	-	-	-	-
	40-400	-	-	-	-	-	-	-	-	L7	L7	L7	-
208	50/60	-	-	-	-	LE7	LE7	LE7	-	-	-	-	-
	60	-	-	-	-	-	L6	L6	-	-	-	-	-
	40-400	-	-	-	-	-	-	-	L7	-	-	-	-
220	50/60	-	M7	-	-	M7	M7	M7	-	-	-	-	-
	50	-	-	-	-	-	-	M5	M5	-	-	-	-
	60	-	-	-	-	-	M6	M6	M6	-	-	-	-
	40-400	-	-	-	-	-	-	-	M7	M7	M7	M7	-
	DC	-	-	MD	-	MD	MD	MD	-	MD	MD	MD	-
	Low Consump DC	-	-	-	-	ML	-	-	-	-	-	-	-
	Wide Range DC	-	-	-	-	-	MW	-	-	-	-	-	-
220/230	50/60	M7	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	M5	-	-	-	-	-	-
	60	-	-	-	-	-	-	-	-	-	-	-	-
	40-400	-	-	-	-	-	-	-	-	-	-	-	-
	DC	-	-	-	-	-	-	-	MD	-	-	-	-
220/240	40-400	-	-	-	-	-	-	-	-	-	-	-	P7
	DC	-	-	-	-	-	-	-	-	-	-	-	MW

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TeSys™ IEC-Style Contactors and Starters Selection Guide
Voltage Code Tables

Voltage Code Tables (Continued) _ See notes pertaining to each product line at the end of this table.

Voltage	Frequency	K-line				D-line			F-line				
		LC1K LC2K Notes K1, K2	LC7K LC8K Note K4	LP1K LP2K Note K2, K3	LP4K LP5K	LC1D09 - D38 LC2D09 - D38 Notes D1, D3	LC1D40 - D95 LC2D40 - D95 Note D1	LC1D115 - D150 Note D1, D2, D4	LC1F115 - F225 Note F1, F2	LC1F265 - F400 Note F1, F2	LC1F500 - F630 Note F1, F2	LC1F780 Note F1, F2	LC1F800 Note F1, F2, F3,
230	50/60	P7	-	-	-	P7	P7	P7	-	-	-	-	-
	50	-	-	-	-	U7	P5	P5	P5	-	-	-	-
	60	-	-	-	-	-	-	-	-	-	-	-	-
	40-400	-	-	-	-	-	-	-	P7	P7	P7	P7	-
	DC	-	-	MPD	-	-	-	-	-	-	-	-	-
230/240	50/60	U7 Note K4	U7	-	-	-	-	-	-	-	-	-	-
240	50/60	-	-	-	-	U7	U7	U7	-	-	-	-	-
	50	-	-	-	-	-	U5	U5	U5	-	-	-	-
	60	-	-	-	-	-	U6	U6	U6	-	-	-	-
	40-400	-	-	-	-	-	-	-	U7	U7	U7	U7	-
	DC	-	-	MUD	-	-	-	-	-	-	-	-	-
250	DC	-	-	UD	-	UD	UD	UD	UD	UD	UD	UD	-
	Low Consump DC	-	-	-	-	UL	-	-	-	-	-	-	-
256	50/60	W7	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	W5	-	-	-	-	-	-
277	50/60	UE7	-	-	-	W7	-	UE7	-	-	-	-	-
	50	-	-	-	-	-	W6	W6	W5	-	-	-	-
	40-400	-	-	-	-	-	-	-	-	W7	W7	W7	-
380	50/60	-	-	-	-	Q7	Q7	Q7	-	-	-	-	-
	50	-	-	-	-	-	-	Q5	Q5	-	-	-	-
	60	-	-	-	-	-	Q6	Q6	Q6	-	-	-	-
	40-400	-	-	-	-	-	-	-	Q7	Q7	Q7	Q7	-
380/400	50/60	Q7 NOte K4	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	Q5	-	-	-	-	-	-
	60	-	-	-	-	-	-	-	-	-	-	-	-
	40-400	-	-	-	-	-	-	-	-	-	-	-	-
	DC	-	-	-	-	-	-	-	-	-	-	-	QW
380/440	40-400	-	-	-	-	-	-	-	-	-	-	-	V7
400	50/60	V7	-	-	-	V7	V7	V7	-	-	-	-	-
	50	-	-	-	-	-	V5	V5	V5	-	-	-	-
	40-400	-	-	-	-	-	-	-	V7	V7	V7	V7	-
400/415	50/60	N7	-	-	-	-	-	-	-	-	-	-	-
415	50/60	-	-	-	-	N7	N7	N7	-	-	-	-	-
	50	-	-	-	-	-	N5	N5	N5	-	-	-	-
	40-400	-	-	-	-	-	-	-	N7	N7	N7	N7	-
415-440	50	-	-	-	-	-	-	-	-	-	-	-	-
	40-400	-	-	-	-	-	-	-	-	-	-	-	-
440	50/60	R7	-	-	-	R7	R7	R7	-	-	-	-	-
	50	-	-	-	-	-	R5	R5	-	-	-	-	-
	60	-	-	-	-	-	R6	R6	R6	-	-	-	-
	40-400	-	-	-	-	-	-	-	R7	R7	R7	R7	-
	DC	-	-	-	-	RD	RD	RD	-	RD	RD	RD	-
440/460	DC	-	-	-	-	-	-	-	RD	-	-	-	-
460/480	60	-	-	-	-	-	-	-	Q5	-	-	-	-
480	50/60	T7	-	-	-	T7	-	T7	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-
	60	-	-	-	-	-	T6	T6	-	-	-	N7	-
	40-400	-	-	-	-	-	-	-	-	S7 Note F4	-	-	-

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Voltage Code Tables (Continued) _ See notes pertaining to each product line at the end of this table.

Voltage	Frequency	K-line				D-line			F-line				
		LC1K LC2K Notes K1, K2	LC7K LC8K Note K4	LP1K LP2K Note K2, K3	LP4K LP5K	LC1D09 - D38 LC2D09 - D38 Notes D1, D3	LC1D40 - D95 LC2D40 - D95 Note D1	LC1D115 - D150 Note D1, D2, D4	LC1F115 - F225 Note F1, F2	LC1F265 - F400 Note F1, F2	LC1F500 - F630 Note F1, F2	LC1F780 Note F1, F2	LC1F800 Note F1, F2, F3,
500	50/60	S7	-	-	-	S7	-	S7	-	-	-	-	-
	50	-	-	-	-	-	S5	S5	S5	-	-	-	-
	40-400	-	-	-	-	-	-	-	S7	S7	S7	S7	-
575	50/60	SC7	-	-	-	SC7	-	-	-	-	-	-	-
	60	-	-	-	-	-	S6	-	-	-	-	-	-
600	50/60	X7	-	-	-	X7	-	-	-	-	-	-	-
	60	-	-	-	-	-	X6	-	-	-	-	-	-
	40-400	-	-	-	-	-	-	-	-	-	X7	-	-
660	50	-	-	-	-	Y5	Y5	-	-	-	-	-	-
	60	-	-	-	-	-	-	-	Y6	-	-	-	-
660/690	50/60	Y7	-	-	-	-	-	-	-	-	-	-	-

Notes:

K-Line:

K1 Up to and including 240 V, coil with integral suppression device (bi-directional diode): add 2 to the requested voltage code. Ex. J72

K2 For voltage codes B7 or BD, when connecting an electronic sensor or timer in series with the coil of the control relay, select a 20 V coil (Voltage code Z7 for AC or ZD for DC). This coil compensates for incurred voltage drop.

K3 Coil with integral suppression device available (bidirectional diode): add 3 to the requested voltage code. Ex JD3.

K4 For voltage codes M7, U7, Q7, N7, Y7 and all LC7K and LC8K devices, operating range is 0.85 - 1.10 of nominal. For all other LC1K and LC2K the operating range is 0.80 - 1.15 of nominal.

D line:

D1 For operating ranges refer to technical data section of the D-line contactors. Ranges vary as a function of the current rating of the contactor and type of supply (AC/DC)

D2 LC1-D150 Contactors utilize dual frequency 50/60 Hz. coils only. Single frequency coils are not available.

D3 LC1D09 -LC1D38 contactors with DC coil have integral suppression device (bi-directional diode) as standard.

D4 D115 and D150 coils have integral suppression device fitted as standard.

F-Line:

F1 For operating ranges refer to technical data section of the F-line contactors. Ranges vary as a function of the supply (AC/DC).

F2 For non-stock voltage codes, order contactor and coil separately. See page 202 - 209 for coils.

F3 Built in surge suppressor included on LC1F800 coils.

F4 For use with LC1F265 and LC1F330 only.

F5 For LC1-F400 contactor with 120VAC coil, use F7 code.

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Altitude

The low oxygen atmosphere at high altitudes reduces the dielectric strength of the air and hence the rated operational voltage of the contactor. It also reduces the cooling effect of the air and hence the rated operational current of the contactor (unless the temperature drops at the same time).

No derating is necessary up to 3000 m (9,840 ft.). Derating factors to be applied above this altitude for main pole operational voltage and current (AC supply) are as follows.

Altitude	3500 m (11,480 ft.)	4000 m (13,120 ft.)	4500 m (14,760 ft.)	5000 m (16,400 ft.)
Rated operational voltage	0.90	0.80	0.70	0.60
Rated operational current	0.92	0.90	0.88	0.86

Ambient air temperature

The temperature of the air surrounding the device, measured near to the device. The operating characteristics are given:
- with no restriction for temperatures between –5 and +55 °C (+23 and +131 °F)
- with restrictions, if necessary, for temperatures between –50 and +70 °C (–58 and +149 °F)

Rated operational current (Ie)

This is defined taking into account the rated operational voltage, operating rate and duty, utilization category and ambient temperature around the device.

Rated conventional thermal current (Ith) ♦

The current which a closed contactor can sustain for a minimum of 8 hours without its temperature rise exceeding the limits given in the standards.

Permissible short time rating

The current which a closed contactor can sustain for a short time after a period of no load, without dangerous overheating.

Rated operational voltage (Ve)

This is the voltage value which, in conjunction with the rated operational current, determines the use of the contactor or starter, and on which the corresponding tests and the utilization category are based. For three-phase circuits it is expressed as the voltage between phases. Apart from exceptional cases such as rotor short-circuiting, the rated operational voltage Ve is less than or equal to the rated insulation voltage Vi.

Rated control circuit voltage (Vc)

The rated value of the control circuit voltage, on which the operating characteristics are based. For AC applications, the values are given for a near sinusoidal wave form (less than 5% total harmonic distortion).

Rated insulation voltage (Vi)

This is the voltage value used to define the insulation characteristics of a device and referred to in dielectric tests determining leakage paths and creepage distances. As the specifications are not identical for all standards, the rated value given for each of them is not necessarily the same.

Rated impulse withstand voltage (Vimp)

The peak value of a voltage surge which the device is able to withstand without breaking down.

Rated operational power (expressed in kW)

The rated power of the standard motor which can be switched by the contactor, at the stated operational voltage.

Rated breaking capacity ▲

This is the current value which the contactor can break in accordance with the breaking conditions specified in the IEC standard.

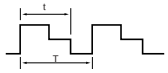
Rated making capacity ▲

This is the current value which the contactor can make in accordance with the making conditions specified in the IEC standard.

On-load factor (m)

This is the ratio between the time the current flows (t) and the duration of the cycle (T)

$$m = \frac{t}{T}$$



Cycle duration: duration of current flow + time at zero current

Pole impedance

The impedance of one pole is the sum of the impedance of all the circuit components between the input terminal and the output terminal. The impedance comprises a resistive component (R) and an inductive component ($X=L\omega$). The total impedance therefore depends on the frequency and is normally given for 50 Hz. This average value is given for the pole at its rated operational current.

Electrical durability

This is the average number of on-load operating cycles which the main pole contacts can perform without maintenance. The electrical durability depends on the utilization category, the rated operational current and the rated operational voltage.

Mechanical durability

This is the average number of on-load operating cycles (i.e. with zero current flow through the main poles) which the contactor can perform without mechanical failure

♦ Conventional thermal current, in free air, conforming to IEC standards.

▲ For AC applications, the breaking and making capacities are expressed by the rms value of the symmetrical component of the short-circuit current. Taking into account the maximum asymmetry which may exist in the circuit, the contacts therefore have to withstand a peak asymmetrical current which may be twice the rms symmetrical component.

NOTE: These definitions are extracted from standard IEC 60947-1.

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TeSys™ K-Line
Mini-Contactors, Overload Relays, and Accessories

Catalog

04

File 8502

CONTENTS

a brand of Schneider Electric

Telemecanique

K-line Mini-contactors, and Overload Relays are ideal for general-duty applications where small size and reliability are key concerns. They feature:

- Three contactor ratings for the USA market:
  - — K06 rated for 3 HP motors at 480 Vac or 600 Vac.
  - — K09 rated for 5 HP motors at 480 Vac or 600 Vac.
  - — K12 rated for 7.5 HP motors at 480 Vac or 10 HP at 600 Vac.
- Space savings — the special magnet and armature structure allow for a DC coil-operated device with the same physical size and panel footprint of the AC coil version.
- IP20-rated touch-safe terminals with both North American and International terminal markings
- Mountable on 35mm DIN rail or panel mount with screws
- Available in 3-pole contactor versions with built-in auxiliary contact for holding circuit or 4-pole contactor versions.
- Easily-installed accessories.
  - — 2-pole or 4-pole instantaneous auxiliary contact blocks with screw clamp, slip-on, or spring terminals.
  - — Transient voltage surge suppressors.
  - — Electronic 1 to 30 second on-delay timers.
- Four wiring methods to reduce installation time:
  - — Captive screw terminals for use with either Phillips or slotted head screwdrivers.
  - — Slip-on terminals for quick installation of single 1/4" or double 1/8" tabs.
  - — Terminal pins for soldering the contactor directly to a printed circuit board.
  - — Spring terminals for extreme-vibration applications.
- Control circuit flexibility

  All versions of the K-line mini-contactors are available with an AC, DC, or low-consumption DC operating coil. The low-consumption DC coil operating device can be energized by a low level DC signal from a computer or PLC and includes built-in transient suppression and LED “On” indicator.
- Bimetallic overload relays

  The K-line Class 10 bimetallic overload relays are ambient-compensated and include single-phase sensitivity for phase unbalance and phase loss protection. Standard features include isolated N.C. trip contact and N.O. alarm contact, manual or automatic reset function, tamper resistant window for full load current settings, and Test trip button. Five pins connect to the contactor load side terminals — three for the power circuit and two for the control circuit — which eliminate customer wiring for the 3-wire control holding circuit.

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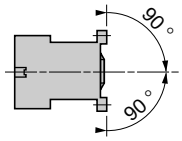
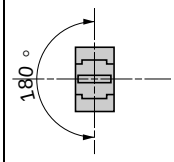
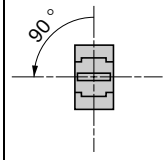
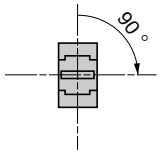
Environment

Rated insulation voltage (Vi)	Conforming to IEC 60947	**V**	690		
	Conforming to VDE 0110 gr C	**V**	750		
	Conforming to BS 5424, NF C 20-040	**V**	690		
	Conforming to CSA 22-2 No. 14, UL 508	**V**	600		
Rated impulse withstand voltage (Vimp)		**kV**	8		
Conforming to standards	CE Meets the essential requirements of the LV & EMC directives		IEC 60947, NF C 63-110, VDE 0660, BS 5424, UL508, CSA 22-2 No. 14		
Approvals	LC•K06, LC•K09, LC•K12 LP•K06, LP•K09, LP•K12		UL E164862 NLDX (Screw Clamp)	E164862 NLDX2 (Slip-on & Solder Pin)	LR 43364 321104
Protective treatment	Conforming to IEC 60068 (DIN 50016)		"TC" (Fungus-proof, tropicalization protection)		
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact		
Ambient air temperature around the device	Storage		- 50° to + 80°C (-58° to +176°F)		
	Operation		- 25° to + 50°C (-13° to +122°F)		
Maximum operating altitude	Without derating		2000 m (6562 ft.)		
Operating position	**Vertical axis**  Without derating		**Horizontal axis**  Without derating	  Derate current carrying capability by 15% when not mounted vertically	
Flame resistance	Conforming to UL 94		Self-extinguishing material V1		
	Conforming to NF F 16-101 and 16-102		Conforming to requirement 2		
Shock resistance (1/2 sine wave, 11 ms)	Contactor open		10 gn		
	Contactor closed		15 gn		
Vibration resistance 5 to 300 Hz	Contactor open		2 gn		
	Contactor closed		4 gn		
Safe circuit separation	Conforming to VDE 0106 and IEC 60536		SELV ♦, up to 400 V		
Cabling			Min	Max	Max to IEC 60947
Screw-clamp terminals	Solid or stranded cable	**AWG**	1 x 18	2 x 14 or 1 x 12	—
	Solid cable	**mm²**	1 x 1.5	2 x 4	1 x 4 + 1 x 2.5
	Stranded cable without cable end	**mm²**	1 x 0.75	2 x 4	2 x 2.5
	Stranded cable with cable end	**mm²**	1 x 0.34	1 x 1.5 + 1 x 2.5	1 x 1.5 + 1 x 2.5
Slip-on connectors	Clip		2 x 2.8mm or 1 x 6.35mm (2 x 0.110 in. or 1 x 0.250 in.)		
Solder pins for printed circuit board	With locating device between power and control circuits		4 mm x 35 microns		
Tightening torque	Phillips no. 2 or 3/16" slotted head screwdriver		0.8 N•m (7lb.-in.)		
Terminal referencing	Conforming to standards EN 50005 and EN 50012		Up to 5 contacts		

♦ Safety extra low voltage.

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Pole Characteristics

Conventional thermal current (Ith)	For ambient temperature ≤ 50 °C (122 °F)		20 A						
Rated operational frequency			50/60 Hz						
Frequency limits of the operational current			Up to 400 Hz						
Rated operational voltage (Ve)			690 Vac						
Rated making capacity	I rms conforming to NF C 63-110 and IEC 60947 LC•K06, LPI•K06, LC•K09, LP•K09		110 A						
	LC•K12, LP•K12		144 A						
	LC•K16		160 A						
Rated breaking capacity	Conforming to NF C 63-110 and IEC 60947		220/ 230 V	380/ 400 V	415 V	440 V	500 V	660/ 690 V	
	LC•K06, LP•K06, LC•K09, LP•K09 I rms		110 A	110 A	110 A	110 A	80 A	70 A	
	LC•K12, LP•K12		–	–	–	110 A	80 A	70 A	
	LC•K16		–	–	–	110 A	80 A	70 A	
Permissible short-time rating	In free air for a time "t" from cold state (θ ≤ 50 °C [122 °F])		1 s	5 s	10 s	30 s	1 min	3 min	≥ 15 min
	LC•K06, LP•K06, LC•K09, LP•K09		90 A	85 A	80 A	60 A	45 A	40 A	20 A
	LC•K12, LP•K12 LC•K16		115 A	105 A	100 A	75 A	55 A	50 A	25 A
Short-circuit protection	By circuit breaker		Select in accordance with NEC and local codes						
	By fuses		Max 400% of motor FLA						
Average impedance/pole	At Ith and 50 Hz		3 mΩ						
	At Ith and 60 Hz		3.6 mΩ						
Utilization in category AC-1: resistive circuit, heating, lighting (Ve ≤ 440 V)	Maximum rated operational current for a temperature ≤ 50 °C (122 °F)		20 A						
	Maximum rated operational current for a temperature ≤ 70 °C (158 °F)		16 A for Ve only						
	Rated operational current limits in relation to on-load factor and operating frequency		On-load factor			90%	60%	30%	
			300 op. cycles/hour			13 A	15 A	18 A	
			120 op. cycles/hour			15 A	18 A	19 A	
			30 op. cycles/hour			19 A	20 A	20 A	
	Increase in operational current by paralleling of poles		Apply the following coefficients to the current values given above. These take into account the often unbalanced current distribution between poles						
			2 poles in parallel: K = 1.60						
			3 poles in parallel: K = 2.25						
			4 poles in parallel: K = 2.80						
Utilization in category AC-3 Squirrel cage motors	Operational power according to the voltage	Voltage 50 or 60 Hz	115 V	220 V	220/ 240 V	380/ 415 V	440/ 480 V	500/ 600 V	660/ 690 V
			1-phase		3-phase				
	LC•K06, LP•K06	Motor ratings	0.37 kW	0.75 kW	1.5 kW	2.2 kW	3 kW	3 kW	3 kW
	LC•K09, LP•K09	Motor ratings	0.55 kW	1.1 kW	2.2 kW	4 kW	4 kW	4 kW	4 kW
	LC•K12, LP•K12	Motor ratings	–	–	3 kW	5.5 kW	5.5/4 (480) kW	4 kW	4 kW
	LC•K16	Motor ratings	–	–	4 kW	7.5 kW	5.5/4 (480) kW	4 kW	4 kW
	Maximum operating rate (in operating cycles/ hour in relation to percentage of rated power)		Op. cycles/hour				600	900	1200
			Power				100%	75%	50%
Utilization in category AC-3 Squirrel cage motors	Operational power according to the voltage	Voltage 50 or 60 Hz	115	220	200/ 208	220/ 240	460/ 480	575/ 600	
			1-phase		3-phase				
	LC•K06, LP•K06	Motor ratings	0.5 HP	1 HP	1.5 HP	1.5 HP	3 HP	3 HP	
	LC•K09, LP•K09	Motor ratings	0.5 HP	1.5 HP	2 HP	3 HP	5 HP	5 HP	
	LC•K12, LP•K12	Motor ratings	0.5 HP	1.5 HP	3 HP	3 HP	7.5 HP	10 HP	
	LC•K16, LP•K16	Not UL Listed or CSA Certified.							

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Control Circuit Characteristics

Type		LC1	LC2	LC7	LC8	LP1	LP2
Rated control circuit voltage (Vc)		12 to 690 Vac ♦		24 to 230 Vac		12 to 250 Vdc ♦	
Control voltage limits (≤ 50 °C [122 °F]) single voltage coil	For operation ▲	0.8 to 1.15 Vc		0.85 to 1.1 Vc		0.8 to 1.15 Vc	
	For drop-out	≥ 0.20 Vc		≥ 0.10 Vc		≥ 0.10 Vc	
Average consumption at 20 °C (68 °F) and at Vc	Inrush	30 VA		3 VA		3 W	
	Sealed	4.5 VA		3 VA		3 W	
Heat dissipation		1.3		3		3	
Operating time at 20 °C (68 °F) and at Vc	Between coil energization and:						
	- opening of the N.C. contacts	5 to 15 ms		25 to 35 ms		25 to 35 ms	
	- closing of the N.O. contacts	10 to 20 ms		30 to 40 ms		30 to 40 ms	
	Between coil de-energization and:						
	- opening of the N.O. contacts	10 to 20 ms		30 ms		10 ms	
	- closing of the N.C. contacts	15 to 25 ms		40 ms		15 ms	
Maximum immunity to micro-breaks		2 ms		2 ms		2 ms	
Maximum operating rate	In operating cycles per hour	3600		3600		3600	
Mechanical durability at Vc In millions of operating cycles	50/60 Hz coil	10	5	10	5	–	–
	DC coil	–	–	–	–	10	5

♦ For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module LA4KE1FC (50 to 129 V) or LAFKE1UG (130 to 250 V); see page 56.

▲ LC1K16: 0.85 to 1.15 Vc.

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Auxiliary Contact Characteristics and Instantaneous Contact Blocks

Number of contacts	On LC•K or LP•K		1
	On LA1K		2 or 4
Rated operational voltage (Ve)	Up to		690 Vac
Rated insulation voltage (Vi)	Conforming to BS 5424		690 Vac
	Conforming to IEC 60947		690 Vac
	Conforming to VDE 0110 group C		750 Vac
	Conforming to CSA C 22.2 No.14, UL 508		600 Vac
Conventional thermal current (Ith)	For ambient temperature ≤ 50 °C (122 °F)		10 A
Frequency of operational current			Up to 400 Hz
Minimum switching capacity	V min (DIN 19 240)		17 Vac
	I min		5 mA
Short-circuit protection	Conforming to IEC 60947 and VDE 0660, gl fuse		10 A
Rated making capacity	Conforming to IEC 60947	I rms	110 A
Overload current	Permissible for	1 s	80 A
		500 ms	90 A
		100 ms	110 A
Insulation resistance			> 10 mΩ
Non-overlap distance	Linked contacts conforming to INRS and BIA spec.		0.5 mm

Operational power of contacts conforming to IEC 60947	**AC supply, category AC-15** Electrical durability (valid up to 3600 operating cycles per hour) on an inductive load such as the coil of an electromagnet: making current (power factor 0.7) = 10 times the breaking current (power factor 0.4).							**DC supply, category DC-13** Electrical durability (valid up to 1200 operating cycles per hour, on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.						
	V	24	48	110/ 127	220/ 230	440	600/ 690	V	24	48	110	220	440	600
1 million operating cycles	VA	48	96	240	440	880	1200	W	120	80	60	52	51	50
2 million operating cycles	VA	17	34	86	158	317	500	W	55	38	30	28	26	25
10 million operating cycles	VA	7	14	36	66	132	200	W	15	11	9	8	7	6
Occasional making capacity	VA	1000	2050	5000	10000	13000	9000	W	720	600	400	300	230	200

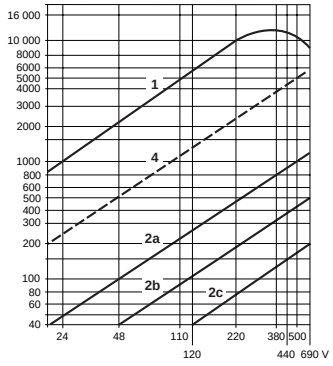
1 Breaking limit of contacts valid for maximum of 50 operating cycles at 10 s intervals (breaking current = making current x power factor 0.7).

2 Electrical durability of contacts for:
- 1 million operating cycles (2a)
- 3 million operating cycles (2b)
- 10 million operating cycles (2c).

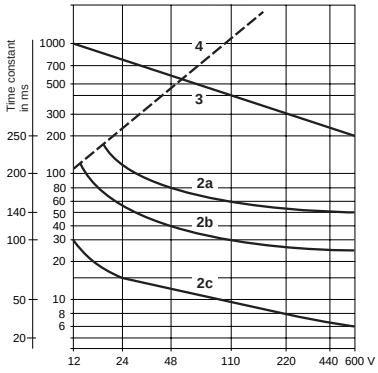
3 Breaking limit of contacts valid for maximum of 20 operating cycles at 10 s intervals with current passing for 0.5 s per operating cycle.

4 Thermal limit.

Power in broken VA



Power in broken W



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General-Purpose Contactors for AC Control Circuits

The table below shows general-purpose contactors. The contactors mount on 35 mm DIN rails or with 4 mm (# 6) screws. The wire termination screws are in the open, “ready-to-tighten” position.

For information on add-on auxiliary contact blocks and accessories, see page 54 to 58.

Horsepower Ratings for North American Applications							Kilowatt Ratings for International Applications				Type of Connection	Auxiliary Contacts		Catalog Number ▼▲	Weight lb. (kg)
Maximum Horsepower Rating Category AC-3, 50/60 Hz						Max. Inductive Current	Standard power ratings of 3-phase motors, 50/60 Hz in category AC-3			Rated operational current, up to 440 V					
1-Phase		3-Phase					220 V 230 V	380 V 415 V	440/500 V 660/690 V						
115/ 120 V	230/ 240 V	200/ 208 V	220/ 240 V	460/ 480 V	575/ 600 V							N.O.	N.C.		
HP	HP	HP	HP	HP	HP	A	kW	kW	kW	A					
0.5	1	1.5	1.5	3	3	6	1.5	2.2	3	6	Screw clamp	1	–	**LC1K0610••**	0.40 (0.180)
												–	1	**LC1K0601••**	0.40 (0.180)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	**LC1K06107••**	0.40 (0.180)
												–	1	**LC1K06017••**	0.40 (0.180)
											Solder pins for printed circuit board	1	–	**LC1K06105••**	0.46 (0.210)
												–	1	**LC1K06015••**	0.46 (0.210)
											Spring terminals	1	–	**LC1K06103••**	0.40 (0.180)
												–	1	**LC1K06013••**	0.40 (0.180)
0.5	1.5	2	3	5	5	9	2.2	4	4	9	Screw clamp	1	–	**LC1K0910••**	0.40 (0.180)
												–	1	**LC1K0901••**	0.40 (0.180)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	**LC1K09107••**	0.40 (0.180)
												–	1	**LC1K09017••**	0.40 (0.180)
											Solder pins for printed circuit board	1	–	**LC1K09105••**	0.46 (0.210)
												–	1	**LC1K09015••**	0.46 (0.210)
											Spring terminals	1	–	**LC1K09103••**	0.40 (0.180)
												–	1	**LC1K09013••**	0.40 (0.180)
0.5	1.5	3	3	7.5	10	12	3	5.5	4 (> 440) 5.5 (440)	12	Screw clamp	1	–	**LC1K1210••**	0.40 (0.180)
												–	1	**LC1K1201••**	0.40 (0.180)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	**LC1K12107••**	0.40 (0.180)
												–	1	**LC1K12017••**	0.40 (0.180)
											Solder pins for printed circuit board	1	–	**LC1K12105••**	0.46 (0.210)
												–	1	**LC1K12015••**	0.46 (0.210)
											Spring terminals	1	–	**LC1K12103••**	0.40 (0.180)
												–	1	**LC1K12013••**	0.40 (0.180)
Not for North American applications — not UL Listed or CSA Certified							3	7.5	4 (440) 5.5 (440)	16	Screw clamp	1	–	**LC1K1610••**	0.40 (0.180)
												–	1	**LC1K1601••**	0.40 (0.180)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	**LC1K16107••**	0.40 (0.180)
												–	1	**LC1K16017••**	0.40 (0.180)
											Solder pins for printed circuit board	1	–	**LC1K16105••**	0.46 (0.210)
												–	1	**LC1K16015••**	0.46 (0.210)
											Spring terminals	1	–	**LC1K16103••**	0.40 (0.180)
												–	1	**LC1K16013••**	0.40 (0.180)

▼ Use voltage codes on page 52 “Voltage Code Table” to complete catalog number.
▲ For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module **LA4KE1FC** (50 to 129 V) or **LA4KE1UG** (130 to 250 V), see page 56.

LC1K0610••

LC1K06107••

LC1K09103••

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LC7K06105••

Sensitive-Environment Contactors for AC Control Circuits

The tables below show the kilowatt ratings (for international applications) and horsepower ratings (for North American applications) of contactors for use in sensitive environments. They are recommended for use in areas sensitive to noise, high interference mains supplies, and so forth. The contactors mount on 35 mm DIN rails or with 4 mm (# 6) screws. The wire termination screws are in the open, "ready-to-tighten" position, and include a coil with a built-in rectifier and suppressor.

For information on add-on auxiliary contact blocks and accessories, see page 54 to 58.

Horsepower Ratings for North American Applications							Kilowatt Ratings for International Applications				Type of connection	Auxiliary Contacts		Catalog Number ▼	Weight lb. (kg)
Maximum Horsepower Rating Category AC-3, 50/60 Hz						Max. Inductive Current	Standard power ratings of 3-phase motors, 50/60 Hz in category AC-3			Rated operational current, 440V up to:					
1-Phase		3-Phase													
115/ 120 V	230/ 240 V	200/ 208 V	220/ 240 V	460/ 480 V	575/ 600 V		220 V 230 V	380 V 415 V	440/500 V 660/690 V			N.O.	N.C.		
HP	HP	HP	HP	HP	HP	A	kW	kW	kW	A					
0.5	1	1.5	1.5	3	3	6	1.5	2.2	3	6	Screw clamp	1	–	**LC7K0610••**	0.50 (0.225)
												–	1	**LC7K0601••**	0.50 (0.225)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	**LC7K06107••**	0.50 (0.225)
												–	1	**LC7K06017••**	0.50 (0.225)
											Solder pins for printed circuit board	1	–	**LC7K06105••**	0.50 (0.225)
												–	1	**LC7K06015••**	0.50 (0.225)
0.5	1.5	2	3	5	5	9	2.2	4	4	9	Screw clamp	1	–	**LC7K0910••**	0.50 (0.225)
												–	1	**LC7K0901••**	0.50 (0.225)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	**LC7K09107••**	0.50 (0.225)
												–	1	**LC7K09017••**	0.56 (0.255)
											Solder pins for printed circuit board	1	–	**LC7K09105••**	0.56 (0.255)
												–	1	**LC7K09015••**	0.50 (0.225)
0.5	1.5	3	3	7.5	10	12	3	5.5	4 (> 440) 5.5 (440)	12	Screw clamp	1	–	**LC7K1210••**	0.50 (0.225)
												–	1	**LC7K1201••**	0.50 (0.225)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	**LC7K12107••**	0.50 (0.225)
												–	1	**LC7K12017••**	0.50 (0.225)
											Solder pins for printed circuit board	1	–	**LC7K12105••**	0.56 (0.255)
												–	1	**LC7K12015••**	0.56 (0.255)

▼ Use voltage codes on page 52 "Voltage Code Table" to complete catalog number.

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Three-Pole Contactors for DC Control Circuits

The table below shows the kilowatt ratings (for international applications) and horsepower ratings (for North American applications) for three-pole contactors for DC control circuits. The contactors mount on 35 mm DIN rails or with 4 mm (# 6) screws. The wire termination screws are in the open, “ready-to-tighten” position.

For information on add-on auxiliary contact blocks and accessories, see page 54 to 58.

Horsepower Ratings for North American Applications							Kilowatt Ratings for International Applications				Type of Connection	Auxiliary Contacts		Catalog Number ▼	Weight lb. (kg)
Maximum Horsepower Rating Category AC-3, 50/60 Hz						Max. Inductive Current	Standard power ratings of 3-phase motors, 50/60 Hz in category AC-3			Rated operational current, 440V up to:					
1-Phase		3-Phase					220 V 230 V	380 V 415 V	440/500 V 660/690 V						
115/ 120 V	230/ 240 V	200/ 208 V	220/ 240 V	460/ 480 V	575/ 600 V							N.O.	N.C.		
HP	HP	HP	HP	HP	HP	A	kW	kW	kW	A					
1.5	2.2	3	6	0.5	1	1.5	1.5	3	3	6	Screw clamp	1	–	LP1K0610••	0.50 (0.225)
												–	1	LP1K0601••	0.50 (0.225)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	LP1K06107••	0.50 (0.225)
												–	1	LP1K06017••	0.50 (0.225)
											Solder pins for printed circuit board	1	–	LP1K06105••	0.56 (0.255)
												–	1	LP1K06015••	0.56 (0.255)
											Spring terminals	1	–	LP1K06103••	0.50 (0.225)
												–	1	LP1K06013••	0.50 (0.225)
2.2	4	4	9	0.5	1.5	2	3	5	5	9	Screw clamp	1	–	LP1K0910••	0.50 (0.225)
												–	1	LP1K0901••	0.50 (0.225)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	LP1K09107••	0.50 (0.225)
												–	1	LP1K09017••	0.50 (0.225)
											Solder pins for printed circuit board	1	–	LP1K09105••	0.50 (0.225)
												–	1	LP1K09015••	0.56 (0.255)
											Spring terminals	1	–	LP1K09103••	0.50 (0.225))
												–	1	LP1K09013••	0.50 (0.225)
3	5.5	4 (> 440 V) 5.5 (440 V)	12	0.5	1.5	3	3	7.5	10	12	Screw clamp	1	–	LP1K1210••	0.50 (0.225)
												–	1	LP1K1201••	0.50 (0.225)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	LP1K12107••	0.50 (0.225)
												–	1	LP1K12017••	0.50 (0.225)
											Solder pins for printed circuit board	1	–	LP1K12105••	0.56 (0.255)
												–	1	LP1K12015••	0.56 (0.255)
											Spring terminals	1	–	LP1K12103••	0.50 (0.225)
												–	1	LP1K12013••	0.50 (0.225)

▼ Use voltage codes on page 52 “Voltage Code Table” to complete catalog number.

LP1K0610••

LP1K06107••

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Three- and Four-Pole Contactors for AC Control Circuits

The tables below show general-purpose and sensitive-environment three- and four-pole contactors for AC control circuits. (The sensitive-environment contactors are recommended for use in areas sensitive to noise, high interference mains supplies, and so forth.) The contactors mount on 35 mm DIN rails or with 4 mm (# 6) screws. The wire termination screws are in the open, “ready-to-tighten” position. In addition, the sensitive-environment contactors include a coil with a built-in rectifier and suppressor.

For information on add-on auxiliary contact blocks and accessories, see page 54 to 58.

LC1K09004••

General-Purpose Contactors ♦

Non-inductive loads Category AC-1 Maximum current at ≤ 50 °C (122 °F)	Type of Connection	Power Poles		Auxiliary Contacts		Catalog Number ▼	Weight lb. (kg)
A		N.O.	N.C.	N.O.	N.C.		
20	Screw clamp	3	–	1	–	**LC1K0910••**	0.56 (0.255)
		3	–	–	1	**LC1K0901••**	0.56 (0.255)
		4	–	–	–	**LC1K09004••**	0.40 (0.180)
		2	2	–	–	**LC1K09008••**	0.40 (0.180)
	Slip-on 1 x 0.25 in. or 2 x 0.11 in.	3	–	1	–	**LC1K09107••**	0.56 (0.255)
		3	–	–	1	**LC1K09017••**	0.56 (0.255)
		4	–	–	–	**LC1K090047••**	0.40 (0.180)
		2	2	–	–	**LC1K090087••**	0.40 (0.180)
	Solder pins for printed circuit board	3	–	1	–	**LC1K09105••**	0.56 (0.255)
		3	–	–	1	**LC1K09015••**	0.56 (0.255)
		4	–	–	–	**LC1K090045••**	0.46 (0.210)
		2	2	–	–	**LC1K090085••**	0.46 (0.210)
	Spring terminals	3	–	1	–	**LC1K09103••**	0.56 (0.255)
		3	–	–	1	**LC1K09013••**	0.56 (0.255)
		4	–	–	–	**LC1K090043••**	0.46 (0.210)
		2	2	–	–	**LC1K090083••**	0.46 (0.210)

LC7K090047••

Sensitive-environment Contactors

20	Screw clamp	3	–	1	–	**LC7K0910••**	0.56 (0.255)
		3	–	–	1	**LC7K0901••**	0.56 (0.255)
		4	–	–	–	**LC7K09004••**	0.56 (0.255)
		2	2	–	–	**LC7K09008••**	0.56 (0.255)
	Slip-on 1 x 0.25 in. or 2 x 0.11 in.	3	–	1	–	**LC7K09107••**	0.56 (0.255)
		3	–	–	1	**LC7K09017••**	0.56 (0.255)
		4	–	–	–	**LC7K090047••**	0.56 (0.255)
		2	2	–	–	**LC7K090087••**	0.56 (0.255)
	Solder pins for printed circuit board	3	–	1	–	**LC7K09105••**	0.56 (0.255)
		3	–	–	1	**LC7K09015••**	0.56 (0.255)
		4	–	–	–	**LC7K090045••**	0.56 (0.255)
		2	2	–	–	**LC7K090085••**	0.56 (0.255)

♦ For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module **LA4KE1FC** (50 to 129 V) or **LAFKE1UG** (130 to 250 V), see page 56.

▼ Use voltage codes on page 52 “Voltage Code Table” to complete catalog number.

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Three- and Four-Pole Contactors for DC Control Circuits

The table below shows three- and four-pole contactors for DC control circuits. The contactors mount on 35 mm DIN rails or with 4 mm (# 6) screws. The wire termination screws are in the open, “ready-to-tighten” position.

For information on add-on auxiliary contact blocks and accessories, see page 54 to 58.

LP1K09004••

Non-inductive loads Category AC-1 Maximum current at ≤ 50 °C (122 °F)	Type of Connection	Power Poles		Auxiliary Contacts		Catalog Number ▼	Weight lb. (kg)
A		N.O.	N.C.	N.O.	N.C.		
20	Screw clamp	3	–	1	–	**LP1K0910••**	0.56 (0.225)
		3	–	–	1	**LP1K0901••**	0.56 (0.225)
		4	–	–	–	**LP1K09004••**	0.56 (0.225)
		2	2	–	–	**LP1K09008••**	0.56 (0.225)
	Slip-on 1 x 0.25 in. or 2 x 0.11 in.	3	–	1	–	**LP1K09107••**	0.56 (0.225)
		3	–	–	1	**LP1K09017••**	0.56 (0.225)
		4	–	–	–	**LP1K090047••**	0.56 (0.225)
		2	2	–	–	**LP1K090087••**	0.56 (0.225)
	Solder pins for printed circuit board	3	–	1	–	**LP1K09105••**	0.56 (0.225)
		3	–	–	1	**LP1K09015••**	0.56 (0.225)
		4	–	–	–	**LP1K090045••**	0.56 (0.225)
		2	2	–	–	**LP1K090085••**	0.56 (0.225)
	Spring terminals	3	–	1	–	**LC1K09103••**	0.56 (0.225)
		3	–	–	1	**LC1K09013••**	0.56 (0.225)
		4	–	–	–	**LC1K090043••**	0.46 (0.210)
		2	2	–	–	**LC1K090083••v**	0.46 (0.210)

▼ Use voltage codes on page 52 “Voltage Code Table” to complete catalog number.

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Three-Pole Reversing Contactors for AC Control Circuits

The table below shows three-pole reversing contactors with integrated mechanical interlock. The contactors mount on 35 mm DIN rails or with 4 mm (# 6) screws. The wire termination screws are in the open, “ready-to-tighten” position. Customer wiring is required to connect coil terminations to electrical interlock; see page 60 (top row, center wiring diagram).

For information on add-on auxiliary contact blocks and accessories, see page 54 to 58.

Horsepower Ratings for North American Applications							Kilowatt Ratings for International Applications				Type of Connection	Auxiliary Contacts		Catalog Number ▼ ■	Weight lb. (kg)
Maximum Horsepower Rating Category AC-3, 50/60 Hz						Max. Inductive Current	Standard power ratings of 3-phase motors, 50/60 Hz in category AC-3			Rated Operational Current, up to 440 V					
1-Phase		3-Phase					220 V 230 V	380 V 415 V	440/500 V 660/690 V						
115/ 120 V	230/ 240 V	200/ 208 V	220/ 240 V	460/ 480 V	575/ 600 V							N.O.	N.C.		
HP	HP	HP	HP	HP	HP	A	kW	kW	kW	A					
0.5	1	1.5	1.5	3	3	6	1.5	2.2	3	6	Screw clamp ▲	1	–	LC2K0610••	0.86 (0.390)
												–	1	LC2K0601••	0.86 (0.390)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	LC2K06107••	0.81 (0.370)
												–	1	LC2K06017••	0.81 (0.370)
											Solder pins for printed circuit board	1	–	LC2K06105••	0.95 (0.430)
												–	1	LC2K06015••	0.95 (0.430)
											Spring terminals	1	–	LC2K06103••	0.86 (0.390)
												–	1	LC2K06013••	0.86 (0.390)
0.5	1.5	2	3	5	5	9	2.2	4	4	9	Screw clamp ▲	1	–	LC2K0910••	0.86 (0.390)
												–	1	LC2K0901••	0.86 (0.390)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	LC2K09107••	0.86 (0.390)
												–	1	LC2K09017••	0.86 (0.390)
											Solder pins for printed circuit board	1	–	LC2K09105••	0.95 (0.430)
												–	1	LC2K09015••	0.95 (0.430)
											Spring terminals	1	–	LC2K09103••	0.86 (0.390)
												–	1	LC2K09013••	0.86 (0.390)
0.5	1.5	3	3	7.5	10	12	3	5.5	4 (> 440) 5.5 (440)	12	Screw clamp ▲	1	–	LC2K1210••	0.86 (0.390)
												–	1	LC2K1201••	0.86 (0.390)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	LC2K12107••	0.86 (0.390)
												–	1	LC2K12017••	0.86 (0.390)
											Solder pins for printed circuit board	1	–	LC2K12105••	0.95 (0.430)
												–	1	LC2K12015••	0.95 (0.430)
											Spring terminals	1	–	LC2K12103••	0.86 (0.390)
												–	1	LC2K12013••	0.86 (0.390)
Not for North American applications — not UL Listed or CSA Certified							3	7.5	4 (440) 5.5 (440)	16	Screw clamp ▲	1	–	LC2K1610••	0.86 (0.390)
												–	1	LC2K1601••	0.86 (0.390)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	LC2K16107••	0.86 (0.390)
												–	1	LC2K16017••	0.86 (0.390)
											Solder pins for printed circuit board	1	–	LC2K16105••	0.95 (0.430)
												–	1	LC2K16015••	0.95 (0.430)
											Spring terminals	1	–	LC2K16103••	0.86 (0.390)
												–	1	LC2K16013••	0.86 (0.390)

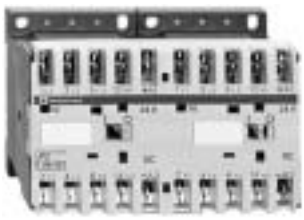
▼ Use voltage codes on page 52 “Voltage Code Table” to complete catalog number.

■ For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module **LA4KE1FC** (50 to 129 V) or **LA4KE1UG** (130 to 250 V), see page 56.

▲ Pre-wired power circuit connections are standard on screw clamp versions.

LC2K0610••

LC2K06107••



LC2K09103••

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LC8K06105••

Sensitive-Environment Reversing Contactors for AC Control Circuits

The tables below show the kilowatt ratings (for international applications) and horsepower ratings (for North American applications) for reversing contactors with mechanical interlock for use in sensitive environments. They are recommended for use in areas sensitive to noise, high interference mains supplies, and so forth. A coil with incorporated rectifier and suppressor is standard.

The contactors mount on 35 mm DIN rails or with 4 mm (# 6) screws. The wire termination screws are in the open, “ready-to-tighten” position. Customer wiring is required to connect coil terminations to electrical interlock; see page 60 (top row, center wiring diagram).

For information on add-on auxiliary contact blocks and accessories, see page 54 to 58.

Horsepower Ratings for North American Applications							Kilowatt Ratings for International Applications				Type of Connection	Auxiliary Contacts		Catalog Number ▼	Weight lb. (kg)
Maximum Horsepower Rating Category AC-3, 50/60 Hz						Max. Inductive Current	Standard power ratings of 3-phase motors, 50/60 Hz in category AC-3			Rated Operational Current, up to 440 V					
1-Phase		3-Phase					220 V 230 V	380 V 415 V	440/500 V 660/690 V						
115/ 120 V	230/ 240 V	200/ 208 V	220/ 240 V	460/ 480 V	575/ 600 V										
HP	HP	HP	HP	HP	HP	A	kW	kW	kW	A		N.O.	N.C.		
0.5	1	1.5	1.5	3	3	6	1.5	2.2	3	6	Screw clamp ▲	1	–	LC8K0610••	1.05 (0.480)
												–	1	LC8K0601••	1.05 (0.480)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	LC8K06107••	1.00 (0.460)
												–	1	LC8K06017••	1.00 (0.460)
											Solder pins for printed circuit board	1	–	LC8K06105••	1.14 (0.520)
												–	1	LC8K06015••	1.14 (0.520)
0.5	1.5	2	3	5	5	9	2.2	4	4	9	Screw clamp ▲	1	–	LC8K0910••	1.05 (0.480)
												–	1	LC8K0901••	1.05 (0.480)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	LC8K09107••	1.00 (0.460)
												–	1	LC8K09017••	1.00 (0.460)
											Solder pins for printed circuit board	1	–	LC8K09105••	1.14 (0.520)
												–	1	LC8K09015••	1.14 (0.520)
0.5	1.5	3	3	7.5	10	12	3	5.5	4 (> 440) 5.5 (440)	12	Screw clamp ▲	1	–	LC8K1210••	1.05 (0.480)
												–	1	LC8K1201••	1.05 (0.480)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	LC8K12107••	1.00 (0.460)
												–	1	LC8K12017••	1.00 (0.460)
											Solder pins for printed circuit board	1	–	LC8K12105••	1.14 (0.520)
												–	1	LC8K12015••	1.14 (0.520)

▼ Use voltage codes on page 52 “Voltage Code Table” to complete catalog number.

▲ Pre-wired power circuit connections are standard on screw clamp versions.

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Three-Pole Reversing Contactors for DC Control Circuits

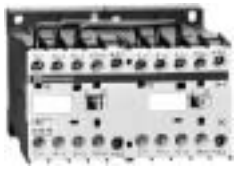
The table below show the kilowatt ratings (for international applications) and horsepower ratings (for North American applications) for three-pole reversing contactors with integrated mechanical interlock for DC control circuits. The contactors mount on 35 mm DIN rails or with 4 mm (# 6) screws. The wire termination screws are in the open, “ready-to-tighten” position. Customer wiring is required to connect coil terminations to electrical interlock; see page 60 (top row, center wiring diagram).

For information on add-on auxiliary contact blocks and accessories, see page 54 to 58.

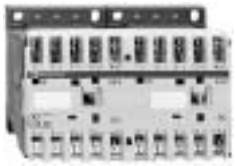
Horsepower Ratings for North American Applications							Kilowatt Ratings for International Applications			Rated Operational Current in AC-3 up to 400 V	Type of Connection	Auxiliary Contacts		Catalog Number ▼	Weight lb. (kg)
Maximum Horsepower ratings						Maximum Inductive Current in AC-3 Category	Standard power ratings of 3-phase motors 50/60 Hz in category AC-3								
1- phase 50/60 HZ		3- phase 50/60 HZ					220 V 230 V	380 V 415 V	440/500 V 660/690 V						
115/ 120 V	230/ 240 V	200/ 208 V	220/ 240 V	460/ 480 V	575/ 600 V							N.O.	N.C.		
HP	HP	HP	HP	HP	HP	A	kW	kW	kW	A					
0.5	1	1.5	1.5	3	3	6	1.5	2.2	3	6	Screw clamp ▲	1	–	**LP2K0610••**	1.05 (0.480)
												–	1	**LP2K0601••**	1.05 (0.480)
											Slip-on 1 x 0.25 in. or 2 x 0.11 in.	1	–	**LP2K06107••**	1.00 (0.460)
														LP2K06017••	1.00 (0.460)
											Solder pins for printed circuit board	–	1	**LP2K06105••**	1.14 (0.520)
												1	–	**LP2K06015••**	1.14 (0.520)
											Spring terminal	1	–	**LP2K06103••**	1.05 (0.480)
												–	1	**LP2K06013••**	1.05 (0.480)
0.5	1.5	2	3	5	5	9	2.2	4	4	9	Screw clamp ▲	–	1	**LP2K0910••**	1.05 (0.480)
												1	–	**LP2K0901••**	1.05 (0.480)
											Slip-on 1 x 0.25 in. or 2 x 0.11 in.	–	1	**LP2K09107••**	1.00 (0.460)
												1	–	**LP2K09017••**	1.00 (0.460)
											Solder pins for printed circuit board	–	1	**LP2K09105••**	1.14 (0.520)
												1	–	**LP2K09015••**	1.14 (0.520)
											Spring terminal	1		**LP2K09103••**	1.14 (0.520)
													1	**LP2K09013••**	1.14 (0.520)
0.5	1.5	3	3	7.5	10	12	3	5.5	4 (> 440) 5.5 (440)	12	Screw clamp ▲	–	1	**LP2K1210••**	1.05 (0.480)
												1	–	**LP2K1201••**	1.05 (0.480)
											Slip-on 1 x 0.25 in. or 2 x 0.11 in.	–	1	**LP2K12107••**	1.00 (0.460)
												1	–	**LP2K12017••**	1.00 (0.460)
											Solder pins for printed circuit board	–	1	**LP2K12105••**	1.14 (0.520)
												1	–	**LP2K12015••**	1.14 (0.520)
											Spring terminal	1		**LP2K12103••**	1.14 (0.520)
													1	**LP2K12013••**	1.14 (0.520)

▼ Use voltage codes on page 52 “Voltage Code Table” to complete catalog number.
▲ Pre-wired power circuit connections are standard on screw clamp versions.

LP2K0610••



LP2K06107••



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Three- and Four-Pole Contactors for AC Control Circuits

The tables below show general purpose and sensitive-environment three-pole reversing and four-pole change over contactors for AC control circuits. The sensitive-environment contactors are recommended for use in areas sensitive to noise, high interference mains supplies, and so forth. The contactors incorporate an integrated mechanical interlock.

Both types of contactors mount on 35 mm DIN rails or with 4 mm (# 6) screws. The wire termination screws are in the open, “ready-to-tighten” position. In addition, the sensitive-environment contactors include a coil with a built-in rectifier and suppressor. Customer wiring is required to connect coil terminations to the electrical interlock; see page 60 (top row, center wiring diagram).

For information on add-on auxiliary contact blocks and accessories, see page 54 to 58.

General-Purpose Contactors ♦

LC2K09004••

Non-inductive loads Category AC-1 Maximum current at ≤ 50 °C (122 °F)	Type of Connection	Power Poles		Auxiliary Contacts		Catalog Number ▼	Weight lb. (kg)
A		N.O.	N.C.	N.O.	N.C.		
20	Screw clamp ▲	3	–	1	–	**LC2K0910••**	0.86 (0.390)
		3	–	–	1	**LC2K0901••**	0.86 (0.390)
		4	–	–	–	**LC2K09004••**	0.84 (0.380)
	Slip-on 1 x 0.25 in. or 2 x 0.11 in.	3	–	–	1	**LC2K09107••**	0.81 (0.370)
		3	–	1	–	**LC2K09017••**	0.81 (0.370)
		4	–	–	–	**LC2K090047••**	0.81 (0.370)
	Solder pins for circuit board	3	–	1	1	**LC2K09105••**	0.95 (0.430)
		3	–	–	–	**LC2K09015••**	0.95 (0.430)
		4	–	–	–	**LC2K090045••**	0.95 (0.430)
	Spring terminals	3	–	1	1	**LC2K09103••**	0.86 (0.390)
		3	–	–	–	**LC2K09013••**	0.86 (0.390)
		4	–	–	–	**LC2K090043••**	0.86 (0.390)

Sensitive-Environment Contactors

LC8K09105••

20	Screw clamp ▲	3	–	1	–	**LC8K0910•• ♦**	1.05 (0.480)
		3	–	–	1	**LC8K0901•• ♦**	1.05 (0.480)
		4	–	–	–	**LC8K09004••**	1.03 (0.470)
	Slip-on 1 x 0.25 in. or 2 x 0.11 in.	3	–	–	1	**LC8K09107••**	1.01 (0.460)
		3	–	1	–	**LC8K09017••**	1.01 (0.460)
		4	–	–	–	**LC8K090047••**	1.01 (0.460)
	Solder pins for circuit board	3	–	1	1	**LC8K09105••**	1.14 (0.520)
		3	–	–	–	**LC8K09015••**	1.14 (0.520)
		4	–	–	–	**LC8K090045••**	1.14 (0.520)

♦ For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module **LA4KE1FC** (50 to 129 V) or **LAFKE1UG** (130 to 250 V), see page 56.

▼ Use voltage codes on page 52 “Voltage Code Table” to complete catalog number.

▲ Pre-wired power circuit connections are standard on screw clamp versions.

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Three- and Four-Pole Contactors for DC Control Circuits

The table below shows general-purpose three-pole reversing and four-pole change over contactors for DC control circuits. The contactors incorporate an integrated mechanical interlock.

The contactors mount on 35 mm DIN rails or with 4 mm (# 6) screws. The wire termination screws are in the open, “ready-to-tighten” position. Customer wiring is required to connect coil terminations to the electrical interlock; see page 60 (top row, center wiring diagram).

For information on add-on auxiliary contact blocks and accessories, see page 54 to 58.

LC2K09004••

Non-inductive loads Category AC-1 Maximum current at ≤ 50 °C (122 °F)	Type of Connection	Power Poles		Auxiliary Contacts		Catalog Number ▼	Weight lb. (kg)
A		N.O.	N.C.	N.O.	N.C.		
20	Screw clamp ▲	3	–	1	–	**LP2K0910••**	1.05 (0.480)
		3	–	–	1	**LP2K0901••**	1.05 (0.480)
		4	–	–	–	**LP2K09004••**	1.05 (0.480)
	Slip-on 1 x 0.25 in. or 2 x 0.11 in.	3	–	–	1	**LP2K09107••**	1.01 (0.460)
		3	–	1	–	**LP2K09017••**	1.01 (0.460)
		4	–	–	–	**LP2K090047••**	1.01 (0.460)
	Solder pins for circuit board	3	–	1	1	**LP2K09105••**	1.14 (0.520)
		3	–	–	–	**LP2K09015••**	1.14 (0.520)
		4	–	–	–	**LP2K090045••**	1.14 (0.520)

▼ Use voltage codes below to complete the catalog number.
▲ Pre-wired power circuit connections are standard on screw clamp versions.

K-line Voltage Code

Voltage	Frequency	K-line *(see notes at end of table)*			
		LC1K LC2K Notes K1, K2	LC7K LC8K Note K4	LP1K LP2K Notes K2, K3	LP4K LP5K
5	**Low Consump DC**	-	-	-	-
12	**50/60**	J7	-	-	-
	50	-	-	-	-
	DC	-	-	JD	-
	Low Consump DC	-	-	-	JW3
	Wide Range DC	-	-	-	-
20	50/60	Z7	-	-	-
	50	-	-	-	-
	60	-	-	-	-
	DC	-	-	ZD	-
	Low Consump DC	-	-	-	ZW3
24	50/60	B7 Note K2	B7	-	-
	50	-	-	-	-
	60	-	-	-	-
	40-400	-	-	-	-
	DC	-	-	BD Note K2	-
	Low Consump DC	-	-	-	BW3
	Wide Range DC	-	-	-	-
36	50/60	C7	-	-	-
	DC	-	-	CD	-
	Wide Range DC	-	-	-	-

K-line Voltage Code (Continued)

Voltage	Frequency	K-line *(see notes at end of table)*			
		LC1K LC2K Notes K1, K2	LC7K LC8K Note K4	LP1K LP2K Notes K2, K3	LP4K LP5K
42	50/60	D7	D7	-	-
	50	-	-	-	-
	60	-	-	-	-
48	50/60	E7	E7	-	-
	50	-	-	-	-
	60	-	-	-	-
	40-400	-	-	-	-
	DC	-	-	ED	-
	Low Consump DC	-	-	-	EW3
	Wide Range DC	-	-	-	-
60	50/60	-	-	-	-
	DC	-	-	ND	-
72	DC	-	-	SD	-
	Low Consump DC	-	-	-	SW3
	Wide Range DC	-	-	-	-
96	Low Consump DC	-	-	-	-
100	50/60	-	-	-	-
	DC	-	-	KD	-
110	50/60	F7	F7	-	-
	50	-	-	-	-
	60	-	-	-	-
	40-400	-	-	-	-
	DC	-	-	FD	-
	Low Consump DC	-	-	-	FW3
	Wide Range DC	-	-	-	-

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K-line Voltage Code (Continued)

Voltage	Frequency	K-line *(see notes at end of table)*			
		LC1K LC2K Notes K1, K2	LC7K LC8K Note K4	LP1K LP2K Notes K2, K3	LP4K LP5K
110/127	40-400	-	-	-	-
115	50/60	FE7	FE7	-	-
	50	-	-	-	-
	40-400	-	-	-	-
120	50/60	G7	G7	-	-
	50	-	-	-	-
	60	-	-	-	-
	40-400	-	-	-	-
	DC	-	-	-	-
	Low Consump DC	-	-	-	GW3
125	DC	-	-	GD	-
127	50/60	FC7	-	-	-
	60	-	-	-	-
	40-400	-	-	-	-
155	DC	-	-	PD	-
174	DC	-	-	QD	-
200	50/60	-	-	-	-
	DC	-	-	LD	-
200/208	50/60	L7	-	-	-
	60	-	-	-	-
	40-400	-	-	-	-
208	50/60	-	-	-	-
	60	-	-	-	-
	40-400	-	-	-	-
220	50/60	-	M7	-	-
	50	-	-	-	-
	60	-	-	-	-
	40-400	-	-	-	-
	DC	-	-	MD	-
	Low Consump DC	-	-	-	-
	Wide Range DC	-	-	-	-
220/230	50/60	M7	-	-	-
	50	-	-	-	-
	60	-	-	-	-
	40-400	-	-	-	-
	DC	-	-	-	-
220/240	40-400	-	-	-	-
	DC	-	-	-	-
230	50/60	P7	-	-	-
	50	-	-	-	-
	60	-	-	-	-
	40-400	-	-	-	-
	DC	-	-	MPD	-
230/240	50/60	U7 Note K4	U7	-	-
240	50/60	-	-	-	-
	50	-	-	-	-
	60	-	-	-	-
	40-400	-	-	-	-
	DC	-	-	MUD	-
250	DC	-	-	UD	-
	Low Consump DC	-	-	-	-
256	50/60	W7	-	-	-
	50	-	-	-	-
277	50/60	UE7	-	-	-
	50	-	-	-	-
	40-400	-	-	-	-
380	50/60	-	-	-	-
	50	-	-	-	-
	60	-	-	-	-
	40-400	-	-	-	-

K-line Voltage Code (Continued)

Voltage	Frequency	K-line *(see notes at end of table)*			
		LC1K LC2K Notes K1, K2	LC7K LC8K Note K4	LP1K LP2K Notes K2, K3	LP4K LP5K
380/400	50/60	Q7 NOte K4	-	-	-
	50	-	-	-	-
	60	-	-	-	-
	40-400	-	-	-	-
	DC	-	-	-	-
380/440	40-400	-	-	-	-
400	50/60	V7	-	-	-
	50	-	-	-	-
	40-400	-	-	-	-
400/415	50/60	N7	-	-	-
415	50/60	-	-	-	-
	50	-	-	-	-
	40-400	-	-	-	-
415-440	50	-	-	-	-
	40-400	-	-	-	-
440	50/60	R7	-	-	-
	50	-	-	-	-
	60	-	-	-	-
	40-400	-	-	-	-
	DC	-	-	-	-
440/460	DC	-	-	-	-
460/480	60	-	-	-	-
480	50/60	T7	-	-	-
	50	-	-	-	-
	60	-	-	-	-
	40-400	-	-	-	-
500	50/60	S7	-	-	-
	50	-	-	-	-
	40-400	-	-	-	-
575	50/60	SC7	-	-	-
	60	-	-	-	-
600	50/60	X7	-	-	-
	60	-	-	-	-
	40-400	-	-	-	-
660	50	-	-	-	-
	60	-	-	-	-
660/690	50/60	Y7	-	-	-

Notes:

K1 Up to and including 240 V, coil with integral suppression device (bi-directional diode): add 2 to the requested voltage code. Ex. J72

K2 For voltage codes B7 or BD, when connecting an electronic sensor or timer in series with the coil of the control relay, select a 20 V coil (Voltage code Z7 for AC or ZD for DC). This coil compensates for incurred voltage drop.

K3 Coil with integral suppression device available (bidirectional diode): add 3 to the requested voltage code. Ex JD3.

K4 For voltage codes M7, U7, Q7, N7, Y7 and all LC7K and LC8K devices, operating range is 0.85 - 1.10 of nominal. For all other LC1K and LC2K the operating range is 0.80 - 1.15 of nominal.

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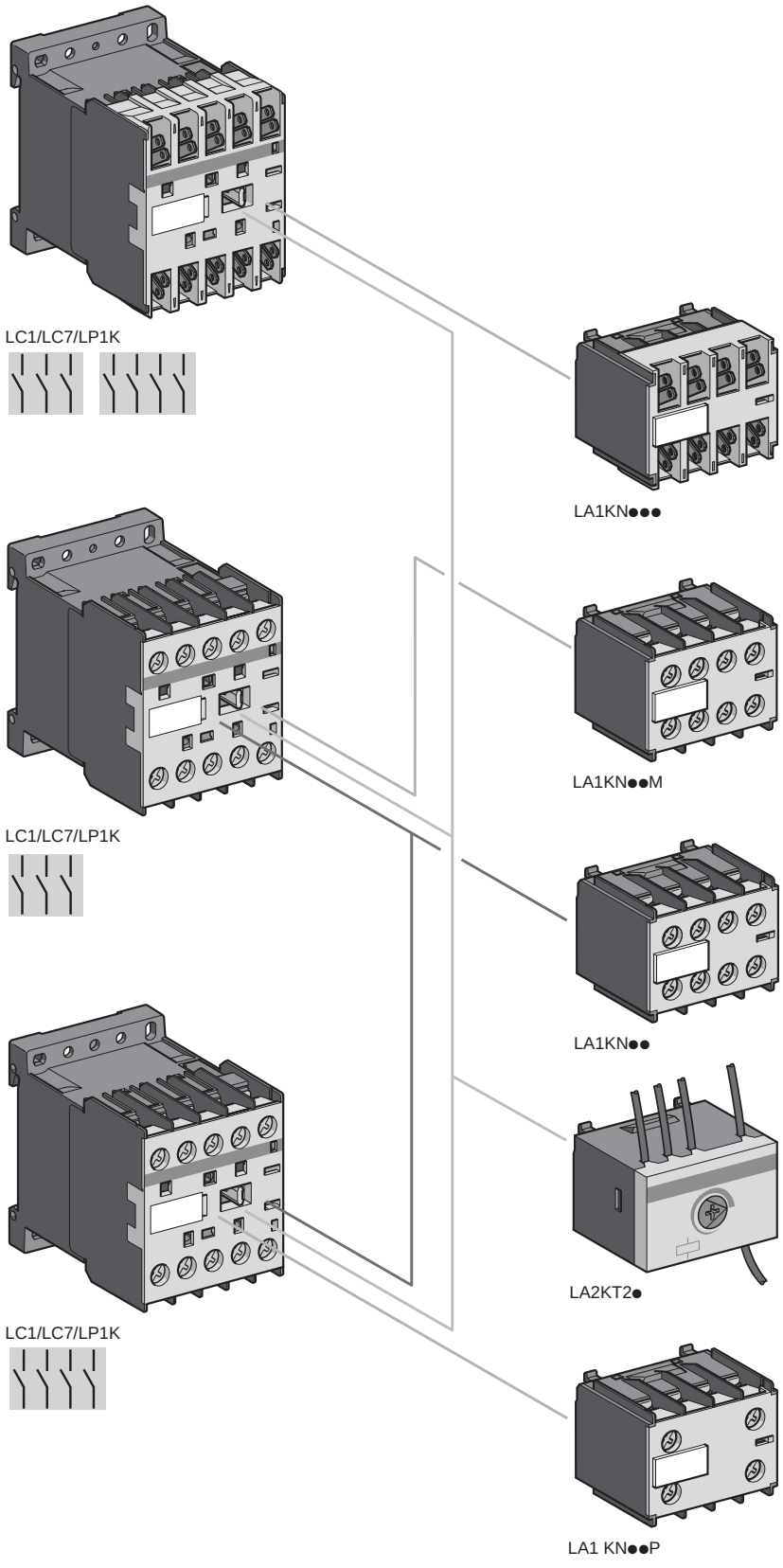

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Instantaneous Auxiliary Contact Blocks for Type LC•K and LP•K Contactors

Recommended for standard applications. Clip-on front mounting, 1 block per contactor

Type of Connection	Type of Contactor	Auxiliary Contacts N.O.	Auxiliary Contacts N.C.	Catalog Number	Weight lb. (kg)
Screw Clamp	LC1, LC2 LC7, LC8 LP1, LP2 3- or 4-pole	2	–	**LA1KN20**	0.10 (0.045)
		–	2	**LA1KN02**	0.10 (0.045)
		1	1	**LA1KN11**	0.10 (0.045)
		4	–	**LA1KN40**	0.10 (0.045)
		3	1	**LA1KN31**	0.10 (0.045)
		2	2	**LA1KN22**	0.10 (0.045)
		1	3	**LA1KN13**	0.10 (0.045)
		–	4	**LA1KN04**	0.10 (0.045)
Slip-on 1 x 0.25 in. or 2 x 0.11 in.	LC1, LC2 LC7, LC8 LP1, LP2 3- or 4-pole	2	–	**LA1KN207**	0.10 (0.045)
		–	2	**LA1KN027**	0.10 (0.045)
		1	1	**LA1KN117**	0.10 (0.045)
		4	–	**LA1KN407**	0.10 (0.045)
		3	1	**LA1KN317**	0.10 (0.045)
		2	2	**LA1KN227**	0.10 (0.045)
		1	3	**LA1KN137**	0.10 (0.045)
		–	4	**LA1KN047**	0.10 (0.045)
Spring Terminals	LC1, LC2 LP1, LP2 3- or 4-pole	2	–	**LA1KN203**	0.10 (0.045)
		–	2	**LA1KN023**	0.10 (0.045)
		1	1	**LA1KN113**	0.10 (0.045)
		4	–	**LA1KN403**	0.10 (0.045)
		3	1	**LA1KN313**	0.10 (0.045)
		2	2	**LA1KN223**	0.10 (0.045)
		1	3	**LA1KN133**	0.10 (0.045)
		–	4	**LA1KN043**	0.10 (0.045)
With terminal referencing conforming to standard EN 50012. Clip-on front mounting, 1 block per contactor					
Screw clamp with terminal referencing conforming to standard EN 50012 ▲	LC1, LC2 LC7, LC8 LP1, LP2 3-pole + N.O.	–	2	**LA1KN02M**	0.10 (0.045)
		1	1	**LA1KN11M**	0.10 (0.045)
		3	1	**LA1KN31M**	0.10 (0.045)
		2	2	**LA1KN22M**	0.10 (0.045)
		1	3	**LA1KN13M**	0.10 (0.045)
	LC1, LC2 LC7, LC8 LP1, LP2 4-pole	1	1	**LA1KN11P**	0.10 (0.045)
		2	2	**LA1KN22P**	0.10 (0.045)

▲ See pages 59 and 60 for actual terminal markings.

Electronic Time-Delay Auxiliary Contact Blocks for Type LC•K and LP•K Contactors

– Relay output, with common point changeover contact, AC or DC 240 Vac, 2 A maximum.
– Control voltage: 0.85 to 1.1 Vc.
– Maximum switching capacity: 250 VA or 150 W.
– Operating temperature: -10 to + 60 °C (14 to 140 °F).
– Reset time: 1.5 s during the time delay period, 0.5 s after the time delay period.

Clip-on front mounting, 1 block per contactor

Voltage V	Type	Timing Range s	Auxiliary Contacts SPDT	Catalog Number	Weight lb. (kg)
AC or DC 24 to 48	On-delay	1 to 30	1	**LA2KT2E**	0.09 (0.040)
AC 110 to 240	On-delay	1 to 30	1	**LA2KT2U**	0.09 (0.040)

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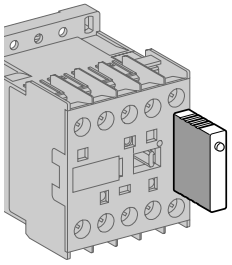
Coil Suppressor Modules With an LED Indicator for Type LC•K and LP•K Contactors

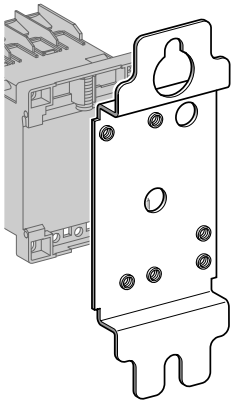


LA4K••

Mounting and connection	Type	For voltages:	Sold in lots of	Catalog Number	Weight lb. (kg)
Clip-on mounting on the front of LC1 and LP1 contactors. No tools required.	Varistor ■	AC and DC 12 to 24 V	5	**LA4KE1B**	0.02 (0.010)
		AC and DC 32 to 48 V	5	**LA4KE1E**	0.02 (0.010)
		AC and DC 50 to 129 V	5	**LA4KE1FC**	0.02 (0.010)
		AC and DC 201 to 250 V	5	**LA4KE1UG**	0.02 (0.010)
	Diode + Zener diode ♦	DC 12 to 24 V	5	**LA4KC1B**	0.02 (0.010)
		DC 32 to 48 V	5	**LA4KC1E**	0.02 (0.010)
	RC ▲	AC 220 to 250 V	5	**LA4KA1U**	0.02 (0.010)

■ Protection by limitation of the transient voltage up to 2 Vc maximum. Maximum reduction of transient voltage peaks. Slight time delay on drop-out (1.1 to 1.5 times the normal time).
♦ No overvoltage or oscillation frequency. Polarized component. Slight time delay on drop-out (1.1 to 1.5 times the normal time).
▲ Protection by limitation of the transient voltage up to 3 Vc maximum and limitation of the oscillation frequency. Slight time delay on drop-out (1.2 to 2 times the normal time).

Mounting and Marking Accessories

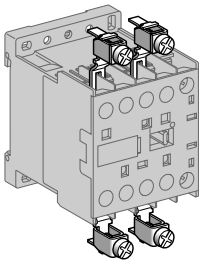


DX1AP25

Description	Application		Sold in lots of	Unit Catalog Number	Weight lb. (kg)
Mounting plates ■	For mounting on 1 ' rail	Clip-on	1	**LA9D973**	0.05 (0.025)
	For mounting on 2 ' rails	110/120 mm mounting centers	10	**DX1AP25**	0.14 (0.065)
Marker holder	Clip-on	Onto front of contactor	100	**LA9D90**	0.002 (0.001)
Clip-in markers	4 maximum per contactor	Strips of 10 identical numbers 0 to 9	25	**AB1R•** ▲	0.004 (0.002)
		Strips of 10 identical capital letters A to Z	25	**AB1G•** ▲	0.004 (0.002)
35mm " DIN rail (7.5mm deep x 2m long)			10	**AM1DP200**	2.88 (1.310)
35mm " DIN rail (15mm deep x 2m long)			10	**AM1ED200**	1.44 (0.650)

■ Order 1 mounting plate for a contactor and 2 mounting plates for a reversing contactor.
▲ Complete the catalog number by replacing the • with the required number or character.

Cabling Accessories



LA9E01

Description	Application		Sold in lots of	Unit Catalog Number	Weight kg (lb.)
Paralleling links	For 2-poles	With screw clamp terminals	4	**LA9E01**	0.02 (0.010)
	For 4-poles	With screw clamp terminals	2	**LA9E02**	0.03 (0.015)
Power connections: 6 required per contactor	For 3-pole reversing contactors for motor control	For contactors with screw clamp terminals	100	**LA9K0969**	0.02 (0.010)
Power connections: 4 required per contactor	For 4-pole changeover contactor pairs	For contactors with screw clamp terminals	100	**LA9K0970**	0.02 (0.010)

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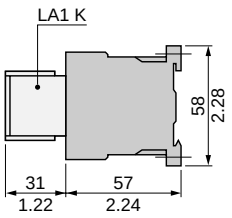
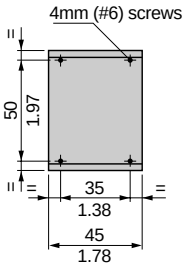
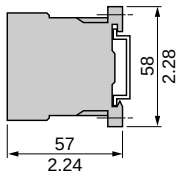
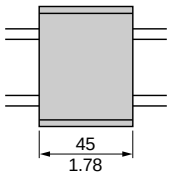
Contactors
LC1K, LC7K, LP1K
On panel





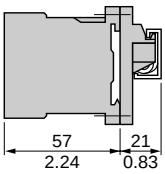
On mounting rail **AM1DP200** or **AM1DE200** 1.4 in. (35 mm) DIN rail

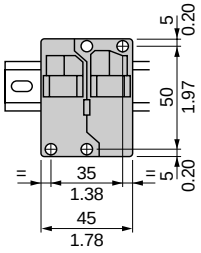




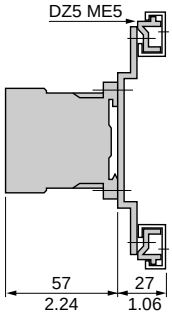
On one asymmetrical rail **DZ5MB** with clip-on mounting plate

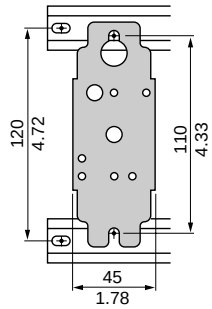
LA9D973



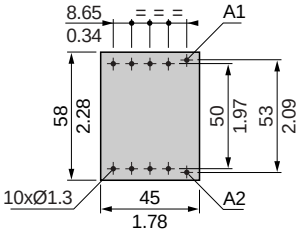


DX1AP25



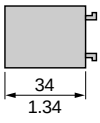


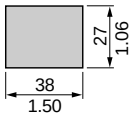
On printed circuit board



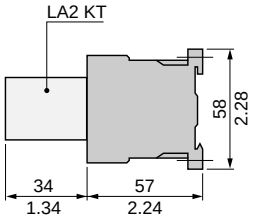
Electronic time-delay auxiliary contact blocks

LA2KT



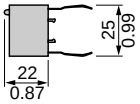


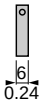
On contactor



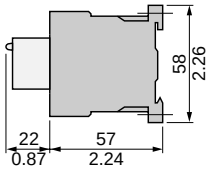
Suppressor modules

LA4K•





On contactor



Dimensions **Inches** / **mm**

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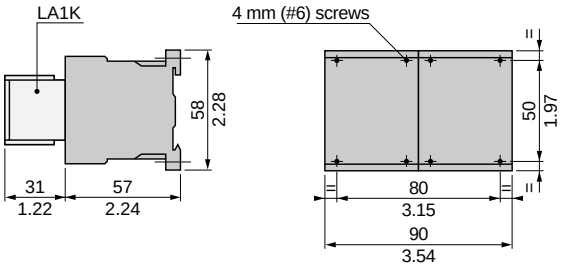
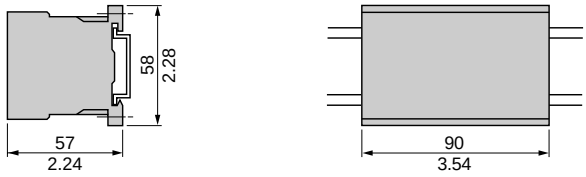
Reversing contactors LC2K, LC8K, LP2K

On panel

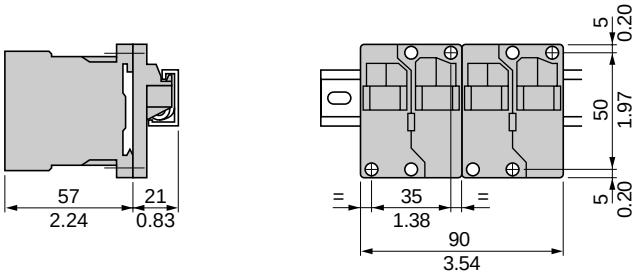


On mounting rail **AM1DP200** or **AM1DE200** 1.4 (35 mm) DIN rail

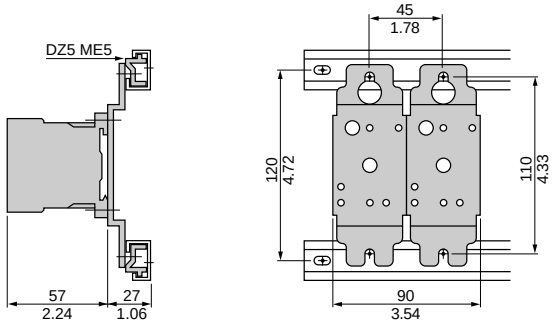


On one asymmetrical rail **DZ5MB** with 2 clip-on mounting plates LA9D973 or on 2 mounting plates **DX1AP25**.

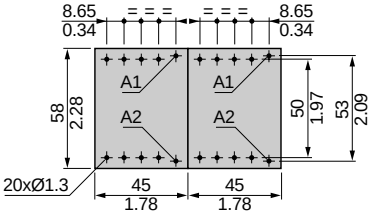
2 x LA9D973



2 x DX1AP25



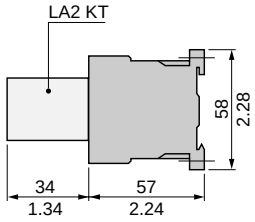
On printed circuit board for reversing contactors or 2 contactors mounted side by side



Electronic time delay auxiliary contact blocks

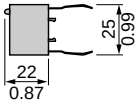
LA2KT

On reversing contactors

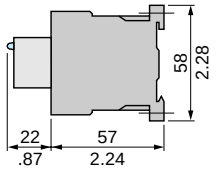


Suppressor modules

LA4K•



On reversing contactors



Dimensions **inches** / **mm**

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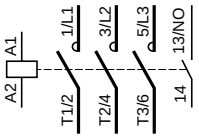
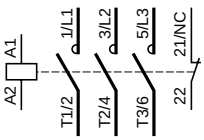
Type LC•K and LP•K Contactors and Accessories

3-pole contactors
LC1K, LC7K, LP1K

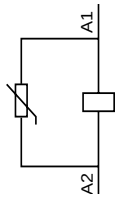
3-pole + N.O.



3-pole + N.C.

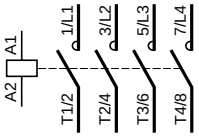


Integrated-coil suppression device
LC7K

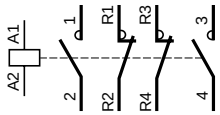


4-pole contactors
LC1K, LC7K, LP1K

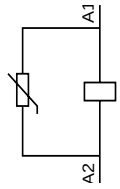
4-pole



2-pole N.O. + 2-pole N.C.

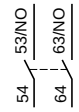


Integrated-coil suppression device
LC7K

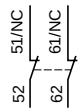


Instantaneous auxiliary contacts LA1K
For contactors **LC•K** and **LP•K**

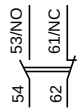
2 N.O.
LA1KN20
LA1KN207



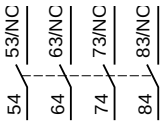
2 N.C.
LA1KN02
LA1KN027



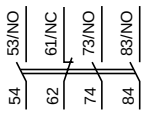
1 N.O. + 1 N.C.
LA1KN11
LA1KN117



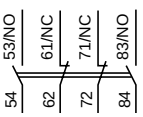
4 N.O.
LA1KN40
LA1KN407



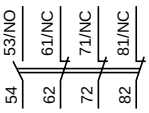
3 N.O. + 1 N.C.
LA1KN31
LA1KN317



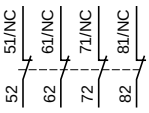
2 N.O. + 2 N.C.
LA1KN22
LA1KN227



1 N.O. + 3 N.C.
LA1KN13
LA1KN137

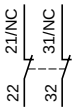


4 N.C.
LA1KN04
LA1KN047

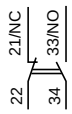


Terminal referencing conforming to standard EN 50012
For 3-pole contactors

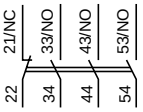
2 N.C.
LA1KN02M



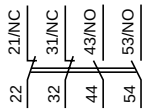
1 N.O. + 1 N.C.
LA1KN11M



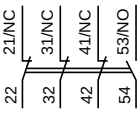
3 N.O. + 1 N.C.
LA1KN31M



2 N.O. + 2 N.C.
LA1KN22M

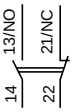


1 N.O. + 3 N.C.
LA1KN13M

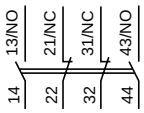


For 4-pole contactors

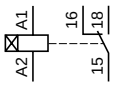
1 N.O. + 1 N.C.
LA1KN11P



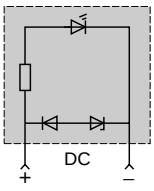
2 N.O. + 2 N.C.
LA1KN22P



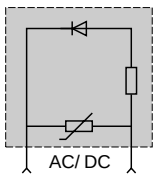
Electronic time delay auxiliary contact blocks
LA2KT
For contactors **LC•K** and **LP•K**
1 C/O



Suppressor modules
LA4KC



LA4KE



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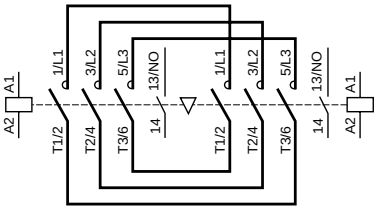
TeSys™ K-line Mini-Contactors and Starters
Schematics

Type LC•K and LP•K Reversing Contactors and Accessories

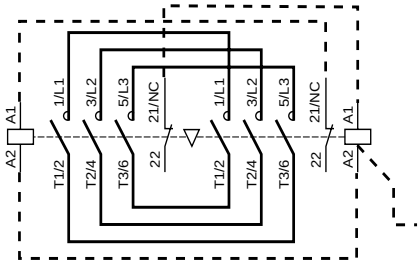
3-pole reversing contactors
LC2K, LC8K, LP2K
With screw clamp terminals

3 P + N.O.

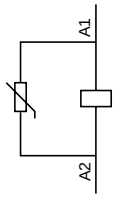


Dashed lines indicate suggested customer wiring to electrically interlock coils

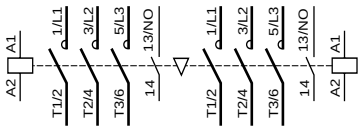
3 P + N.C.



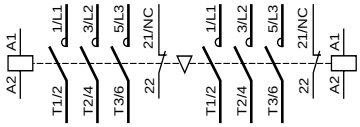
Integrated-coil suppression device
LC8K



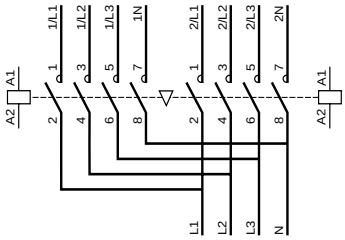
With Slip-on connectors or solder pins (printed circuit board)
3 P+ N.O.



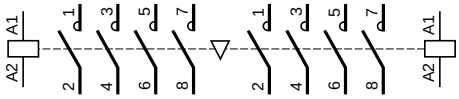
With Slip-on connectors or solder pins (printed circuit board)
3 P + N.C.



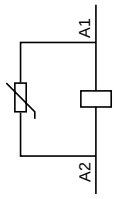
4-pole reversing contactors
LC2K, LC8K, LP2K
With screw clamp terminals
4 P



With Slip-on connectors or solder pins (printed circuit board)
4 P

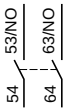


Integrated-coil suppression device
LC8K

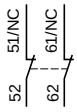


Instantaneous auxiliary contact blocks LA1K
For contactors **LC•K** and **LP2K**

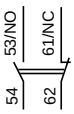
2 N.O.
LA1KN20
LA1KN207



2 N.C.
LA1KN02
LA1KN027



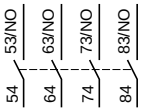
1 N.O. + 1 N.C.
LA1KN11
LA1KN117



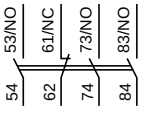
Terminal referencing conforming to standard EN 50012
1 N.O. + 1 N.C.
LA1KN11P

For contactors **LC•K**, **LP2K**

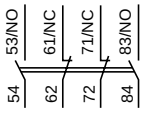
4 N.O.
LA1KN40
LA1KN407



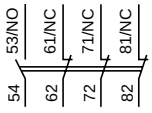
3 N.O. + 1 N.C.
LA1KN31
LA1KN317



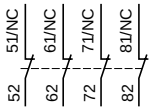
2 N.O. + 2 N.C.
LA1KN22
LA1KN227



1 N.O. + 3 N.C.
LA1KN13
LA1KN137

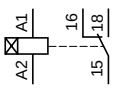


4 N.C.
LA1KN04
LA1KN047

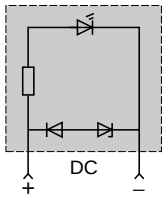


For auxiliary contacts with terminal referencing conforming to standard EN 50012 see page 55.

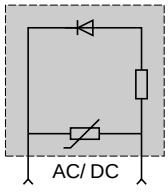
Electronic time delay contact blocks
LA2KT
For contactors **LC•K** and **LP•K**
1 C/O



Suppressor modules
LA4KC



LA4KE



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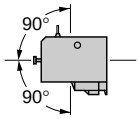
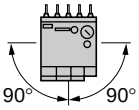
Environment

Conforming to standards	CE Meets the essential requirements of the LV & EMC directives	IEC 60947, NF C 63-650, VDE 0660, BS 4941, UL 508, CSA 22.2 No. 14	
Product certifications		UL E164353 NKCR	CSA LR43364 3211 03
Protective treatment	Conforming to IEC 60068 (DIN 50016)	"TC" (Fungus-proof, tropicalization protection)	
Degree of protection	Conforming to VDE 0106	Protection against direct finger contact	
Ambient air temperature around the device	Storage	-40° to +70° C (-40 to +158° F)	
	For normal operation (IEC 60947)	-20 to +55° C (-4 to +131° F) without derating	
	Operating limit	-30 to +60° C (-22 to +140° F) with derating ■	
Maximum operating altitude	Without derating	2000 m (6562 ft.)	
Operating positions	**Vertical axis**  Without derating	**Horizontal axis**  With derating ■	
Flame resistance	Conforming to UL 94	Self-extinguishing material V1	
	Conforming to NF F 16-101 and 16-102	Conforming to requirement 2	
Shock resistance, hot state (1/2 sine wave, 11 ms)	Conforming to IEC 60068, N.C. contact	10 gn	
	Conforming to IEC 60068, N.O. contact	10 gn	
Vibration resistance, hot state 5 to 300 Hz	Conforming to IEC 60068, N.C. contact	2 gn	
	Conforming to IEC 60068, N.O. contact	2 gn	
Safe separation of circuits	Conforming to VDE 0106 and IEC 60536	SELV, up to 400 V ▲	

Cabling			Minimum	Maximum	Maximum to IEC 60947
Screw clamp terminals	Solid or stranded cable	AWG	1 x 18	2 x 14 or 1 x 12	–
	Solid cable	mm^2	1 x 1.5	2 x 4	1 x 4 + 1 x 2.5
	Stranded cable without cable end	mm^2	1 x 0.75	2 x 4	2 x 2.5
	Stranded cable with cable end	mm^2	1 x 0.34	1 x 1.5 + 1 x 2.5	1 x 1.5 + 1 x 2.5
Tightening torque	Phillips no. 2 or 3/16" slotted head	0.8 N•m (7 lb.-in.)			
Mounting	Directly under the contactor or reversing contactor				
Connections	Made automatically when mounted under the contactor, as follows: - contactor terminal A2 connected to overload relay terminal 96 on all products, - contactor terminal 14 connected to overload relay terminal 95 on products with 3 P + N.O. When using 3 P + N.C., or 4 P contactors, or the N.O. auxiliary contact marked 13-14, at a voltage other than the coil voltage, break off the link marked 14. (See page 64 for additional information.)				

■ Please consult your Local Field Sales Office.

▲ Safe extra low voltage.

Auxiliary Contact Characteristics

Number of contacts			1 N.C. + 1 N.O.						
Conventional thermal current		A	6						
Short-circuit protection ●	Conforming to IEC 60947, VDE 0660. gl fuse or supplementary protector GB2CB••	A	6 max.						
Maximum power of the controlled contactor coils (sealed) (Occasional operating cycles of contact 95-96)	AC	V	24	48	110	220/230	400	415/440	600/690
		VA	100	200	400	600	600	600	600
	DC	V	24	48	110	220	250	–	–
		W	100	100	50	45	35	–	–
Maximum operational voltage	AC, category AC-15	V	690						
	DC, category DC-13	V	250						

● Select short circuit protection to meet the National Electrical Code or other local codes and standards.

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Electrical Characteristics of the Power Circuit

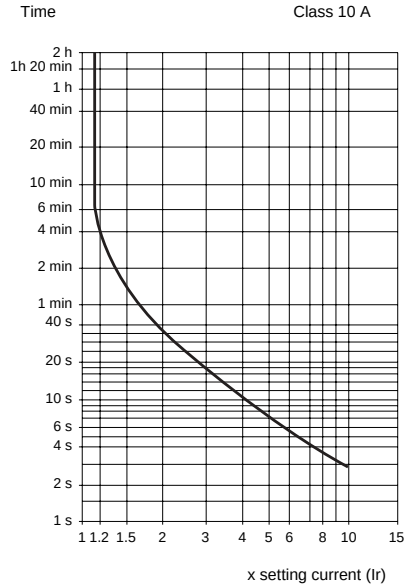
Rated operational voltage (Ve)	Up to	**V**	690
Rated insulation voltage (Vi)	Conforming to BS 4941	**V**	690
	Conforming to IEC 60947	**V**	690
	Conforming to VDE 0110 group C	**V**	750
	Conforming to UL 508, CSA 22.2 No. 14	**V**	600
Rated impulse withstand voltage (Vimp)		**kV**	6
Frequency limits of the operational current		**Hz**	Up to 400
Power dissipated per pole		**W**	2
Short-circuit protection and coordination	By circuit breaker		Select in accordance with NEC and local codes
	By fuses		Maximum 400% of motor FLA

Operating Characteristics

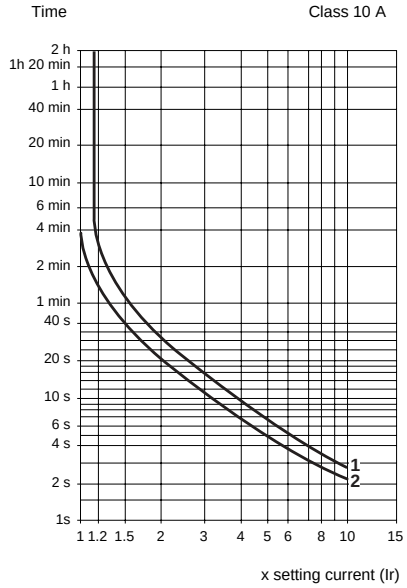
Sensitivity to phase failure	Conforming to IEC 60947	Yes
Reset	Manual or automatic	Selected by means of a lockable and sealable switch on the front of the relay
Signalling	On front of relay	Trip indicator
Reset-Stop function		Pressing the Reset-Stop button: – Actuates the N.C. contact – Has no effect on the N.O. contact
Test function	By pushbutton	Pressing the Test button enables: – Checking of the control circuit wiring – Simulation of overload tripping (actuation of both N.C. and N.O. contacts, and of the trip indicator)

Tripping curves

Average operating time related to multiples of the current setting Class 10 A



Balanced 3-phase operation, from cold state.



Balanced operation with 2-phases only, from cold state.
1 = Setting: at lower end of scale.
2 = Setting: at upper end of scale.

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These overload relays are designed for the protection of motors. They are ambient-compensated and phase-failure sensitive. They may be reset either manually or automatically.

For direct mounting, the relays are placed under the contactors with screw clamp terminals only (pre-wired terminals; see page 64). For separate mounting, use terminal block LA7K0064 (see below).

The front face of the overload relay provides:

- Selection of reset mode: Manual (marked H) or Automatic (marked A).
- A red pushbutton for the Trip Test function.
- A blue pushbutton for Stop and manual reset.
- A yellow trip flag to indicate that the overload relay tripped.

LR2K0301

Three-Pole Overload Relays with Screw Clamp Terminals

Short-circuit protection for North American applications	By circuit breaker		Select in accordance with NEC and local codes		
	By fuses		Maximum 400% of motor FLA		
Relay Setting Range	**European type fuses Maximum rating Type**			**Catalog Number**	**Weight lb. (kg)**
	aM	**gl**	**BS88**		
A	**A**	**A**	**A**		
Class 10 (the standard specifies a tripping time of between 2 and 10 seconds at 7.2 In)					
0.11 to 0.16	0.25	0.5	–	**LR2K0301**	0.32 (0.145)
0.16 to 0.23	0.25	0.5	–	**LR2K0302**	0.32 (0.145)
0.23 to 0.36	0.5	1	–	**LR2K0303**	0.32 (0.145)
0.36 to 0.54	1	1.6	–	**LR2K0304**	0.32 (0.145)
0.54 to 0.8	1	2	–	**LR2K0305**	0.32 (0.145)
0.8 to 1.2	2	4	6	**LR2K0306**	0.32 (0.145)
1.2 to 1.8	2	6	6	**LR2K0307**	0.32 (0.145)
1.8 to 2.6	4	8	10	**LR2K0308**	0.32 (0.145)
2.6 to 3.7	4	10	16	**LR2K0310**	0.32 (0.145)
3.7 to 5.5	6	16	16	**LR2K0312**	0.32 (0.145)
5.5 to 8	8	20	20	**LR2K0314**	0.32 (0.145)
8 to 11.5	10	25	20	**LR2K0316**	0.32 (0.145)
10 to 14	16	32	25	**LR2K0321 ♦**	0.32 (0.145)
12 to 16	20	40	32	**LR2K0322 ♦**	0.32 (0.145)

♦ Not UL Listed or CSA Certified.

Overload Relays without Single-phase Sensitivity ♦

Class 10: To order, replace the prefix **LR2** by **LR7** in the catalog numbers selected from above (only applicable to overload relays LR2K0305 to LR2K0322). Example: **LR7K0308**.

♦ Not UL Listed or CSA Certified.

LA7K0064

Accessory

Description	**Type of Connection**	**Catalog Number**	**Weight lb. (kg)**
Terminal block for separate clip-on mounting of the overload relay on 35 mm DIN rail	Screw clamp	**LA7K0064**	0.22 (0.100)

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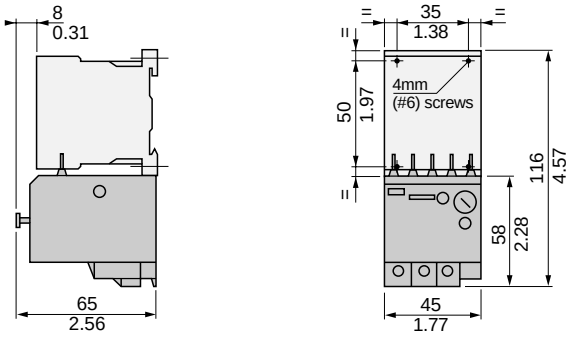
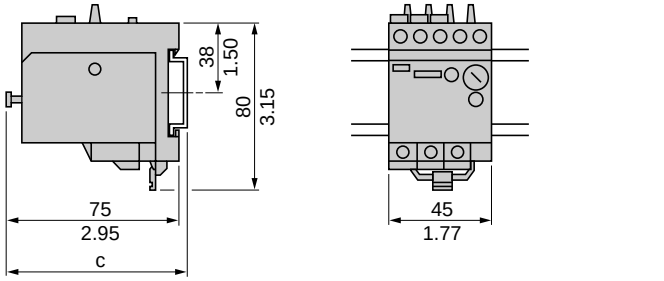
Protection Components

LR2K
Direct mounting beneath the contactor

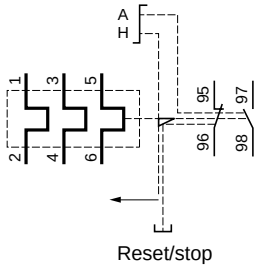


Separate mounting with terminal block **LA7K0064** on 1.4 in. (35 mm) DIN rail (**AM1DP200** or **AM1DE200**)



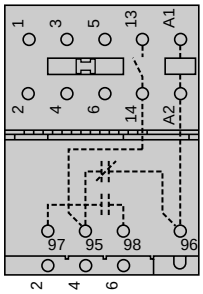
AM1-	c
DP200	3.09 in. / 78.5mm
DE200	3.38 in. / 86mm

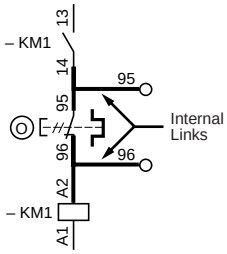
LR2K



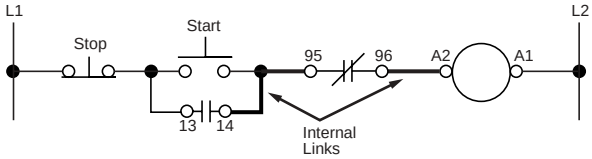
Reset/stop

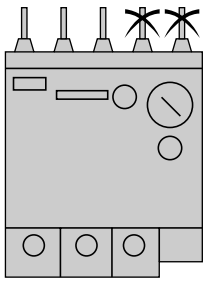
LR2K + LC•K
Built-in wiring schematic





LR2K Overload Relays feature built-in wiring to save time and materials when all five links of the overload relay are connected to a K-line contactor with an integrated N.O. (normally-open) auxiliary contact. Terminal 96 of the N.C. (normally-closed) overload relay contact (95-96) will be internally linked in series with terminal A2 of the contactor operating coil. Terminal 95 of the N.C. overload relay contact (95-96) will be internally linked in series with terminal 14 of N.O. coil holding contact (13-14) of the contactor. These internal links help to eliminate additional wiring when using a conventional 3-wire control circuit similar to the diagram shown.





If integrated wiring between contactor and overload relay is not desired, break off the two links on the overload relay as indicated.

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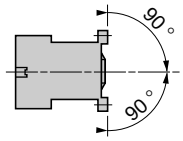
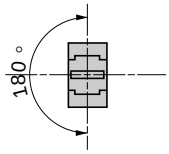
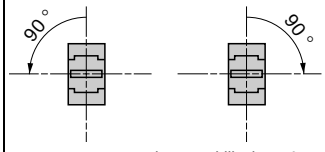
Environment

Rated insulation voltage (Vi)	Conforming to IEC 60947	**V**	690		
	Conforming to VDE 0110 gr C	**V**	750		
	Conforming to BS 5424, NF C 20-040	**V**	690		
	Conforming to CSA 22.2 No. 14, UL 508	**V**	600		
Rated impulse withstand voltage (Vimp)		**kV**	8		
Conforming to standards	CE Meets the essential requirements of the LV & EMC directives		IEC 60947, NF C 63-110, VDE 0660, BS 5424, UL 508, CSA 22.2 No. 14		
Approvals	**LP•K06, LP•K09, LP•K12**		UL E164862 NLDX (screw clamp)	CSA LR43364 3211 04	E164862 NLDX2 (Slip-on & solder pin)
Protective treatment	Conforming to IEC 60068 (DIN 50016)		"TC" (Fungus-proof, Tropicalization protection)		
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact		
Ambient air temperature around the device	Storage		- 50 to + 80 °C (-58 to +176 °F)		
	Operation		- 25 to + 50 °C (-13 to +122 °F)		
Maximum operating altitude	Without derating		2000 m (6562 ft)		
Operating positions	**Vertical axis**  Without derating	**Horizontal axis**  Without derating	 Derate current carrying capability by 15% when not mounted vertically		
Flame resistance	Conforming to UL 94		Self-extinguishing materials V1		
	Conforming to NF F 16-101 and 16-102		Conforming to requirement 2		
Shock resistance (1/2 sine wave, 11 ms)	Contactor open		10 g		
	Contactor closed		15 g		
Vibration resistance 5 to 300 Hz	Contactor open		2 g		
	Contactor closed		4 g		
Safe separation of circuits	Conforming to VDE 0106 and IEC 60536		SELV, up to 400 V ▲		

Cabling			Min	Max	Max to IEC 60947
Screw clamp terminals	Solid or stranded cable	AWG	1 x 18	2 x 14 or 1 x 12	-
	Solid cable	mm^2	1 x 1.5	2 x 4	1 x 4 + 1 x 2.5
	Stranded cable without cable end	mm^2	1 x 0.75	2 x 4	2 x 2.5
	Stranded cable with cable end	mm^2	1 x 0.34	1 x 1.5 + 1 x 2.5	1 x 1.5 + 1 x 2.5
Slip-on connectors	Clip	2 x 2.8mm or 1 x 6.35mm (2 x 0.110 in. or 1 x 0.250 in.)			
Solder pins for printed circuit board	With locating device between power and control circuits	4 mm x 35 microns			

Tightening torque	Phillips no. 2 or 3/16" slotted head screwdriver	0.8 to 1.3 N•m (7 to 11.5 lb.-in)	
Terminal referencing	Conforming to standards EN 50005 and EN 50012	Up to 3 contacts	

▲ Safe extra low voltage.

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Pole Characteristics

Conventional rated thermal current (Ith)	For ambient temperature ≤ 50 °C (122°F)		A	20						
Rated operational frequency			Hz	50/60						
Frequency limits of the operational current			Hz	Up to 400						
Rated operational voltage (Ve)			V	690						
Rated making capacity	I rms conforming to NF C 63-110 and IEC 60947		A							
	LP•K06, LP•K09 LP•K12			110 144						
Rated breaking capacity	Conforming to NF C 63-110 and IEC 60947		V	220/ 230	380/ 400	415	440	500	660/ 690	
	LP•K06, LP•K09 LP•K12	I rms	A	110 –	110 –	110 –	110 120	80 80	70 70	
Permissible short time rating	Open mounted, for a time "t" from cold state (θ ≤ 50 °C [122 °F])			1 s	5 s	10 s	30 s	1 min	3 min	≥15 min
	LP•K06, LP•K09 LP•K12		A	90 115	85 105	80 100	60 75	45 55	40 50	20 25
Short-circuit protection	By circuit breaker			Select in accordance with NEC and local codes						
	By fuses			Max 400% of motor FLA						
Average impedance per pole	At Ith and 50 Hz		mΩ	3						
Utilization in category AC-1 resistive circuits, heating, lighting (Ve ≤ 440 V)	Maximum rated operational current for a temperature ≤ 50 °C (122 °F)		A	20						
	Rated operational current limits in relation to on-load factor and operating frequency		A	On-load factor			90%	60%	30%	
				300 op. cycles/hour			13	15	18	
				120 op. cycles/hour			15	18	19	
				30 op. cycles/hour			19	20	20	
	Increase in operational current by paralleling poles			Apply the following coefficients to the current values given above. These take into account the often unbalanced current distribution between poles						
				2 poles in parallel: K = 1.60						
				3 poles in parallel: K = 2.25						
				4 poles in parallel: K = 2.80						
Utilization in category AC-3 Squirrel cage motors	Operational power according to the voltage	Voltage 50 or 60Hz	V	115	220	220/ 240	380/ 415	440/ 480	500/ 600	660/ 690
				1-ph	1-ph	3-ph	3-ph	3-ph	3-ph	3-ph
	LP•K06	Motor ratings	kW	0.37	0.75	1.5	2.2	3	3	3
	LP•K09	Motor ratings	kW	0.55	1.1	2.2	4	4	4	4
	LP•K12	Motor ratings	kW	–	–	3	5.5	5.5 4 (480)	4	4
	Percent utilization of operational power in relation to the maximum operating rate			Op. cycles/h		600		900		1200
				Power		100%		75%		50%
Utilization in category AC-3 Squirrel cage motors	Operational power according to the voltage	Voltage 50 or 60Hz	V	115	220	200/ 208	220/ 240	460/ 480	575/ 600	
				1-ph	1-ph	3-ph	3-ph	3-ph	3-ph	
	LC•K06, LP•K06	Motor ratings	HP	0.5	1	1.5	1.5	3	3	
	LC•K09, LP•K09	Motor ratings	HP	0.5	1.5	2	3	5	5	
	LC•K12, LP•K12	Motor ratings	HP	1	2	3	3	7.5	10	
	LC•K16, LP•K16	Not for North American Applications. Not UL Listed or CSA Certified.								

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Control Circuit Characteristics

Type			LP4	LP5
Rated control circuit voltage (Vc)		V	DC 12 to 72	
Control voltage limits (≤ 50 °C [122 °F]) single-voltage coil	For operation		0.7 to 1.30 Vc	
	For drop-out		≥ 0.10 Vc	
Average consumption at 20 °C (68 °F) and at Vc	Inrush	W	1.8	
	Sealed	W	1.8	
Heat dissipation		W	1.8	
Operating time at 20 °C (68 °F) and at Vc	Between coil energization and: - opening of the N.C. contacts - closing of the N.O. contacts	ms ms	25 to 35 30 to 40	
	Between coil de-energization and: - opening of the N.O. contacts - closing of the N.C. contacts	ms ms	10 to 20 15 to 25	
Maximum immunity to micro breaks		ms	2	
Maximum operating rate	In operating cycles per hour		3600	
Mechanical durability at Vc In millions of operating cycles	Wide range DC coil		30	5

Auxiliary Contact Characteristics of Contactors and Instantaneous Contact Blocks

Number of contacts	On LP4, LP5K			1
	On LA1K			2 max.
Rated operational voltage (Ve)	Up to		**V**	690
Rated insulation voltage (Vi)	Conforming to BS 5424		**V**	690
	Conforming to IEC 60947		**V**	690
	Conforming to VDE 0110 group C		**V**	750
	Conforming to CSA 22.2 No. 14, UL 508		**V**	600
Conventional rated thermal current (Ith)	For ambient temperature ≤ 50 °C (122 °F)		**A**	10
Frequency of operational current			**Hz**	Up to 400
Minimum switching capacity	V min (DIN 19 240)		**V**	17 (reliability $<10^{-8}$ at 24V)
	I min		**mA**	5
Short-circuit protection	Conforming to IEC 60947 and VDE 0660, gl fuse		**A**	10
Rated making capacity	Conforming to IEC 60947	I rms	**A**	110
Overload current	Permissible for	1 s	**A**	80
		500 ms	**A**	90
		100 ms	**A**	110
Insulation resistance			**MΩ**	> 10
Non-overlap distance	Linked contacts conforming to INRS and BIA specs.		**mm**	0.5 (0.02")

Operational power of contacts conforming to IEC 60947

AC supply, category AC-15

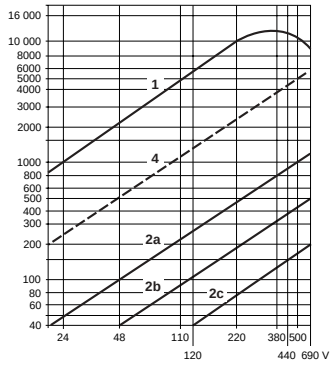
Electrical durability (valid up to 3600 operating cycles per hour) on an inductive load such as the coil of an electromagnet: making current (power factor 0.7) = 10 times the breaking current (power factor 0.4).

DC supply, category DC-13

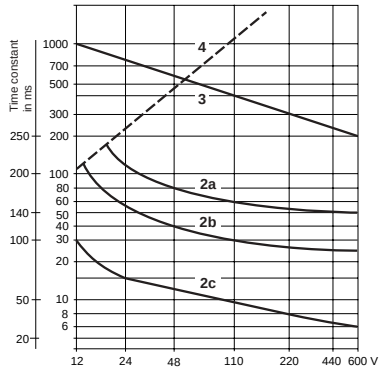
Electrical durability (valid up to 1200 operating cycles per hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

	V	**24**	**48**	**110/ 127**	**220/ 230**	**380/ 400**	**400**	**600/ 690**		**V**	**24**	**48**	**110**	**220**	**440**	**600**
1 million operating cycles	**VA**	48	96	240	440	800	880	1200		**W**	120	80	60	52	51	50
3 million operating cycles	**VA**	17	34	86	158	288	317	500		**W**	55	38	30	28	26	25
10 million operating cycles	**VA**	7	14	36	66	120	132	200		**W**	15	11	9	8	7	6
Occasional making capacity	**VA**	1000	2050	5000	10000	14000	13000	9000		**W**	720	600	400	300	230	200

Power in broken VA



Power in broken W



1 Breaking limit of contacts valid for maximum of 50 operating cycles at 10 s intervals (breaking current = making current x power factor 0.7).

2 Electrical durability of contacts for:
- 1 million operating cycles (2a)
- 3 million operating cycles (2b)
- 10 million operating cycles (2c).

3 Breaking limit of contacts valid for maximum of 20 operating cycles at 10 s intervals with current passing for 0.5 s per operating cycle.

4 Thermal limit.

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The table below shows three-pole contactors with low-consumption coils for DC control circuits. They are compatible with programmable controller outputs, and incorporate an LED indicator. For wide-range coils (0.7 to 1.3 Vc), a suppressor (zener diode) is fitted as standard (consumption is 1.8 W).

The contactors mount on 35 mm DIN rails or with 4 mm (# 6) screws. The wire termination screws are in the open, “ready-to-tighten” position.

For information on add-on auxiliary contact blocks and accessories, see page 72.

Three-Pole Contactors with Low-consumption Coils for DC Control Circuits

Horsepower Ratings for North American Applications							Kilowatt Ratings for International Applications				Type of Connection	Auxiliary Contacts		Catalog Number ♦ ▼	Weight lb. (kg)
Maximum Horsepower Rating Category AC-3, 50/60 Hz						Max. Inductive Current	Standard power ratings of 3-phase motors, 50/60 Hz in category AC-3			Rated Operational Current, up to 440 V					
1-Phase		3-Phase													
115/ 120 V	230/ 240 V	200/ 208 V	220/ 240 V	460/ 480 V	575/ 600 V		220 V 230 V	380 V 415 V	440/500 V 660/690 V			N.O.	N.C.		
HP	HP	HP	HP	HP	HP	A	kW	kW	kW	A					
0.5	1	1.5	1.5	3	3	6	1.5	2.2	3	6	Screw clamp	1	–	LP4K0610•••	0.52 (0.235)
												–	1	LP4K0601•••	0.52 (0.235)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	LP4K06107•••	0.52 (0.235)
												–	1	LP4K06017•••	0.52 (0.235)
											Solder pins for printed circuit board	1	–	LP4K06105•••	0.265 (0.58)
												–	1	LP4K06015•••	0.58 (0.265)
											Spring terminals	1	–	LP4K06103•••	0.52 (0.235)
												–	1	LP4K06013•••	0.52 (0.235)
0.5	1.5	2	3	5	5	9	2.2	4	4	9	Screw clamp	1	–	LP4K0910•••	0.52 (0.235)
												–	1	LP4K0901•••	0.52 (0.235)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	LP4K09107•••	0.52 (0.235)
												–	1	LP4K09017•••	0.52 (0.235)
											Solder pins for printed circuit board	1	–	LP4K09105•••	0.58 (0.265)
												–	1	LP4K09015•••	0.58 (0.265)
											Spring terminals	1	–	LP4K09103•••	0.52 (0.235)
												–	1	LP4K09013•••	0.52 (0.235)
1	2	3	3	7.5	10	12	3	5.5	4 (> 440) 5.5 (440)	12	Screw clamp	1	–	LP4K1210•••	0.52 (0.235)
												–	1	LP4K1201•••	0.52 (0.235)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	LP4K12107•••	0.52 (0.235)
												–	1	LP4K12017•••	0.52 (0.235)
											Solder pins for printed circuit board	1	–	LP4K12105•••	0.58 (0.265)
												–	1	LP4K12015•••	0.58 (0.265)
											Spring terminals	1	–	LP4K12103•••	0.52 (0.235)
												–	1	LP4K12013•••	0.52 (0.235)

♦ Standard control circuit voltages (variable delivery times, please consult your Local Square D Field Sales Office).

▼ Use voltage codes on page 52 “Voltage Code Table” to complete catalog number.

LP4K06105•••

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The table below shows three-pole reversing contactors with low-consumption coils for DC control circuits. They are compatible with programmable controller outputs, and incorporate an LED indicator and mechanical interlock. For wide-range coils (0.7 to 1.3 Vc), a suppressor (zener diode) is fitted as standard (consumption is 1.8 W).

The contactors mount on 35 mm DIN rails or with 4 mm (# 6) screws. The wire termination screws are in the open, “ready-to-tighten” position. Customer wiring is required to connect coil terminations to the electrical interlock; see page 75 for more information.

For information on add-on auxiliary contact blocks and accessories, see page 72.

Three-Pole Reversing Contactors with Low-Consumption Coils for DC Control Circuits

Horsepower Ratings for North American Applications							Kilowatt Ratings for International Applications				Type of Connection	Auxiliary Contacts		Catalog Number ♦▼	Weight lb. (kg)
Maximum Horsepower Rating Category AC-3, 50/60 Hz						Max. Inductive Current	Standard power ratings of 3-phase motors, 50/60 Hz in category AC-3			Rated Operational Current, up to 440 V					
1-Phase		3-Phase					220 V 230 V	380 V 415 V	440/500 V 660/690 V						
115/ 120 V	230/ 240 V	200/ 208 V	220/ 240 V	460/ 480 V	575/ 600 V							N.O.	N.C.		
HP	HP	HP	HP	HP	HP	A	kW	kW	kW	A					
0.5	1	1.5	1.5	3	3	6	1.5	2.2	3	6	Screw clamp ▲	1	–	**LP5K0610•••**	1.08 (0.490)
												–	1	**LP5K0601•••**	1.08 (0.490)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	**LP5K06107•••**	1.03 (0.470)
												–	1	**LP5K06017•••**	1.03 (0.470)
											Solder pins for printed circuit board	1	–	**LP5K06105•••**	1.17 (0.530)
												–	1	**LP5K06015•••**	1.17 (0.530)
											Spring terminals	1	–	**LP5K06103•••**	1.08 (0.490)
												–	1	**LP5K06013•••**	1.08 (0.490)
0.5	1.5	2	3	5	5	9	2.2	4	4	9	Screw clamp ▲	1	–	**LP5K0910•••**	1.08 (0.490)
												–	1	**LP5K0901•••**	1.08 (0.490)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	**LP5K09107•••**	1.03 (0.470)
												–	1	**LP5K09017•••**	1.03 (0.470)
											Solder pins for printed circuit board	1	–	**LP5K09105•••**	1.17 (0.530)
												–	1	**LP5K09015•••**	1.17 (0.530)
											Spring terminals	1	–	**LP5K09103•••**	1.08 (0.490)
												–	1	**LP5K09013•••**	1.08 (0.490)
1	2	3	3	7.5	10	12	3	5.5	4 (> 440) 5.5 (440)	12	Screw clamp ▲	1	–	**LP5K1210•••**	1.08 (0.490)
												–	1	**LP5K1201•••**	1.08 (0.490)
											Slip-on 1 x 0.25 in., or 2 x 0.11 in.	1	–	**LP5K12107•••**	1.03 (0.470)
												–	1	**LP5K12017•••**	1.03 (0.470)
											Solder pins for printed circuit board	1	–	**LP5K12105•••**	1.17 (0.530)
												–	1	**LP5K12015•••**	1.17 (0.530)
											Spring terminals	1	–	**LP5K12103•••**	1.08 (0.490)
												–	1	**LP5K12013•••**	1.08 (0.490)

♦ Standard control circuit voltages (variable delivery times, please consult your Local Square D Field Sales Office.).
▲ Pre-wired power circuit connections are standard on screw clamp versions.
▼ Use voltage codes on page 52 “Voltage Code Table” to complete catalog number.

LP5K06105•••

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LP4K090047••

Three- and Four-Pole Contactors with Low-consumption Coils for DC Control Circuits

The table below shows three- and four-pole contactors with low-consumption coils for DC control circuits. They are compatible with programmable controller outputs, and incorporate an LED indicator. For wide-range coils (0.7 to 1.3 Vc), a suppressor (zener diode) is fitted as standard (consumption is 1.8 W).

The contactors mount on 35 mm DIN rails or with 4 mm (# 6) screws. The wire termination screws are in the open, “ready-to-tighten” position. For information on add-on auxiliary contact blocks and accessories, see page 72.

Non-inductive loads Category AC-1 Maximum current at ≤ 50 °C (122 °F)	Type of Connection	Power Poles		Auxiliary Contacts		Catalog Number ♦▼	Weight lb. (kg)
A		N.O.	N.C.	N.O.	N.C.		
20	Screw clamp	3	–	1	–	**LP4K0910•••**	0.52 (0.235)
				–	1	**LP4K0901•••**	0.52 (0.235)
		4	–	–	–	**LP4K09004•••**	0.52 (0.235)
		2	2	–	–	**LP4K09008•••**	0.52 (0.235)
	Slip-on 1 x 0.25 in. or 2 x 0.11 in.	3	–	1	–	**LP4K09107•••**	0.52 (0.235)
				–	1	**LP4K09017•••**	0.52 (0.235)
		4	–	–	–	**LP4K090047•••**	0.52 (0.235)
		2	2	–	–	**LP4K090087•••**	0.52 (0.235)
	Solder pins for printed circuit board	3	–	1	–	**LP4K09105•••**	0.58 (0.265)
				–	1	**LP4K09015•••**	0.58 (0.265)
		4	–	–	–	**LP4K090045•••**	0.58 (0.265)
		2	2	–	–	**LP4K090085•••**	0.58 (0.265)
	Spring terminals	3	–	1	–	**LP4K09103•••**	0.52 (0.235)
				–	1	**LP4K09013•••**	0.52 (0.235)
		4	–	–	–	**LP4K090043•••**	0.52 (0.235)
		2	–	–	–	**LP4K090083•••**	0.52 (0.235)

♦ Standard control circuit voltages (variable delivery times, please consult your Local Square D Field Sales Office.).

▼ Use voltage codes on page 52 “Voltage Code Table” to complete catalog number.

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LP5K0910•••

Three- and Four-Pole Contactors with Low-Consumption Coils for DC Control Circuits

The table below shows three-pole reversing and four-pole change over contactors with low-consumption coils for DC control circuits. They are compatible with programmable controller outputs, and incorporate an LED indicator and mechanical interlock. For wide-range coils (0.7 to 1.3 Vc), a suppressor (zener diode) is fitted as standard (consumption is 1.8 W).

The contactors mount on 35 mm DIN rails or with 4 mm (# 6) screws. The wire termination screws are in the open, "ready-to-tighten" position. Customer wiring is required to connect coil terminations to the electrical interlock; see page 75 for more information.

For information on add-on auxiliary contact blocks and accessories, see page 72.

Non-inductive loads Category AC-1 Maximum current at ≤ 50 °C (122 °F)	**Type of Connection**	**Power Poles**		**Auxiliary Contacts**		**Catalog Number ♦ ▼**	**Weight lb. (kg)**
A		**N.O.**	**N.C.**	**N.O.**	**N.C.**		
20	Screw clamp	3	–	1	–	**LP5K0910••• ■**	1.08 (0.490)
		3	–	–	1	**LP5K0901••• ■**	1.08 (0.490)
		4	–	–	–	**LP5K09004•••**	1.08 (0.490)
	Slip-on 1 x 0.25 in. or 2 x 0.11 in.	3	–	1	–	**LP5K09107•••**	1.03 (0.470)
		3	–	–	1	**LP5K09017•••**	1.03 (0.470)
		4	–	–	–	**LP5K090047•••**	1.17 (0.530)
	Solder pins for printed circuit board	3	–	1	–	**LP5K09105•••**	1.17 (0.530)
		3	–	–	1	**LP5K09015•••**	1.17 (0.530)
		4	–	–	–	**LP5K090045•••**	1.17 (0.530)
	Spring terminals	3	–	1	–	**LP5K09103•••**	1.08 (0.490)
		3	–	–	1	**LP5K09013•••**	1.08 (0.490)
		4	–	–	–	**LP5K090043•••**	1.08 (0.490)

♦ Standard control circuit voltages (variable delivery times, please consult your Local Square D Field Sales Office.).
■ WARNING: These reversing contactors are pre-wired for reverse motor operation
▼ Use voltage codes on page 52 "Voltage Code Table" to complete catalog number.

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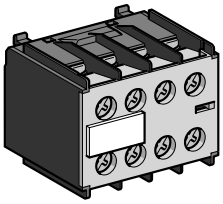
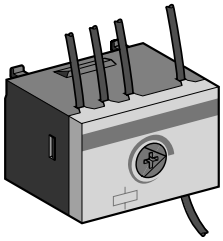


LA1KN••

Instantaneous Auxiliary Contact Blocks (clip-on front mounting, 1 block per contactor)

Type of Connection	Type of Contactor	Auxiliary Contacts N.O.	Auxiliary Contacts N.C.	Catalog Number	Weight lb. (kg)
Screw clamp	3- or 4-pole	2	–	**LA1KN20**	0.10 (0.045)
		–	2	**LA1KN02**	0.10 (0.045)
		1	1	**LA1KN11**	0.10 (0.045)
Slip-on 1 x 0.25 in. or 2 x 0.11 in.	3- or 4-pole	2	–	**LA1KN207**	0.10 (0.045)
		–	2	**LA1KN027**	0.10 (0.045)
		1	1	**LA1KN117**	0.10 (0.045)
Spring terminals	3- or 4-pole	2	–	**LA1KN203**	0.10 (0.045)
		–	2	**LA1KN023**	0.10 (0.045)
		1	1	**LA1KN113**	0.10 (0.045)
With terminal referencing conforming to EN 50012					
Screw clamp ●	3-pole, 6 and 9 A	–	2	**LA1KN02M**	0.10 (0.045)
		1	1	**LA1KN11M**	0.10 (0.045)
	4-pole, 9 A	1	1	**LA1KN11P**	0.10 (0.045)

● See pages 75 and 76 for actual markings.



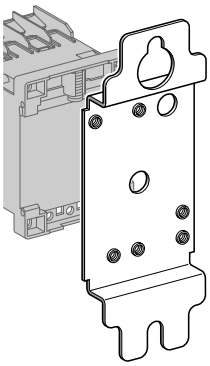
LA2KT2•

Electronic Time-Delay Auxiliary Contact Blocks

– Relay output, with common point changeover contact, AC or DC 240 V, 2 A maximum.
– Control voltage: 0.85 to 1.1 Vc.
– Maximum switching capacity: 250 VA or 150 W.
– Operating temperature: -10 to + 60 °C (14 to 140 °F).
– Reset time: 1.5 s during the time-delay period, 0.5 s after the time delay period.

Clip-on front mounting, 1 block per contactor

Voltage	Type	Timing Range	Auxiliary Contacts	Catalog Number	Weight lb. (kg)
V		**s**	**SPDT**		
AC or DC 24 to 48 (1)	On-delay	1 to 30	1	**LA2KT2E**	0.09 (0.040)

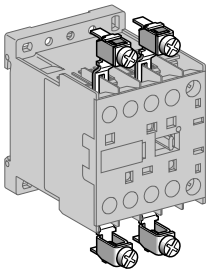


DX1AP25

Mounting and Marking Accessories

Description	Application		Sold in lots of	Unit Catalog No.	Weight lb. (kg)
Mounting plates (order 1 for a contactor; order 2 for a reversing contactor)	For mounting on 1 rail	Clip-on	1	**LA9D973**	0.05 (0.025)
	For mounting on 2 rails	110/120 mm mounting centers	10	**DX1AP25**	0.14 (0.065)
Marker holder	Clip-on	On to front of contactor	100	**LA9D90**	0.002 (0.001)
Clip-in markers	4 maximum per contactor	Strips of 10 identical numbers 0 to 9 ▲	25	**AB1R•** ▲	0.004 (0.002)
		Strips of 10 identical capital letters A to Z ▲	25	**AB1G•** ▲	0.004 (0.002)
35mm " DIN rail (7.5 mm deep x 2 m long)			10	**AM1DP200**	2.88 (1.310)
35mm " DIN rail (15 mm deep x 2 m long)			10	**AM1ED200**	1.44 (0.650)

▲ Complete the catalog number by replacing the • with the required number or character.



LA9E01

Cabling Accessories

Description	Application		Sold in lots of	Unit Catalog No.	Weight lb. (kg)
Paralleling links	For 2-poles	With screw clamp terminals	4	**LA9E01**	0.02 (0.010)
	For 4-poles	With screw clamp terminals	2	**LA9E02**	0.03 (0.015)
Set of 6 power connections	For 3-pole reversing contactors for motor control	For contactors with screw clamp terminals	100	**LA9K0969**	0.02 (0.010)
Set of 4 power connections	For 4-pole changeover contactor pairs	For contactors with screw clamp terminals	100	**LA9K0970**	0.02 (0.010)

(1) Low consumption K-line contactors are DC only.

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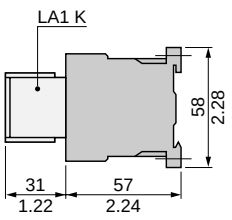
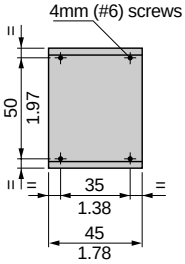
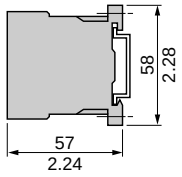
Contactors
LP4K

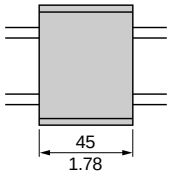
On panel





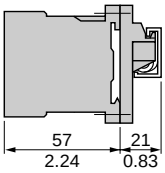
On mounting rail **AM1DP200** or **AM1DE200** 1.4 in. (35 mm) DIN rail

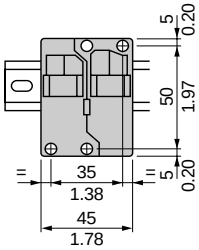




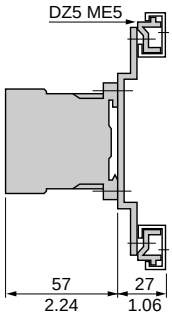
On one asymmetrical rail **DZ5MB** with clip-on mounting plate

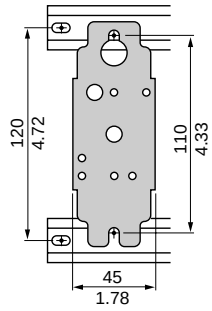
LA9D973



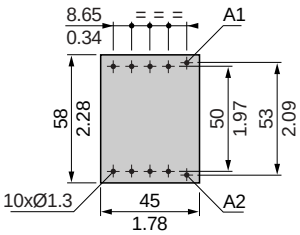


DX1AP25



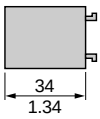


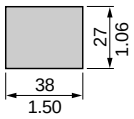
On printed circuit board



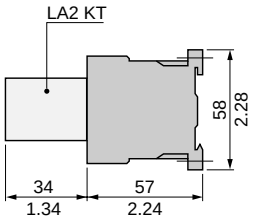
Electronic time-delay auxiliary contact blocks

LA2KT





On contactor



Dimensions **inches**
mm

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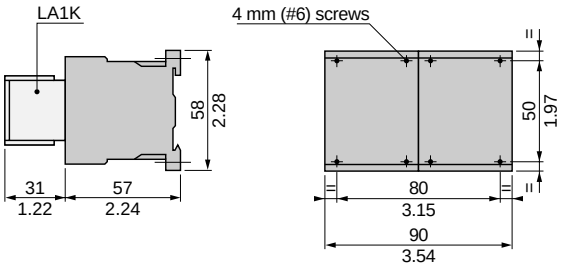
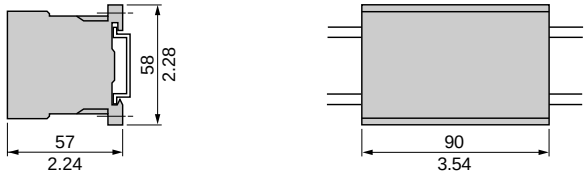
Reversing contactors LP5K

On panel

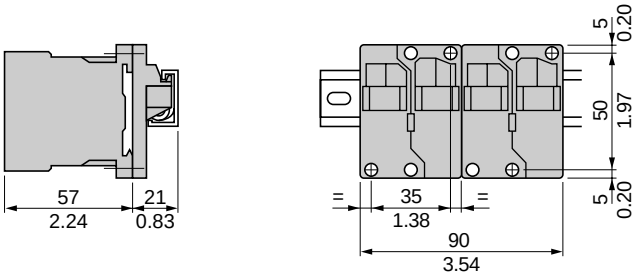


On mounting rail **AM1DP200** or **AM1DE200** 1.4 in. (35 mm) DIN rail

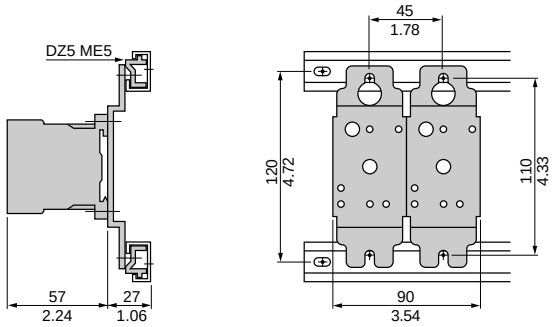


On one asymmetrical rail **DZ5MB** with 2 clip-on mounting plates **LA9D973** or on 2 mounting plates **DX1AP25**.

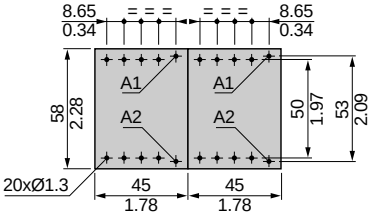
2 x LA9D973



2 x DX1AP25



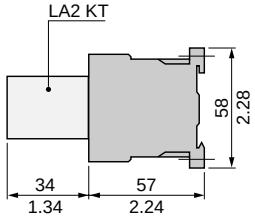
On printed circuit board for reversing contactors or 2 contactors mounted side by side



Electronic time-delay auxiliary contact blocks

LA2KT

On reversing contactors



Dimensions inches / mm

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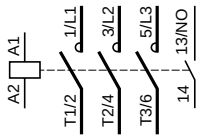
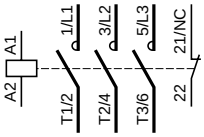
Type LP•K Three-Pole Low-Consumption Contactors, Reversing Contactors, and Accessories

3-pole contactors
LP4K

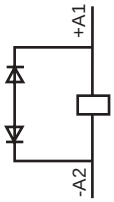
3-pole + N.O.



3-pole + N.C.



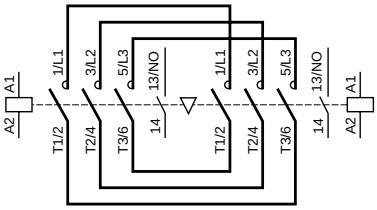
Integrated-coil suppression device
LP4K



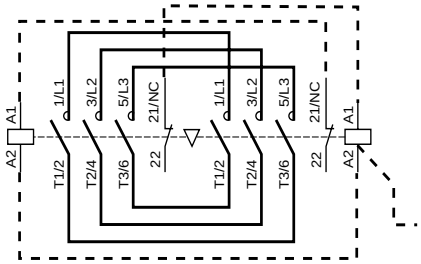
3-pole reversing contactors
LP5K
With screw clamp terminals

Dashed lines indicate suggested customer wiring to electrically interlock coils

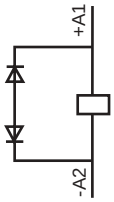
3-pole + N.O.



3-pole + N.C.

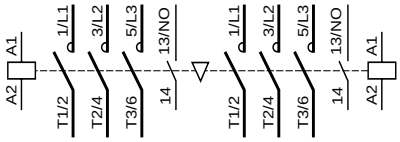


Integrated-coil suppression device
LC5K

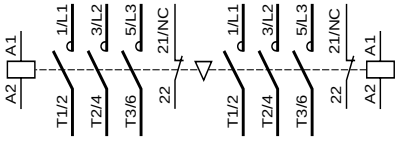


With Slip-on connectors or solder pins for printed circuit boards

3-pole + N.O.



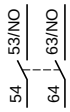
3-pole + N.O.



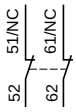
Instantaneous auxiliary contact blocks
LA1K

For 3-pole contactors

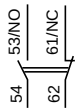
2 N.O.
LA1KN20
LA1KN207



2 N.C.
LA1KN02
LA1KN027

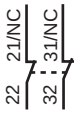


1 N.O. + 1 N.C.
LA1KN11
LA1KN117



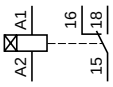
Terminal referencing conforming to standard EN 50012

2 N.C.
LA1KN02



1 N.O. + 1 N.C.
LA1KN11M

Electronic Time-delay Auxiliary Contact Blocks
LA2KT
For 3-pole contactors **LP•K**
1 C/O



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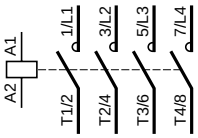
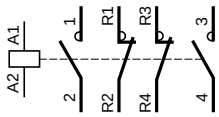
Type LP•K Four-Pole Low-Consumption Contactors, Reversing Contactors, and Accessories

4-pole contactors
LP4K

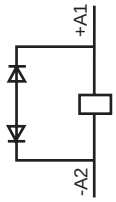
4-pole + N.O.



2-pole N.O. + 2-pole N.C.

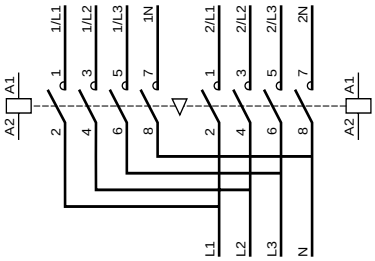


Integrated-coil suppression device
LP4K

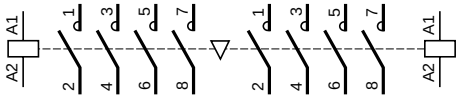


4-pole reversing contactors
LP5K

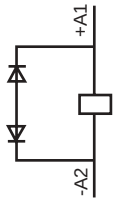
With screw clamp terminals



With slip-on terminals or solder pins for printed circuits boards

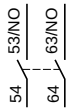


Integrated-coil suppression device
LP5K

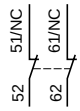


Instantaneous auxiliary contact blocks
LA1K

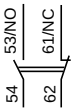
2 N.O.
LA1KN20
LA1KN207



2 N.C.
LA1KN02
LA1KN027

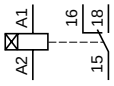


1 N.O. + 1 N.C.
LA1KN11
LA1KN117



Terminal referencing conforming to standard EN 50012
1 N.O. + 1 N.C.
LA1KN11P

Electronic Time-delay Auxiliary Contact Blocks
LA2KT
For 3-pole contactors **LP•K**
1 C/O



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TeSys™ D-Line
Contactors, Enclosed Starters, Overload Relays, and Accessories

Catalog

04

File 8502

CONTENTS

a brand of Schneider Electric

Telemecanique

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The D-line contactors and overload relays are the largest selling line of contactors and starters in the world. They offer high reliability with long mechanical and electrical life and the most complete line of accessories in the industry.

Contactor Ratings

- D-line contactors and overload relays are available in 11 contactor ratings for the USA market for inductive motor applications up to 150 full-load amps and resistive loads up to 200 A. They offer motor control and overload protection for motors rated up to 100 hp at 480 Vac or 125 hp at 600 Vac.
- 3-pole and 4-pole contactor versions available.
- All contactors include built-in auxiliary contacts.
- All screw connections have IP20 rated touch-safe terminals with both North American and International terminal markings.
- D-line contactors can be panel mounted with screws or DIN rail mounted.

Easily Installed Accessories

- Auxiliary contact blocks with serrated wiping action
- Front mount dust tight auxiliary contact blocks
- Pneumatic time delay blocks
- Transient voltage surge suppressors
- Interface modules and electronic timers
- Mechanical latching blocks

Control Circuit Flexibility

The D-line contactors are available with ac or dc operating coils. Several devices utilize a low-consumption dc coil with built-in transient suppression for operation with a low-level dc signal from a computer or PLC without need for an interposing relay.

Overload Relays

Class 10 or Class 20 bimetallic overload relays are available up to 140 A. They are bimetallic ambient compensated and are available with or without single-phase sensitivity for phase unbalance and phase loss protection. New solid state overload relays are available for 90 to 150 A applications. Both bimetallic and solid-state overload relays include the following features:

- Isolated N.C. trip contact and N.O. alarm contacts.
- Manual or Automatic reset function (bi-metallic versions only).
- Tamper-resistant window for FLA settings.
- Test trip button.

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Environment

Type				LC1D09	LC1D12	LC1D18	LC1D25
				LC1DT20	LC1DT25	LC1DT32	LC1DT40
Rated insulation voltage (Vi)	UL/CSA		V	690	690	690	690
	To IEC 60947-4-1, overvoltage category III, degree of pollution: 3		V	1000	1000	1000	1000
	Conforming to UL, CSA		V	600	600	600	600
Rated impulse withstand voltage (Vimp)	Conforming to IEC 60947		kV	6	6	6	6
Conforming to standards	CE Meets the essential requirements of the LV & EMC directives			IEC 60947-1, 60947-4-1, NFC 63-110, VDE 0660, BS 5424, JEM 1038., EN 60947-1, EN 60947-4-1.			
Approvals	UL E164862 CCN NLDX	CSA LR43364 Class 3211 04		ASE, UL, CSA, DEMKO, NEMKO, SEMKO, FI, Conforming to SNCF, Sichere Trennung recommendations			
Degree of protection ♦	Conforming to VDE 0106	Power connections		Protection against direct finger contact IP 2X			
		Coil connections		Protection against direct finger contact IP 2X			
Protective treatment	Conforming to IEC 60068			"TH"			
Ambient air temperature around the device	Storage			- 60 to + 80 °C (-76 to +176 °F)			
	Operation at 80 to 110% nominal control voltage			- 5 to + 60 °C (+23 to +140 °F)			
	Permissible at nominal control voltage			- 40 to + 70 °C (-40 to +158 °F)			
Maximum operating altitude	Without derating			3000m (8900 ft.)			
Operating positions	Without derating			± 30° possible, in relation to normal vertical mounting plane			
Flame resistance	Conforming to UL 94			V 1	V1	V1	V1
	Conforming to IEC 60695-2-1			960°	960°	960°	960°
Shock resistance ▲ 1/2 sine wave = 11ms	Contactor open			10 g	10 g	10 g	8 g
	Contactor closed			15 g	15 g	15 g	15 g
Vibration resistance ▲ 5 to 300 Hz	Contactor open			2 g	2 g	2 g	2 g
	Contactor closed			4 g	4 g	4 g	4 g
Pole characteristics							
Number of poles				3	3 or 4	3	3 or 4
Rated operational current (Ie)	In ac-3, θ ≤ 55°C (131°F)		A	9	12	18	25
	In ac-1, θ ≤ 40°C (104°F)		A	25	25	32	40
Rated operational voltage (Ve)	Up to		V	690	690	690	690
Frequency limits	Of the operational current		Hz	25 to 400	25 to 400	25 to 400	25 to 400
Rated thermal current (Ith)	θ ≤ 40°C (104°F)		A	25	25	32	40
Rated making capacity (1 rms)	Conforming to IEC 60947-4		A	250	250	300	450
Rated breaking capacity (1 rms)	Conforming to IEC 60947	220-380-415-440 V	A	250	250	300	450
		500 V		175	175	250	400
		690 V		85	85	120	180
Permissible short time rating from cold state, no current flowing for previous 15 minutes, at θ ≤ 40 °C (104 °F)	For 1 s		A	210	210	240	380
	For 10 s		A	105	105	145	240
	For 1 min		A	61	61	84	120
	For 10 min		A	30	30	40	50
Short-circuit protection	By circuit breaker			Select circuit breaker in accordance with NEC and local codes			
	By fuses			Maximum 400% of motor full load Amps			
Average impedance per pole	A Ith and 50 Hz		mΩ	2.5	2.5	2.5	2
Power dissipation per pole for the above operational currents	AC-3		W	0.20	0.36	0.8	1.25
	AC-1		W	1.56	1.56	2.5	3.2

♦ Protection provided for the cable c.s.a. indicated on page 86 and for cable connections.

▲ In the least favorable direction, without change of contact state (coil supplied at Ve).

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Environment

Type				LC1D32	LC1D38	LC1D40	LC1D50	LC1D65	LC1D80	LC1D95	LC1D115	LC1D150
						LP1D40	LP1D50	LP1D65	LP1D80			
Rated insulation voltage (Vi)	UL/CSA		V	690	690	690	690	690	690	690	690	690
	To IEC 60947-4-1, overvoltage category III, degree of pollution: 3		V	1000	1000	1000	1000	1000	1000	1000	1000	1000
	Conforming to UL, CSA		V	600	600	600	600	600	600	600	600	600
Rated impulse withstand voltage (Vimp)	Conforming to IEC 60947		kV	6	6	8	8	8	8	8	8	8
Conforming to standards	CE Meets the essential requirements of the LV & EMC directives			IEC 60947-1, 60947-4-1, NFC 63-110, VDE 0660, BS 5424, JEM 1038., EN 60947-1, EN 60947-4-1.								
Approvals	UL E164862 CCN NLDX	CSA LR43364 Class 3211 04		ASE, UL, CSA, DEMKO, NEMKO, SEMKO, FI, Conforming to SNCF, Sichere Trennung recommendations	-	UL 508, CSA C22.2 No.14						
Degree of protection ♦	Conforming to VDE 0106	Power connections		Protection against direct finger contact IP 2X								
		Coil connections		Protection against direct finger contact IP 2X except LP1D40 to LP1D80								
Protective treatment	Conforming to IEC 60068			"TH"								
Ambient air temperature around the device	Storage			- 60 to + 80 °C (-76 to +176 °F)								
	Operation at 80 to 110% nominal control voltage			- 5 to + 55 °C (+23 to +131 °F)								
	Permissible at nominal control voltage			- 40 to + 70 °C (-40 to +158 °F)								
Maximum operating altitude	Without derating			3000m (8900 ft.)								
Operating positions	Without derating			± 30° possible, in relation to normal vertical mounting plane								
Flame resistance	Conforming to UL 94			V 1	V 1	V 1	V 1	V 1	V 1	V 1	V 1	V 1
	Conforming to IEC 60695-2-1			960°	960°	960°	960°	960°	960°	960°	960°	960°
Shock resistance ▲ 1/2 sine wave = 11ms	Contactor open			8 g	8 g	8 g	8 g	8 g	8 g	8 g	6 g	6 g
	Contactor closed			15 g	10 g	10 g	10 g	10 g	10 g	10 g	15 g	15 g
Vibration resistance ▲ 5 to 300 Hz	Contactor open			2 g	2 g	2 g	2 g	2 g	2 g	2 g	2 g	2 g
	Contactor closed			4 g	4 g	3 g	3 g	3 g	3 g	3 g	4 g	4 g
Pole characteristics												
Number of poles				3	3	3 or 4	3	3 or 4	3 or 4	3	3 or 4	3
Rated operational current (Ie)	In ac-3, θ ≤ 55°C (131°F)		A	32	38	40	50	65	80	95	115	150
	In ac-1, θ ≤ 40°C (104°F)		A	50	50	60	80	80	125	125	200	200
Rated operational voltage (Ve)	Up to		V	690	690	1000	1000	1000	1000	1000	1000	1000
Frequency limits	Of the operational current		Hz	25 to 400	25 to 400	25 to 400	25 to 400	25 to 400	25 to 400	25 to 400	25 to 400	25 to 400
Rated thermal current (Ith)	θ ≤ 40°C (104°F)		A	50	50	60	80	80	125	125	200	200
Rated making capacity (1 rms)	Conforming to IEC 60947-4		A	550	–	800	900	1000	1100	–	–	–
Rated breaking capacity (1 rms)	Conforming to IEC 60947	220-380-415-440 V	A	550	–	800	900	1000	1100	–	–	–
		500 V		450	–	800	900	1000	1100	–	–	–
		690 V		180	–	400	400	630	640	–	–	–
Permissible short time rating from cold state, no current flowing for previous 15 minutes, at θ ≤ 40 °C (104 °F)	For 1 s		A	430	430	720	810	900	990	1100	1100	1400
	For 10 s		A	260	310	320	400	520	640	800	950	1200
	For 1 min		A	138	150	165	208	260	320	400	550	580
	For 10 min		A	60	60	72	84	110	135	135	250	250
Short-circuit protection	By circuit breaker			Select circuit breaker in accordance with NEC and local codes								
	By fuses			Maximum 400% of motor full load Amps								
Average impedance per pole	A Ith and 50 Hz		mΩ	2	2	1.5	1.5	1	0.8	0.8	0.6	0.6
Power dissipation per pole for the above operational currents	AC-3		W	2	2	2.4	3.7	4.2	5.1	7.2	7.9	13.5
	AC-1		W	5	5	5.4	9.6	6.4	12.5	12.5	24	24

♦ Protection provided for the cable c.s.a. indicated on page 86 and for cable connections.
▲ In the least favorable direction, without change of contact state (coil supplied at Ve).

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Control Circuit Characteristics

Type					LC1D09 LC1DT20	LC1D12 LC1DT25	LC1D18 LC1DT32	LC1D25 LC1DT40	LC1D32	LC1D38
Rated control circuit voltage (Vc)		50 or 60 Hz		V	21 to 660				21 to 660	
Control voltage limits (θ ≤ 55 °C [131 °F])	50 or 60 Hz coils	Operational			0.8 to 1.1 Vac				0.8 to 1.1 Vac	
		Drop-out			0.3 to 0.6 Vac				0.3 to 0.6 Vac	
	50/60 Hz coils	Operational			0.85 to 1.1 Vac at 60 Hz				0.85 to 1.1 Vac at 60 Hz	
		Drop-out			0.3 to 0.6 Vac				0.3 to 0.6 Vac	
Average consumption at 20 °C (68 °F) and at Vc	50 Hz ac	Inrush	50 Hz coil	VA	–	–	–	–	–	–
			Cos φ		0.75	0.75	0.75	0.75	0.75	0.75
			50/60 Hz coil	VA	70	70	70	70	70	70
		Sealed	50 Hz coil	VA	–	–	–	–	–	–
			Cos φ		0.3	0.3	0.3	0.3	0.3	0.3
			50/60 Hz coil	VA	7	7	7	7	7	7
	60 Hz ac	Inrush	60 Hz coil	VA	–	–	–	–	–	–
			Cos φ		0.75	0.75	0.75	0.75	0.75	0.75
			50/60 Hz coil	VA	70	70	70	100	70	70
		Sealed	60 Hz coil	VA	–	–	–	–	–	–
			Cos φ		0.3	0.3	0.3	0.3	0.3	0.3
			50/60 Hz coil	VA	7.5	7.5	7.5	7.5	7.5	7.5
Heat dissipation	50/60 Hz			W	2 to 3	2 to 3	2 to 3	2.5 to 3.5	2 to 3	2 to 3
Operating time	Closing “C” ■			ms	12 to 22	12 to 22	12 to 22	15 to 24	12 to 22	12 to 22
	Opening “O” ▲			ms	4 to 19	4 to 19	4 to 19	5 to 19	4 to 19	4 to 19
Mechanical durability in millions of operating cycles	50 or 60 Hz coil				–	–	–	–	–	–
	50/60 Hz coil at 50 Hz				15	15	15	15	15	15
Maximum operating rate at ambient temperature ≤ 55 °C (131 °F)	In operating cycles per hour				3600	3600	3600	3600	3600	3600

■ The closing time “C” is measured from the moment the coil supply is switched on to initial contact of the main poles.

▲ The opening time “O” is measured from the moment the coil supply is switched off to the moment the mains poles separate.

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Control Circuit Characteristics

Type					LC1D40	LC1D50	LC1D65	LC1D80	LC1D95	LC1D115	LC1D150
Rated control circuit voltage (Vc)		50 or 60 Hz		V	24 to 660					24 to 500	
Control voltage limits (θ ≤ 55 °C [131 °F])	50 or 60 Hz coils	Operational			0.85 to 1.1 Vac						–
		Drop-out			0.3 to 0.6 Vac					0.3 to 0.5 Vc	–
	50/60 Hz coils	Operational			0.85 to 1.1 Vac at 60 Hz				0.8 to 1.15 Vac at 50/60 Hz		
		Drop-out			0.3 to 0.6 Vac					0.3 to 0.5 Vac	
Average consumption at 20 °C (68 °F) and at Vc	50 Hz ac	Inrush	50 Hz coil	VA	200	200	200	200	200	300	–
			Cos φ		0.75	0.75	0.75	0.75	0.75	0.8	0.9
			50/60 Hz coil	VA	245	245	245	245	245	280-350	280-350
		Sealed	50 Hz coil	VA	20	20	20	20	20	22	–
			Cos φ		0.3	0.3	0.3	0.3	0.3	0.3	0.9
			50/60 Hz coil	VA	26	26	26	26	26	2 to 18	2 to 18
	60 Hz ac	Inrush	60 Hz coil	VA	220	220	220	220	220	300	–
			Cos φ		0.75	0.75	0.75	0.75	0.75	0.8	0.9
			50/60 Hz coil	VA	245	245	245	245	245	280-350	280-350
		Sealed	60 Hz coil	VA	22	22	22	22	22	22	–
			Cos φ		0.3	0.3	0.3	0.3	0.3	0.3	0.9
			50/60 Hz coil	VA	26	26	26	26	26	6	6
Heat dissipation	50/60 Hz			W	6 to 10	6 to 10	6 to 10	6 to 10	6 to 10	2 to 18	2 to 18
Operating time	Closing “C” ■			ms	20 to 26	20 to 26	20 to 26	20 to 35	20 to 35	20 to 50	20 to 35
	Opening “O” ▲			ms	8 to 12	8 to 12	8 to 12	6 to 20	6 to 20	6 to 20	40 to 75
Mechanical durability in millions of operating cycles	50 or 60 Hz coil				16	16	16	10	10	8	–
	50/60 Hz coil at 50 Hz				6	6	6	4	4	8	8
Maximum operating rate at ambient temperature ≤ 55 °C (131 °F)	In operating cycles per hour				3600	3600	3600	3600	3600	2400	1200

■ The closing time “C” is measured from the moment the coil supply is switched on to initial contact of the main poles.

▲ The opening time “O” is measured from the moment the coil supply is switched off to the moment the mains poles separate.

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DC Control Circuit Characteristics

Type of contactor				LC1 D09 to D38 DT20 to DT40	LP1 D12 and D25	LC1 or LP1 D40 to D65	LC1 or LP1D80	LC1D115 & LC1D150
Rated control circuit voltage (Uc)	dc		V	12 to 440		12 to 440		24 to 440
Rated insulation voltage	Conforming to IEC 60947-1		V	690				
	Conforming to UL, CSA		V	600				
Control voltage limits	Operational	Standard coil		0.7 to 1.25 Uc at 60 °C (140 °F)	0.8 to 1.1 Uc @ 55 °C (131 °F)	0.85 to 1.1 Uc at 55 °C (131 °F)		0.75 to 1.2 Uc at 55 °C (131 °F)
		Wide range coil		–	0.7 to 1.25 Uc @ 55 °C (131 °F)	0.75 to 1.2 Uc at 55 °C (131 °F)		–
	Drop-out			0.1 to 0.25 Uc at 60 °C (140 °F)		0.1 to 0.3 Uc at 55 °C (131 °F)		0.15 to 0.4 Uc at 55 °C (131 °F)
Average consumption at 20 °C (68 ° F) and at Uc	dc	Inrush	W	5.4	9/11	22	22	270 to 365
		Sealed	W	5.4	9/11	22	22	2.4 to 5.1
Average operating time at Uc (1)	Closing	"C"	ms	55	52 - 64	85 to 110	95 to 130	20 to 35
	Opening	"O"	ms	20	8 - 14	20 to 35	20 to 35	40 to 75
	Note: The arcing time depends on the circuit switched by the poles. For normal three-phase applications, the arcing time is usually less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.							
Time constant (L/R)			ms	28	42	65	75	25
Mechanical life at Uc	In millions of operating cycles			30	30	20	20	8
Maximum operating rate at ambient temperature ≤ 60 °C (140 °F)	In operating cycles per hour			3600	3600	3600	3600	1200

Low Consumption Control Circuit Characteristics

Rated insulation voltage	Conforming to IEC 60947-1		V	690
	Conforming to UL, CSA		V	600
Maximum voltage	Of the control circuit on dc			250
Average consumption dc at 20 °C and at Uc	Wide range coil (0.7 to 1.25 Uc)	Inrush	W	2.4
		Sealed	W	2.4
Operating time (1) at Uc and at 20 °C (68 ° F)	Closing	"C"	ms	70
	Opening	"O"	ms	25
Voltage limits θ ≤ 60 °C (140 °F) of the control circuit	Operational			0.7 to 1.25 Uc
	Drop-out			0.1 to 0.3 Uc
Time constant (L/R)			ms	40
Mechanical life	In millions of operating cycles			30
Maximum operating rate	At ambient temperature ≤ 60 °C (140 °F)		ops/h	3600
Rated insulation voltage	Conforming to UL, CSA		V	600
	Conforming to IEC 60947-1		V	690

(1) Operating times depend on the type of contactor electromagnet and its control mode.
The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.

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Contactor Integral Auxiliary Contact Characteristics

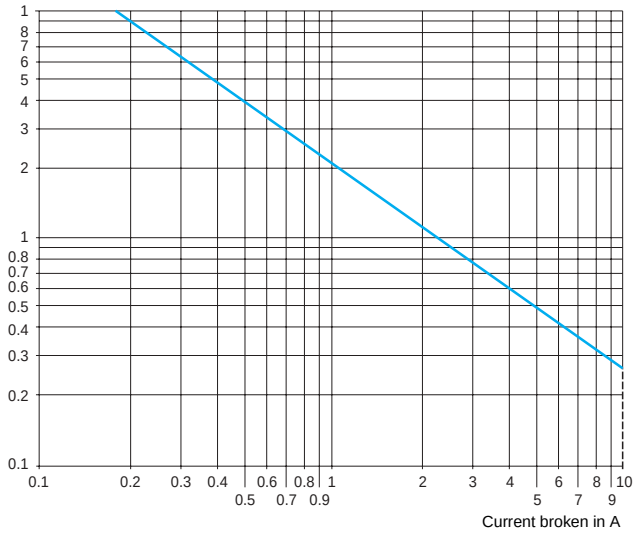
Linked contacts conforming to draft standard IEC 60947-4-5	Each contactor has two N.O. and N.C. contacts mechanically linked on the same movable contact holder.			
Mirror contact	The N.C. contact on each contactor represents the state of the power contacts and can be connected to a PREVENTA safety module			
Rated operational voltage (Ue)	Up to		**V**	690
Rated insulation voltage (Ui)	Conforming to IEC 60947-1		**V**	690
	Conforming to UL, CSA		**V**	600
Conventional thermal current (Ith)	For ambient temperature ≤ 60 °C (140 °F)		**A**	10
Operating current frequency			**Hz**	25 to 400
Minimum switching capacity	U min.		**V**	17
	I min.		**mA**	5
Short-circuit protection ●	Conforming to IEC 60947-5-1			gG fuse: 10 A
Rated making capacity	Conforming to IEC 60947-5-1, I rms		**A**	ac: 140; dc: 250
Short-time rating	Permissible for	1 s	**A**	100
		500 ms	**A**	120
		100 ms	**A**	140
Insulation resistance			**MΩ**	> 10
Non-overlap time	Guaranteed between N.C. and N.O. contacts		**ms**	1.5 on energizing and on de-energizing

● Select short circuit protection to meet the National Electrocal Code or other local codes and standards.

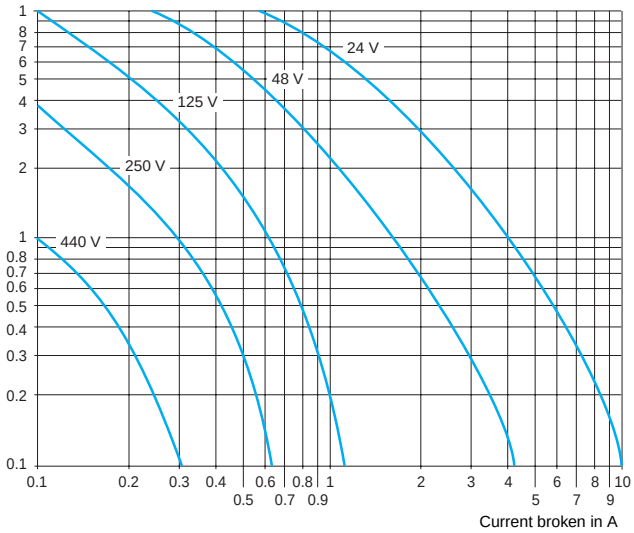
	ac supply categories AC-14 and AC-15	**dc supply category DC-13**
Contact operating power conforming to IEC 60947-5-1	Electrical life (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making power (cos φ 0.7) = 10 times the power broken (cos φ 0.4).	Electrical life (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

	V	**24**	**48**	**115**	**230**	**400**	**440**	**600**	**V**	**24**	**48**	**125**	**250**	**440**
1 million operating cycles	**VA**	60	120	280	560	960	1050	1440	**W**	96	76	76	76	44
3 million operating cycles	**VA**	16	32	80	160	280	300	420	**W**	48	38	38	32	–
10 million operating cycles	**VA**	4	8	20	40	70	80	100	**W**	14	12	12	–	–

AC-15



DC-13



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TeSys™ D-Line Contactors and Starters
Characteristics of Type LC•D and LP•D Contactors

Power Circuit Connections

Type					LC1 D09, D12 DT20, DT25	LC1D18 LC1DT32	LC1D25 LC1DT40	LC1D32	LC1D38	LC1D40 LP1D40	LC1D50 LP1D50
Cabling (for screw clamp terminals)		Connector type			**Screw clamp terminals**						**Box lug terminals**
	Stranded cable without cable end	1 conductor	AWG		18-10	18-8	18-8	14-6	–	10-3	10-3
		2 conductors	AWG		18-10	18-8	18-8	14-6	–	10-4	10-4
		1 conductor	mm^2		1/4	1.5/6	1.5/10	2.5/10	2.5/10	2.5/25	2.5/25
		2 conductors	mm^2		1/4	1.5/6	1.5/6	2.5/10	2.5/10	2.5/16	2.5/16
	Stranded cable with cable end	1 conductor	AWG		18-10	18-3	18-3	18-3/0	–	10-4	10-4
		2 conductors	AWG		18-10	18-10	18-10	14-2	–	12-2	12-2
		1 conductor	mm^2		1/4	1/6	1/6	1/10	1/10	2.5/25	2.5/25
		2 conductors	mm^2		1/2.5	1/4	1/4	1.5/6	1.5/6	2.5/10	2.5/10
	Solid cable without cable end	1 conductor	AWG		18-8	18-8	18-8	14-8	–	10-3	10-3
		2 conductors	AWG		18-8	18-8	18-8	10-8	–	10-6	10-6
		1 conductor	mm^2		1/4	1.5/6	1.5/6	1.5/10	1.5/10	2.5/25	2.5/25
		2 conductors	mm^2		1/4	1.5/6	1.5/6	2.5/10	2.5/10	2.5/16	2.5/16
	Phillips head type				N° 2	N° 2	N° 2	N° 2	N° 2	–	–
	Screwdriver Ø				Ø 6	Ø 6	Ø 6	Ø 6	Ø 6	Ø 6 to Ø 8	Ø 6 to Ø 8
	Hexagon spanner				–	–	–	–	–	4 mm	4 mm
	Tightening torque				15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	23 lb.-in. 2.5 N•m	23 lb.-in. 2.5 N•m	23 lb.-in. 2.5 N•m	45 lb.-in. 5 N•m	45 lb.-in. 5 N•m
Bus bar connection (for bus bar or ring-tongue terminals)					**Connection by bus bar or ring-tongue terminals**						
	Bar c.s.a.				–	–	–	–	–	–	–
	Lug external Ø			mm	8	8	10	10	10	13	16
	Screw Ø			mm	M3.5	M3.5	M4	M4	M4	M5	M6
	Phillips head type				N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 3
	Screwdriver Ø				Ø 6	Ø 6	Ø 6	3/16 in. Ø 6 mm	3/16 in. Ø 6 mm	Ø 8 mm	Ø 8 mm
	Hexagon spanner				–	–	–	–	–	–	–
	Tightening torque				15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	20 lb.-in. 7.5 N•m	20 lb.-in. 7.5 N•m	53 lb.-in. 6 N•m	71 lb.-in. 6 N•m
Flexible cabling (for spring terminals)					**Spring terminals**						
	Flexible cable without cable end	1 conductor	AWG		14	12	12	12	12	–	–
		2 conductors	AWG		14	12	12	12	12	–	–
		1 conductor	mm^2		2.5	4	4	4	4	–	–
		2 conductors	mm^2		2.5	4	4	4	4	–	–

Control Circuit Connections

Type				LC1 D09, D12 DT20, DT25	LC1D18 LC1DT32	LC1D25 LC1DT40	LC1D32	LC1D38	LC1D40 LP1D40	LC1D50 LP1D50
Connection by cable										
Screw clamp terminals										
Cabling	Stranded cable without cable end	1 conductor	AWG (mm^2)	18 - 10 (1/4)	18 - 10 (1/4)	18 - 10 (1/4)	1/4	18 - 10 (1/4)	18 - 10 (1/4)	18 - 10 (1/4)
		2 conductors	AWG (mm^2)	18 - 10 (1/4)	18 - 10 (1/4)	18 - 10 (1/4)	1/4	18 - 10 (1/4)	18 - 10 (1/4)	18 - 10 (1/4)
	Stranded cable with cable end	1 conductor	AWG (mm^2)	18 - 10 (1/4)	18 - 10 (1/4)	18 - 10 (1/4)	1/4	18 - 10 (1/4)	18 - 10 (1/4)	18 - 10 (1/4)
		2 conductors	AWG (mm^2)	18 - 12 (1/2.5)	18 - 12 (1/2.5)	18 - 12 (1/2.5)	18 - 12 (1/2.5)	18 - 12 (1/2.5)	18 - 12 (1/2.5)	18 - 12 (1/2.5)
	Solid cable without cable end	1 conductor	AWG (mm^2)	18 - 10 (1/4)	18 - 10 (1/4)	18 - 10 (1/4)	1/4	18 - 10 (1/4)	18 - 10 (1/4)	18 - 10 (1/4)
		2 conductors	AWG (mm^2)	18 - 10 (1/4)	18 - 10 (1/4)	18 - 10 (1/4)	1/4	18 - 10 (1/4)	18 - 10 (1/4)	18 - 10 (1/4)
Phillips head type				N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 2
Screwdriver Ø			mm	Ø 6	Ø 6	Ø 6	Ø 6	Ø 6	Ø 6	Ø 6
Tightening torque				15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	17 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m
Connection by bus bar or ring-tongue terminals										
Lug external Ø			mm	8	8	8	8	8	8	8
Screw Ø			mm	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5
Phillips head type				N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 2
Screwdriver Ø				3/16 in. Ø 6	3/16 in. Ø 6	3/16 in. Ø 6	3/16 in. Ø 6	3/16 in. Ø 6	3/16 in. Ø 6	3/16 in. Ø 6
Tightening torque				15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m

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Power Circuit Connections

Type				LC1D65 LP1D65	LC1D80 LP1D80	LC1D95	LC1D115	LC1D150
Cabling (for screw clamp terminals)		Connector type		**Box lug terminals**			**LA9D11560• terminals**	
	Stranded cable without cable end	1 conductor	AWG	10-3	10-2	–	8-250 mcm	8-250 mcm
		2 conductors	AWG	10-4	10-4	–	8-1+8-250 mcm ▲	8-1+8-250 mcm ▲
		1 conductor	mm^2	2.5/25	4/50	4/50	10/120	10/120
		2 conductors	mm^2	2.5/16	4/25	4/25	10/120+ 10/50 ▲	10/120+ 10/50 ▲
	Stranded cable with cable end	1 conductor	AWG	10-4	10-4	–	–	–
		2 conductors	AWG	12-2	12-2	–	–	–
		1 conductor	mm^2	2.5/25	4/50	4/50	10/120	10/120
		2 conductors	mm^2	2.5/10	4/16	4/16	10/120+ 10/50 ▲	10/120+ 10/50 ▲
	Solid cable without cable end	1 conductor	AWG	10-3	10-3	–	8-250 mcm	8-250 mcm
		2 conductors	AWG	10-6	10-2	–	8-0+ 8-250mcm ▲	8-0+8-250 mcm ▲
		1 conductor	mm^2	2.5/25	4/50	4/50	10/120	10/120
		2 conductors	mm^2	2.5/16	4/25	4/25	10/120+ 10/50 ▲	10/120+ 10/50 ▲
	Phillips head type			–	–	–	–	–
	Screwdriver Ø			Ø 6 to Ø 8	Ø 6 to Ø 8	Ø 6 to Ø 8	–	–
	Hexagon spanner			4 mm	4 mm	4 mm	4 mm	4 mm
	Tightening torque			45 lb.-in. 5 N•m	100 lb.-in. 11.3 N•m	100 lb.-in. 11.3 N•m	100 lb.-in. 11.3 N•m	100 lb.-in. 11.3 N•m
Bus bar connection (for bus bar or ring-tongue terminals)				**Connection by bus bar or ring-tongue terminals**				
	Bar c.s.a.			–	3 x 16	3 x 16	5 x 25	5 x 25
	Lug external Ø		mm	16	17	17	25	25
	Screw Ø		mm	M6	M6	M6	M8	M8
	Phillips head type			N° 3	–	–	–	–
	Screwdriver Ø			Ø 8 mm	Ø 8 mm	Ø 8 mm	–	–
	Hexagon spanner			–	10 mm	10 mm	13 mm	13 mm
	Tightening torque			71 lb.-in. 6 N•m	71 lb.-in. 8 N•m	71 lb.-in. 8 N•m	124 lb.-in. 14 N•m	124 lb.-in. 14 N•m
Flexible cabling (for spring terminals)				**Spring terminals**				
	Flexible cable without cable end	1 conductor	AWG	–	–	–	–	–
		2 conductors	AWG	–	–	–	–	–
		1 conductor	mm^2	–	–	–	–	–
		2 conductors	mm^2	–	–	–	–	–

▲ One of each size range.

Control Circuit Connections

Type				LC1D65 LP1D65	LC1D80 LP1D80	LC1D95	LC1D115	LC1D150
Connection by cable								
Screw clamp terminals								
Cabling	Stranded cable without cable end	1 conductor	AWG (mm^2)	18 - 10 (1/4)	18 - 10 (1/4)	18 - 10 (1/4)	18 - 12 (1/2.5)	18 - 12 (1/2.5)
		2 conductors	AWG (mm^2)	18 - 10 (1/4)	18 - 10 (1/4)	18 - 10 (1/4)	18 - 12 (1/2.5)	18 - 12 (1/2.5)
	Stranded cable with cable end	1 conductor	AWG (mm^2)	18 - 10 (1/4)	18 - 10 (1/4)	18 - 10 (1/4)	18 - 12 (1/2.5)	18 - 12 (1/2.5)
		2 conductors	AWG (mm^2)	18 - 12 (1/2.5)	18 - 12 (1/2.5)	18 - 12 (1/2.5)	18 - 12 (1/2.5)	18 - 12 (1/2.5)
	Solid cable without cable end	1 conductor	AWG (mm^2)	18 - 10 (1/4)	18 - 10 (1/4)	18 - 10 (1/4)	18 - 12 (1/2.5)	18 - 12 (1/2.5)
		2 conductors	AWG (mm^2)	18 - 10 (1/4)	18 - 10 (1/4)	18 - 10 (1/4)	18 - 12 (1/2.5)	18 - 12 (1/2.5)
Phillips head type				N° 2	N° 2	N° 2	N° 2	N° 2
Screwdriver Ø			mm	Ø 6	Ø 6	Ø 6	Ø 6	Ø 6
Tightening torque				15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m
Connection by bus bar or ring-tongue terminals								
Lug external Ø			mm	8	8	8	8	8
Screw Ø			mm	M3.5	M3.5	M3.5	M3.5	M3.5
Phillips head type				N° 2	N° 2	N° 2	N° 2	N° 2
Screwdriver Ø				3/16 in. Ø 6	3/16 in. Ø 6	3/16 in. Ø 6	3/16 in. Ø 6	3/16 in. Ø 6
Tightening torque				15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m	15 lb.-in. 1.7 N•m

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The tables below show the kilowatt ratings (for international applications) and horsepower ratings (for North American applications) of contactors for motor control.

AC and DC Control Circuit — 3-pole Contactors with Touch-safe Terminals for Power Cabling (AC-3 category)

Maximum horsepower ratings						Maximum Inductive Current in AC-3 Category 600 V	Standard power ratings of 3-phase motors 50/60 Hz in category AC-3							Rated Operating Current in AC-3 up to 440 V	Instantaneous Auxiliary Contacts		Catalog Number ▼♦	Weight lb (kg)
1-phase 50/60 Hz		3-phase 50/60 Hz																
115/ 120 V	230/ 240 V	200/ 208 V	220/ 240 V	460/ 480 V	575 V 600 V		220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V	1000 V		N.O.	N.C.		
HP	HP	HP	HP	HP	HP	A	kW	kW	kW	kW	kW	kW	kW	A	N.O.	N.C.		
0.5	1	2	2	5	7.5	9	2.2	4	4	4	5.5	5.5	–	9	1	1	**LC1D09••**	0.71 (0.320)
1	2	3	3	7.5	10	12	3	5.5	5.5	5.5	7.5	7.5	–	12	1	1	**LC1D12••**	0.72 (0.325)
1	3	5	5	10	15	18	4	7.5	9	9	10	10	–	18	1	1	**LC1D18••**	0.73 (0.330)
2	3	7.5	7.5	15	20	25	5.5	11	11	11	15	15	–	25	1	1	**LC1D25••**	0.82 (0.370)
2	5	10	10	20	30	32	7.5	15	15	15	18.5	18.5	–	32	1	1	**LC1D32••**	0.83 (0.375)
Not for North American applications ■						38	9	18.5	18.5	18.5	18.5	18.5	–	38	1	1	**LC1D38••**	0.84 (0.380)
3	5	10	10	30	30	40	11	18.5	22	22	22	30	22	40	1	1	**LC1D40••**	3.11 (1.400)
3	7.5	15	15	40	40	50	15	22	25	30	30	33	30	50	1	1	**LC1D50••**	3.11 (1.400)
5	10	20	20	50	50	65	18.5	30	37	37	37	37	37	65	1	1	**LC1D65••**	3.11 (1.400)
7.5	15	25	30	60	60	80	22	37	45	45	55	45	45	80	1	1	**LC1D80••**	3.53 (1.590)
Not for North American applications ■						95	25	45	45	45	55	45	45	95	1	1	**LC1D95••**	3.58 (1.610)
–	–	30	40	75	100	115	30	55	59	59	75	80	75	115	1	1	**LC1D115••**	5.38 (2.420)
–	–	40	50	100	125	150	40	75	80	80	90	100	90	150	1	1	**LC1D150••**	5.42 (2.440)

♦ For **LC1D09** to **LC1D38**: clip-on mounting on 35 mm DIN rail **AM1DP** or screw mounting.
For **LC1D40** to **LC1D95**: clip-on mounting on 35 mm DIN rail **AM1DE** or 75 mm DIN rail **AM1DL** or screw mounting.
For **LC1D115** and **LC1D150**: clip-on mounting on 2 x 35 mm DIN rails **AM1DP** or screw mounting.

▼ Use voltage codes on page 115 “Voltage Code Table” to complete catalog number.

■ Devices are UL Listed at the same HP ratings as 32 and 80 amp devices, respectively.

LC1D09••

LC1D65••

LC1D150••

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LC1D123••

The tables below show the kilowatt ratings (for international applications) and horsepower ratings (for North American applications) of contactors for motor control.

AC and DC Control Circuit — 3-pole Contactors for Spring Terminal Connections (AC-3 category)

Maximum horsepower ratings						Maximum Inductive Current in AC-3 Category 600 V	Standard power ratings of 3-phase motors 50/60 Hz in category AC-3							Rated Operating Current in AC-3 up to 440 V	Instantaneous Auxiliary Contacts		Catalog Number ▼♦	Weight lb (kg)
1-phase 50/60 Hz		3-phase 50/60 Hz																
115/ 120 V	230/ 240 V	200/ 208 V	220/ 240 V	460/ 480 V	575 V 600 V		220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V	1000 V					
HP	HP	HP	HP	HP	HP	A	kW	kW	kW	kW	kW	kW	kW	A	N.O.	N.C.		
0.5	1	2	2	5	7.5	9	2.2	4	4	4	5.5	5.5	–	9	1	1	**LC1D093••**	0.71 (0.320)
1	2	3	3	7.5	10	12	3	5.5	5.5	5.5	7.5	7.5	–	12	1	1	**LC1D123••**	0.72 (0.325)
1	3	5	5	10	15	18	4	7.5	9	9	10	10	–	18	1	1	**LC1D183••**	0.73 (0.330)
2	3	7.5	7.5	15	20	25	5.5	11	11	11	15	15	–	25	1	1	**LC1D253••**	0.82 (0.370)
2	5	10	10	20	30	32	7.5	15	15	15	18.5	18.5	–	32	1	1	**LC1D323••**	0.83 (0.375)
Not for North American applications ■						38	9	18.5	18.5	18.5	18.5	18.5	–	38	1	1	**LC1D383••**	0.84 (0.380)

♦ For **LC1D09** to **LC1D38**: clip-on mounting on 35 mm DIN rail **AM1DP** or screw mounting.
▼ Use voltage codes on page 115 “Voltage Code Table” to complete catalog number.
■ Device is UL Listed at the same HP ratings as 32 amp device.

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LC1D1506••

The tables below show the kilowatt ratings (for international applications) and horsepower ratings (for North American applications) of contactors for motor control.

AC and DC Control Circuit — 3-pole Contactors for Ring-tongue Terminals or Bus Bar Power Connections (AC-3 category)

Maximum horsepower ratings						Maximum Inductive Current in AC-3 Category 600 V	Standard power ratings of 3-phase motors 50/60 Hz in category AC-3							Rated Operating Current in AC-3 up to 440 V	Instantaneous Auxiliary Contacts		Catalog Number ♦▼	Weight lb (kg)
1-phase 50/60 Hz		3-phase 50/60 Hz																
115/ 120 V	230/ 240 V	200/ 208 V	220/ 240 V	460/ 480 V	575 V 600 V		220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V	1000 V		N.O.	N.C.		
HP	HP	HP	HP	HP	HP	A	kW	kW	kW	kW	kW	kW	kW	A				
0.5	1	2	2	5	7.5	9	2.2	4	4	4	5.5	5.5	–	9	1	1	**LC1D096••**	0.71 (0.320)
1	2	3	3	7.5	10	12	3	5.5	5.5	5.5	7.5	7.5	–	12	1	1	**LC1D126••**	0.72 (0.325)
1	3	5	5	10	15	18	4	7.5	9	9	10	10	–	18	1	1	**LC1D186••**	0.73 (0.330)
2	3	7.5	7.5	15	20	25	5.5	11	11	11	15	15	–	25	1	1	**LC1D256••**	0.82 (0.370)
2	5	10	10	20	30	32	7.5	15	15	15	18.5	18.5	–	32	1	1	**LC1D326••**	0.83 (0.375)
Not for North American applications ■						38	9	18.5	18.5	18.5	18.5	18.5	–	38	1	1	**LC1D386••**	0.84 (0.380)
3	5	10	10	30	30	40	11	18.5	22	22	22	30	22	40	1	1	**LC1D406••**	2.93 (1.320)
3	7.5	15	15	40	40	50	15	22	25	30	30	33	30	50	1	1	**LC1D506••**	2.93 (1.320)
5	10	20	20	50	50	65	18.5	30	37	37	37	37	37	65	1	1	**LC1D656••**	2.93 (1.320)
7.5	15	25	30	60	60	80	22	37	45	45	55	45	45	80	1	1	**LC1D806••**	3.55 (1.600)
Not for North American applications ■						95	25	45	45	45	55	45	45	95	1	1	**LC1D956••**	3.55 (1.600)
–	–	30	40	75	100	115	30	55	59	59	75	80	75	115	1	1	**LC1D1156••**	4.69 (2.110)
–	–	40	50	100	125	150	40	75	80	80	90	100	90	150	1	1	**LC1D1506••**	4.69 (2.130)

♦ For **LC1D09** to **LC1D38**: clip-on mounting on 35 mm DIN rail **AM1DP** or screw mounting.
For **LC1D40** to **LC1D95**: clip-on mounting on 35 mm DIN rail **AM1DE** or 75 mm DIN rail **AM1DL** or screw mounting.
For **LC1D115** and **LC1D150**: clip-on mounting on 2 x 35 mm DIN rails **AM1DP** or screw mounting.

▼ Use voltage codes on page 115 “Voltage Code Table” to complete catalog number.

■ Devices are UL Listed at the same HP ratings as 32 and 80 amp devices, respectively.

AC and DC Control Circuit — 3-pole Contactors for Connection with Slip-on Connectors

For contactors **LC1D09** and **LC1D12** only, replace the last digit in the catalog numbers shown in the table above (“6”) with a 9. For example, **LC1D096••** becomes **LC1D099••**. These contactors include slip-on connectors: UL Recognized **E164862 NLDX2**, 2 x 6.35 mm (0.25 in.) on the power poles and 1 x 6.35 mm (0.25 in.) on the coil terminals.

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LC1DT20••

AC and DC Control Circuit — 3- or 4-Pole Screw Terminal Connections (AC-1 Category)

Maximum Current Utilization Categories		Number of Poles		Instantaneous Auxiliary Contacts			Catalog Number ♦▼	Weight lb (kg)
AC-1	AC-3	N.O.	N.C.	N.O.	N.C.			
20	9	3	0	1	1		**LC1D09••**	0.71 (0.320)
		4	0	1	1		**LC1DT20••**	0.80 (0.365)
		2	2	1	1		**LC1D098••**	0.80 (0.365)
25	12	3	0	1	1		**LC1D12••**	0.75 (0.340)
		4	0	1	1		**LC1DT25••**	0.80 (0.365)
		2	2	1	1		**LC1D128••**	0.80 (0.365)
32	18	3	0	1	1		**LC1D18••**	0.79 (0.355)
		4	0	1	1		**LC1DT32••**	0.93 (0.425)
		2	2	1	1		**LC1D188••**	0.93 (0.425)
40	25	3	0	1	1		**LC1D25••**	0.82 (0.370)
		4	0	1	1		**LC1DT40••**	0.93 (0.425)
		2	2	1	1		**LC1D258••**	0.93 (0.425)
50	32	3	0	1	1		**LC1D32••**	0.83 (0.375)
		3	0	1	1	or ▲	**LC1D38•• ■**	0.84 (0.380)
60	40	3	0	1	1		**LC1D40••**	3.11 (1.400)
		4	0	1	1		**LC1D40004••**	0.93 (0.425)
		2	2	1	1		**LC1D40008••**	0.93 (0.425)
		4	0	1	1		**LP1D40004••**	0.93 (0.425)
		2	2	1	1		**LP1D40008••**	0.93 (0.425)
80	50	3	0	1	1		**LC1D50••**	3.22 (1.450)
	65	3	0	1	1	or ▲	**LC1D65••**	3.11 (1.400)
		4	0	0	0		**LC1D65004••**	3.20 (1.440)
		4	0	0	0		**LP1D65004••**	4.89 (2.220)
		2	2	0	0		**LC1D65008••**	3.22 (1.450)
		2	2	0	0		**LP1D65008••**	4.89 (2.220)
125	80	3	0	1	1		**LC1D80••**	3.53 (1.590)
	95	3	0	1	1	or ▲	**LC1D95•• ■**	3.55 (1.600)
	80	4	0	0	0		**LC1D80004••**	3.91 (1.760)
		4	0	0	0		**LP1D80004••**	4.87 (2.210)
		2	2	0	0		**LC1D80008••**	4.09 (1.940)
		2	2	0	0		**LP1D80008••**	5.84 (2.650)
200	115	3	0	1	1		**LC1D115••**	5.38 (2.420)
	150	3	0	1	1	or ▲	**LC1D150••**	5.42 (2.440)
	115	4	0	0	0		**LC1D115004••**	6.35 (2.860)

AC and DC Control Circuit — 3- or 4-Pole Spring Terminal Connections (AC-1 Category)

20	9	3	0	1	1	◊	**LC1D093••**	0.710 (0.320)
		4	0	1	1	◊	**LC1DT203••**	0.837 (0.380)
		2	2	1	1	◊	**LC1D0983••**	0.837 (0.380)
25	12	3	0	1	1	◊	**LC1D123••**	0.710 (0.320)
		4	0	1	1	◊	**LC1DT253••**	0.840 (0.380)
		2	2	1	1	◊	**LC1D1283••**	0.840 (0.380)
32	–	3	0	1	1	◊	**LC1D183••**	0.730 (0.330)
	18	4	0	1	1	◊	**LC1DT323••**	0.940 (0.425)
	–	2	2	1	1	◊	**LC1D1883••**	0.940 (0.425)
40	–	3	0	1	1	◊	**LC1D253••**	0.820 (0.370)
	25	4	0	1	1	◊	**LC1DT403••**	0.940 (0.425)
	–	2	2	1	1	◊	**LC1D2583••**	0.940 (0.425)

♦ For **LC1D09** to **LC1D38**: clip-on mounting on 35 mm DIN rail **AM1DP** or screw mounting.
For **LC1D40** to **LC1D95**: clip-on mounting on 35 mm DIN rail **AM1DE** or 75 mm DIN rail **AM1DL** or screw mounting.
For **LC1D115** and **LC1D150**: clip-on mounting on 2 x 35 mm DIN rails **AM1DP** or screw mounting.

◊ For **LC1D09** to **LC1D25**: clip-on mounting on 35 mm DIN rail **AM1DP** or screw mounting.

▲ Select between the two shown based upon the number of operating cycles; see the AC-1 graph on page 22 for further information.

▼ Use voltage codes on page 115 “Voltage Code Table” to complete catalog number.

■ Devices are UL Listed at the same ratings as 32 and 80 amp devices, respectively.

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LC1D150••

AC and DC Control Circuit — 3- or 4-pole Contactors
For Ring Terminals or Bus Bar Power Connections (AC-1 category)

Maximum Current Utilization Categories		Number of Poles		Instantaneous Auxiliary Contacts			Catalog Number ♦▼	Weight lb (kg)
AC-1	AC-3	N.O.	N.C.	N.O.	N.C.			
20	9	3	0	1	1		**LC1D096••**	0.71 (0.320)
		4	0	1	1		**LC1DT206••**	0.80 (0.365)
		2	2	1	1		**LC1D0986••**	0.80 (0.365)
25	12	3	0	1	1		**LC1D126••**	0.75 (0.340)
		4	0	1	1		**LC1DT256••**	0.80 (0.365)
		2	2	1	1		**LC1D1286••**	0.80 (0.365)
32	18	3	0	1	1		**LC1D186••**	0.79 (0.355)
		4	0	1	1		**LC1DT326••**	0.93 (0.425)
		2	2	1	1		**LC1D1886••**	0.93 (0.425)
40	25	3	0	1	1		**LC1D256••**	0.82 (0.370)
		4	0	1	1		**LC1DT406••**	0.93 (0.425)
		2	2	1	1		**LC1D2586••**	0.93 (0.425)
50	32	3	0	1	1		**LC1D326••**	0.83 (0.375)
		3	0	1	1	or ▲	**LC1D386•• ■**	0.84 (0.380)
60	40	3	0	1	1		**LC1D406••**	3.11 (1.400)
		4	0	1	1		**LC1D400046••**	0.93 (0.425)
		2	2	1	1		**LC1D400086••**	0.93 (0.425)
		4	0	1	1		**LP1D40004••**	0.93 (0.425)
		2	2	1	1		**LP1D40008••**	0.93 (0.425)
80	65	3	0	1	1		**LC1D656••**	3.11 (1.400)
	80	4	0	0	0		**LC1D800046••**	3.20 (1.440)
		4	0	0	0		**LP1D800046••**	4.89 (2.220)
		2	2	0	0		**LC1D800086••**	3.22 (1.450)
		2	2	0	0		**LP1D800086••**	4.89 (2.220)
125	80	3	0	1	1		**LC1D806••**	3.53 (1.590)
		4	0	0	0		**LC1D800046••**	3.91 (1.760)
		4	0	0	0		**LP1D800046••**	4.87 (2.210)
		2	2	0	0		**LC1D800086••**	4.09 (1.940)
		2	2	0	0		**LP1D800086••**	5.84 (2.650)
	95	3	0	1	1		**LC1D95•• ■**	3.55 (1.600)
200	115	3	0	1	1		**LC1D1156••**	5.38 (2.420)
	150	3	0	1	1	or ▲	**LC1D1506••**	5.42 (2.440)
	115	4	0	0	0		**LC1D1150046••**	6.35 (2.860)

♦ For **LC1D09** to **LC1D38**: clip-on mounting on 35 mm DIN rail **AM1DP** or screw mounting.
For **LC1D40** to **LC1D95**: clip-on mounting on 35 mm DIN rail **AM1DE** or 75 mm DIN rail **AM1DL** or screw mounting.
For **LC1D115** and **LC1D150**: clip-on mounting on 2 x 35 mm DIN rails **AM1DP** or screw mounting.

▲ Select between the two shown based upon the number of operating cycles and control voltage; see the AC-1 graph on page 22 for further information.

▼ Use voltage codes on page 115 “Voltage Code Table” to complete catalog number.

■ Devices are UL Listed at the same ratings as 32 and 80 amp devices, respectively.

AC and DC Control Circuit — Contactors for Connection with Slip-on Connectors (3-pole only)
AC-1 category

For contactors **LC1D09** and **LC1D12** only, replace the last digit in the catalog numbers shown in the table above (“6”) with a 9. For example, **LC1D096••** becomes **LC1D099••**. These contactors include slip-on connectors: UL Recognized **E164862 NLDX2**, 2 x 6.35 mm (0.25 in.) on the power poles and 1 x 6.35 mm (0.25 in.) on the coil terminals.

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The tables below show the kilowatt ratings (for international applications) and horsepower ratings (for North American applications) of contactors for motor control.

The contactors are pre-assembled, horizontally-mounted, and have pre-wired power connections. Order accessories separately. For information on auxiliary contact blocks and modules, see pages 106 to 107.

AC and DC Control Circuit — 3-pole Reversing Contactors with Touch-safe Terminals for Power Cabling (AC-3 category)

Maximum horsepower ratings						Maximum Inductive Current in AC-3 Category 600 V	Standard power ratings of 3-phase motors 50/60 Hz in category AC-3							Rated Operating Current in AC-3 up to 440 V	Instantaneous Auxiliary Contacts		Catalog Number ♦▼	Weight lb (kg)
1-phase 50/60 Hz		3-phase 50/60 Hz																
115/ 120 V	230/ 240 V	200/ 208 V	220/ 240 V	460/ 480 V	575 V 600 V		220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V	1000 V		N.O.	N.C.		
HP	HP	HP	HP	HP	HP	A	kW	kW	kW	kW	kW	kW	kW	A	N.O.	N.C.		
0.5	1	2	2	5	7.5	9	2.2	4	4	4	5.5	5.5	–	9	1	1	**LC2D09••** ▲●	1.55 (0.700)
1	2	3	3	7.5	10	12	3	5.5	5.5	5.5	7.5	7.5	–	12	1	1	**LC2D12••** ▲●	1.55 (0.700)
1	3	5	5	10	15	18	4	7.5	9	9	10	10	–	18	1	1	**LC2D18••** ▲●	1.670 (0.75)
2	3	7.5	7.5	15	20	25	5.5	11	11	11	15	15	–	25	1	1	**LC2D25••** ▲●	2.44 (1.100)
2	5	10	10	20	30	32	7.5	15	15	15	18.5	18.5	–	32	1	1	**LC2D32••** ▲●	2.67 (1.200)
Not for North American applications						38	9	18.5	18.5	18.5	18.5	18.5	–	38	1	1	**LC2D38••** ▲●◗	2.67 (1.200)
3	5	10	10	30	30	40	11	18.5	22	22	22	30	–	40	1	1	**LC2D40••** ▲	5.33 (2.400)
3	7.5	15	15	40	40	50	15	22	25	30	30	33	–	50	1	1	**LC2D50••** ▲	5.33 (2.400)
5	10	20	20	50	50	65	18.5	30	37	37	37	37	–	65	1	1	**LC2D65••** ▲	5.33 (2.400)
7.5	15	25	30	60	60	80	22	37	45	45	55	45	–	80	1	1	**LC2D80••** ▲	7.11 (3.200)
Not for North American applications						95	25	45	45	45	55	45	–	95	1	1	**LC2D95••** ▲◗	7.11 (3.200)
–	–	30	40	75	100	115	30	55	59	59	75	80	75	115	1	1	**LC2D115** ■	14.44 (6.500)
–	–	40	50	100	125	150	40	75	80	80	90	100	90	150	1	1	**LC2D150** ■	14.44 (6.500)

♦ For **LC2D09** to **LC2D38**: clip-on mounting on 35 mm DIN rail **AM1DP** or screw mounting.
For **LC2D40** to **LC2D95**: clip-on mounting on 35 mm DIN rail **AM1DE** or 75 mm DIN rail **AM1DL** or screw mounting.
For **LC2D115** and **LC2D150**: clip-on mounting on 2 x 35 mm DIN rails **AM1DP** or screw mounting.

▲ Includes mechanical interlock without electrical contacts. Installer to complete wiring for electrically interlocking contactor operating coils by utilizing a N.C. auxiliary contact integrated in the contactor or optional **LADN** or **LAD8N** type auxiliary contact block.

■ Included with electrical contacts integrated in mechanical interlock (type **LA9D••02**).

▼ Use voltage codes on page 115 “Voltage Code Table” to complete catalog number.

● For reversing contactors with electrical interlocking pre-wired at the factory, add suffix **V** to the catalog number reflected above. Example: **LC2D09••** becomes **LC2D09••**V.

◗ Devices are UL Listed at the same HP ratings as 32 and 80 amp devices, respectively.

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TeSys™ D-Line Contactors and Starters
Selection of Reversing Contactors for Motor Control

The tables below show the kilowatt ratings (for international applications) and horsepower ratings (for North American applications) of contactors for motor control.

The contactors are pre-assembled, horizontally-mounted, and have pre-wired power connections. Order accessories separately. For information on auxiliary contact blocks and modules, see pages 106 to 107.

AC and DC Control Circuit — 3-pole Reversing Contactors for Spring Terminal Connections (AC-3 category)

Maximum horsepower ratings						Maximum Inductive Current in AC-3 Category 600 V	Standard power ratings of 3-phase motors 50/60 Hz in category AC-3							Rated Operating Current in AC-3 up to 440 V	Instantaneous Auxiliary Contacts		Catalog Number ♦▼∗	Weight lb (kg)
1-phase 50/60 Hz		3-phase 50/60 Hz																
115/ 120 V	230/ 240 V	200/ 208 V	220/ 240 V	460/ 480 V	575 V 600 V		220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V	1000 V		N.O.	N.C.		
HP	HP	HP	HP	HP	HP	A	kW	kW	kW	kW	kW	kW	kW	A	N.O.	N.C.		
0.5	1	2	2	5	7.5	9	2.2	4	4	4	5.5	5.5	–	9	1	1	**LC2D093•• ▲**	1.55 (0.700)
1	2	3	3	7.5	10	12	3	5.5	5.5	5.5	7.5	7.5	–	12	1	1	**LC2D123•• ▲**	1.55 (0.700)
1	3	5	5	10	15	18	4	7.5	9	9	10	10	–	18	1	1	**LC2D183•• ▲**	1.670 (0.75)
2	3	7.5	7.5	15	20	25	5.5	11	11	11	15	15	–	25	1	1	**LC2D253•• ▲**	2.44 (1.100)
2	5	10	10	20	30	32	7.5	15	15	15	18.5	18.5	–	32	1	1	**LC2D323•• ▲**	2.67 (1.200)
Not for North American applications						38	9	18.5	18.5	18.5	18.5	18.5	–	38	1	1	**LC2D383•• ▲●**	2.67 (1.200)

♦ For **LC2D09** to **LC2D38**: clip-on mounting on 35 mm DIN rail **AM1DP** or screw mounting.

▲ Includes mechanical interlock without electrical contacts. Installer to complete wiring for electrically interlocking contactor operating coils by utilizing a N.C. auxiliary contact integrated in the contactor or optional **LADN** or **LAD8N** type auxiliary contact block.

▼ Use voltage codes on page 115 “Voltage Code Table” to complete catalog number.

∗ For reversing contactors with electrical interlocking pre-wired at the factory, add suffix **V** to the catalog number reflected above. Example: **LC2D09••** becomes **LC2D09••**V.

● LC2D38 is UL Listed at the same HP rating as the 32 amp device.

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LC2D186••

The tables below show the kilowatt ratings (for international applications) and horsepower ratings (for North American applications) of contactors for motor control.

The contactors have pre-wired power connections. Order accessories separately. For information on auxiliary contact blocks and modules, see pages 106 to 107.

AC and DC Control Circuit — 3-pole Reversing Contactors for Ring-tongue Terminals or Bus Bar Power Connections (AC-3 category)

Maximum horsepower ratings						Maximum Inductive Current in AC-3 Category 600 V	Standard power ratings of 3-phase motors 50/60 Hz in category AC-3							Rated Operating Current in AC-3 up to 440 V	Instantaneous Auxiliary Contacts		Catalog Number ♦▼	Weight
1-phase 50/60 Hz		3-phase 50/60 Hz																
115/ 120 V	230/ 240 V	200/ 208 V	220/ 240 V	460/ 480 V	575 V 600 V		220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V	1000 V					
HP	HP	HP	HP	HP	HP	A	kW	kW	kW	kW	kW	kW	kW	A	N.O.	N.C.		lb (kg)
0.5	1	2	2	5	7.5	9	2.2	4	4	4	5.5	5.5	–	9	1	1	**LC2D096••** ▲	1.55 (0.700)
1	2	3	3	7.5	10	12	3	5.5	5.5	5.5	7.5	7.5	–	12	1	1	**LC2D126••** ▲	1.55 (0.700)
1	3	5	5	10	15	18	4	7.5	9	9	10	10	–	18	1	1	**LC2D186••** ▲	1.67 (0.750)
2	3	7.5	7.5	15	20	25	5.5	11	11	11	15	15	–	25	1	1	**LC2D256••** ▲	2.44 (1.100)
2	5	10	10	20	30	32	7.5	15	15	15	18.5	18.5	–	32	1	1	**LC2D326••** ▲	2.67 (1.200)
Not for North American applications						38	9	18.5	18.5	18.5	18.5	18.5	–	38	1	1	**LC2D386••** ▲ ●	2.67 (1.200)
–	–	30	40	75	100	115	30	55	59	59	75	80	75	115	1	1	**LC2D1156••** ■ ▲	13.22 (5.950)
–	–	15	15	40	40	150	40	70	80	80	90	100	90	150	1	1	**LC2D1506••** ■ ▲	13.22 (5.950)

♦ For **LC2D09** to **LC2D38**: clip-on mounting on 35 mm DIN rail **AM1DP** or screw mounting.
For **LC2D115** and **LC2D150**: clip-on mounting on 2 x 35 mm DIN rails **AM1DP** or screw mounting.

▲ Includes mechanical interlock without electrical contacts. Installer to complete wiring for electronically interlocking contactor operating coils by utilizing a N.C. auxiliary contact integrated in the contactor or optional **LADN** or **LAD8N** type auxiliary contact block.

■ Included with electrical contacts integrated in mechanical interlock (type **LA9D••02**).

▼ Use voltage codes on page 115 “Voltage Code Table” to complete catalog number.

● LC2D386 devices are UL Listed at the same HP rating as the 32 amp device.

AC and DC Control Circuit — 3-pole Reversing Contactors for Connection with Slip-on Connectors (AC-3 category)

For contactors **LC2D09** and **LC2D12** only, replace the last digit in the catalog numbers shown in the table above (“6”) with a 9. For example, **LC2D096••** becomes **LC2D099••**. These contactors include slip-on connectors: UL Recognized **E164862 NLDX2**, 2 x 6.35 mm (0.25 in.) on the power poles and 1 x 6.35 mm (0.25 in.) on the coil terminals.

Power connections are to be made by the customer.

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LC2DT20••

The contactors have pre-wired power connections. Order accessories separately. For information on auxiliary contact blocks and modules, see pages 106 to 107.

AC and DC Control Circuit — 4-pole
Changeover Contactors with Touch-safe Terminals for Power Cabling (AC-1 category)

Maximum Current Utilization Categories		Instantaneous Auxiliary Contacts		Catalog Number ♦▼	Weight
AC-1	AC-3	N.O.	N.C.		lb (kg)
20	9	1	1	**LC2DT20•• ▲**	1.60 (0.730)
25	12	1	1	**LC2DT25•• ▲**	1.55 (0.700)
32	18	1	1	**LC2DT32•• ▲**	1.86 (0.450)
40	25	1	1	**LC2DT40•• ▲**	2.43 (1.100)
60	40	1	1	**LC2D40004•• ▲**	5.30 (2.400)
		1	1	**LP2D40004•• ▲**	5.30 (2.400)
80	65	–	–	**LC2D65004•• ▲**	7.07 (3.200)
		–	–	**LP2D80004•• ▲**	7.07 (3.200)
125	80	–	–	**LC2D80004•• ▲**	7.07 (3.200)
		–	–	**LP2D80004•• ▲**	7.07 (3.200)
200	115	–	–	**LC2D115004•• ■**	16.0 (27.250)

♦ For **LC2D12** and **LC2D25**: clip-on mounting on 35 mm DIN rail **AM1DP** or screw mounting.
For **LC2D40** to **LC2D95**: clip-on mounting on 35 mm DIN rail **AM1DE** or 75 mm DIN rail **AM1DL** or screw mounting.
For **LC2D115**: clip-on mounting on 2 x 35 mm DIN rails **AM1DP** or screw mounting.

▲ Includes mechanical interlock (type **LA9••D978**) without electrical contacts. Installer to complete wiring for electronically interlocking contactor operating coils by utilizing a N.C. auxiliary contact integrated in the contactor or optional **LA1DN** or **LA8DN** type auxiliary contact block.

■ Includes mechanical interlock (Type LA9D11502) with pre-wired electrical contacts for interlocking contactor operating coils.

▼ Use voltage codes on page 115 “Voltage Code Table” to complete catalog number.

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AC and DC Control Circuit— 4-pole
Changeover Contactors with Ring-tongue Terminal or Bus Bar Power Connection (AC-1 category)

Maximum Current Utilization Categories		Instantaneous Auxiliary Contacts		Catalog Number ♦▼	Weight lb (kg)
AC-1	AC-3	N.O.	N.C.		
20	9	1	1	**LC2DT206•• ▲**	1.60 (0.730)
25	12	1	1	**LC2DT256•• ▲**	1.55 (0.700)
32	18	1	1	**LC2DT326•• ▲**	1.86 (0.450)
40	25	1	1	**LC2DT406•• ▲**	2.43 (1.100)
60	40	1	1	**LC2D400046•• ▲**	5.30 (2.400)
		1	1	**LP2D400046•• ▲**	5.30 (2.400)
80	65	–	–	**LC2D650046•• ▲**	7.07 (3.200)
		–	–	**LP2D800046•• ▲**	7.07 (3.200)
125	80	–	–	**LC2D800046•• ▲**	7.07 (3.200)
		–	–	**LP2D800046•• ▲**	7.07 (3.200)
200	115	–	–	**LC2D1150046•• ■**	16.0 (27.250)

♦ For **LC2D12** and **LC2D25**: clip-on mounting on 35 mm DIN rail **AM1DP** or screw mounting.
For **LC2D40** to **LC2D95**: clip-on mounting on 35 mm DIN rail **AM1DE** or 75 mm DIN rail **AM1DL** or screw mounting.
For **LC2D115**: clip-on mounting on 2 x 35 mm DIN rails **AM1DP** or screw mounting.

▲ Includes mechanical interlock (Type **LA9••D978**) without electrical contacts. Installer to complete wiring for electronically interlocking contactor operating coils by utilizing a N.C. auxiliary contact integrated in the contactor or optional **LA1DN** or **LA8DN** type auxiliary contact block.

■ Includes mechanical interlock (Type **LA9D11502**) with pre-wired electrical contacts for interlocking contactor operating coils.

▼ Use voltage codes on page 115 “Voltage Code Table” to complete catalog number.

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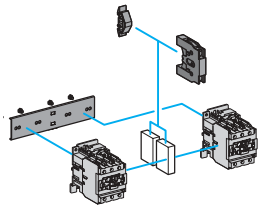
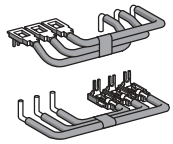


LA9D4002



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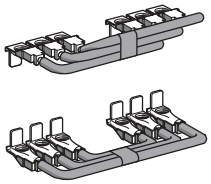

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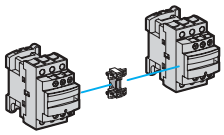

LA9R1

For 3-pole Motor Reversing Contactors

Contactors with Screw Clamp Terminals or Connectors
Horizontally Mounted, Assembled by Customer

Using 2 Identical Contactors (1)	Set of Power Connections		Mechanical Interlock Kit	
	Catalog Number	Weight lb (kg)	Catalog Number	Weight lb (kg)
Including mechanical interlock and an electrical interlocking kit for the contactors				
Power Connections for LC1D09 to D38				
Use with screw terminal versions LC1D09 - LC1D38				
Line Side (Parallel) Connector	**LAD9V5**	0.037 (0.17)	**LAD9R1V (2)**	–
Load Side (Reversing) Connector	**LAD9V6**	0.037 (0.17)	**LAD9R1V (2)**	–
Low Voltage Control Circuit Interlock	**LAD9V1 (3)**	0.037 (0.17)	**LAD9R1V (2)**	–
Use with spring terminal versions LC1D093 - LC1D383				
When using Quick-Fit LAD34 and LAD33 Power Connectors				
Line Side (Parallel) Connector	**LAD9V10**	0.037 (0.17)	**LAD9V2**	–
Load Side (Reversing) Connector	**LAD9V11**	0.037 (0.17)	**LAD9V2**	–
When using standard cable/wire				
Line Side (Parallel) Connector	**LAD9V12**	0.037 (0.17)	**LAD9V2**	–
Load Side (Reversing) Connector	**LAD9V13**	0.037 (0.17)	**LAD9V2**	–
Including mechanical interlock with integral electrical interlocking				
LC1D40 to D65	**LA9D6569**	0.290 (0.64)	**LA9D4002**	0.37 (0.170)
LC1D80 and D95 (ac)	**LA9D8069**	0.290 (0.64)	**LA9D4002**	0.37 (0.170)
LC1D80 and D95 (dc)	**LA9D8069**	0.490 (1.08)	**LA9D8002**	0.37 (0.170)
LC1D115 and D150	**LA9D11569**	1.450 (3.20)	**LA9D11502**	0.63 (0.290)
Including mechanical interlock without electrical interlocking				
Power Connections for LC1D09 to D38				
Line Side (Parallel) Connector	**LAD9V5**	0.045 (0.10)	**LAD9R1 (2)**	–
Load Side (Reversing) Connector	**LAD9V6**	0.045 (0.10)	**LAD9R1 (2)**	–
LC1D40 to D65	**LA9D6569**	0.290 (0.64)	**LA9D50978**	0.37 (0.170)
LC1D80 and D95 (ac)	**LA9D8069**	0.490 (1.08)	**LA9D50978**	0.37 (0.170)
LC1D80 and D95 (dc)	**LA9D8069**	0.490 (1.08)	**LA9D80978**	0.37 (0.170)

For Low Speed – High Speed Starter

Description	For Contactors with Connections	Catalog Number	Weight lb (kg)
Connection kit enabling reversing of slow and high speed directions, using a reversing contactor and a 2 N.O. + 2 N.C. main pole contactor	Screw clamps or connectors	**LA9D9PVGV**	0.03 (0.016)
	Spring terminals	**LAD3PVPG**	0.15 (0.068)

(1) To order the 2 contactors: see pages 88, 89 and 90.
(2) Mechanical interlock kit includes line and load side power connectors, mechanical interlock, control circuit interlock (LAD9R1V only), and clip. Interlock only -- LAD9V2 (includes retaining clip). Retaining clip only -- W116430980111 (std. package of 10).
(3) There is no spring terminal equivalent for this part.
(4) Line side (parallel) connector: LAD9V5; load side (reversing) connector: LAD9V6.

Characteristics: pages 80 to 87 Dimensions, Schematics: pages 128, 129

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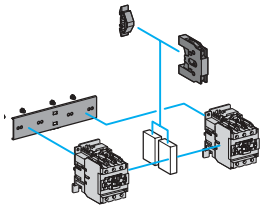
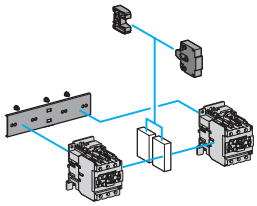
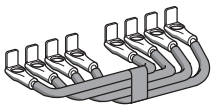


LA9D4002



LA9D50978



LA9D8070

For 4-pole Changeover Contactor Pairs (3-phase distribution + neutral)

Contactors with Screw Clamp Terminals or Connectors
Horizontally Mounted, Assembled by Customer

Using 2 Identical Contactors (1)	Set of Power Connections		Mechanical Interlock	
	Catalog Number	Weight lb (kg)	Catalog Number of Kit	Weight lb (kg)
Including mechanical interlock and an electrical interlocking kit for the contactors				
LC1DT20 to DT40	**LADT9R1V (2)**	0.088 (0.040)	–	–
Including mechanical interlock with integral electrical interlocking				
LC1D65004	**LA9D6570**	0.33 (0.150)	**LA9D4002**	0.37 (0.170)
LC1D80004	**LA9D8070**	0.62 (0.280)	**LA9D4002**	0.37 (0.170)
LP1D80004	**LA9D8070**	0.62 (0.280)	**LA9D8002**	0.37 (0.170)
LC1D115004	**LA9D11570**	2.43 (1.100)	**LA9D11502**	0.62 (0.280)
Including mechanical interlock without electrical interlocking				
LC1DT20 to DT40 With screw clamp terminals or connectors	**LADT9R1 (2)**	0.08 (0.035)	–	–
LC1DT203 to DT403 With spring terminal connections	**(4)**	–	–	–
LC1 or LP1D65004	**LA9D6570 (3)**	0.33 (0.150)	**LA9D50978**	0.34 (0.155)
LC1D80004	**LA9D8070 (3)**	0.62 (0.280)	**LA9D50978**	0.34 (0.155)
LP1D80004	**LA9D8070 (3)**	0.62 (0.280)	**LA9D80978**	0.40 (0.180)
For 3-pole changeover contactor pairs				
Including mechanical interlock with integral electrical interlocking				
LC1D115 and D150	**LA9D11571**	2.12 (0.960)	**LA9D11502**	0.62 (0.280)

(1) To order the two contactors: see page 91.
(2) Including mechanical interlock.
(3) Order two contact bocks LADN•1 to obtain electrical interlocking between the contactors, see page 106.
(4) To build a reversing contactor with spring terminal connections, the following components must be ordered in addition to the two contactors:
- 1 mechanical interlock LAD9V2,
- 1 downstream power connection kit LAD9V9

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Auxiliary Contact Blocks without Dust and Damp Protected Contacts for Contactors

Environment

Contact block type			LADN or C	LADT and S	LADR	LAD8
Conforming to standards	CE Meets the essential requirements of the LV & EMC directives		IEC 60947-5-1, NF C 63-140, VDE 0660, BS 4794, EN 60947-5-1			
Product certifications	UL CSA		UL, CSA			
Protective treatment	Conforming to IEC 60068		"TH"			
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X			
Ambient air temperature around the device	Storage	**°C**	- 60 to + 80 (- 140 to + 176 °F)			
	Operation	**°C**	- 5 to + 60 (- 41to + 140 °F)			
	Permissible for operation at Uc	**°C**	- 40 to + 70 (- 104 to + 158 °F)			
Maximum operating altitude	Without derating	**m**	3000			
Cabling	Phillips N° 2 and Ø 6 mm Flexible or solid cable with or without cable end	**mm²**	Min.: 1 x 1; max.: 2 x 2.5 (#10 AWG)			
Connection by spring terminals	Flexible or solid cable without cable end	**mm²**	Max.: 2 x 2.5 (#10 AWG)			
Instantaneous and Time Delay Contact Characteristics						
Number of contacts			1, 2 or 4	2	2	2
Rated operational voltage (Ue)	Up to	**V**	690			
Rated insulation voltage (Ui)	Conforming to IEC 60947-5-1	**V**	690			
	Conforming to UL, CSA	**V**	600			
Conventional thermal current (Ith)	For ambient temperature ≤ 60 °C (140 °F)	**A**	10			
Frequency of operational current		**Hz**	25 to 400			
Minimum switching capacity	U min.	**V**	17			
	I min.	**mA**	5			
Short-circuit protection ●	Conforming to IEC 60947-5-1 and VDE 0660. gG fuse	**A**	10			
Rated making capacity	Conforming to IEC 60947-5-1, I rms	**A**	ac: 140; dc: 250			
Short-time rating	Permissible for: 1 s	**A**	100			
	500 ms	**A**	120			
	100 ms	**A**	140			
Insulation resistance		**MΩ**	> 10			
Non-overlap time	Guaranteed between N.C. and N.O. contacts	**ms**	1.5 (on energizing and on de-energizing)			
Overlap time	Guaranteed between N.C. and N.O. on LADC22	**ms**	1.5	–	–	–
Time delay (LADT, R and S contact blocks) Accuracy only valid for setting range indicated on the front face	Ambient air temperature for operation	**°C**	–	- 40 to + 70 (- 104 to + 158 °F)	- 40 to + 70 (- 104 to + 158 °F)	–
	Repeat accuracy		–	± 2%	± 2%	–
	Drift up to 0.5 million operating cycles		–	+ 15%	+ 15%	–
	Drift depending on ambient air temperature		–	0.25% per °C	0.25% per °C	–
Mechanical durability	In millions of operating cycles		30	5	5	30
Operational power of contacts			See page 101.			

● Select short circuit protection to meet the National Electrical Code or other local codes and standards.

Catalog Number: pages 107, 108 Dimensions: pages 122, 123 Schematics: pages 126, 127

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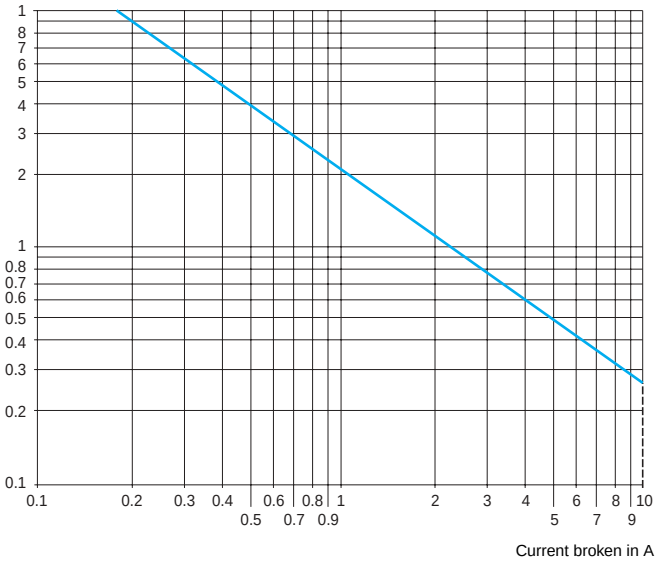
Auxiliary Contact Blocks with Dust and Damp Protected Contacts for Contactors

Operational Power of Contacts (conforming to IEC 60947-5-1)

AC supply, categories AC-14 and AC-15

Electrical durability (valid up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making power (cos φ 0.7) = 10 times the power broken (cos φ 0.4)

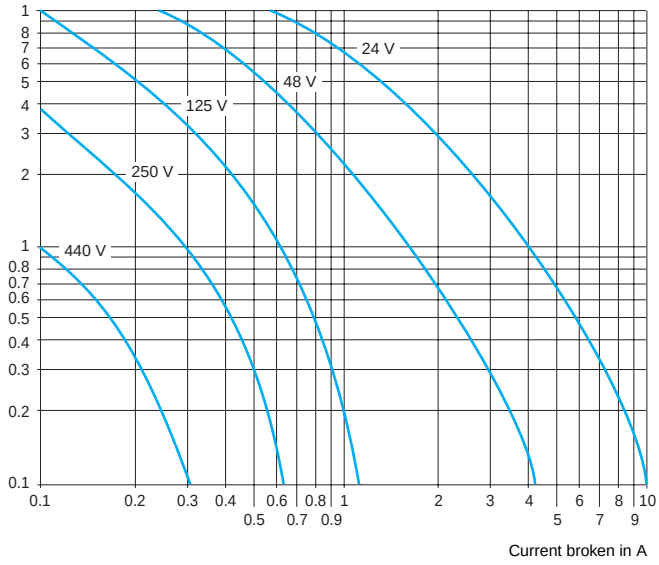
	V	24	48	115	230	400	440	600
1 million operating cycles	VA	60	120	280	560	960	1050	1440
3 million operating cycles	VA	16	32	80	160	280	300	420
10 million operating cycles	VA	4	8	20	40	70	80	100



DC supply, category DC-13

Electrical durability (valid up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the power.

	V	24	48	125	250	440
1 million operating cycles	W	120	90	75	68	61
3 million operating cycles	W	70	50	38	33	28
10 million operating cycles	W	25	18	14	12	10



Catalog Number: pages 107, 108 Dimensions: pages 122, 123 Schematics: pages 126, 127

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Auxiliary Contact Blocks with Dust and Damp Protected Contacts for Contactors

Environment

Contact block type				LA1DX	LA1DZ		LA1DY
					protected	non protected	
Conforming to standards	CE Meets the essential requirements of the LV & EMC directives			IEC 60947-5-1, VDE 0660			
Product certifications	UL, CSA			UL, CSA			
Protective treatment	Conforming to IEC 60068			"TH"			
Degree of protection	Conforming to VDE 0106			Protection against direct finger contact IP 2X			
Ambient air temperature	Storage and operation		**°C**	- 25 to + 70 (- 77 to + 158 °F)			
Cabling	Phillips N° 2 and Ø 6 mm Flexible or solid cable with or without cable end		**mm²**	Min.: 1 x 1 Max.: 2 x 2.5			
Number of contacts				2	2	2	2
Contact Characteristics							
Rated operational voltage (Ue)	Up to		**V**	50	50	690	24
Rated insulation voltage (Ui)	Conforming to IEC 60947-5-1		**V**	250	250	690	250
	Conforming to UL, CSA		**V**	–	–	600	–
Conventional thermal current (Ith)	For ambient temperature ≤ 40 °C (104 °F)		**A**	–	–	10	–
Maximum operational current (Ie)			**mA**	50	50	10	50
Frequency of operational current			**Hz**	–	–	25 to 400	–
Minimum switching capacity	U min.		**V**	3	3	17	3
	I min.		**mA**	0.3	0.3	5	0.3
Short-circuit protection ●	Conforming to IEC 60947-5-1. gG fuse		**A**	–	–	10	–
Rated making capacity	Conforming to IEC 60947-5-1, I rms		**A**	–	–	ac: 140; dc: 250	–
Short-time rating	Permissible for:	1 s	**A**	–	–	100	–
		500 ms	**A**	–	–	120	–
		100 ms	**A**	–	–	140	–
Insulation resistance			**MΩ**	> 10	> 10	> 10	> 10
Mechanical durability	In millions of operating cycles			5	5	30	5
Materials and technology used for dust and damp protected contacts				Gold - Single break with crossed bars	Gold - Single break with crossed bars	–	Gold - Single break with crossed bars

● Select short circuit protection to meet the National Electrical Code or other local codes and standards.

Catalog Number: pages 107, 108 Dimensions: pages 122, 123 Schematics: pages 126, 127

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Interface Modules for Contactors

Environment

Conforming to standards	CE Meets the essential requirements of the LV & EMC directives			IEC 60255-5					
Product certifications	UL, CSA								
Protective treatment	Conforming to IEC 60068			"TH"					
Degree of protection	Conforming to VDE 0106			Protection against direct finger contact IP 2X					
Ambient air temperature around the device	Storage		**°C**	- 40 to + 80 (- 104 to + 176 °F)					
	Operation		**°C**	- 25 to + 55 (- 77 to + 131 °F)					
	Permissible for operation at Uc		**°C**	- 25 to + 70 (- 77 to + 158 °F)					

Other Characteristics

Module type				**LA4DFBQ**	**LA4DFB**	**LA4DFE**	**LA4DLB**	**LA4DLE**	**LA4DWB**
				With relay	With relay	With relay	With relay + override		Solid state
Rated insulation voltage	Conforming to IEC 60947-1		**V**	5	250				
Rated operational voltage	Conforming to IEC 60947-1		**V**	415	250				
Indication of input state	By integral LED which illuminates when the contactor coil is energized								
Input signals	Control voltage (E1-E2)		**V**	dc 24	dc 24	dc 48	dc 24	dc 48	dc 24
	Permissible variation		**V**	17 to 30	17 to 30	33 to 60	17 to 30	33 to 60	5 to 30
	Current consumption at 20 °C (68 °F)		**mA**	25	25	15	25	15	8.5 for 5 V 15 for 24 V
	State "0" guaranteed for	U	**V**	< 2.4	< 2.4	< 4.8	< 2.4	< 4.8	< 2.4
		I	**mA**	< 2	< 2	< 1.3	< 2	< 1.3	< 2
	State "1" guaranteed for	U	**V**	17	17	33	17	33	5
Built-in protection	Against reverse polarity			By diode					
	Of the input			By diode					
Electrical durability at 220/240 V	In millions of operating cycles			3	10	10	3	3	20
Maximum immunity time to micro-breaks			**ms**	4	4	4	4	4	1
Power dissipated	At 20 °C (68 °F)		**W**	0.6	0.6	0.6	0.6	0.6	0.4
Direct mounting without contactor	With coil:	ac 24 to 250 V		–	**LC1D40 to D150**				–
		ac 100 to 250 V		–	–				**LC1D40 to D115**
		ac 380 to 415 V		**LC1D40 to D150**	–				–
Mounting with cabling adaptor LAD-4BB	With coil:	ac 24 to 250 V		–	**LC1D09 to D38, DT20 to DT60**				**LC1D09 to D38, DT20 to DT60**
		ac 380 to 415 V		**LC1D09 to D38, DT20 to DT40**	–				–
Total operating time at Uc (of the contactor)	Operating times depend on the type of contactor electromagnet and its control mode. The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.								
				LC1D09 to D38, DT20 to DT60		**LC1D40 to D65**		**LC1D80 and D95**	
	With **LA4DF, DL**	N.O.	**ms**	20 to 30		28 to 34		28 to 43	
		N.C.	**ms**	16 to 24		20 to 24		18 to 32	
Cabling	Phillips N° 2 and Ø 6 mm Flexible or solid cable with or without cable end		**mm²**	Min.: 1 x 1 (#12 AWG)					
			mm²	Min.: 2 x 2.5 (#12 AWG)					

Catalog Number: page 111 Dimensions: pages 122, 123 Schematics: pages 126, 127

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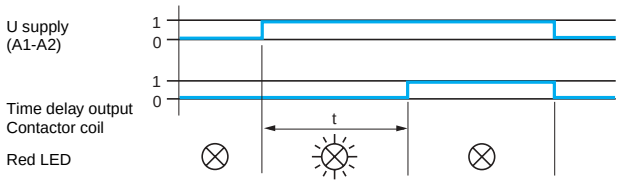
Electronic Serial Timer Modules for Contactors

Environment

Module type			**LA4DT** (On-delay)
Conforming to standards	CE Meets the essential requirements of the LV & EMC directives		IEC 60255-5
Product certifications			UL, CSA
Protective treatment	Conforming to IEC 60068		"TH"
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X
Ambient air temperature around the device	Storage	**°C**	- 40 to + 80 (- 104 to + 176 °F)
	Operation	**°C**	- 25 to + 55 (- 77 to + 131 °F)
	For operation at Uc	**°C**	- 25 to + 70 (- 77 to + 158 °F)
Rated insulation voltage (Ui)	Conforming to IEC 60947-1	**V**	250
Cabling	Phillips N° 2 and Ø 6 mm Flexible or solid cable with or without cable end	**mm^2**	Min.: 1 x 1
			Max.: 2 x 2.5
Control Circuit Characteristics			
Built-in protection	On input		By varistor
	Suppression of contactor		By varistor
Rated control circuit voltage (Uc)		**V**	ac or dc 24 to 250
Permissible variation			0.8 to 1.1 Uc
Type of control			By mechanical contact only
Time Delay Characteristics			
Timing ranges		**s**	0.1 to 2; 1.5 to 30; 25 to 500
Repeat accuracy	0 to 40 °C (104 °F)		± 3% (10 ms minimum)
Reset time	During the time delay period	**ms**	150
	After the time delay period	**ms**	50
Immunity to micro-breaks	During the time delay period	**ms**	10
	After the time delay period	**ms**	2
Indication of time delay	By LED		Illuminates during time delay period
Switching Characteristics (solid state type)			
Maximum power dissipated		**W**	2
Leakage current		**mA**	< 5
Residual voltage		**V**	3.3
Overvoltage protection			3 kV; 0.5 N•m
Electrical durability	In millions of operating cycles		30
Operating Diagrams			

LA4DT "On-delay" electronic timers



Catalog Number: page 111 Dimensions: pages 122, 123 Schematics: pages 126, 127

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Control Modules, Coil Suppressor Modules and Mechanical Latch Blocks for Contactors

Environment

Conforming to standards			IEC 60947-5-1
Product certifications			UL, CSA
Protective treatment	Conforming to IEC 60068		"TH"
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X
Ambient air temperature around the device	Storage	**°C**	- 40 to + 80 (- 104 to + 176 °F)
	Operation	**°C**	- 25 to + 55 (- 77 to + 131 °F)
	Permissible for operation at Uc	**°C**	- 25 to + 70 (- 77 to + 158 °F)

"Auto - Man - Stop" Control Modules

Recommendation	The Auto - Man selector switch must only be operated with the Start - Stop ("O" "I") switch in position "O"		
Rated insulation voltage	Conforming to IEC 60947-5-1	**V**	250
Rated operational voltage	Conforming to IEC 60947-5-1	**V**	250
Protection	Against electric shocks	**kV**	2
Built-in protection	Contactor coil suppression		By varistor
Indication	By integral LED		Illuminates when the contactor coil is energized
Electrical durability	In operating cycles		20,000

Coil Suppressor Modules

Module type			**LA4DA LAD4RC**	**LA4DB LAD4T**	**LA4DC**	**LA4DE LAD4V**
Type of protection			RC circuit	Bidirectional peak limiting diode	Diode	Varistor
Rated control circuit voltage (Uc)		**V**	ac 24 to 415	ac or dc 24 to 72	dc 12 to 250	ac or dc 24 to 250
Maximum peak voltage			3 Uc	2 Uc	Uc	2 Uc
Natural RC frequency	24/48 V	**Hz**	400	–	–	–
	50/127 V	**Hz**	200			
	110/240 V	**Hz**	100	–	–	–
	380/415 V	**Hz**	150	–	–	–

Mechanical Latch Blocks

Mechanical latch block type			**LA6DK10**	**LAD6K10**	**LA6DK20**
For mounting on contactor			**LC1D40 to D65, LP1D65**	**LC1D09 to D38, DT20 to DT60**	**LC1D80 to D150 LP1D80 and LC1D115**
Certification			UL, CSA		UL, CSA
Rated insulation voltage	Conforming to IEC 60947-5-1	**V**	690		690
Rated control circuit voltage	ac 50/60 Hz and dc	**V**	24 to 415		24 to 415
Power required	For unlatching ac	**VA**	25		25
	For unlatching dc	**W**	30		30
Maximum operating rate	In operating cycles/hour		1200		1200
On-load factor			10%		10%
Mechanical durability at Uc	In millions of operating cycles		0.5		0.5

Catalog Number: pages 108, 110 - 112 Dimensions: pages 122, 123 Schematics: pages 126, 127

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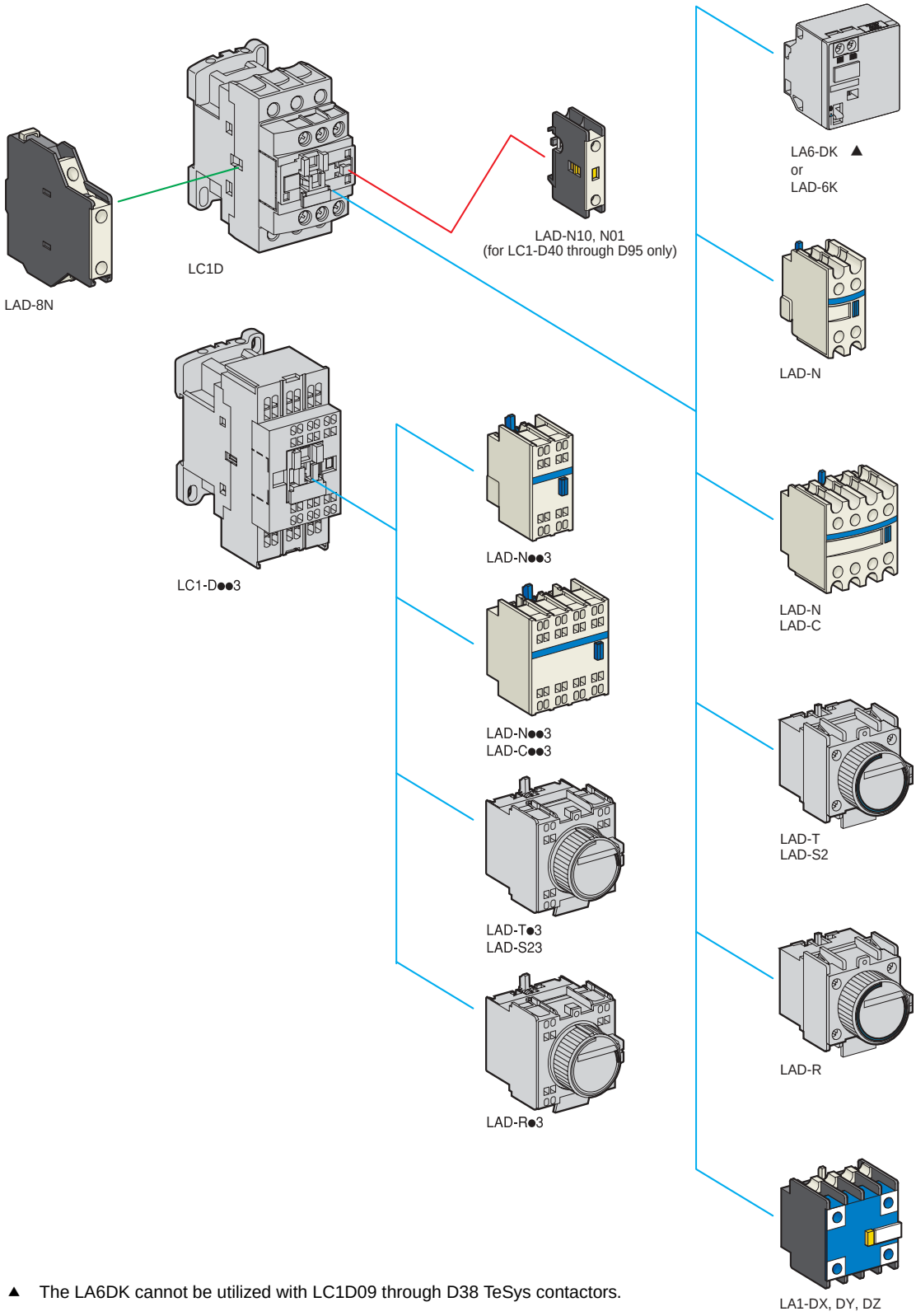

▲ The LA6DK cannot be utilized with LC1D09 through D38 TeSys contactors.

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Instantaneous Auxiliary Contact Blocks for Connection by Screw Clamp Terminals

For use in normal operating environments

Clip-on mounting	Number of contacts per block (see table below for maximum number of contacts)	Composition					Catalog Number	Weight lb (kg)
Front	1	–	–	–	1	–	**LADN10** ♦	0.04 (0.020)
		–	–	–	–	1	**LADN01** ♦	0.04 (0.020)
	2	–	–	–	1	1	**LADN11**	0.07 (0.030)
		–	–	–	2	–	**LADN20**	0.07 (0.030)
		–	–	–	–	2	**LADN02**	0.07 (0.030)
	4	–	–	–	2	2	**LADN22**	0.11 (0.050)
		–	–	–	1	3	**LADN13**	0.11 (0.050)
		–	–	–	4	–	**LADN40**	0.11 (0.050)
		–	–	–	–	4	**LADN04**	0.11 (0.050)
		–	–	–	3	1	**LADN31**	0.11 (0.050)
	4 includes one N.O. and one N.C. make before break	–	–	–	2	2	**LADC22**	0.11 (0.050)
Side	2	–	–	–	1	1	**LAD8N11**●	0.07 (0.030)
		–	–	–	2	–	**LAD8N20** ●	0.07 (0.030)
		–	–	–	–	2	**LAD8N02** ●	0.07 (0.030)
For terminal referencing conforming to standard EN 50012 ◑								
Front, on 3P contactors & 4P contactors 20 to 60A	2	–	–	–	1	1	**LADN11G**	0.07 (0.030)
	4	–	–	–	2	2	**LADN22G**	0.11 (0.050)
Front, on 4P contactors 80 to 200A	2	–	–	–	1	1	**LADN11P**	0.07 (0.030)
	4	–	–	–	2	2	**LADN22P**	0.11 (0.050)
With dust and damp protected terminals, for use in particularly harsh industrial environments								
Front	2		–	2	–	–		**LA1DX20**	0.09 (0.040)
			2	–	–	–	–	**LA1DX02**	0.09 (0.040)
			–	2	2	–	–	**LA1DY20** ▲	0.09 (0.040)
	4		–	2	–	2	–	**LA1DZ40**	0.11 (0.050)
			–	2	–	1	1	**LA1DZ31**	0.13 (0.060)

♦ For LC1D40 through LC1D95 only.
▲ Device with 4 shield bonding terminals.
● Mount on left side only of LC●D09 through D38 with AC coils. Not allowed on LC●D09 through D38 with DC coils.
◑ See page 126 for actual markings.

Instantaneous auxiliary contact blocks for connection by ring-tongue connectors

This type of connection is not possible for blocks with dust and damp protected contacts. For all other instantaneous auxiliary contact blocks, add the digit **6** to the end of the references selected above. Example: **LADN10** becomes **LADN106**.

Instantaneous auxiliary contact blocks for connection by spring terminals

This type of connection is not possible for LAD8, LADN with 1 contact or blocks with dust and damp protected contacts. For all other contact blocks, add the digit **3** to the end of the references selected above. Example: **LADN11** becomes **LADN113**.

Instantaneous auxiliary contact blocks for connection by Faston connectors

This type of connection is not possible for LAD8, LADN with 1 contact or blocks with dust and damp protected contacts. For all other contact blocks, add the digit **9** to the end of the references selected above. Example: **LADN11** becomes **LADN119**.

Maximum Number of Auxiliary Contacts

Contactors			Instantaneous auxiliary contact blocks					Time delay Front mounted
			Side mounted		Front mounted			
Type	Number of poles and size				1 contact	2 contacts	4 contacts	
ac	3P	LC1D09 to D38	1 on left-hand side	**and**	–	1	or 1	or 1
		LC1D40 to D95 (50/60 Hz)	1 on each side	**or**	2	and 1	or 1	or 1
		LC1D40 to D95 (50 or 60 Hz)	1 on each side	**and**	2	and 1	or 1	or 1
		LC1D115 and D150	1 on left-hand side	**and**	–	1	or 1	or 1
	4P	LC1DT20 to DT40	1 on left-hand side	**and**	–	1	or 1	or 1
		LC1D65 and D80	1 on each side	**or**	1	or 1	or 1	or 1
		LC1D115	1 on each side	**and**	1	or 1	or 1	or 1
dc	3P	LC1D09 to D38	–		–	1	or 1	or 1
		LC1D40 to D95	–		1	or 1	or 1	or 1
		LC1D115 and D150	1 on left-hand side	**and**	–	1	or 1	or 1
	4P	LC1DT20 to DT40	1 on left-hand side	**or**	–	1	or 1	or 1
		LP1D65 and D80	–		2	and 1	or 1	or 1
		LC1D115	1 on each side		–	and 1	or 1	or 1
LC (1)	3P	LC1D09 to D38	–		–	1 (2)	–	–
	4P	LC1DT20 to DT40	1 on left-hand side	**and**	–	1	or 1	or 1

(1) LC: low consumption.
(2) Except LADN02.

In order to mount on an LAD8N on an LC1D40 to D95, a set of shims must be ordered separately, see page 114.

Characteristics: page 100-102 Dimensions: pages 122, 123 Schematics: pages 126, 127

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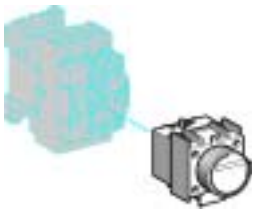
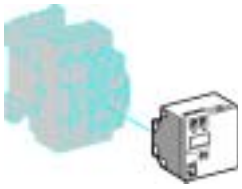
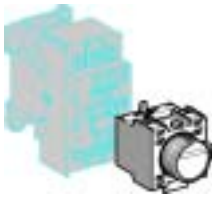


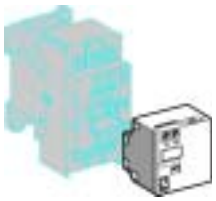
LADT●



LA6DK●●



LADT●3



LA6DK●●

Time Delay Auxiliary Contact Blocks for Connection by Screw Clamp Terminals

Maximum number of auxiliary contact blocks that can be attached per contactor, see page 107.
Sealing cover to be ordered separately, see page 114.
LADT0 and LADR0: with extended scale from 0.1 to 0.6 s.
LADS2: with switching time of 40 ms ± 15 ms between opening of the N.C. contact and closing of the N.O. contact.

Clip-on Mounting	Number of Contacts	Time Delay			Catalog Number	Weight lb (kg)
		Type	Setting Range			
Front	1 N.O. + 1 N.C.	On-delay ♦	0.1 to 3 s		**LADT0**	(0.13) 0.060
			0.1 to 30 s		**LADT2**	(0.13) 0.060
			10 to 180 s		**LADT4**	(0.13) 0.060
			1 to 30 s		**LADS2**	(0.13) 0.060
		Off-delay ♦	0.1 to 3 s		**LADR0**	(0.13) 0.060
			0.1 to 30 s		**LADR2**	(0.13) 0.060
			10 to 180 s		**LADR4**	(0.13) 0.060

♦ Also fit pre-TeSys Contactors.

Time delay auxiliary contact blocks for connection by ring-tongue connectors

Add the digit **6** to the end of the references selected above. Example: **LADT0** becomes **LADT06**.

Time delay auxiliary contact blocks for connection by spring terminals

Add the digit **3** to the end of the references selected above. Example: **LADT0** becomes **LADT03**.

Time delay auxiliary contact blocks for connection by Faston connectors

Add the digit **9** to the end of the references selected above. Example: **LADT0** becomes **LADT09**.

Mechanical latch blocks (2)

Clip-on Mounting	Unlatching Control	For use on Contactor	Basic Reference. Complete with Code Indicating Control Voltage	Standard Voltages (1)	Weight lb (kg)
Front	Manual or electric	LC1D40 to D65 3P ac or dc LC1D65 4P ac LP1D65 4P dc	**LA6DK10•**	B E F M Q	(0.15) 0.070
		LC1D80 to D150 3P ac LC1D80 and D115 3P dc LP1D80 and LC1D115 4P	**LA6DK20•**	B E F M Q	(0.20) 0.090
		LC1D09 to D38 ac or dc LC1DT20 to DT60 ac or dc	**LAD6K10•**	B E F M Q	(0.15) 0.070

(1) Standard control circuit voltages (for other voltages please consult your Regional Sales Office).

Vdc 50/60 Hz,	**24**	**32/36**	**42/48**	**60/72**	**100**	**110/127**	**220/240**	**256/277**	**380/415**
Code	**B**	**C**	**E**	**EN**	**K**	**F**	**M**	**U**	**Q**

(2) The mechanical latching block must not be powered up at the same time as the contactor. The duration of the control signal for the mechanical latching block and the contactor should be ≥ 100 ms.

Characteristics: pages 100 - 102 Dimensions: pages 122, 123 Schematics: pages 126, 127

SERIPLEX® Module

LA4SPX ▲

Approvals	File E114926 CCN NRAQ		LR53531 Class 2252 01	
SERIPLEX	**1 block per contactor Clip-on front mounting**	**Operates coils up to**	**Catalog Number**	**Weight – lb (kg.)**
Contactor adaptor module ♦	**LC1D09** to **LC1D80**	277 Vac	**LA4SPX**	0.160 (0.072)
	LP1D09 to **LP1D80**	24 Vdc		

♦ For more information, refer to SERIPLEX catalog 8330CT9601.
▲ Attaches similarly to all other accessories.

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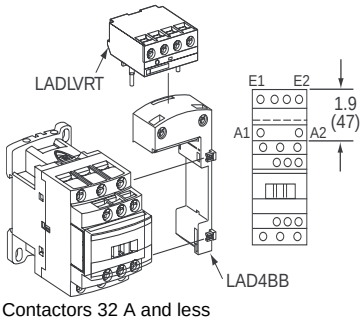
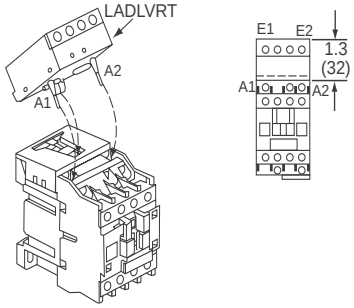
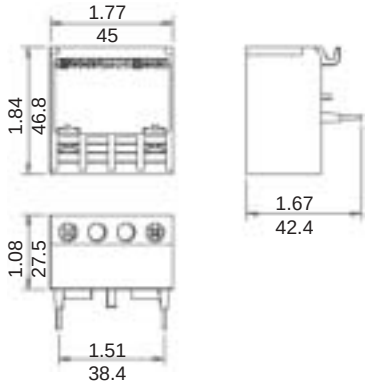


Contactors 32 A and less

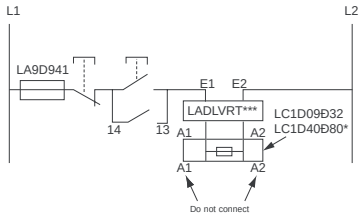


Contactors 40 A - 80 A

Dimensions



Typical Wiring Scheme for 3-Wire Control



SEMI F47 Low Voltage Ride Through Module

By ensuring SEMI F47 compliance of AC powered IEC contactors and relays, the Low Voltage Ride Through Modules can be used to increase the voltage sag immunity of semiconductor processing equipment. These modules make it possible for AC powered TELEMECANIQUE contactors and relays to exceed the requirements of SEMI F47, both in the magnitude and duration of a voltage sag event – even with accessories such as auxiliary contact blocks and pneumatic timers.

More and more wafer fabs are insisting that front-end wafer processing equipment comply with SEMI F47. Many of the contactors and pilot relays used on equipment, particularly in the EMO circuit, are not able to meet the standard. As a result, equipment can drop out during a voltage sag of 50% in magnitude and 200ms in duration, causing equipment shutdown.

The Low Voltage Ride Through Modules can be used with TELEMECANIQUE contactors from 9A through 80A, as well as the CAD series of control relays.

Selection

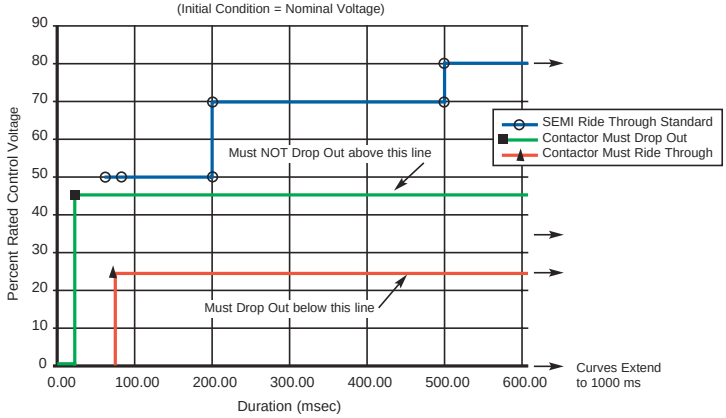
LADLVRT24V	LADLVRT120V	LADLVRT208V	Bracket	Fuse
For use on LC1: D09B7, D12B7, D18B7, D25B7	**For use on LC1:** D09G7, D12G7, D18G7, D25G7	**For use on LC1:** D09LE7, D12LE7, D18LE7, D25LE7	LAD4BB*	LA9D941
D32B7, D40B7, D50B7, D65B7, D80B7	D32G7, D40G7, D50G7, D65G7, D80B7	D32LE7, D40L7, D50L7, D65L7, D80B7	-	
CADxxxB7	CADxxxG7	CADxxxLE7	-	

* The Low Voltage Ride Through Module can be used with all TeSys control relays with 24 VAC, 120 VAC or 208 VAC dual frequency coils.

** LAD4BB must be used when the Low Voltage Ride Through Module is being used with contactors 32 A and less, and TeSys CAD Series of Control Relays.

Specifications

Continuous operating voltage range and line frequency	85–110% of the rated voltage at 47–63 Hz
Max. installed accessories	1 front mount and 1 side mount auxiliary device for contactors 1 auxiliary device for TeSys Control Relays
Dropout time	150 ms
Max. operation rate	20 operations/min. for LC1D09–LC1D32 30 operations/min. for LC1D40–LC1D80
Max. mechanical and electrical durability	250 000 operations
Leakage current capability	6 ma maximum as per IEC 61131
MTBF	100,000 hours
Standards	SEMI F47-0999, cULus, CE, UL 508 IEC 60947-5-1 (Control Circuit Devices and Switching Elements) IEC 60068 (Mechanical Environmental Testing) NSTA (Shipping and Handling) IEC 61000-4-2 Electrostatic Discharge IEC 61000-4-3 Electromagnetic Field IEC 61000-4-4 Fast Transient and Burst IEC 61000-4-5 Surge Immunity IEC 61000-4-6 Conducted RFI IEC 60068-2-6 Operational Vibration IEC 60068-2-27 Operational Shock
Pickup performance	per UL508 and IEC 60947
Storage temperature	-40 to +80 °C (- 104 to + 176 °F)
Operating temperature	0 to 40°C (32 to 104 °F) ambient surrounding ride through module
Relative humidity	5 to 95%, at 40°C (104 °F) non-condensing
Maximum operating altitude	3000 meters (9842.4 ft)



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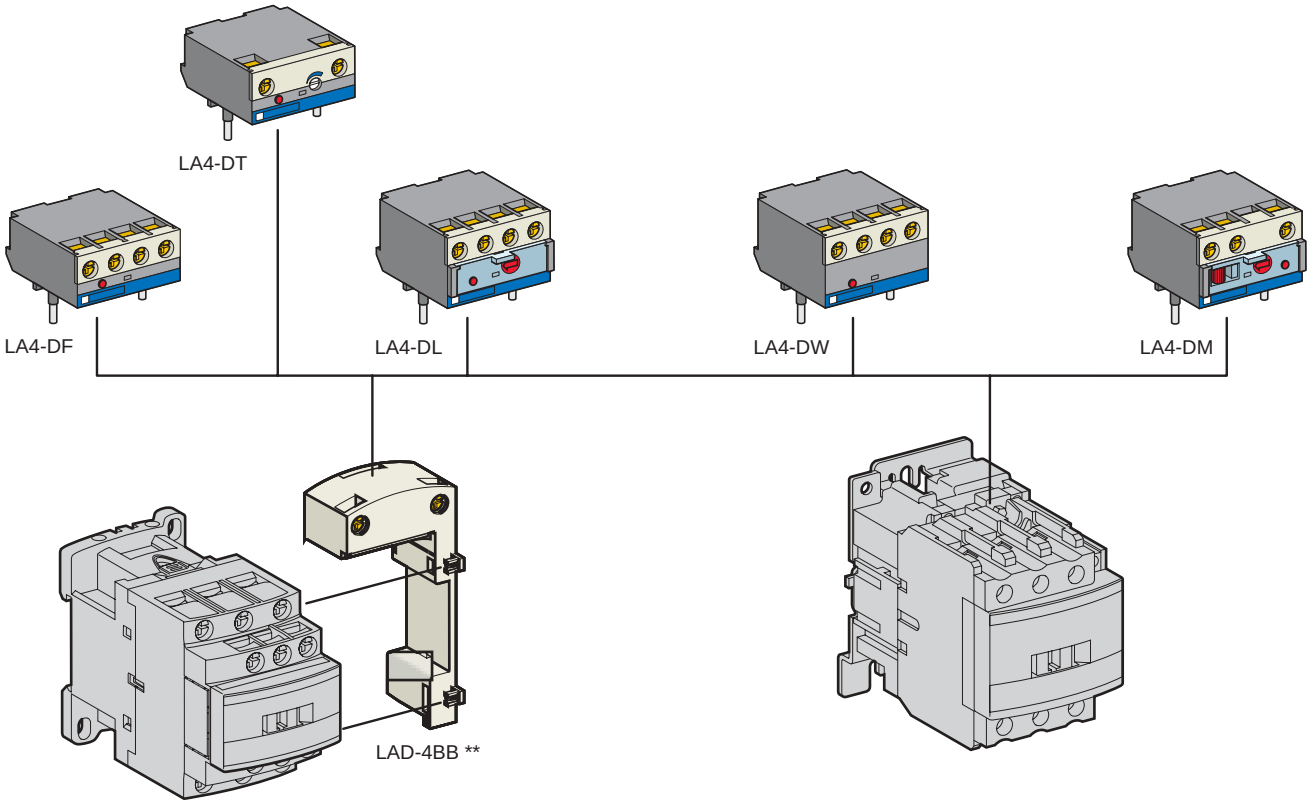

**See Cabling Accessories page 114.

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Electronic Serial Timer Modules (1)

- 3-pole contactors LC1D40 to D150 and 4-pole contactors LC1D65 to D115: mounted directly across terminals A1 and A2 of contactor (screw mounting).

On-delay Type

Operational Voltage		Time	Catalog Number	Weight lb (kg)
AC 24 to 250 V	**100 to 250 V**			
LC1 D09 to D38 (3P) and DT20 to DT60 (4P)	LC1 D40 to D150 (3P)	0.1 to 2 s	**LA4DT0U (2)**	0.09 (0.040)
		1.5 to 30 s	**LA4DT2U (2)**	0.09 (0.040)
		25 to 500 s	**LA4DT4U (2)**	0.09 (0.040)

Interface Modules

- 3-pole contactors LC1D40 to D150 and 4-pole contactors LC1D65 to D115: mounted directly across terminals A1 and A2 of contactor (screw mounting).

Relay Interface

Operational Voltage		Supply voltage E1-E2 (dc)	Catalog Number	Weight lb (kg)
AC 24 to 250 V	**AC 380 to 415 V**			
–	LC1D09 to D150 (3P) and DT20 to DT60 (4P)	24 V	**LA4DFBQ (2)**	0.12 (0.055)
LC1D09 to D150 (3P) and DT20 to DT60 (4P)	–	24 V	**LA4DFB (2)**	0.11 (0.050)
		48 V	**LA4DFE (2)**	0.11 (0.050)

Relay Interface with Manual Override Switch (output forced “ON”)

Operational Voltage		Supply Voltage E1-E2 (dc)	Catalog Number	Weight lb (kg)
AC 24 to 250 V	**AC 100 to 250 V**			
LC1D09 to D150 (3P) and DT20 to DT60 (4P)	–	24 V	**LA4DLB (2)**	0.10 (0.045)
		48 V	**LA4DLE (2)**	0.10 (0.045)

Solid State Interface

LC1D09 to D38 (3P) and DT20 to DT60 (4P)	LC1D40 to D115 (3P)	24 V	**LA4DWB (2)**	0.10 (0.045)

Auto-Man-Stop Control Modules

For local override operation tests with two-position “Auto-Man” switch and “O-I” switch

- 3-pole contactors LC1D40 to D150 and 4-pole contactors LC1D65 to D115: mounted directly across terminals A1 and A2 of contactor (screw mounting).

Operational voltage			Catalog Number	Weight lb (kg)
AC 24 to 100 V	**AC 100 to 250 V**			
LC1D09 to D150 (3P) and DT20 to DT60 (4P)	–		**LA4DMK (2)**	0.09 (0.040)
–	LC1D40 to D150 (3P)		**LA4DMU**	0.09 (0.040)

(1) For 24 V operation, the contactor must be fitted with a 21 V coil (code Z7). See pages 117.
(2) Mounting these accessories to TeSys LC1D09 through D38 AC controlled and LC1DT20 through DT40 AC controlled contactors requires the use of the LAD4BB adaptor. This adapter can not be used on TeSys contactors with DC coils.

Characteristics: pages 103 - 105 Dimensions: pages 122, 123 Schematics: pages 126, 127

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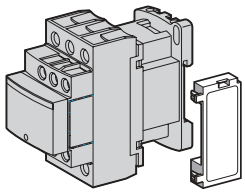
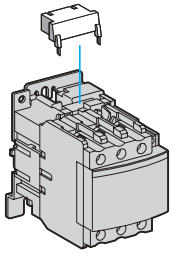


LAD4



LA4D

RC Circuits (resistor-capacitor)

- Effective protection for circuits highly sensitive to “high frequency” interference. For use only in cases where the voltage is virtually sinusoidal, i.e. less than 5% total harmonic distortion.
- Voltage limited to 3 Uc maximum and oscillating frequency limited to 400 Hz maximum.
- Slight increase in drop-out time (1.2 to 2 times the normal time).

Mounting	For use with Contactor (1)	Type		Catalog Number	Weight lb (kg)
	Rating	Vac	Vdc		
Clip-on (3)	D09 to D38 (3P) and DT20 to DT40	24 to 48	–	**LAD4RCE**	0.03 (0.012)
		110 to 250	–	**LAD4RCU**	0.03 (0.012)
Screw mounting(4)	D40 to D150 (3P) and D40 to D115 (4P)	24 to 48	–	**LA4DA2E**	0.04 (0.018)
		50 to 127	–	**LA4DA2G**	0.04 (0.018)
		110 to 250	–	**LA4DA2U**	0.04 (0.018)
		380 to 415	–	**LA4DA2N**	0.04 (0.018)

Varistors (peak limiting)

- Protection provided by limiting the transient voltage to 2 Uc max.
- Maximum reduction of transient voltage peaks.
- Slight increase in drop-out time (1.1 to 1.5 times the normal time).

Clip-on (3)	D09 to D38 (3P) (2) DT20 to DT40	24 to 48	–	**LAD4VE**	0.03 (0.012)
		50 to 127	–	**LAD4VG**	0.03 (0.012)
		110 to 250	–	**LAD4VU**	0.03 (0.012)
Screw connection to the contactor coil terminals	D40 to D115 (3P) and D40 to D115 (4P)	24 to 48	–	**LA4DE2E**	0.04 (0.018)
		50 to 127	–	**LA4DE2G**	0.04 (0.018)
		110 to 250	–	**LA4DE2U**	0.04 (0.018)
Screw connection of wire to the contactor coil terminals	D40 to D115 (3P) and D40 to D115 (4P)	–	24 to 48	**LA4DE3E**	0.04 (0.018)
		–	50 to 127	**LA4DE3G**	0.04 (0.018)
		–	110 to 250	**LA4DE3U**	0.04 (0.018)

Diodes

- No over voltage or oscillating frequency.
- Increase in drop-out time (6 to 10 times the normal time).
- Polarized component.

Screw mounting (4)	D40 to D95 (3P) D40 and D80 (4P)	–	24 to 250	**LA4DC3U**	0.04 (0.018)

Bidirectional peak limiting diode

- Protection provided by limiting the transient voltage to 2 Uc max.
- Maximum reduction of transient voltage peaks.

Clip-on (3)	D09 to D38 (3P) (2)	24	–	**LAD4TB**	0.03 (0.012)
	DT20 to DT40	72	–	**LAD4TS**	0.03 (0.012)
Screw mounting (4)	D40 to D95 (3P)	24	–	**LA4DB2B**	0.04 (0.018)
	D40 and D80 (4P)	72	–	**LA4DB2S**	0.04 (0.018)
	D40 to D95 (3P)	–	24	**LA4DB3B**	0.04 (0.018)
	D40 and D80 (4P)	–	72	**LA4DB3S**	0.04 (0.018)

(1) For satisfactory protection, a suppressor module must be installed across the coil of each contactor.
(2) From LC1D09 to D38 and LC1DT20 to DT40, dc and low consumption 3-pole contactors are fitted with built-in suppression as standard.
(3) Clipping-on makes the electrical connection. The overall size of the contactor remains unchanged.
(4) Mounting at the top of the contactor on coil terminals A1 and A2.

Characteristics: pages 100 - 102 Dimensions: pages 122, 123 Schematics: pages 126, 127

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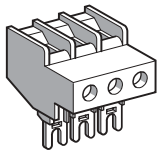
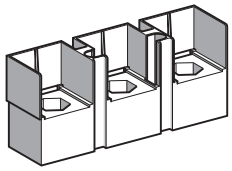
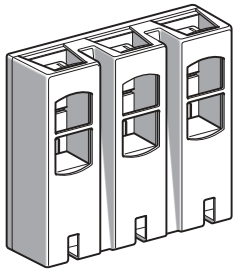


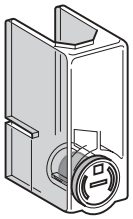
LA9D3260



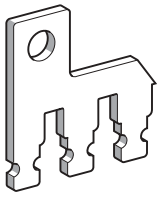
LA9D11550·



LA9D11560·



LA9D11570·



LA9D80962

Accessories for Main Pole and Control Connections

Description		For Use on Contactors		Sold In Lots Of	Catalog Number	Weight lb (kg)
		AC	DC			
Connectors for cable, sizes (1 connector)	4-pole 10 mm^2 (8 AWG)	D09, D12, DT20, DT25	D09, D12, DT20, DT25	1	**LAD92560**	0.67 (0.030)
	3-pole 25 mm^2 (4 AWG)	D09 to D38	D09 to D38	1	**LA9D3260**	0.09 (0.040)
	4-pole 25 mm^2 (4 AWG)	DT32 to DT40	DT32 to DT40	1	**LAD96060**	0.13 (0.060)
Connectors for cable, sizes (2 connectors)	3-pole 120 mm^2(250 MCM)	D115, D150	D115, D150	1	**LA9D115603B**	1.2 (0.560)
	4-pole 120 mm^2 (250 MCM)	D115	D115	1	**LA9D115604**	1.6 (0.740)
Connector for lug type terminals (2 connectors)	3-pole	D115, D150	D115, D150	1	**LA9D115503B**	0.66 (0.300)
	4-pole	D115	D115	1	**LA9D115504**	0.80 (0.360)
Protective covers for lug type terminals	3-pole (1)	D115, D150	D115, D150	1	**LA9D115703**	0.55 (0.250)
	4-pole (1)	D115, D150	D115, D150	1	**LA9D115704**	0.66 (0.300)
Links for parallel connection of	2 poles	D09 to D38	D09 to D38	10	**LA9D2561**	0.13 (0.060)
		DT20 & DT25 (4P)	DT20 & DT25 (4P)	10	**LA9D1261**	0.03 (0.012)
		DT32 to DT40 (4P)	DT32 to DT40 (4P)	10	**LAD96061**	0.13 (0.060)
		D40 to D65	D40 to D65	2	**LA9D40961**	0.05 (0.021)
		D80, D95	D80	2	**LA9D80961**	0.13 (0.060)
	3 poles (star connection)	D09 to D38	D09 to D38	10	**LAD9P3 (2)**	0.01 (0.005)
		D80, D95	D80	1	**LA9D80962**	0.18 (0.080)
	4 poles	DT20 to DT40	DT20 to DT40	2	**LA9D1263**	0.05 (0.024)
		D40 to D65	D40 to D65	2	**LA9D40963**	0.15 (0.070)
		D80, D95	D80	2	**LA9D80963**	0.22 (0.100)
Staggered coil connection		–	D40 to D80	10	**LA9D09966**	0.01 (0.006)
Control circuit take-off from main pole		D40 to D65	D40 to D65	10	**LA9D6567**	0.02 (0.010)
		D80, D95	D80	10	**LA9D8067**	0.02 (0.010)
Spreaders for increasing the pole pitch to 45 mm		D115, D150	D115, D150	3	**GV7AC03**	0.4 (0.180)

(1) For 3-pole contactors: 1 set of 6 covers, for 4-pole contactors: 1 set of 8 covers.
(2) Separate connecting bar for connecting 2 poles in parallel.

Dimensions: pages 122, 123 Schematics: pages 126, 127

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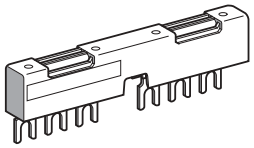
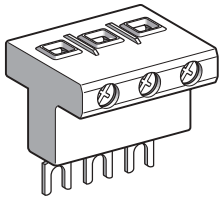
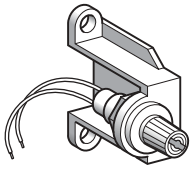


GV2G245



GV1G09



LA9D941

LAD9ET·

XBY1U

Sets of Contacts and Arc Chambers

Description	For Use on Contactors		Catalog Number	Weight lb (kg)
Set of contacts	3-pole	LC1D115	**LA5D1158031**	0.60 (0.260)
		LC1D150	**LA5D150803**	0.60 (0.260)
	4-pole	LC1D115004	**LA5D115804**	0.72 (0.330)
Arc chambers	3-pole	LC1D115	**LA5D11550**	0.87 (0.395)
		LC1D150	**LA5D15050B**	0.87 (0.395)
	4-pole	LC1D115004	**LA5D115450B**	1.03 (0.470)

Cabling Accessories

For adapting existing wiring to a new product	LC1D09 to D38 and LC1DT20 to DT60 AC only	Without coil suppression		**LAD4BB**	0.04 (0.019)
		With coil suppression	ac 24 to 48 V	**LAD4BBVE**	0.03 (0.014)
			ac 50 to 127 V	**LAD4BBVG**	0.03 (0.014)
			ac 110 to 250 V	**LAD4BBVU**	0.03 (0.014)
Set of 63 A busbars for paralleling of contactors	2 contactors LC1D09 to D18 or D25 to D38			**GV2G245**	0.08 (0.036)
	4 contactors LC1D09 to D18 or D25 to D38			**GV2G445**	0.17 (0.077)
Terminal block for supply to:	One or more GV2G busbar sets			**GV1G09**	0.09 (0.040)

Protection Accessories

Description	Application	Sold in Lots Of	Catalog Number	Weight lb (kg)
Miniature fuse holder	5 x 20 with 4 A-250 V fuse	1	**LA9D941**	0.05 (0.025)
Sealing cover	For LADT, LADR	1	**LA9D901**	0.01 (0.005)
Safety cover preventing access to the moving contact carrier	LC1D09 to D38 and DT20 to DT60	1	**LAD9ET1**	0.06 (0.026)
	LC1D40 to D65	1	**LAD9ET2**	0.03 (0.012)
	LC1D80 and D95	1	**LAD9ET3**	0.008 (0.004)
	LC1D115 and D150	1	**LAD9ET4**	0.008 (0.004)

Marking Accessories

Description	Application	Sold in Lots Of	Catalog Number	Weight lb (kg)
Sheet of 80 blank labels self-adhesive, 8 x 33 (1)	Contactors (excluding 4-pole LC1-D65 to D115) LADN (4 contacts), LA6DK	10	**LAD21**	0.04 (0.020)
Sheet of 80 blank labels self-adhesive, 8 x 12 (1)	LADN (2 contacts), LADT, LADR, LRD	10	**LAD22**	0.04 (0.020)
Sheet of 80 blank labels for marking using plotter or 8 x 33 engraver	Contactors (excluding 4-pole LC1D65 to D115) LAD (4 contacts), LA6DK	10	**LAD23**	0.11 (0.050)
Sheet of 112 blank labels for marking using plotter or 8 x 12 mm engraver	All products	35	**LAD24**	0.44 (0.200)
Label holder snap-in, 8 x 22 mm	4-pole contactors LC1D65 and D80, LA6DK	100	**LA9D92**	0.002 (0.001)
Legend holder snap-in, 8 x 22 mm	LC1DO9 to D38 LC1DT20 to D40 LAD●N (4 contacts) LAD●T, LAD●R	100	**LAD90**	0.002 (0.001)
Bag of 300 blank labels self-adhesive, 7 x 21 mm	On holder LA9D92	1	**LA9D93**	0.002 (0.001)
"SIS Label" label creation software	Multi-language version (EN, FR, GE) ▲	1	**XBY2U**	0.13 (0.060)

▲ System requirement: 486 processor or better; Windows 95, 98 or NT 4.0 or better.

Mounting Accessories

Mounting plate	For replacement of LC1F115 or F150 by LC1D115 or D150	1	**LA9D730**	0.80 (0.360)
Set of shims	For fitting side mounting blocks LAD8N on LC1D40 to D95	1	**LA9D511**	0.04 (0.020)

(1) These legends are for sticking onto the safety cover of the contactors or add-on block, if fitted.

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D-line Voltage Code

Voltage	Frequency	D-line (see notes at end of table)		
		LC1D09 - D38 LC2D09 - D38 Notes D1, D3	LC1D40 - D95 LC2D40 - D95 Note D1	LC1D115 - D150 Note D1, D2, D4
5	**Low Consump DC**	AL	-	-
12	**50/60**	J7	-	-
	50	-	J5	-
	DC	JD	JD	-
	Low Consump DC	JL	-	-
	Wide Range DC	-	JW	-
20	50/60	-	Z7	-
	50	-	Z5	-
	60	-	Z6	-
	DC	-	-	-
	Low Consump DC	ZL	-	-
24	50/60	B7	B7	B7
	50	-	B5	B5
	60	-	B6	B6
	40-400	-	-	-
	DC	BD	BD	BD
	Low Consump DC	BL	-	-
	Wide Range DC	-	BW	-
36	50/60	CC7	-	-
	DC	CD	CD	CD
	Wide Range DC	-	CW	-
42	50/60	D7	D7	D7
	50	-	D5	D5
	60	-	-	-
48	50/60	E7	E7	E7
	50	-	E5	E5
	60	-	E6	E6
	40-400	-	-	-
	DC	ED	ED	ED
	Low Consump DC	EL	-	-
	Wide Range DC	-	EW	-
60	50/60	EE7	-	-
	DC	ND	ND	ND
72	DC	SD	SD	SD
	Low Consump DC	SL	-	-
	Wide Range DC	-	SW	-
96	Low Consump DC	DL	-	-
100	50/60	K7	K7	-
	DC	-	-	-

D-line Voltage Code (Continued)

Voltage	Frequency	D-line (see notes at end of table)		
		LC1D09 - D38 LC2D09 - D38 Notes D1, D3	LC1D40 - D95 LC2D40 - D95 Note D1	LC1D115 - D150 Note D1, D2, D4
110	50/60	F7	F7	F7
	50	-	F5	F5
	60	-	F6	F6
	40-400	-	-	-
	DC	FD	FD	FD
	Low Consump DC	FL	-	-
	Wide Range DC	-	FW	-
110/127	40-400	-	-	-
115	50/60	FE7	FE7	FE7
	50	-	FE5	FE5
	40-400	-	-	-
120	50/60	G7	G7	G7
	50	-	-	-
	60	-	G6	G6
	40-400	-	-	-
	DC	-	-	-
	Low Consump DC	-	-	-
125	DC	GD	GD	GD
127	50/60	FC7	-	FC7
	60	-	G5	FC5
	40-400	-	-	-
155	DC	PD	-	-
174	DC	-	-	-
200	50/60	L7	L7	-
	DC	-	-	-
200/208	50/60	-	-	-
	60	-	-	-
	40-400	-	-	-
208	50/60	LE7	LE7	LE7
	60	-	L6	L6
	40-400	-	-	-
220	50/60	M7	M7	M7
	50	-	-	M5
	60	-	M6	M6
	40-400	-	-	-
	DC	MD	MD	MD
	Low Consump DC	ML	-	-
	Wide Range DC	-	MW	-
220/230	50/60	-	-	-
	50	-	M5	-
	60	-	-	-
	40-400	-	-	-
	DC	-	-	-
220/240	40-400	-	-	-
	DC	-	-	-

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D-line Voltage Code (Continued)

Voltage	Frequency	D-line (see notes at end of table)		
		LC1D09 - D38 LC2D09 - D38 Notes D1, D3	LC1D40 - D95 LC2D40 - D95 Note D1	LC1D115 - D150 Note D1, D2, D4
230	50/60	P7	P7	P7
	50	U7	P5	P5
	60	-	-	-
	40-400	-	-	-
	DC	-	-	-
230/240	50/60	-	-	-
240	50/60	U7	U7	U7
	50	-	U5	U5
	60	-	U6	U6
	40-400	-	-	-
	DC	-	-	-
250	DC	UD	UD	UD
	Low Consump DC	UL	-	-
256	50/60	-	-	-
	50	-	W5	-
277	50/60	W7	-	UE7
	50	-	W6	W6
	40-400	-	-	-
380	50/60	Q7	Q7	Q7
	50	-	-	Q5
	60	-	Q6	Q6
	40-400	-	-	-
380/400	50/60	-	-	-
	50	-	Q5	-
	60	-	-	-
	40-400	-	-	-
	DC	-	-	-
380/440	40-400	-	-	-
400	50/60	V7	V7	V7
	50	-	V5	V5
	40-400	-	-	-
400/415	50/60	-	-	-
415	50/60	N7	N7	N7
	50	-	N5	N5
	40-400	-	-	-
415-440	50	-	-	-
	40-400	-	-	-
440	50/60	R7	R7	R7
	50	-	R5	R5
	60	-	R6	R6
	40-400	-	-	-
	DC	RD	RD	RD
440/460	DC	-	-	-
460/480	60	-	-	-
480	50/60	T7	-	T7
	50	-	-	-
	60	-	T6	T6
	40-400	-	-	-
500	50/60	S7	-	S7
	50	-	S5	S5
	40-400	-	-	-
575	50/60	SC7	-	-
	60	-	S6	-

D-line Voltage Code (Continued)

Voltage	Frequency	D-line (see notes at end of table)		
		LC1D09 - D38 LC2D09 - D38 Notes D1, D3	LC1D40 - D95 LC2D40 - D95 Note D1	LC1D115 - D150 Note D1, D2, D4
600	50/60	X7	-	-
	60	X6	X6	-
	40-400	-	-	-
660	50	Y5	Y5	-
	60	-	-	-
660/690	50/60	-	-	-

Notes:

D1 For operating ranges refer to technical data section of the D-line contactors. Ranges vary as a function of the current rating of the contactor and type of supply (AC/DC)

D2 LC1-D150 Contactors utilize dual frequency 50/60 Hz. coils only. Single frequency coils are not available.

D3 LC1D09 -LC1D38 contactors with DC coil have integral suppression device (bi-directional diode) as standard.

D4 D115 and D150 coils have integral suppression device fitted as standard.

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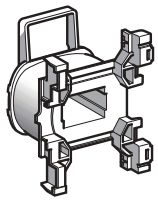

LXD1●

AC Coils for Contactors LC1D09 to D38 3-pole and 4-pole LC1DT20 to DT40

Specifications

Control circuit voltage Uc	Average resistance at 20 °C ± 10%	Inductance of closed circuit	Catalog Number (1)	Weight lb (kg)
V	Ω	H	50/60 Hz	
Average consumption at 20 °C (68 °F): - inrush (cos φ = 0.75) 70 VA, - sealed (cos φ = 0.3) 50 Hz: 7 VA, 60 Hz: 7.5 VA. Operating range (θ ≤ 60 °C / 140 °F): 50 Hz: 0.8 to 1.1 Uc, 60 Hz: 0.85 to 1.1 Uc.				
12	6.3	0.26	**LXD1J7**	0.15 (0.070)
21 (2)	5.6	0.24	**LXD1Z7**	0.15 (0.070)
24	6.19	0.26	**LXD1B7**	0.15 (0.070)
32	12.3	0.48	**LXD1C7**	0.15 (0.070)
36	12.83		**LXD1CC7**	0.15 (0.070)
42	19.15	0.77	**LXD1D7**	0.15 (0.070)
48	25	1	**LXD1E7**	0.15 (0.070)
60	34.6	–	**LXD1EE7**	0.15 (0.070)
100	100.4	–	**LXD1K7**	0.15 (0.070)
110	130	5.5	**LXD1F7**	0.15 (0.070)
115	129.8	–	**LXD1FE7**	0.15 (0.070)
120	159	6.7	**LXD1G7**	0.15 (0.070)
127	192.5	7.5	**LXD1FC7**	0.15 (0.070)
200	410.7	–	**LXD1L7**	0.15 (0.070)
208	417	16	**LXD1LE7**	0.15 (0.070)
220	539	22	**LXD1M7**	0.15 (0.070)
230	595	21	**LXD1P7**	0.15 (0.070)
240	645	25	**LXD1U7**	0.15 (0.070)
277	781	30	**LXD1W7**	0.15 (0.070)
380	1580	60	**LXD1Q7**	0.15 (0.070)
400	1810	64	**LXD1V7**	0.15 (0.070)
415	1938	74	**LXD1N7**	0.15 (0.070)
440	2242	79	**LXD1R7**	0.15 (0.070)
480	2300	85	**LXD1T7**	0.15 (0.070)
575	3432	119	**LXD1SC7**	0.15 (0.070)
600	3600	135	**LXD1X7**	0.15 (0.070)
690	5600	190	**LXD1Y7**	0.15 (0.070)

(1) The last two digits of the reference represent the voltage code.
(2) Voltage for special coils installed in contactors with serial timer modules, with 24 V supply.

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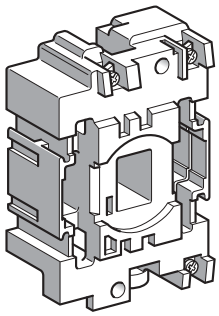

LX1D6•

AC Coils for 3 or 4-pole Contactors LC1D40, D50, D65, D80, D95

Specifications

Control circuit voltage Uc	Average resistance at 20 °C ± 10%	Inductance of closed circuit	Catalog Number (1)	Average resistance at 20 °C ± 10%	Inductance of closed circuit	Catalog Number (1)	Weight lb (kg)
V	Ω	H	50 Hz	W	H	60 Hz	
Average consumption at 20 °C (68 °F): - inrush (cos φ = 0.75) 50 Hz: 200 VA, 60 Hz: 220 VA, - sealed (cos φ = 0.3) 50 Hz: 20 VA, 60 Hz: 22 VA. Operating range (θ ≤ 55 °C / 131 °F): 0.85 to 1.1 Uc.							
24	1.4	0.09	**LX1D6B5**	1.05	0.06	**LX1D6B6**	0.61 (0.280)
32	2.6	0.16	**LX1D6C5**	–	–	**–**	0.61 (0.280)
42	4.4	0.27	**LX1D6D5**	–	–	**–**	0.61 (0.280)
48	5.5	0.35	**LX1D6E5**	4.2	0.23	**LX1D6E6**	0.61 (0.280)
110	31	1.9	**LX1D6F5**	22	1.2	**LX1D6F6**	0.61 (0.280)
115	31	1.9	**LX1D6FE5**	–	–	**–**	0.61 (0.280)
120	–	–	**–**	28	1.5	**LX1D6G6**	0.61 (0.280)
127	41	2.4	**LX1D6G5**	–	–	**–**	0.61 (0.280)
208	–	–	**–**	86	4.3	**LX1D6L6**	0.61 (0.280)
220	–	–	**–**	98	4.8	**LX1D6M6**	0.61 (0.280)
220/230	127	7.5	**LX1D6M5**	–	–	**–**	0.61 (0.280)
230	133	8.1	**LX1D6P5**	–	–	**–**	0.61 (0.280)
240	152	8.7	**LX1D6U5**	120	5.7	**LX1D6U6**	0.61 (0.280)
256	166	10	**LX1D6W5**	–	–	**–**	0.61 (0.280)
277	–	–	**–**	157	8	**LX1D6W6**	0.61 (0.280)
380	–	–	**–**	300	14	**LX1D6Q6**	0.61 (0.280)
380/400	381	22	**LX1D6Q5**	–	–	**–**	0.61 (0.280)
400	411	25	**LX1D6V5**	–	–	**–**	0.61 (0.280)
415	463	26	**LX1D6N5**	–	–	**–**	0.61 (0.280)
440	513	30	**LX1D6R5**	392	19	**LX1D6R6**	0.61 (0.280)
480	–	–	**–**	480	23	**LX1D6T6**	0.61 (0.280)
500	668	38	**LX1D6S5**	–	–	**–**	0.61 (0.280)
575	–	–	**–**	675	33	**LX1D6S6**	0.61 (0.280)
600	–	–	**–**	775	36	**LX1D6X6**	0.61 (0.280)
660	1220	67	**LX1D6Y5**	–	–	**–**	0.61 (0.280)

Specifications

Average consumption at 20 °C (68 °F):
- inrush (cos φ = 0.75) 50/60 Hz: 245 VA at 50 Hz,
- sealed (cos φ = 0.3) 50/60 Hz: 26 VA at 50 Hz.

Operating range (θ ≤ 55 °C / 131 °F): 0.85 to 1.1 Uc.

						50/60 Hz	
24	–	–	–	1.22	0.08	**LX1D6B7**	0.61 (0.280)
42	–	–	–	3.5	0.25	**LX1D6D7**	0.61 (0.280)
48	–	–	–	5	0.32	**LX1D6E7**	0.61 (0.280)
110	–	–	–	26	1.7	**LX1D6F7**	0.61 (0.280)
115	–	–	–	–	–	**LX1D6FE7**	0.61 (0.280)
120	–	–	–	32	2	**LX1D6G7**	0.61 (0.280)
208	–	–	–	88.7	4.42	**LC1D6LE7**	0.61 (0.280)
220/230 (2)	–	–	–	102	6.7	**LX1D6M7**	0.61 (0.280)
230	–	–	–	115	7.7	**LX1D6P7**	0.61 (0.280)
230/240 (3)	–	–	–	131	8.3	**LX1D6U7**	0.61 (0.280)
380/400 (4)	–	–	–	310	20	**LX1D6Q7**	0.61 (0.280)
400	–	–	–	349	23	**LX1D6V7**	0.61 (0.280)
415	–	–	–	390	24	**LX1D6N7**	0.61 (0.280)
440	–	–	–	410	27	**LX1D6R7**	0.61 (0.280)

(1) The last two digits of the reference represent the voltage code.
(2) For use on 230 V 50 Hz, apply a coefficient of 0.6 to the mechanical durability of the contactor (see page 82). This coil can be used on 240 V at 60 Hz.
(3) This coil can be used on 220/240 V at 50 Hz and on 240 V only at 60 Hz.
(4) For use on 400 V 50 Hz, apply a coefficient of 0.6 to the mechanical durability of the contactor.

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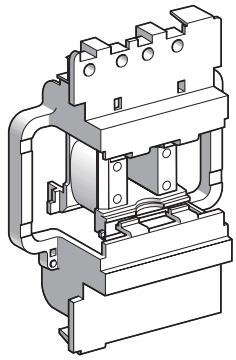

LX1D8••

AC Coils for 3 or 4-pole Contactors LC1D115

Control circuit voltage Uc	Average resistance at 20 °C ± 10%	Inductance of closed circuit	Catalog Number(1)	Average resistance at 20 °C ± 10%	Inductance of closed circuit	Catalog Number (1)	Weight lb (kg)
V	Ω	H	50 Hz	Ω	H	60 Hz	kg
Specifications							
Average consumption at 20 °C (68 °F): - inrush (cos φ = 0.8) - 50 or 60 Hz: 300 VA, - sealed (cos φ = 0.3) - 50 or 60 Hz: 22 VA. Operating range (θ ≤ 55 °C / 131°F): 0.85 to 1.1 Uc.							
24	1.24	0.09	**LX1D8B5**	0.87	0.07	**LX1D8B6**	0.57 (0.260)
32	2.14	0.17	**LX1D8C5**	–	–	**–**	0.57 (0.260)
42	3.91	0.28	**LX1D8D5**	–	–	**–**	0.57 (0.260)
48	4.51	0.36	**LX1D8E5**	3.91	0.28	**LX1D8E6**	0.57 (0.260)
110	26.53	2.00	**LX1D8F5**	19.97	1.45	**LX1D8F6**	0.57 (0.260)
115	26.53	2.00	**LX1D8FE5**	–	–	**–**	0.57 (0.260)
120	–	–	**–**	24.02	1.70	**LX1D8G6**	0.57 (0.260)
127	32.75	2.44	**LX1D8FC5**	–	–	**–**	0.57 (0.260)
208	–	–	**–**	67.92	5.06	**LX1D8L6**	0.57 (0.260)
220	104.77	7.65	**LX1D8M5**	79.61	5.69	**LX1D8M6**	0.57 (0.260)
230	104.77	8.29	**LX1D8P5**	–	–	**–**	0.57 (0.260)
240	125.25	8.89	**LX1D8U5**	97.04	6.75	**LX1D8U6**	0.57 (0.260)
277	–	–	**–**	125.75	8.89	**LX1D8W6**	0.57 (0.260)
380	338.51	22.26	**LX1D8Q5**	243.07	17.04	**LX1D8Q6**	0.57 (0.260)
400	368.43	25.55	**LX1D8V5**	–	–	**–**	0.57 (0.260)
415	368.43	27.65	**LX1D8N5**	–	–	**–**	0.57 (0.260)
440	441.56	30.34	**LX1D8R5**	338.51	22.26	**LX1D8R6**	0.57 (0.260)
480	–	–	**–**	368.43	25.55	**LX1D8T6**	0.57 (0.260)
500	566.62	38.12	**LX1D8S5**	–	–	**–**	0.57 (0.260)

For 3 or 4-pole contactors LC1D115, D150

Specifications							
Average consumption at 20 °C (68 °F): - inrush: cos φ = 0.9 - 280 to 350 VA, - sealed: cos φ = 0.9 - 2 to 18 VA. Operating range (θ ≤ 55 °C / 131 °F): 0.8 to 1.15 Uc. Coils with integral suppression device fitted as standard, class B.							
						50/60 Hz	
24	–	–	–	147	3.03	**LX1D8B7**	0.64 (0.290)
32	–	–	–	301	8.28	**LX1D8C7**	0.64 (0.290)
42	–	–	–	498	13.32	**LX1D8D7**	0.64 (0.290)
48	–	–	–	1061	24.19	**LX1D8E7**	0.64 (0.290)
110	–	–	–	4377	109.69	**LX1D8F7**	0.64 (0.290)
115	–	–	–	4377	109.69	**LX1D8FE7**	0.64 (0.290)
120	–	–	–	4377	109.69	**LX1D8G7**	0.64 (0.290)
127	–	–	–	6586	152.65	**LX1D8FC7**	0.64 (0.290)
208	–	–	–	10 895	260.15	**LX1D8LE7**	0.64 (0.290)
220	–	–	–	9895	210.72	**LX1D8M7**	0.64 (0.290)
230	–	–	–	9895	210.72	**LX1D8P7**	0.64 (0.290)
240	–	–	–	9895	210.72	**LX1D8U7**	0.64 (0.290)
277	–	–	–	21 988	533.17	**LX1D8UE7**	0.64 (0.290)
380	–	–	–	21 011	482.42	**LX1D8Q7**	0.64 (0.290)
400	–	–	–	21 011	482.42	**LX1D8V7**	0.64 (0.290)
415	–	–	–	21 011	482.42	**LX1D8N7**	0.64 (0.290)
440	–	–	–	21 501	507.47	**LX1D8R7**	0.64 (0.290)
480	–	–	–	32 249	938.41	**LX1D8T7**	0.64 (0.290)
500	–	–	–	32 249	938.41	**LX1D8S7**	0.64 (0.290)

(1) The last two characters of the reference represent the voltage code.

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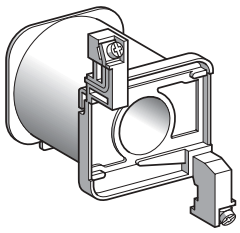
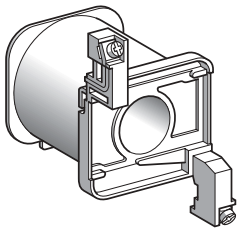


LX4D6••

DC Coils for 3-pole Contactors LC1D40 to D65 or 4-pole Contactors LP1D65

Control circuit voltage Uc	Average resistance at 20 °C ± 10%	Inductance of closed circuit	Catalog Number (1)	Weight lb (kg)
V	Ω	H		
Specifications				
Average consumption: 22 W. Operating range: 0.85 to 1.1 Uc.				
12	7.1	0.44	**LX4D6JD**	0.91 (0.415)
24	26.8	1.69	**LX4D6BD**	0.91 (0.415)
36	58	3.55	**LX4D6CD**	0.91 (0.415)
48	109	6.86	**LX4D6ED**	0.91 (0.415)
60	173	10.9	**LX4D6ND**	0.91 (0.415)
72	234	14.7	**LX4D6SD**	0.91 (0.415)
110	560	35.28	**LX4D6FD**	0.91 (0.415)
125	717	45.2	**LX4D6GD**	0.91 (0.415)
220	2255	142	**LX4D6MD**	0.91 (0.415)
250	2940	185	**LX4D6UD**	0.91 (0.415)
440	9080	572	**LX4D6RD**	0.91 (0.415)



LX4D7••

For 3-pole contactors LC1D80 or 4-pole contactors LP1D80

Specifications				
Average consumption: 22 W. Operating range: 0.85 to 1.1 Uc.				
12	6.6	0.46	**LX4D7JD**	1.50 (0.680)
24	27	1.89	**LX4D7BD**	1.50 (0.680)
36	57	4	**LX4D7CD**	1.50 (0.680)
48	107	7.5	**LX4D7ED**	1.50 (0.680)
60	170	11.9	**LX4D7ND**	1.50 (0.680)
72	230	16.1	**LX4D7SD**	1.50 (0.680)
110	564	39.5	**LX4D7FD**	1.50 (0.680)
125	718	50.3	**LX4D7GD**	1.50 (0.680)
220	2215	155	**LX4D7MD**	1.50 (0.680)
250	2850	200	**LX4D7UD**	1.50 (0.680)
440	9195	640	**LX4D7RD**	1.50 (0.680)

(1)1 The last two characters of the reference represent the voltage code.

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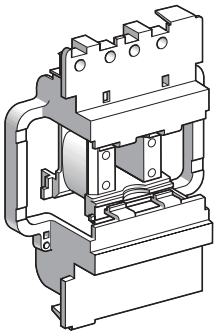
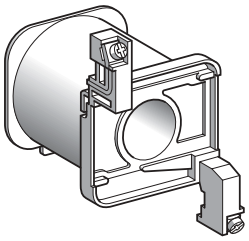


LX4D8•D

DC Coils for 3 or 4-pole Contactors LC1D115, D150

Control circuit voltage Uc	Average resistance at 20 °C ± 10%	Inductance of closed circuit		Catalog Number(1)	Weight lb (kg)
V	Ω	H			
Specifications					
Consumption: inrush 270 to 365 W, sealed 2.4 to 5.1 W. Operating range: 0.7 to 1.2 Uc. Coils have integral suppression device as standard, class B.					
24	147	3.03		**LX4D8BD**	0.66 (0.300)
48	1061	24.19		**LX4D8ED**	0.66 (0.300)
60	1673	38.44		**LX4D8ND**	0.66 (0.300)
72	2500	56.27		**LX4D8SD**	0.66 (0.300)
110	4377	109.69		**LX4D8FD**	0.66 (0.300)
125	6586	152.65		**LX4D8GD**	0.66 (0.300)
220	9895	210.72		**LX4D8MD**	0.66 (0.300)
250	18 022	345.40		**LX4D8UD**	0.66 (0.300)
440	21 501	684.66		**LX4D8RD**	0.66 (0.300)

(1) The last two characters of the reference represent the voltage code.



LX4D6••

Wide Range DC Coils for 3-pole Contactors LC1D40 to D65 or 4-pole Contactors LP1 to D65

Control circuit voltage Uc	Average resistance at 20 °C ± 10%	Inductance of closed circuit	Catalog Number(1)	Weight lb (kg)
V	Ω	H		
Specifications				
Average consumption: 22 W. Operating range: 0.75 to 1.2 Uc. Coils with “TH” treatment as standard.				
12	6.8	0.45	**LX4D6JW**	0.91 (0.415)
24	30	1.9	**LX4D6BW**	0.91 (0.415)
36	53	3.5	**LX4D6CW**	0.91 (0.415)
48	110	7.2	**LX4D6EW**	0.91 (0.415)
72	215	14.2	**LX4D6SW**	0.91 (0.415)
110	580	38.3	**LX4D6FW**	0.91 (0.415)
220	2120	140	**LX4D6MW**	0.91 (0.415)

For 3-pole contactors LC1D80 or 4-pole contactors LP1D80

Specifications				
Average consumption: 23 W. Operating range: 0.75 to 1.2 Uc. Coils with “TH” treatment as standard.				
12	6.2	0.49	**LX4D7JW**	1.50 (0.680)
24	23.5	1.75	**LX4D7BW**	1.50 (0.680)
36	51.9	4.18	**LX4D7CW**	1.50 (0.680)
48	94.2	7	**LX4D7EW**	1.50 (0.680)
72	204	15.7	**LX4D7SW**	1.50 (0.680)
110	483	36	**LX4D7FW**	1.50 (0.680)
220	1922	144	**LX4D7MW**	1.50 (0.680)

(1) The last two characters of the reference represent the voltage code.

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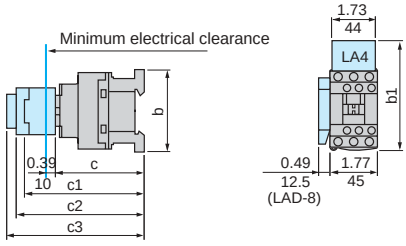
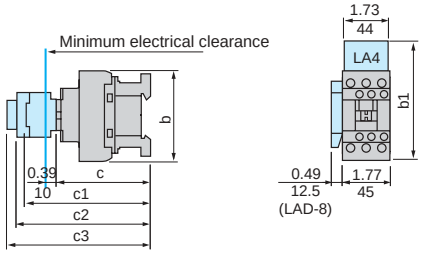
D-Line Contactors AC Control Circuits

LC1D09 to D18 (3-pole)



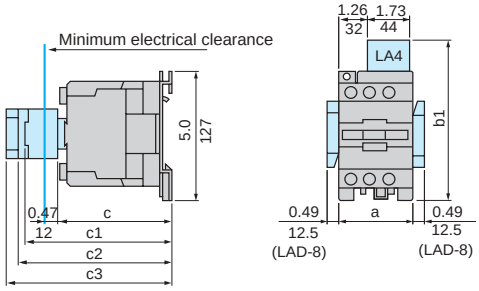
LC1D25 to D38 (3-pole)
LC1DT20 to DT40 (4-pole)



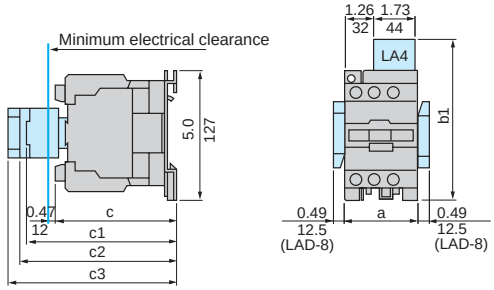
LC1		D09 to D18	D093 to D183	D099 to D189	D25 to D38	D253 and D323	DT20 and DT25	DT203 and DT253	DT32 to DT40	DT323 and DT403
b	without add-on blocks	3.03 (77)	3.89 (99)	3.14 (80)	3.36 (85)	3.89 (99)	3.34 (85)	3.89 (99)	3.58 (91)	4.13 (105)
b1	with LAD4BB	3.70 (94)	4.21 (107)	3.75 (95.5)	3.85 (98)	4.21 (107)	3.85 (98)	–	–	–
	with LA4D•2	4.33 (110) (1)	4.84 (123) (1)	4.30 (111.5) (1)	4.48 (114) (1)	4.84 (123) (1)	4.48 (114)	–	–	–
	with LA4DF, DT	4.68 (119) (1)	5.19 (132) (1)	4.76 (120.5) (1)	4.84 (123) (1)	5.19 (132) (1)	5.02 (129)	–	–	–
	with LA4DR, DW, DL	4.96 (126) (1)	5.67 (139) (1)	5.0 (127.5) (1)	5.11 (130) (1)	5.47 (139) (1)	7.48 (190)	–	–	–
c	without cover or add-on blocks	3.30 (84)	3.30 (84)	3.30 (84)	3.54 (90)	3.54 (90)	3.54 (90)	3.54 (90)	3.85 (98)	3.85 (98)
	with cover, without add-on blocks	3.38 (86)	3.38 (86)	3.38 (86)	3.62 (92)	3.62 (92)	3.62 (92)	3.62 (92)	3.93 (100)	3.93 (100)
c1	with LADN or C (two or four contacts)	4.60 (117)	4.60 (117)	4.60 (117)	4.84 (123)	4.84 (123)	4.84 (123)	4.84 (123)	5.15 (131)	5.15 (131)
c2	with LA6DK10, LAD6K10	5.07 (129)	5.07 (129)	5.07 (129)	5.31 (135)	5.31 (135)	5.31 (135)	5.31 (135)	5.62 (143)	5.62 (143)
c3	with LADT, R, S	5.39 (137)	5.39 (137)	5.39 (137)	5.62 (143)	5.62 (143)	5.62 (143)	5.62 (143)	5.94 (151)	5.94 (151)
	with LADT, R, S and sealing cover	5.55 (141)	5.59 (141)	5.55 (141)	5.78 (147)	5.78 (147)	5.78 (147)	5.78 (147)	6.10 (155)	6.10 (155)

(1) Including LAD4BB

LC1D40 to D65 (3-pole)
LC1D65004, D40008 and D65008 (4-pole)



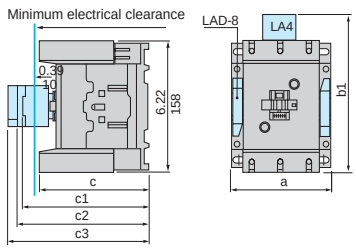
LC1D80 and D95 (3-pole)
LC1D80004 and D80008 (4-pole)



LC1		D40 to D65	D40008	D80 D65004	D95 D65008	D80004	D80008
a		2.95 (75)	3.34 (85)	3.34 (85)	3.34 (85)	96	96
b1	with LA4D•2	5.31 (135)	5.31 (135)	5.31 (135)	5.31 (135)	5.31 (135)	5.31 (135)
	with LA4DB3	–	–	5.31 (135)	–	–	–
	with LA4DF, DT	5.59 (142)	5.59 (142)	5.59 (142)	5.59 (142)	5.59 (142)	5.59 (142)
	with LA4DM, DR, DW, DL	5.90 (150)	5.90 (150)	5.90 (150)	5.90 (150)	5.90 (150)	5.90 (150)
c	without cover or add-on blocks	4.72 (114)	4.92 (125)	4.92 (125)	4.92 (125)	4.92 (125)	5.51 (140)
	with cover, without add-on blocks	4.68 (119)	–	5.11 (130)	5.11 (130)	–	–
c1	with LADN (one contact)	5.47 (139)	5.47 (139)	5.90 (150)	5.90 (150)	5.90 (150)	5.90 (150)
	with LADN or C (two or four contacts)	5.78 (147)	5.78 (147)	6.22 (158)	6.22 (158)	6.22 (158)	6.22 (158)
c2	with LA6DK	6.25 (159)	6.25 (159)	6.69 (170)	6.69 (170)	6.69 (170)	6.69 (170)
c3	with LADT, R, S	6.57 (167)	6.57 (167)	7.00 (178)	7.00 (178)	7.00 (178)	7.00 (178)
	with LADT, R, S and sealing cover	6.73 (171)	6.73 (171)	7.16 (182)	7.16 (182)	7.16 (182)	7.16 (182)

LC1D115 and D150 (3-pole)
LC1D115004 (4-pole)

LC1		D115 D150	D115004	D115006	D150006	D1150046
a		4.72 (120)	5.90 (150)	4.72 (120)	4.72 (120)	6.10 (155)
b1	with LA4DA2	6.85 (174)	6.85 (174)	6.85 (174)	6.85 (174)	6.85 (174)
	with LA4DF, DT	7.28 (185)	7.28 (185)	7.28 (185)	7.28 (185)	7.28 (185)
	with LA4DM, DR, DL	7.40 (188)	7.40 (188)	7.40 (188)	7.40 (188)	7.40 (188)
	with LA4DW	7.40 (188)	7.40 (188)	7.40 (188)	–	7.40 (188)
c	without cover or add-on blocks	5.1'9 (132)	5.1'9 (132)	4.52 (115)	4.52 (115)	4.52 (115)
	with cover, without add-on blocks	5.35 (136)	–	–	–	–
c1	with LADN or C (two or four contacts)	5.90 (150)	5.90 (150)	5.90 (150)	5.90 (150)	5.90 (150)
c2	with LA6DK20	6.10 (155)	6.10 (155)	6.10 (155)	6.10 (155)	6.10 (155)
c3	with LADT, R, S	6.61 (168)	6.61 (168)	6.61 (168)	6.61 (168)	6.61 (168)
	with LADT, R, S and sealing cover	6.77 (172)	6.77 (172)	6.77 (172)	6.77 (172)	6.77 (172)



Selection: pages 142, 143 Characteristics: pages 84, 85 Schematics: pages 126, 127

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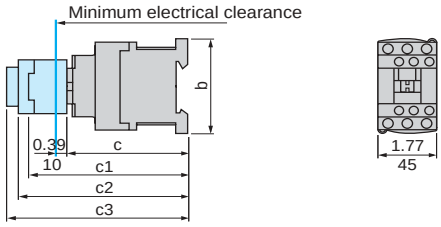
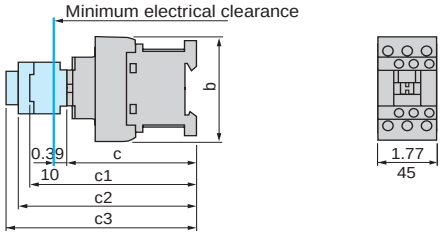
D-Line Contactors DC Control Circuit or Low Consumption

LC1D09 to D18 (3-pole)

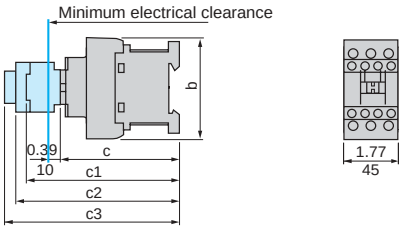


LC1D25 to D38 (3-pole)



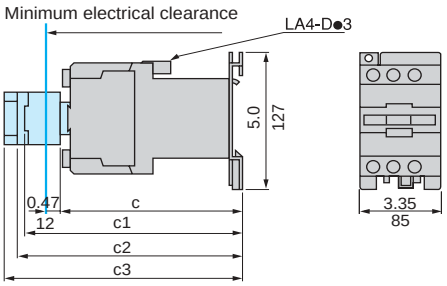
LC1		D09 to D18	D093 to D183	D099 to D189	D25 to D38	D253 and D383
b		3.03 (77)	3.89 (99)	3.30 (80)	3.34 (85)	3.89 (99)
c	without cover or add-on blocks	3.66 (93)	3.66 (93)	3.66 (93)	3.89 (99)	3.89 (99)
	with cover, without add-on blocks	3.76 (95)	3.76 (95)	3.76 (95)	3.97 (101)	3.97 (101)
c1	with LADN or C (two or four contacts)	4.96 (126)	4.96 (126)	4.96 (126)	5.19 (132)	5.19 (132)
c2	with LA6DK10	5.43 (138)	5.43 (138)	5.43 (138)	5.66 (144)	5.66 (144)
c3	with LADT, R, S	5.76 (146)	5.76 (146)	5.76 (146)	5.98 (152)	5.98 (152)
	with LADT, R, S and sealing cover	5.90 (150)	5.76 (146)	5.76 (146)	6.14 (156)	6.14 (156)

LC1DT20 to DT60 (4-pole)

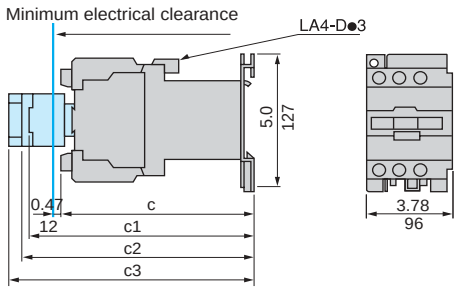


LC1		DT20 and DT25 D098 and D128	DT203 and DT253 D0983 and D1283	DT32 to DT40 D188 to D258	DT323 and DT403 D1883 and D2583
b		3.34 (85)	3.89 (99)	3.58 (91)	4.13 (105)
c	with cover	3.56 (90)	3.56 (90)	3.54 (98)	3.54 (98)
c1	with LADN or C (two or four contacts)	4.84 (123)	4.84 (123)	5.15 (131)	5.15 (131)
c2	with LA6DK10	5.31 (135)	5.31 (135)	5.62 (143)	5.62 (143)
c3	with LADT, R, S	5.62 (143)	5.62 (143)	5.94 (151)	5.94 (151)
	with LADT, R, S and sealing cover	5.78 (147)	5.78 (147)	6.10 (155)	6.10 (155)

LC1D40 to D65 (3-pole
LP1D65004, LP1D40008 to D65008 (4-pole)



LC1D80 and D95 (3-pole)
LP1D80004, LP1D80008 (4-pole)



		LC1 D40 to D65	LP1D65004	LP1D40008 and D65008	LC1 D80 and D95	LP1 D80004	LP1 D80008
c	without cover or add-on blocks	6.73 (171)	6.73 (171)	7.46 (182)	7.40 (181)	7.40 (181)	–
	with cover, without add-on blocks	6.92 (176)	–	–	7.32 (186)	–	8.03 (204)
c1	with LADN (1 contact)	7.71 (196)	7.71 (196)	7.71 (196)	8.03 (204)	8.03 (204)	8.26 (210)
	with LADN or C (2 or 4 contacts)	7.95 (202)	7.95 (202)	7.95 (202)	8.26 (210)	8.26 (210)	8.70 (221)
c2	with LA6DK10	8.38 (213)	8.38 (213)	8.38 (213)	8.70 (221)	8.70 (221)	9.01 (229)
c3	with LADT, R, S	8.70 (221)	8.70 (221)	8.70 (221)	9.01 (229)	9.01 (229)	9.17 (233)

Selection: pages 92 Characteristics: pages 80 - 87 Schematics: pages 126, 127

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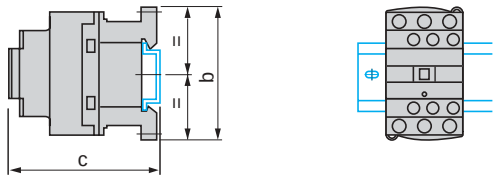
TeSys™ D-Line Contactors and Starters
Mounting Information for Type LC1D and LP1D Contactors

On mounting rail AM1DP200, DR200 or AM1DE200 (width 35 mm)
LC1D09 to D38, DT20 to DT60



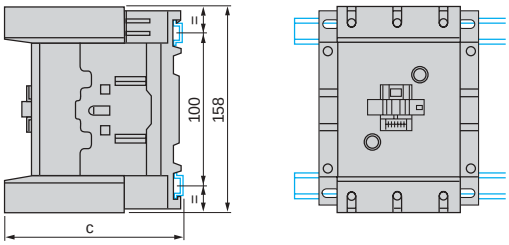
LC1	D09 to D18	D25 to D38	DT20 and DT25	DT32 to DT40
b	3.03 (77)	3.36 (85)	3.36 (85)	3.93 (100)
c (AM1DP200 or DR200) (1)	3.46 (88)	3.70 (94)	3.70 (94)	4.29 (109)
c (AM1DE200) (1)	3.77 (96)	4.01 (102)	4.01 (102)	4.60 (117)

dc control circuit

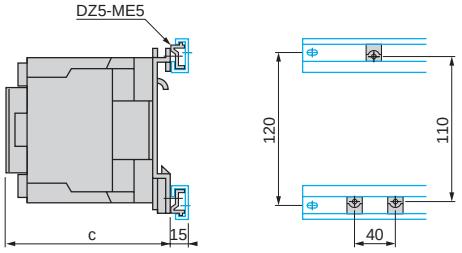
b	3.03 (77)	3.36 (85)	3.70 (94)	4.29 (109)
c (AM1DP200 or DR200) (1)	3.81 (97)	4.05 (103)	4.05 (103)	4.64 (118)
c (AM1DE200) (1)	4.13 (105)	4.33 (110)	4.37 (111)	4.84 (123)

(1) with safety cover

On two mounting rails DZ5MB at 120 mm center
LC1D115, D150



On two mounting rails DZ5MB at 120 mm center
LC1D40 to D95, LP1D40 to D80



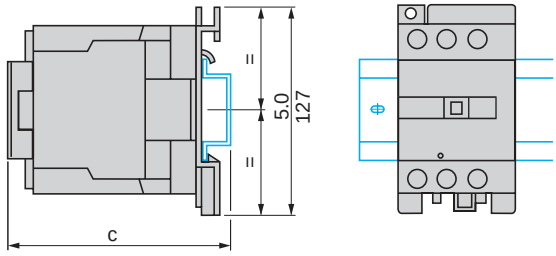
ac control circuit

LC1	D40 to D65	D80 and D95
c with cover	4.70 (119)	5.11 (130)

dc control circuit

LC1	D40 to D65	D80 and D95
c with cover	6.92 (176)	7.32 (186)
LP1	**D40 and D65**	**D80**
c	6.73 (171)	7.12 (181)

On mounting rail AM1DL200 or DL201 (width 75 mm)
On mounting rail AM1ED••• or AM1DE200 (width 35 mm)
LC1D40 to D95, LP1D40 to D80



ac control circuit

LC1	D40 to D65	D80 and D95
c (AM1DL200) (1)	5.35 (136)	5.78 (147)
c (AM1DL201) (1)	4.96 (126)	5.39 (137)
c (AM1ED••• or DE200) (1)	4.96 (126)	5.39 (137)

dc control circuit

LC1	D40 to D65	D80 and D95
c (AM1DL200) (1)	7.59 (193)	7.99 (203)
c (AM1DL201) (1)	7.20 (183)	7.99 (203)

LP1	D40	D65	D80
c (AM1DL200)	7.40 (188)	7.40 (188)	7.78 (198)
c (AM1DL201)	7.00 (178)	7.00 (178)	7.78 (198)

(1) with safety cover

ac or dc control circuit

LC1	D115 and D150	D1156 and D1506
c (AM1DP200 or DR200)	134.5	117.5
c (AM1DE200 or ED●●●)	142.5	125.5

Selection: pages 88 Characteristics: pages 80 - 87 Schematics: pages 126, 127

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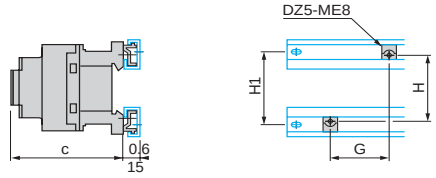
LC1D09 to D38 and LC1DT20 to DT60
On two mounting rails DZ5MB



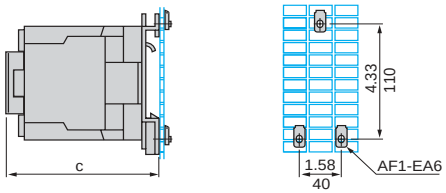
Control circuit:	ac		dc	
LC1	**D09 to D18**	**D25 to D38**	**D09 to D18**	**D25 to D38**
c with cover	3.38 (86)	3.62 (92)	3.76 (95)	3.97 (101)
G	1.37 (35)	1.37 (35)	1.37 (35)	1.37 (35)
H	2.36 (60)	2.36 (60)	2.36 (60)	2.36 (60)
H1	2.75 (70)	2.75 (70)	2.75 (70)	2.75 (70)
4-pole contactors				
LC1	**DT20 and DT25**	**DT32 to DT60**	**DT20 and DT25**	**DT32 to DT60**
c	3.62 (92)	3.93 (100)	3.97 (101)	4.29 (109)
G	5.31 (135)	1.57/1.96 (40/50)	1.37 (35)	1.37 (35)
H	2.36 (60)	2.36 (60)	2.36 (60)	2.36 (60)
H1	2.75 (70)	2.75 (70)	2.75 (70)	2.75 (70)

LC1D09 to D38 and LC1DT20 to DT60
On pre-slotted mounting plate AM1PA, PB, PC

Control circuit:	ac		dc	
LC1	**D09 to D18**	**D25 to D38**	**D09 to D18**	**D25 to D38**
c with cover	3.38 (86)	3.62 (92)	3.76 (95)	3.97 (101)
G	1.37 (35)	1.37 (35)	1.37 (35)	1.37 (35)
c with cover	3.38 (86)	3.62 (92)	3.74 (95)	3.97 (101)
4-pole contactors				
LC1	**DT20 and DT25**	**DT32 to DT60**	**DT20 and DT25**	**DT32 to DT60**
c	3.14 (80)	3.66 (93)	4.64 (118)	5.19 (132)
G	1.37 (35)	1.37 (35)	1.37 (35)	1.37 (35)
H	2.36 (60)	2.36 (60)	2.36 (60)	2.36 (60)

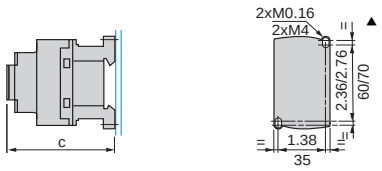
Note: Units with DC coils have round mounting holes ONLY and are spaced at 70 mm.

LC1D40 to D95, LP1D40 to D80
On pre-slotted mounting plate AM1PA, PB, PC



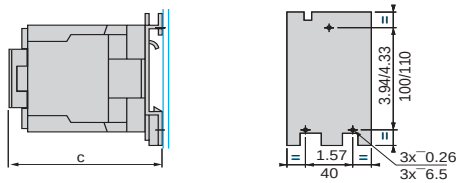
Control circuit:	ac		dc	
LC1	**D40 to D65**	**D80 and D95**	**D40 to D65**	**D80 and D95**
c with cover	4.68 (119)	5.11 (130)	6.92 (176)	7.32 (186)
LP1	**–**	**–**	**D40 and D65**	**D80**
c without cover	–	–	6.73 (171)	7.12 (181)

LC1D09 to D38 Panel mounted



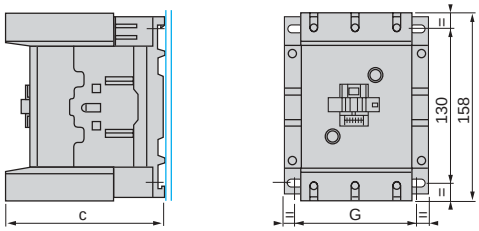
Control circuit:	ac		dc	
LC1	**D09 to D18**	**D25 to D38**	**D09 to D18**	**D25 to D38**
c with cover	3.38 (86)	3.62 (92)	3.76 (95)	3.97 (101)
4-pole contactors				
LC1	**DT20 and DT25**	**DT32 to DT60**	**DT20 and DT25**	**DT32 to DT60**
c with cover	3.54 (90)	3.85 (98)	3.54 (90)	3.85 (98)

LC1D40 to D95, LP1D40 to D80 Panel mounted



Control circuit:	ac		dc	
LC1	**D40 to D65**	**D80 and D95**	**D4 to D65**	**D80 and D95**
c with cover	4.68 (119)	5.11 (130)	6.92 (176)	7.92 (186)
LP1	**–**	**–**	**D40 and D65**	**D80**
c without cover	–	–	6.73 (171)	7.12 (181)

LC1D115, D150
Panel mounted



LC1	**D115**	**D1156**	**D150**	**D1506**
c	5.19 (132)	4.52 (115)	5.19 (132)	4.52 (115)
G (3-pole)	3.77/4.33 (96/110)	3.77/4.33 (96/110)	3.77/4.33 (96/110)	3.77/4.33 (96/110)
G (4-pole)	5.11/5.66 (130/144)	5.11/5.66 (130/144)	–	–

Selection: pages 88 Characteristics: pages 80 - 87 Schematics: pages 126, 127

▲ Units with DC coils have round mounting holes ONLY and are spaced at 70 mm.

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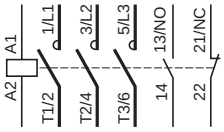
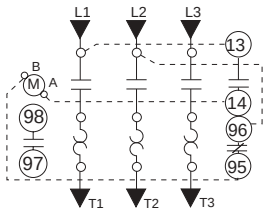
3-Pole Contactors

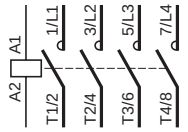
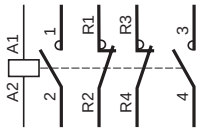
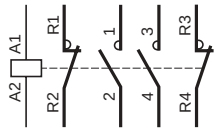
LC1D09 to D150



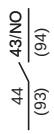
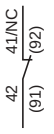
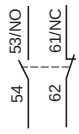
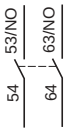
AC Magnetic 3-Pole Contactor with Overload Relay

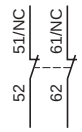
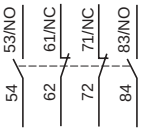
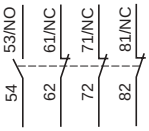
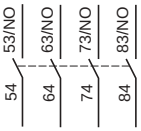


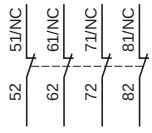
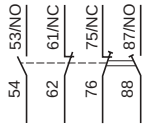
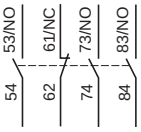
4-Pole Contactors

LC1 and LP1 D12004 to D80004 LC1D115004	LC1 and LP1 D12008 to D25008	LC1 and LP1 D40008 to D80008
		

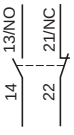
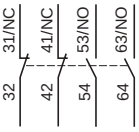
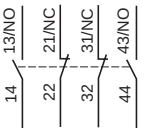
Front Mounting Add-on Contact Blocks
Instantaneous Auxiliary Contacts

One N.O. LADN10 (1)	One N.C. LADN01 (1)	One N.O. + 1 N.C. LADN11	Two N.O. LADN20
			

Two N.C. LADN02	Two N.O. + two N.C. LADN22	One N.O. + three N.C. LADN13	Four N.O. LADN40
			

Four N.C. LADN04	Two N.O. + two N.C. including one N.O. + one N.C. make before break LADC22	Three N.O. + one N.C. LADN31
		

Front Mounting Add-on Contact Bocks
Instantaneous Auxiliary Contacts Conforming to Standard EN 50012

One N.O. + one N.C. LADN11G	One N.O. + one N.C. LADN11P	Two N.O. + two N.C. LADN22G	Two N.O. + two N.C. LADN22P
			

(1) Items in brackets are for blocks mounted on right-hand side of contactor.

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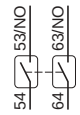
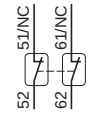
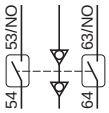
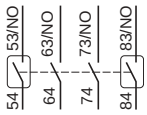
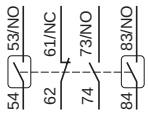
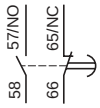
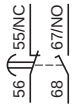
Front Mounting Add-on Contact Blocks
Dust and Damp Protected Instantaneous Auxiliary Contacts

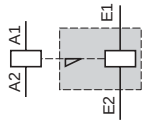
Two N.O. (24-50 V) LA1DX20	Two N.C. (24-50 V) LA1DX02	Two N.O. (5-24 V) LA1DY20	Two N.O. protected (24-50 V) Two N.O. standard LA1DZ40	Two N.O. protected (24-50 V) + one N.O. + one N.C. standard LA1DZ31
				

Front Mounting Add-on Contact Blocks
Time-delay Auxiliary Contacts

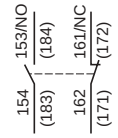
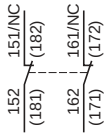
On-delay one N.O. + one N.C. LADT	Off-delay one N.O. + one N.C. LADR	On-delay N.C. with one N.O. break before make LADS
		

Mechanical Latch Blocks

LA6DK10 and LA6DK20



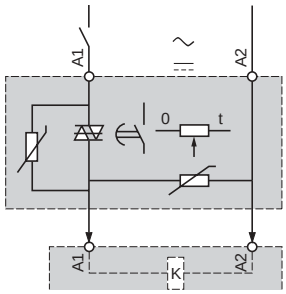
Side Mounting Add-on Contact Blocks
Instantaneous Auxiliary Contacts

One N.O. + one N.C. LAD8N11 (1)	Two N.O. LAD8N20 (1)	Two N.C. LAD8N02 (1)
		

(1) Items in Brackets are for Blocks Mounted on Right-hand Side of Contactor

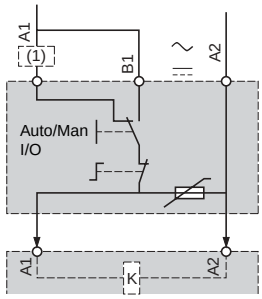
Electronic serial timer modules

On-delay LA4DT•U



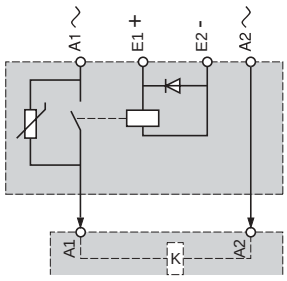
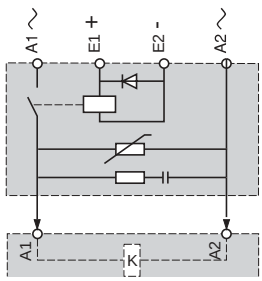
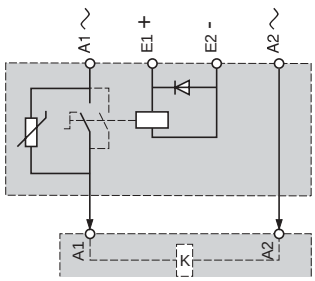
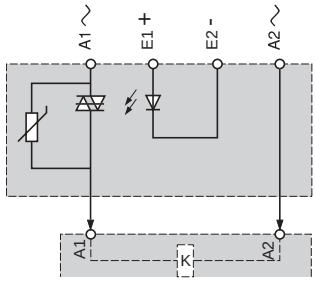
Auto-Man-Stop modules

LA4DM● (1) PLC



(1) PLC

Interface Modules

Relay interface LA4DF•	LA4DFBQ	Relay interface with override switch LA4DL•	Solid state LA4DWB•
			

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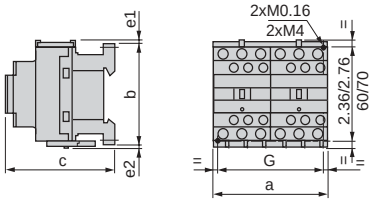
LC2D09 to D38
2 x LC1D09 to D38

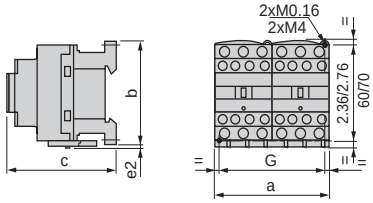


LC2 or 2 x LC1	a	b	c (1)		e1	e2	G
D09 to D18 ac	3.54 (90)	3.03 (77)	3.38 (86)		0.15 (4)	0.05 (1.5)	3.14 (80)
D093 to D183 ac	3.54 (90)	3.89 (99)	3.38 (86)		–	–	3.14 (80)
D09 to D18 dc	3.54 (90)	3.03 (77)	3.74 (95)		0.15 (4)	0.05 (1.5)	3.14 (80)
D093 to D183 dc	3.54 (90)	3.89 (99)	3.74 (95)		–	–	3.14 (80)
D12004	–	2.91 (74)	3.14 (80)		–	0.23 (6)	3.74 (95)
D25 to D38 ac	3.54 (90)	3.34 (85)	3.62 (92)		0.35 (9)	0.19 (5)	3.14 (80)
D253 to D383 ac	3.54 (90)	3.89 (99)	3.62 (92)		–	–	3.14 (80)
D25 to D32 dc	3.54 (90)	3.34 (85)	3.97 (101)		0.35 (9)	0.19 (5)	3.14 (80)
D253 to D383 dc	3.54 (90)	3.89 (99)	3.97 (101)		–	–	3.14 (80)
D25004	–	3.30 (84)	3.66 (93)		–	0.22 (7)	4.37 (111)

e1 and e2: including cabling.

(1) With safety cover, without add-on block.

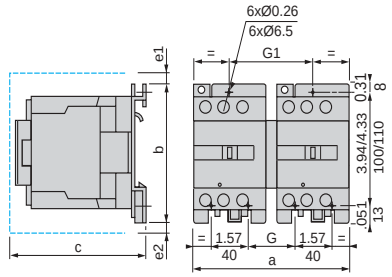
LC2DT20 to DT60
2 x LC1DT20 to DT60



LC2 or 2 x LC1	a	b	c	G
DT20 and DT25	3.54 (90)	3.34 (85)	3.54 (90)	3.14 (80)
DT32 to DT60	3.54 (90)	3.58 (91)	3.85 (98)	3.14 (80)

c, e2: including cabling.

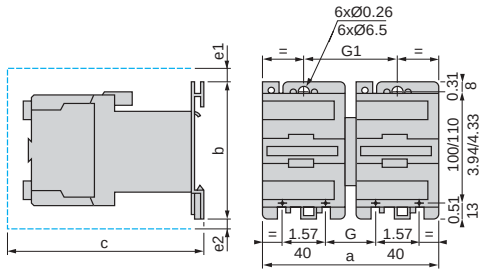
LC2D40 to D65
2 x LC1D40 to D65



LC2 or 2 x LC1	a	b	c	e1	e2	G	G1
D40 to D65	6.49 (165)	5.0 (127)	5.6 (142)	0.49 (5)	–	1.96 (50)	3.54 (90)
D40004	7.16 (182)	5.0 (127)	5.2 (133)	–	0.78 (11)	2.24 (57)	3.81 (97)
D65004	7.16 (182)	5.0 (127)	5.2 (133)	–	0.78 (11)	2.24 (57)	3.81 (97)
D80 and D95	7.16 (182)	5.0 (127)	6.2 (158)	0.5 (13)	–	2.24 (57)	3.77 (96)
D80004	8.14 (207)	5.0 (127)	6.2 (158)	–	1.78 (20)	2.79 (71)	4.37 (111)

c, e1 and e2: including cabling.

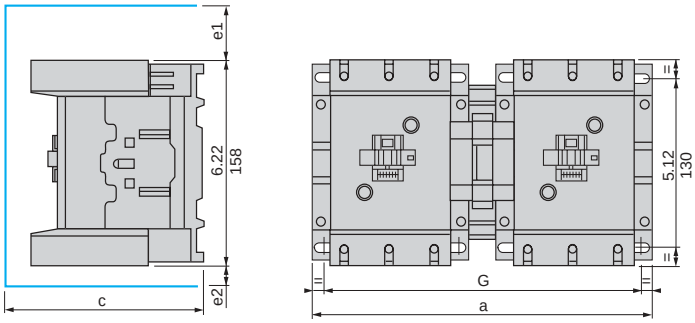
2 x LP1D40 and D65



LC2 or 2 x LC1	a	b	c	e1	e2	G	G1
D40 to D65	7.16 (182)	5.0 (127)	7.4 (190)	1.19 (5)	0.43 (11)	2.2 (57)	3.8 (97)
D80 and D95	8.14 (207)	11.0 (127)	8.4 (215)	0.51 (13)	0.78 (20)	3.7 (96)	4.3 (111)

c, e1 and e2: including cabling.

LC2D115 and D150
2 x LC1D115 and D150



LC2 or 2 x LC1	a	c	e1	e2	G
D115, D150	10.5 (266)	5.9 (148)	2.2 (56)	0.7 (18)	9.5/10.0 (242/256)
D115004	13.1 (334)	5.9 (148)	–	2.4 (60)	12.2/12.7 (310/324)

c, e1 and e2: including cabling.

Selection: pages 93 Characteristics: pages 80, 87 Schematics: pages 129

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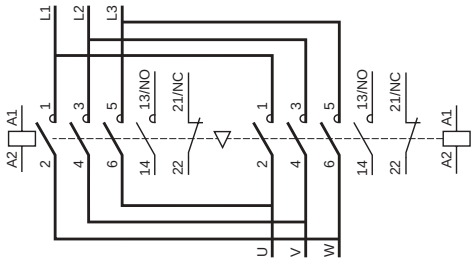
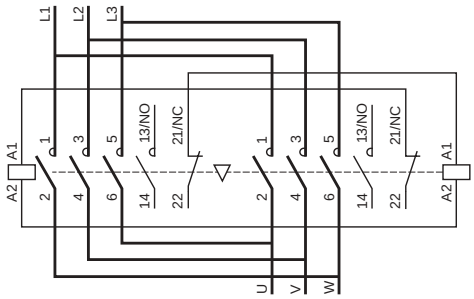
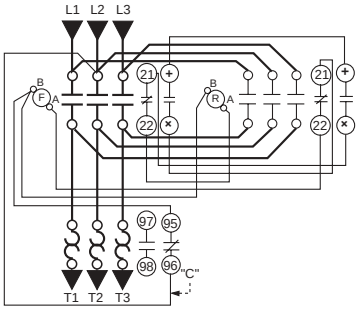
Reversing contactors for motor control, horizontally mounted LC2D09 to D150



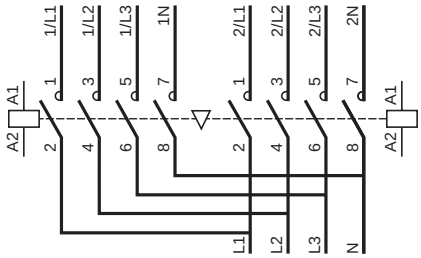
Reversing contactors for motor control with integral electrical interlocking (LAD9R1V)



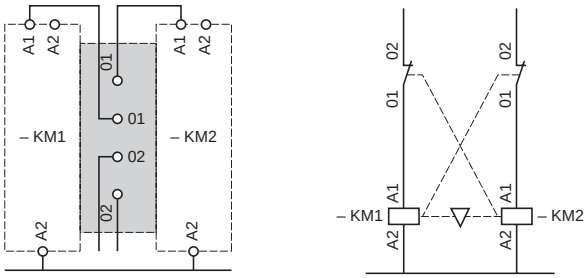
Reversing contactor with overload relay



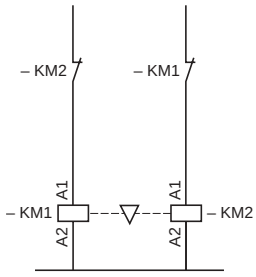
Changeover contactor pairs, horizontally mounted LC2DT20 to DT60



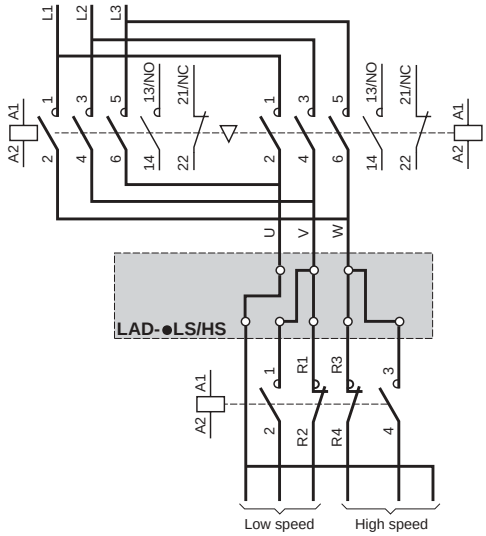
Electrical interlocking of contactors using:
mechanical interlock with integral electrical contacts LA9D•••02



Mechanical interlock without integral electrical contacts LA9D•••78, LAD9R1



Low speed - High speed cabling kit



Telemecanique
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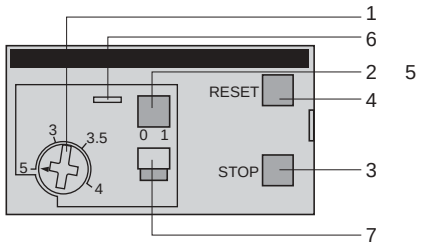
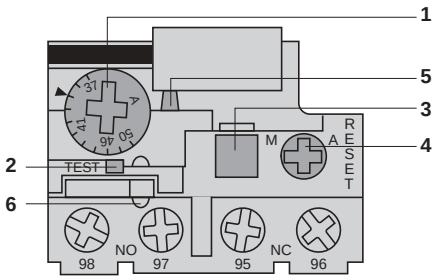
Description

D-Line 3-pole thermal overload relays are designed to protect ac circuits and motors against overloads, phase failure, long starting times and prolonged stalling of the motor.

LRD01 to 35



LRD3322 to 4369, **LR2D**



1 Adjustment dial Ir
2 Test button
Operation of the Test button allows:
- checking of control circuit wiring,
- simulation of relay tripping (actuates both the N.O. and N.C. contacts).

3 Stop button. Actuates the N.C. contact; does not affect the N.O. contact.
4 Reset button
5 Trip indicator
6 Setting locked by sealing the cover.
7 Selector for manual or automatic reset. Relays LRD01 to LRD35 are supplied with the selector in the manual position, protected by a cover. Deliberate action is required to move it to the automatic position.

Environment

Conforming to standards			IEC 60947-1, IEC 60947-4-1, NF C 63-650, VDE 0660, BS 4941
Product certifications			CSA, UL, Sichere Trennung, PTB except LAD4: UL, CSA.
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X
Protective treatment	Conforming to IEC 60068		"TH"
Ambient air temperature around the device	Storage	**°C**	- 60 to + 70 (- 140 to + 158 °F)
	Normal operation, without derating (IEC 60947-4-1)	**°C**	- 20 to + 60 (- 68 to + 140 °F)
	Minimum and maximum operating temperatures (with derating)	**°C**	- 40 to + 70 (- 104 to + 158 °F)
Operating positions without derating	In relation to normal, vertical mounting plane		Any position
Shock resistance	Permissible acceleration conforming to IEC 60068-2-7		15 gn - 11 ms
Vibration resistance	Permissible acceleration conforming to IEC 60068-2-6		6 gn
Dielectric strength at 50 Hz	Conforming to IEC 60255-5	**kV**	6
Impulse withstand voltage	Conforming to IEC 60801-5	**kV**	6

Auxiliary Contact Characteristics

Conventional rated thermal current		**A**	5 Amps AC; 1 Amp DC					
Maximum consumption of operating coils of controlled contactors (Occasional operating cycles of contact 95-96)	ac supply	**V**	24	48	110	220	380	600
		VA	100	200	400	600	600	600
	dc supply	**V**	24	48	110	220	440	–
		W	100	100	50	45	25	–
Short-circuit protection ●	By gG, BS or Class CC fuse. Max. rating or by **GB2** circuit-breaker	**A**	5 maximum					
Connection to screw clamp terminals			Min - max c.s.a.					
Flexible cable with cable end	One or two conductors	**AWG (mm²)**	18 - 14 (1 - 2.5)					
Solid cable without cable end	One or two conductors	**AWG (mm²)**	18 - 14 (1 - 2.5)					
Flexible cable without cable end	One or two conductors	**AWG (mm²)**	18 - 14 (1 - 2.5)					
Solid cable without cable end	One or two conductors	**AWG (mm²)**	18 - 14 (1 - 2.5)					
Tightening torque		**lb-in (N.m)**	15 (1.7)					

● Select short circuit protection to meet the National Electrical Code or other local codes and standards.

Catalog Numbers: pages 134, 135 Dimensions: pages 138 - 140

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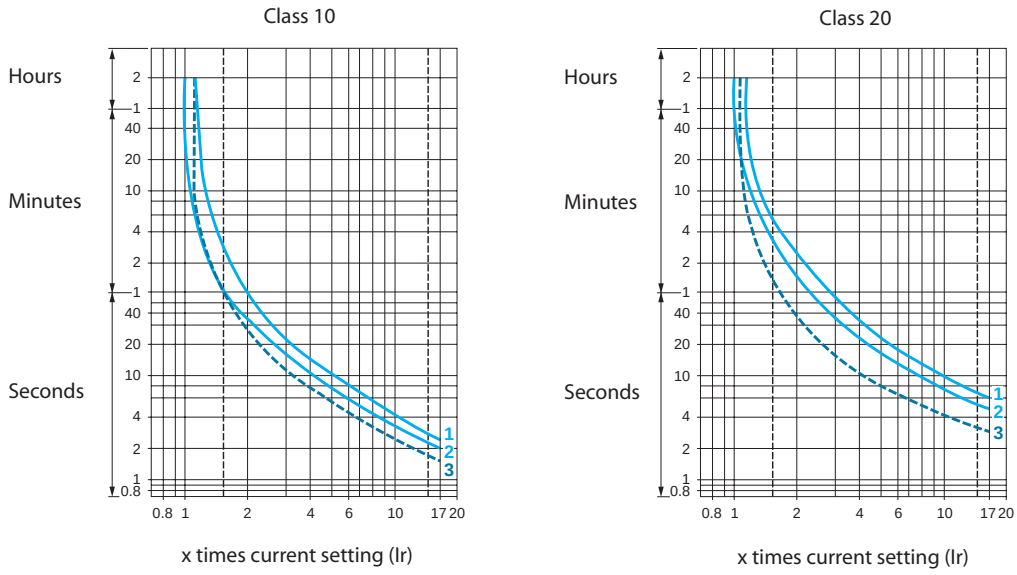
Electrical Characteristics of Power Circuit

Relay type			LRD 01 to 16 LR3 D01 to D16	LR2 D15••	LRD 21 to 35 LR3 D21 to D35	LR2 D25••	LRD 3322 to 33696 LR3 D3322 to D33696	LR2 D35••	LRD 4365 to 4369
Tripping class	To UL 508, IEC 60947-4-1		10	20	10	20	10	20	10
Rated insulation voltage (Ui)	Conforming to IEC 60947-4-1	**V**	690		690		1000		1000
	Conforming to UL, CSA	**V**	600		600		600		600 except **LRD4369**
Rated impulse withstand voltage (Uimp)		**kV**	6		6		6		6
Frequency limits	Of the operational current	**Hz**	0 to 400		0 to 400		0 to 400		0 to 400
Setting range	Depending on model	**A**	0.1 to 13		12 to 38		17 to 104		80 to 140
Connection to screw clamp terminals			Min - max c.s.a.						
Flexible cable without cable end	One conductor	**AWG (mm²)**	14 - 8 (1.5 - 10)		14 - 8 (1.5 - 10)		10 - 2 (4 - 35)		10 - 1 (4 - 50)
Flexible cable with cable end	One conductor	**AWG (mm²)**	16 - 12 (1 - 4)		16 - 10 (1 - 6) except **LRD21**: 16 - 12 (1 - 4)		10 - 2 (4 - 35)		10 - 2 (4 - 35)
Solid cable without cable end	One conductor	**AWG (mm²)**	16 - 10 (1 - 6)		14 - 8 (1.5 - 10) except **LRD21**: 16 - 10 (1 - 6)		12 - 2 (4 - 35)		10 - 1 (4 - 50)
Tightening torque		**lb-In (N.m)**	15.0 (1.7)	16.4 (1.85)	22.1 (2.5)		100 lb-in		100 lb-in
Connection to spring terminals			Min - max c.s.a.						
Flexible cable without cable end	One conductor	**AWG (mm²)**	14 - 12 (1.5 - 4)	–	14 - 12 (1.5 - 4)	–	–	–	–
Solid cable without cable end	One conductor	**AWG (mm²)**	14 - 12 (1.5 - 4)	–	14 - 12 (1.5 - 4)	–	–	–	–
Operating Characteristics									
Temperature compensation		**°C** **°F**	- 20 to + 60 - 68 to + 140		- 30 to + 60 - 86 to + 140		- 30 to + 60 - 86 to + 140		- 20 to + 60 - 68 to + 140
Tripping threshold	Conforming to IEC 60947-4-1	**A**	1.14 ± 0.06 In						
Sensitivity to phase failure	Conforming to IEC 60947-4-1		Tripping current 30% of In on one phase, the others at In						
Tripping curves									

Average operating time
related to multiples of the current setting



1 Balanced operation, 3-phase, from cold state.
2 Balanced operation, 2-phase, from cold state.
3 Balanced operation, 3-phase, after a long period at the set current (hot state).

Catalog Numbers: pages 134, 135 Dimensions: pages 138 - 140

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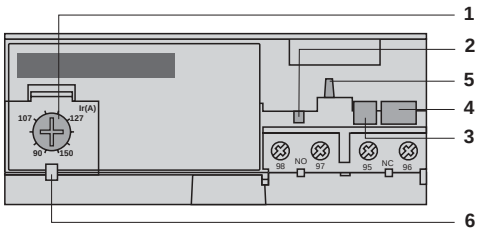
Description

LR9D electronic thermal overload relays are designed for use with contactors LC1D115 and D150.

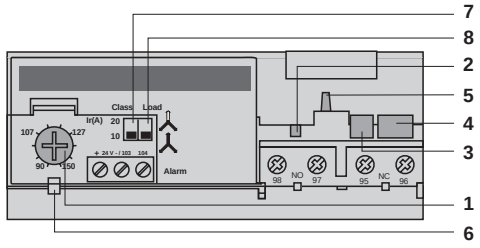
In addition to the protection provided by model d thermal overload relays, (see page 130), they offer the following special features:
- Protection against phase imbalance.
- Choice of starting class.
- Protection of unbalanced circuits.
- Protection of single-phase circuits.
- Alarm function to avoid tripping by load shedding.

1 Setting dial Ir
2 Test button
3 Stop button
4 Reset button
5 Trip indication
6 Setting locked by sealing the cover
7 Class 10/class 20 selector
8 Selector for balanced load / unbalanced load

LR9D5367 to D5569



LR9D67 and D69



Environment

Conforming to standards			IEC 60947-4-1, 255-8, 255-17, VDE 0660 and EN 60947-4-1
Product certifications			UL 508, CSA 22-2
Degree of protection	**Conforming to IEC 60529 and VDE 0106**		IP 20 on front face with protective covers **LA9D11570•** or **D11560•**
Protective treatment	Standard version		"TH"
Ambient air temperature around the device (conforming to IEC 60255-8)	Storage	**°C**	- 40 to + 85 (- 104 to + 185 °F)
	Normal operation	**°C**	- 20 to + 55 (1) (- 68 to + 131 °F)
Maximum operating altitude	Without derating	**ft/m**	6562 (2000)
Operating positions without derating	In relation to normal, vertical mounting plane		Any position
Shock resistance	Permissible acceleration conforming to IEC 60068-2-27		13 gn - 11 ms
Vibration resistance	Permissible acceleration conforming to IEC 60068-2-6		2 gn - 5 to 300 Hz
Dielectric strength at 50 Hz	Conforming to IEC 60255-5	**kV**	6
Impulse withstand voltage	Conforming to IEC 61000-4-5	**kV**	6
Resistance to electrostatic discharge	Conforming to IEC 61000-4-2	**kV**	8
Resistance to radio-frequency conducted disturbances	Conforming to IEC 61000-4-3 and NF C 46-022	**V/m**	10
Resistance to fast transient currents	Conforming to IEC 61000-4-4	**kV**	2
Electromagnetic compatibility	Draft EN 50081-1 and 2, EN 50082-2	**V**	Meets requirements

Electrical characteristics of auxiliary contacts

Conventional thermal current		**A**	5					
Maximum consumption of operating coils of controlled contactors (Occasional operating cycles of contact 95-96)	ac supply	**V**	24	48	110	220	380	600
		VA	100	200	400	600	600	600
	dc supply	**V**	24	48	110	220	440	–
		W	100	100	50	45	25	–
Short-circuit protection ●	By gG, BS or Class CC fuse or by **GB2** circuit-breaker	**A**	5					
Cabling	One or two conductors	**AWG (mm^2)**	Minimum c.s.a.: 16 (**1**) / maximum c.s.a.: 14 (2.5)					
Flexible cable without cable end	Tightening torque	**lb-in (N.m)**	11 (1.2)					

(1) For operation at 70 °C (158 °F), please consult your Regional Sales Office.
● Select short circuit protection to meet the National Electrical Code or other local codes and standards.

Catalog Numbers: pages 135 Dimensions: pages 138

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Electrical Characteristics of Power Circuit

Relay Type		LR9-D
Tripping Class	Conforming to UL 508, IEC 60947-4-1	10 or 20
Rated Insulation Voltage (Ui)	Conforming to IEC 60947-4-1	1000 V
	Conforming to UL, CSA	600 V
Rated Impulse Withstand Voltage (Uimp)		8 kV
Frequency Limits	Of the operational current	50-60 Hz For other frequencies, consult your Regional Sales Office. (1)
Setting Range	Depending on model	60-150 A
Power Circuit Connections	Width of terminal lug	0.787 in (20 mm)
	Clamping screw	M8
	Tightening torque	lb-ft 13 (18 N•m)

Operating Specifications

Temperature Compensation		-20 to +70 °C (- 68 to + 158 °F)
Tripping Threshold	Conforming to IEC 60947-4-1 Alarm	1.05 ± 0.06 In A
	Tripping	1.12 ± 0.06 In A
Sensitivity to Phase Failure	Conforming to IEC 60947-4-1	Tripping current 4 s ± 20% in the event of phase failure

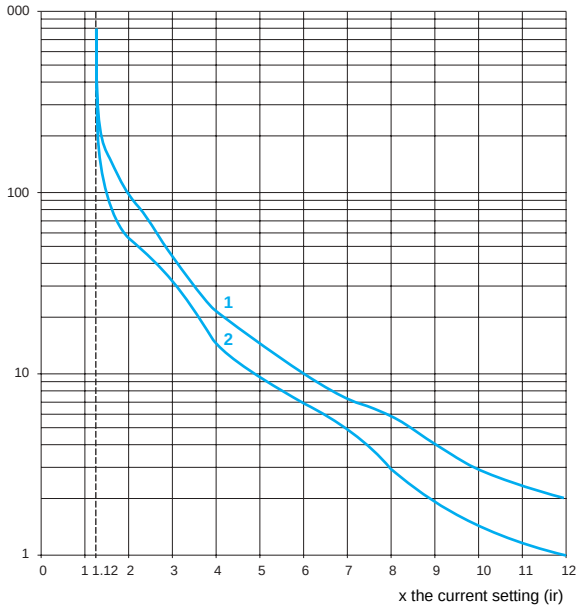
Alarm Circuit Specifications

Rated Supply Voltage	dc supply	24 Vdc
Supply Voltage Limits		17 - 32 V
Current Consumption	No load	less than or equal to 5 mA
Switching Capacity		0 - 150 mA
Protection	Short-circuit and overload	Self-protected
Voltage Drop	Closed state	less than or equal to 2.5 V
Cabling	Flexible cable without cable end	20 - 16 AWG (0.5 - 1.5 mm^2)
Tightening Torque		4.0 lb-in (0.45 N•m)

Tripping Curve LR9-D

Average Operating Time Related to Multiples of the Current Setting

Tripping time in seconds



1 Cold state curve.
2 Hot state curve.

(1) For use of these relays with soft start units or variable speed controllers, please consult your Regional Sales Office.

Catalog Numbers: pages 135 Dimensions: pages 138

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LRD08

LRD21

LRD33

LRD083

Differential (Single Phase Sensitive) Thermal Overload Relays

Compensated Relays with Manual or Automatic Reset, with Relay Trip Indicator, for ac or dc.

Short-circuit Protection for North American Applications				By Circuit Breaker	Select in Accordance with NEC and Local Codes	
				By Fuses	Maximum 400% of Motor FLA	
Relay Setting Range	Fuses to be used with Selected Relay			For use with Contactor LC1-	Catalog Number	Weight lb. (kg)
	aM	gG	BS88			
A	A	A	A			
Class 10 with Connection by Screw Clamp Terminals						
0.10 to 0.16	0.25	2	–	D09 to D38 (2)	**LRD01**	0.27 (0.124)
0.16 to 0.25	0.5	2	–	D09 to D38 (2)	**LRD02**	0.27 (0.124)
0.25 to 0.40	1	2	–	D09 to D38 (2)	**LRD03**	0.27 (0.124)
0.40 to 0.63	1	2	–	D09 to D38 (2)	**LRD04**	0.27 (0.124)
0.63 to 1	2	4	–	D09 to D38 (2)	**LRD05**	0.27 (0.124)
1 to 1.6	2	4	6	D09 to D38 (2)	**LRD06**	0.27 (0.124)
1.6 to 2.5	4	6	10	D09 to D38 (2)	**LRD07**	0.27 (0.124)
2.5 to 4	6	10	16	D09 to D38 (2)	**LRD08**	0.27 (0.124)
4 to 6	8	16	16	D09 to D38 (2)	**LRD10**	0.27 (0.124)
5.5 to 8	12	20	20	D09 to D38 (2)	**LRD12**	0.27 (0.124)
7 to 10	12	20	20	D09 to D38 (2)	**LRD14**	0.27 (0.124)
9 to 13	16	25	25	D12 to D38 (2)	**LRD16**	0.27 (0.124)
12 to 18	20	35	32	D18 to D38 (2)	**LRD21**	0.27 (0.124)
16 to 24	25	50	50	D25 to D38 (2)	**LRD22**	0.27 (0.124)
23 to 32	40	63	63	D25 to D38 (2)	**LRD32**	0.27 (0.124)
30 to 38	50	80	80	D32 and D38 (2)	**LRD35**	0.27 (0.124)
17 to 25	25	50	50	D40 to D95	**LRD3322**	1.12 (0.510)
23 to 32	40	63	63	D40 to D95	**LRD3353**	1.12 (0.510)
30 to 40	40	100	80	D40 to D95	**LRD3355**	1.12 (0.510)
37 to 50	63	100	100	D40 to D95	**LRD3357**	1.12 (0.510)
48 to 65	63	100	100	D50 to D95	**LRD3359**	1.12 (0.510)
55 to 70	80	125	125	D50 to D95	**LRD3361**	1.12 (0.510)
63 to 80	80	125	125	D65 to D95	**LRD3363**	1.12 (0.510)
80 to 104	100	160	160	D80 and D95	**LRD3365**	1.12 (0.510)
80 to 104	125	200	160	D115 and D150	**LRD4365**	1.98 (0.900)
95 to 120	125	200	200	D115 and D150	**LRD4367**	1.98 (0.900)
110 to 140	160	250	200	D150	**LRD4369**	1.98 (0.900)
80 to 104	100	160	160	D115 and D150	**LRD33656** (1)	2.20 (1.000)
95 to 120	125	200	200	D115 and D150	**LRD33676** (1)	2.20 (1.000)
110 to 140	160	250	200	D115 and D150	**LRD33696** (1)	2.20 (1.000)
Class 10 with Spring Terminal Connections (for direct mounting on the contactor only)						
0.10 to 0.16	0.25	2	–	D09 to D38 (2)	**LRD013**	6.31 (0.140)
0.16 to 0.25	0.5	2	–	D09 to D38 (2)	**LRD023**	6.31 (0.140)
0.25 to 0.40	1	2	–	D09 to D38 (2)	**LRD033**	6.31 (0.140)
0.40 to 0.63	1	2	–	D09 to D38 (2)	**LRD043**	6.31 (0.140)
0.63 to 1	2	4	–	D09 to D38 (2)	**LRD053**	6.31 (0.140)
1 to 1.6	2	4	6	D09 to D38 (2)	**LRD063**	6.31 (0.140)
1.6 to 2.5	4	6	10	D09 to D38 (2)	**LRD073**	6.31 (0.140)
2.5 to 4	6	10	16	D09 to D38 (2)	**LRD083**	6.31 (0.140)
4 to 6	8	16	16	D09 to D38 (2)	**LRD103**	6.31 (0.140)
5.5 to 8	12	20	20	D09 to D38 (2)	**LRD123**	6.31 (0.140)
7 to 10	12	20	20	D09 to D38 (2)	**LRD143**	6.31 (0.140)
9 to 13	16	25	25	D12 to D38 (2)	**LRD163**	6.31 (0.140)
12 to 18	20	35	32	D18 to D38 (2)	**LRD213**	6.31 (0.140)
16 to 24	25	50	50	D25 to D38 (2)	**LRD223**	6.31 (0.140)

Class 10 with Ring-Tongue Terminals for LRD01 through LRD35 (load side terminals only)

Select the appropriate overload relay with screw clamp terminals from the table above and add **6** to the end of the reference.
Example: **LRD01** becomes **LRD016**.

Thermal Overload Relays for use on single phase loads

Class 10 with connection by screw clamp terminals

Change the prefix in the references above from **LRD** (except **LRD4●●●**) to **LR3D**. Example: **LRD01** becomes **LR3D01.**

Thermal Overload Relays for use on 1000 V Supplies

Class 10 with connection by screw clamp terminals

For relays LRD-01 to LRD-35 only, for an operating voltage of 1000 V, and only for independent mounting, the reference becomes **LRD33 A66**. Example: **LRD12** becomes **LRD3312A66.**
Order an **LA7D3064** terminal block separately; see page 137.

(1) These are special separate mounted versions of the LRD43 overload relays for the LC1D115 and D150 contactors. Part number includes overload relay, terminal block and 6 connectors (unit is not UL/CSA approved).

(2) When used with D25-D38 contactors, order spacer clip (part number W816366180111). See page 137.

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Differential (Single Phase Sensitive) Thermal Overload Relays

Compensated relays with manual or automatic reset, with relay trip indicator, for ac or dc
LR2-D1508 to 2553: independent mounting either by ordering a terminal block **LA7D1064** or **LA7D2064**, or by ordering the relay pre-assembled; in this case, add the suffix **LA7** to the reference.
Example: **LR2D1508** becomes **LR2D1508LA7**.

Short-circuit Protection for North American Applications				By Circuit Breaker	Select in Accordance with NEC and Local Codes	
				By Fuses	Maximum 400% of Motor FLA	
Relay Setting Range	**Fuses to be used with the Selected Relay**			**For use with Contactor**	**Catalog Number**	**Weight lb. (kg)**
	aM	**gG**	**BS88**	**LC1**		
A	A	A	A			
Class 20 for Connection by Screw Clamp Terminals						
2.5 to 4	6	10	16	D09 to D38 (2)	**LRD1508 (3)**	0.42 (0.190)
4 to 6	8	16	16	D09 to D38 (2)	**LRD1510 (3)**	0.42 (0.190)
5.5 to 8	12	20	20	D09 to D38 (2)	**LRD1512 (3)**	0.42 (0.190)
7 to 10	16	20	25	D09 to D38 (2)	**LRD1514 (3)**	0.42 (0.190)
9 to 13	16	25	25	D12 to D38 (2)	**LRD1516 (3)**	0.42 (0.190)
12 to 18	25	35	40	D18 to D38 (2)	**LRD1521 (3)**	0.42 (0.190)
17 to 25	32	50	50	D25 and D38 (2)	**LRD1522 (3)**	0.42 (0.190)
23 to 28	40	63	63	D25 and D38 (2)	**LRD1530 (3)**	0.76 (0.345)
25 to 32	40	63	63	D25 and D38 (2)	**LRD1532 (3)**	0.76 (0.345)
17 to 25	32	50	50	D40 to D95	**LRD3522**	1.18 (0.535)
23 to 32	40	63	63	D40 to D95	**LR2D3553**	1.18 (0.535)
30 to 40	50	100	80	D40 to D95	**LR2D3555**	1.18 (0.535)
37 to 50	63	100	100	D50 to D95	**LR2D3557**	1.18 (0.535)
48 to 65	80	125	100	D50 to D95	**LR2D3559**	1.18 (0.535)
55 to 70	100	125	125	D65 to D95	**LR2D3561**	1.18 (0.535)
63 to 80	100	160	125	D80 and D95	**LR2D3563**	1.18 (0.535)

LRD15

Solid-state Differential Thermal Overload Relays

Compensated relays, with relay trip indicator, for ac or dc, for direct mounting on contactor or independent mounting (1).

Relay Setting Range	**Fuses to be used with Selected Relay (4)**		**For Direct Mounting Beneath Contactor LC1**	**Catalog Number**	**Weight lb. (kg)**
	aM	**gG**			
A	A	A			
Class 10 for Connection using Bars or Connectors					
60 to 100	100	160	D115 and D150	**LR9D5367**	1.95 (0.885)
90 to 150	160	250	D115 and D150	**LR9D5369**	1.95 (0.885)
Class 20 for Connection using Bars or Connectors					
60 to 100	125	160	D115 and D150	**LR9D5567**	1.95 (0.885)
90 to 150	200	250	D115 and D150	**LR9D5569**	1.95 (0.885)

LR2D35

Solid-state Thermal Overload Relays for use with Balanced/Unbalanced Loads (Single Phase)

Compensated relays, with separate outputs for alarm and tripping.

Relay Setting Range	**Fuses to be used with Selected Relay (4)**		**For Direct Mounting Beneath Contactor LC1**	**Catalog Number**	**Weight lb. (kg)**
	aM	**gG**			
A	A	A			
Class 10 or 20 Selectable with Connection using Bars or Connectors					
60 to 100	100	160	D115 and D150	**LR9D67**	1.98 (0.900)
90 to 150	160	250	D115 and D150	**LR9D69**	1.98 (0.900)

(1) Power terminals can be protected against direct finger contact by the addition of shrouds and/or insulated terminal blocks, to be ordered separately (see page 113).
(2) For use with D25-D38 contactors, order spacer clip (part number W816366180111). See page 137.
(3) These overloads are available without single phase sensitivity. To order, change the LRD prefix to LR3D and add A1 to the end of the number. Example: LRD1508 becomes LR3D1508A1
(4) Select short circuit protection to meet the National Electrical Code or other local codes and standards.

Other Versions Thermal overload relays for resistive circuits in category AC-1. Please consult your Regional Sales Office.

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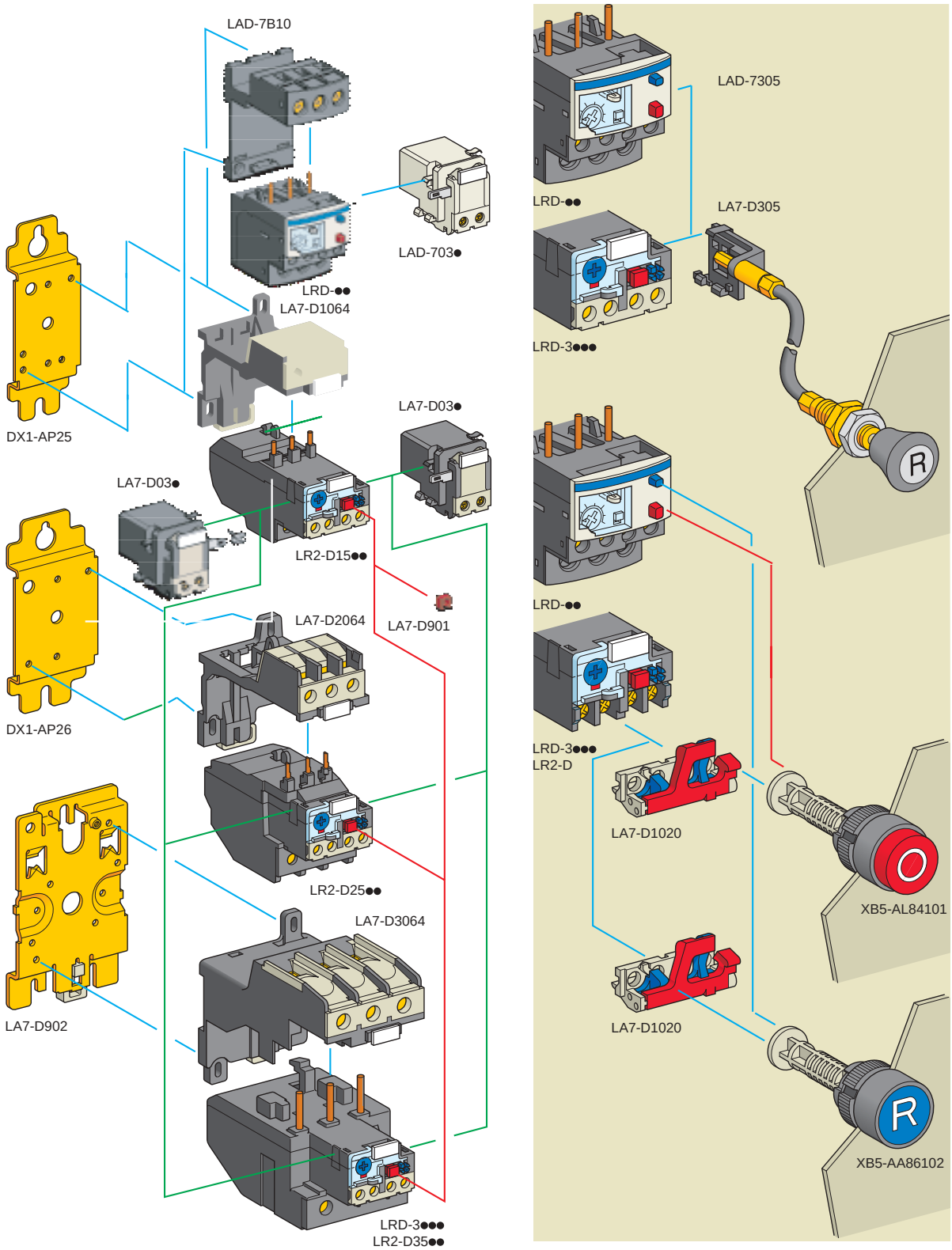

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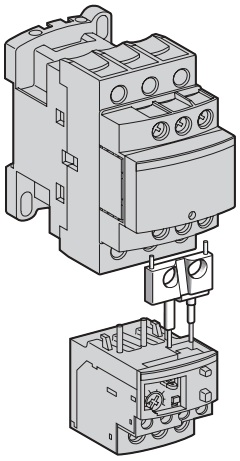
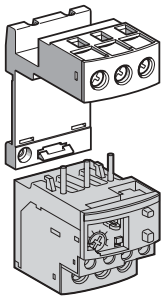


LAD7C



LAD7B10

Overload Relay and Spacer (W816366180111)

Accessories (to be ordered separately)

Description	For use on:	Sold in Lots of:	Catalog Number	Weight lb. (kg)
Pre-wiring kit allowing direct connection of the N.C. contact of relay LRD01 to 35 or LR3D01 to D35 to the contactor	LC1D09 to D18	10	**LAD7C1**	0.002 (0.004)
	LC1D25 to D38	10	**LAD7C2**	0.003 (0.007)
Separate Mount Kits	LRD01 to 35 and LR3D01 to D35	1	**LAD7B10**	0.100 (0.22)
Terminal blocks (1) for separate mounting on 35 mm rail (AM1DP200) or screw mounting; for mounting centers, see pages 138 to 140.	LRD15●●	1	**LAD7B105**	0.100 (0.22)
	LR2D15●●	1	**LA7D1064**	0.100 (0.22)
	LR2D25●●	1	**LA7D2064**	0.120 (0.26)
	LRD3●●●, LR3D3●●●, LR2D35●●	1	**LA7D3064 (2)**	0.370 (0.82)
Terminal block adapter for mounting a relay beneath an LC1D115 or D150 contactor	LRD3●●●, LR3D3●●●, LRD35●●	1	**LA7D3058**	0.080 (0.18)
Mounting plates (3) for screw mounting on 110 mm center	LRD01 to 35, LR3D01 to D35. LR2D15●●	10	**DX1AP25**	0.065 (0.14)
	LR2D25●●	10	**DX1AP26**	0.082 (0.18)
	LRD3●●●, LR3D3●●●, LR2D35●●	1	**LA7D902**	0.130 (0.29)
Marker holder snap in	All relays except LRD01 to 35 and LR3D01 to D35 (4)	100	**LA7D903**	0.001 (0.002)
Bag of 400 labels (blank, self-adhesive, 7 x 16 mm)	–	1	**LA9D91**	0.001 (0.002)
Stop button locking device	All relays except LRD01 to 35. LR3D01 to D35 and LR9D	10	**LA7D901**	0.005 (0.01)
Remote stop or electrical reset device (5)	LRD01 to 35 and LR3D01 to D35	1	**LAD703• (6)**	0.090 (0.20)
Remote tripping or electrical reset device (5)	All relays except LRD01 to 35 and LR3D01 to D35	1	**LA7D03• (6)**	0.090 (0.20)
Block of insulated terminals	LR9D	2	**LA9F103**	0.560 (1.23)
Spacer	Mounting small overload relays to LC1D25 and LC1D32	10	**W816366180111**	0.050 (0.023)

Remote Control

"Reset" Function				
By flexible cable (length = 0.5 m / 1.64 ft.)	LRD01 to 35 and LR3D01 to D35	1	**LAD7305**	0.075 (0.17)
	All relays except LRD01 to 35 and LR3D01 to D35	1	**LA7D305**	0.075 (0.17)
"Stop" and/or "Reset" Functions				
The terminal protection shroud must be removed and the following three products must be ordered separately.				
Adapter for door interlock mechanism	All relays except LRD01 to 35 and LR3D01 to D35	1	**LA7D1020**	0.005 (0.01)
Operating head for spring return push button	Stop All relays	1	**XB5AL84101**	0.027 (0.06)
	Reset All relays	1	**XB5AA86102**	0.027 (0.06)

(1) Terminal blocks are supplied with terminals protected against direct finger contact and screws in the open, "ready-to-tighten" position.
(2) To order a terminal block (separate mount kit) with ring-tongue terminals, the catalog number becomes **LA7D30646**.
(3) Requires separate mount terminal block corresponding to the type of relay.
(4) For LRD01 to 35 (see page 114).
(5) The time for which the coil of remote tripping or electrical resetting device **LA7D03** or **LAD703** can remain energized depends on its rest time: 1 s pulse duration with 9 s rest time; 5 s pulse duration with 30 s rest time; 10 s pulse duration with 90 s rest time; maximum pulse duration of 20 s with a rest time of 300 s. Minimum pulse time: 200 ms.
(6) Reference to be completed by adding the code indicating control circuit voltage. Standard control circuit voltages (for other voltages, please consult your Regional Sales Office).

Volts	**12**	**24**	**48**	**96**	**110**	**220/230**	**380/400**	**415/440**
50/60 Hz	–	B	E	–	F	M	Q	N
Consumption, inrush and sealed: < 100 VA								
dc	J	B	E	DD	F	M	–	–
Consumption, inrush and sealed: < 100 W.								

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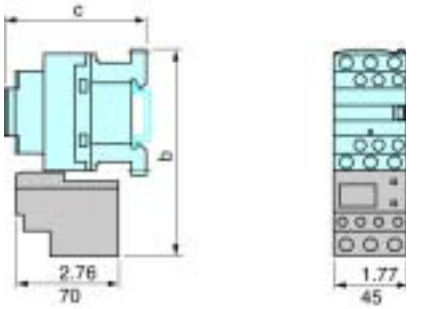
D-Line Thermal Overload Relays

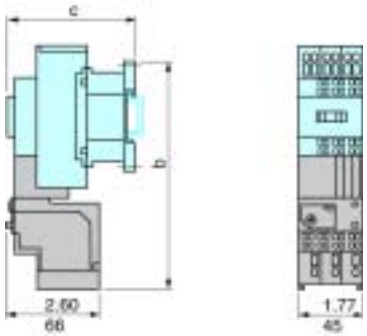
LRD-01-35

Direct mounting beneath contactors with screw



LRD-013-353

Direct mounting beneath contactors with spring terminal connections



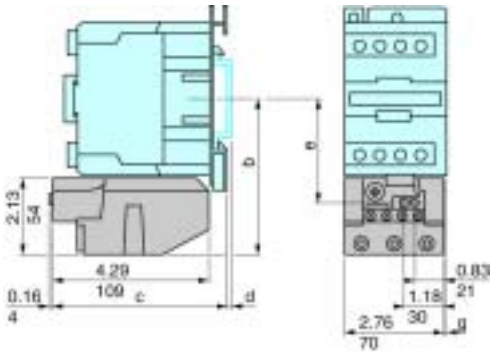
Dual Dimensions: Inches / mm

LC1•	D09 - D18	D25 - D38
b	4.84 (123)	5.39 (137)
c	See pages 122, 123.	

LC1•	D093 - 383
b	4.84 (123)
c	See pages 122, 123.

LRD-3•••

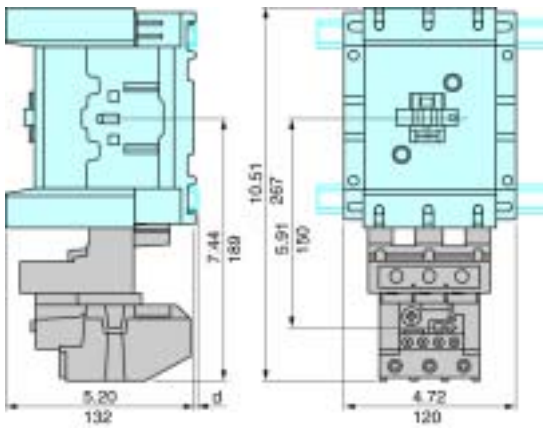
Direct mounting beneath contactors
LC1-D40 to D95 and LP1-D40 to D80



AM1•	DL201	DL200				
d	0.28 (7)	0.67 (17)				
		b	c	e	g(3P)	g(4P)
ac control circuit:						
LC1D40		4.37 (111)	4.69 (119)	2.85 (72.4)	0.18 (4.5)	0.51 (13)
LC1D50		4.37 (111)	4.69 (119)	2.85 (72.4)	0.18 (4.5)	-
LC1D65		4.37 (111)	4.69 (119)	2.85 (72.4)	0.18 (4.5)	0.51 (13)
LC1D80		4.55 (115.5)	4.88 (124)	3.03 (76.9)	0.37 (9.5)	0.87 (22)
LC1D95		4.55 (115.5)	4.88 (124)	3.03 (76.9)	0.37 (9.5)	-
dc control circuit:						
LC1D40, LP1D40		4.37 (111)	6.93 (176)	2.85 (72.4)	0.18 (4.5)	0.51(13)
LC1D50		4.37 (111)	6.93 (176)	2.85 (72.4)	0.18 (4.5)	-
LC1D65, LP1D65		4.37 (111)	6.93 (176)	2.85 (72.4)	0.18 (4.5)	0.51(13)
LC1D80, D95, LP1D80		4.55 (115.5)	7.06 (179.4)	3.03 (76.9)	0.37 (9.5)	0.87(22)

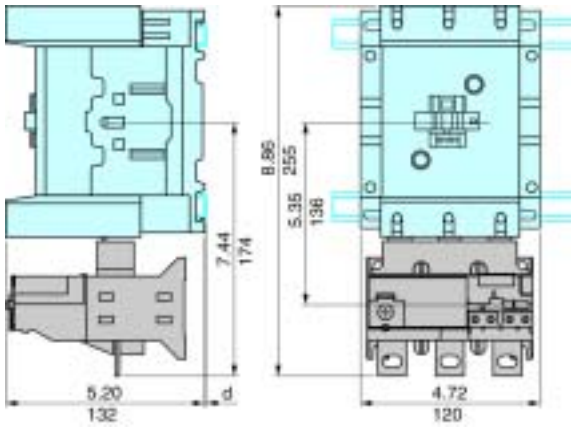
LRD4•••

Direct mounting beneath contactors
LC1D115 and D150



LR9D

Direct mounting beneath contactors
LC1D115 and D150



	AM1DL200 and DR200	AM1DE200 and ED•••		AM1DP200 and DR200	AM1DE200 and ED•••
d	0.10 (2.5)	0.41 (10.5)	d	0.10 (2.5)	0.41 (10.5)

Characteristics: pages 130 - 133 Catalog Number: pages 134, 135

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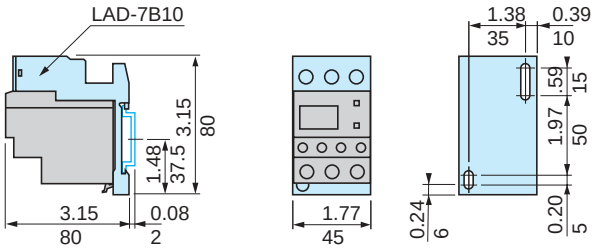
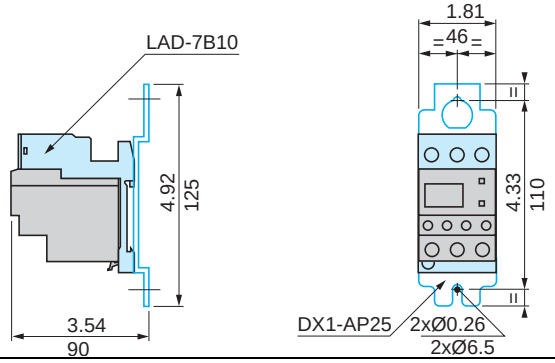
D-Line Thermal Overload Relays

LRD-01-35

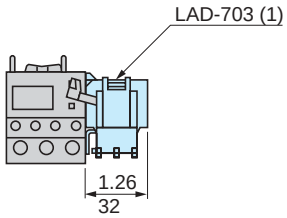
Independent mounting on 50 mm centers or on rail AM1DP200 or DE200



Independent mounting on 110 mm centers



Remote tripping or electrical reset

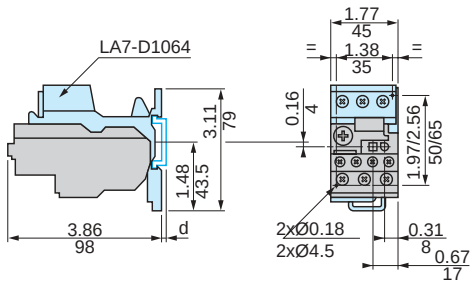


Dual Dimensions: Inches / mm

(1) Can only be mounted on RH side of relay LRD-01 to 35

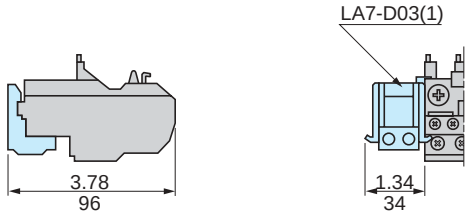
LRD15••

Independent mounting on 50 mm centers or on rail AM1DP200 or DE200



	AM1DP200	AM1DE200
d	0.08 (2)	0.37 (9.5)

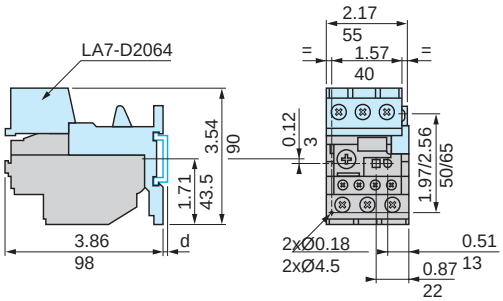
Remote tripping or electrical reset



(1) Can be mounted on RH or LH side of relay LR2D15••

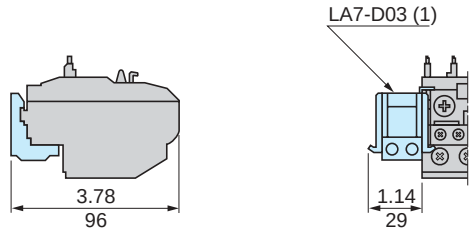
LR2D25••

Independent mounting on 50 mm centers or on rail AM1DP200 or DE200



	AM1DP200	AM1DE200
d	0.08 (2)	0.37 (9.5)

Remote tripping or electrical reset



(1) Can be mounted on RH or LH side of relay LR2D25••

Characteristics: pages 130 - 133 Catalog Number: pages 134, 135

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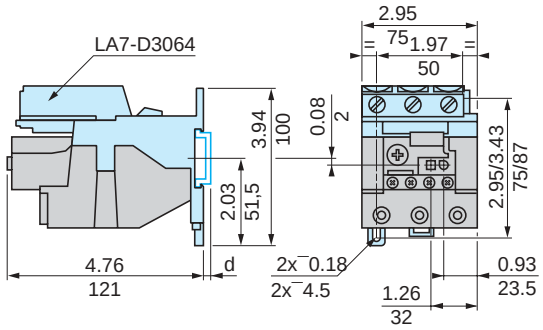
D-Line Thermal Overload Relays

LRD3••• and LR2D35••

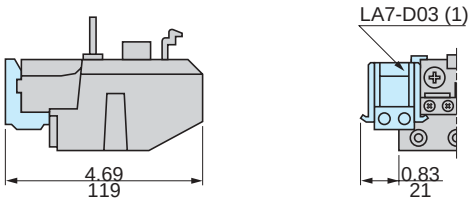
Independent mounting on 50 mm centers or on rail AM1DP200 or DE200



	AM1DP200	AM1DE200
d	0.08 (2)	0.37 (9.5)

LRD3•••, LR2D35•• and LR9D

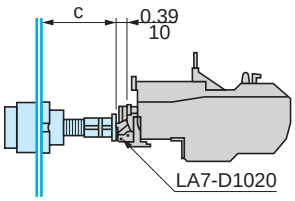
Remote tripping or electrical reset



(1) Can be mounted on RH or LH side of relay LR23•••, LR2D35•• or LR9D

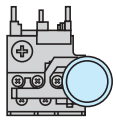
LR2D and LRD3•••

Adapter for door interlock mechanism LA7D1020

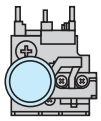


c: adjustable from 0.67 to 4.72 in. (17 to 120 mm)

Stop

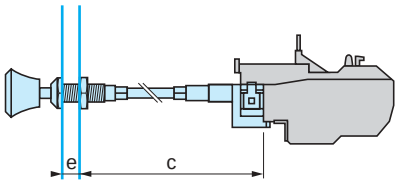


Reset



LRD, LR2D and LR9D

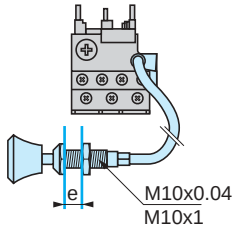
"Reset" by flexible cable LA7D305 and LAD7305
Mounting with cable straight



c: up to 21.6in (550 mm)

e: up to.79in (20 mm)

Mounting with cable bent



e: up to 0.79in (20 mm)

Characteristics: pages 130 - 133 Catalog Number: pages 134, 135

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For Switching 3-phase Capacitor Banks used for Power Factor Correction - Selection

Standard Contactors

Capacitors, together with the circuits to which they are connected, form oscillatory circuits which can, at the moment of switch-on, give rise to high transient currents (> 180 In) at high frequencies (1 to 15 kHz).

As a general rule, the peak current on energizing is lower when:
- the mains inductances are high,
- the line transformer ratings are low,
- the transformer short-circuit voltage is high,
- the ratio between the sum of the ratings of the capacitors already switched into the circuit and that of the capacitors to be switched in is small (for multiple step capacitor banks).

In accordance with standards IEC 60070, NF C 54-100, VDE 0560, the switching contactor must be able to withstand a continuous current of 1.43 times the rated current of the capacitor bank step being switched.
The rated operational powers given in the tables opposite take this overload into account.

Short-circuit protection is normally provided by gL type HPC fuses rated at 1.7 to 2 In.

Contactor Applications

Operating Conditions

Capacitors are directly switched. **The values of peak current at switch-on must not exceed the values indicated opposite.**
An inductor may be inserted in each of the three phases supplying the capacitors to reduce the peak current, if necessary. Inductance values are determined according to the selected operating temperature.

Power factor correction by a single-step capacitor bank

The use of a choke inductor is unnecessary; the inductance of the mains supply is adequate to limit the peak to a value compatible with the contactor characteristics.

Power factor correction by a multiple-step capacitor bank

Select a special contactor as defined on page 142.
If a standard contactor is used, it is essential to insert a choke inductor in each of the three phases of each step.

Maximum operational power of contactors

Standard Contactors

Maximum operating rate: 120 operating cycles/hour.
Electrical durability at maximum load: 100,000 operating cycles.
With choke inductors connected, where necessary.

Operational power at 50/60 Hz						**Maximum Peak Current**	**Contactor Size**
θ ≤ 40 °C / 104 °F (1)			**θ ≤ 55 °C / 131 °F (1)**				
220 V	**400 V**	**600 V**	**220 V**	**400 V**	**600 V**		
240 V	**440 V**	**690 V**	**240 V**	**440 V**	**690 V**		
kVAR	**kVAR**	**kVAR**	**kVAR**	**kVAR**	**kVAR**	**A**	
6	11	15	6	11	15	560	**LC1D09, D12**
9	15	20	9	15	20	850	**LC1D18**
11	20	25	11	20	25	1600	**LC1D25**
14	25	30	14	25	30	1900	**LC1D32, D38**
17	30	37	17	30	37	2160	**LC1D40**
22	40	50	22	40	50	2160	**LC1D50**
22	40	50	22	40	50	3040	**LC1D65**
35	60	75	35	60	75	3040	**LC1D80, D95**
50	90	125	38	75	80	3100	**LC1D115**
60	110	135	40	85	90	3300	**LC1D150**
70	125	160	50	100	100	3500	**LC1F185**
80	140	190	60	110	110	4000	**LC1F225**
90	160	225	75	125	125	5000	**LC1F265**
100	190	275	85	140	165	6500	**LC1F330**
125	220	300	100	160	200	8000	**LC1F400**
180	300	400	125	220	300	10 000	**LC1F500**
250	400	600	190	350	500	12 000	**LC1F630**
250	400	600	190	350	500	14 200	**LC1F800**

(1) Upper limit of temperature category conforming to IEC 70.

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For Switching 3-phase Capacitor Banks, used for Power Factor Correction
Direct Connection without Choke Inductors - References

LC1DFK11••

Special Contactors

Special contactors **LC1D●K** are designed for switching 3-phase, single or multiple-step capacitor banks; they conform to standards IEC 60070 and 60831, NFC 54-100, VDE 0560, UL and CSA.

Contactor Applications

Specification

Contactors fitted with a block of early make poles and damping resistors, limiting the value of the current on closing to 60 In max.
This current limitation increases the life of all the components of the installation, in particular that of the fuses and capacitors.
The patented design of the add-on block (No. 90 119-20) ensures safety and long life of the installation.

Operating Conditions

There is no need to use choke inductors for either single or multiple-step capacitor banks.
Short-circuit protection must be provided by gI type fuses rated at 1.7 to 2 In.

Maximum Operational Power

The power values given in the selection table below are for the following operating conditions.

Prospective Peak Current at Switch-on	LC1D●K		200 In
Maximum Operating Rate	LC1DFK, DGK, DLK, DMK, DPK		240 operating cycles/hour
	LC1DTK, DWK		100 operating cycles/hour
Electrical Durability at Nominal Load	All Contactor Ratings	400 V	300,000 operating cycles
		690 V	200,000 operating cycles

LC1DPK12••

Operational Power at 50/60 Hz (1) θ ≤ **55 °C / 131 °F (3)**			**Instantaneous Auxiliary Contacts**		**Tightening Torque on Cable End**	**Basic Reference. Complete with Code Indicating Control Circuit Voltage (2)**	**Weight lb. (kg)**
220 V	**400 V**	**660 V**					
240 V	**440 V**	**690 V**					
kVAR	**kVAR**	**kVAR**	**N.O.**	**N.C.**	**lb-in (N.m)**		
6.7	12.5	18	1	1	11 (1.2)	**LC1DFK11••**	0.94 (0.430)
			–	2	11 (1.2)	**LC1DFK02••**	0.94 (0.430)
8.5	16.7	24	1	1	15 (1.7)	**LC1DGK11••**	0.99 (0.450)
			–	2	15 (1.7)	**LC1DGK02••**	0.99 (0.450)
10	20	30	1	1	17 (1.9)	**LC1DLK11••**	1.3 (0.600)
			–	2	17 (1.9)	**LC1DLK02••**	1.3 (0.600)
15	25	36	1	1	22 (2.5)	**LC1DMK11••**	1.4 (0.630)
			–	2	22 (2.5)	**LC1DMK02••**	1.4 (0.630)
20	33.3	48	1	2	44 (5)	**LC1DPK12••**	2.9 (1.300)
25	40	58	1	2	44 (5)	**LC1DTK12••**	2.9 (1.300)
40	60	92	1	2	80 (9)	**LC1DWK12••**	3.6 (1.650)

Switching of multiple step capacitor banks (with equal or different power ratings).

The correct contactor for each step is selected from the above table, according to the power rating of the step to be switched.
Example: 50 kVAR 3-step capacitor bank. Temperature 50 °C (122 °F) and U = 400 V or 440 V.
One 25 kVAR step: contactor LC1-DMK, one 15 kVAR step: contactor LC1-DGK and one 10 kVAR step: contactor LC1-DFK.

(1) Operational power of the contactor according to the schematic on page 143.
(2) Standard control circuit voltages.

Volts	**24**	**42**	**48**	**110**	**115**	**220**	**230**	**240**	**380**	**400**	**415**	**440**
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7

For other voltages between 24 and 440 V, please consult your Regional Sales Office
(3) The average temperature over a 24-hour period, in accordance with standards IEC 60070 and 60831, is 45 °C (113 °F).

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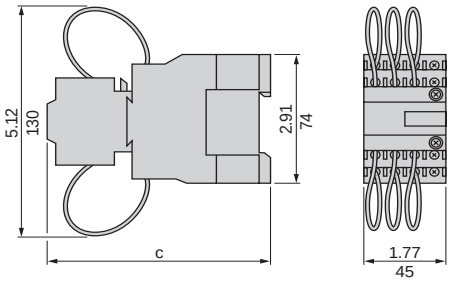
For Switching 3-phase Capacitor Banks, used for Power Factor Correction
Dimensions, Schematics - References

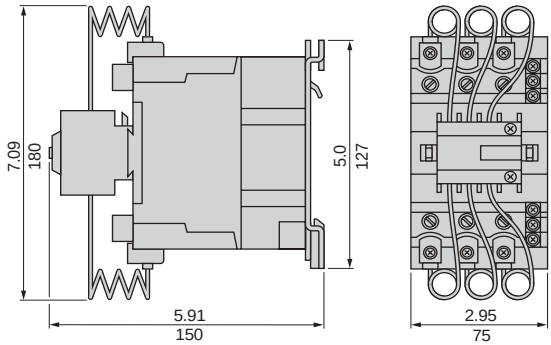
Dimensions

LC1DFK, DGK



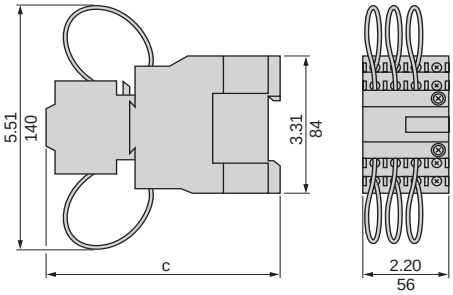
LC1	c	Type of Mounting	
DFK	117	LC1D12	See pages 124, 125
DGK	122	LC1D18	See pages 124, 125

LC1DPK, DTK



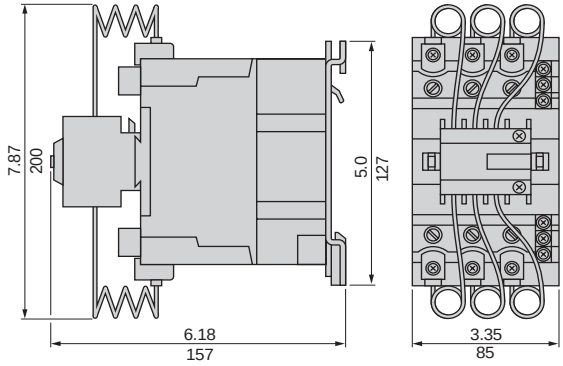
LC1	Type of Mounting	
DPK	LC1D40	See pages 124, 125
DTK	LC1D50	See pages 124, 125

LC1DLK, DMK



LC1	c	Type of Mounting	
DLK	117	LC1D25	See pages 124, 125
DMK	122	LC1D32	See pages 124, 125

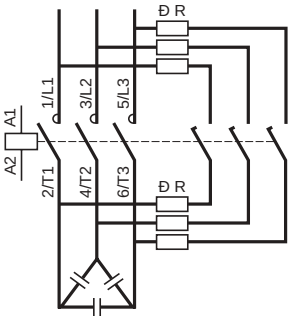
LC1DWK



LC1	Type of Mounting	
DWK	LC1D80	See pages 124, 125

Schematics

LC1D•K



Cabling (maximum permissible c.s.a.)

R = Pre-wired resistor connections

Contactor type **LC1**	**DFK**		**DGK**		**DLK**		**DMK**		**DPK, DTK**		**DWK**	
Number of conductors	1	2	1	2	1	2	1	2	1	2	1	2
Flexible cable with cable end AWG (mm^2)	14 (2.5)	16 (1.5)	12 (4)	14 (2.5)	12 (4)	12 (4)	10 (6)	12 (4)	6 (16)	10 (6)	1 (50)	4 (25)
Solid cable without cable end AWG (mm^2)	12 (4)	12 (4)	10 (6)	10 (6)	8 (10)	10 (6)	6 (16)	8 (10)	4 (25)	6 (16)	1 (50)	2 (35)

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LC4D09A••

AC D.O.L. Starters, Plate Mounted, for Motor Control
4 to 37 kW, (1), with Isolating Device, Pre-Assembled - References

Utilization Category ac-3						Operational Current	Fuses to be Fitted by the Customer		Basic Reference. Complete with Code Indicating Control Circuit Voltage (2)	Weight lb (kg)
Standard Power Ratings of 3-phase Motors 50/60 Hz										
220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V	440 V up to	Size	Type aM		
kW	kW	kW	kW	kW	kW	A		A		
2.2	4	4	4	5.5	–	**9**	10 x 38	12	**LC4D09A••**	1.9 (0.870)
3	5.5	5.5	5.5	7.5	–	**12**	10 x 38	16	**LC4D12A••**	1.9 (0.870)
4	7.5	9	9	10	–	**18**	10 x 38	20	**LC4D18A••**	2.5 (1.150)
5.5	11	11	11	15	–	**25**	10 x 38	25	**LC4D25A••**	3.5 (1.580)
7.5	15	15	15	18.5	18.5	**32**	14 x 51	32	**LC4D32A••**	5.8 (2.630)
11	18.5	22	22	22	30	**40**	14 x 51	40	**LC4D40••**	6.5 (2.930)
15	22	25	30	30	33	**50**	22 x 58	63	**LC4D50••**	7.0 (3.200)
18.5	30	37	37	37	37	**65**	22 x 58	80	**LC4D65••**	7.4 (3.340)
22	37	45	45	55	45	**80**	22 x 58	80	**LC4D80••**	8.0 (3.650)

Specifications

Pre-wired power and control circuit connections.

3-pole isolating device

(1) Thermal overload relay to be ordered separately (see pages 134, 135).
(2) Standard control circuit voltages.

Volts	**24**	**42**	**48**	**110**	**220**	**230**	**240**	**380**	**400**	**415**	**440**
50/60 Hz	B7	D7	E7	F7	M7	P7	U7	Q7	V7	N7	R7

For other voltages, please consult your Regional Sales Office.

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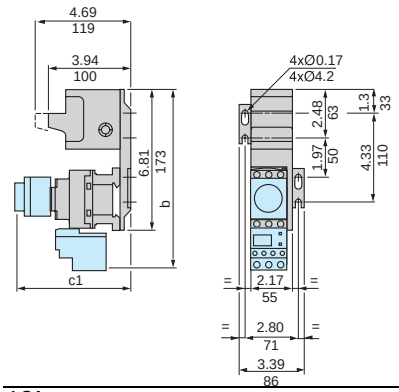
D.O.L. Starters, Plate Mounted, for Motor Control
4 to 37 kW, with Isolating Device, Pre-assembled - Dimensions, Schematics

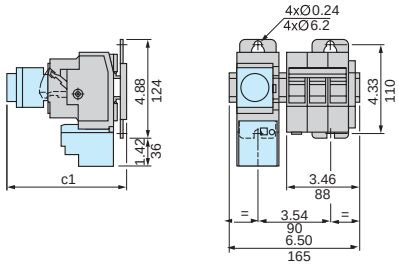
Dimensions

D.O.L. Starters
Plate Mounted, Pre-assembled

LC4D09 to D25A



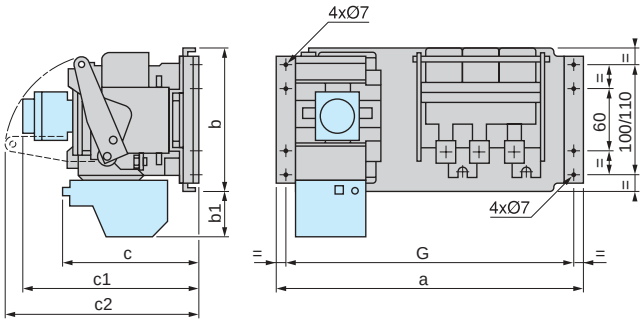
LC4D32A



LC4		D09A to D18A	D25A
b		8.58 (218)	8.70 (221)
c1	without cover or add-on blocks	3.70 (94)	3.93 (100)
	with cover, without add-on block	3.77 (96)	4.01 (102)
	with LADN or C (two or four contacts)	5.0 (127)	5.23 (133)
	with LA6DK10	5.47 (139)	5.70 (145)
	with LADT, R, S	5.78 (147)	6.02 (153)
	with LADT, R, S and sealing cover	5.94 (151)	6.18 (157)

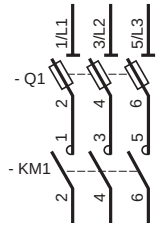
LC4		D32A
c1	without cover or add-on blocks	3.93 (100)
	with cover, without add-on block	4.01 (102)
	with LADN or C (two or four contacts)	5.23 (133)
	with LA6DK10	5.70 (145)
	with LADT, R, S	6.02 (153)
	with LADT, R, S and sealing cover	6.18 (157)

LC4-D40 to D80



LC4		D40 to D65	D80
a		11.0 (281)	12.2 (311)
b		5.6 (143)	5.6 (143)
c		5.1 (130)	5.5 (140)
c1	without cover or add-on blocks	4.8 (124)	5.3 (135)
	with cover, without add-on block	5.2 (129)	5.5 (140)
	with LA1-DN (one contact)	6.1 (149)	6.3 (160)
	with LAD-N or C (two or four contacts)	6.4 (157)	6.6 (168)
	with LA6-DK	6.6 (169)	7.0 (180)
	with LAD-T, R, S	6.9 (177)	7.4 (188)
	with LAD-T, R, S and sealing cover	7.12 (181)	7.5 (192)
c2		3.9 (100)	7.0 (178)

D.O.L. Starters
LC4-D09A to D80



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5.5 to 132 kW, (1), without Isolating Device, Pre-assembled - References

NOTE: Wiring methods differ from typical North American practice.
Contains UL listed, CSA certified, CE marked components.
Assemblies are not UL Listed or CSA Certified.

LC3D32A●●

Standard Power Ratings of Squirrel Cage Motors				Auxiliary Contacts Available on Each Contactor						Star Delta Mechanical Interlock	Catalog Number Complete with Code Indicating Control Circuit Voltage (2)	Weigh lb. (kg)
				line		delta		star				
				KM2		KM3		KM1				
Line Voltage - Delta Connection												
220/ 230 V	380/ 400 V	415 V	440 V									
kW	kW	kW	kW									

Plate Mounted

Maximum Operating Rate: 30 starts/hour. Maximum starting time: 30 seconds.												
4	7.5	7.5	7.5	–	–	–	– (3)	–	1	With	**LC3D09A••**	3.4 (1.530)
5.5	11	11	11	–	–	–	– (3)	–	1	With	**LC3D12A••**	3.4 (1.530)
11	18.5	22	22	–	–	–	– (3)	–	1	With	**LC3D18A••**	3.8 (1.730)
15	25	30	30	–	–	–	– (3)	–	1	With	**LC3D32A••**	4.5 (2.030)
18.5	37	37	37	–	1	1	– (3)	–	1	Without	**LC3D40••**	9.6 (4.360)
										With	**LC3D40••A64**	9.9 (4.500)
30	55	59	59	–	1	1	– (3)	–	– (3)	Without	**LC3D50••**	9.6 (4.360)
										With	**LC3D50••A64**	9.9 (4.500)
37	75	75	75	–	1	1	– (3)	–	– (3)	Without	**LC3D80••**	11.5 (5.200)
										With	**LC3D80••A64**	12.0 (5.400)
63	110	110	110	–	1	1	– (3)	–	– (3)	Without	**LC3D115•• (4)**	26.0 (11.800)
										With	**LC3D115••A64 (4)**	26.7 (12.100)
75	132	132	147	–	1	1	– (3)	–	1 (3)	Without	**LC3D150•• (4)**	26.7 (12.100)
										With	**LC3D150••A64 (4)**	26.7 (12.100)

Rail Mounted (35 mm DIN rail)

Maximum Operating Rate: 12 starts/hour. Maximum starting time: 30 seconds.												
3	5.5	5.5	5.5	–	–	–	–	–	1	With	**LC3K06••**	1.6 (0.740)
4	7.5	7.5	7.5	–	–	–	–	–	1	With	**LC3K09••**	1.6 (0.740)
Maximum operating rate: 30 starts/hour. Maximum starting time: 30 seconds.												
4	7.5	7.5	7.5	–	–	–	– (3)	–	1	With	**LC3D090A••**	3.4 (1.530)
5.5	11	11	11	–	–	–	– (3)	–	1	With	**LC3D120A••**	3.4 (1.530)
11	18.5	22	22	–	–	–	– (3)	–	1	With	**LC3D180A••**	3.8 (1.730)
15	25	30	30	–	–	–	– (3)	–	1	With	**LC3D320A••**	4.5 (2.030)

(1) Protection must be provided by the addition of an overload relay, to be ordered separately. Select appropriate overload relay for setting at 0.58 of the full load rated motor current (see pages 134 and 135).

(2) Standard control circuit voltages

Volts ac 50/60 Hz	**24**	**36**	**42**	**48**	**110**	**220**	**230**	**240**	**380**	**400**	**415**	**440**
Wye-delta Starters LC3K06 and K09												
Code	B7	C7	D7	E7	F7	M7	P7	U7	–	V7	N7	R7
Wye-delta starters LC3D09A to D150, LC3D090A to D320A												
Code	B7	–	D7	E7	F7	M7	P7	U7	Q7	V7	N7	R7

For other voltages, please consult your Regional Sales Office.

(3) One auxiliary contact block type LADN can also be installed, see page 107.

(4) These starters consist of contactors LC1D115 or D150 without connectors.

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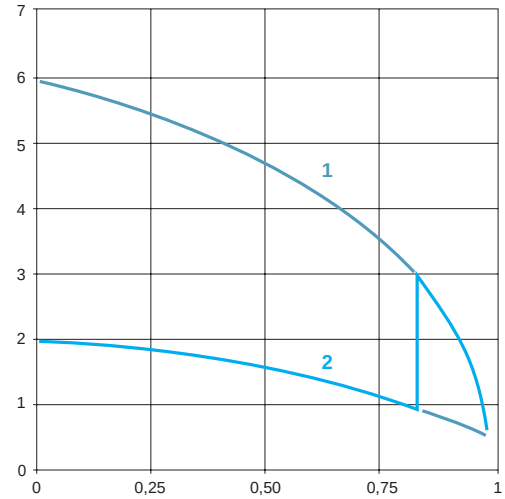
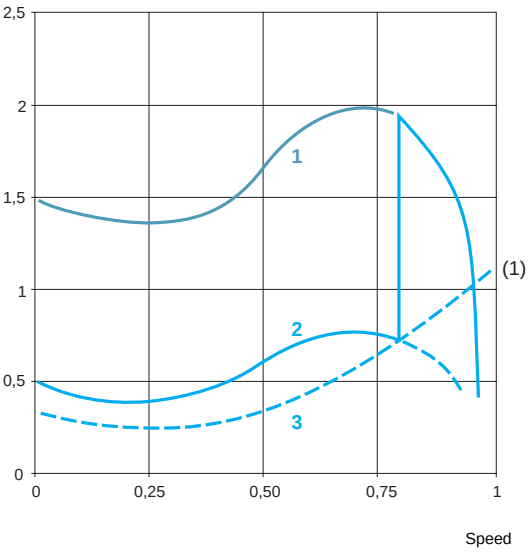
Wye-delta Starting

Current



1 Starting in direct delta connection
2 Starting in wye connection

Torque



1 Starting in direct delta connection
2 Starting in star connection
3 Machine resistive torque

(1) Motor manufacturers generally specify machine load torques.
Example: maximum resistive torque on completion of star-delta start (expressed as a proportion of the rated torque).

This method of starting is applicable to motors on which all six stator terminals are accessible and whose delta connection voltage corresponds to the mains voltage.

Wye-delta starting should be used for motors starting on no-load or having a low load torque and gradual build-up: the starting torque in star connection is reduced to one third of the direct starting torque, i.e. about 50% of the rated torque; the starting current in star connection is about 1.8 to 2.6 times the rated current.

The transition from wye to delta connection must occur when the machine has run up to speed. A too rapid build-up in load torque would cause the stabilized run-up speed to be too low and would therefore eliminate any advantage in this method of starting: this is the case with certain machines whose load torque depends on the machine speed (a characteristic of centrifugal machines, for example).

All wye-delta starters are supplied with a special LA2DS2 or LA2KT2● time delay relay which imposes a delay on the delta contactor during the transition period in order to allow the star contactor sufficient breaking time.

For ratings D115 and D150, this function is performed by a time delay auxiliary contact block LA2DT2 and a control relay.

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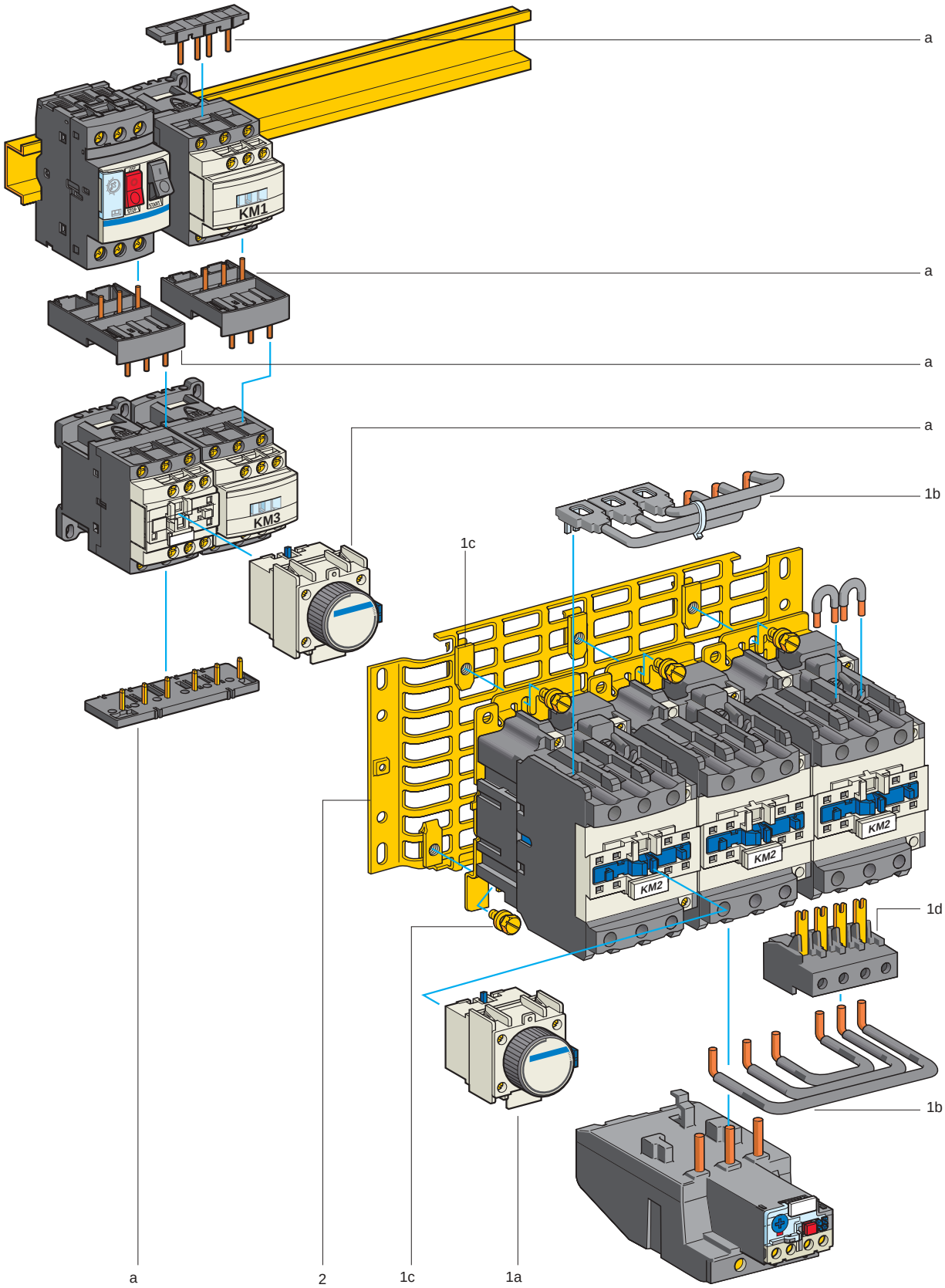

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Wye-delta Starters, for Motor Control, 7.5 to 132 kW (1), without Mechanical Interlock, for Customer Assembly (on plate or on mounting rail) (2) - References

Starters for Direct Combination with Circuit-breaker

Maximum Operating Rate: 30 starts/hour. Maximum starting time: 30 seconds					
Standard Power Ratings of Squirrel Cage Motors (3) Mains Voltage-delta		**Motor Thermal-magnetic MCB**	**Catalog Number** Complete with Code Indicating Control Circuit Voltage (4)		
400/415 V kW	**440 V kW**		**line**	**delta**	**star**
			KM2	**KM3**	**KM1**
7.5	7.5	**GV2ME20**	**LC1D09••**	**LC1D09••**	**LC1D09••**
–	9	**GV2ME20**	**LC1D12••**	**LC1D12••**	**LC1D09••**
9	11	**GV2ME21**	**LC1D12••**	**LC1D12••**	**LC1D09••**
11	–	**GV2ME22**	**LC1D18••**	**LC1D18••**	**LC1D09••**
15	15	**GV2ME32**	**LC1D18••**	**LC1D18••**	**LC1D09••**

Separate Parts

Description	Illustration Item No.	Catalog Number	Weight lb. (kg)
Mounting Kit comprising: Power circuit connections and 1 time delay contact block LADS2	a	**LAD912GV**	0.29 (0.130)

Starters for Mounting Separately from Upstream Protection

Maximum Operating Rate : 30 starts/hour. Maximum starting time: 30 seconds							
Standard power ratings of squirrel cage motors (3) Mains voltage-delta				**Contactors** (basic references to be completed with code indicating the voltage) (4)			**Separate Parts** (see below)
220/230 V	**380/400 V**	**415 V**	**440 V**	**line**	**delta**	**star**	
kW	**kW**	**kW**	**kW**	**KM2**	**KM3**	**KM1**	**Component Type**
4	7.5	7.5	7.5	**LC1D09••**	**LC1D09••**	**LC1D09••**	D09
5.5	11	11	11	**LC1D12••**	**LC1D12••**	**LC1D09••**	D12
11	18.5	22	22	**LC1D18••**	**LC1D18••**	**LC1D09••**	D18
15	25	30	30	**LC1D32••**	**LC1D32••**	**LC1D18••**	D32
18.5	37	37	37	**LC1D40••**	**LC1D40••**	**LC1D40••**	D40
30	55	59	59	**LC1D50••**	**LC1D50••**	**LC1D40••**	D50
37	75	75	75	**LC1D80••**	**LC1D80••**	**LC1D50••**	D80
63	110	110	110	**LC1D115••**	**LC1D115••**	**LC1D80••**	D115
75	132	132	147	**LC1D150••**	**LC1D150••**	**LC1D115••**	D150

Separate Parts

Description	Illustration Item No.	For use on	Catalog Number	Weight lb. (kg)
Mounting Kit comprising: - 1 time delay contact block LADS2 (D09 to D80) (3) - power circuit connections (D09 to D80) - screws and clamps for attaching contactors to the plate (D40 to D80) - terminal block (D09 to D32)	1 a 1 b 1 c 1 d	D09 to D18	**LAD91217**	0.40 (0.180)
		D32	**LAD93217**	0.65 (0.310)
		D40	**LA9D4017**	0.83 (0.380)
		D50	**LA9D5017**	1.06 (0.480)
		D80	**LA9D8017**	1.5 (0.680)
Equipment Mounting Plate	2	D09, D12, D18	**LA9D12974**	0.33 (0.150)
		D32	**LA9D32974**	0.40 (0.180)
		D40 and D50	**LA9D40973**	0.66 (0.300)
		D80	**LA9D80973**	0.66 (0.300)

(1) Protection must be provided by the addition of a thermal overload relay, to be ordered separately. Select appropriate overload relay for setting at 0.58 of the rated motor current, see pages 134 and 135.
(2) For mounting, assembly and cabling: refer to installation instructions supplied with the equipment.
(3) See comments on page 147.
(4) See page 115.

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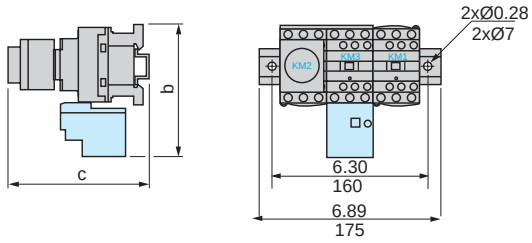
Wye-delta Starters - Dimensions, Schematics

Dimensions for Wye-delta Starters

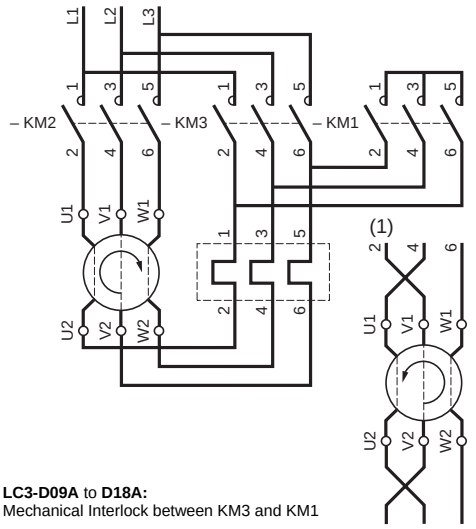
On mounting rail AM1-DP, pre-assembled
LC3-D090A to D320A



LC3		D090A to D180A	D320A
b		6.0 (153)	5.6 (137)
c	with LAD-S	5.4 (139)	5.9 (145)
	with LAD-S and sealing cover	5.8 (143)	5.8 (149)

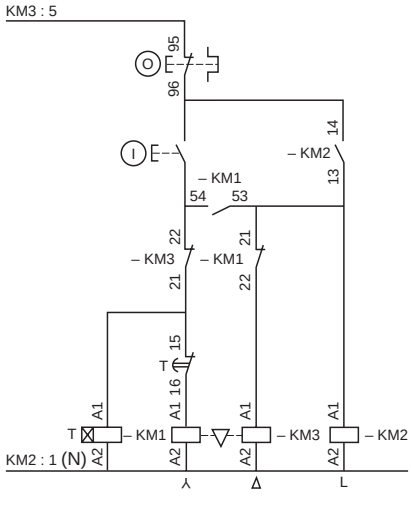
Schematics

LC3-K, LC3-D09A to D80 / LC3D090A to D320A

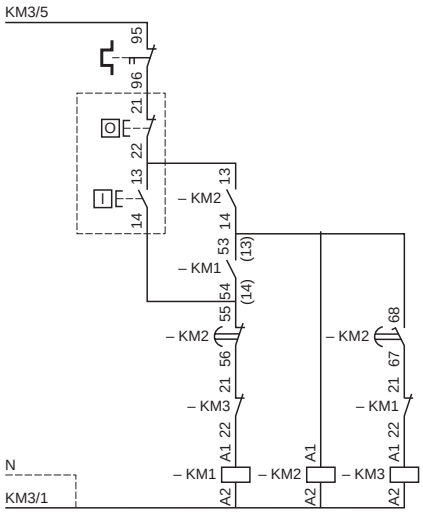


LC3-D09A to **D18A:**
Mechanical Interlock between KM3 and KM1

LC3-K



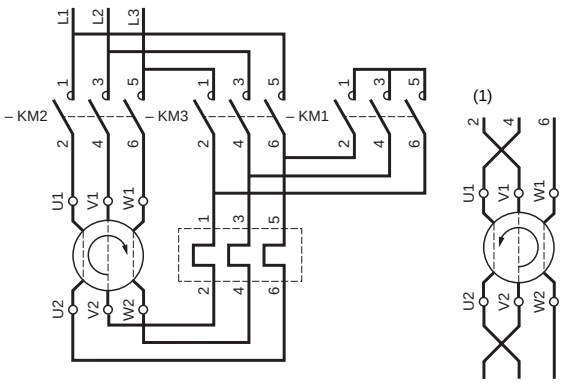
LC3-D

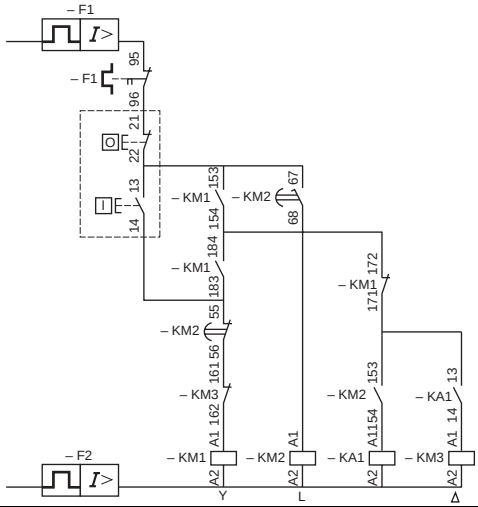


For LC3D50, D80

(1) Recommended cabling for reversal of motor rotation (Standard motor, viewed from shaft end)

LC3-D115 and D150





(1) Recommended cabling for reversal of motor rotation (Standard motor, viewed from shaft end)

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Horsepower Ratings for North American Applications of D-Line Products in Metal Enclosures

D-line enclosed full voltage starters are available in Type 1 and Type 12/3R enclosures through 50 hp at 460 Vac.

See pages 106 to 112 for a complete selection of D-line accessories. See page 155 for Insta-Kit accessories.

E154118
CCN NLDX
CCN NLDX7

LR23506 41
Class 3211 04

Enclosed full voltage non-reversing starters

Max. Horsepower Ratings (AC3) 3 Phase				Auxiliary Contacts		Current Rating of Contactor	Catalog Number	Weight kg (lb.)	Catalog Number	Weight kg (lb.)
200 V	230 V	460 V	575V	N.O.	N.C.		Type 1		Type 12/3R	
2	2	5	7 1/2	1	...	9	LE1D093A62(1)(2)(3)(4)(5)	3.1 (6.9)	LE1D093A72(1)(2)(3)(4)(5)	3.5 (7.7)
3	3	7 1/2	10	1	...	12	LE1D123A62(1)(2)(3)(4)(5)	3.1 (6.9)	LE1D123A72(1)(2)(3)(4)(5)	3.5 (7.7)
5	5	10	15	1	...	18	LE1D183A62(1)(2)(3)(4)(5)	3.1 (6.9)	LE1D183A72(1)(2)(3)(4)(5)	3.5 (7.7)
5	7 1/2	15	20	1	...	25	LE1D253A62(1)(2)(3)(4)(5)	3.3 (7.3)	LE1D253A72(1)(2)(3)(4)(5)	3.6 (8.1)
7 1/2	10	20	25	1	...	32	LE1D323A62(1)(2)(3)(4)(5)	3.3 (7.3)	LE1D323A72(1)(2)(3)(4)(5)	3.6 (8.1)
10	10	30	30	1	1	40	LE1D403A62(1)(2)(3)(4)(5)	5.1 (11.4)	LE1D403A72(1)(2)(3)(4)(5)	5.5 (12.3)
10	15	30	40	1	1	50	LE1D503A62(1)(2)(3)(4)(5)	5.1 (11.4)	LE1D503A72(1)(2)(3)(4)(5)	5.5 (12.3)
15	20	40	50	1	1	65	LE1D653A62(1)(2)(3)(4)(5)	7.4 (16.5)	LE1D653A72(1)(2)(3)(4)(5)	7.8 (17.4)
20	20	50	60	1	1	80	LE1D803A62(1)(2)(3)(4)(5)	7.6 (16.8)	LE1D803A72(1)(2)(3)(4)(5)	8.0 (17.8)

Enclosed full voltage reversing starters

Max. Horsepower Ratings (AC3) 3 Phase				Auxiliary Contacts		Current Rating of Contactor	Catalog Number	Weight kg (lb.)	Catalog Number	Weight kg (lb.)
200 V	230 V	460 V	575 V	N.O.	N.C.		Type 1		Type 12/3R	
2	2	5	7 1/2	2	2	9	LE2D093A62(1)(2)(3)(4)(5)	4.5 (10)	LE2D093A72(1)(2)(3)(4)(5)	4.9 (10.8)
3	3	7 1/2	10	2	2	12	LE2D123A62(1)(2)(3)(4)(5)	4.5 (10)	LE2D123A72(1)(2)(3)(4)(5)	4.9 (10.8)
5	5	10	15	2	2	18	LE2D183A62(1)(2)(3)(4)(5)	4.5 (10)	LE2D183A72(1)(2)(3)(4)(5)	4.9 (10.8)
5	7 1/2	15	20	2	2	25	LE2D253A62(1)(2)(3)(4)(5)	4.5 (10)	LE2D253A72(1)(2)(3)(4)(5)	4.9 (10.8)
7 1/2	10	20	25	2	2	32	LE2D323A62(1)(2)(3)(4)(5)	4.5 (10)	LE2D323A72(1)(2)(3)(4)(5)	4.9 (10.8)
10	10	30	30	2	2	40	LE2D403A62(1)(2)(3)(4)(5)	4.5 (10)	LE2D403A72(1)(2)(3)(4)(5)	4.9 (10.8)
10	15	30	40	2	2	50	LE2D503A62(1)(2)(3)(4)(5)	4.5 (10)	LE2D503A72(1)(2)(3)(4)(5)	4.9 (10.8)
15	20	40	50	2	2	65	LE2D653A62(1)(2)(3)(4)(5)	4.5 (10)	LE2D653A72(1)(2)(3)(4)(5)	4.9 (10.8)
20	20	50	60	2	2	80	LE2D803A62(1)(2)(3)(4)(5)	4.5 (10)	LE2D803A72(1)(2)(3)(4)(5)	4.9 (10.8)

NOTE: Use of control circuit transformers requires Insta-Kit wiring.

1. Control Power Transformer: Select letter from below for primary voltage of CPT.

Control Power Transformer Primary Voltage Code Table

Voltage	No Transformer used	208	240	480	600
Code	O	L	M	T	X

2. Contactor/starter coil voltage: Select coil voltage from table below.

NOTE: If control transformer is used, the only options available are 24 or 120 volts as the secondary of the transformer.

Contactor Coil Voltage Table

Voltage	24	120	208	240	480	600
AC	B	G	L	U	T	X

3. Coil Frequency: Select: 7 = dual frequency coils (50/60 Hz), 6 = 60 Hz.

NOTE: For 9 to 32 A contactors, only dual frequency coils are available. For 40 to 80 A contactors, the 24 V to 240 V coils are dual frequency only (50/60 Hz.). The 480 V to 600 V coils are 60 Hz. only.

4. Overload relay type: Select: 0 = No overload relay, 1 = Trip Class 10, 2 = Trip Class 20.
5. Overload relay range: Select code from page 152.

NOTE: If no overload relay is required, leave this portion of the catalog number blank.

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LE2D093A62

Enclosed starter overload relay selection table

Code	Range	For use on Contactors
01	0.1–0.16	LC1D09–D32 ▲
02	0.16–0.25	LC1D09–D32 ▲
03	0.25–0.40	LC1D09–D32 ▲
04	0.40–0.63	LC1D09–D32 ▲
05	0.63–1.0	LC1D09–D32 ▲
06	1.0–1.6	LC1D09–D32 ▲
07	1.6–2.5	LC1D09–D32 ▲
08	2.5–4	LC1D09–D32
10	4–6	LC1D09–D32
12	5.5–8	LC1D09–D32
14	7–10	LC1D09–D32
16	9–13	LC1D12–D32
21	12–18	LC1D18–D32
22	16–24 ▲ 17-25 ■	LC1D25–D32 ▲ LC1D40-80 ■
30	23-28	LC1D25–D32 ■
32	25-32 ▲ 23–32 ■	LC1D25–D32
53	30–38	LC1D40–D80
55	30–40	LC1D40–D80
57	37–50	LC1D40–D80
59	48–65	LC1D40–D80
61	55–70	LC1D40–D80
63	63–80	LC1D40–80

▲ Available in Class 10 only
■ Available in Class 20 only

NOTE: Use of control circuit transformers requires Insta-Kit wiring.

1. Control Power Transformer: Select letter from below for primary voltage of CPT.

Control Power Transformer Primary Voltage Code Table

Voltage	No Transformer used	208	240	480	600
Code	O	L	M	T	X

2. Contactor/starter coil voltage: Select coil voltage from table below.

NOTE: If control transformer is used, the only options available are 24 or 120 volts as the secondary of the transformer.

Contactor Coil Voltage Table

Voltage	24	120	208	240	480	600
AC	B	G	L	U	T	X

3. Coil frequency: Select: 7 = dual frequency for all starter coil selections except for 480 V or 600 V coils, on 40 A - 80 A starters select 6, 60 Hz only.
4. Overload relay type: Select: 0 = No overload relay, 1 = Trip Class 10, 2 = Trip Class 20.
5. Overload relay range: Select code from page 155.

NOTE: If no overload relay is required, leave this portion of the catalog number blank.

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Horsepower Ratings for North American Applications of
D-Line Products in Metal Enclosures with Fusible Disconnect Switch or Circuit Breaker

IEC combination starters combine the requirements of motor overload and short circuit protection in one convenient compact package. All devices provide Type 2 Coordination through 30 hp at 460 V. Devices are available in Type 1 and Type 12/3R enclosures.

NOTE: Use tables and notes from page 152 to complete the catalog numbers. See pages 106 to 112 for a complete selection of D-line accessories. See page 155 for Insta-Kit accessories.

E154118
CCN NLDX
CCN NLDX7

LR23506 41
Class 3211 04

Enclosed full voltage non-reversing fusible combination starters

Max. Horsepower Ratings (AC3) 3 Phase				Fuse Clip Rating		Auxiliary Contacts		Current Rating of Contactor	Catalog Number	Weight kg (lb.)	Catalog Number	Weight kg (lb.)
200 V	230 V	460 V	575 V	Amperes	UL Class	N.O.	N.C.		Type 1		Type 12/3R	
2	2	5	7 1/2	30 A	CC	1	...	9	LE1D096B62(1)(2)(3)(4)(5)	8.1 (18)	LE1D096B72(1)(2)(3)(4)(5)	8.1 (18)
3	3	7 1/2	10	30 A	CC	1	...	12	LE1D126B62(1)(2)(3)(4)(5)	8.1 (18)	LE1D126B72(1)(2)(3)(4)(5)	8.1 (18)
5	5	10	15	30 A	J	1	...	18	LE1D186B62(1)(2)(3)(4)(5)	8.1 (18)	LE1D186B72(1)(2)(3)(4)(5)	8.1 (18)
5	7 1/2	15	20	30 A	J	1	...	25	LE1D256B62(1)(2)(3)(4)(5)	8.1 (18)	LE1D256B72(1)(2)(3)(4)(5)	8.1 (18)
7 1/2	10	20	25	60 A	J	1	...	32	LE1D326C62(1)(2)(3)(4)(5)	11.7 (26)	LE1D326C72(1)(2)(3)(4)(5)	11.7 (26)
10	10	30	30	60 A	J	1	1	40	LE1D406C62(1)(2)(3)(4)(5)	12.6 (28)	LE1D406C72(1)(2)(3)(4)(5)	12.6 (28)

Enclosed full voltage reversing fusible combination starters

Max. Horsepower Ratings (AC3) 3 Phase				Fuse Clip Rating		Auxiliary Contacts		Current Rating of Contactor	Catalog Number	Weight kg (lb.)	Catalog Number	Weight kg (lb.)
200 V	230 V	460 V	575 V	Amperes	UL Class	N.O.	N.C.		Type 1		Type 12/3R	
2	2	5	7 1/2	30 A	CC	2	2	9	LE2D096B62(1)(2)(3)(4)(5)	11.7 (26)	LE2D096B72(1)(2)(3)(4)(5)	11.7 (26)
3	3	7 1/2	10	30 A	CC	2	2	12	LE2D126B62(1)(2)(3)(4)(5)	11.7 (26)	LE2D126B72(1)(2)(3)(4)(5)	11.7 (26)
5	5	10	15	30 A	J	2	2	18	LE2D186B62(1)(2)(3)(4)(5)	11.7 (26)	LE2D186B72(1)(2)(3)(4)(5)	11.7 (26)
5	7 1/2	15	20	30 A	J	2	2	25	LE2D256B62(1)(2)(3)(4)(5)	11.7 (26)	LE2D256B72(1)(2)(3)(4)(5)	11.7 (26)
7 1/2	10	20	25	60 A	J	2	2	32	LE2D326C62(1)(2)(3)(4)(5)	12.2 (27)	LE2D326C72(1)(2)(3)(4)(5)	12.2 (27)
10	10	30	30	60 A	J	2	2	40	LE2D406C62(1)(2)(3)(4)(5)	14.0 (31)	LE2D406C72(1)(2)(3)(4)(5)	14.0 (31)

Enclosed full voltage non-reversing circuit breaker combination starters

Max. Horsepower Ratings (AC3) 3 Phase				Auxiliary Contacts		Circuit Breaker Maximum Current Rating	Current Rating of Contactor	Catalog Number	Weight kg (lb.)	Catalog Number	Weight kg (lb.)
200 V	230 V	460 V	575 V	N.O.	N.C.			Type 1		Type 12/3R	
2	2	5	7 1/2	1	-	15 A	9	LE1D097D62(1)(2)(3)(4)(5)	9.0 (20)	LE1D097D72(1)(2)(3)(4)(5)	9.0 (20)
3	3	7 1/2	10	1	-	15 A	12	LE1D127D62(1)(2)(3)(4)(5)	9.0 (20)	LE1D127D72(1)(2)(3)(4)(5)	9.0 (20)
5	5	10	15	1	-	30 A	18	LE1D187E62(1)(2)(3)(4)(5)	9.0 (20)	LE1D187E72(1)(2)(3)(4)(5)	9.0 (20)
5	7 1/2	15	20	1	-	30 A	25	LE1D257E62(1)(2)(3)(4)(5)	9.0 (20)	LE1D257E72(1)(2)(3)(4)(5)	9.0 (20)
7 1/2	10	20	25	1	-	50 A	32	LE1D327F62(1)(2)(3)(4)(5)	12.2 (27)	LE1D327F72(1)(2)(3)(4)(5)	12.2 (27)
10	10	30	30	1	1	50 A	40	LE1D407F62(1)(2)(3)(4)(5)	13.0 (29)	LE1D407F72(1)(2)(3)(4)(5)	13.0 (29)

Enclosed full voltage reversing circuit breaker combination starters

Max. Horsepower Ratings (AC3) 3 Phase				Auxiliary Contacts		Circuit Breaker Maximum Current Rating	Current Rating of Contactor	Catalog Number	Weight kg (lb.)	Catalog Number	Weight kg (lb.)
200 V	230 V	460 V	575 V	N.O.	N.C.			Type 1		Type 12/3R	
2	2	5	7 1/2	2	2	15 A	9	LE2D097D62(1)(2)(3)(4)(5)	10.8 (24)	LE2D097D72(1)(2)(3)(4)(5)	10.8 (24)
3	3	7 1/2	10	2	2	15 A	12	LE2D127D62(1)(2)(3)(4)(5)	10.8 (24)	LE2D127D72(1)(2)(3)(4)(5)	10.8 (24)
5	5	10	15	2	2	30 A	18	LE2D187E62(1)(2)(3)(4)(5)	12.6 (28)	LE2D187E72(1)(2)(3)(4)(5)	12.6 (28)
5	7 1/2	15	20	2	2	30 A	25	LE2D257E62(1)(2)(3)(4)(5)	12.6 (28)	LE2D257E72(1)(2)(3)(4)(5)	12.6 (28)
7 1/2	10	20	25	2	2	50 A	32	LE2D327F62(1)(2)(3)(4)(5)	12.6 (28)	LE2D327F72(1)(2)(3)(4)(5)	12.6 (28)
10	10	30	30	2	2	50 A	40	LE2D407F62(1)(2)(3)(4)(5)	14.4 (32)	LE2D407F72(1)(2)(3)(4)(5)	14.4 (32)

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LE1D406C72

LE1D097D62

Enclosed starter overload relay selection table

Code	Range	For use on Contactors
01	0.1–0.16	LC1D09–D32 ▲
02	0.16–0.25	LC1D09–D32 ▲
03	0.25–0.40	LC1D09–D32 ▲
04	0.40–0.63	LC1D09–D32 ▲
05	0.63–1.0	LC1D09–D32 ▲
06	1.0–1.6	LC1D09–D32 ▲
07	1.6–2.5	LC1D09–D32 ▲
08	2.5–4	LC1D09–D32
10	4–6	LC1D09–D32
12	5.5–8	LC1D09–D32
14	7–10	LC1D09–D32
16	9–13	LC1D12–D32
21	12–18	LC1D18–D32
22	16–24	LC1D25–D32
30	23-28	LC1D25–D32 ■
32	23–32	LC1D25–D32
53	30–38	LC1D40–D80
55	30–40	LC1D40–D80
57	37–50	LC1D40–D80
59	48–65	LC1D40–D80
61	55–70	LC1D40–D80

▲ Available in Class 10 only
■ Available in Class 20 only

NOTE: Use of control circuit transformers requires Insta-Kit wiring.

1. Control Power Transformer: Select letter from below for primary voltage of CPT.

Control Power Transformer Primary Voltage Code Table

Voltage	No Transformer used	208	240	480	600
Code	O	L	M	T	X

2. Contactor/starter coil voltage: Select coil voltage from table below.

NOTE: If control transformer is used, the only options available are 24 or 120 volts as the secondary of the transformer.

Contactor Coil Voltage Table

Voltage	24	120	208	240	480	600
AC	B	G	L	U	T	X

3. Coil frequency: Select: 7 = dual frequency for all starter coil selections except for 480 V or 600 V coils, on 40 A - 80 A starters select 6, 60 Hz only.
4. Overload relay type: Select: 0 = No overload relay, 1 = Trip Class 10, 2 = Trip Class 20.
5. Overload relay range: Select code from page 155.

NOTE: If no overload relay is required, leave this portion of the catalog number blank.

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Factory Modifications and Insta-Kit Selection

Add the Factory Modification Code to the end of the catalog number created from pages 151 and 152. Only one operator scheme (factory modification code or field-installable Insta-Kit option) can be used. Only the combinations of operators and pilot lights shown below can be ordered. Pilot lights will be at the coil voltage indicated in the catalog number for the starter.

LA9FF4TK

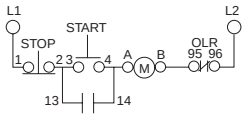
E61239
CCN XPTQ
CCN XPTQ7

All Others

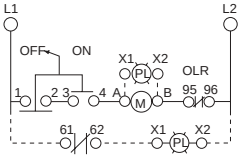
E154118
CCN NLDX
CCN NLDX7

LR23506 41
Class 3211 04

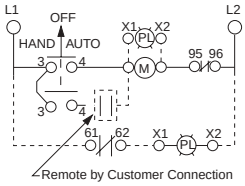
Start/Stop



On-Off Selector Switch



H-O-A Selector Switch



Description	Factory Modification Code ▲	Insta-Kits (for field installation)
Control Units Only		
For-Rev-Stop Push Button	A06L	LA9CA06LT
Start/Stop Push Button	A06G	LA9CA06GT
I/O (Start/Stop) Push Button	N/A	N/A
I/O Push Button (double touch)	A06I	LA9CA06IO
Emergency Stop	N/A	N/A
Start / Mushroom Head Stop Push Button	A06X	LA9CA06XT
Hand-Off-Auto Selector Switch	A06E	LA9CA06ET
On/off Selector Switch	A06D	LA9CA06DT
Pilot Lights only		
LED Pilot light, 24, 120 or 240 V	A16S	LA9CA16ST ★
Green-Red Pilot Light, 120 V ■	A06S	LA9CA06ST
Green-Red Transformer Pilot Light, 120, 208/240, 480 or 600 V ■	A06F	LA9CA06FT ★
Available combination of control units and pilot lights		
Hand-Off-Auto Selector Switch, 120 V LED Pilot Light	A16U	LA9CA16UT ★
Start/Stop Push Button w/ 24, 120 or 240 V LED Pilot Light	A16V	LA9CA16VT ★
On/off Selector w/ 24, 120 or 240 V LED Pilot Light	A16W	LA9CA16WT ★
Start/Stop Push Button w/ Green-Red Transformer Pilot Light	A06N	LA9CA06NT ★
Start/Stop Push Button w/Green-Red Pilot Light	A06G	LA9CA06VT
Hand-Off-Auto Selector Switch w/Green-Red Pilot Light 120 V	A06U	LA9CA06UT
Hand-Off-Auto Selector Switch w/Green-Red Transformer Pilot Light	A06J	LA9CA06JT ★
On/Off Selector w/Green-Red Pilot Light	A06W	LA9CA06WT
On/Off Selector w/Green-Red Transformer Pilot Light	A06H	LA9CA06HT ★
Control Power Transformer		
Standard VA, 2 fuses in Primary, 1 Fuse in secondary	A206P	♦
50 VA extra, 2 fuses in Primary, 1 Fuse in secondary	A207P	♦
100 VA extra, 2 fuses in Primary, 1 Fuse in secondary	A208P	♦
Local / Remote Adapter, 3-wire ●	–	LA9AADIS3
Local / Remote Adapter, 4-wire ●	–	LA9AADIS4
Local / Remote Adapter, 5-wire ●	–	LA9AADIS5
Local / Remote Adapter, 7-wire ●	–	LA9AADIS7

▲ Add these forms to the catalog number selected on pages 151 or 152. The numbers as shown are for use in NEMA 1 Enclosures. For uses in NEMA 12/3R change the 6 to a 7 (ex A06U becomes A07U). The change DOES NOT apply to control power transformer forms or Insta-Kits.

■ Pilot lights are wired such that the light is on when the contactor is energized. For non-LED type pilot lights, a green lens is installed on the unit when shipped. A red lens is included for use as applicable.

♦ Select Insta-Kit from table below.

★ Complete the catalog number for the Insta-Kit by selecting the voltage code from the appropriate tables below.

● 3-wire adapter required when START/STOP pushbutton remote station is used in conjunction with START/STOP local control OR if local pilot light only is used.
4-wire adapter required when FOR/REV/STOP is required for both local and remote control.
5-wire adapter required when START/STOP pushbutton with pilot light remote station OR pilot light only remote is used with START/STOP pushbutton local control.
7-wire adapter required for remote control only applications.

Total VA	Insta-Kit Catalog Number	Weight / kg (lb.)
50	LA9TFD32 ★	0.80 (1.75)
100	LA9TFD80 ★	1.45 (3.25)

Voltage Codes for pilot lights

Voltage (Vac)	24	120	208/240	480	600
Code	B	G	M	T	X

Voltage Codes for control power transformers

Primary Voltage	120	208	240	480	600	208	240	480	600
Secondary Voltage	24					120			
Code	E	D	C	B	A	L	M	T	X

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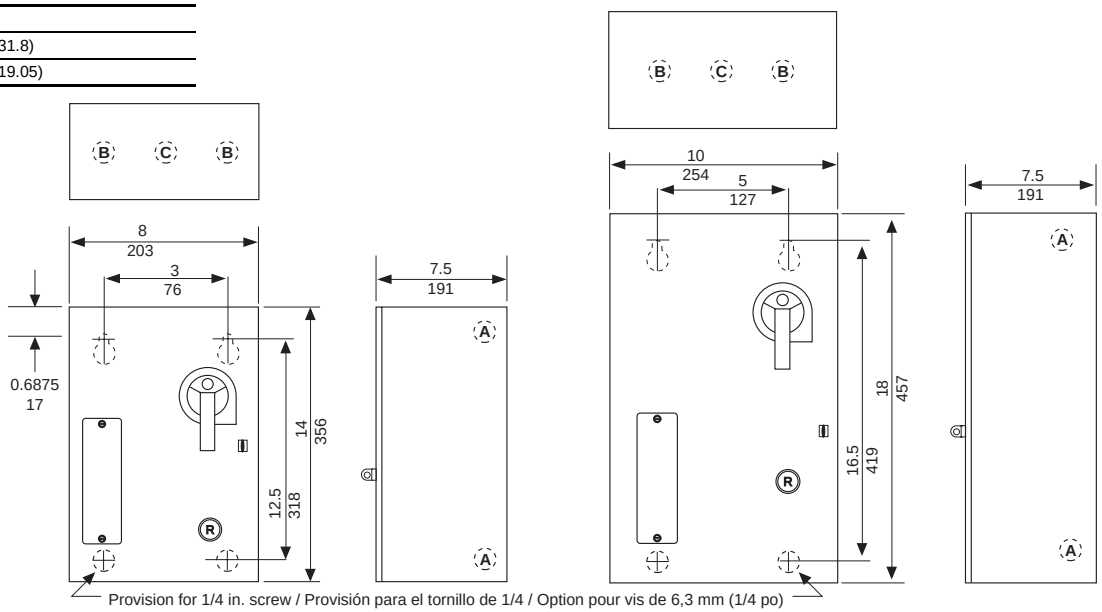
Combination Starter Dimensions with Rotary Disconnect Handle - Type 1

Knockout Schedule

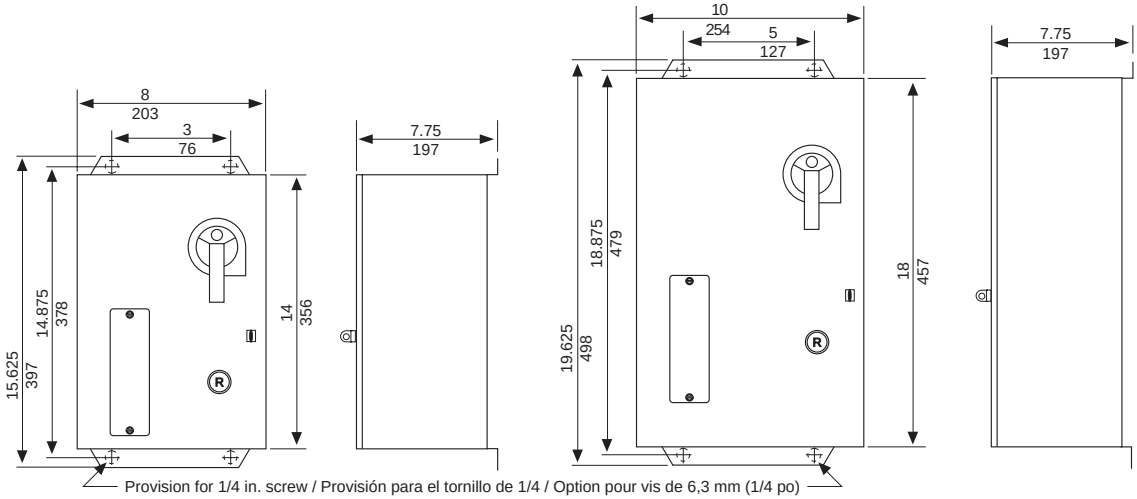
Knockout	Conduit Size, in. (mm)
A	0.50 (12.7)
B	1.00 (25.4); 1.25 (31.8)
C	0.50 (12.7); 0.75 (19.05)



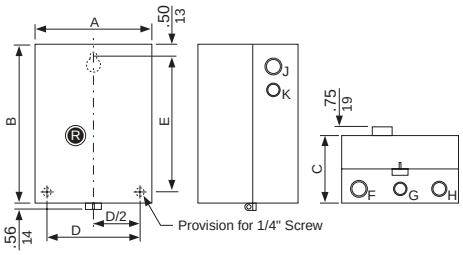
Dual Dimensions: Inches / mm

D09-25 (FVNR) **D09-40 (FVR); D32-40 (FVNR)**

Type 12



D09-25 (FVNR) **D09-40 (FVR); D32-40 (FVNR)**



Non-combination Starter Dimensions

		TYPE 1										TYPE 12/3R	
Non-reversing	Reversing	A	B	C	D	E	F	G	H	J	K	D	E
D09-25	...	6.77 172	10.04 255	6.25 158	5.38 136	9.00 228	1-1 1/4 25.4-31.7	1/2-3/4 12.7-19	–	1-1/4 25.4-6.3	1/2 - 3/4 12.7-19	5.38 13.6	11.37 288
D32-50	D09-32	8.66 220	10.83 275	7.21 183	7.25 184	9.75 247	1 1/4-1 1/2 31.7-38.1	1/2-3/4 12.7-19	1-1 1/4 25.4-31.7	1-1/4 25.4-6.3	1/2 - 3/4 12.7-19	5.38 13.6	12.15 308
D65-80	D40-80	10.63 270	13.98 355	7.21 183	9.22 234	12.94 328	1 1/4-1 1/2 31.7-38.1	1/2-3/4 12.7-19	1-1 1/4 25.4-31.7	1-1 1/4 25.4-6.3	1/2 - 3/4 12.7-19	5.38 13.6	15.30 385

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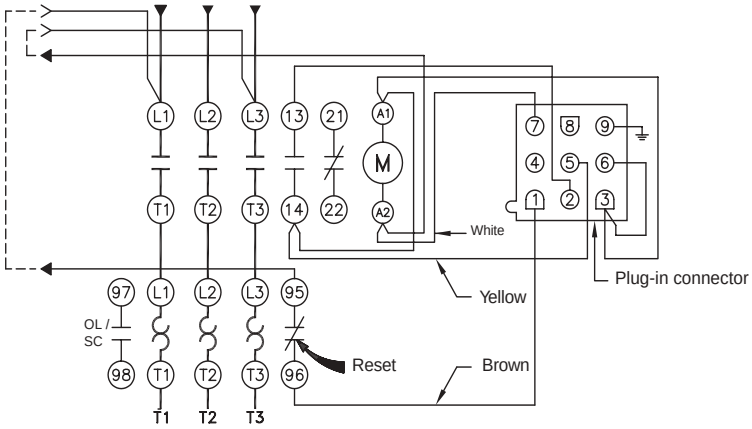
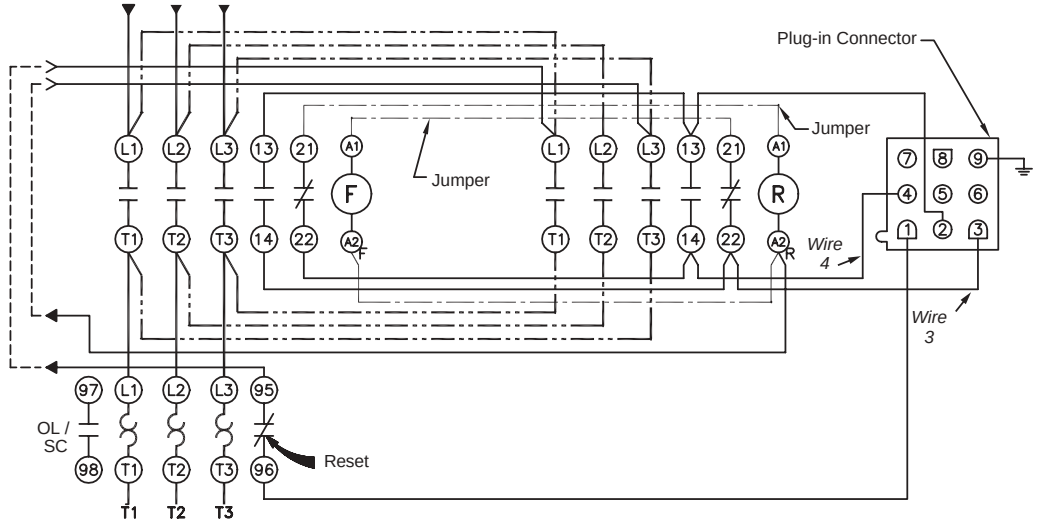
Non-Reversing, Non-Combination 3-Phase Starter



Reversing, Non-Combination 3-Phase Starter



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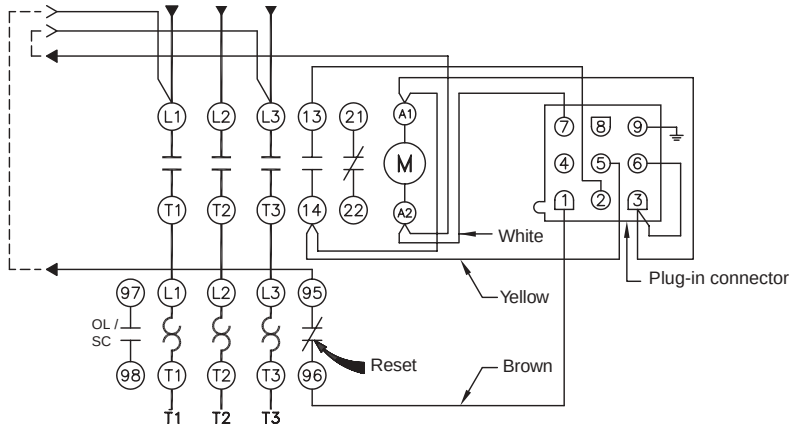
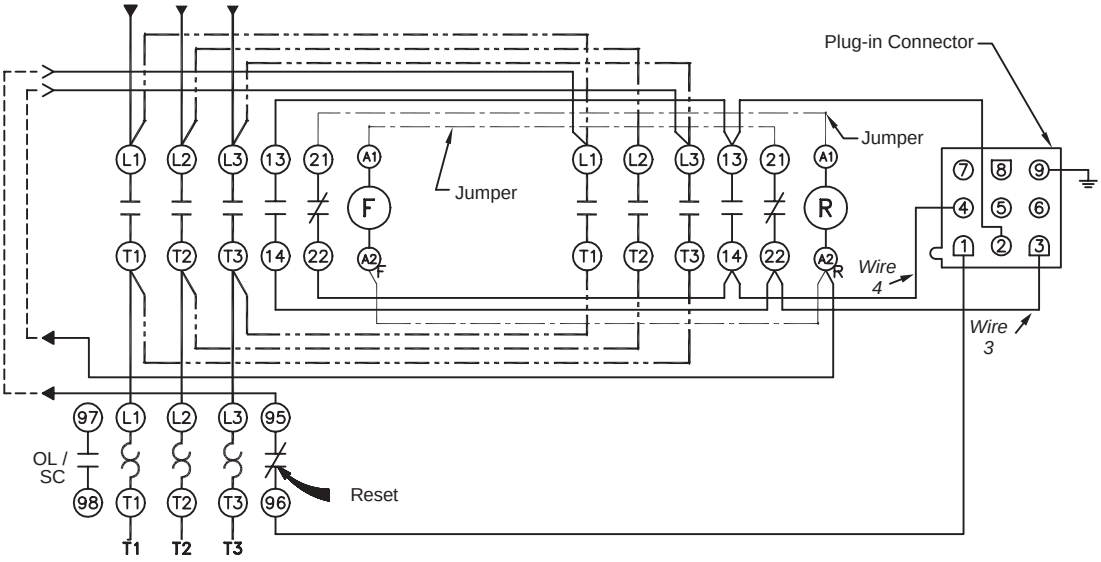
Non-Reversing, Combination 3-Phase Starter



Reversing, Combination 3-Phase Starter



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International Applications Only

D.O.L. AC Starters for Motor Control (1) 2.2 to 45 kW, without Isolator Device

Characteristics

Conforming to standards	IEC 60947-4-1 and IEC 60439-1, VDE 0660-102, EN 60947
Degree of protection to IEC 60529	IP 659: **LE2K**, IP 657: **LE●D09** to **D35** and IP 557: **LE●D405** to **D955**
Ambient air temperature	For operation: - 5 to + 40 °C (- 41 to + 104 °F)
Operating positions	Identical to positions for contactors
Material	Poly carbonate (2): **LE2K** and **LE●D09** to **D35**. Sheet steel: **LE●D405** to **D955**

Non-reversing Starters

LE1D12••

LE2D12••

Standard Power Ratings of 3-phase Motors 50/60 Hz in Category AC-3 (kW)						Maximum Current I the up to	Catalog Number, Complete with Control Circuit Voltage Code (3)	Standard Voltages	Weight lbs (kg)
220 230 V	380 400 V	415V	440 V	500 V	660 690 V				
2.2	4	4	4	5.5	5.5	**9**	**LE1DO9••**	F7 P7 V7	2.03 (0.92)
3	5.5	5.5	5.5	7.5	7.5	**12**	**LE1D12••**	F7 P7 V7	2.03 (0.92)
4	7.5	9	9	10	10	**18**	**LE1D18••**	F7 P7 V7	2.24 (1.015)
5.5	11	11	11	15	15	**25**	**LE1D25••**	F7 P7 V7	2.24 (1.015)
7.5	15	15	15	18.5	18.5	**35**	**LE1D35••**	F7 P7 V7	9.53 (4.320)
11	18.5	22	22	22	30	**40**	**LE1D405••**	F7 P7 V7	10.63 (4.82)
15	22	25	30	30	33	**50**	**LE1D505••**	F7 P7 V7	10.69 (4.85)
18.5	30	37	37	37	37	**65**	**LE1D655••**	F7 P7 V7	10.69 (4.85)
22	37	45	45	55	45	**80**	**LE1D805••**	F7 P7 V7	11.33 (5.14)
25	45	45	45	55	45	**95**	**LE1D955••**	F7 P7 V7	12.0 (5.44)
Reversing Starters									
1.5	2.2	2.2	3	–	–	**6**	**LE2K065••**	F7 P7 V7	2.38 (1.08)
2.2	4	4	4	–	–	**9**	**LE2K095••**	F7 P7 V7	2.38 (1.08)
							LE2D09••	F7 P7 V7	4.63 (2.100)
–	–	–	–	5.5	5.5	**9**	**LE2D09••**	F7 P7 V7	4.63 (2.100)
3	5.5	5.5	5.5	7.5	7.5	**12**	**LE2D12••**	F7 P7 V7	4.63 (2.100)
4	7.5	9	9	10	10	**18**	**LE2D18••**	F7 P7 V7	5.31 (2.410)
5.5	11	11	11	15	15	**25**	**LE2D25••**	F7 P7 V7	5.66 (2.570
7.5	15	15	15	18.5	18.5	**35**	**LE2D35••**	F7 P7 V7	9.0 (4.100)
11	18.5	22	22	22	30	**40**	**LE2D405••**	F7 P7 V7	11.6 (5.270)
15	22	25	30	30	33	**50**	**LE2D505••**	F7 P7 V7	12.06 (5.470)
18.5	30	37	37	37	37	**65**	**LE2D655••**	F7 P7 V7	12.06 (5.470)
22	37	45	45	55	45	**80**	**LE2D805••**	F7 P7 V7	14.77 (6.700)
25	45	45	45	55	45	**95**	**LE2D955••**	F7 P7 V7	15.43 (7.000)

(1) Protection must be provided by addition of an overload relay, to be ordered separately, see pages 134 and 135.
(2) Avoid placing this material in contact with harsh substances (detergents, chlorinated solvents, ketones, alcohol, aromatic hydrocarbons).
(3) Standard control circuit voltages.

Volts AC 50/60 Hz	24	42	48	110	115	220	230	240	380	400	415	440
LE2K	B7	D7	E7	F7	–	M7	P7	U7	Q7	V7	N7	R7
LE1, LE2D	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7

For other voltages please consult your Regional Sales Office.

(4) Selection according to the number of operating cycles, please consult your Regional Sales Office.

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LE1D12••A04

LE1D12••A05

LE1D12••A09

LE1D12••A13

LE1D12••A35

D.O.L. AC Starters for Motor Control (1) 2.2 to 45 kW without Isolator Device, Non-reversing

Description	
Standard versions comprise:	
• For non-reversing starters:	1 green Start button “I”, 1 red Stop/Reset button “O”.
• For reversing starters:	1 Start button ↑, 1 Start button ↓, 1 red Stop/Reset button.
— LE2K:	
— LE2D09 to D35:	1 2-position spring return selector switch “I”-“II”, 1 red Stop/Reset button “O”.
— LE2D405 to D955:	1 blue Reset button “R”.

Forms (installed by Telemecanique)

Description	For Use On	Suffix to be Added to Starter Catalog Number (2)
No push buttons on cover	LE1D09 through D955 LE2D09 through D955	A04
1 green Start button “I” 1 green Start button “II” 1 red Stop/Reset button “O”	LE2D405 through D955	A11
1 blue Reset button “R”	LE1D09 through D955 LE2K06 and K09 LE2D09 through D35	A05
1 3-position stay put selector switch (“I”-”O”-”II”) (“I”: Automatic Start; “O”: Stop; “II”: Manual Start) 1 blue Reset button “R”	LE1D09 through D35	A09
1 2-position stay put selector switch (”O”-”I”) (“O”: Stop; “I”: Manual Start) 1 blue Reset button “R”	LE1D09 through D35	A13
1 3-position stay put selector switch ”O”-”I” with spring return to center position (”I”: Manual start; ”O”: Stop, stay put) 1 blue Reset button “R”	LE1D09 through D35	A35
1 neutral terminal Fitted as standard on LE1 and LE2D18 to D955 starters ordered with 220 V (M7), 230 V (P7) or 240 V (U7) control circuit voltage.	LE1D09 through D955 LE2K06 and K09 LE2D09 through D955	A59

Accessories (installed by the customer)

Description	For Use On	Catalog Number	Weight lbs (kg)
Start pushbutton latching device for stay-put operation (Start-Stop)	LE1D405 through D955	**LA9D09907**	0.13 (0.06)

(1) See previous page.
(2) Example: **LE1D093F7A04**

Other versions: Combination of 2 accessories, please consult your Regional Sales Office.

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International Applications Only

D.O.L. AC Starters for Motor Control (1), 2.2 to 45 kW with Isolator Device

Characteristics

Conforming to standards	IEC 60947-4-1 and IEC 60439-1, VDE 0660-102, EN 60947
Degree of protection to IEC 529	IP 659: **LE●K**, IP 657: **LE●D09** to **D35** and IP 55: **LE●D406** to **D806**
Ambient air temperature	For operation: - 5 to + 40 °C (- 41 to + 104 °F)
Operating positions	Identical to positions for contactors
Material	Poly carbonate (2): **LE●K** and **LE●D09** to **D35**. Sheet steel: **LE●D406** to **D806**

Non-reversing Starters

LE4D12••

LE8D12••

Standard Power Ratings of 3-phase Motors 50/60 Hz in Category AC-3 (kW)						Operational Current (A) 440 V up to	Fuses to be fitted by the customer			Catalog Number, Complete with Control Circuit Voltage Code (3)	Weigh lbs (kg)
220 230 V	380 400 V	415V	440 V	500 V	660 690 V		Size	Type aM A			
1.5	2.2	2.2	3	-	-	6	10 X 38	10		**LE4K065••**	3.19 (1.45)
2.2	4	4	4	-	-	9	10 X 38	12		**LE4K095••**	3.19 (1.45)
									or	**LE4D09•• (4)**	4.32 (1.96)
2.2	4	4	4	5.5	-	9	10 X 38	12		**LE4D09••**	4.32 (1.96)
3	5.5	5.5	5.5	7.5	-	12	10 X 38	16		**LE4D12••**	4.32 (1.96)
4	7.5	9	9	10	-	18	10 X 38	20		**LE4D18••**	4.85 (2.20)
5.5	11	11	11	15	-	25	10 X 38	25		**LE4D25••**	4.85 (2.20)
7.5	15	15	15	18.5	18.5	35	14 X 51	32		**LE4D35••**	11.4 (5.19)
11	18.5	22	22	22	30	40	14 X 51	40		**LE4D406••**	12.7 (5.77)
15	22	25	30	30	33	50	22 X 58	63		**LE4D506••**	14.2 (6.44)
18.5	30	37	37	37	37	65	22 X 58	80		**LE4D656••**	14.7 (6.67)
22	37	45	45	55	45	80	22 X 58	80		**LE4D806•• (5)**	15.6 (7.10)
Reversing Starters											
1.5	2.2	2.2	3	-	-	6	10 X 38	10		**LE8K065••**	3.52 (1.60)
2.2	4	4	4	-	-	9	10 x 38	12		**LE8K095••**	3.52 (1.60)
									or	**LE8D09•• (4)**	7.82 (3.55)
-	-	-	-	5.5	-	9	10 x 38	12		**LE8D09••**	7.82 (3.55)
3	5.5	5.5	5.5	7.5	-	12	10 x 38	16		**LE8D12••**	7.82 (3.55)
4	7.5	9	9	10	-	18	10 x 38	20		**LE8D18••**	8.16 (3.70)
5.5	11	11	11	15	-	25	10 x 38	25		**LE8D25••**	10.3 (4.67)
7.5	15	15	15	18.5	18.5	35	14 x 51	32		**LE8D35••**	12.8 (5.80)
11	18.5	22	22	22	30	40	14 x 51	40		**LE2D406••**	31.24 (14.17)
15	22	25	30	30	33	50	22 x 58	63		**LE2D506••**	32.40 (14.17)
18.5	30	37	37	37	37	65	22 x 58	80		**LE2D656••**	32.56 (14.77)
22	37	45	45	55	45	80	22 x 58	80		**LE2D806••**	35.30 (16.00)

(1) Protection must be provided by addition of an overload relay, to be ordered separately, see pages 134 and 135.
(2) Avoid placing this material in contact with harsh substances (detergents, chlorinated solvents, ketones, alcohol, aromatic hydrocarbons).
(3) Standard control circuit voltages.

Volts AC 50/60 Hz	24	42	48	110	115	220	230	240	380	400	415	440
LE•K	B7	D7	E7	F7	–	M7	P7	U7	Q7	V7	N7	R7
LE•D	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7

For other voltages please consult your Regional Sales Office.

(4) Selection according to dimensions and the number of operating cycles, please consult your Regional Sales Office.
(5) Supplied with 3 cable entries.

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International Applications Only

D.O.L. AC Starters for Motor Control (1) 2.2 to 45 kW with Isolator Device

LE4D12••A04

LE4D12••A05

Description	
Standard versions comprise:	
• For non-reversing starters:	
— LE4K and LE4D09 to D656:	1 green Start button “I”, 1 red Stop/Reset button “O”.
— LE4D806:	no pushbuttons on cover.
• For reversing starters:	
— LE8K:	1 Start button ↑, 1 Start button ↓, 1 red Stop/Reset button.
— LE8D09 to D35:	1 2-position spring return selector switch “I”-“II”, 1 red Stop/Reset button “O”.
— LE2D406 to D806:	no pushbuttons on cover

Protection	Power Circuit	Control Circuit
LE4 and LE8K	1 3-pole isolating device	None
LE4 and LE8D09 to D35	1 3-pole isolating device	+ 1 additional pole LA8D254
LE4 and LE2D406 to D806	1 3-pole isolating device	+ 1 circuit-breaker GB2CB08

Forms (installed by Telemecanique)

Description	For Use On	Suffix to be Added to Starter Catalog Number (2)
No push buttons on cover	LE4D09 through D656 LE8D09 through D35	A04
1 green Start button “I” 1 green Start button “II” 1 red Stop/Reset button “O”	LE2D406 through D806	A11
1 blue Reset button “R”	LE4D09 through D806 LE8K06 and K09 LE2D406 through D806	A05
1 neutral terminal Fitted as standard on LE4D18 to D806, LE8D18 to D35 and LE4D406 to D806 starters ordered with 220 V (M7), 230 V (P7) or 240 V (U7) control circuit voltage.	LE4K06 and K09 LE4D09 through D806 LE8K06 and K09 LE8D09 through D35 LE2D406 through D806	A59

Accessories (installed by the customer)

Description	For Use On	Catalog Number	Weight lbs (kg)
Start pushbutton latching device for stay-put operation (Start-Stop)	LE4D406 through D656	**LA9D09907**	0.13 (0.06)

(1) See previous page.
(2) Example: **LE4D09F7A04**

Other versions: Combination of 2 accessories, please consult your Regional Sales Office.

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Wye-Delta Starters for Motor Control from 4 to 75 kW, without Off-Load Isolator (1) - References

LE3D12••

Selection

Standard Power Ratings of Squirrel Cage Motors Mains Voltage - Delta Connection (kW)				Catalog Number, Complete with Control Circuit Voltage Code (2)	Normal Control Circuit Voltage Code	Weight lbs (kg)
220 V	380 V	415V	440 V			
Maximum operating rate in starts/hour: LE3-K: 12 and LE3-D: 30. Maximum starting time: 30 seconds. (4)						
3	5.5	5.5	5.5	**LE3K065••**	F7 M7 Q7	3.22 (1.46)
4	7.5	7.5	7.5	**LE3K095••**	F7 M7 Q7	3.22 (1.46)
				or **LE3D09••**	F7 M7 Q7	8.05 (3.65)
5.5	11	11	11	**LE3D12••**	F7 M7 Q7	8.05 (3.65)
11	18.5	22	22	**LE3D18••**	F7 M7 Q7	8.27 (3.75)
15	25	30	30	**LE3D32••**	F7 M7 Q7	11.38 (5.16)
18.5	37	37	37	**LE3D405••**	F7 M7 Q7	17.99 (8.16)
30	55	59	59	**LE3D505••**	F7 M7 Q7	17.97 (8.15)
37	75	75	75	**LE3D805••**	F7 M7 Q7	30.87 (14.00)

Specifications

Enclosure	LE3D09 through D80	Metal Enclosure, IP 559
Control (2 push buttons mounted on enclosure cover)	LE3D09 through D18	1 green start button “I” 1 red stop/reset button “O”
No push buttons on cover	LE3D32 through D80	-
Connections	LE3K06 and K09	Pre-wired power and control circuit connections

A timer LA2-DS2 imposes a delay of 40 ms ± 15 ms on the delta contactor at the moment of changeover to ensure that the star contactor has sufficient breaking time.

Forms (installed by Telemecanique)

Description	For Use On	Suffix to be Added to Starter Catalog Number (5)
No push buttons on cover	LE3D09 through D18	A04
1 blue reset button “R”	LE3D09 through D80	A05
1 green start button “I” 1 red stop/reset button “O”	LE3D32 through D80	A06
1 neutral terminal Fitted as standard on starters ordered with 240 V (U7) control circuit voltage.	LE3K06 and K09 LE3D09 through D80	A59
Mechanical interlock Fitted as standard on starters LE3K and LE3D09 to D35	LE3D405 TO D150	A64

Control Circuit Voltage Codes

LE3-K (6)

Control Voltage 50/60 Hz	12	24	36	42	48	110	127	220/230	230	230-240	380/400	400	400/415	440	500	660/690
Code	J7	B7	C7	D7	E7	F7	FC7	M7	P7	U7	Q7	V7	N7	R7	S7	Y7

LE3-D (6)

Control Voltage 50/60 Hz	24	42	48	110	220/230	230	240	380/400	400	415	440
Code	B7	D7	E7	F7	M7	P7	U7	Q7	V7	N7	R7

(1) Overload protection by thermal overload relay, to be ordered separately. Select appropriate overload relay for setting at 0.58 the full load rated motor current.
(2) Standard control circuit voltages (variable delivery time, please consult your Regional Sales Office).
(4) Selection according to size and number of operating cycles (see AC-3 curves, page 20).
(5) Example: LE3-D095F7A04.
(6) Other voltages: For LE3-K, please consult your Regional Sales Office.
Other versions: Combination of 2 accessories, please consult your Regional Sales Office.

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TeSys™ D-Line Contactors and Starters
Wye-delta Starters with Fused Disconnect Switch LE3D (International Applications Only)

International Applications Only

NOTE: Wiring methods differ from typical North American practice.
Contains UL Listed, CSA Certified, and CE marked components.
Assemblies are not UL Listed or CSA Certified.

LE6D12••

Standard power ratings of squirrel cage motors Mains voltages - delta connection				Fuses to be installed by customer		Catalog Number ■ ▼	Weight
220 V	380 V	415 V	440 V	Size	Type aM		
kW	kW	kW	kW		A		kg (lb.)
Maximum operating rate: 30 starts/hour. Maximum starting time: 30 seconds.							
4	7.5	7.5	7.5	10 x 38	20	**LE6D09••**	3.900 (8.598)
5.5	11	11	11	10 x 38	25	**LE6D12••**	3.900 (8.598)
11	18.5	22	22	14 x 51	40	**LE6D18••**	4.850 (10.692)
15	25	30	30	22 x 58	63	**LE6D326••**	7.650 (16.865)
18.5	37	37	37	22 x 58	80	**LE3D406••**	16.90 (37.256)
30	55	59	59	22 x 58	125	**LE3D506••**	17.00 (37.478)
37	75	75	75	0	160	**LE3D806••**	27.50 (60.626)

Specifications

Enclosure	LE3D09 to LE3D80	Metal enclosure, degree of protection IP 559
Control (2 pushbuttons on enclosure cover)	LE3D09 and LE3D12	1 green Start button “I” 1 red Stop/Reset button “O”
No pushbuttons on cover	LE3D18 to LE3D80	–
Isolator with external operator	LE3D09 and LE3D12	1 3-pole isolator + 1 additional pole LA8D254
	LE3D18 to LE3D80	1 3-pole isolator and 1 circuit breaker GB2-CB08
Connections	LE3D09 to LE3D80	Pre-wired power and control circuit connections

A timer **LA2DS2** imposes a delay of 40 ms ± 15 ms on the delta contactor at the moment of changeover to ensure that the star contactor has sufficient breaking time.

■ Overload protection by means of bimetallic overload relay, to be ordered separately. Select appropriate overload relay for setting at 0.58 of the full-load rated motor current.

▼ Complete catalog number with appropriate coil selection code below.

LE6D12••A04

Coil Selection

50/60 Hz	24	42	48	110	220/230	230	240	380/400	400	415	440
Voltage Code	B7	D7	E7	F7	M7	P7	U7	Q7	V7	N7	R7

Forms (installed by Telemecanique)

Description	For use on	Suffix to be added to starter catalog number ●
No pushbuttons on cover	LE3D09 to LE3D12	A04
1 blue Reset button “R”	LE3D09 to LE3D80	A05
1 green Start button “I” 1 red Stop/Reset button “O”	LE3D18 to LE3D80	A06
1 neutral terminal Fitted as standard on starters ordered with 240 V (U7) control supply	LE3D09 to LE3D80	A59
Mechanical interlock Fitted as standard on starters LE6D09 to D18	LE3D326 to D80	A64

● For example: **LE3D096F7A04**.

LE6D12••A05

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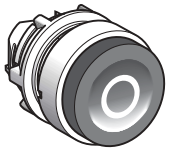
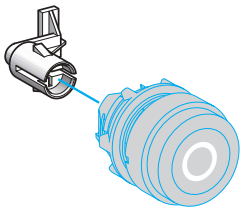
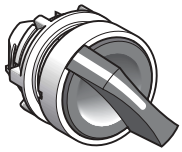
ZB5AA331



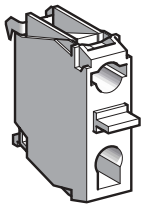
ZB5AL432



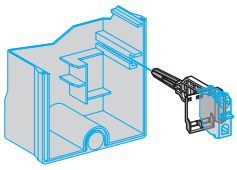
LAD9091



ZB5AD•



ZENL1111



LAD91809

Operating Heads for Start and Stop/Reset Pushbuttons

Description	For use on	Catalog Number	Weight – kg (lb.)
Flush green “I” (1)	LE1D09 to D35	**ZB5AA331**	0.018 (0.040)
Projecting red “O” (1)	LE1D09 to D35	**ZB5AL432**	0.019 (0.042)
Mounting kit for head **ZB5AL432**	LE1D09 and D12	**LAD9091**	0.002 (0.004)
	LE1D18 to D35	**LAD91810**	0.003 (0.006)

Operating Heads for Reset Pushbuttons

Flush blue “R” (2)	LE1D09 to D35	**ZB5AA0**	0.022 (0.048)
		ZBA639 (3)	0.001 (0.002)
Mounting kit for head **ZB5AA0 + ZBA639**	LE1D09 and D12	**LAD9092**	0.002 (0.004)
	LE1 or LE2D18 to D35	**LAD91810**	0.003 (0.006)
	LE3, LE6, LE4 or LE8D09 to D35	**LAD9T4**	0.004 (0.008)

Operating Heads for Selector Switches

Description	For use on	Catalog Number	Weight – kg (lb.)
3 position stay put	LE1D09 to D35	**ZB5AD3**	0.024 (0.053)
2 position stay put	LE1D09 to D35	**ZB5AD2**	0.024 (0.053)
3 position spring return to center	LE1D09 to D35	**ZB5AD5**	0.024 (0.053)

Contact Blocks

1 N.O. spring return	LE1D09 to D35	**ZENL1111**	0.010 (0.022)
1 N.C. spring return	LE1D09 to D35	**ZENL1121**	0.010 (0.022)
Contact block support	LE1D09 and D12	**LAD90909**	0.008 (0.017)
	LE•D18 to D35 (4)	**LAD91809**	0.014 (0.031)

(1) Remember to order mounting kit **LAD9091** or **LAD91810**, depending on the size.
(2) Remember to order mounting kit **LAD9092**.
(3) Sold in lots of 10.
(4) LE1, LE2, LE3, LE4, LE6 or LE8.

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DE1DS1A04

DE1DS1A05

DE1DS1

DE1DS1A13

Empty Enclosures for D.O.L. Starters Without Isolator Device

For use with	Push button operating head(s) or blanking plug(s) mounted on the cover	Catalog Number	Weight kg (lb.)
LE1D09, D12	Without	**DE1DS1A04**	0.300 (0.66)
	1 flush blue head “R”	**DE1DS1A05**	0.300 (0.66)
	1 flush green head “I” 1 projecting red head “O”	**DE1DS1**	0.300 (0.66)
	1 flush blue head “R” 1 switch	**DE1DS1A13**	0.300 (0.66)
LE1D18 to D35	Without	**DE1DS2A04**	0.500 (1.10)
	1 flush blue head “R”	**DE1DS2A05**	0.500 (1.10)
	1 flush green head “I” 1 projecting red head “O”	**DE1DS2**	0.500 (1.10)
	1 flush blue head “R” 1 switch	**DE1DS2A13**	0.500 (1.10)

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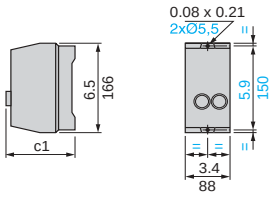
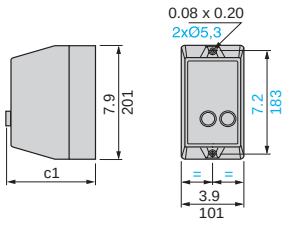
Enclosed D-line Starters Without Fused Disconnect Switch

LE1D09 and D12



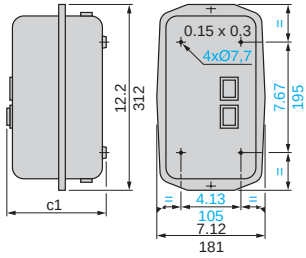
	c1
Standard version	5.05 (128.5)
Version A04	4.7 (120)
Version A05	5.05 (128.5)
Version A09	5.31 (135)
Version A13	5.31 (135)
Version A35	5.31 (135)

LE1D18 to D35
LE2D09 to D35



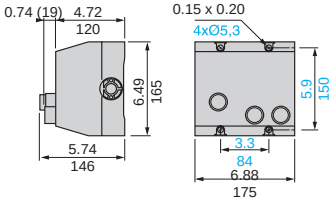
	c1	
	LE1D	LE2D
Standard version	6.0 (153.5)	6.3 (160)
Version A04	5.7 (145)	5.7 (145)
Version A05	6.0 (153.5)	6.0 (153.5)
Version A09	6.3 (160)	—
Version A13	6.3 (160)	—
Version A35	6.3 (160)	—

LE1D405 to D655



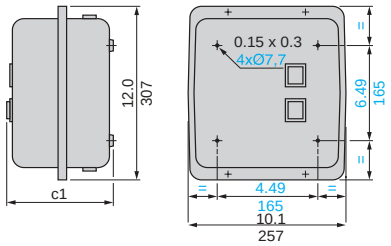
	c1
Standard version	6.33 (161)
Version A04	5.9 (150)
Version A05	6.33 (161)

LE2D095, LE2D125, LE2D185, LE2D255



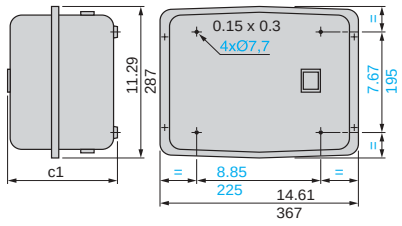
Dual Dimensions: Inches / mm

LE1D805 and D955
LE2D405 to D655



	c1	
	LE1D	LE2D
Standard version	6.9 (176)	6.9 (176)
Version A04	6.5 (165)	6.5 (165)
Version A05	6.9 (176)	—
Version A11	—	6.9 (176)

LE2D805 and D955



	c1
Standard version	7.6 (194)
Version A04	7.48 (190)
Version A05	7.6 (194)

Knock-outs or Blanking Plugs for Cable Glands

Type of Enclosure	At top		At bottom	
	PG	ISO	PG	ISO
LE1D09 and D12	2 x 13 or 2 x 16	2 x 20 I	2 x 13 or 2 x 16	2 x 20 I
LE1D18 to D35 and LE2D09 to D35	2 x 16 or 2 x 21	2 x 20 I or 2 x 25 I	2 x 16 or 2 x 21	2 x 20 I or 2 x 25 I
LE2D405	1 x 13 and 1 x 21	1 x 20 I and 1 x 25 I	1 x 13 and 2 x 21	1 x 20 I and 2 x 25 I
LE1D405 to D655 and LE2D505 and D655	1 x 13 and 1 x 29	1 x 20 I and 1 x 32 I	1 x 13 and 2 x 29	1 x 20 I and 2 x 32 I
LE1 or LE2D805 and D955	1 x 13 and 1 x 36	1 x 20 I and 1 x 40 I	1 x 13 and 2 x 36	1 x 20 I and 2 x 40 I
LE2K	2 x 13 and 2 x 16	4 x 20 I	2 x 13 and 2 x 16	4 x 20 I

(millimeters x 0.0394 = inches)

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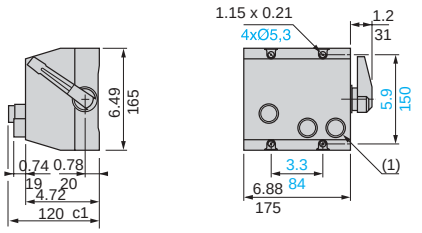
Enclosed D-line Starters With Fused Disconnect Switch

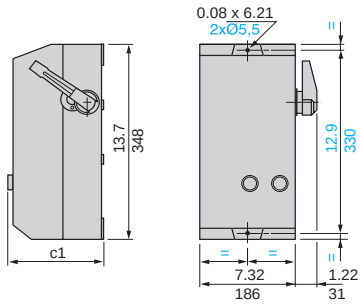
LE4K06 and K09
LE8K06 and K09



	c1	
	LE4K	**LE8K**
Standard version	5.74 (146)	5.74 (146)
Version A05	—	5.47 (139)

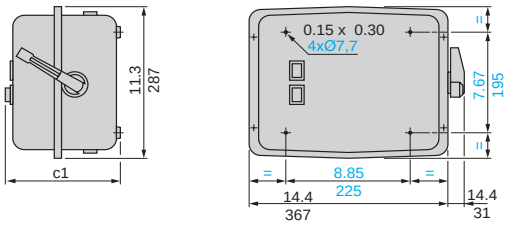
(1) For LE8 only.

LE4D09 to D35
LE8D09 to D35



	c1	
	LE4D	**LE8D**
Standard version	6.90 (175.5)	7.16 (182)
Version A04	6.57 (167)	6.57 (167)
Version A05	6.90 (175.5)	6.90 (175.5)

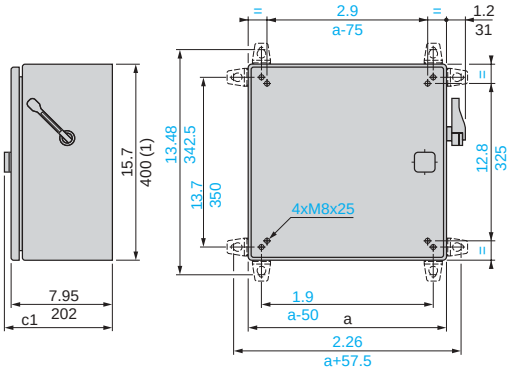
LE4D406 to D656



Dual Dimensions: Inches / mm

	c1
Standard version	7.91 (201)
Version A04	7.48 (190)
Version A05	7.91 (201)

LE2D406 to D806
LE4D806



LE2	a
D406, D506, D656	11.8 (300)
D806	15.7 (400)

LE4	a
D806	15.7 (400)

	c1'	
	LE2D	**LE4D**
Standard version	8.58 (218)	8.58 (218)
Version A05	8.58 (218)	8.58 (218)
Version A11	—	8.58 (218)

(1) + 14 mm with blankink plugs

Knock-outs or Blanking Plugs for Cable Glands

Type of Enclosure	At top		At bottom	
	PG	ISO	PG	ISO
LE4 and LE8D09 to D35	2 x 13 or 2 x 16 or 2 x 21 or 2 x 29	2 x 20 l or 2 x 25 l or 2 x 32 l or 2 x 40 l	2 x 13 or 2 x 16 or 2 x 21 or 2 x 29	2 x 20 l or 2 x 25 l or 2 x 32 l or 2 x 40 l
LE2D09 to D35	1 x 16 or 2 x 21	2 x 20 l or 2 x 25 l	2 x 16 or 2 x 21	2 x 20 l or 2 x 25 l
LE2D406 and LE4D406	1 x 13 and 1 x 21	1 x 20 l and 1 x 25 l	1 x 13 and 2 x 21	1 x 20 l and 2 x 25 l
LE1D506 to D656 and LE4D506 and D656	1 x 13 and 1 x 29	1 x 20 l and 1 x 32 l	1 x 13 and 2 x 29	1 x 20 l and 2 x 32 l
LE2D806 and LE4D806	1 x 13 and 1 x 36	1 x 20 l and 1 x 40 l	1 x 13 and 2 x 36	1 x 20 l and 2 x 40 l
LE4K, LE8K	2 x 13 and 2 x 16	4 x 20 l	2 x 13 and 2 x 16	4 x 20 l

(millimeters x 0.0394 = inches)

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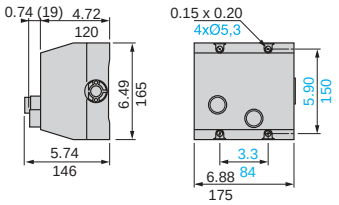
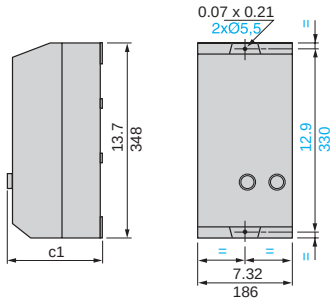
Enclosed K-line Starters Without Fused Disconnect Switch

LE3K065, K095



LE3D09 to D35

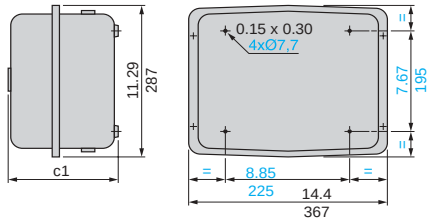


c1

Standard version	6.90 (175.5)
Version A04	6.57 (167)
Version A05	6.90 (175.5)

LE3D405 to D505

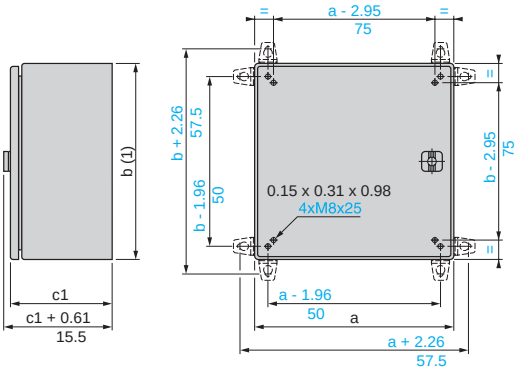
Dimensions shown in millimeters (millimeters x 0.0394 = inches)



Dual Dimensions: Inches / mm

	c1
Standard version	7.48 (190)
Version A05	7.63 (194)
Version A06	7.63 (194)

LE3D805 to D150



(1) + 14 mm with blankink plugs

LE3	a	b
D805	15.7 (400)	15.7 (400)
D1155	19.6 (500)	23.6 (600)
D1505	19.6 (500)	23.6 9600)

	c1	
	LE3D805	**LE3D115, D150**
Standard version	7.95 (202)	9.92 (252)
Version A05	8.58 (218)	–
Version A06	8.58 (218)	10.55 (268)

Knock-outs or Blanking Plugs for Cable Glands

Type of Enclosure	At top		At bottom	
	PG	ISO	PG	ISO
LE3D09 to D35	2 x 13 or 2 x 16 or 2 x 21 or 2 x 29	2 x 20 I or 2 x 25 I or 2 x 32 I or 2 x 40 I	2 x 13 or 2 x 16 or 2 x 21 or 2 x 29	2 x 20 I or 2 x 25 I or 2 x 32 I or 2 x 40 I
LE3D405	1 x 29	1 X 32 I	1 x 29, 2 x 13 and 2 x 21	1 x 32 I, 2 x 20 I and 2 x 25 I
LE3D505	1 x 36	1 x 40 I	1 x 36, 2 x 13 and 2 x 29	1 x 40 I, 2 x 20 I and 2 x 32 I
LE3D805	1 x 36	1 x 40 I	2 x 13 and 3 x 36	2 x 20 I and 3 x 40 I
LE3K	2 x 13 and 2 x 16	4 x 20 I	2 x 13 and 2 x 16	4 x 20 I

(millimeters x 0.0394 = inches)

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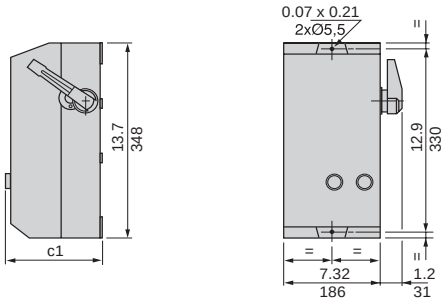
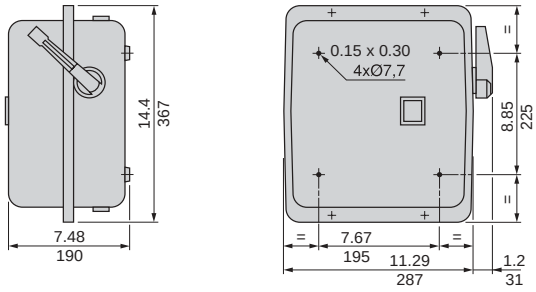
Starters Without Isolator

LE6D09 to D18

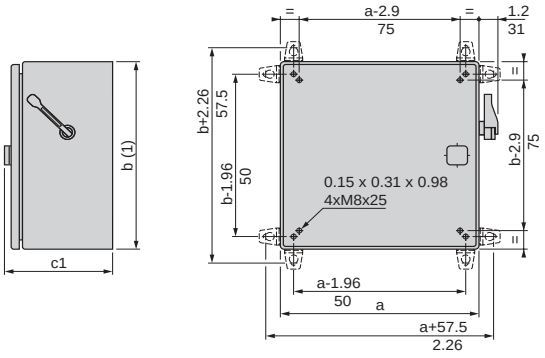


	c1
Standard version	6.90 (175.5)
Version A04	6.57 (167)
Version A05	6.90 (175.5)

LE3D326



LE3D406 to D806



Dual Dimensions: Inches / mm

LE3	a	b	c1
D406, D506	15.7 (400)	19.6 (500)	8.58 (218)
D806	19.6 (500)	27.5 (700)	10.6 (269)

(1) + 14 mm with blankink plugs

Knock-outs or Blanking Plugs for Cable Glands

Type of Enclosure	At top		At bottom	
	PG	ISO	PG	ISO
LE6D09 to D18	2 x 13 or 2 x 16 or 2 x 21 or 2 x 29	2 x 20 I or 2 x 25 I or 2 x 32 I or 2 x 40 I	2 x 13 or 2 x 16 or 2 x 21 or 2 x 29	2 x 20 I or 2 x 25 I or 2 x 32 I or 2 x 40 I
LE3D326	1 x 21	1 X 32 I	2 x 13, 2 x 16 and 1 x 21	2 x 20 I, 2 x 25 I and 1 x 32 I
LE3D406	1 x 29	1 X 32 I	2 x 13, 2 x 21 and 1 x 29	2 x 20 I, 2 x 25 I and 1 x 32 I
LE3D506	1 x 36	1 x 40 I	2 x 13, 2 x 29 and 1 x 36	1 x 40 I, 2 x 20 I and 2 x 32 I
LE3D806	1 x 36	1 x 40 I	2 x 13 and 3 x 36	2 x 20 I and 3 x 40 I

(millimeters x 0.0394 = inches)

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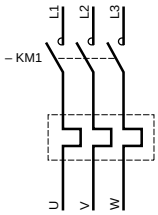
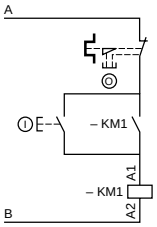
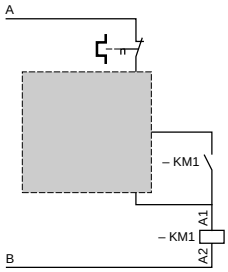
LE1D09 to D955



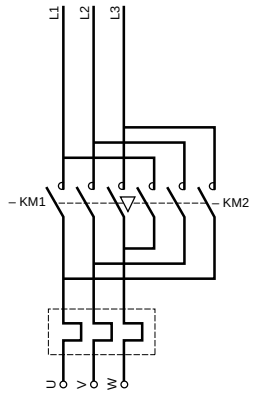
LE1D09 to D955



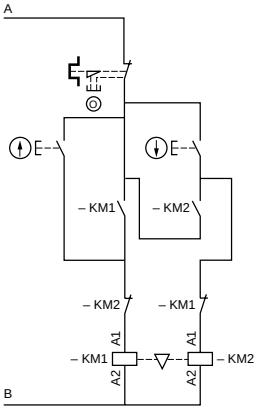
Form A04 or A05



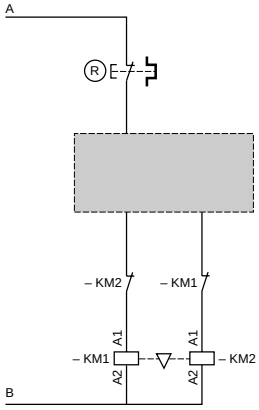
LE2K06, K09



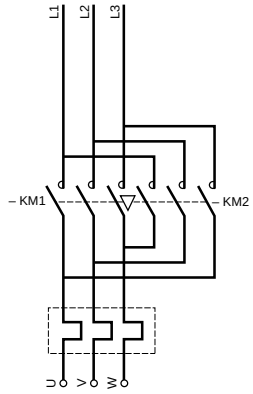
LE2K06, K09



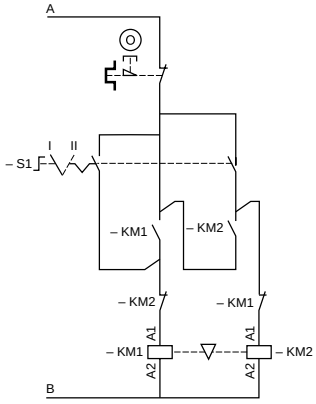
Form A05



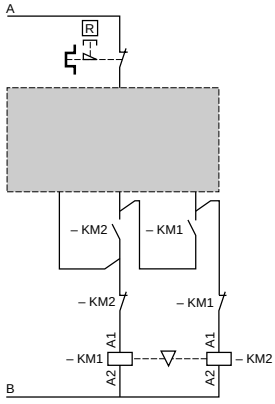
LE2D09 to D955



LE2D09 to D35



LE2D405 to D955
LE2D09 to D955 with Forms A04 or A05



Connections		A	B
220 V, 230 V, 240 V	LE2K, LE1 and LE2D09 and D12	L3	Neutral
	LE1 and LE2D18 to D955	L3	Neutral terminal
380 V, 400 V, 415 V, 440 V	All products	L3	L1
Other voltages	LE1 and LE2D09 to D35	Terminal 1	Terminal 2
	LE2K, LE1 and LE2D405 and D955	Direct connection	Direct connection

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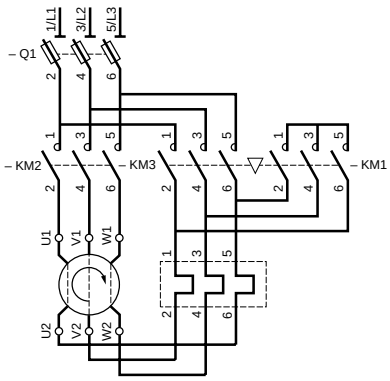
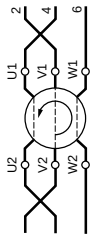
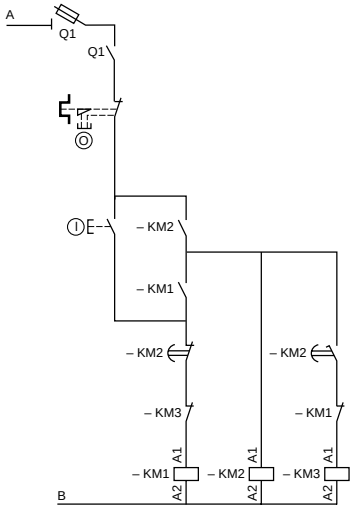
LE6D09 to D18



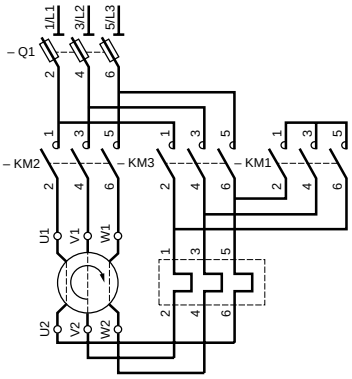


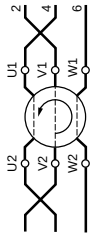
Recommended cabling for reversal of motor rotation (standard motor, viewed from shaft end).

LE6D09 to D18



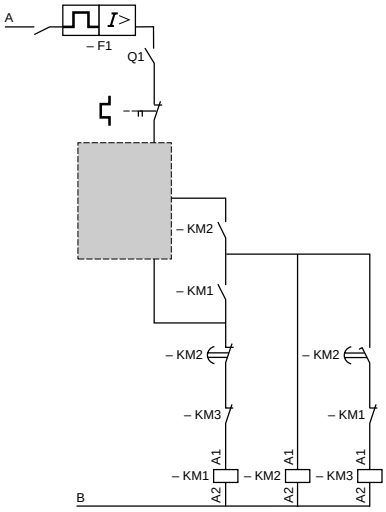
LE3D326 t0 D806





Recommended cabling for reversal of motor rotation (standard motor, viewed from shaft end).

LE3D326 to D806



Connections		A	B
220 V, 230 V, 240 V	LE6D09 and D12	L3	Neutral
	LE6D18 to LE3D806	L3	Neutral terminal
380 V, 400 V, 415 V, 440 V	All products	L3	L1
Other voltages	LE6D09 to D18	Terminal 1	Terminal 2
	LE3D326 to D806	Direct connection	Direct connection

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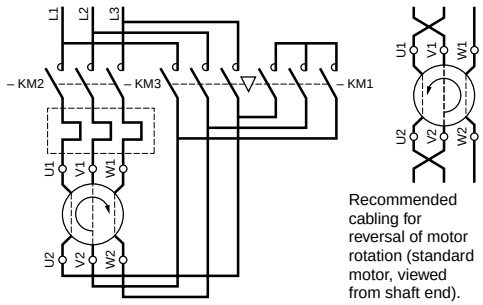
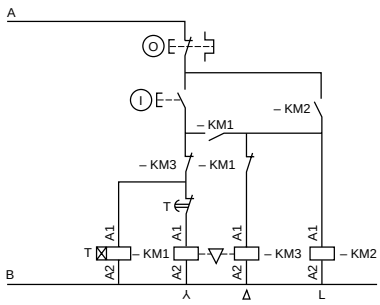
LE3K065 and K095

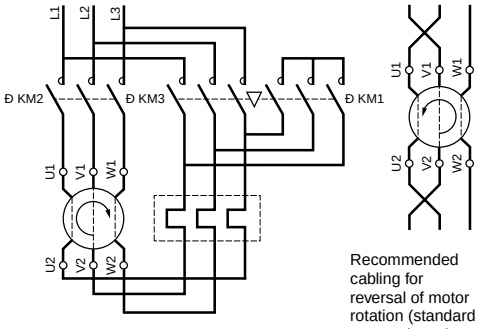


Recommended cabling for reversal of motor rotation (standard motor, viewed from shaft end).

LE3K065 and K095

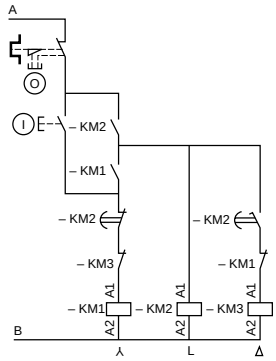


LE3D09 to D805

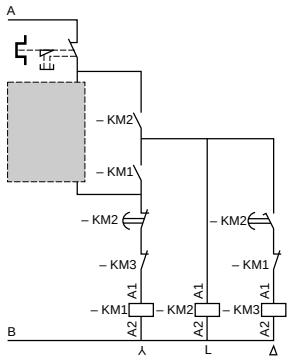


Recommended cabling for reversal of motor rotation (standard motor, viewed from shaft end).

LE3D09 to D35

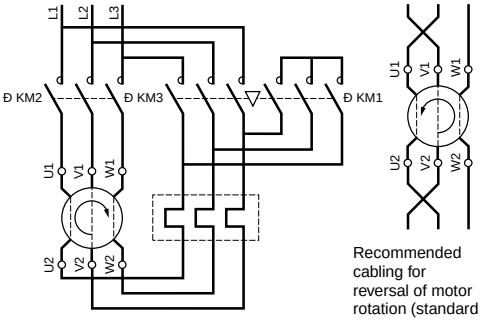


LE3D405 to D805



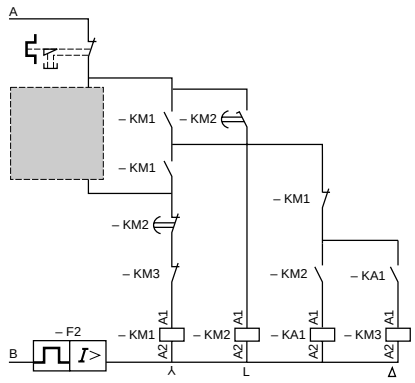
Note: In accordance with current installation regulations, short-circuit protection must be provided by fused or a circuit-breaker.

LE3D115 and D150



Recommended cabling for reversal of motor rotation (standard motor, viewed from shaft end).

LE3D115 and D150



Connections		A	B
220 V, 230 V, 240 V	LD09 and D12	L3	Neutral
	LE3D18 to D150	L3	Neutral terminal
380 V, 400 V, 415 V, 440 V	All products	L3	L1
Other voltages	LE3D09 to D35	Terminal 1	Terminal 2
	LE3K and LE3D405 to D150	Direct connection	Direct connection

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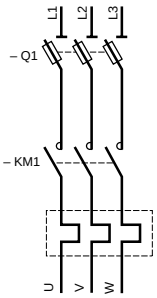
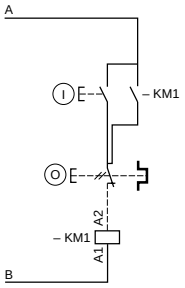
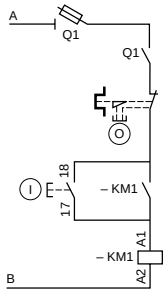
LE4K06, K09
LE4D09 to D806



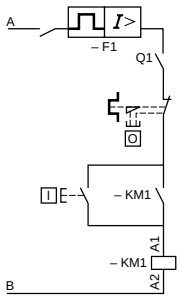
LE4K06, K09



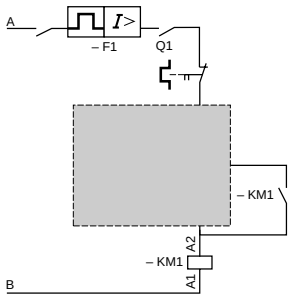
LE4D09 to D35



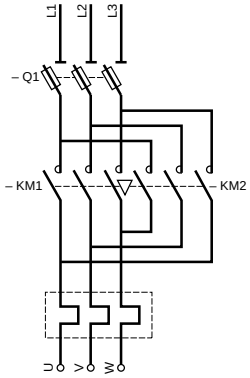
LE4D406 to D656



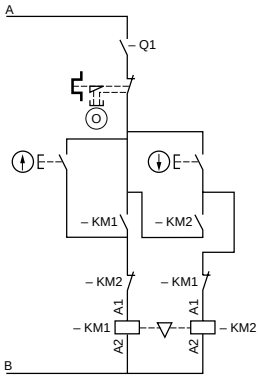
LE4D806
LE4D09 to D656 with Form A04 or A05



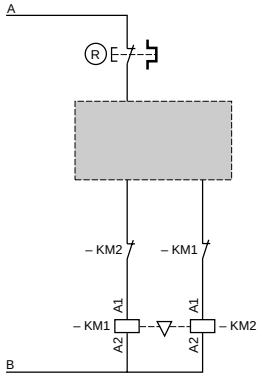
LE8K06, K09



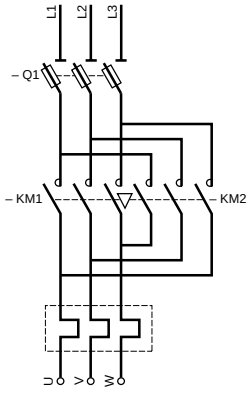
LE8K06, K09



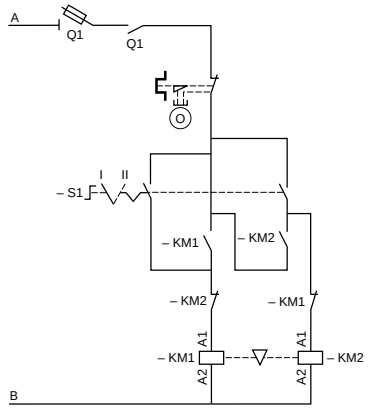
Form A05



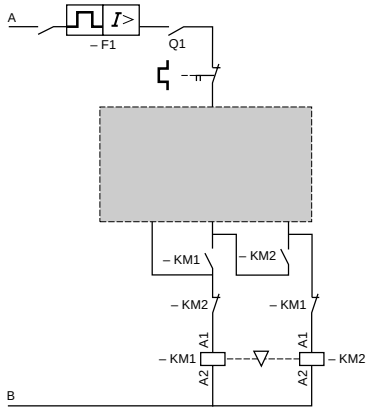
LE8D09 to LE2D806



LE8D09 to D35



LE2D406 to D806



Connections		A	B
220 V, 230 V, 240 V	LE4 and LE8K, LE4 and LE8D09 and D12	L3	Neutral
	LE4D18 to D806, LE8D18 to D35 and LE2D406 to D806	L3	Neutral terminal
380 V, 400 V, 415 V, 440 V	All products	L3	L1
Other voltages	LE4 and LE8D09 to D35	Terminal 1	Terminal 2
	LE4 and LE2D406 and D806	Direct connection	Direct connection

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3-Pole AC Contactors(1)

Connection for Cables with or without Cable End		for Ring Terminal Type		for Slip on Connectors	
Old Catalog No.	**New Catalog No.**	**Old Catalog No.**	**New Catalog No.**	**Old Catalog No.**	**New Catalog No.**
LC1D0900	LC1D09	LC1D09006	LC1D096	LC1D09009	LC1D099
LC1D0910	LC1D09	LC1D09106	LC1D096	LC1D09109	LC1D099
LC1D0901	LC1D09	LC1D09016	LC1D096	LC1D09019	LC1D099
LC1D1200	LC1D12	LC1D12006	LC1D126	LC1D12009	LC1D129
LC1D1210	LC1D12	LC1D12106	LC1D126	LC1D12109	LC1D129
LC1D1201	LC1D12	LC1D12016	LC1D126	LC1D12019	LC1D129
LC1D1800	LC1D18	LC1D18006	LC1D186		
LC1D1810	LC1D18	LC1D18106	LC1D186		
LC1D1801	LC1D18	LC1D18016	LC1D186		
LC1D2500	LC1D25	LC1D25006	LC1D256		
LC1D2510	LC1D25	LC1D25106	LC1D256		
LC1D2501	LC1D25	LC1D25016	LC1D256		
LC1D3200	LC1D32	LC1D32006	LC1D326		
LC1D3210	LC1D32	LC1D32106	LC1D326		
LC1D3201	LC1D32	LC1D32016	LC1D326		
LC1D3810	LC1D38	LC1D38106	LC1D386		
LC1D3801	LC1D38	LC1D38016	LC1D386		
LC1D4011	LC1D40	LC1D40116	LC1D406		
LC1D5011	LC1D50	LC1D50116	LC1D506		
LC1D6511	LC1D65	LC1D65116	LC1D656		
LC1D8011	LC1D80	LC1D80116	LC1D806		
LC1D9511	LC1D95	LC1D95116	LC1D956		
LC1D11500	LC1D115	LC1D115006	LC1D1156		
LC1D15000	LC1D150	LC1D150006	LC1D1506		

4-Pole AC Contactors (1)

LC1D12004	LC1DT25	LC1D120046	LC1DT256		
LC1D12008	LC1D128	LC1D120086	LC1D1286		
LC1D25004	LC1DT40	LC1D250046	LC1DT406		
LC1D25008	LC1D258	LC1D250086	LC1D2586		

(1) Coil voltages: codes to be added to the end of the new catalog numbers

Volts - 50/60 Hz	24	48	220	230	380	400
Voltage Code	B7	E7	M7	P7	Q7	V7

3-Pole DC Contactors (2)

LP1D0910	LC1D09	LP1D09106	LC1D096	LP1D09109	LC1D099
LP1D0901	LC1D09	LP1D09016	LC1D096	LP1D09019	LC1D099
LP1D1210	LC1D12	LP1D12106	LC1D126	LP1D12109	LC1D129
LP1D1201	LC1D12	LP1D12016	LC1D126	LP1D12019	LC1D129
LP1D1810	LC1D18	LP1D18106	LC1D186		
LP1D1801	LC1D18	LP1D18016	LC1D186		
LP1D2510	LC1D25	LP1D25106	LC1D256		
LP1D2501	LC1D25	LP1D25016	LC1D256		
LP1D3210	LC1D32	LP1D32106	LC1D326		
LP1D3201	LC1D32	LP1D32016	LC1D326		
LP1D4011	LC1D40	LP1D40116	LC1D406		
LP1D5011	LC1D50	LP1D50116	LC1D506		
LP1D6511	LC1D65	LP1D65116	LC1D656		
LP1D8011	LC1D80	LP1D80116	LC1D806		
LP1D11500	LC1D115	LC1D115006	LC1D1156		
LP1D15000	LC1D150	LC1D150006	LC1D1506		

4-Pole DC Contactors (2)

LP1D12004	LC1DT25	LC1D120046	LC1DT256
LP1D12008	LC1D128	LC1D120086	LC1D1286
LP1D25004	LC1DT40	LC1D250046	LC1DT406
LP1D25008	LC1D258	LC1D250086	LC1D2586

(2) Coil voltages: codes to be added to the end of the new catalog numbers

Volts dc	24	48	72
Voltage Code	BD	ED	SD

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3-Pole Contactors, Low Consumption (1)

Connection for Cables with or without Cable End		for Lugs or Bars		for Faston Connectors	
Old Catalog No.	**New Catalog No.**	**Old Catalog No.**	**New Catalog No.**	**Old Catalog No.**	**New Catalog No.**
LP4D0910	LC1D09				
LP4D0901	LC1D09				
LP4D1210	LC1D12				
LP4D1201	LC1D12				
LP4D1810	LC1D18				
LP4D1801	LC1D18				
LP4D2500	LC1D25				

3-Pole Reversing Contactors, Low Consumption (1)

LP5D0910	LC2D09				
LP5D1210	LC2D12				
LP5D1810	LC2D18				
LP5D2500	LC2D25				

(1) Coil voltages: codes to be added to the end of the new catalog numbers

Low Consumption Volts	24	48	72
Code	BL	EL	SL

3-Pole Reversing Contactors, AC

LC2D0901	LC2D09	LC2D09016	LC2D096	LC2D09019	LC2D099
LC2D1201	LC2D12	LC2D12016	LC2D126	LC2D12019	LC2D129
LC2D1801	LC2D18	LC2D18016	LC2D186		
LC2D2501	LC2D25	LC2D25016	LC2D256		
LC2D3201	LC2D32	LC2D32016	LC2D326		
LC2D3801	LC2D38	LC2D38016	LC2D386		
LC2D4011	LC2D40	LC2D115006	LC2D1156		
LC2D5011	LC2D50	LC2D150006	LC2D1506		
LC2D6511	LC2D65				
LC2D8011	LC2D80				
LC2D9511	LC2D95				
LC2D11500	LC2D115				
LC2D15000	LC2D150				

4-Pole Changeover Contactors, AC

LC2D12004	LC2DT25	LC2D120046	LC2DT256		
LC2D25004	LC2DT40	LC2D250046	LC2DT406		

3-Pole Reversing Contactors, DC

LP2D0901	LC2D09	LP2D09016	LC2D0906	LP2D09109	LC2D099
LP2D1201	LC2D12	LP2D12016	LC2D126	LP2D12019	LC2D129
LP2D1801	LC2D18	LP2D18016	LC2D186		
LP2D2501	LC2D25	LP2D25016	LC2D256		
LP2D3201	LC2D32	LP2D32016	LC2D326		

4-Pole Changeover Contactors, DC

LP2D12004	LC2DT25	LP2D120046	LC2DT256		
LP2D25004	LC2DT40	LP2D250046	LC2DT406		

Contact Blocks

LA1DN10	LADN10	LA1DN11M	LA1DN11G	LA2DT0	LADT0
LA1DN01	LADN01	LA1DN11P	LADN11P	LA2DT2	LADT2
LA1DN11	LADN11	LA1DN11G	LADN11G	LA2DT4	LADT4
LA1DN20	LADN20	LA1DN22M	LADN22G	LA2DS2	LADS2
LA1DN02	LADN02	LA1DN13M	LADN22G	LA3DR0	LADR0
LA8DN11	LAD8N11	LA1DN31M	LADN31G	LA3DR2	LADR2
LA8DN20	LAD8N20	LA1DN22P	LADN22P	LA3DR4	LADR4
LA1DN22	LADN22	LA1DN13P	LADN31P		
LA1DN13	LADN13	LA1DN31P	LADN31P		
LA1DN40	LADN40	LA1DN22G	LADN22G		
LA1DN04	LADN04	LN1DN11	LADN11		
LA1DN31	LADN31				
LA1DC22	LADC22				

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Thermal Overload Relays

For Use with Balanced Loads		For Use with Unbalanced (Single Phase) Loads		For Use on 1000V Supplies	
Old Catalog No.	**New Catalog No.**	**Old Catalog No.**	**New Catalog No.**	**Old Catalog No.**	**New Catalog No.**
LR2D1301	LRD01	LR3D1301	LR3D01	LR2D3301A66	LRD3301A66
LR2D1302	LRD02	LR3D1302	LR3D02	LR2D3302A66	LRD3302A66
LR2D1303	LRD03	LR3D1303	LR3D03	LR2D3303A66	LRD3303A66
LR2D1304	LRD04	LR3D1304	LR3D04	LR2D3304A66	LRD3304A66
LR2D1305	LRD05	LR3D1305	LR3D05	LR2D3305A66	LRD3305A66
LR2D1306	LRD06	LR3D1306	LR3D06	LR2D3306A66	LRD3306A66
LR2D13X6	LRD06	LR3D13X6	LR3D06	LR2D33X6A66	LRD33X6A66
LR2D1307	LRD07	LR3D1307	LR3D07	LR2D3307A66	LRD3307A66
LR2D1308	LRD08	LR3D1308	LR3D08	LR2D3308A66	LRD3308A66
LR2D1310	LRD10	LR3D1310	LR3D10	LR2D3310A66	LRD3310A66
LR2D1312	LRD12	LR3D1312	LR3D12	LR2D3312A66	LRD3312A66
LR2D1314	LRD14	LR3D1314	LR3D14	LR2D3314A66	LRD3314A66
LR2D1316	LRD16	LR3D1316	LR3D16	LR2D3316A66	LRD3316A66
LR2D1321	LRD21	LR3D1321	LR3D21	LR2D3321A66	LRD3321A66
LR2D1322	LRD22	LR3D1322	LR3D22	LR2D3322A66	LRD3322A66
LR2D2353	LRD32	LR3D2353	LR3D32		
LR2D2355	LRD35	LR3D2355	LR3D35		
LR2D1508	LRD1508				
LR2D1510	LRD1510				
LR2D1512	LRD1512				
LR2D1514	LRD1514				
LR2D1516	LRD1516				
LR2D1521	LRD1521				
LR2D1522	LRD1522				
LR2D2553	LRD1530 (1)				
	or				
	LRD1532 (1)				
LR2D3322	LRD3322	LR3D3322	LR3D3322		
LR2D3353	LRD3353	LR3D3353	LR3D3353		
LR2D3355	LRD3355	LR3D3355	LR3D3355		
LR2D3357	LRD3357	LR3D3357	LR3D3357		
LR2D3359	LRD3359	LR3D3359	LR3D3359		
LR2D3361	LRD3361	LR3D3361	LR3D3361		
LR2D3363	LRD3363	LR3D3363	LR3D3363		
LR2D3365	LRD3365	LR3D3365	LR3D3365		
LR2D4365	LRD4365				
LR2D4367	LRD4367				
LR2D4369	LRD4369				

(1) Depends on actual Full Load Current.

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TeSys™ F-Line
Contactors, Overload Relays, and Accessories

Catalog

04

File 8502

CONTENTS

a brand of Schneider Electric

Telemecanique

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The F-line contactors and overload relays offer proven performance for resistive loads or large motor starting applications such as fans, crushers, pumps, compressors and overhead cranes. They offer high reliability with long mechanical and electrical life and the most complete line of accessories in the industry.

Contactor Ratings

F-line contactors and overload relays are available in the USA market for inductive motor applications up to 800 full load Amps and resistive loads up to 1000 Amps. They offer motor control and overload protection for motors rated up to 800 horsepower at 480 Vac or 900 horsepower at 600 Vac.

- 2 pole, 3 pole and 4 pole Contactors and Magnetic Latching Contactors
- AC or DC operating coils
- Includes UL listing, CSA Certification and CE mark
- Both North American and international terminal markings
- Replacement parts available
  - — Contact Kits
  - — Arc Chambers
  - — Operating Coils
- Easily installed accessories
  - — Auxiliary contact blocks with serrated wiping action
  - — Front mount dust tight auxiliary contact blocks
  - — Pneumatic time delay blocks
- Solid State Overload Relays

Class 10 or class 20 overload relays are available from 30 to 630 Amperes. They are ambient compensated and include single phase sensitivity for phase unbalance and phase loss protection. They also include the following features: Isolated N.C. trip contact, N.O. alarm contact, manual reset button, rotary dial for adjustable current settings with tamper resistant window, test trip button, momentary stop button and trip indicator.

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Contactors Type LC1F (115 to 800A)
Control Circuit: AC or DC Supply

Type				LC1F115	LC1F150	LC1F185	LC1F225	LC1F265
Environment								
Rated insulation voltage (Vi)	Conforming to IEC 60947-4-1/IEC 60947-4		V	1000	1000	1000	1000	1000
	Conforming to VDE 0110 gr C		V	1500	1500	1500	1500	1500
Rated impulse withstand voltage (Vimp)	Test with coil not connected to the power circuit		kV	8	8	8	8	8
Conforming to standards	CE Meets the essential requirements of the LV & EMC directives			IEC 60947-4, NFC 63-110, VDE 0660, BS 5424, JEM 1038				
Approvals	UL E164862 NLDX	CSA LR 43364 3211 04		ASE, CSA, UL, BV, GL, LROS, USSR, NORSK VERITAS, RINA				
Degree of protection	Conforming to IEC 60529			IP 20 front face with shrouds LA9F				
	Conforming to VDE 0106			Protection against direct finger contact with shrouds LA9F				
Protective treatment	Standard version			"TH"				
Ambient air temperature around the device	Storage			- 60 to + 80 °C (- 76 to +176 °F)				
	Operation			- 5 to + 55 °C (23 to + 131 °F) for operation at 80 to 110% of nominal control voltage				
	Permissible at Vc ♦			- 40 to + 70 °C (- 40 to + 158 °F) for operation at nominal control voltage				
Maximum operating altitude	Without derating			3000 m (9800 ft.)				
Operating positions	Without derating			± 30° possible, in relation to normal vertical mounting plane				
Shock resistance ■ 1/2 sine wave = 11 ms	Contactor open			9 gn	9 gn	7 gn	7 gn	6 gn
	Contactor closed			13 gn	13 gn	15 gn	15 gn	15 gn
Vibration resistance ■ 5 to 300 Hz	Contactor open			2 gn	2 gn	2 gn	2 gn	2 gn
	Contactor closed			6 gn	6 gn	5 gn	5 gn	5 gn
Pole Characteristics ▲								
Number of poles				3 or 4	3 or 4	3 or 4	3 or 4	3 or 4
Rated operational current (Ie) (Ve ≤ 440 V)	In AC-3, q ≤ 55 °C (131 °F)		A	115	150	185	225	265
	In AC-1, q ≤ 40 °C (104 °F)		A	200	250	275	315	350
Rated operational voltage (Ve)	Up to		V	1000	1000	1000	1000	1000
Frequency limits	Of the operational current ▼		Hz	$16^{2/3}$ to 200	$16^{2/3}$ to 200	$16^{2/3}$ to 200	$16^{2/3}$ to 200	$16^{2/3}$ to 200
Conventional rated thermal current	θ ≤ 40 °C (104 °F)		A	200	250	275	315	350
Rated making capacity	I rms to IEC 60947-4-1		A	1400	1700	2100	2460	2940
Rated breaking capacity	I rms conforming to IEC 60947-4-1	up to 440 V	A	1300	1500	1800	2050	2450
		500 V	A	1100	1200	1600	1850	2200
		660 to 690 V	A	900	1100	1200	1350	1700
		1000 V	A	400	450	600	780	800
Permissible short time rating from cold state, no current flowing for preceding 60 minutes θ ≤ 40 °C (104 °F)	For 1 s		A	1100	1200	1500	1800	2200
	For 5 s		A	1100	1200	1500	1800	2200
	For 10 s		A	1100	1200	1500	1800	2200
	For 30 s		A	640	700	920	1000	1230
	For 1 min		A	520	600	740	850	950
	For 3 min		A	400	450	500	560	620
	For 10 min		A	320	350	400	440	480
Short-circuit protection	By circuit breaker			Select in accordance with NEC and local codes				
	By fuses			Max 400% of motor FLA				
Average impedance per pole	At Ith and 50 Hz		mΩ	0.40	0.40	0.36	0.36	0.32
Power dissipation per pole for the above operational currents	AC-3		W	6	9	12	18	22
	AC-1		W	18	25	26	35	39
Mechanical durability at nominal voltage	Millions of operations			10	10	10	10	10
Maximum operating rate	≤ 55°C (131°F)		ops/HR	2400	2400	2400	2400	2400
Cabling	Cable size (min-max)		AWG	#14 to 2/0	#6 to 3/0	#6 to 3/0	—	#6 to 300mcm
	Lug			DZ2FF	DZ2FG	DZ2FG	—	DZ2FH
Tightening torque using DZ2F•• Lug	Bolt lug to contactor		lb.-in	89	160	160	—	310
	Wire pressure screw		lb.-in	120	200	200	—	275

♦ In these conditions, for ratings F115 to F225, it is recommended to use LX9F coils.
■ In the least favorable direction, without change of contact state (coil at Vc).
▲ Paralleling of poles must be carried out only in accordance with the fuse manufacturer's recommendations.
▼ Sine wave without interference, above these values, please consult your Local Square D Field Sales Office.

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Contactors Type LC1F (115 to 800 A)
Control Circuit: AC or DC Supply

Type				LC1F330	LC1F400	LC1F500	LC1F630	LC1F780	LC1F800
Environment									
Rated insulation voltage (Vi)	Conforming to IEC 60947-4-1/IEC 60947-4		V	1000	1000	1000	1000	1000	1000
	Conforming to VDE 0110 gr C		V	1500	1500	1500	1500	1500	1500
Rated impulse withstand voltage (Vimp)	Test with coil not connected to the power circuit		kV	8	8	8	8	8	8
Conforming to standards	CE Meets the essential requirements of the LV & EMC directives			IEC 60947-4, NFC 63-110, VDE 0660, BS 5424, JEM 1038					
Approvals	UL E164862 NLDX	CSA LR 43364 3211 04		ASE, CSA C22.2 No.14, UL 508, BV, GL, LROS, USSR, NORSK VERITAS, RINA					
Degree of protection	Conforming to IEC 60529			IP 20 front face with shrouds LA9F					
	Conforming to VDE 0106			Protection against direct finger contact with shrouds LA9F					
Protective treatment	Standard version			"TH"					
Ambient air temperature around the device	Storage			- 60 to + 80°C (- 76 to +176°F)					
	Operation			- 5 to + 55°C (23 to + 131°F) for operation at 80 to 110% of nominal control voltage					
	Permissible at Vc			- 40 to + 70°C (- 40 to + 158°F) for operation at nominal control voltage					-5 to +55°C (23-131 °F)
Maximum operating altitude	Without derating			3000 m (9800 ft.)					
Operating positions	Without derating			± 30° possible, in relation to normal vertical mounting plane					
Shock resistance ■ 1/2 sine wave = 11 ms	Contactor open			6 gn	6 gn	9 gn	6 gn	5 gn	6 gn
	Contactor closed			15 gn	15 gn	15 gn	15 gn	15 gn	15 gn
Vibration resistance ■ 5 to 300 Hz	Contactor open			2 gn	1.5 gn	2 gn	2 gn	2.5 gn	2 gn
	Contactor closed			5 gn	5 gn	4 gn	4 gn	5.5 gn	4 gn
Pole Characteristics ▲									
Number of poles				3 or 4	2, 3 or 4	2, 3 or 4	2, 3 or 4	3 or 4	3
Rated operational current (Ie) (Ve ≤ 440 V)	In AC-3, q ≤ 55 °C (131 °F)		A	330	400	500	630	780	800
	In AC-1, q ≤ 40 °C (104 °F)		A	400	500	700	1000	1600	1000
Rated operational voltage (Ve)	Up to		V	1000	1000	1000	1000	1000	1000
Frequency limits	Of the operational current ▼		Hz	$16^{2/3}$ to 200	$16^{2/3}$ to 200	$16^{2/3}$ to 200	$16^{2/3}$ to 200	$16^{2/3}$ to 200	$16^{2/3}$ to 200
Conventional rated thermal current	θ ≤ 40 °C (104 °F)		A	400	500	700	1000	1600	1000
Rated making capacity	I rms to IEC 60947-4-1		A	3600	4500	5550	6740	8550	8200
Rated breaking capacity	I rms conforming to IEC 60947-4-1	up to 440 V	A	3000	4000	5000	6300	7100	7400
		500 V	A	2810	3500	4500	5400	6100	6200
		660 to 690 V	A	2350	3050	3560	4600	5200	5400
		1000 V	A	1150	1200	2500	3200	3800	3850
Permissible short time rating from cold state, no current flowing for preceding 60 minutes θ ≤ 40 °C (104 °F)	For 1 s		A	2650	3600	4200	5050	6250	5100
	For 5 s		A	2650	3600	4200	5050	6250	5100
	For 10 s		A	2650	3600	4200	5050	6250	5100
	For 30 s		A	1800	2400	3200	4400	5600	4400
	For 1 min		A	1300	1700	2400	3400	4600	3400
	For 3 min		A	900	1200	1500	2200	3000	2200
	For 10 min		A	750	1000	1200	1600	2200	1600
Short-circuit protection	By circuit breaker			Select in accordance with NEC and local codes					
	By fuses			Max 400% of motor FLA					
Average impedance per pole	At Ith and 50 Hz		mΩ	0.28	0.28	0.18	0.12	0.10	0.12
Power dissipation per pole for the above operational currents	AC-3		W	31	45	45	48	60	77
	AC-1		W	44	70	88	120	250	120
Mechanical durability at nominal voltage	Millions of operations			10	10	10	5	5	5
Maximum operating rate	≤ 55°C (131°F)		ops/ HR	2400	2400	2400	1200	1200	1200
Cabling	Cable size (min-max)		AWG	#6 to 300mcm	#4 to 500mcm	2 x #2 to 600mcm	3 x#2 to 600mcm	4 x1/0 to 750mcm	3 x#2 to 600mcm
	Lug			DZ2FH	DZ2FJ	DZ2FK	DZ2FL	DZ2FX	DZ2FL
Tightening torque using DZ2F•• Lug	Bolt lug to contactor		lb.-in	310	310	310	510	510	510
	Wire pressure screw		lb.-in	275	500	500	500	500	500

■ In the least favorable direction, without change of contact state (coil at Vc).
▲ Paralleling of poles must be carried out only in accordance with the fuse manufacturer's recommendations.
▼ Sine wave without interference, above these values, please consult your Local Square D Field Sales Office.

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Contactors Type LC1F (115 to 800 A)
Control Circuit: AC Supply

Type				LC1F115	LC1F150	LC1F185	LC1F225	LC1F265	LC1F330
Control Circuit Characteristics (LX1/LX8 type coils)									
Rated control circuit voltage (Vc)	50 or 60 Hz		V	24 to 1000	24 to 1000	24 to 1000	24 to 1000	48 to 1000	48 to 1000
Control voltage limits ($\theta \leq 55$ °C [131 °F])	50 or 60 Hz coils	Operational		0.85 to 1.1 Vc	0.85 to 1.1 Vc	0.85 to 1.1 Vc	0.85 to 1.1 Vc	–	–
		Drop-out		0.35 to 0.55 Vc	0.35 to 0.55 Vc	0.35 to 0.55 Vc	0.35 to 0.55 Vc	–	–
	40 to 400 Hz coils	Operational		–	–	–	–	0.85 to 1.1 Vc	0.85 to 1.1 Vc
		Drop-out		–	–	–	–	0.35 to 0.55 Vc	0.35 to 0.55 Vc
Average consumption at 20 °C (68 °F) and at Vc	AC 50 Hz Inrush	50 Hz coil	VA	550	550	805	805	–	–
		40 to 400 Hz coil	VA	–	–	–	–	650	650
		Power factor		0.3	0.3	0.3	0.3	0.9	0.9
	AC 50 Hz Sealed	50 Hz coil	VA	45	45	55	55	–	–
		40 to 400 Hz coil	VA	–	–	–	–	10	10
		Power factor		0.3	0.3	0.3	0.3	0.9	0.9
	AC 60 Hz Inrush	60 Hz coil	VA	660	660	970	970	–	–
		40 to 400 Hz coil	VA	–	–	–	–	650	650
		Power factor		0.3	0.3	0.3	0.3	0.9	0.9
	AC 60 Hz Sealed	60 Hz coil	VA	55	55	66	66	–	–
		40 to 400 Hz coil	VA	–	–	–	–	10	10
		Power factor		0.3	0.3	0.3	0.3	0.9	0.9
Heat dissipation			W	12 to 16	12 to 16	18 to 24	18 to 24	8	8
Operating time ■	Closing “C”		ms	23 to 35	23 to 35	20 to 35	20 to 35	40 to 65	40 to 65
	Opening “O”		ms	5 to 15	5 to 15	7 to 15	7 to 15	100 to 170	100 to 170
Mechanical durability to Vc in millions of operating cycles				10	10	10	10	10	10
Maximum operating rate at ambient temperature ≤ 55 °C (131 °F)	In operating cycles per hour			2400	2400	2400	2400	2400	2400
Cabling				Min/max					
	Solid or stranded cable	1 or 2 conductors	AWG	16/12	16/12	16/12	16/12	16/12	16/12
				Min/max c.s.a.					
	Stranded cable without cable end	1 or 2 conductors	mm^2	1/4	1/4	1/4	1/4	1/4	1/4
	Stranded cable with cable end	1 conductor	mm^2	1/4	1/4	1/4	1/4	1/4	1/4
		2 conductors	mm^2	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5
	Solid cable without cable end	1 or 2 conductors	mm^2	1/4	1/4	1/4	1/4	1/4	1/4
Tightening torque			N•m/lb-in	1.2/10	1.2/10	1.2/10	1.2/10	1.2/10	1.2/10
Mechanical latching	The **LA6DK** mechanical latch blocks cannot be mounted on **LC1F** contactors, for similar operation use **CR1F** magnetic latching contactors (see page 226).								

■ The closing time “C” is measured from the moment the coil supply is switched on to initial contact of the main poles.
The opening time “O” is measured from the moment the coil supply is switched off to the moment the main poles separate.

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Contactors Type LC1F (115 to 800 A)
Control Circuit: AC Supply

Type				LC1F400	LC1F500	LC1F630	LC1F780	LC1F800
Control Circuit Characteristics (LX1/LX8 type coils)								
Rated control circuit voltage (Vc)	50 or 60 Hz		V	48 to 1000	48 to 1000	48 to 1000	110 to 500	110 to 440
Control voltage limits ($\theta \leq 55$ °C [131 °F])	50 or 60 Hz coils	Operational		–	–	–	–	–
		Drop-out		–	–	–	–	–
	40 to 400 Hz coils	Operational		0.85 to 1.1 Vc	0.85 to 1.1 Vc	0.85 to 1.1 Vc	0.85 to 1.1 Vc	0.7 to 1.3 Vc
		Drop-out		0.3 to 0.5 Vc	0.3 to 0.5 Vc	0.25 to 0.5 Vc	0.2 to 0.4 Vc	0.3 to 0.5 Vc
Average consumption at 20 °C (68 °F) and at Vc	AC 50 Hz Inrush	50 Hz coil	VA	–	–	–	–	–
		40 to 400 Hz coil	VA	1075	1100	1650	2100	1300
		Power factor		0.9	0.9	0.9	0.9	–
	AC 50 Hz Sealed	50 Hz coil	VA	–	–	–	–	–
		40 to 400 Hz coil	VA	15	18	22	50	15
		Power factor		0.9	0.9	0.9	0.9	–
	AC 60 Hz Inrush	60 Hz coil	VA	–	–	–	–	–
		40 to 400 Hz coil	VA	1075	1100	1650	2100	1300
		Power factor		0.9	0.9	0.9	0.9	–
	AC 60 Hz Sealed	60 Hz coil	VA	–	–	–	–	–
		40 to 400 Hz coil	VA	15	18	22	50	15
		Power factor		0.9	0.9	0.9	0.9	–
Heat dissipation			W	14	18	20	2 x 22	25
Operating time ■	Closing “C”		ms	40 to 75	40 to 75	40 to 80	40 to 80	40 to 80
	Opening “O”		ms	100 to 170	100 to 170	100 to 200	130 to 230	20 to 40
Mechanical durability to Vc in millions of operating cycles				10	10	5	5	5
Maximum operating rate at ambient temperature ≤ 55 °C (131 °F)	In operating cycles per hour			2400	2400	1200	600	600
Cabling				Min/max				
	Solid or stranded cable	1 or 2 conductors	AWG	16/12	16/12	16/12	16/12	16/12
				Min/max c.s.a.				
	Stranded cable without cable end	1 or 2 conductors	mm^2	1/4	1/4	1/4	1/4	1/4
	Stranded cable with cable end	1 conductor	mm^2	1/4	1/4	1/4	1/4	1/4
		2 conductors	mm^2	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5
	Solid cable without cable end	1 or 2 conductors	mm^2	1/4	1/4	1/4	1/4	1/4
Tightening torque			N•m/lb-in	1.2/10	1.2/10	1.2/10	1.2/10	1.2/10
Mechanical latching	The **LA6DK** mechanical latch blocks cannot be mounted on **LC1F** contactors, for similar operation use **CR1F** magnetic latching contactors (see page 226).							

■ The closing time “C” is measured from the moment the coil supply is switched on to initial contact of the main poles.
The opening time “O” is measured from the moment the coil supply is switched off to the moment the main poles separate.

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Contactors Type LC1F (115 to 800 A)
Control Circuit: DC Supply

Type				LC1F115	LC1F150	LC1F185	LC1F225	LC1F265	LC1F330
Control Circuit Characteristics (LX4/LX8 type coils)									
Rated control circuit voltage (Vc)	DC		V	24 to 460	24 to 460	24 to 460	24 to 460	24 to 460	24 to 460
Control voltage limits (θ ≤ 55 °C [131 °F])	Operational			0.85 to 1.1 Vc	0.85 to 1.1 Vc	0.85 to 1.1 Vc	0.85 to 1.1 Vc	0.85 to 1.1 Vc	0.85 to 1.1 Vc
	Drop-out			0.15 to 0.2 Vc	0.15 to 0.2 Vc	0.1 to 0.2 Vc	0.15 to 0.2 Vc	0.15 to 0.2 Vc	0.15 to 0.2 Vc
Average consumption at 20 °C (68 °F) and at Vc	DC	Inrush	W	560	560	800	800	750	750
		Sealed	W	4.5	4.5	5	5	5	5
Average operating time ■	Closing “F”	ms		30 to 40	30 to 40	30 to 40	30 to 40	40 to 50	40 to 50
	Opening “O”	ms		30 to 50	30 to 50	30 to 50	30 to 50	40 to 65	40 to 65
	Note: The arcing time depends on the circuit switched by the poles. For normal 3-phase applications, the arcing time is usually less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.								
Mechanical durability at Vc	In millions of operating cycles			10	10	10	10	10	10
Maximum operating rate at ambient temperature ≤ 55 °C (131 °F)	In operating cycles/hour			2400	2400	2400	2400	2400	2400
Cabling				Min/max					
	Solid or stranded cable	1 or 2 conductors	AWG	16/12	16/12	16/12	16/12	16/12	16/12
				Min/max c.s.a.					
	Stranded cable without cable end	1 conductor	mm^2	1/4	1/4	1/4	1/4	1/4	1/4
		2 conductors	mm^2	1/4	1/4	1/4	1/4	1/4	1/4
	Stranded cable with cable end	1 conductor	mm^2	1/4	1/4	1/4	1/4	1/4	1/4
		2 conductors	mm^2	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5
	Solid cable without cable end	1 conductor	mm^2	1/4	1/4	1/4	1/4	1/4	1/4
		2 conductors	mm^2	1/4	1/4	1/4	1/4	1/4	1/4
Tightening torque			N•m /lb-in	1.2/10	1.2/10	1.2/10	1.2/10	1.2/10	1.2/10
Mechanical latching	The **LA6DK** mechanical latch blocks cannot be mounted on **LC1F** contactors, for similar operation use **CR1F** magnetic latching contactors (see page 226).								

■ Operating times depend on the type of contactor electromagnet and its control mode.
The closing time “C” is measured from the moment the coil supply is switched on to initial contact of the main poles.
The opening time “O” is measured from the moment the coil supply is switched off to the moment the main poles separate.

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Contactors Type LC1F (115 to 800 A)
Control Circuit: DC Supply

Type				LC1F400	LC1F500	LC1F630	LC1F780	LC1F800
Control Circuit Characteristics (LX4/LX8 type coils)								
Rated control circuit voltage (Vc)	DC		V	48 to 460	48 to 460	48 to 460	110 to 460	110 to 440
Control voltage limits (θ ≤ 55 °C [131 °F])	Operational			0.85 to 1.1 Vc	0.85 to 1.1 Vc	0.85 to 1.1 Vc	0.85 to 1.1 Vc	0.7 to 1.3 Vc
	Drop-out			0.2 to 0.35 Vc	0.2 to 0.35 Vc	0.2 to 0.35 Vc	0.2 to 0.4 Vc	0.3 to 0.5 Vc
Average consumption at 20 °C (68 °F) and at Vc	DC	Inrush	W	1000	1100	1600	2 x 1000	1300
		Sealed	W	6	6	9	2 x 21	15
Average operating time ■	Closing “F”	ms		50 to 60	50 to 60	60 to 70	70 to 80	40 to 80
	Opening “O”	ms		45 to 60	45 to 60	40 to 50	100 to 130	20 to 40
	Note: The arcing time depends on the circuit switched by the poles. For normal 3-phase applications, the arcing time is usually less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.							
Mechanical durability at Vc	In millions of operating cycles			10	10	5	5	5
Maximum operating rate at ambient temperature ≤ 55 °C (131 °F)	In operating cycles/hour			2400	2400	1200	600	600
Cabling				Min/max				
	Solid or stranded cable	1 or 2 conductors	AWG	16/12	16/12	16/12	16/12	16/12
				Min/max c.s.a.				
	Stranded cable without cable end	1 conductor	mm^2	1/4	1/4	1/4	1/4	1/4
		2 conductors	mm^2	1/4	1/4	1/4	1/4	1/4
	Stranded cable with cable end	1 conductor	mm^2	1/4	1/4	1/4	1/4	1/4
		2 conductors	mm^2	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5
	Solid cable without cable end	1 conductor	mm^2	1/4	1/4	1/4	1/4	1/4
		2 conductors	mm^2	1/4	1/4	1/4	1/4	1/4
Tightening torque			N•m /lb-in	1.2/10	1.2/10	1.2/10	1.2/10	1.2/10
Mechanical latching	The **LA6DK** mechanical latch blocks cannot be mounted on **LC1F** contactors, for similar operation use **CR1F** magnetic latching contactors (see page 226).							

■ Operating times depend on the type of contactor electromagnet and its control mode.
The closing time “C” is measured from the moment the coil supply is switched on to initial contact of the main poles.
The opening time “O” is measured from the moment the coil supply is switched off to the moment the main poles separate.

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LC1F225

LC1F630

Control Circuit: AC or DC
Kilowatt Ratings for International Applications

2-, 3-, and 4-Pole Contactors

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3							Maximum current (θ ≤ 40 °C [104 °F])		Number of poles	Catalog Number ▲▼	Weight lb (kg)
							AC-3	AC-1			
220 V 230 V	380 V 400 V	415 V	440 V	660 V 500 V	690 V	1000 V	up to 400 V	up to 400 V		Panel mount with screws ■	
kW	kW	kW	kW	kW	kW	kW	A	A			
30	55	59	59	75	80	65	115	200	3	**LC1F115••**	7.56 (3.430)
									4	**LC1F1154••**	8.44 (3.830)
40	75	80	80	90	100	65	150	250	3	**LC1F150••**	7.56 (3.430)
									4	**LC1F1504••**	8.44 (3.830)
55	90	100	100	110	110	100	185	275	3	**LC1F185••**	10.2 (4.650)
									4	**LC1F1854••**	12.0 (5.450)
63	110	110	110	129	129	100	225	315	3	**LC1F225••**	10.5 (4.750)
									4	**LC1F2254••**	12.2 (5.550)
75	132	140	140	160	160	147	265	350	3	**LC1F265••**	16.4 (7.440)
									4	**LC1F2654••**	18.8 (8.540)
100	160	180	200	200	220	160	330	400	3	**LC1F330••**	18.9 (8.600)
									4	**LC1F3304••**	20.9 (9.500)
110	200	220	250	257	280	185	400	500	2	**LC1F4002••**	17.6 (8.000)
									3	**LC1F400••**	20.0 (9.100)
									4	**LC1F4004••**	22.5 (10.200)
147	250	280	295	355	335	335	500	700	2	**LC1F5002••**	21.5 (9.750)
									3	**LC1F500••**	25.0 (11.350)
									4	**LC1F5004••**	28.5 (12.950)
200	335	375	400	400	450	450	630	1000	2	**LC1F6302••**	34.2 (15.500)
									3	**LC1F630••**	41.0 (18.600)
									4	**LC1F6304••**	47.4 (21.500)
220	400	425	425	450	475	450	780	1600	3	**LC1F780••**	87.1 (39.500)
									4	**LC1F7804••**	105.8 (48.000)
250	450	450	450	450	475	450	800	1000	3	**LC1F800••**	41.3 (18.750)

Note: For auxiliary contact blocks and modules (see pages 195 to 196).

■ The power terminals may be protected by the addition of shrouds, to be ordered separately except **LC1F780**. For power terminal lugs, see page 199.

▲ Use voltage codes on page 200 “Voltage Codes Table” to complete catalog number.

▼ The following coil types include one normally open holding circuit contact incorporated in the design of the coil for 3-wire control applications: LX1FF, FG, FJ, FK, FL, LX1FX0422 to FH3802. The following coil types require an additional LA•DN1•, LADN2•, LADN31, or LADN4. Auxiliary contact block: LX1FH0202 to 0362, LX1FH4402 to 10002, LX8F8•W, LX1FX, LX1FX, LX9FF, FG, LX9FH•••2, LX9FJ, FK, FL, LX4FF, FG FH, FJ, FK, FL.

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LC1F225

LC1F630

Control Circuit: AC or DC
Horsepower Ratings for North American Applications

2-, 3-, and 4-Pole Contactors

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3				Maximum current (θ ≤ 40 °C [104 °F])		Number of poles	Catalog Number ▲▼	Weight lb (kg)
				AC-3	AC-1			
200 V 208 V	220 V 240 V	460 V 480 V	575 V 600 V				Panel mount with screws ■	
HP	HP	HP	HP	A	A			
30	40	75	100	115	200	3	**LC1F115••**	7.56 (3.430)
						4	**LC1F1154••**	8.44 (3.830)
40	50	100	125	150	250	3	**LC1F150••**	7.56 (3.430)
						4	**LC1F1504••**	8.44 (3.830)
50	60	125	150	185	275	3	**LC1F185••**	10.2 (4.650)
						4	**LC1F1854••**	12.0 (5.450)
Current Rated				225	315	3	**LC1F225••**	10.5 (4.750)
						4	**LC1F2254••**	12.2 (5.550)
60	75	150	175	265	350	3	**LC1F265••**	16.4 (7.440)
						4	**LC1F2654••**	18.8 (8.540)
75	100	200	250	330	400	3	**LC1F330••**	18.9 (8.600)
						4	**LC1F3304••**	20.9 (9.500)
100	125	250	300	400	500	2	**LC1F4002••**	17.6 (8.000)
						3	**LC1F400••**	20.0 (9.100)
						4	**LC1F4004••**	22.5 (10.200)
150	200	400	500	500	700	2	**LC1F5002••**	21.5 (9.750)
						3	**LC1F500••**	25.0 (11.350)
						4	**LC1F5004••**	28.5 (12.950)
250	300	600	800	630	1000	2	**LC1F6302••**	34.2 (15.500)
						3	**LC1F630••**	41.0 (18.600)
						4	**LC1F6304••**	47.4 (21.500)
Current Rated				780	1600	3	**LC1F780••**	87.1 (39.500)
						4	**LC1F7804••**	105.8 (48.000)
—	450	800	900	800	1000	3	**LC1F800••**	41.3 (18.750)

Note: For auxiliary contact blocks and modules (see pages 195 to 196).

■ The power terminals may be protected by the addition of shrouds, to be ordered separately except **LC1F780**. For power terminal lugs, see page 199.

▲ Use voltage codes on page 200 “Voltage Codes Table” to complete catalog number.

▼ The following coil types include one normally open holding circuit contact incorporated in the design of the coil for 3-wire control applications: LX1FF, FG, FJ, FK, FL, LX1FX0422 to FH3802. The following coil types require an additional LA•DN1•, LADN2•, LADN31, or LADN4. Auxiliary contact block: LX1FH0202 to 0362, LX1FH4402 to 10002, LX8F8•W, LX1FX, LX1FX, LX9FF, FG, LX9FH•••2, LX9FJ, FK, FL, LX4FF, FG FH, FJ, FK, FL.

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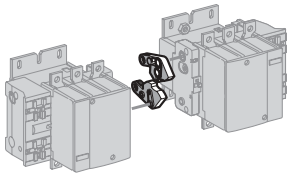
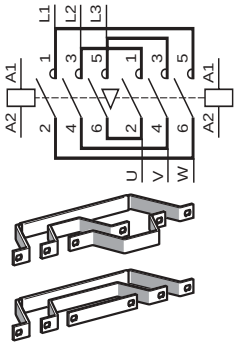
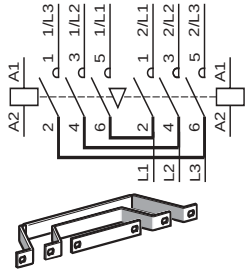
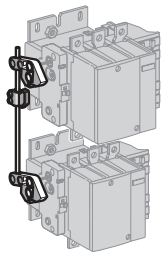
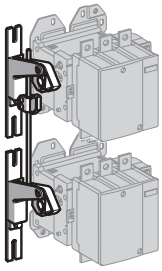
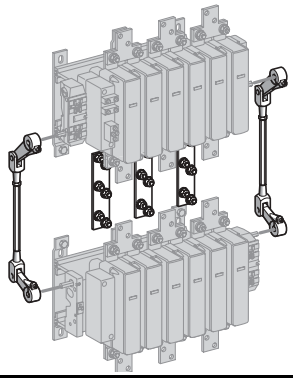
Components for Assembling 3-Pole Reversing Contactors and Changeover Contactor Pairs, for Customer Assembly

Horizontally mounted	Mechanical interlocks	Sets of power connections	
Reversers assembled using 2 contactors of identical rating, type:	LA9F•970	Reversing contactors LA9F•••76	3-pole changeover contactor pairs ■ LA9F•••82
LC1F115 **LC1F150** **LC1F185** **LC1F225** **LC1F265** **LC1F330** **LC1F400** **LC1F500** **LC1F630** **LC1F800**			

Vertically mounted	Mechanical interlocks	
Reversers assembled using 2 contactors of identical rating, type:	**LA9FF4F** **LA9FG4G**	**LA9FH4H** **LA9FJ4J** **LA9FK4K** **LA9FL4L**
LC1F115 **LC1F150** **LC1F185** **LC1F225** **LC1F265** **LC1F330** **LC1F400** **LC1F500** **LC1F630** **LC1F800**		
LC1F780	**LA9FX970**	
		

■ For 4-pole changeover contactor pairs, see pages 193 and 194.

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Components for Assembling 3-Pole Reversing Contactors and Changeover Contactor Pairs, for Customer Assembly.

How to order:

Components are available for customer assembly of F-line reversing contactors and changeover contactors. For example the following components must be ordered to build a 75 HP @ 460 V reversing contactor with a 120 V/60 Hz coil:

Quantity	Catalog number	Description
2	**LC1F115G6**	Contactors
6	**DZ2FF1**	Lugs
2	**LA1DN•1**	Auxiliary Contact Block
1	**LA9FF976**	Power Connections
1	**LA9FF970**	Mechanical Interlock

Using 2 contactors of identical rating

Contactor Type ■	Set of power connections		Mechanical interlock	
	Catalog Number	Weight lb (kg)	Kit Catalog Number	Weight lb (kg)
For assembly of 3-pole reversing contactors for motor control				
Horizontally mounted				
LC1F115	**LA9FF976**	1.3 (0.600)	**LA9FF970**	0.13 (0.060)
LC1F150	**LA9F15076**	1.3 (0.600)	**LA9FF970**	0.13 (0.060)
LC1F185	**LA9FG976**	1.7 (0.780)	**LA9FG970**	0.13 (0.060)
LC1F225	**LA9F22576**	3.3 (1.500)	**LA9FG970**	0.13 (0.060)
LC1F265	**LA9FH976**	3.3 (1.500)	**LA9FJ970**	0.31 (0.140)
LC1F330	**LA9FJ976**	4.6 (2.100)	**LA9FJ970**	0.31 (0.140)
LC1F400	**LA9FJ976**	4.6 (2.100)	**LA9FJ970**	0.31 (0.140)
LC1F500	**LA9FK976**	5.2 (2.350)	**LA9FJ970**	0.31 (0.140)
LC1F630 or **F800**	**LA9FL976**	(8.4 3.800)	**LA9FL970**	0.33 (0.150)
Vertically mounted				
LC1F115 or **F150**	●	–	**LA9FF4F**	0.76 (0.345)
LC1F185	●	–	**LA9FG4G**	0.77 (0.350)
LC1F225	●	–	**LA9FG4G**	0.77 (0.350)
LC1F265 or **F330**	●	–	**LA9FH4H**	2.34 (1.060)
LC1F400	●	–	**LA9FJ4J**	2.64 (1.200)
LC1F500	●	–	**LA9FK4K**	2.64 (1.200)
LC1F630 or **F800**	●	–	**LA9FL4L**	2.64 (1.220)
LC1F780	▲	–	**LA9FX970** ▲	13.4 (6.100)
For assembly of 3-pole changeover contactor pairs ♦				
Horizontally mounted				
LC1F115	**LA9FF982**	1.0 (0.460)	**LA9FF970**	0.13 (0.060)
LC1F150	**LA9F15082**	1.0 (0.460)	**LA9FF970**	0.13 (0.060)
LC1F185	**LA9FG982**	1.3 (0.610)	**LA9FG970**	0.13 (0.060)
LC1F225	**LA9F22582**	2.6 (1.200)	**LA9FG970**	0.13 (0.060)
LC1F265	**LA9FH982**	2.6 (1.200)	**LA9FJ970**	0.31 (0.140)
LC1F330	**LA9FJ982**	4.0 (1.800)	**LA9FJ970**	0.31 (0.140)
LC1F400	**LA9FJ982**	4.0 (1.800)	**LA9FJ970**	0.31 (0.140)
LC1F500	**LA9FK982**	5.1 (2.300)	**LA9FJ970**	0.31 (0.140)
LC1F630 or **F800**	**LA9FL982**	7.5 (3.400)	**LA9FL970**	0.33 (0.150)
Vertically mounted				
LC1F115 or **F150**	●	–	**LA9FF4F**	0.76 (0.345)
LC1F185	●	–	**LA9FG4G**	0.77 (0.350)
LC1F225	●	–	**LA9FG4G**	0.77 (0.350)
LC1F265 or **F330**	●	–	**LA9FH4H**	2.34 (1.060)
LC1F400	●	–	**LA9FJ4J**	2.64 (1.200)
LC1F500	●	–	**LA9FK4K**	2.64 (1.200)
LC1F630 or **F800**	●	–	**LA9FL4L**	2.64 (1.220)
LC1F780	▼	–	**LA9FX970** ▼	17.2 (7.800)

■ To order the 2 contactors: see pages 188 and 189. Order 2 contact blocks **LA1DN•1** to obtain electrical interlocking between the 2 contactors: see pages 194 and 195.

● All power connections are to be made by the customer, except for contactors type **LC1F780**.

▲ Double mechanical interlock mechanism with 2 interlock connecting rods and 3 power connecting links.

♦ For assembly of 4-pole changeover contactor pairs, see pages 192 and 193.

▼ Double mechanical interlock mechanism with 2 interlock connecting rods and 4 power connecting links.

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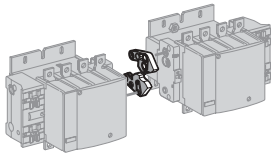
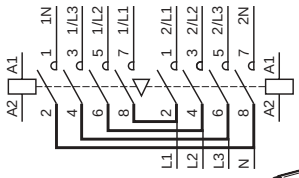
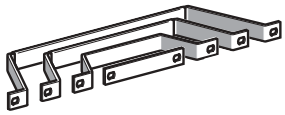
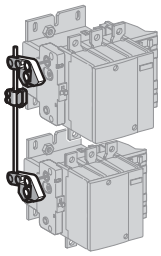
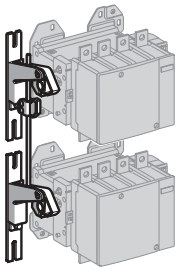
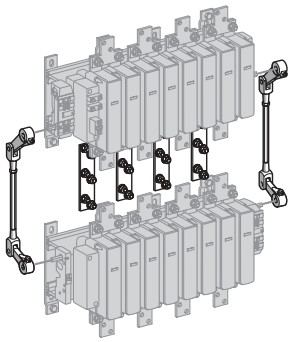
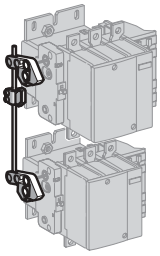
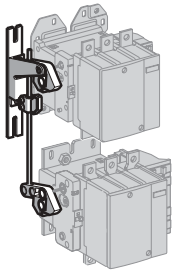
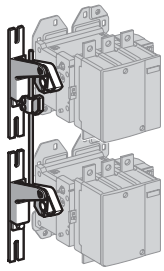
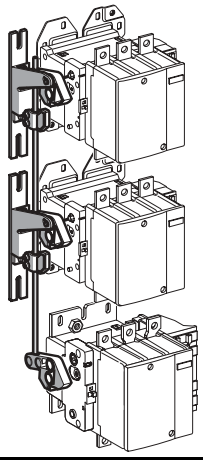
Components for Assembling 3- and 4-Pole Changeover Contactor Pairs, for Customer Assembly

Horizontally mounted	Mechanical interlocks	Sets of power connections
Reversers assembled using 2 contactors of identical rating, type: **LC1F1154** **LC1F1504** **LC1F1854** **LC1F2254** **LC1F2654** **LC1F3304** **LC1F4004** **LC1F5004** **LC1F6304**	LA9F•970 	4-pole changeover contactor pairs ■ LA9F•••77  

Vertically mounted	Mechanical interlocks		
Reversers assembled using 2 contactors of identical rating, type: **LC1F1154** **LC1F1504** **LC1F1854** **LC1F2254** **LC1F2654** **LC1F3304** **LC1F4004** **LC1F5004** **LC1F6304**	LA9FF4F LA9FG4G 	LA9FH4H LA9FJ4J LA9FK4K LA9FL4L 	LA9FX971 
Reversers assembled using 2 contactors of different ratings, type: **LC1F115** or **F1154** **LC1F150** or **F1504** **LC1F185** or **F1854** **LC1F225** or **F2254** **LC1F265** or **F2654** **LC1F330** or **F3304** **LC1F400** or **F4004** **LC1F500** or **F5004** **LC1F630** or **F6304** **LC1F800**	LA9FG4F 	LA9FH4F LA9FJ4F LA9FK4F LA9FL4F LA9FH4G LA9FJ4G LA9FK4G LA9FL4G 	LA9FJ4H LA9FK4H LA9FL4K LA9FK4J LA9FL4J LA9FL4K 
Reversers assembled using 3 contactors of identical or different ratings, type: **LC1F115** or **F1154** **LC1F150** or **F1504** **LC1F185** or **F1854** **LC1F225** or **F2254** **LC1F265** or **F2654** **LC1F330** or **F3304** **LC1F400** or **F4004** **LC1F500** or **F5004** **LC1F630** or **F6304** **LC1F800**	LA9F•4•4• 	**Warning:** the contactor ratings must be in decreasing size from top to bottom (largest size at top and smallest size at bottom).	

■ For 3-pole changeover contactor pairs, see pages 190 and 191.

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Components for Assembling 3 and 4-Pole Changeover Contactor Pairs, for Customer Assembly

For additional information see **How to Order** on page 191.

Using 2 contactors of identical rating

For assembly of 4-pole changeover contactor pairs ▲

Contactor Type ■	Set of power connections		Mechanical Interlock	
	Catalog Number	Weight lb (kg)	Kit Catalog Number	Weight lb (kg)
Horizontally mounted				
LC1F1154	**LA9FF977**	1.0 (0.460)	**LA9FF970**	0.13 (0.060)
LC1F1504	**LA9F15077**	1.0 (0.460)	**LA9FF970**	0.13 (0.060)
LC1F1854	**LA9FG977**	1.3 (0.610)	**LA9FG970**	0.13 (0.060)
LC1F2254	**LA9F22577**	2.6 (1.200)	**LA9FG970**	0.13 (0.060)
LC1F2654	**LA9FH977**	2.6 (1.200)	**LA9FJ970**	0.30 (0.140)
LC1F3304	**LA9FJ977**	4.0 (1.800)	**LA9FJ970**	0.30 (0.140)
LC1F4004	**LA9FJ977**	4.0 (1.800)	**LA9FJ970**	0.30 (0.140)
LC1F5004	**LA9FK977**	5.1 (2.300)	**LA9FJ970**	0.30 (0.140)
LC1F6304	**LA9FL977**	7.5 (3.400)	**LA9FL970**	0.33 (0.150)
Vertically mounted				
LC1F1154 or **F1504**	●	–	**LA9FF4F**	0.76 (0.345)
LC1F1854	●	–	**LA9FG4G**	0.77 (0.350)
LC1F2254	●	–	**LA9FG4G**	0.77 (0.350)
LC1F2654 or **F3304**	●	–	**LA9FH4H**	2.33 (1.060)
LC1F4004	●	–	**LA9FJ4J**	2.64 (1.200)
LC1F5004	●	–	**LA9FK4K**	2.64 (1.200)
LC1F6304	●	–	**LA9FL4L**	2.70 (1.220)
LC1F7804	♦	–	**LA9FX971**◆	17.2 (7.800)

Using 2 contactors of different ratings

For assembly of 3 or 4-pole changeover contactor pairs

Contactor Type ■		Mechanical Interlock	
		Kit Catalog Number	Weight lb (kg)
Vertically mounted			
at bottom	**at top**		
LC1F115 or **F1154** or **LC1F150** or **F1504**	**LC1F185** or **F1854**	**LA9FG4F**	0.77 (0.350)
	LC1F225 or **F2254**	**LA9FG4F**	0.77 (0.350)
	LC1F265 or **F2654**	**LA9FH4F**	1.92 (0.870)
	LC1F330 or **F3304**	**LA9FH4F**	1.92 0.870)
	LC1F400 or **F4004**	**LA9FJ4F**	2.05 (0.930)
	LC1F500 or **F5004**	**LA9FK4F**	2.07 (0.940)
	LC1F630, F6304 or **F800**	**LA9FL4F**	2.07 (0.940)
LC1F185 or **F1854** or **LC1F225** or **F2254**	**LC1F265** or **F2654**	**LA9FH4G**	1.90 0.860)
	LC1F330 or **F3304**	**LA9FH4G**	1.90 (0.860)
	LC1F400 or **F4004**	**LA9FJ4G**	2.07 (0.940)
	LC1F500 or **F5004**	**LA9FK4G**	2.07 (0.940)
	LC1F630, F6304 or **F800**	**LA9FL4G**	2.09 (0.950)
LC1F265 or **F2654** or **LC1F330** or **F3304**	**LC1F400** or **F4004**	**LA9FJ4H**	2.50 (1.130)
	LC1F500 or **F5004**	**LA9FK4H**	2.50 (1.130)
	LC1F630, F6304 or **F800**	**LA9FL4H**	2.51 (1.140)
LC1F400 or **F4004**	**LC1F500** or **F5004**	**LA9FK4J**	2.64 (1.200)
	LC1F630, F6304 or **F800**	**LA9FL4J**	2.70 (1.210)
LC1F500 or **F5004**	**LC1F630, F6304** or **F800**	**LA9FL4K**	2.70 (1.210)

▲ For assembly of 3-pole changeover contactor pairs, see pages 190 and 191.

■ To order the 2 contactors: see pages 188 and 189. Order 2 contact blocks **LADN•1** to obtain electrical interlocking between the 2 contactors: see pages 194 and 195.

● All power connections are to be made by the customer, except for contactors type **LC1F780**.

♦ Double mechanical interlock mechanism with 2 interlock connecting rods and 4 power connecting links.

For assembly of reversers using 3 contactors, vertically mounted, see pages 191 and 192.

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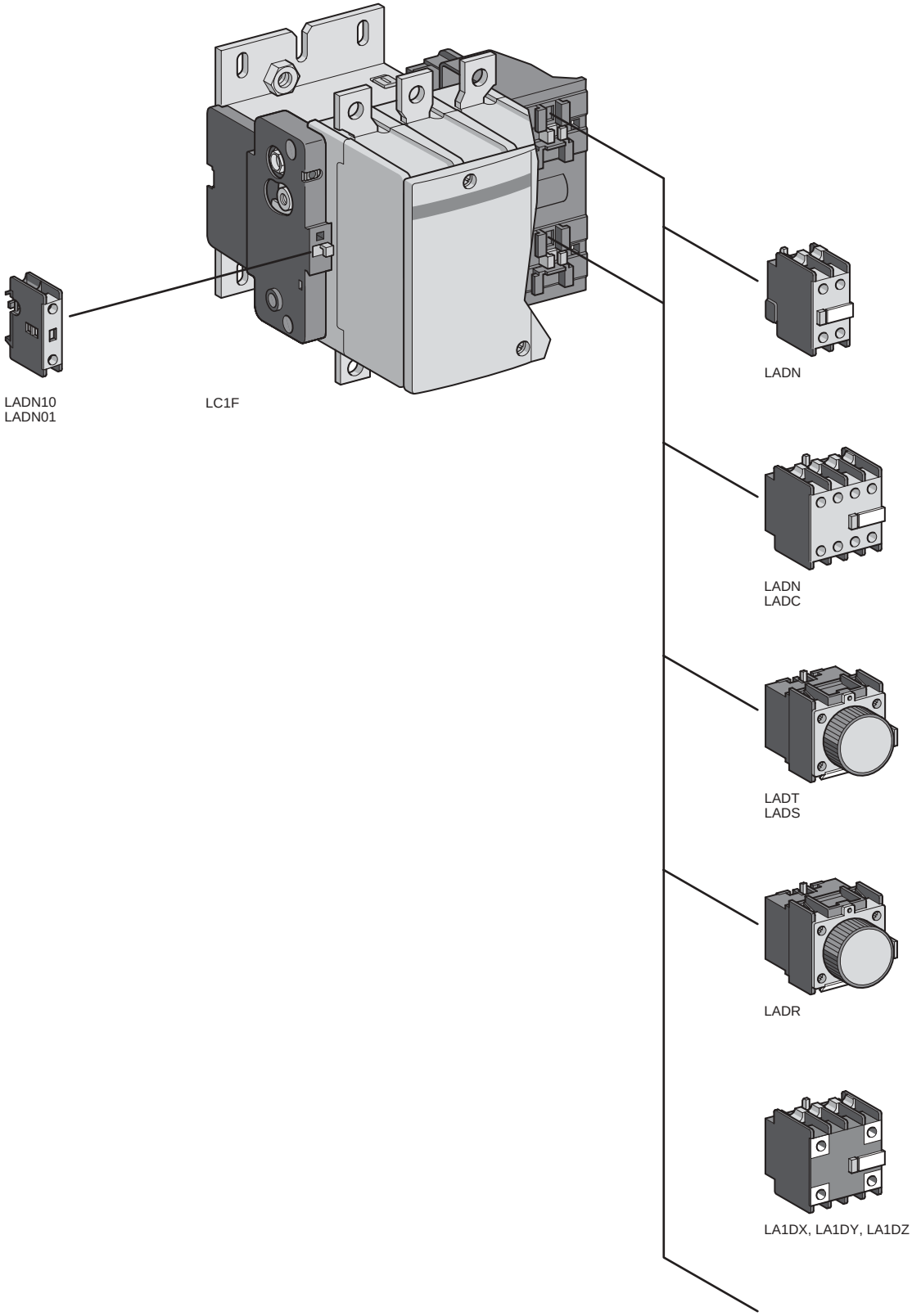

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Contactors and Reversing Contactors Type LC1F
Auxiliary Contact Blocks and Interface Module

Instantaneous Auxiliary Contact Blocks

For use in normal operating environments

Number of contacts	Max. number of blocks per contactor Side clip-on mounting	Auxiliary Contacts ●	♦	N.O.	N.C.	Catalog Number	Weight lb (kg)
1	1	–	–	1	–	**LADN10**	0.04 (0.020)
		–	–	–	1	**LADN01**	0.04 (0.020)
2	2	–	–	1	1	**LADN11**	0.07 (0.030)
		–	–	2	–	**LADN20**	0.07 (0.030)
		–	–	–	2	**LADN02**	0.07 (0.030)
4	2	–	–	2	2	**LADN22**	0.11 (0.050)
		–	–	1	3	**LADN13**	0.11 (0.050)
		–	–	4	–	**LADN40**	0.11 (0.050)
		–	–	–	4	**LADN04**	0.11 (0.050)
		–	–	3	1	**LADN31**	0.11 (0.050)
		–	–	2	2 ■	**LADC22**	0.11 (0.050)
With terminal referencing conforming to standard EN 50012 ◑							
2	2	–	–	1	1	**LADN11P**	0.07 (0.030)
		–	–	1	1	**LADN11G**	0.07 (0.030)
4	2	–	–	2	2	**LADN22P**	0.11 (0.050)
		–	–	2	2	**LADN22G**	0.11 (0.050)

◑ See page 216 for actual markings.

Instantaneous Auxiliary Contact Blocks With Dust and Damp Protected Contacts

For use in harsh industrial environments

Number of contacts	Max. number of blocks per contactor Side clip-on mounting	Auxiliary Contacts ●	♦	N.O.	N.C.	Catalog Number	Weight lb (kg)
2	2	2	–	–	–	**LA1DX20**	0.09 (0.040)
		2	2	–	–	**LA1DY20**	0.09 (0.040)
4	2	2	–	2	–	**LA1DZ40**	0.11 (0.050)
		2	–	1	1	**LA1DZ31**	0.11 (0.050)

Time Delay Auxiliary Contacts

Number of Contacts	Max. number of blocks per contactor Side clip-on mounting	Time delay Type	Range (s)	Catalog Number	Weight lb (kg)
1 N.O. + 1 N.C.	2	OnDelay	0.1 to 3 ▲	**LADT0**	0.13 (0.060)
			0.1 to 30	**LADT2**	0.13 (0.060)
			10 to 180	**LADT4**	0.13 (0.060)
			1 to 30 ▼	**LADS2**	0.13 (0.060)
		OffDelay	0.1 to 3 ▲	**LADR0**	0.13 (0.060)
			0.1 to 30	**LADR2**	0.13 (0.060)
			10 to 180	**LADR4**	0.13 (0.060)

● Sealed dust tight contacts.
♦ Ground terminal connections.
■ Including 1 N.O. + 1 N.C. make before break.
▲ With extended scale from 0.1 to 0.6 s.
▼ With switching time of 40 ms ± 15 ms between opening of the N.C. contact and closing of the N.O. contact.

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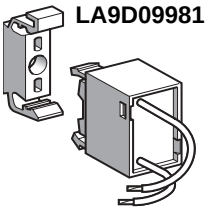
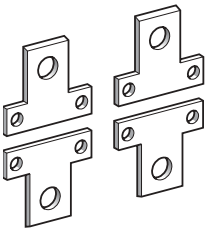
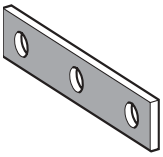


LA9D09981

LA9F980



LA9F•602



LA9F•601

DZ3FA3

Contactors and Reversing Contactors Type LC1F
Suppressor Blocks and Cabling Accessories

Suppressor Blocks

Type of Suppressor	Specifications	Coil Voltage Range	Catalog Number	Weight lb (kg)
RC (Resistor-Capacitor)	Used on AC only Limits transients to 3X Uc max. Increases contactor drop out time 10 to 30 %	24 - 48	**LA4FRCE**	0.07 (0.030)
		50 - 110	**LA4FRCF**	0.07 (0.030)
		127 - 240	**LA4FRCP**	0.07 (0.030)
		265 - 415	**LA4FRCV**	0.07 (0.030)
Varistor	Used on AC or DC Limits Transients to 2 X Uc max.	24 - 48	**LA4FVE**	0.07 (0.030)
		50 - 110	**LA4FVF**	0.07 (0.030)
		127 - 240	**LA4FVP**	0.07 (0.030)
		265 - 415	**LA4FVV**	0.07 (0.030)
Bi-directional Diode	Used on AC or DC Limits Transients to 2.5 X Uc max.	24 - 48	**LA4FTE**	0.07 (0.030)
		50 - 110	**LA4FTF**	0.07 (0.030)
		127 - 240	**LA4FTP**	0.07 (0.030)
		265 - 415	**LA4FTV**	0.07 (0.030)
Diode	Used on DC only No overvoltage Polarity sensitive Increases contactor drop out time 300-400%	24 - 48	**LA4FDE**	0.07 (0.030)
		55 - 110	**LA4FDF**	0.07 (0.030)
		125 - 250	**LA4FDP**	0.07 (0.030)
		280 - 440	**LA4FDV**	0.07 (0.030)
Mounting bracket (for 35mm DIN rail or panel mounting) for suppressor block			**LA9D09981**	0.02 (0.010)

Cabling Accessories

Links for parallel connection of poles (in pairs)		
For use on 4-pole contactors	**Set of 4 links Set Catalog Number**	**Weight lb (kg)**
LC1F1154	**LA9FF602**	0.44 (0.200)
LC1F1504, F1854	**LA9FG602**	0.77 (0.350)
LC1F2254, F2654, F3304, F4004	**LA9FH602**	2.20 (1.000)
LC1F5004	**LA9FK602**	3.85 (1.750)
LC1F6304	**LA9FL602**	6.61 (3.000)
Links for "star" connection of 3 poles		
LC1F115	**LA9FF601**	0.08 (0.035)
LC1F150, F185	**LA9FG601**	0.11 (0.050)
LC1F225, F265, F330, F400	**LA9FH601**	0.26 (0.120)
LC1F500	**LA9FK601**	0.40 (0.180)
LC1F630, F800	**LA9FL601**	1.21 (0.550)

Control circuit voltage take-off from power terminals				
For use on contactors	**Mounted on bolt size**	**Sold in lots of**	**Unit Catalog Number**	**Weight lb (kg)**
LC1F115	**M6**	10	**DZ3FA3**	0.008 (0.004)
LC1F150, F185	**M8**	10	**DZ3GA3**	0.008 (0.004)
LC1F225 to F500	**M10**	10	**DZ3HA3**	0.013 (0.006)
LC1F630, F800	**M12**	10	**DZ3JA3**	0.019 (0.009)

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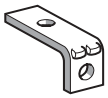
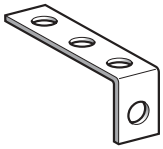


LA9F•981

Contactors and Reversing Contactors Type LC1F
Suppressor Blocks and Cabling Accessories

Right-Angled Connectors

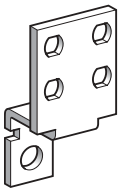
For contactors or thermal overload relays					
For use on		Connector		Set of 3 Connectors	
Contactors	Thermal Overload Relays	Width	Type	Set Catalog Number	Weight lb (kg)
LC1F115	LR•F5•67, LR1F105, F125	0.59" (15 mm)	Rear	**LA9FF981**	0.13 (0.060)
			Side	**LA9FF979**	0.53 (0.240)
			Large s. area	**LA9FF980**	0.33 (0.150)
LC1F150, F185	LR•F5•69, F5•71	0.79" (20 mm)	Rear	**LA9FG981**	0.18 (0.080)
			Side	**LA9FG979**	0.77 (0.350)
			Large s. area	**LA9FG980**	0.44 (0.200)
LC1F225, F265. F330, F400	LR•F6•73, F6•75, F6•77	0.98" (25 mm)	Rear	**LA9FJ981**	0.95 (0.430)
			Side	**LA9FJ979**	1.65 (0.750)
			Large s. area	**LA9FJ980**	1.08 (0.490)
LC1F500	LR•F7•79, F7•81	1.18" (30 mm)	Rear	**LA9FK981**	1.06 (0.480)
			Side	**LA9FK979**	2.03 (0.920)
			Large s. area	**LA9FK980**	1.76 (0.800)
LC1F630, F800	LR•F8•83, F8•85	1.57" (40 mm)	Rear	**LA9FL981**	2.67 (1.210)
			Side	**LA9FL979**	5.66 (2.570)
			Large s. area	**LA9FL980**	7.03 (3.190)



LA9F•979

Connection Accessories

For reversing contactors or star-delta contactors combined with a thermal overload relay				
For use on		Width of Connector Plates	Set of 3 bus bars	
Contactors	Thermal Overload Relays		Set Catalog Number	Weight lb (kg)
LC1F115	LR9F5357, F5363 F5367, F5369	0.59" (15 mm)	**LA7F401**	0.24 (0.110)
LC1F150 and F185	LR9F5357, F5363 F5367, F5369	0.79" (20 mm)	**LA7F402**	0.24 (0.110)
LC1F225 and F265	LR9F5371	0.98" (25 mm)	**LA7F403**	0.35 (0.160)
LC1F330 and F400	LR9F7375 and F7379	0.98" (25 mm)	**LA7F404**	0.35 (0.160)
LC1F400	LR9F7381	0.98" (25 mm)	**LA7F404**	0.35 (0.160)
LC1F500	LR9F7375, F7379 F7381	1.18" (30 mm)	**LA7F405**	0.60 (0.270)
LC1F630	LR9F7381	1.57" (40 mm)	**LA7F406**	1.30 (0.600)



LA9F•980

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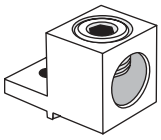


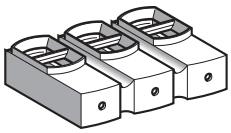
DZ2F••

Contactors and Reversing Contactors Type LC1F
Cabling Accessories and Spare Parts

Lug Kits

Lugs can be ordered either individually (for 2-pole and 4-pole contactors) or in sets of 6 (for 3-pole contactors).
Mounting hardware is provided with the contactors, not the kits.

Single lug	Set of six lugs	Cable size AWG range	Suitable for contactor LC1•••• / CR1••••	Suitable for overload relay LR9••••• ▲
DZ2FF1	**DZ2FF6**	14 to 2/0	F115	none
DZ2FG1	**DZ2FG6**	6 to 3/0	F150, F185	F5•57, F5•63, F5•67, F5•69
DZ2FH1	**DZ2FH6**	6 to 300 MCM	F265, F330	LR9F•71
DZ2FJ1	**DZ2FJ6**	4 to 500 MCM	F400	none
DZ2FK1	**DZ2FK6**	2x2 to 600 MCM	F500	F7•75, F7•79
DZ2FL• ■	**DZ2FL6**	3x2 to 600 MCM	F630, F800	F7•81
DZF2FX1	**DZ2FX6**	4x1/0 to 750 MCM	F780	none



LA9F103

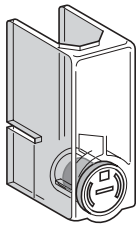
Insulated Terminal Blocks

For use on 3-pole contactors	Cable Size AWG Range	Set of 2 blocks	
		Set Catalog Number	Weight lb (kg)
LC1F115, F150, F185 (provides IP20 touch-safe protection)	#6 to 300 mcm	**LA9F103**	1.23 (0.560)

Power Terminal Protection Shrouds

These clear plastic protective shrouds are an effective means to meet international touch-safe requirements for power terminals. They are designed to be used with power cables that have been bolted to the terminal. Note: The protection shrouds do not attach to contactors or overloads utilizing **DZ2F** lug kits.

For use with 2-, 3-, and 4-pole contactors	Number of shrouds per set	Set Catalog Number	Weight lb (kg)
LC1F115	6	**LA9F701**	0.55 (0.250)
LC1F150, F185 CR1F150, F185	6	**LA9F702**	0.55 (0.250)
LC1F225, F265, F330, F400 and F4002, F500 and F5002 CR1F265, F400 and F500	6	**LA9F703**	0.55 (0.250)
LC1F630, F6302 and F800 CR1F630	6	**LA9F704**	0.55 (0.250)
LC1F1154	8	**LA9F706**	0.66 (0.300)
LC1F1504 and F1854	8	**LA9F707**	0.66 (0.300)
LC1F2254, F2654, F3304, F4004, F5004	8	**LA9F708**	0.66 (0.300)
LC1F6304	8	**LA9F709**	0.66 (0.300)



LA9F701

▲ When direct mounting the **LR9F** to an **LC1F** or **CR1F** contactor, lugs of different sizes may be required. See page 220 for additional information.

■ For 3-pole F630 contactors, order **DZ2FL1** for L1 and T3, **DZ2FL2** for L2 and T2, and **DZ2PL3** for L3 and T1 terminals.
For 4-pole F6304 contactors, order **DZ2FL1** for L1 and T4, **DZ2FL2** for L2, T2, L3 and T3, and **DZ2FL3** for L4 and T1 terminals.

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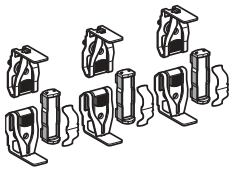
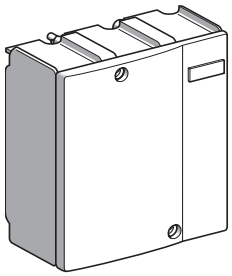
Contactors and Reversing Contactors Type LC1F
Spare Parts



LA5FG431



LA5F40050

Main Contact Sets

Per pole: 2 stationary contacts and 1 moving contact, 2 deflectors, 1 leaf spring, screws and washers

For contactor	Type	Replacement for	Catalog Number	Weight lb (kg)
2-pole	LC1F4002	2 poles	**LA5F400802**	3.00 (1.350)
	LC1F5002	2 poles	**LA5F500802**	4.30 (1.950)
	LC1F6302	2 poles	**LA5F630802**	10.3 (4.700)
3-pole	LC1F115, F150	3 poles	**LA5FF431**	0.60 (0.270)
	LC1F185, F225	3 poles	**LA5FG431**	0.77 (0.350)
	LC1F265	3 poles	**LA5FH431**	1.45 (0.660)
	LC1F330, F400	3 poles	**LA5F400803**	4.40 (2.000)
	LC1F500	3 poles	**LA5F500803**	6.50 (2.950)
	LC1F630	3 poles	**LA5F630803**	13.4 (6.100)
	LC1F780	1 pole	**LA5F780801** ■	10.4 (4.700)
		3 poles	**LA5F780803**	29.1 (13.200)
	LC1F800	3 poles	**LA5F800803**	13.4 (6.100)
4-pole	LC1F1504, F1154	4 poles	**LA5FF441**	0.80 (0.360)
	LC1F1854, F2254	4 poles	**LA5FG441**	1.20 (0.465)
	LC1F2654	4 poles	**LA5FH441**	1.94 (0.880)
	LC1F3304, F4004	4 poles	**LA5F400804**	5.95 (2.700)
	LC1F5004	4 poles	**LA5F500804**	8.59 (3.900)
	LC1F6304	4 poles	**LA5F630804**	17.9 (8.150)
	LC1F7804	1 pole	**LA5F780801** ■	10.36 (4.700)
		4 poles	**LA5F780804**	38.1 (17.300)

Arc Chambers

For contactor	Type	Replacement for	Catalog Number	Weight lb (kg)
2-pole	LC1F4002	2 poles	**LA5F400250**	1.91 (0.870)
	LC1F5002	2 poles	**LA5F500250**	2.75 (1.250)
	LC1F6302	2 poles	**LA5F630250**	4.62 (2.100)
3-pole	LC1F115	3 poles	**LA5F11550**	1.08 (0.490)
	LC1F150	3 poles	**LA5F15050**	1.08 (0.490)
	LC1F185	3 poles	**LA5F18550**	1.47 (0.670)
	LC1F225	3 poles	**LA5F22550**	1.47 (0.670)
	LC1F265	3 poles	**LA5F26550**	2.03 (0.920)
	LC1F330	3 poles	**LA5F33050**	2.90 (1.300)
	LC1F400	3 poles	**LA5F40050**	2.90 (1.300)
	LC1F500	3 poles	**LA5F50050**	4.08 (1.850)
	LC1F630	3 poles	**LA5F63050**	6.94 (3.150)
	LC1F780	1 pole	**LA5F780150** ■	4.63 (2.100)
	LC1F800	3 poles	**LA5F80050**	6.94 (3.150)
4-pole	LC1F1154	4 poles	**LA5F115450**	1.45 (0.660)
	LC1F1504	4 poles	**LA5F150450**	1.45 (0.660)
	LC1F1854	4 poles	**LA5F185450**	2.00 (0.910)
	LC1F2254	4 poles	**LA5F225450**	2.20 (1.000)
	LC1F2654	4 poles	**LA5F265450**	2.70 (1.220)
	LC1F3304	4 poles	**LA5F330450**	3.83 (1.740)
	LC1F4004	4 poles	**LA5F400450** ♦	3.83 (1.740)
	LC1F5004	4 poles	**LA5F500450** ♦	5.51 (2.500)
	LC1F6304	4 poles	**LA5F630450** ▲	9.26 (4.200)
	LC1F7804	1 pole	**LA5F780150** ■	9.63 (2.100)

■ Comprising 2 identical items per pole.
♦ Comprising two 2-pole arc chambers.
▲ Comprising single-pole arc chambers.

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F-line Voltage Code Table

F-line Voltage Code

Voltage	Frequency	F-line (see notes at end of table)				
		LC1F115 - F225 Note F1, F2	LC1F265 - F400 Note F1, F2	LC1F500 - F630 Note F1, F2	LC1F780 Note F1, F2	LC1F800 Note F1, F2, F3
5	Low Consump DC	-	-	-	-	-
12	50/60	-	-	-	-	-
	50	-	-	-	-	-
	DC	-	-	-	-	-
	Low Consump DC	-	-	-	-	-
	Wide Range DC	-	-	-	-	-
20	50/60	-	-	-	-	-
	50	-	-	-	-	-
	60	-	-	-	-	-
	DC	-	-	-	-	-
	Low Consump DC	-	-	-	-	-
24	50/60	-	-	-	-	-
	50	B5	-	-	-	-
	60	B6	-	-	-	-
	40-400	-	B7 Note F4	-	-	-
	DC	BD	BD Note F4	-	-	-
	Low Consump DC	-	-	-	-	-
	Wide Range DC	-	-	-	-	-
36	50/60	-	-	-	-	-
	DC	-	-	-	-	-
	Wide Range DC	-	-	-	-	-
42	50/60	-	-	-	-	-
	50	D5	-	-	-	-
	60	-	-	-	-	-
48	50/60	-	-	-	-	-
	50	E5	-	-	-	-
	60	E6	-	-	-	-
	40-400	E7	E7	E7	-	-
	DC	ED	ED	ED	-	-
	Low Consump DC	-	-	-	-	-
	Wide Range DC	-	-	-	-	-
60	50/60	-	-	-	-	-
	DC	-	-	-	-	-
72	DC	-	-	-	-	-
	Low Consump DC	-	-	-	-	-
	Wide Range DC	-	-	-	-	-

F-line Voltage Code

Voltage	Frequency	F-line (see notes at end of table)				
		LC1F115 - F225 Note F1, F2	LC1F265 - F400 Note F1, F2	LC1F500 - F630 Note F1, F2	LC1F780 Note F1, F2	LC1F800 Note F1, F2, F3
96	Low Consump DC	-	-	-	-	-
100	50/60	-	-	-	-	-
	DC	-	-	-	-	-
110	50/60	-	-	-	-	-
	50	F5	-	-	-	-
	60	F6	-	-	-	-
	40-400	F7	F7	F7	F7	-
	DC	FD	FD	FD	FD	FW
	Low Consump DC	-	-	-	-	-
	Wide Range DC	-	-	-	-	-
110/127	40-400	-	-	-	-	FE7
115	50/60	-	-	-	-	-
	50	FE5	-	-	-	-
	40-400	FE7	FE7	FE7	FE7	-
120	50/60	-	-	-	-	-
	50	-	-	-	-	-
	60	G6	-	-	-	-
	40-400	G7	G7 Note F5	F7	F7	-
	DC	-	-	-	-	FW
	Low Consump DC	-	-	-	-	-
125	DC	GD	GD	GD	GD	-
127	50/60	-	-	-	-	-
	60	G5	-	-	-	-
	40-400	G7	G7	G7	G7	-
155	DC	-	-	-	-	-
174	DC	-	-	-	-	-
200	50/60	-	-	-	-	-
	DC	-	-	-	-	-
200/208	50/60	-	-	-	-	-
	60	L6	-	-	-	-
	40-400	-	L7	L7	L7	-
208	50/60	-	-	-	-	-
	60	-	-	-	-	-
	40-400	L7	-	-	-	-

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F-line Voltage Code

Voltage	Frequency	F-line (see notes at end of table)				
		LC1F115 - F225 Note F1, F2	LC1F265 - F400 Note F1, F2	LC1F500 - F630 Note F1, F2	LC1F780 Note F1, F2	LC1F800 Note F1, F2, F3
220	50/60	-	-	-	-	-
	50	M5	-	-	-	-
	60	M6	-	-	-	-
	40-400	M7	M7	M7	M7	-
	DC	-	MD	MD	MD	-
	Low Consump DC	-	-	-	-	-
	Wide Range DC	-	-	-	-	-
220/230	50/60	-	-	-	-	-
	50	-	-	-	-	-
	60	-	-	-	-	-
	40-400	-	-	-	-	-
	DC	MD	-	-	-	-
220/240	40-400	-	-	-	-	P7
	DC	-	-	-	-	MW
230	50/60	-	-	-	-	-
	50	P5	-	-	-	-
	60	-	-	-	-	-
	40-400	P7	P7	P7	P7	-
	DC	-	-	-	-	-
230/240	50/60	-	-	-	-	-
240	50/60	-	-	-	-	-
	50	U5	-	-	-	-
	60	U6	-	-	-	-
	40-400	U7	U7	U7	U7	-
	DC	-	-	-	-	-
250	DC	UD	UD	UD	UD	-
	Low Consump DC	-	-	-	-	-
256	50/60	-	-	-	-	-
	50	-	-	-	-	-
277	50/60	-	-	-	-	-
	50	W5	-	-	-	-
	40-400	-	W7	W7	W7	-
380	50/60	-	-	-	-	-
	50	Q5	-	-	-	-
	60	Q6	-	-	-	-
	40-400	Q7	Q7	Q7	Q7	-
380/400	50/60	-	-	-	-	-
	50	-	-	-	-	-
	60	-	-	-	-	-
	40-400	-	-	-	-	-
	DC	-	-	-	-	QW
380/440	40-400	-	-	-	-	V7

F-line Voltage Code

Voltage	Frequency	F-line (see notes at end of table)				
		LC1F115 - F225 Note F1, F2	LC1F265 - F400 Note F1, F2	LC1F500 - F630 Note F1, F2	LC1F780 Note F1, F2	LC1F800 Note F1, F2, F3
400	50/60	-	-	-	-	-
	50	V5	-	-	-	-
	40-400	V7	V7	V7	V7	-
400/415	50/60	-	-	-	-	-
415	50/60	-	-	-	-	-
	50	N5	-	-	-	-
	40-400	N7	N7	N7	N7	-
415-440	50	-	-	-	-	-
	40-400	-	-	-	-	-
440	50/60	-	-	-	-	-
	50	-	-	-	-	-
	60	R6	-	-	-	-
	40-400	R7	R7	R7	R7	-
	DC	-	RD	RD	RD	-
440/460	DC	RD	-	-	-	-
460/480	60	Q5	-	-	-	-
480	50/60	-	-	-	-	-
	50	-	-	-	-	-
	60	-	-	-	N7	-
	40-400	-	S7, Note F4	-	-	-
500	50/60	-	-	-	-	-
	50	S5	-	-	-	-
	40-400	S7	S7	S7	S7	-
575	50/60	-	-	-	-	-
	60	-	-	-	-	-
600	50/60	-	-	-	-	-
	60	-	-	-	-	-
	40-400	-	-	X7	-	-
660	50	-	-	-	-	-
	60	Y6	-	-	-	-
660/690	50/60	-	-	-	-	-

F-line Notes:
F1 For operating ranges refer to technical data section of the F-line contactors. Ranges vary as a function of the supply (AC/DC).
F2 For non-stock voltage codes, order contactor and coil separately. See page 234 for coils.
F3 Built in surge suppressor included on LC1F800 coils.
F4 For use with LC1F265 and LC1F330 only.
F5 For LC1F400 contactor with 120 Vac coil, use F7 code.

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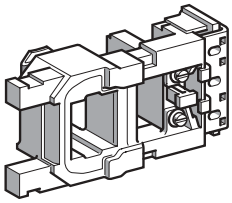
Contactors Type LC1F
Coils for LC1F115 to F225, AC supply 50 to 60 Hz

Maximum ambient air temperature: 55 °C (131 °F); above this, use an **LX9F** coil, see page 208 to 209.
Operating cycles/hour (θ ≤ 55 °C [131 °F]): ≤ 2400.



LX1FF•••

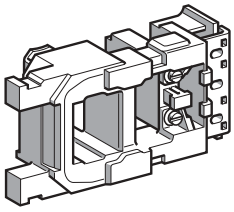
For Contactors LC1F115 and LC1F150

Control Circuit Voltage		Average resistance at 20 °C (68 °F) ± 10%	Inductance of Closed Circuit	Voltage Code	Catalog Number	Weight lb (kg)
Vc 50 Hz	Vc 60 Hz					
V	V	Ω	H			
24	**–**	0.27	0.04	**B5**	**LX1FF024**	0.95 (0.430)
42	**–**	0.94	0.13	**–**	**LX1FF042**	0.95 (0.430)
–	**48**	0.78	0.11	**E6**	**LX1FF040**	0.95 (0.430)
48	**–**	1.17	0.16	**E5**	**LX1FF048**	0.95 (0.430)
–	**110**	4.55	0.59	**F6**	**LX1FF092**	0.95 (0.430)
–	**115/120**	4.77	0.64	**G6**	**LX1FF095**	0.95 (0.430)
110/115	**–**	6.38	0.86	**F5**	**LX1FF110**	0.95 (0.430)
127	**–**	9.14	1.15	**G5**	**LX1FF127**	0.95 (0.430)
–	**200/208**	14.5	1.87	**L6**	**LX1FF162**	0.95 (0.430)
–	**220**	18.4	2.38	**M6**	**LX1FF184**	0.95 (0.430)
–	**230/240**	18.9	2.5	**U6**	**LX1FF187**	0.95 (0.430)
220/230	**265/277**	28.1	3.44	**M5**	**LX1FF220**	0.95 (0.430)
240	**–**	31.1	4.1	**U5**	**LX1FF240**	0.95 (0.430)
–	**380**	57.2	7.05	**Q6**	**LX1FF316**	0.95 (0.430)
–	**415**	67.9	8.21	**N6**	**LX1FF340**	0.95 (0.430)
–	**440**	72.6	9.21	**R6**	**LX1FF360**	0.95 (0.430)
380/400	**460/480**	86.9	10.3	**Q5**	**LX1FF380**	0.95 (0.430)
415/440	**–**	95.1	12	**N5**	**LX1FF415**	0.95 (0.430)
500	**–**	141	17	**S5**	**LX1FF500**	0.95 (0.430)
–	**660**	172	20.3	**Y6**	**LX1FF550**	0.95 (0.430)
660	**–**	254	28.9	**Y5**	**LX1FF660**	0.95 (0.430)
–	**1000**	414	48.9	**–**	**LX1FF850**	0.95 (0.430)
1000	**–**	610	68.5	**–**	**LX1FF1000**	0.95 (0.430)

Specifications

Average consumption at 20 °C (68 °F):
- inrush 50 Hz: 550 VA; 60 Hz: 660 VA.
- sealed 50 Hz: 45 VA; 60 Hz: 55 VA, cos φ = 0.32.

Heat dissipation: 12 to 16 W
Operating time at Vc: closing = 23 to 35 ms; Opening = 5 to 15 ms



LX1FG•••

For Contactors LC1F185 and LC1F225

24	**–**	0.18	0.03	**B5**	**LX1FG024**	1.21 (0.550)
42	**–**	0.57	0.09	**–**	**LX1FG042**	1.21 (0.550)
–	**48**	0.47	0.08	**E6**	**LX1FG040**	1.21 (0.550)
48	**–**	0.71	0.12	**E5**	**LX1FG048**	1.21 (0.550)
–	**110**	2.74	0.44	**F6**	**LX1FG092**	1.21 (0.550)
–	**115/120**	2.87	0.49	**G6**	**LX1FG095**	1.21 (0.550)
110/115	**–**	4.18	0.65	**F5**	**LX1FG110**	1.21 (0.550)
127	**–**	5.35	0.86	**G5**	**LX1FG127**	1.21 (0.550)
–	**200/208**	8.8	1.41	**L6**	**LX1FG162**	1.21 (0.550)
–	**220**	11.1	1.8	**M6**	**LX1FG184**	1.21 (0.550)
–	**230/240**	11.4	1.87	**U6**	**LX1FG187**	1.21 (0.550)
220/230	**265/277**	16.5	2.59	**M5**	**LX1FG220**	1.21 (0.550)
240	**–**	20.1	3.09	**U5**	**LX1FG240**	1.21 (0.550)
–	**380**	34	5.32	**Q6**	**LX1FG316**	1.21 (0.550)
–	**415**	40.8	6.2	**N6**	**LX1FG340**	1.21 (0.550)
–	**440**	43.5	6.94	**R6**	**LX1FG360**	1.21 (0.550)
380/400	**460/480**	51.3	7.75	**Q5**	**LX1FG380**	1.21 (0.550)
415/440	**–**	62.3	9.06	**N5**	**LX1FG415**	1.21 (0.550)
500	**–**	82.7	12.8	**S5**	**LX1FG500**	1.21 (0.550)
–	**660**	103	15.3	**Y6**	**LX1FG550**	1.21 (0.550)
660	**–**	154	21.8	**Y5**	**LX1FG660**	1.21 (0.550)
–	**1000**	249	36.6	**–**	**LX1FG850**	1.21 (0.550)
1000	**–**	370	51.6	**–**	**LX1FG1000**	1.21 (0.550)

Specifications

Average consumption at 20 °C (68 °F):
- inrush 50 Hz: 805 VA; 60 Hz: 970 VA.
- sealed 50 Hz: 55 VA; 60 Hz: 66 VA, cos φ = 0.34.

Heat dissipation: 18 to 24 W
Operating time at Vc: closing = 20 to 35 ms; Opening = 7 to 15 ms

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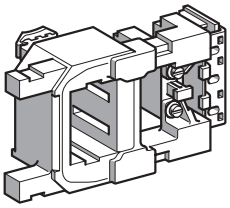
Contactors Type LC1F
Coils for LC1F265 to F500, AC supply 40 to 400 Hz

Low sealed consumption.
Operate on networks with harmonic numbers ≤ 7
Operating cycles/hour (θ ≤ 55 °C [131 °F]) ≤ 2400.

For Contactors LC1F265 and LC1F330



LX1FH•••2

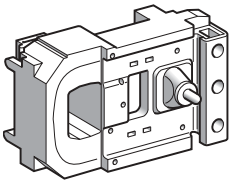
Control circuit voltage Vc	Average resistance at 20 °C (68 °F) ±10%		Inductance of Closed Circuit	Voltage Code	Catalog Number	Weight lb (kg)
	Inrush	Sealed				
V	Ω	Ω	H			
24	0.8	20	■	**B7**	**LX1FH0242**	1.65 (0.750)
48	2.96	72	■	**E7**	**LX1FH0482**	1.65 (0.750)
110/115	18.7	415	■	**F7**	**LX1FH1102**	1.65 (0.750)
120/127	22.9	536	■	**G7**	**LX1FH1272**	1.65 (0.750)
200/208	57.8	1285	■	**L7**	**LX1FH2002**	1.65 (0.750)
220/230	71.6	1621	■	**M7**	**LX1FH2202**	1.65 (0.750)
240	71.6	1621	■	**U7**	**LX1FH2402**	1.65 (0.750)
277	114.3	2425	■	**W7**	**LX1FH2772**	1.65 (0.750)
380/415	222	5075	■	**Q7**	**LX1FH3802**	1.65 (0.750)
480/500	345	7990	■	**S7**	**LX1FH5002**	1.65 (0.750)
600/660	521	11 988	■	**X7**	**LX1FH6002**	1.65 (0.750)
1000	1218	30 124	■	**–**	**LX1FH10002**	1.65 (0.750)

Specifications

Average consumption at 20 °C (68 °F) for 50 or 60 Hz and cos φ = 0.9:
- inrush: 600 to 700 VA.
- sealed: 8 to 10 VA.

Heat dissipation: 8 W
Operating time at Vc: closing = 40 to 65 ms; Opening = 100 to 170 ms

For Contactor LC1F400



LX1FJ•••

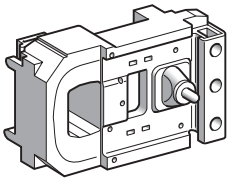
48	1.6	29.5	0.18	**E7**	**LX1FJ048**	2.20 (1.000)
110/120	9.8	230	1.35	**F7**	**LX1FJ110**	2.20 (1.000)
127	12.8	280	1.75	**G7**	**LX1FJ127**	2.20 (1.000)
200/208	30	815	4.1	**L7**	**LX1FJ200**	2.20 (1.000)
220/230	37	1030	5.1	**M7**	**LX1FJ220**	2.20 (1.000)
230/240	47.5	1320	6.4	**U7**	**LX1FJ240**	2.20 (1.000)
265/277	61	1700	8.1	**W7**	**LX1FJ280**	2.20 (1.000)
380/400	120	3310	15.8	**Q7**	**LX1FJ380**	2.20 (1.000)
415/480	145	4070	19.4	**N7**	**LX1FJ415**	2.20 (1.000)
500	190	4980	25.5	**S7**	**LX1FJ500**	2.20 (1.000)
550/600	243	6310	27.4	**X7**	**LX1FJ600**	2.20 (1.000)
1000	720	19 420	84.6	**–**	**LX1FJ1000**	2.20 (1.000)

Specifications

Average consumption at 20 °C (68 °F) for 50 or 60 Hz and cos φ = 0.9:
- inrush: 1000 to 1150 VA.
- sealed: 12 to 18 VA.

Heat dissipation: 14 W
Operating time at Vc: closing = 40 to 75 ms; Opening = 100 to 170 ms

For Contactor LC1F500



LX1FK•••

48	1.9	33.5	0.19	**E7**	**LX1FK048**	2.53 (1.150)
110/120	9.55	260	1.25	**F7**	**LX1FK110**	2.53 (1.150)
127	11.5	315	1.5	**G7**	**LX1FK127**	2.53 (1.150)
200/208	29	735	3.75	**L7**	**LX1FK200**	2.53 (1.150)
220/230	35.5	915	4.55	**M7**	**LX1FK220**	2.53 (1.150)
230/240	44.5	1160	5.75	**U7**	**LX1FK240**	2.53 (1.150)
265/277	56.5	1490	7.3	**W7**	**LX1FK280**	2.53 (1.150)
380/400	112	2980	14.7	**Q7**	**LX1FK380**	2.53 (1.150)
415/480	143	3730	18.4	**N7**	**LX1FK415**	2.53 (1.150)
500	172	4590	22.8	**S7**	**LX1FK500**	2.53 (1.150)
550/600	232	5660	23.9	**X7**	**LX1FK600**	2.53 (1.150)
1000	679	16 960	72	**–**	**LX1FK1000**	2.53 (1.150)

Specifications

Average consumption at 20 °C (68 °F) for 50 or 60 Hz, cos φ = 0.9:
- inrush: 1050 to 1150 VA.
- sealed: 16 to 20 VA.

Heat dissipation: 18 W
Operating time at Vc: closing = 40 to 75 ms; Opening = 100 to 170 ms

■ Please consult your Local Square D Field Sales Office.

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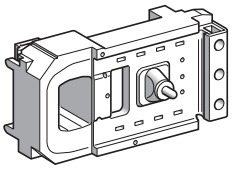
Contactors Type LC1F
Coils for LC1F630 to F800, AC supply 40 to 400 Hz



LX1FL●●●

Low sealed consumption.
Operate on networks with harmonic numbers ≤ 7.

Control circuit voltage Vc	Average resistance at 20 °C (68 °F) ±10%		Inductance of Closed Circuit	Voltage Code	Catalog Number	Weight lb (kg)
	Inrush	Sealed				
V	Ω	Ω	H			
For Contactor LC1F630						
48	1.1	17.1	0.09	**E7**	**LX1FL048**	3.30 (1.500)
110/120	6.45	165	1.85	**F7**	**LX1FL110**	3.30 (1.500)
127	8.1	205	1.05	**G7**	**LX1FL127**	3.30 (1.500)
200/208	20.5	605	2.65	**L7**	**LX1FL200**	3.30 (1.500)
220/240	25.5	730	3.35	**M7**	**LX1FL220**	3.30 (1.500)
265/277	31	900	4.1	**W7**	**LX1FL260**	3.30 (1.500)
380/400	78	2360	10.5	**Q7**	**LX1FL380**	3.30 (1.500)
415/480	96	2960	13	**N7**	**LX1FL415**	3.30 (1.500)
500	120	3660	16.5	**S7**	**LX1FL500**	3.30 (1.500)
550/600	155	4560	19.5	**X7**	**LX1FL600**	3.30 (1.500)
1000	474	12 880	56.2	**–**	**LX1FL1000**	3.30 (1.500)

Specifications

Average consumption at 20 °C (68 °F) for 50 or 60 Hz, cos φ = 0.9:
- inrush: 1500 to 1730 VA.
- sealed: 20 to 25 VA.

Operating cycles/hour (θ ≤ 55 °C [131 °F]): 1200.
Heat dissipation: 20 W
Operating time at Vc: closing = 40 to 80 ms; Opening = 100 to 200 ms

For Contactor LC1F780

Replacement rectifier for use with **LX1FX●●●** coils: **DR5TX5S**.

110/120	4.95 ▲	230 ▲	0.21	**F7**	**LX1FX110 ■**	6.61 (3.000)
127	6.1 ▲	280 ▲	0.26	**G7**	**LX1FX127 ■**	6.61 (3.000)
200/208	15.5 ▲	750 ▲	0.66	**L7**	**LX1FX200 ■**	6.61 (3.000)
220/240	19.5 ▲	920 ▲	0.82	**M7**	**LX1FX220 ■**	6.61 (3.000)
265/277	29.8 ▲	1330 ▲	1.25	**W7**	**LX1FX280 ■**	6.61 (3.000)
380	60.9 ▲	2780 ▲	2.3	**Q7**	**LX1FX380 ■**	6.61 (3.000)
415/480	74.3 ▲	3340 ▲	2.8	**N7**	**LX1FX415 ■**	6.61 (3.000)
500	92 ▲	4180 ▲	3.5	**S7**	**LX1FX500 ■**	6.61 (3.000)

Specifications

Average consumption at 20 °C (68 °F) for 50 or 60 Hz, cos φ = 0.9:
- inrush: 1900 to 2300 VA.
- sealed: 44 to 55 VA.

Operating cycles/hour (θ ≤ 55 °C [131 °F]): 600.
Heat dissipation: 2 x 22 W
Operating time at Vc: closing = 40 to 80 ms; Opening = 130 to 230 ms

For Contactor LC1F800

110/127	–	–	–	FW	**LX4F8FW ∗**	3.64 (1.650)
220/240	–	–	–	MW	**LX4F8MW ∗**	3.64 (1.650)
380/440	–	–	–	QW	**LX4F8QW ∗**	3.64 (1.650)

Specifications

Operating cycles/hour (θ ≤ 55 °C [131 °F]): 600.
Heat dissipation: 25 W
Operating time at Vc: closing = 40 to 80 ms; Opening = 20 to 40 ms

■ Catalog number includes a set of 2 identical coils, to be connected in series.
▲ Value for the 2 coils in series.
∗ Coil circuit requires a separately mounted rectifier catalog number DR5 TE4U.

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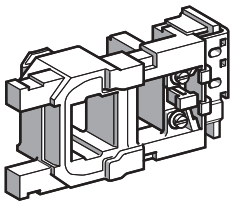
Contactors Type LC1F
Coils for LC1F115 to F400, DC supply

Low sealed consumption.
Operate on networks with harmonic numbers ≤ 7.
Operating cycles/hour (θ ≤ 55 °C [131 °F]) ≤ 2400.

Control circuit voltage Vc	Average resistance at 20 °C (68 °F) ±10%		Inductance of Closed Circuit	Voltage Code	Catalog Number	Weight lb (kg)
	Inrush	Sealed				
V	Ω	Ω	H			

For Contactors LC1F115 and LC1F150



LX4FF•••

24	1.12	177	11	**BD**	**LX4FF024**	0.95 (0.430)
48	4.52	715	42.7	**ED**	**LX4FF048**	0.95 (0.430)
110	21.7	2940	179	**FD**	**LX4FF110**	0.95 (0.430)
125	26.8	3560	223	**GD**	**LX4FF125**	0.95 (0.430)
220/230	84	11 100	704	**MD**	**LX4FF220**	0.95 (0.430)
250	105	13 000	868	**UD**	**LX4FF250**	0.95 (0.430)
440/460	301	48 200	4000	**RD**	**LX4FF440**	0.95 (0.430)

Specifications

Average consumption:
- inrush: 543 to 665 W.
- sealed: 3.94 to 4.83 W.

Operating time at Vc: closing = 30 to 40 ms; Opening = 30 to 50 ms

For Contactors LC1F185 and LC1F225

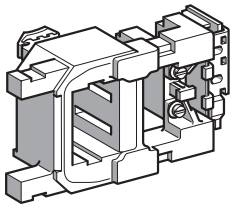
24	0.79	169	14.9	**BD**	**LX4FG024**	1.21 (0.550)
48	3.2	662	55.3	**ED**	**LX4FG048**	1.21 (0.550)
110	14.9	2810	241	**FD**	**LX4FG110**	1.21 (0.550)
125	19.	3320	289	**GD**	**LX4FG125**	1.21 (0.550)
220/230	57.7	10 200	890	**MD**	**LX4FG220**	1.21 (0.550)
250	76.	12 400	1140	**UD**	**LX4FG250**	1.21 (0.550)
440/460	223	39 700	4210	**RD**	**LX4FG440**	1.21 (0.550)

Specifications

Average consumption:
- inrush: 737 to 902 W.
- sealed: 4.13 to 5.07 W.

Operating time at Vc: closing = 30 to 40 ms; Opening = 30 to 50 ms

For Contactors LC1F265 and LC1F330



LX4FH•••

24	0.9	192	26.3	**BD**	**LX4FH024**	1.63 (0.740)
48	3.49	707	92.9	**ED**	**LX4FH048**	1.63 (0.740)
110	16.8	3180	424	**FD**	**LX4FH110**	1.63 (0.740)
125	20.8	3840	530	**GD**	**LX4FH125**	1.63 (0.740)
220/230	65.7	11 500	1590	**MD**	**LX4FH220**	1.63 (0.740)
250	84	13 900	1910	**UD**	**LX4FH250**	1.63 (0.740)
440/460	255	44 000	7570	**RD**	**LX4FH440**	1.63 (0.740)

Specifications

Average consumption:
- inrush: 655 to 803 W.
- sealed: 3.68 to 4.53 W.

Operating time at Vc: closing = 40 to 50 ms; Opening = 40 to 65 ms

For Contactor LC1F400

48	2.5	558	56	**ED**	**LX4FJ048**	2.14 (0.970)
110	12.7	2660	270	**FD**	**LX4FJ110**	2.14 (0.970)
125	15.8	3130	330	**GD**	**LX4FJ125**	2.14 (0.970)
220	47	8820	910	**MD**	**LX4FJ220**	2.14 (0.970)
250	61	10 500	1200	**UD**	**LX4FJ250**	2.14 (0.970)
440	236	33 750	4435	**RD**	**LX4FJ440**	2.14 (0.970)

Specifications

Average consumption:
- inrush: 920 to 1140 W.
- sealed: 4 to 7.5 W.

Operating time at Vc: closing = 50 to 60 ms; Opening = 45 to 60 ms

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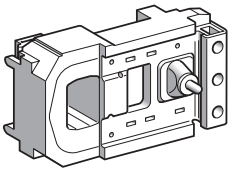
Contactors Type LC1F
Coils for LC1F500 to F800, DC Supply



LX4FK•••

Low sealed consumption.

Control circuit voltage Vc	Average resistance at 20 °C (68 °F) ±10%		Inductance of Closed Circuit	Voltage Code	Catalog Number	Weight lb (kg)
	Inrush	Sealed				
V	Ω	Ω	H			
For Contactor LC1F500						
48	2.35	515	67	**ED**	**LX4FK048**	2.40 (1.080)
110	11.5	2450	280	**FD**	**LX4FK110**	2.40 (1.080)
125	15	2930	400	**GD**	**LX4FK125**	2.40 (1.080)
220	44	8150	1080	**MD**	**LX4FK220**	2.40 (1.080)
250	56	9650	1350	**UD**	**LX4FK250**	2.40 (1.080)
440	225	31 300	5270	**RD**	**LX4FK440**	2.40 (1.080)
Specifications						
Average consumption: - inrush: 990 to 1220 W. - sealed: 4.5 to 8 W. Operating cycles/hour (θ ≤ 55 °C [131 °F]): 2400 Operating time at Vc: closing = 50 to 60 ms; Opening = 45 to 60 ms						
For Contactor LC1F630						
48	1.7	353	40.5	**ED**	**LX4FL048**	3.21 (1.450)
110	8.1	1680	180	**FD**	**LX4FL110**	3.21 (1.450)
125	10	2110	230	**GD**	**LX4FL125**	3.21 (1.450)
220	31	5160	650	**MD**	**LX4FL220**	3.21 (1.450)
250	38	6080	815	**UD**	**LX4FL250**	3.21 (1.450)
440	152	23 120	2910	**RD**	**LX4FL440**	3.21 (1.450)
Specifications						
Average consumption: - inrush: 1420 to 1920 W. - sealed: 6.5 to 72.5 W. Operating cycles/hour (θ ≤ 55 °C [131 °F]): 1200 Operating time at Vc: closing = 60 to 70 ms; Opening = 40 to 50 ms						
For contactor LC1F780						
110	6.1 ▲	280 ▲	0.26	**FD**	**LX4FX110 ■**	6.61 (3.000)
125	7.7 ▲	410 ▲	0.33	**GD**	**LX4FX125 ■**	6.61 (3.000)
220	24.6 ▲	1100 ▲	1	**MD**	**LX4FX220 ■**	6.61 (3.000)
250	29.8 ▲	1330 ▲	1.25	**UD**	**LX4FX250 ■**	6.61 (3.000)
440	92 ▲	4180 ▲	3.5	**RD**	**LX4FX440 ■**	6.61 (3.000)
Specifications						
Average consumption: - inrush: 1960 to 2420 W. - sealed: 42 to 52 W. Operating cycles/hour (θ ≤ 55 °C [131 °F]): 600 Operating time at Vc: closing = 70 to 80 ms; Opening = 100 to 130 ms						
For Contactor LC1F800						
110/127	–	–	–	**FW**	**LX4F8FW ∗**	3.64 (1.650)
220/240	–	–	–	**MW**	**LX4F8MW ∗**	3.64 (1.650)
380/440	–	–	–	**QW**	**LX4F8QW ∗**	3.64 (1.650)
Specifications						
Operating cycles/hour (θ ≤ 55 °C [131 °F]): 600 Heat dissipation: 25 W Operating time at Vc: closing = 40 to 80 ms; Opening = 20 to 40 ms						

■ Catalog number includes a set of 2 identical coils, to be connected in series.

▲ Value of the 2 coils in series.

∗ Coil circuit requires a separately mounted rectifier catalog number DR5 TE4U.

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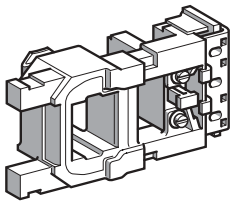
Contactors Type LC1F
Coils for LC1F115 to F330 (specific applications ■)
AC Supply, 40 to 400 Hz

Low sealed consumption.
High tolerance to inrush voltage drops.
Immune to micro-breaks (mains supply or contact chain).
Operate on networks with harmonic numbers ≤ 7.

Control circuit voltage Vc	Average resistance at 20 °C (68 °F) ±10%		Inductance of Closed Circuit	Voltage Code	Catalog Number	Weight lb (kg)
	Inrush	Sealed				
V	Ω	Ω	H			

For Contactors LC1F115 and LC1F150



LX9FF•••

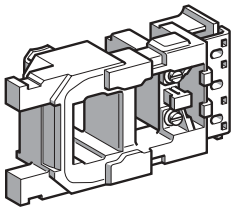
48	3.03	80.2	0.3	**E7**	**LX9FF048**	0.95 (0.430)
110/115	14.8	579	2.08	**F7**	**LX9FF110**	0.95 (0.430)
127	19	746	2.65	**G7**	**LX9FF127**	0.95 (0.430)
220/230	59.4	2190	7.7	**M7**	**LX9FF220**	0.95 (0.430)
240	73.5	2750	9.68	**U7**	**LX9FF240**	0.95 (0.430)
380/400	173	6540	23	**Q7**	**LX9FF380**	0.95 (0.430)
415/440	218	8460	30	**N7**	**LX9FF415**	0.95 (0.430)
500	262	10 300	36	**S7**	**LX9FF500**	0.95 (0.430)

Specifications

Average consumption at 20 °C (68 °F):
- inrush: 690 to 855 VA.
- sealed: 6.6 to 8.1 VA.

Heat dissipation: 5.9 to 7.2 W.
Operating time at Vc: Closing = 35 ms; Opening = 130 ms.
Operating cycles/hour (θ ≤ 55 °C [131 °F]): < 2400.

For Contactors LC1F185 and LC1F225



LX9FG•••

48	2.2	60	0.23	**E7**	**LX9FG048**	1.21 (0.550)
110/115	10.4	411	1.46	**F7**	**LX9FG110**	1.21 (0.550)
127	13	520	1.85	**G7**	**LX9FG127**	1.21 (0.550)
220/230	42.1	1680	5.84	**M7**	**LX9FG220**	1.21 (0.550)
240	50.6	2060	7.22	**U7**	**LX9FG240**	1.21 (0.550)
380/400	128	4730	16.4	**Q7**	**LX9FG380**	1.21 (0.550)
415/440	157	5930	20.6	**N7**	**LX9FG415**	1.21 (0.550)
500	194	7550	26.3	**S7**	**LX9FG500**	1.21 (0.550)

Specifications

Average consumption at 20 °C (68 °F):
- inrush: 950 to 1180 VA.
- sealed: 8.9 to 10.9 VA.

Heat dissipation: 8 to 9.8 W.
Operating time at Vc: Closing = 35 ms; Opening = 130 ms.
Operating cycles/hour (θ ≤ 55 °C [131 °F]): < 2400.

For Contactors LC1F265 and LC1F330

48	2.96	72	▲	–	**LX9FH0482**	1.65 (0.750)
110/115	18.7	415	▲	–	**LX9FH1102**	1.65 (0.750)
120/127	22.9	156	▲	–	**LX9FH1272**	1.65 (0.750)
220/230	71.6	1621	▲	–	**LX9FH2202**	1.65 (0.750)
380/415	222	5075	▲	–	**LX9FH3802**	1.65 (0.750)
500	345	7990	▲	–	**LX9FH5002**	1.65 (0.750)

Specifications

Average consumption at 20 °C (68 °F):
- inrush: 560 to 660 VA.
- sealed: 8 to 10 VA.

Heat dissipation: 8.4 to 10.4 W.
Operating time at Vc: Closing = 45 ms; Opening = 25 ms.
Operating cycles/hour (θ ≤ 55 °C [131 °F]): < 3600.

■ Application examples:
- Hoisting (inching, high operating rate).
- Normal Standby (distributed power supplies).

These coils are specifically designed for use at high ambient temperature (mounting in MCCs, non ventilated enclosures, etc.).

▲ Please consult your Local Square D Field Sales Office.

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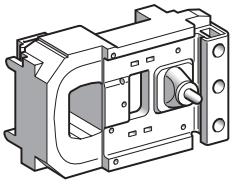
Contactors Type LC1F
Coils for LC1F400 to F630 (specific applications)
AC Supply, 40 to 400 Hz

Coils with short operating times (at Vc):	Closing: Opening:	60 ms 50 ms (c side); 20 ms (a side)
Coils for high operating rates (θ ≤ 70 °C [158 °F]):	3600 operating cycles/hour 1800 for LC1F630	

Coils with low inrush consumption

Control circuit voltage Vc	Average resistance at 20 °C (68 °F) ±10%		Inductance of closed circuit	Rectifier	Coil	
	Inrush	Sealed		Catalog Number ■	Catalog Number	Weight lb (kg)
V	Ω	Ω	H			



LX9FJ•••

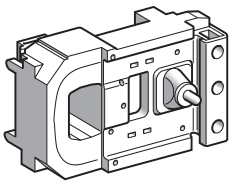
For Contactor LC1F400

48	4.03	43	0.22	**DR5TF4V**	**LX9FJ917**	2.14 (0.970)
110	25.7	246	1.3	**DR5TE4U**	**LX9FJ925**	2.14 (0.970)
127	32.3	302	1.7	**DR5TE4U**	**LX9FJ926**	2.14 (0.970)
220/230	99.5	919	5	**DR5TE4U**	**LX9FJ931**	2.14 (0.970)
380/415	311	3011	15	**DR5TE4S**	**LX9FJ936**	2.14 (0.970)
440	386	3690	19	**DR5TE4S**	**LX9FJ937**	2.14 (0.970)
500	478	4380	23	**DR5TE4S**	**LX9FJ938**	2.14 (0.970)

Specifications

Average consumption:
- inrush: 500 VA.
- sealed: 23 VA.

Heat dissipation: 11.4 to 13.9 W.



LX9FK•••

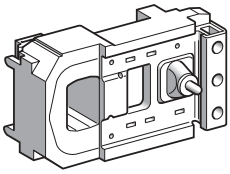
For Contactor LC1F500

48	3.73	30.7	0.18	**DR5TF4V**	**LX9FK917**	2.38 (1.080)
110	24	204	1.1	**DR5TE4U**	**LX9FK925**	2.38 (1.080)
127	29.8	250	1.4	**DR5TE4U**	**LX9FK926**	2.38 (1.080)
220/230	89.9	770	4	**DR5TE4U**	**LX9FK931**	2.38 (1.080)
380/415	274	2075	12	**DR5TE4S**	**LX9FK936**	2.38 (1.080)
440	361	3060	16	**DR5TE4S**	**LX9FK937**	2.38 (1.080)
500	448	3750	19	**DR5TE4S**	**LX9FK938**	2.38 (1.080)

Specifications

Average consumption:
- inrush: 550 VA.
- sealed: 31 VA.

Heat dissipation: 15 to 18.3 W.



LX9FL•••

For Contactor LC1F630

48	2.81	20.8	0.17	**DR5TF4V**	**LX9FL917**	3.20 (1.450)
110	13.5	114	0.77	**DR5TE4U**	**LX9FL924**	3.20 (1.450)
127	20.8	167	1.2	**DR5TE4U**	**LX9FL926**	3.20 (1.450)
220	52	425	2.9	**DR5TE4U**	**LX9FL930**	3.20 (1.450)
220/240	64.5	518	3.6	**DR5TE4U**	**LX9FL931**	3.20 (1.450)
380/400	163	1360	8.8	**DR5TE4S**	**LX9FL935**	3.20 (1.450)
415/440	204	1670	11	**DR5TE4S**	**LX9FL936**	3.20 (1.450)
500	312	2510	17	**DR5TE4S**	**LX9FL938**	3.20 (1.450)

Specifications

Average consumption:
- inrush: 830 VA.
- sealed: 47 VA.

Heat dissipation: 22.8 to 27.8 W.

■ Rectifier to be ordered separately; weight of rectifier: 0.100 kg (0.22 lbs).

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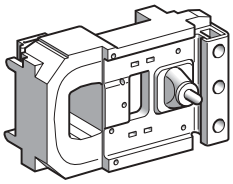
Contactors Type LC1F
Coils for LC1F400 to F630 (specific applications)
DC Supply

Coils with short operating times (at Vc):	Closing:	60 ms
	Opening:	20 ms
Coils with high operating rates (θ ≤ 70 °C [158 °F]):	3600 operating cycles/hour 1800 for LC1F630	

Coils with low inrush consumption



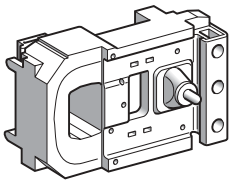
LX9FJ•••

For Contactor LC1F400

Control circuit voltage Vc	Average resistance at 20 °C (68 °F) ±10%		Inductance of closed circuit	Resistor	Coil	
	Inrush	Sealed		Quantity and Catalog Number ■	Catalog Number	Weight lb (kg)
V	Ω	Ω	**H**			
48	5.11	99	0.27	**1 x DR2SC0047**	**LX9FJ918**	2.14 (0.970)
110	32.3	632	1.7	**1 x DR2SC0330**	**LX9FJ926**	2.14 (0.970)
125	39.4	760	2	**1 x DR2SC0390**	**LX9FJ927**	2.14 (0.970)
220	123	2320	6.1	**1 x DR2SC1200**	**LX9FJ932**	2.14 (0.970)
440/460	478	9080	23	**1 x DR2SC4700**	**LX9FJ938**	2.14 (0.970)

Specifications

Average consumption:
- inrush: 430 W.
- sealed: 22 W.



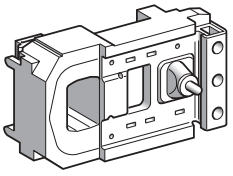
LX9FK•••

For Contactor LC1F500

48	4.67	76.7	0.22	**1 x DR2SC0039**	**LX9FK918**	2.38 (1.080)
110	29.8	470	1.4	**1 x DR2SC0220**	**LX9FK926**	2.38 (1.080)
125	37.4	637	1.7	**1 x DR2SC0330**	**LX9FK927**	2.38 (1.080)
220	115	1935	5.1	**1 x DR2SC1000**	**LX9FK932**	2.38 (1.080)
440/460	448	7050	19	**1 x DR2SC3300**	**LX9FK938**	2.38 (1.080)

Specifications

Average consumption:
- inrush: 470 W.
- sealed: 29 W.



LX9FL•••

For Contactor LC1F630

48	3.43	52.9	0.20	**2 x DR2SC0047**	**LX9FL918**	3.20 (1.450)
110	17.2	272	0.98	**2 x DR2SC0270**	**LX9FL925**	3.20 (1.450)
125	20.8	333	1.2	**2 x DR2SC0330**	**LX9FL926**	3.20 (1.450)
220	64.5	1018	3.6	**2 x DR2SC1000**	**LX9FL931**	3.20 (1.450)
440/460	260	4010	14	**2 x DR2SC3900**	**LX9FL937**	3.20 (1.450)

Specifications

Average consumption:
- inrush: 733 W.
- sealed: 48 W.

■ Resistors to be ordered separately, weight of resistor: 0.030 kg (0.06 lbs).

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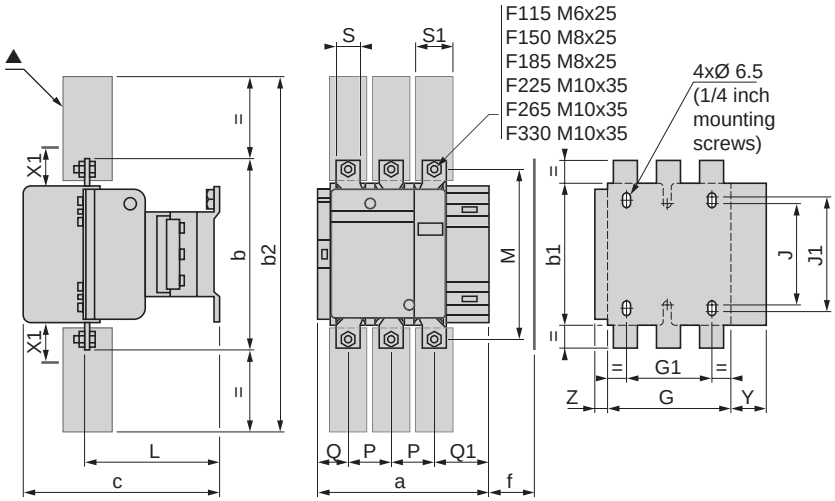
Contactors Type LC1F
Dimensions

Dimensions shown in mm (mm x 0.0394 = inches)

LC1F115 to F330



X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity

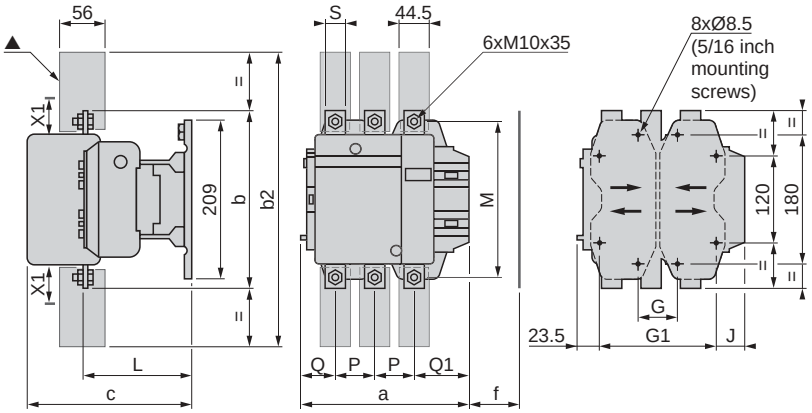
	200 to 500 V	600 to 1000 V
LC1F115, LC1F150	10	15
LC1F185	10	15
LC1F225, LC1F265	10	15
LC1F330	10	15

▲ Power terminal protection shroud (see page 198).
f Minimum distance required for coil removal.

LC1-		a	b	b1	b2	c	f	G	G1	J	J1	L	M	P	Q	Q1	S	S1	Y	Z
F115	3P	163.5	162	137	265	171	131	106	80	106	120	107	147	37	29.5	60	20	26	44	13.5
	4P	200.5	162	137	265	171	131	143	80	106	120	107	147	37	29.5	60	20	26	44	13.5
F150	3P	163.5	170	137	301	171	131	106	80	106	120	107	150	40	26	57.5	20	34	44	13.5
	4P	200.5	170	137	301	171	131	143	80	106	120	107	150	40	26	55.5	20	34	44	13.5
F185	3P	168.5	174	137	305	181	130	111	80	106	120	113.5	154	40	29	59.5	20	34	44	13.5
	4P	208.5	174	137	305	181	130	151	80	106	120	113.5	154	40	29	59.5	20	34	44	13.5
F225	3P	168.5	197	137	364	181	130	111	80	106	120	113.5	172	48	21	51.5	25	44.5	44	13.5
	4P	208.5	197	137	364	181	130	151	80	106	120	113.5	172	48	17	47.5	25	44.5	44	13.5
F265	3P	201.5	203	145	375	213	147	142	96	106	120	141	178	48	39	66.5	25	44.5	38	21.5
	4P	244.5	203	145	375	213	147	190	96	106	120	141	178	48	34	66.5	25	44.5	38	21.5
F330	3P	213	206	145	375	219	147	154.5	96	106	120	145	181	48	43	74	25	44.5	38	20.5
	4P	261	206	145	375	219	147	202.5	96	106	120	145	181	48	43	74	25	44.5	38	20.5

f = minimum distance required for coil removal

LC1F400 and F500



Dimensions shown in mm
mm x 0.0394 = inches

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity

	200 to 500 V	600 to 1000 V
LC1F400	15	20
LC1F500	15	20

▲ Power terminal protection shroud (see page 198).
f Minimum distance required for coil removal.

LC1-		a	b	b2	c	f	G*	G min	G max	G1 ■	G1 min	G1 max	J	L	M	P	Q	Q1	S
F400	2P	213	206	375	219	119	80	66	102	170	156	192	19.5	145	181	48	69	96	25
	3P	213	206	375	219	119	80	66	102	170	156	192	19.5	145	181	48	43	74	25
	4P	261	206	375	219	119	80	66	150	170	156	240	67.5	145	181	48	43	74	25
F500	2P	233	238	400	232	141	80	66	120	170	156	210	39.5	146	208	55	76	102	30
	3P	233	238	400	232	141	80	66	120	170	156	210	39.5	146	208	55	46	77	30
	4P	288	238	400	232	141	140	66	175	230	156	265	34.5	146	208	55	46	77	30

■ Supplied.

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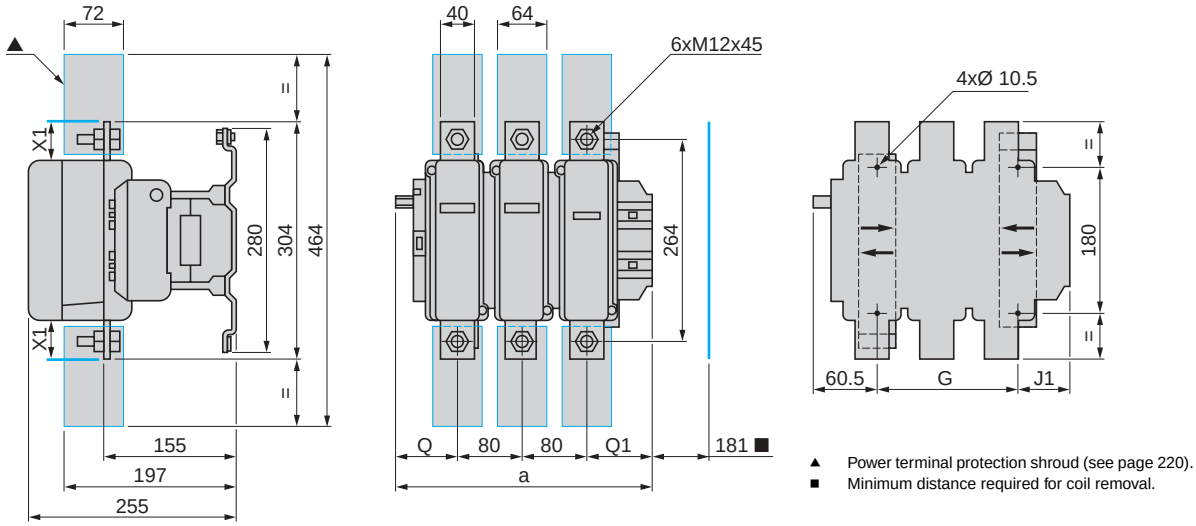
Contactors Type LC1F
Dimensions

Dimensions shown in mm (mm x 0.0394 = inches)

LC1F630 and F800



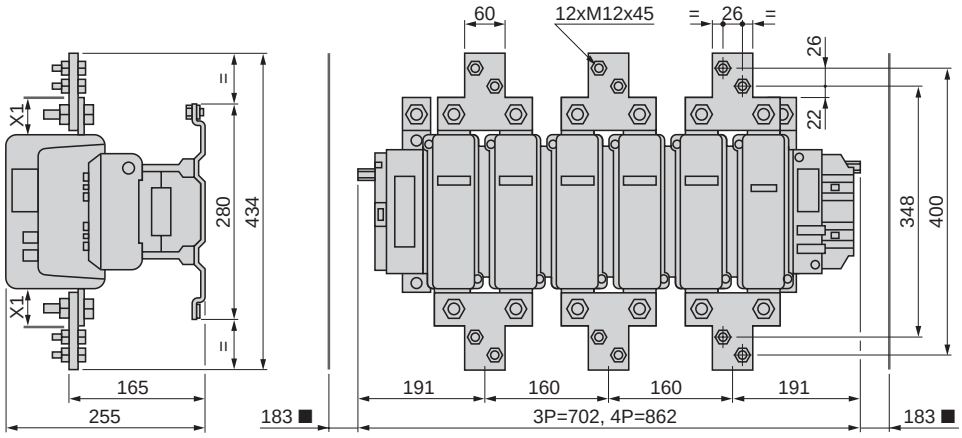
▲ Power terminal protection shroud (see page 220).
■ Minimum distance required for coil removal.

		a	G supplied	G min	G max	J1	Q	Q1
LC1F630	2P	309	180	100	195	68.5	102	127
LC1F630 LC1F800	3P	309	180	100	195	68.5	60	89
LC1F630	4P	389	240	150	275	68.5	60	89

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity

Voltage	**200 to 500 V**	**690 to 1000 V**	**200 to 690 V**	**1000 V**
LC1F630	20	30	–	–
LC1F800	–	–	10	20

LC1F780

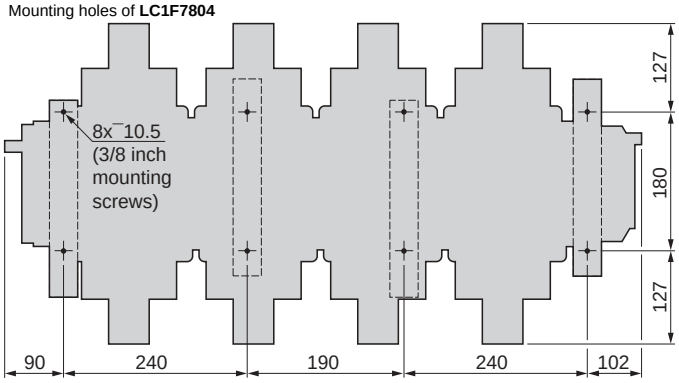


X1 (mm) = Min. electrical clearance according to operating voltage and breaking capacity

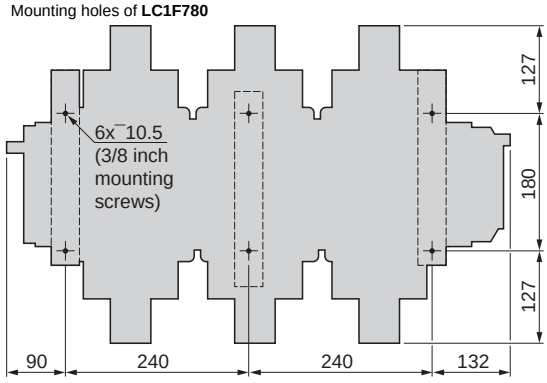
Voltage	200 to 500 V	690 to 1000 V
X1 (mm)	30	35

■ Minimum distance required for coil removal.

Mounting holes of **LC1F7804**



Mounting holes of **LC1F780**



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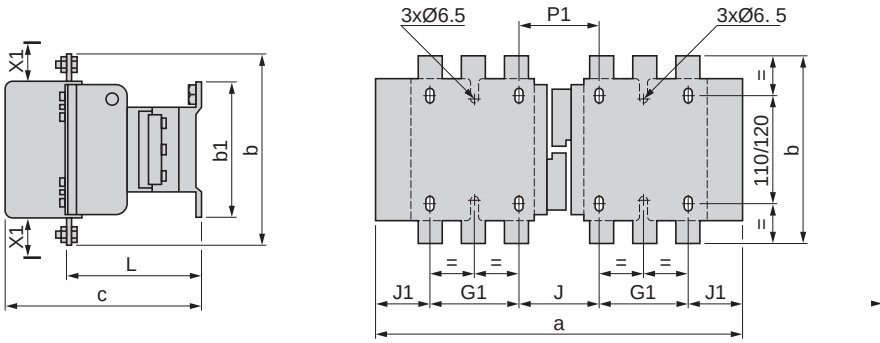
Reversing contactors and changeover contactor pairs LC2F
Horizontally mounted

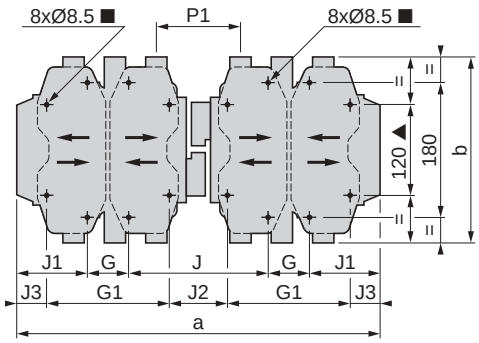
Dimensions shown in mm (mm x 0.0394 = inches)

For customer assembly, see pages 190 to 193.

2 x LC1F115 to LC1F330



2 x LC1F400, F500, F630, F800



X1 (mm) = Minimum electrical clearance according to operational voltage and breaking capacity

	200 to 500 V	660 to 1000 V	200 to 690 V	1000 V
LC1F115, LC1F150	10	15	–	–
LC1F185	10	15	–	–
LC1F225, LC1F265	10	15	–	–
LC1F330	10	15	–	–
LC1F400	15	20	–	–
LC1F500	15	20	–	–
LC1F630	20	30	–	–
LC1F800	–	–	10	20

2 x		a	b	b1	c	G	G1	J	J1	J2	J3	L	P1
LC1F115	3P	345	162	137	171	–	80	71	57	–	–	107	77
	4P	419	162	137	171	–	80	108	75.5	–	–	107	77
LC1F150	3P	345	170	137	171	–	80	71	57	–	–	107	71
	4P	422	170	137	171	–	80	111	75.5	–	–	107	71
LC1F185	3P	357	174	137	181	–	80	78	59.5	–	–	113.5	78
	4P	437	174	137	181	–	80	118	79.5	–	–	113.5	78
LC1F225	3P	357	197	137	181	–	80	78	59.5	–	–	113.5	62
	4P	437	197	137	181	–	80	118	79.5	–	–	113.5	54
LC1F265	3P	425	203	145	213	–	96	109	61.5	–	–	141	100
	4P	521	203	145	213	–	96	157	85.5	–	–	141	100
LC1F330	3P	447	206	145	219	–	96	124	65.5	–	–	145	107
	4P	543	206	145	219	–	96	172	89.5	–	–	145	107
LC1F400	3P	446	206	209	219	80	170	157	64.5	67	19.5	145	107
	4P	542	206	209	219	80	170	157	112.5	67	67.5	145	107
LC1F500	3P	485	238	209	232	80	170	156	84.5	66	39.5	146	112
	4P	595	238	209	232	140	230	156	79.5	66	34.5	146	112
LC1F630	3P	636	304	280	255	180	–	139	68.5	–	–	155	137
	4P	796	304	280	255	240	–	139	88.5	–	–	155	137
LC1F800	3P	636	304	280	255	180	–	139	68,5	–	–	155	137

■ Except **LC1F630** and **LC1F800**: 4 x Ø 10.5.

▲ Except **LC1F630**.and **LC1F800**

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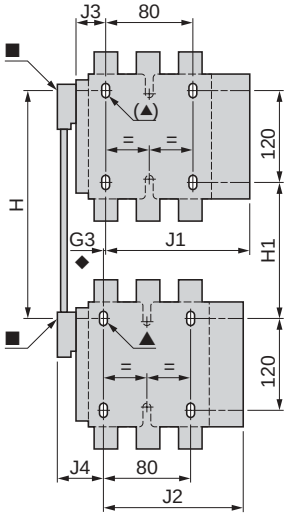
Reversing contactors and changeover contactor pairs LC2F
Vertically mounted

Dimensions shown in mm (mm x 0.0394 = inches)

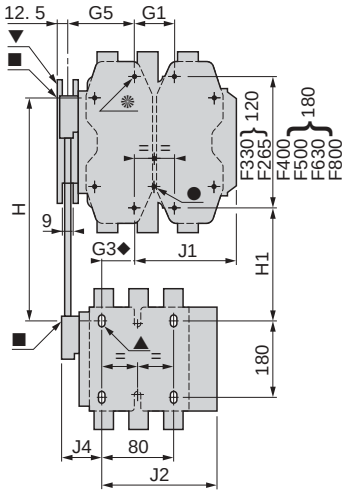
For customer assembly, with mechanical interlock (MI) **LA9F•••**.
2 x **LC1** identical or different ratings (**LC1F115** to **LC1F630** and **LC1F800**). See pages 190 to 193.

Assembly A

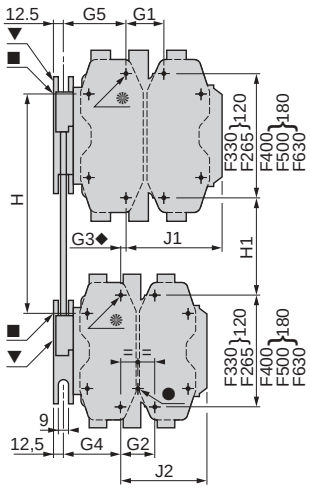


■ Mechanical interlock shaft.
▲ 4 x Ø6.5 for LC1F115 to LC1F225
♦ For assembly of contactors of different ratings only.
▼ Mechanical interlock guide bracket.
✱ 4 x Ø8.5 for LC1F400, LC1F500 or 4 x Ø10.5 for LC1F630, LC1F800.
● 4 x Ø6.5 for LC1F265.

Assembly B



Assembly C

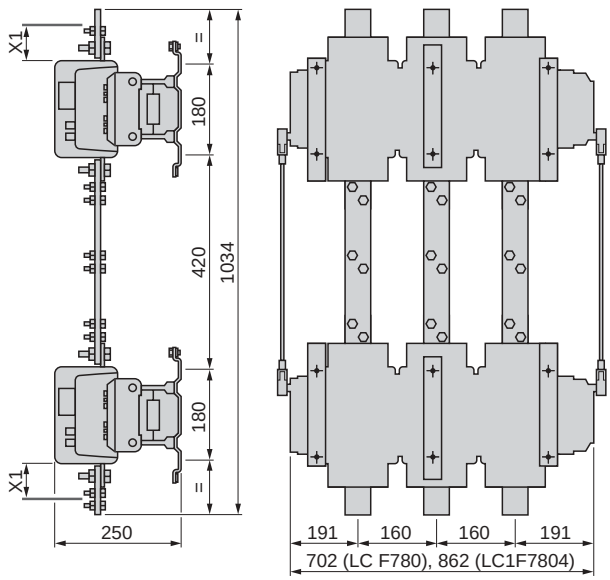


Assembly A (F800 in 3-pole only)

MI	G3		H		H1		J1	
Catalog #	3P	4P	min	max	min	max	3P	4P
LA9FF4F	0	0	200	310	80	190	137	155.5
LA9FG4F	3	4	210	300	90	180	139.5	159.5
LA9FG4G	0	0	220	310	100	190	139.5	159.5

	J2		J3		J4	
	3P	4P	3P	4P	3P	4P
LA9FF4F	137	155.5	48.5	67	48.5	67
LA9FG4F	137	155.5	53	73	54	69
LA9FG4G	139.5	159.5	53	73	53	73

For customer assembly, mounting recommended on **AM1EC•••** uprights,
2 x **LC1F780**



X1 and mounting holes, see page 211.

Assembly B (F800 in 3-pole only)

MI	G1		G3		G5		H	
Catalog #	3P	4P	3P	4P	3P	4P	min	max
LA9FH4F	96	96	21	27	60	83	240	380
LA9FJ4F	80	80	45	26	83	83	250	380
LA9FK4F	80	140	45	26	83	83	270	380
LA9FL4F	180	240	35	17	74	74	310	380
LA9FH4G	96	96	19	23	60	83	250	380
LA9FJ4G	80	80	42	22	83	83	250	380
LA9FK4G	80	140	42	22	83	83	270	380
LA9FL4G	180	240	33	13	74	74	310	380

	H1		J1		J2		J4	
	min	max	3P	4P	3P	4P	3P	4P
LA9FH4F	110	250	157.5	181.5	137	155.5	48.5	67
LA9FJ4F	80	210	144.5	192.5	137	155.5	48.5	67
LA9FK4F	100	210	164.5	219.5	137	155.5	48.5	67
LA9FL4F	140	210	248.5	328.5	137	155.5	48.5	67
LA9FH4G	120	250	157.5	181.5	139.5	159.5	53	73
LA9FJ4G	90	220	144.5	192.5	139.5	159.5	53	73
LA9FK4G	110	220	164.5	219.5	139.5	159.5	53	73
LA9FL4G	150	220	248.5	328.5	139.5	159.5	53	73

Assembly C (F800 in 3-pole only)

MI	G1		G2		G3		G4		G5	
Catalog #	3P	4P	3P	4P	3P	4P	3P	4P	3P	4P
LA9FH4H	96	96	96	96	0	0	60	83	60	83
LA9FJ4H	80	80	96	96	23	0	60	83	83	83
LA9FK4H	80	140	96	96	23	0	60	83	83	83
LA9FL4H	180	240	96	96	14	9 ▼	60	83	74	74
LA9FJ4J	80	80	80	80	0	0	83	83	83	83
LA9FK4J	80	140	80	80	0	0	83	83	83	83
LA9FL4J	180	240	80	80	9 ▼	9 ▼	83	83	74	74
LA9FK4K	80	140	80	140	0	0	83	83	83	83
LA9FL4K	180	240	80	140	9 ▼	9 ▼	83	83	74	74
LA9FL4L	180	240	180	240	0	0	74	74	74	74

	H		H1		J1		J2	
	min	max	min	max	3P	4P	3P	4P
LA9FH4H	250	380	130	260	157.5	181.5	157.5	181.5
LA9FJ4H	260	380	110	230	144.5	192.5	157.5	181.5
LA9FK4H	280	380	130	230	164.5	219.5	157.5	181.5
LA9FL4H	330	380	170	220	248.5	328.5	157.5	181.5
LA9FJ4J	260	380	60	200	144.5	192.5	144.5	192.5
LA9FK4J	280	380	100	200	164.5	219.5	144.5	192.5
LA9FL4J	325	380	140	195	248.5	329.5	144.5	192.5
LA9FK4K	300	380	120	200	164.5	329.5	164.5	219.5
LA9FL4K	345	380	160	195	248.5	328.5	164.5	219.5
LA9FL4L	380	380	200	200	248.5	328.5	248.5	328.5

▼ In this case, G4 is greater than G5

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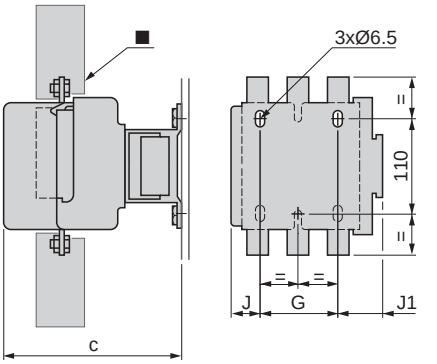
Contactors Type LC1F
Mounting

Dimensions shown in mm (mm x 0.0394 = inches)

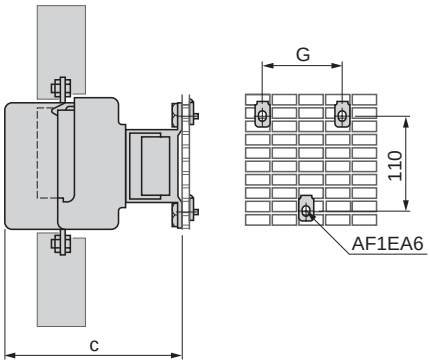
LC1F115 to LC1F330

On panel



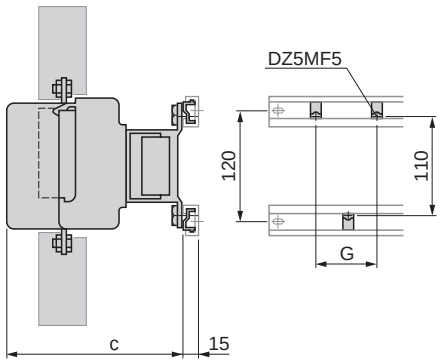
		LC1F115, LC1F150	LC1F185, LC1F225	LC1 F265	LC1 F330
c ▲	3P	171	181	213	219
	4P	171	181	213	219
G	3P	80	80	96	96
	4P	80	80	96	96
J	3P	26.5	29	44.5	44.5
	4P	45	49	68.5	68.5
J1	3P	57	59.5	61.5	61.5
	4P	75.5	79.5	85.5	85.5

On pre-slotted mounting plate **AM1PA**, **AM1PB**, **AM1PC**



		LC1F115, LC1F150	LC1F185, LC1F225	LC1 F265	LC1 F330
c ▲	3P	171	181	213	219
	4P	171	181	213	219
G	3P	80	80	96	96
	4P	80	80	96	96

On rails **DZ5MB** on 120 mm center



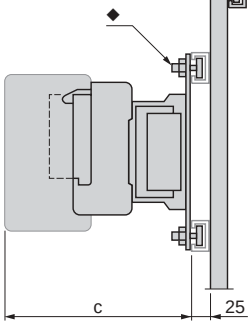
		LC1F115, LC1F150	LC1F185, LC1F225	LC1 F265	LC1 F330
c ▲	3P	171	181	213	219
	4P	171	181	213	219
G	3P	80	80	96	96
	4P	80	80	96	96

■ Power terminal protection shroud (see page 198)

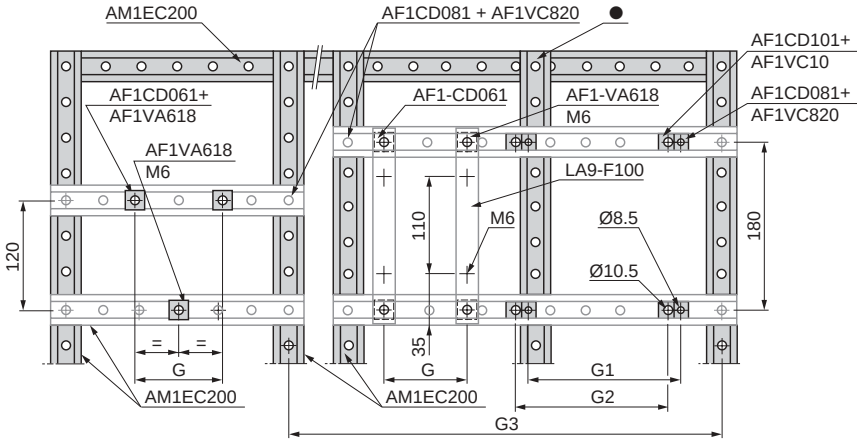
▲ See X1, minimum electrical clearance on pages 210 and 211.

LC1F

On 2 notched rails AM1-EC•••



LC1F115 to LC1F330



LC1F400 to LC1F800

		LC1F115, LC1F150	LC1F185, LC1F225	LC1F265	LC1F330	LC1F400	LC1F500	LC1F630	LC1F780	LC1F800
c	3P	165 ▼	176	207	213	219	232	255	255	255
	4P	165 ▼	176	207	213	219	232	255	255	–
G (M6)	3P	80	80	96	96	–	–	–	–	–
	4P	80	80	96	96	–	–	–	–	–
G1 (Ø 8.5)	3P	–	–	–	–	80	80	–	–	–
	4P	–	–	–	–	80	140	–	–	–
G2 (Ø 10.5)	3P	–	–	–	–	–	–	180	See page 211	
	4P	–	–	–	–	–	–	240	1/129	–

◆ **AF1CD•••** and **AF1VA•••**.

● This **AM1EC200** upright is required when G2 or G3 is greater than 700 mm.

▼ Add 6 mm with timer block on **LC1F**.

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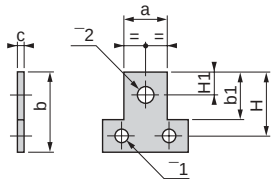
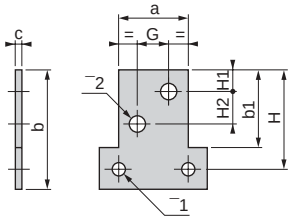
Contactors Type LC1F
Cabling Accessories

Dimensions shown in mm (mm x 0.0394 = inches)

Paralleling links (set of 4)
LA9FF, FG, FH602

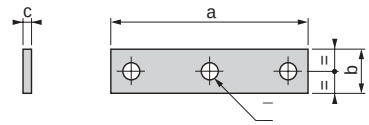


LA9FK, LA9FL602



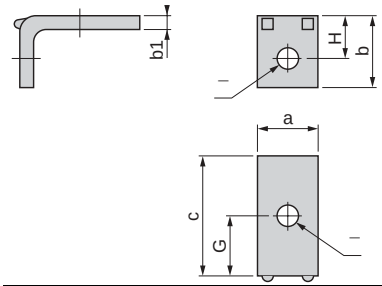
	LA9FF602	LA9FG602	LA9FH602	LA9FK602	LA9FL602
a	25	30	40	50	60
b	45	55	60	85	100
b1	30	35	40	55	65
c	4	5	8	10	10
G	–	–	–	22	26
H	37.5	45	52.5	70	85
H1	12.5	15	15	14	17
H2	–	–	–	22	26
Ø1	6.5	9	11	11	13
Ø2	11	11	13	11	14

Bars for 3-pole star connection LA9F•601



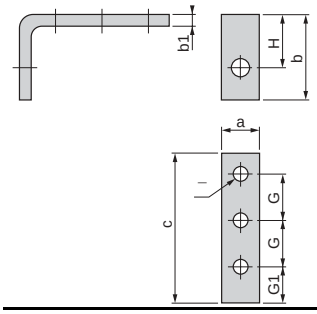
	LA9FF601	LA9FG601	LA9FH601	LA9FK601	LA9FL601
a	89	100	121	140	200
b	15	20	20	30	40
c	3	3	5	5	8
Ø	6.5 x 8.5	8.5 x 10.5	10.5 x 13	11	13

Brackets LA9F•981 (set of 3) for back connection



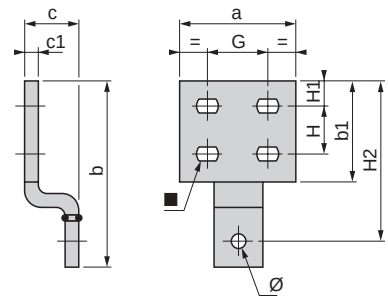
	LA9FF981	LA9FG981	LA9FJ981	LA9FK981	LA9FL981
a	15	20	25	30	40
b	18	23	29	35	48
b1	3	3	4	5	8
c	42	45	55	52	86
G	24	26	32.5	26	45
H	10.5	13	16.5	20	28
Ø	6.5	9	11	11	13

Brackets LA9F•979 (set of 3) for side connection



	LA9FF979	LA9FG979	LA9FJ979	LA9FK979	LA9FL979
a	15	20	25	30	40
b	54	58	63.5	68	117
b1	5	5	6	6	10
c	80	92	120	120	130
G	24	28	37	37	37.5
G1	20	22	29	29	35
H	36	39	41	42	76
Ø	6.5	9	11	11	13

Wide range brackets LA9F•980 (set of 3)



	LA9FF980	LA9FG980	LA9FJ980	LA9FK980	LA9FL980
a	35	40	50	60	100
b	70.5	82.5	98.5	114	154
b1	40	45	55	65	85
c	29	29	33	33	43
c1	3	3	5	5	10
G	18	20	25	29	53
H	18	20	22	26	40
H1	10	12	14	17	20
H2	60.5	72.5	84.5	97	132
Ø	6.5	9	11	11	13
■	Ø7 x 10	Ø9 x 12	Ø11 x 14	Ø12.5 x 15	Ø12.5 x 15

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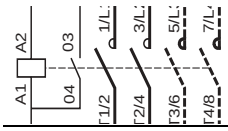
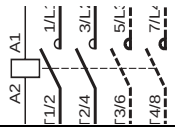
Contactors Type LC1F
Schematics

2-, 3-, and 4-pole contactors

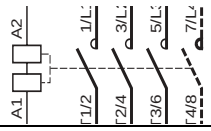
LC1F115 to LC1F630 (coil LX1F AC)



LC1F115 to LC1F630 (coil LX4F DC)
LC1F115 to LC1F265 (coil LX9F AC)
LC1F800 (coil LX8F AC/DC)

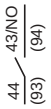


LC1F780, 3- and 4-poles AC or DC

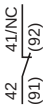


Front-mounting contact blocks
Instantaneous auxiliary contacts

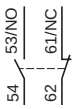
1 N.O. LA1DN10 ■



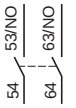
1 N.C. LA1DN01 ■



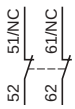
1 N.O. + 1 N.C. LA1DN11



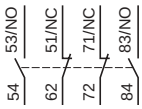
2 N.O. LA1DN20



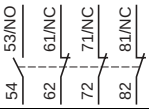
2 N.C. LA1DN02



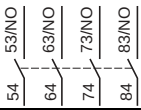
2 N.O. + 2 N.C. LA1DN22



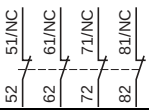
1 N.O. + 3 N.C. LA1DN13



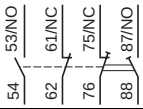
4 N.O. LA1DN40



4 N.C. LA1DN04



2 N.O. + 2 N.C. including 1 N.O. + 1 N.C. make before break LA1DC22

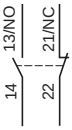


3 N.O. + 1 N.C. LA1DN31

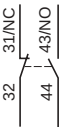
■ Items in brackets are for blocks mounted on right-hand side of contactor.

Front-mounting contact blocks
Instantaneous auxiliary contacts with terminal referencing conforming to standard EN 50012 (References: pages 218 and 219)

1 N.O. + 1 N.C. LA1DN11P

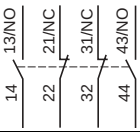


1 N.O. + 1 N.C. LA1DN11G

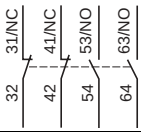


1 N.O. + 1 N.C. LA1DN11M

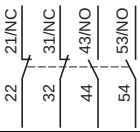
2 N.O. + 2 N.C. LA1DN22P



2 N.O. + 2 N.C. LA1DN22G

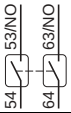


2 N.O. + 2 N.C. LA1DN22M

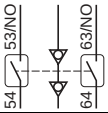


Front-mounting contact blocks
Dust and damp protected instantaneous auxiliary contacts

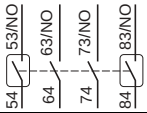
2 N.O. (24-50 V) LA1DX20



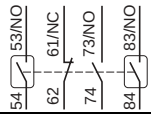
2 N.O. (5-24 V) LA1DY20



2 N.O. protected (24-50 V) + 2 N.O. standard LA1DZ40

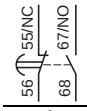


2 N.O. protected (24-50 V) + 1 N.O. + 1 N.C. standard LA1DZ31

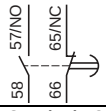


Front-mounting contact blocks
Time delay auxiliary contacts

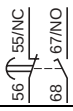
OnDelay 1 N.O. + 1 N.C. LA2DT•



Off Delay 1 N.O. + 1 N.C. LA3DR•

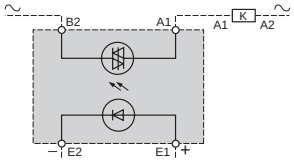


On Delay N.C. contact with N.O. break before make contact LA2DS•



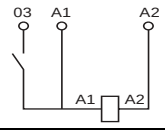
Interface module

LA4FWB

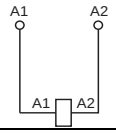


Standard AC coils

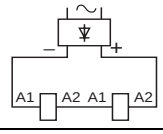
LX1FF,FG, FJ to LX1FL
LX1FH0422 to LX1FH3802



LX1FH0202 to LX1FH0362
LX1FH4402 to LX1FH10002
LX8F8•W (AC / DC)

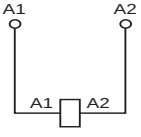


LX1FX
Rectifier supplied and attached to the contactor

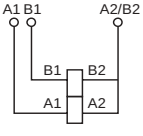


Special AC coils

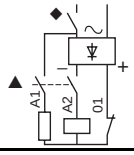
LX9FF, LX9FG



LX9FH•••2



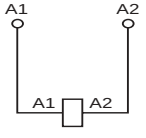
LX9FJ, LX9FK, LX9FL



♦ Breaking on AC side
Drop-out time 50 ms
▲ Breaking on DC side
Drop-out time 20 ms

DC coils

LX4FF, FG, FH, FJ, FK, FL, FX ■



■ 2 coils in series

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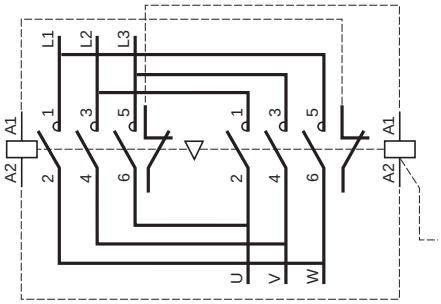
Reversing Contactors and Changeover Contactors

Reversing contactors for motor control, horizontally mounted

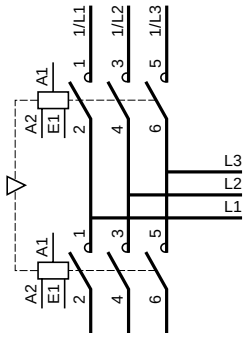
2 x LC1F



Dashed lines indicate suggested customer wiring to electrically interlock coils using quantity of 2 **LA1DN•1** auxiliary contact blocks.

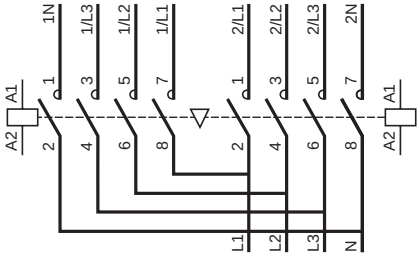
Reversing contactors for motor control, vertically mounted

2 x LC1F



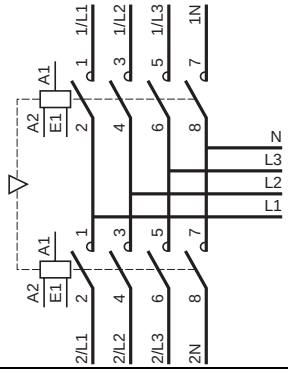
Changeover contactor pairs for distribution, horizontally mounted

2 x LC1F

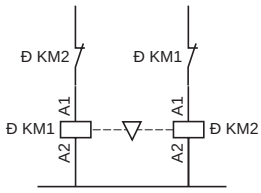


Changeover contactor pairs for distribution, vertically mounted

2 x LC1F



Electrical interlocking of reversers with:
mechanical interlock LA9F•••
without integrated electrical contacts



Note: Must use quantity of 2 **LA1DN•1** auxiliary contact blocks to provide electrical interlocking of coils. See diagram with dashed lines above.

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Introduction

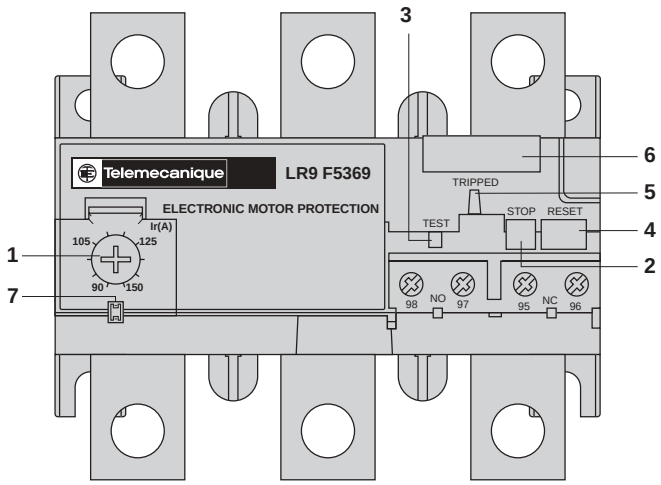
The LR9F solid state overload relay provides the accurate, repeatable protection of a solid state device, while still maintaining the ease of installation of a traditional overload relay.

The LR9F provides protection against:

- Motor Overload
- Failure or Phase unbalance of 30% or greater
- Prolonged starting times
- Locked rotor conditions

The LR9F overload relays have 8 current ranges, spanning 30 amps up to 630 amps. They are available in Class 10 trip or Class 20 trip models. The device is manually reset via a clearly labeled button on the front face. A separate attachment is available for remote reset or test tripping of the relay. All units incorporate both a normally open and normally closed contact for control circuit wiring.

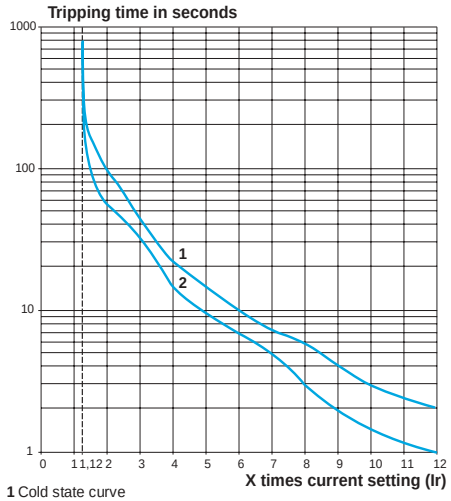
The LR9F is designed to directly mount on the load side of a LC1F contactor, minimizing space and wiring time. Lugs for the LR9F are ordered separately (see page 220 for selection). For LR9F relays up to 185 amps, an interposing touch-safe terminal block may be ordered in place of lugs, making power wiring even easier.



1. Trip Current Adjustment Dial
2. Stop Button
3. Test Button
4. Reset Button
5. Trip Indicator
6. Clip-on Legend
7. Transparent Cover with Sealing Provisions

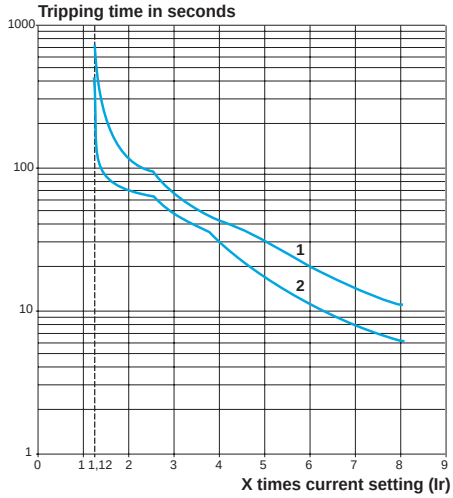
LR9F Tripping Curve
Average operating times depending on multiples of the current setting

Class 10



1 Cold state curve
2 Hot state curve

Class 20



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Environment

Conforming to standards	CE Meets the essential requirements of LV & EMC directives.		IEC 60947-1, 60947-4-1, 255-8, and VDE 0660EN 60947-1. 60947-4-1
Approvals	UL EI64353 NKCR; CSA LR43364 3211 03		UL508; CSA 22-2, No.14; PTB Pending
Degree of protection	Conforming to VDE 0106		IP 20 - Protection against direct finger contact with LA9F103 insulated terminal blocks or LA9F7/LA7F7 shrouds
Protective treatment	Standard version		"TH"
Ambient air temperature around the device (conforming to IEC 60255-8)	Storage		–40 to + 85 °C (–40 to +185 °F)
	Normal operation		–20 to + 55 °C (-4 to +131 °F)
Maximum operating altitude	Without derating	m	2000
Operating positions without derating	In relation to normal vertical mounting plane		All positions
Shock resistance	Permissible acceleration conforming to IEC 60068-2-7		13 g - 11 ms
Vibration resistance	Permissible acceleration conforming to IEC 60068-2-6		2 g
Dielectric strength at 50 Hz	Conforming to IEC 60255-5	kV	6
Impulse withstand voltage	Conforming to IEC 60801-5	kV	4
Resistance to electrostatic discharges	Conforming to IEC 60801-2	kV	8 (in air) 6 (in indirect mode)
Resistance to radio-frequency conducted disturbances	Conforming to IEC 60801-3 and NF C 46-022	V/m	10
Resistance to fast transient currents	Conforming to IEC 60801-4	kV	2
Electromagnetic compatibility	EN50081-1 & 2, EN50082-2		Meets test requirements

Power Circuit Characteristics

Relay Type		LR9F	F5•57	F5•63 F5•67 F5•69	F5•71	F7•75	F7•79	F7•81
Rated insulation voltage (Vi)	Conforming to IEC 60947-4	V	1000					
Rated operational voltage (Ve)	Conforming to VDE 0110 gr C	V	1000					
Rated impulse withstand voltage (Vimp)	Conforming to IEC 60947-1	kV	8					
Rated operational current (Ie)		A	30 to 630					
Frequency limits	Of the operating current	Hz	50/60					
Power circuit connections	Width of terminal lug	mm (in)	20 (0.78)	25 (0.98)	25 (0.98)	30 (1.18)	40 (1.57)	40 (1.57)
	Clamping screw		M6	M8	M10	M10	M10	M12
	Tightening torque	lb • in	90	160	310	310	310	515
		N • m	10	18	35	35	35	58

Auxiliary contact characteristics

Rated thermal current			A	5					
Control circuit connections				Minimum		Maximum			
	Stranded cable without cable end	1 conductor	mm^2	1 x 0.75		1 x 4.0			
		2 conductors		2 x 1.0		2 x 2.5			
		1 conductor	AWG	1 x 18		2 x 12			
		2 conductors		2 x 16		2 x 14			
	Stranded cable with cable end	1 conductor	mm^2	1 x 0.75		1 x 2.5			
		2 conductors		2 x 1.0		2 x 1.5			
	Solid cable	1 conductor	mm^2	1 x 0.75		1 x 2.5			
		2 conductors		2 x 1.0		2 x 1.0			
	Tightening torque		lb • in	11					
			N • m	1.2					
Maximum sealed consumption of coils on controlled contactors	AC control		V	24	48	110	220	380	600
			VA	100	200	400	600	600	600
	DC control		V	24	48	110	220	440	–
			W	100	100	50	45	25	–

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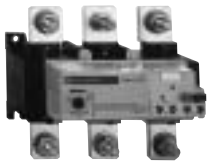
LR9F53•••



LR9F73•••

Three-Phase Overload Relays ■

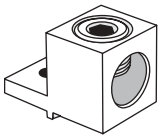
Current Setting Range Amps	For Direct Mounting To Contactor LC1••••/CR1F••••	Class 10 Trip ▲ Catalog Number	Class 20 Trip ▲ Catalog Number
30 to 50	F115 to F185	**LR9F5357**	**LR9F5557**
48 to 80	F115 to F185	**LR9F5363**	**LR9F5563**
60 to 100	F115 to F185	**LR9F5367**	**LR9F5567**
90 to 150	F115 to F185	**LR9F5369**	**LR9F5569**
132 to 220	F185 ♦, F265	**LR9F5371**	**LR9F5571**
200 to 330	F265 to F500	**LR9F7375**	**LR9F7575**
300 to 500	F265 to F500	**LR9F7379**	**LR9F7579**
380 to 630	F400 to F630	**LR9F7381**	**LR9F7581**

■ When mounting overload relays **LR9F5•57** to **LR9F5•71** directly beneath the contactor it is recommended that the relays be additionally supported by a mounting plate. For sizes **LR9F5•75** to **LR9F7•81** use of the supporting mounting plate is mandatory. See page 221 for selection table.

▲ IEC standard 60947-4 specifies the following trip times when the overload relay senses 7.2 times the setting current:
Class 10: between 4 and 10 seconds
Class 20: between 6 and 20 seconds

♦ Interconnection kit **LA7F407** is required to mount an **LR9F•71** to an **LCIF185**.

Lug Kits

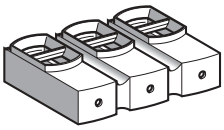


DZ2F••

Lugs can be ordered either individually or in sets of six. In some cases the LR9F overload relay mounted directly on the bottom of LC1F contactor will require a different size lug than the contactor itself. Refer to the table below to select the appropriate size lug for your choice of contactor and overload. If all 6 lugs (three for line side of contactor, three for load side of overload relay) are the same, Square D offers a pre-packaged set of six lugs. If the two sizes are different, order 3 of each size lug. Mounting hardware (screws, washers, nuts) are provided with the contactors and overload relays, not with the lugs.

Overload Relay	Directly mounted to contactor LC1••••	Cable size AWG range		Lug Catalog Number	
		Line side (of contactor)	Load side (of overload)	Line side (of contactor)	Load side (of overload)
LR9F5•57 to **F5•69**	F115	14 to 2/0	6 to 3/0	3 ea. **DZ2FF1**	3 ea. **DZ2FG1**
LR9F5•57 to **F5•71**	F150 or F185	6 to 3/0		1 ea. **DZ2FG6**	
LR9F5•71	F265	6 to 300 MCM		1 ea. **DZ2FH6**	
LR9F7•75 to **F7•79**	F265 or F330	6 to 300 MCM	4 to 500 MCM	3 ea. **DZ2FH1**	★
LR9F7•75 to **F7•81**	F400	4 to 500 MCM	4 to 500 MCM	3 ea. **DZ2FJ1**	★
LR9F7•75 to **F7•81**	F500	2 x 2 to 600 MCM	4 to 500 MCM	3 ea. **DZ2FK1**	★
LR9F7•81	F630	3 x 2 to 600 MCM	4 to 500 MCM	**DZ2FL1** **DZ2FL2** **DZ2FL3**	★

★ Customer to obtain from local supplier.



LR9F73•••

Insulated Terminal Blocks

For contactors LC1F115, LC1F150, and LC1F185, an available touch-safe terminal block may be used in place of lugs for power connections

Insulated terminal block	Cable size AWG range	Suitable for contactor LC1••••/CR1••••	Suitable for overload relay LR9•••••
LA9F103	#6 to 300 MCM	F115, F150, F185	5•57, F5•63, F5•67, F5•69

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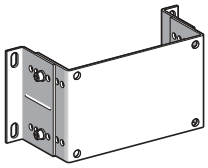
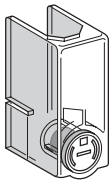
Mounting Plate for Overload Relay



LA7F90•

Provides overload relay support when mounted directly to F-Line Contactor For use with relays:	Catalog Number
LR9F5•57, F5•63, F5•67, F5•69 and F5•71	**LA7F901**
LR9F7•75, F7•79 and F7•81	**LA7F902**

Power Terminal Protection Shrouds, Single-Pole



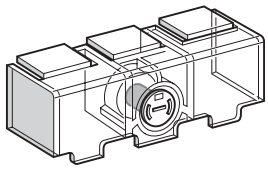
LA9F70•

These clear plastic protection shrouds are an effective means to meet international touch-safe requirements for power terminals. They are designed to be used with power cables that have been bolted to the terminal.

NOTE: The protection shrouds do not attach to contactors or overload relays utilizing DZ2F lug kits.

For use with relays	Catalog Number
LR9F5•57	**LA9F701**
LR9F5•63, F5•67, F5•69	**LA9F702**
LR9F5•71	**LA9F705**
LR9F7•75, F7•79, F7•81	**LA9F703**

Power Terminal Protection Shrouds, 3-Poles



LA7F70•

For use with relays	Catalog Number
LR9F5•57, F5•63, F5•67, F5•69	**LA7F701**
LR9F5•71	**LA7F702**
LR9F7•75, F7•79, F7•81	**LA7F703**

Connection Accessories Required (for mounting overload relays beneath reversing contactors)

Application		Set of 3 bars Catalog Number
For relays	**For contactor**	
LR9F5•57, F5•63, F5•67, F5•69	LC1F115	**LA7F401**
LR9F5•57, F5•63	LC1F150 and F185	**LA7F402**
LR9F5•71	LC1F185	**LA7F407**
LR9F5•71	LC1F265	**LA7F403**
LR9F7•75, F7•79	LC1F265 to F400	**LA7F404**
LR9F7•81	LC1F400	**LA7F404**
LR9F7•75, F7•79, F7•81	LC1F500	**LA7F405**
LR9F7•81	LC1F630	**LA7F406**
Marking accessories		
Description	**Sold in units of:**	**Catalog Number**
Marker holder, snap-in	100	**LA7D903**

Control Accessories

Description		Sold in lots of	Catalog Number
Remote electrical reset snap-on module ■		1	**LA7D03• ▲**
Remote reset function control by flexible cable (length = 0.5 m / 0.02")		1	**LA7D305**
Locking Device for “Stop” button		10	**LA7D901**
Remote Stop and/or Reset function control	Adaptor for door mounted operator	1	**LA7D1020**
	Rod (snap-off end to obtain required length, between 17 and 120 mm)	1	**ZA2BZ13**
	Operating head for spring return pushbutton	1	**ZA2BA8602**

Standard control circuit voltages								
Volts	12	24	48	96	110	220/230	380/400	415/440
AC 50/60 Hz	–	B	E	–	F	M	Q	N
Consumption, inrush and sealed: < 100 VA								
DC	J	B	E	DD	F	M	–	–
Consumption, inrush and sealed: < 100 W								

■ Part number to be completed by adding coil voltage code.

▲ The time for which the coil of remote electrical reset device **LA7D03** can remain energized depends on its rest time: 1 s pulse duration with 9 s rest time; 5 s pulse duration with 30 s rest time; 10 s pulse duration with 90 s rest time: maximum pulse duration of 20 s with rest time of 300 s. Minimum impulse time: 200 ms.

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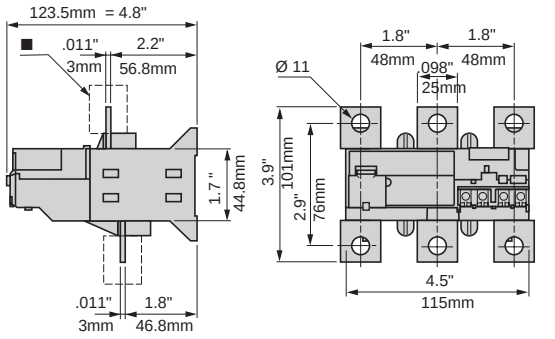
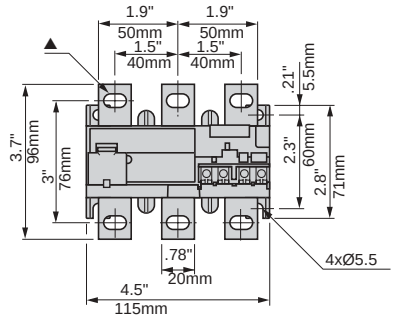
Common side view

LR9F5•71



■ Terminal shroud **LA9F70•**.

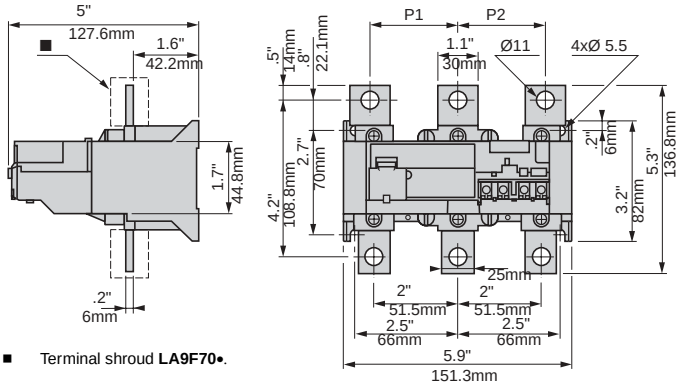
LR9F5•57, F5•63, F5•67, F5•69



▲ 6.5 x 13.5 for **LR9F5•57** and 8.5 x 13.5 for **LR9F5•63**, **F5•67**, **F5•69**.

Common side view

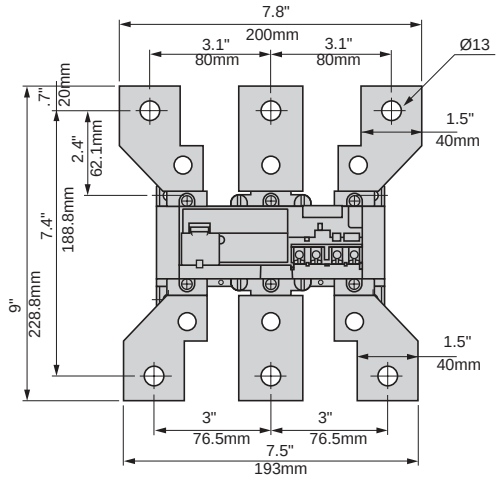
LR9F7•75, F7•79, F7•81



■ Terminal shroud **LA9F70•**.

	P1	P2
LR9F7•75	48	48
LR9F7•79, F7•81	55	55

LR9F7•81 (for mounting beneath LC1F630)



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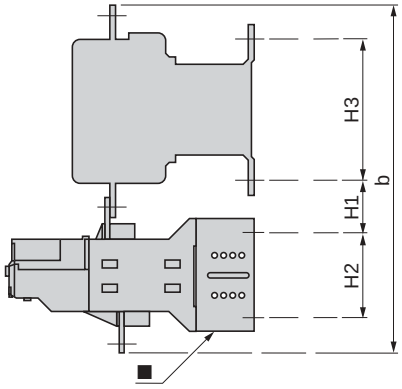
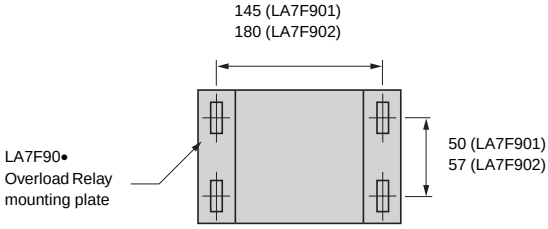
Direct mounting beneath contactor LC1F

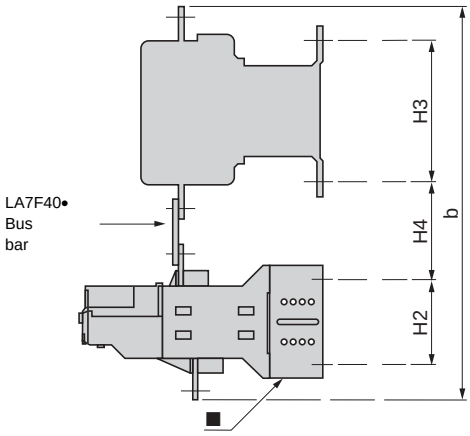




LC1 contactors	With LR9 relays	b	H1	H2	H3
F115	F5●57, F5●63, F5●67, F5●69	240	30	76	120
F150	F5●57, F5●63, F5●67, F5●69	246	30	76	120
F185	F5●57, F5●63, F5●67, F5●69	250	30	76	120
F225	F5●71	273	40	76	120
	F7●75, F7●79	308	50	108.8	120
F265	F5●71	279	40	76	120
	F7●75, F7●79	314	60	108.8	120
F330	F7●75, F7●79	317	60	108.8	120
F400	F7●75, F7●79, F7●81	317	60	108.8	180
F500	F7●75, F7●79, F7●81	346	70	108.8	180
F630	F7●81	510	110	108.8	180

Direct mounting beneath reversing contactors or star-delta contactors

Dimensions shown in mm
mm x.0394 = in



LC1 contactors	With LR9 relays	b	H4	H2	H3
F115	F5•57, F5•63, F5•67, F5•69	279	60	76	120
F150	F5•57, F5•63, F5•67, F5•69	283	60	76	120
F185	F5•57, F5•63, F5•67, F5•69	285	60	76	120
F225	F5•71	319	80	76	120
	F7•75, F7•79	360	100	108.8	120
F265	F5•71	332	90	76	120
	F7•75, F7•79	363	100	108.8	120
F330	F7•75, F7•79	364	100	108.8	120
F400	F7•75, F7•79, F7•81	364	100	108.8	180
F500	F7•75, F7•79, F7•81	390	110	108.8	180
F630	F7•81	509	120	108.8	180

■ Relay mounting plate, see page 221.

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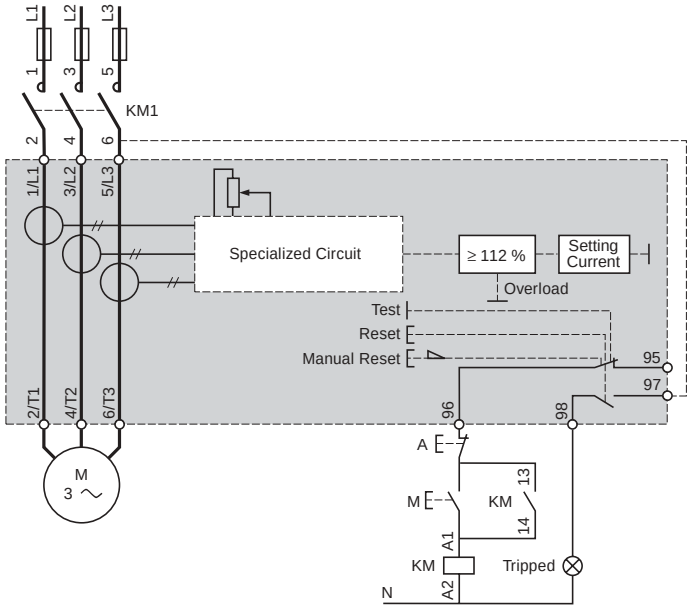
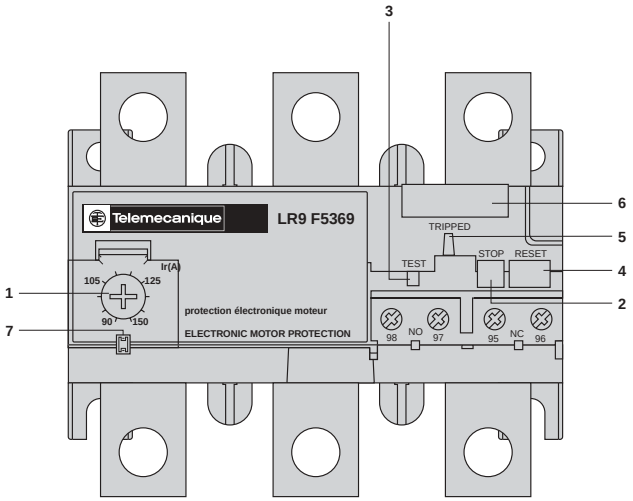
Wiring Diagram
LR9F



Setting the special functions of LR9F thermal overload relays

Setting the Relay

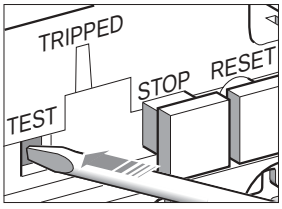


- Lift the transparent cover **(7)** to gain access to the settings and controls.
- Adjust relay by turning dial **(1),** which is graduated directly in amperes.
- The setting can be locked by sealing of the cover **(7)**.

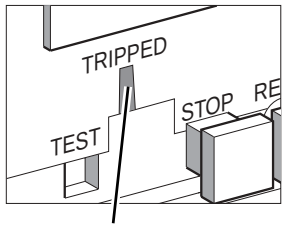
2: Stop Function

- The Stop function is obtained by pressing the red “STOP” button **(2)**.
- Pressing the “STOP” button actuates the N.C. contact, but does not affect the N.O. contact.
- The “STOP” button can be locked by installing a “U” clip (catalog number **LA7D901**).

3: Test Function



Test



Trip Indicator

- The Test function is activated by pressing the red “TEST” button **(3)** with a screwdriver.
- Pressing the “TEST” button simulates tripping of the relay and actuates both N.O. and N.C. contacts, and also actuates the trip indicator **(5)**.

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Magnetic latching contactors of both block and bar mounted types include a special electromagnet which enables them to remain in the “on” position when the coil is no longer energized.

The special properties of magnetic latching contactors make them suitable for a large number of applications:

Properties

- Retention of the sequence memory in automatic control equipment in the event of a control circuit failure.
- Energy saving, since the source of supply to the coil does not need to supply current when the contactor is latched in the closed state.
- Change of state from “Closed” to “Open” by current signal through the coil.
- Unaffected by line interference.
- Utilization of contactors beyond their breaking capacity as operations are performed off Load.
- Contactors are silent in the latched position.

Applications

- Refineries, power stations, excitation circuits.
- Contactors remaining in the closed state for long periods.
  Example: refineries, power supplies, low voltage distribution.
- Selective opening control.
- No unwanted opening and closing of the main power poles.
- Current carrying at voltages up to 1000 Volts.

Operation of the electromagnet

CR1F contactors

CR1F magnetic latching contactors include a double coil with 3 terminals comprising a latching winding and an unlatching winding. The 2 windings have a common point which can necessitate special wiring precautions when the latching supply is separate from the unlatching supply.

The power supplies may be AC or DC. For DC operation, the polarities indicated must be complied with.

Operating precautions:

- the 2 windings must not be energized simultaneously,
- a winding must not be energized continuously,
- supply to the coils must be via momentary contacts.

Manual opening: If the control voltage is not present, the contactor can be unlatched manually.

CR1B contactors

CR1B magnetic latching contactors included a single coil, supplied with DC or AC through a rectifier.

Latching is obtained by direct supply of the coil in one direction of current flow.

Unlatching is obtained by a reverse current, adjusted by resistors.

LC1D contactors

For applications using smaller contactor sizes than those described in the following pages, it is possible to obtain the same function by the addition of a mechanical latching block type **LA6DK**, which can be mounted on **LC1D** contactors (information on D-line contactors starts on page 79).

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CR1F/CR1B Contactors and Accessories
Magnetic Latching Contactors – Characteristics

Type				CR1F150	CR1F185	CR1F265	CR1F400	CR1F500	CR1F630	CR1BL	CR1BM	CR1BP	CR1BR
Environment													
Rated insulation voltage (Vi)	Conforming to IEC 60947-4-1, BS 775, 60947-4		V	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	Conforming to VDE 0110 grC		V	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
Conforming to standards	CE Meets the essential requirements of the LV & EMC directives			IEC 60947-4, NFC 63-110, VDE 0660, BS 5424, JEM 1038									
Approvals	UL E164862 NLDX ▼	CSA LR43364 3211 04 ▼		ASE, CSA, UL, BV, GL, LROS, USSR, NORSK VERITAS, RINA									
Degree of protection	Conforming to IEC 60529			IP 20 front face with shrouds LA9F									
	Conforming to VDE 0106			Protection against direct finger contact with shrouds LA9F									
Protective treatment	Standard version			"TH"						"TC"			
	Special version			–						"TH"			
Ambient air temperature around the device	Storage			-60 to +80 °C (-76 to +176 °F)									
	For operation at Vc			-15 to +70 °C (5 to +158 °F)						-15 to +60°C (5 to +158°F)			
Maximum operating altitude	Without derating			3000m (9800 ft.)									
Operating positions	Without derating			± 5° in relation to normal vertical mounting position						± 30° in relation to normal vertical mounting position			
Pole characteristics													
Number of poles				3 or 4	3 or 4	3 or 4	3 or 4	3 or 4	3 or 4	1, 2, 3 or 4	1, 2, 3 or 4	1, 2, 3 or 4	1, 2, 3 or 4
Rated operational current (Ie) (Ve ≤ 440 V)	AC-3, q ≤ 40 °C (104 °F)		A	150	185	265	400	500	630	750	1000	1500	1800
	AC-1, q ≤ 40 °C (104 °F)		A	250	275	350	500	700	1000	800	1250	2000	2750
	AC-4, q ≤ 40 °C (104 °F)		A	138	170	245	370	460	560	700	800	1250	1500
Rated operational current (Ve)	Up to		V	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency limits (sine wave)	of the operational current		Hz	25 to 200	25 to 200	25 to 200	25 to 200	25 to 200	25 to 200	50 to 60	50 to 60	50 to 60	50 to 60
Rated making capacity	I rms		A	1700	2100	2940	4500	5500	6740	10 000	10 000	15 000	18 000
Rated breaking capacity	I rms	220 to 440 V	A	1500	1800	2450	4000	5000	6300	10 000	10 000	15 000	18 000
		500 V	A	1200	1600	2200	3500	4500	5400	9000	9000	12 000	15 000
		660/690 V	A	1100	1200	1700	3000	3560	4600	8000	8000	9000	11 000
		1000 V	A	450	600	800	1200	2500	3200	4000	4000	5000	6000
Permissible short time rating from cold state, no current flowing for preceding 60 minutes at q ≤ 40 °C (104 °F)	For 1 s		A	1200	1500	2200	3600	4200	5050	9600	9600	12 000	15 000
	For 5 s		A	1200	1500	2200	3600	4200	5050	9600	9600	12 000	15 000
	For 10 s		A	1200	1500	2200	3600	4200	5050	7000	8000	9600	12 000
	For 30 s		A	700	920	1230	2400	3200	4400	4800	5200	6400	8000
	For 1 min		A	600	740	950	1700	2400	3400	3500	3800	5200	6300
	For 3 min		A	450	500	620	1200	1500	2200	2100	2400	3600	4400
	For 10 min		A	350	400	480	1000	1200	1600	1200	1800	2800	3600
Short-circuit protection by fuses q ≤ 440 V ●	Motor circuit AC-3 (type aM)		A	160	200	315	400	500	630	800	1200	800 x 2 ♦	1000 x 2 ♦
	AC-1 circuit (type gI, BS 88)		A	250	315	400	500	800	1000	800	1200	1000 x 2 ♦	1200 x 2 ♦
Average impedance per pole	At Ith and 50 Hz		mΩ	0.45	0.36	0.32	0.28	0.18	0.12	0.18	0.18	0.13	0.09
Power dissipated per pole for the above operational currents	AC-3		W	6	12	22	45	45	48	88	180	290	360
	AC-1		W	18	26	39	70	88	120	115	280	520	680
Cabling	Cable size (min - max)		AWG	#6 to 3/0	#6 to 3/0	#6 to 300mcm	#4 to 500mcm	2 x #2 to 600mcm	3 x #2 to 600mcm	–	–	–	–
	Lug			DZ2 FG	DZ2 FG	DZ2 FH	DZ2 FJ	DZ2 FK	DZ2 FL	–	–	–	–
Tightening torque using DZ2F•• Lug	Bolt lug to contactor		lb-in	160	160	310	310	310	510	–	–	–	–
	Wire pressure screw		lb-in	200	200	275	500	500	500	–	–	–	–
Bus bar connections	Number of bars			–	–	–	–	–	–	2	2	3	4
	Bar c.s.a.		mm in	–	–	–	–	–	–	50 x 5 1.9 x 0.2	80 x 5 3.1 x 0.2	100 x 5 3.9 x 0.2	100 x 10 3.9 x 0.2
	Bolt diameter			–	–	–	–	–	–	4 x Ø 8	4 x Ø 10	4 x Ø 10	4 x Ø 10
	Tightening torque		lb-in	–	–	–	–	–	–	185	310	310	310

▼ **CR1F150** to **CR1F630** only. **CR1B** contactors are not UL listed or CSA certified.

♦ Paralleling of poles must be carried out only in accordance with the fuse manufacturer's recommendations.

● Select short circuit protection to meet the National Electrical Code or other local codes and standards.

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Type				CR1F150	CR1F185	CR1F265	CR1F400	CR1F500	CR1F630	CR1BL	CR1BM	CR1BP	CR1BR

Control circuit characteristics

Rated control circuit voltage (Vc)	AC 50 or 60 Hz		V	48 to 415						110 to 500			
	AC 400 Hz		V	48 to 220						110 to 500			
	DC		V	48 to 220						110 to 500			
	DC low consumption		V	48 to 220						–			
Control voltage limits AC and DC	Energization			0.85 to 1.1 Vc									
	De-energization			0.85 to 1.1 Vc									
Max. operating rate at ambient temperature ≤ 40 °C (104 °F)	In operating cycles/hour			600						120			
Mechanical durability	In millions of operating cycles			1									
Average consumption	Energization	1-pole	VA	–	–	–	–	–	–	650	650	650	650
50/60 Hz		2-pole	VA	–	–	–	–	–	–	1100	1100	1100	1100
		3-pole	VA	1100	1600	1650	1450	1650	2100	1650	1650	1650	1650
		4-pole	VA	1100	1600	1650	1450	1650	2100	1850	1850	1850	1850
	De-energization	1-pole	VA	–	–	–	–	–	–	110	110	110	110
		2-pole	VA	–	–	–	–	–	–	125	125	125	125
		3-pole	VA	7.3	8	9	12	9.5	8	165	165	165	165
		4-pole	VA	7.3	8	9	12	9.5	8	175	175	175	175
400 Hz and DC	Energization	1-pole	VA	–	–	–	–	–	–	600	600	600	600
		2-pole	VA	–	–	–	–	–	–	1000	1000	1000	1000
		3-pole	VA	1260	1750	1800	1600	1800	2300	1500	1500	1500	1500
		4-pole	VA	1260	1750	1800	1600	1800	2300	1700	1700	1700	1700
	De-energization	1-pole	VA	–	–	–	–	–	–	100	100	100	100
		2-pole	VA	–	–	–	–	–	–	115	115	115	115
		3-pole	VA	10	11	12	16	13	11	150	150	150	150
		4-pole	VA	10	11	12	16	13	11	160	160	160	160
DC low consumption	Energization	3/4-pole	W	500	500	500	500	550	620	–	–	–	–
	De-energization	3/4-pole	W	15	20	40	70	60	45	–	–	–	–
Average operating time at Vc ▲	Energization		ms	35 to 40	35 to 40	45 to 50	40 to 75	40 to 80	40 to 80	100 to 150	100 to 150	100 to 150	100 to 150
	De-energization		ms	50 to 100	50 to 100	50 to 100	50 to 100	50 to 100	50 to 100	20 to 40	20 to 40	20 to 40	20 to 40

▲ The closing time is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time is measured from the moment the coil supply is switched off to the moment the main poles separate.

NOTE: The arcing time depends on the circuit switched by the poles. For normal 3-phase applications the arcing time is usually less than 10 ms.
The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.

Auxiliary contact characteristics

Type			**LA1D for contactors CR1F**	**ZC4GM for contactors CR1B**
Conventional rated thermal current		**A**	**10**	**20**
Rated insulation voltage (Vi)	Conforming to IEC 60947-5-1	V	660	
	Conforming to VDE 0110 grC	V	750	
Cabling	Flexible or solid conductor with or without cable end	mm^2	1 x 1 min/2 x 2.5 max (1 - #16 min / 2 - # 14 max)	2 min/4 max (# 14 min / # 10 max)

Operational power of contacts LA1D for contactors CR1F

	AC supply Electrical durability (valid for up to 2400 operating cycles/h) on an inductive load such as the coil of an electromagnet (power factor = 0.7) = 10 times the breaking current (power factor = 0.4).					
	V	**48**	**110/127**	**220/230**	**380/400**	**600**
1 million operating cycles	**VA**	300	400	480	500	500
Occasional making capacity	**VA**	2600	7000	13 000	15 000	9000

DC supply Electrical durability (valid for up to 1200 operating cycles/h) on an inductive load such as the coil of an electromagnet without economy resistor, the time constant increasing with the load.					
V	**48**	**110**	**220**	**440**	**600**
W	90	75	68	61	58
W	700	400	260	220	170

Operational power of contacts ZC4GM for contactors CR1B

	AC supply Electrical durability (valid for up to 2400 operating cycles/h) on an inductive load such as the coil of an electromagnet (power factor = 0.7) = 10 times the breaking current (power factor = 0.4).					
	V	**110/127**	**220**	**380**	**415/440**	**500**
1 million operating cycles	**VA**	2000	4000	4000	4000	3500
Occasional making capacity	**VA**	14000	23000	35000	45000	35000

DC supply Electrical durability (valid for up to 1200 operating cycles/h) on an inductive load such as the coil of an electromagnet without economy resistor, the time constant increasing with the load.				
V	**110**	**120**	**440**	**500**
W	250	250	230	200
W	1600	800	400	360

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For Utilization Category AC-1 and According to Required Electrical Durability Maximum Operational Current (on-load factor ≥ 0.95)

Maximum operating rate: 120 operating cycles/hour											
Contactor size			CR1 F150	CR1 F185	CR1 F265	CR1 F400	CR1 F500	CR1 F630	CR1 BL	CR1 BM	CR1 BP	CR1 BR
Cable c.s.a.		mm^2	120 (250 MCM)	150 (300 MCM)	185 (350 MCM)	–	–	–	–	–	–	–
Number of bars			–	–	–	2	2	2	2	2	3	4
Bar c.s.a.		mm in	–	–	–	30 x 5 1.18 x 0.2	40 x 5 1.57 x 0.2	60 x 5 2.36 x 0.2	50 x 5 1.96 x 0.2	80 x 5 3.14 x 0.2	100 x 5 3.93 x 0.2	100 x 5 3.93 x 0.2
Operational current in category AC-1 at ambient temperature	≤ 40 °C (104 °F) A		250	275	350	500	700	1000	800	1250	2000	2750
	≤ 55 °C (131 °F) A		250	275	300	430	580	850	700	1100	1750	2400
	≤ 70 °C (158 °F) A		170	180	250	340	500	700	600	900	1500	2000

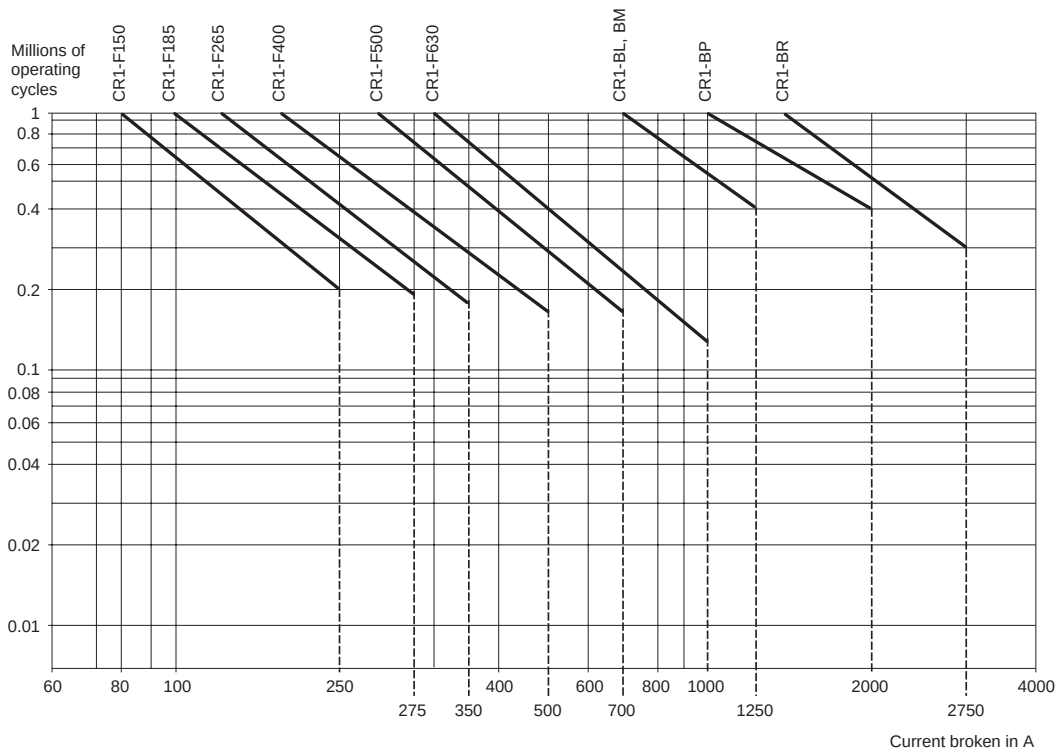
Increase in Operational Current by Paralleling of Poles

Apply the following multiplying factors to the current values given above; these factors take into account the often unbalanced current distribution between poles:

- 2 poles in parallel: K = 1.6
- 3 poles in parallel: K = 2.25
- 4 poles in parallel: K = 2.8

Electrical durability (Ve ≤ 440 V)

NOTE: For 660 V, multiply the number of operating cycles by 0.8.



Example

Ve = 220 V, Ie = 200 A, q = 40 °C (104 °F), Ic = Ie = 200 A. 600,000 operating cycles required.

The above selection curves show the contactor rating needed: **CR1F400**.

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For Switching the Primaries of 3-Phase Transformers

International applications only (not UL Listed or CSA certified for transformer switching)

Operating Conditions

Maximum ambient temperature: 55 °C (131 °F)
Maximum operational voltage: 1000 V, 50 to 60 Hz

When a transformer is switched on, there is generally an initial current surge which reaches its peak value almost instantaneously and then decreases in a largely exponential manner to quickly reach its steady state value.

The value of this current depends on:

- The characteristics of the magnetic circuit and of the windings (cross sectional area of the core, rated inductance, number of turns, size of the windings).
- the performance of the magnetic laminations used (residual induction and saturation inductance).
- the magnetic state of the circuit and the instantaneous value of the AC mains voltage at the moment of switch-on.

The inrush current at the moment of switch-on can reach 20 to 40 times the rated current for the various kVA power ratings in the tables below. This value is independent of the “no-load” or “on-load” state of the transformer (the tables are based on 30 In).

The peak magnetizing current of the transformer must be lower than the values given in the tables below.

Contactor Selection

Maximum Operating Rate: 120 operating cycles /hour							
Contactor size		**CR1F150**	**CR1F185**	**CR1F265**	**CR1F400**	**CR1F500**	**CR1F630**
Maximum permissible closing current peak	A	1700	2800	3500	5500	6800	9000
Maximum operational power in kVA ■	220 to 230 V	25	40	50	75	100	140
	380 to 400 V	50	75	90	130	170	225
	415 to 440 V	55	80	100	140	190	250
	500 V	65	95	110	170	225	280
	660 V	80	120	140	200	270	315
	1000 V	100	150	200	250	375	470
Contactor size		**CR1BL**	**CR1BM**	**CR1BP**	**CR1BR**		
Maximum permissible closing current peak	A	18 000	18 000	24 000	30 000		
Maximum operational power in kVA ■	220 to 230 V	230	230	300	380		
	380 to 400 V	400	400	530	660		
	415 to 440 V	450	450	560	700		
	500 V	480	480	600	750		
	660 V	600	600	800	950		
	1000 V	700	700	1000	1200		

■ Maximum operational power corresponding to a current peak at switch-on of 30 In.

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CR1F/CR1B Contactors and Accessories
Magnetic Latching Contactors – AC or DC – Selection

CR1F1854•

CR1F500

CR1BP33

Maximum thermal current in category AC-1	Rated operational current in category AC-3	Power Poles	Auxiliary Contacts		Catalog Number ▼	Weight lb (kg)
A	A	N.O.	N.O.	N.C.		
250	150	3	–	–	**CR1F150•**	0.14 (3.500)
		4	–	–	**CR1F1504•**	0.15 (3.800)
275	185	3	–	–	**CR1F185•**	0.18 (4.600)
		4	–	–	**CR1F1854•**	0.21 (5.400)
350	265	3	–	–	**CR1F265•**	0.29 (7.400)
		4	–	–	**CR1F2654•**	0.33 (8.500)
500	400	3	–	–	**CR1F400•**	0.36 (9.100)
		4	–	–	**CR1F4004•**	0.40 (10.200)
700	500	3	–	–	**CR1F500•**	0.44 (11.300)
		4	–	–	**CR1F5004•**	0.51 (12.900)
1000	630	3	–	–	**CR1F630•**	0.73 (18.600)
		4	–	–	**CR1F6304•**	0.84 (21.500)
800	750	1	1	2	**CR1BL31•12**	1.26 (32.000)
			2	1	**CR1BL31•21**	1.26 (32.000)
			3	–	**CR1BL31•30**	1.26 (32.000)
		2	1	2	**CR1BL32•12**	1.77 (45.000)
			2	1	**CR1BL32•21**	1.77 (45.000)
			3	–	**CR1BL32•30**	1.77 (45.000)
		3	1	2	**CR1BL33•12**	2.30 (58.000)
			2	1	**CR1BL33•21**	2.30 (58.000)
			3	–	**CR1BL33•30**	2.30 (58.000)
		4	1	2	**CR1BL34•12**	2.83 (72.000)
			2	1	**CR1BL34•21**	2.83 (72.000)
			3	–	**CR1BL34•30**	2.83 (72.000)
1250	1000	1	1	2	**CR1BM31•12**	1.22 (31.000)
			2	1	**CR1BM31•21**	1.22 (31.000)
			3	–	**CR1BM31•30**	1.22 (31.000)
		2	1	2	**CR1BM32•12**	1.73 (44.000)
			2	1	**CR1BM32•21**	1.73 (44.000)
			3	–	**CR1BM32•30**	1.73 (44.000)
		3	1	2	**CR1BM33•12**	2.24 (57.000)
			2	1	**CR1BM33•21**	2.24 (57.000)
			3	–	**CR1BM33•30**	2.24 (57.000)
		4	1	2	**CR1BM34•12**	2.79 (71.000)
			2	1	**CR1BM34•21**	2.79 (71.000)
			3	–	**CR1BM34•30**	2.79 (71.000)
2000	1500	1	1	2	**CR1BP31•12**	1.61 (41.000)
			2	1	**CR1BP31•21**	1.61 (41.000)
			3	–	**CR1BP31•30**	1.61 (41.000)
		2	1	2	**CR1BP32•12**	2.55 (65.000)
			2	1	**CR1BP32•21**	2.55 (65.000)
			3	–	**CR1BP32•30**	2.55 (65.000)
		3	1	2	**CR1BP33•12**	3.70 (94.000)
			2	1	**CR1BP33•21**	3.70 (94.000)
			3	–	**CR1BP33•30**	3.70 (94.000)
		4	1	2	**CR1BP34•12**	4.72 (120.000)
			2	1	**CR1BP34•21**	4.72 (120.000)
			3	–	**CR1BP34•30**	4.72 (120.000)
2750	1800	1	1	2	**CR1BR31•12**	2.05 (52.000)
			2	1	**CR1BR31•21**	2.05 (52.000)
			3	–	**CR1BR31•30**	2.05 (52.000)
		2	1	2	**CR1BR32•12**	3.34 (85.000)
			2	1	**CR1BR32•21**	3.34 (85.000)
			3	–	**CR1BR32•30**	3.34 (85.000)
		3	1	2	**CR1BR33•12**	5.07 (129.000)
			2	1	**CR1BR33•21**	5.07 (129.000)
			3	–	**CR1BR33•30**	5.07 (129.000)
		4	1	2	**CR1BR34•12**	6.29 (160.000)
			2	1	**CR1BR34•21**	6.29 (160.000)
			3	–	**CR1BR34•30**	6.29 (160.000)

▼ For standard control circuit voltages, see page 231.

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LA1DN22

For Contactors CR1F

Description	Number of contacts or shrouds	For use on	Catalog Number	Weight lb (kg)
Instantaneous auxiliary contacts	1 to 9	**CR1F**	**LA1D ■**	1.27 (0.580)
Time delay auxiliary contacts	2 to 4	**CR1F**	**LA•D ■**	1.27 (0.580)
Insulated Terminal Blocks provides IP20 touch-safe protection	Set of 2 blocks	**CR1F150** and **CR1F185** AWG cable size #6 to 300mcm	**LA9F103**	0.66 (0.300)

■ For selection, see pages 194 through 197.

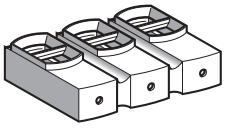
LA•DT, DS

Lug Kits

Lugs can be ordered either individually (for 2- and 4-pole contactors) or in sets of 6 (for 3-pole contactors). Mounting hardware is provided with the contactors, not the kits.

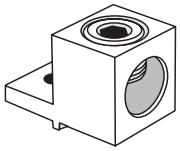
Single lug	Set of six lugs	Cable size AWG range	Suitable for contactor LC1••••/CR1••••	Suitable for overload relay LR9••••• ▲
DZ2FF1	DZ2FF6	14 to 2/0	F115	none
DZ2FG1	DZ2FG6	6 to 3/0	F150, F185	F5•57, F5•63, F5•67, F5•69
DZ2FH1	DZ2FH6	6 to 300 MCM	F265, F330	LR9F•71
DZ3FJ1	DZ3FJ6	4 to 500 MCM	F400	none
DZ2FK1	DZ2FK6	2 x 2 to 600 MCM	F500	F7•75, F7•79
DZ2FL• ♦	DZ2FL6	3 x 2 to 600 MCM	F630, F800	F7•81
DZF2FX	DZ2FX6	4 x 1/0 to 750 MCM	F780	none

▲ When direct mounting the **LR9F** to an **LC1F** or **CR1F** contactor, lugs of different sizes may be required. See page 220 for additional information.
♦ For 3-pole F630 contactors, order **DZ2FL1** for L1 and T3, **DZ2FL2** for L2 and T2 and **DZ2PL3** for L3 and T1 terminals.
For 4-pole F6304 contactors, order **DZ2FL1** for L1 and T4, **DZ2FL2** for L2, T2, L3 and T3 and **DZ2FL3** for L4 and T1 terminals.



LA9F103

Description	Application	Catalog Number
Mechanical interlock and power connections	For assembly of reversing contactors and changeover contactor pairs	See pages 190 to 193.

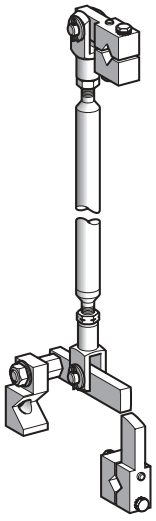


DZ2F••

For Contactors CR1B

Description	Application	Catalog number	Weight lb (kg)
Mechanical interlock with mounting accessories ▼	For vertical assembly of reversing contactors and changeover contactor pairs	**EZ2LB0601**	3.44 (1.560)
Kit containing 2 bar mounting brackets	For mounting on 120 or 150 mm center (4.72" or 5.91")	**LA9B103**	3.57 (1.620)

▼ Positive mechanical interlocking between two vertically-mounted contactors with identical or different ratings. Connecting rods and cranks assembled on right-hand side, crank pins on the pole side. Vertical mounting center distance between the two contactors: 600 mm (23.62").



EZ2LB0601

Coil Selection

Volts	48	110	125	127	220	230	240	250	380	400	415	440	500
For contactors CR1F													
AC 50/60 Hz	E7	F7	–	G7	M7	M7	U7	–	Q7	Q7	N7	–	–
AC 400 Hz	E7	F7	–	G7	M7	M7	–	–	–	–	–	–	–
DC	E7	F7	–	G7	M7	M7	–	–	–	–	–	–	–
DC low consumption	EZ7	FZ7	–	GZ7	MZ7	–	–	–	–	–	–	–	–
For contactors CR1B													
AC 50 to 400 Hz		F	–	G	M	M	U	–	Q	V	N	R	S
DC		FD	GD	–	MD	–	UD	VcD	–	–	–	RD	SD

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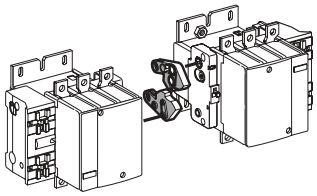
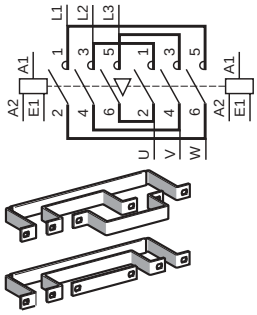
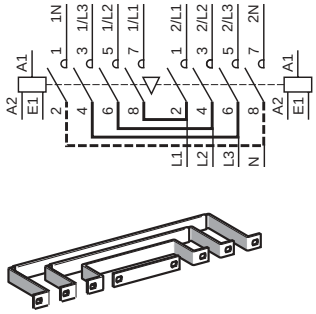
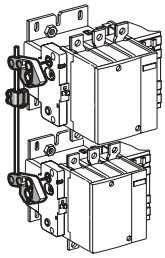
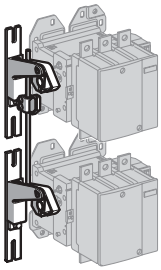
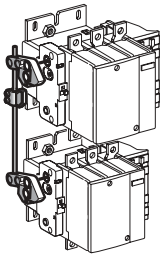
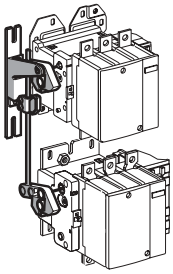
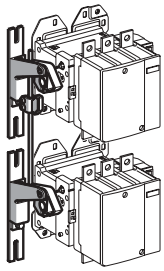
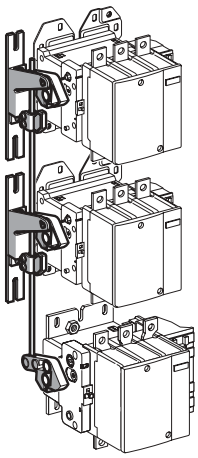
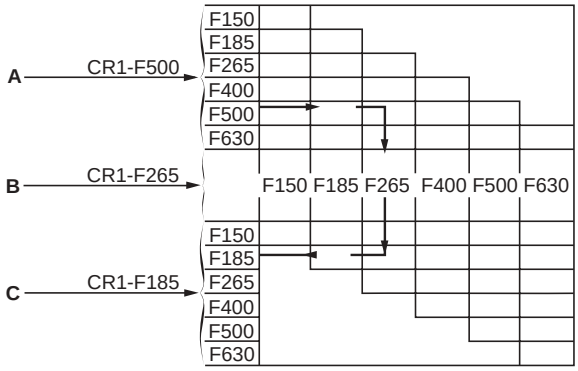
Horizontally or Vertically Mounted

Horizontally mounted	Mechanical interlocks		Sets of power connections			
Reversers assembled using 2 contactors of identical rating type: **CR1F150** **CR1F185** **CR1F265** **CR1F400** **CR1F500** **CR1F630**	**LA9F•970** 		Reversing contactors **LA9F•976** 		3 or 4-pole changeover contactor pairs **LA9F•977** or **LA9F•982** 	
Vertically mounted	**Mechanical interlocks**					
Reversers assembled using 2 contactors of identical rating type: **CR1F150** **CR1F185** **CR1F265** **CR1F400** **CR1F500** **CR1F630**	**LA9FF4F** **LA9FG4G**	Assembly A 	**LA9FH4H** **LA9FJ4J** **LA9FK4K** **LA9FL4L**	Assembly C 		
Reversers assembled using 2 contactors of different ratings type: **CR1F150** **CR1F185** **CR1F265** **CR1F400** **CR1F500** **CR1F630**	**LA9FG4F**	Assembly A 	**LA9FH4F** **LA9FJ4F** **LA9FK4F** **LA9FL4F** **LA9FH4G** **LA9FJ4G** **LA9FK4G** **LA9FL4G**	Assembly B 	**LA9FJ4H** **LA9FK4H** **LA9FL4H** **LA9FK4J** **LA9FL4J** **LA9FK4K**	Assembly C 
Reversers assembled using 3 contactors of identical or different ratings	**LA9F•4•4•** 				Warning: the contactor ratings must be in descending order from top to bottom.	

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Components for Assembling Reversing Contactors and Changeover Pairs CR1F

Reversers assembled using 2 contactors of identical rating

	Contactor Type	Set of power connections		Mechanical Interlock	
		Catalog Number	Weight lb (kg)	Kit Catalog Number	Weight lb (kg)
For assembly of 3-pole reversing contactors for motor control ■	Horizontally mounted				
	CR1F150	**LA9FF976**	0.02 (0.600)	**LA9FF970**	0.13 (0.060)
	CR1F185	**LA9FG976**	0.03 (0.780)	**LA9FG970**	0.13 (0.060)
	CR1F265	**LA9FH976**	0.05 (1.500)	**LA9FJ970**	0.31 (0.140)
	CR1F400	**LA9FJ976**	0.08 (2.100)	**LA9FJ970**	0.31 (0.140)
	CR1F500	**LA9FK976**	0.09 (2.350)	**LA9FJ970**	0.31 (0.140)
	CR1F630	**LA9FL976**	0.15 (3.800)	**LA9FL970**	0.33 (0.150)
	Vertically mounted				
	CR1F150	●		**LA9FF4F**	0.76 (0.345)
	CR1F185	●		**LA9FG4G**	0.77 (0.350)
	CR1F265	●		**LA9FH4H**	2.33 (1.060)
	CR1F400	●		**LA9FJ4J**	2.64 (1.200)
	CR1F500	●		**LA9FK4K**	2.64 (1.200)
	CR1F630	●		**LA9FL4L**	2.68 (1.220)
For assembly of 4-pole changeover contactor pairs for distribution	Horizontally mounted				
	CR1F1504	**LA9FF977**	0.01 (0.460)	**LA9FF970**	0.13 (0.060)
	CR1F1854	**LA9FG977**	0.02 (0.610)	**LA9FG970**	0.13 (0.060)
	CR1F2654	**LA9FH977**	0.04 (1.200)	**LA9FJ970**	0.31 (0.140)
	CR1F4004	**LA9FJ977**	0.07 (1.800)	**LA9FJ970**	0.31 (0.140)
	CR1F5004	**LA9FK977**	0.09 (2.300)	**LA9FJ970**	0.31 (0.140)
	CR1F6304	**LA9FL977**	0.13 (3.400)	**LA9FL970**	0.33 (0.150)
	Vertically mounted				
	CR1F1504	●		**LA9FF4F**	0.76 (0.345)
	CR1F1854	●		**LA9FG4G**	0.77 (0.350)
	CR1F2654	●		**LA9FH4H**	2.33 (1.060)
	CR1F4004	●		**LA9FJ4J**	2.64 (1.200)
	CR1F5004	●		**LA9FK4K**	2.64 (1.200)
	CR1F6304	●		**LA9FL4L**	2.68 (1.220)

Reversers assembled using 2 contactors of different ratings

	Contactor Type (vertically-mounted) ▲	Set of Power Connections	Mechanical Interlock	
		Catalog Number	Kit Catalog Number	Weight (kg) (kg x 2.2 = lbs)
	at bottom	at top		
For assembly of 3 or 4-pole changeover contactor pairs for distribution	CR1F150 or F1504	**CR1F185** or **F1854**	**LA9FG4F**	0.77 (0.350)
		CR1F265 or **F2654**	**LA9FH4F**	1.92 (0.870)
		CR1F400 or **F4004**	**LA9FJ4F**	2.05 (0.930)
		CR1F500 or **F5004**	**LA9FK4F**	2.07 (0.940)
		CR1F630 or **F6304**	**LA9FL4F**	2.07 (0.940)
	CR1F185 or F1854	**CR1F265** or **F2654**	**LA9FH4G**	1.89 (0.860)
		CR1F400 or **F4004**	**LA9FJ4G**	2.07 (0.940)
		CR1F500 or **F5004**	**LA9FK4G**	2.07 (0.940)
		CR1F630 or **F6304**	**LA9FL4G**	2.09 (0.950)
	CR1F265 or F2654	**CR1F400** or **F4004**	**LA9FJ4H**	2.49 (1.130)
		CR1F500 or **F5004**	**LA9FK4H**	2.49 (1.130)
		CR1F630 or **F6304**	**LA9FL4H**	2.51 (1.140)
	CR1F400 or F4004	**CR1F500** or **F5004**	**LA9FK4J**	2.64 (1.200)
		CR1F630 or **F6304**	**LA9FL4J**	2.66 (1.210)
	CR1F500 or F5004	**CR1F630** or **F6304**	**LA9FL4K**	2.66 (1.210)
For assembly of 3 or 4-pole reversing contactors	Using 3 contactors (vertically mounted) of identical or different rating		Mechanical interlock kit catalog number ♦	
	The contactor ratings must be in descending order from top to bottom		**LA9F•4•4•**	

■ A 3-pole reversing contactor for motor control can be converted into a 3-pole changeover contactor pair by removing the upper connecting links.

● All power connections to be made by the customer.

▲ With identical or different number of poles. Power connections to be made by the customer.

♦ Complete the catalog number by replacing the first dot with the code for the upper contactor, the second dot with the code for the middle contactor, and the third dot with the code for the lower contactor; see the table below for the codes for the contactors.

Contactors	CR1F150	CR1F185	CR1F265	CR1F400	CR1F500	CR1F630
Code	F	G	H	J	K	L

For example, mechanical interlock for reversing contactor made up of 3 different contactors: CR1F500 top, CR1F265 middle, and CR1F185 lower: **LA9F•4•4•** becomes **LA9FK4H4G**.

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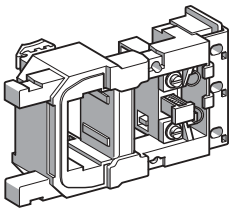
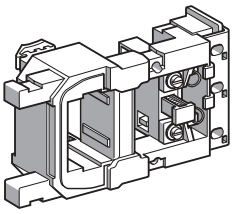


LX0FF009

Standard Coils

Usual voltages		Resistance of winding at 20 °C (68 °F)		Catalog Number	Voltage Code	Weight lb (kg)
50 to 400 Hz or DC	50 Hz, 60 Hz	Latching	Unlatching			
V	V	Ω	Ω			
For contactors CR1F150						
48	–	1.98	230.8	**LX0FF005**	E7	0.97 (0.440)
110	–	9.35	1453	**LX0FF006**	F7	0.97 (0.440)
127	–	11.61	1788	**LX0FF007**	G7	0.97 (0.440)
208	–	23.50	4098	**LX0FF020**	L7	0.97 (0.440)
220/230	–	37.55	5139	**LX0FF008**	M7	0.97 (0.440)
–	240	45.16	6544	**LX0FF009**	U7	0.97 (0.440)
–	380/400	114.10	12447	**LX0FF010**	Q7	0.97 (0.440)
–	415	139.50	16717	**LX0FF011**	N7	0.97 (0.440)
For contactors CR1F185						
48	–	1.42	220	**LX0FG005**	E7	1.23 (0.560)
110	–	6.92	1339	**LX0FG006**	F7	1.23 (0.560)
127	–	8.45	1676	**LX0FG007**	G7	1.23 (0.560)
208	–	21.30	3169	**LX0FG020**	L7	1.23 (0.560)
220/230	–	26.27	4729	**LX0FG008**	M7	1.23 (0.560)
–	240	32.95	4729	**LX0FG009**	U7	1.23 (0.560)
–	380/400	82.29	11885	**LX0FG010**	Q7	1.23 (0.560)
–	415	102.30	14305	**LX0FG011**	N7	1.23 (0.560)
For contactors CR1F265						
48	–	1.34	183.4	**LX0FH005**	E7	1.71 (0.780)
110	–	6.90	1031	**LX0FH006**	F7	1.71 (0.780)
127	–	8.56	1325	**LX0FH007**	G7	1.71 (0.780)
208	–	20.20	2654	**LX0FH020**	L7	1.71 (0.780)
220/230	–	25.77	4090	**LX0FH008**	M7	1.71 (0.780)
–	240	33.03	5002	**LX0FH009**	U7	1.71 (0.780)
–	380/400	78.39	11803	**LX0FH010**	Q7	1.71 (0.780)
–	415	102.9	15006	**LX0FH011**	N7	1.71 (0.780)
For contactors CR1F400						
48	–	1.32	90.5	**LX0FJ005**	E7	2.47 (1.120)
110	–	8.09	813	**LX0FJ006**	F7	2.47 (1.120)
127	–	9.79	1027	**LX0FJ007**	G7	2.47 (1.120)
208	–	24.40	2643	**LX0FJ020**	L7	2.47 (1.120)
220/230	–	30.14	3309	**LX0FJ008**	M7	2.47 (1.120)
–	240	37.02	4074	**LX0FJ009**	U7	2.47 (1.120)
–	380/400	94.80	9380	**LX0FJ010**	Q7	2.47 (1.120)
–	415	121.10	11 763	**LX0FJ011**	N7	2.47 (1.120)
For contactors CR1F500						
48	–	1.57	166	**LX0FK005**	E7	2.70 (1.220)
110	–	7.53	916	**LX0FK006**	F7	2.70 (1.220)
127	–	9.56	1159	**LX0FK007**	G7	2.70 (1.220)
208	–	23.60	2981	**LX0FK020**	L7	2.70 (1.220)
220/230	–	28.81	3733	**LX0FK008**	M7	2.70 (1.220)
–	240	35.67	4595	**LX0FK009**	U7	2.70 (1.220)
–	380/400	89.56	10 570	**LX0FK010**	Q7	2.70 (1.220)
–	415	112.06	13 256	**LX0FK011**	N7	2.70 (1.220)
For contactors CR1F630						
48	–	0.87	204	**LX0FL005**	E7	3.21 (1.460)
110	–	5.20	1423	**LX0FL006**	F7	3.21 (1.460)
127	–	6.45	1830	**LX0FL007**	G7	3.21 (1.460)
208	–	20.20	2961	**LX0FL020**	L7	3.21 (1.460)
220/230	–	25.36	4603	**LX0FL008**	M7	3.21 (1.460)
–	240	25.36	5658	**LX0FL009**	U7	3.21 (1.460)
–	380/400	60.95	10 676	**LX0FL010**	Q7	3.21 (1.460)
–	415	77.97	13 003	**LX0FL011**	N7	3.21 (1.460)



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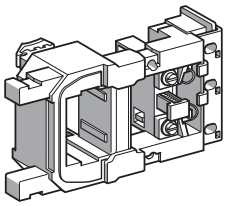

LX0FF020

Special Coils

Coils with two windings with common point, allowing the use of two separate power sources for latching and unlatching.

For contactors	Coil voltages at 50 Hz, 60 Hz, 400 Hz or DC		Resistance of winding at θ = 20 °C (68 °F)		Catalog Number	Voltage code	Weight lb (kg)
	Latching	Unlatching	Latching	Unlatching			
	V	V	Ω	Ω			
CR1F150	220	24	29.5	39.5	**LX0FF224**	MB7	0.01 (0.440)
CR1F185	220	24	26.5	19	**LX0FG224**	MB7	0.02 (0.560)
CR1F265	220	24	26	29.5	**LX0FH224**	MB7	0.03 (0.780)
CR1F400	220	24	30	23	**LX0FJ224**	MB7	0.04 (1.120)
CR1F500	220	24	29	26	**LX0FK224**	MB7	0.05 (1.220)
CR1F630	220	24	26	41	**LX0FL224**	MB7	0.06 (1.460)

Coils with Low-Inrush Consumption

Usual voltages DC	Resistance of winding at θ = 20 °C (68 °F)		Catalog Number	Voltage code	Weight lb (kg)
	Latching	Unlatching			
V	Ω	Ω			
For contactors CR1F150					
48	4.56	140.56	**LX0FF055**	EZ7	0.01 (0.440)
110	22.37	706.44	**LX0FF056**	FZ7	0.01 (0.440)
127	35.54	1086.36	**LX0FF057**	GZ7	0.01 (0.440)
220	89.85	3342.51	**LX0FF058**	MZ7	0.01 (0.440)
For contactors CR1F185					
48	5.19	106.54	**LX0FG055**	EZ7	0.02 (0.570)
110	25.50	536.26	**LX0FG056**	FZ7	0.02 (0.570)
127	32.75	732.64	**LX0FG057**	GZ7	0.02 (0.570)
220	102.44	2378.62	**LX0FG058**	MZ7	0.02 (0.570)
For contactors CR1F265					
48	5.19	74.26	**LX0FH055**	EZ7	0.03 (0.800)
110	25	364.61	**LX0FH056**	FZ7	0.03 (0.800)
127	30.98	458.45	**LX0FH057**	GZ7	0.03 (0.800)
220	97.89	1344.46	**LX0FH058**	MZ7	0.03 (0.800)
For contactors CR1F400					
48	5.05	36.36	**LX0FJ055**	EZ7	0.04 (1.150)
110	25.39	171.49	**LX0FJ056**	FZ7	0.04 (1.150)
127	31.86	221.20	**LX0FJ057**	GZ7	0.04 (1.150)
220	98.19	648.79	**LX0FJ058**	MZ7	0.04 (1.150)
For contactors CR1F500					
48	4.42	41	**LX0FK055**	EZ7	0.05 (1.270)
110	22.74	193.36	**LX0FK056**	FZ7	0.05 (1.270)
127	28.25	313.60	**LX0FK057**	GZ7	0.05 (1.270)
220	85.12	918.68	**LX0FK058**	MZ7	0.05 (1.270)
For contactors CR1F630					
48	3.94	59.17	**LX0FL055**	EZ7	0.06 (1.500)
110	19.36	365.33	**LX0FL056**	FZ7	0.06 (1.500)
127	25.39	452.27	**LX0FL057**	GZ7	0.06 (1.500)
220	74.44	1071.43	**LX0FL058**	MZ7	0.06 (1.500)

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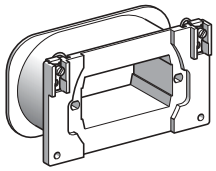

WB1KB•••

Coils with "TC" Treatment ♦

Usual voltages		Resistance at θ = 20 °C (68 °F)	Catalog Number	Weight lb (kg)
DC	AC 50 to 400 Hz			
V	V	Ω		
For contactors CR1B•31				
–	110 to 120	19.7	**WB1KB140**	2.47 (1.120)
110 to 125	–	25.2	**WB1KB134**	2.47 (1.120)
–	220 to 240	77.2	**WB1KB136**	2.47 (1.120)
220	–	94	**WB1KB139**	2.47 (1.120)
250	–	128	**WB1KB125**	2.47 (1.120)
–	380 to 400	197	**WB1KB126**	2.47 (1.120)
–	415 to 440	257	**WB1KB138**	2.47 (1.120)
For contactors CR1B•32				
–	110	9.6	**WB1KB133**	2.47 (1.120)
110	120 to 127	11.4	**WB1KB121**	2.47 (1.120)
125	–	19.7	**WB1KB140**	2.47 (1.120)
–	220/230	32.5	**WB1KB124**	2.47 (1.120)
220	240	49.7	**WB1KB122**	2.47 (1.120)
250	–	77.2	**WB1KB136**	2.47 (1.120)
–	380 to 400	128	**WB1KB125**	2.47 (1.120)
–	415 to 440	160	**WB1KB137**	2.47 (1.120)
For contactors CR1B•33				
–	110	7.2	**WB1KB123**	2.47 (1.120)
110	120 to 127	9.6	**WB1KB133**	2.47 (1.120)
125	–	11.4	**WB1KB121**	2.47 (1.120)
220	240	32.5	**WB1KB124**	2.47 (1.120)
250	–	61	**WB1KB135**	2.47 (1.120)
–	380 to 415	94	**WB1KB139**	2.47 (1.120)
–	440	128	**WB1KB125**	2.47 (1.120)
For contactors CR1B●34				
–	110	5.8	**WB1KB132**	2.47 (1.120)
110	120 to 127	7.2	**WB1KB123**	2.47 (1.120)
125	–	11.4	**WB1KB121**	2.47 (1.120)
–	220/230	25.2	**WB1KB134**	2.47 (1.120)
–	240	32.5	**WB1KB124**	2.47 (1.120)
250	–	49.7	**WB1KB122**	2.47 (1.120)
–	380	77.2	**WB1KB136**	2.47 (1.120)
–	400 to 440	94	**WB1KB139**	2.47 (1.120)

Coils with "TH" Treatment ▼

Add suffix TH to the above catalog numbers; for example, **WB1KB140TH**.

♦ "TC" treatment is standard environmental protection equivalent to tropicalization.

▼ "TH" treatment is improved environmental protection equivalent to fungus-proof and insect-proof.

See page 10 for additional information regarding protective treatments.

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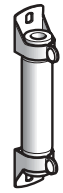

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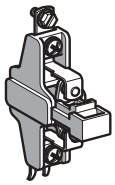
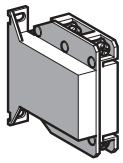
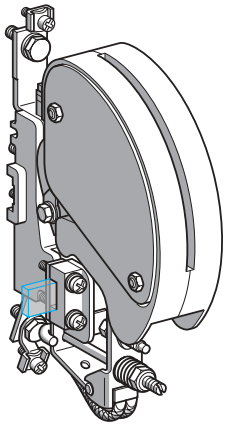


ZC4GM2



DR5TE1U



PR4FB0014

Accessories for use with coils

Coils ("TC" or "TH")	Additional resistors ■				Automatic coil cut-out contact ▲		Rectifier ♦
	R1	Catalog Number	R2	Catalog Number	No.	Catalog Number	Catalog Number
	Ω		Ω				
For contactors CR1B•31							
WB1KB140	68	**DR2SC0068**	47	**DR2SC0047**	2	**ZC4GM2 or ZC4GM8**	**DR5TE1U**
WB1KB134	68	**DR2SC0068**	68	**DR2SC0068**	2	**ZC4GM2 or ZC4GM8**	**–**
WB1KB136	220	**DR2SC0220**	180	**DR2SC0180**	2	**ZC4GM2 or ZC4GM8**	**DR5TE1U**
WB1KB139	270	**DR2SC0270**	220	**DR2SC0220**	2	**ZC4GM2 or ZC4GM8**	**–**
WB1KB125	330	**DR2SC0330**	270	**DR2SC0270**	3	**ZC4GM2 or ZC4GM8**	**–**
WB1KB126	470	**DR2SC0470**	470	**DR2SC0470**	3	**ZC4GM2 or ZC4GM8**	**DR5TE1S**
WB1KB138	1000	**DR2SC1000**	470	**DR2SC0470**	3	**ZC4GM2 or ZC4GM8**	**DR5TE1S**
For contactors CR1B•32							
WB1KB133	10	**DR2SC0010**	33	**DR2SC0033**	1	**PR4FB0011**	**DR5TE1U**
WB1KB121	47	**DR2SC0047**	39	**DR2SC0039**	1	**PR4FB0010**	**DR5TE1U**
WB1KB140	100	**DR2SC0100**	47	**DR2SC0047**	1	**PR4FB0009**	**–**
WB1KB124	120	**DR2SC0120**	120	**DR2SC0120**	1	**PR4FB0007**	**DR5TE1U**
WB1KB122	220	**DR2SC0220**	150	**DR2SC0150**	1	**PR4FB0007**	**DR5TE1U**
WB1KB136	330	**DR2SC0330**	220	**DR2SC0220**	1	**PR4FB0006**	**–**
WB1KB125	470	**DR2SC0470**	470	**DR2SC0470**	1	**PR4FB0005**	**DR5TE1S**
WB1KB137	680	**DR2SC0680**	560	**DR2SC0560**	1	**PR4FB0004**	**DR5TE1S**
For contactors CR1B•33							
WB1KB123	39	**DR2SC0039**	27	**DR2SC0027**	1	**PR4FB0012**	**DR5TE1U**
WB1KB133	47	**DR2SC0047**	39	**DR2SC0039**	1	**PR4FB0011**	**DR5TE1U**
WB1KB121	56	**DR2SC0056**	47	**DR2SC0047**	1	**PR4FB0010**	**–**
WB1KB124	180	**DR2SC0180**	120	**DR2SC0120**	1	**PR4FB0008**	**DR5TE1U**
WB1KB135	270	**DR2SC0270**	270	**DR2SC0270**	1	**PR4FB0006**	**–**
WB1KB139	470	**DR2SC0470**	390	**DR2SC0390**	1	**PR4FB0005**	**DR5TE1S**
WB1KB125	680	**DR2SC0680**	470	**DR2SC0470**	1	**PR4FB0004**	**DR5TE1S**
For contactors CR1B•34							
WB1KB132	33	**DR2SC0033**	27	**DR2SC0027**	1	**PR4FB0014**	**DR5TE1U**
WB1KB123	47	**DR2SC0047**	33	**DR2SC0033**	1	**PR4FB0012**	**DR5TE1U**
WB1KB121	56	**DR2SC0056**	56	**DR2SC0056**	1	**PR4FB0010**	**–**
WB1KB134	150	**DR2SC0150**	120	**DR2SC0120**	1	**PR4FB0008**	**DR5TE1U**
WB1KB124	180	**DR2SC0180**	150	**DR2SC0150**	1	**PR4FB0007**	**DR5TE1U**
WB1KB122	270	**DR2SC0270**	220	**DR2SC0220**	1	**PR4FB0007**	**–**
WB1KB136	390	**DR2SC0390**	390	**DR2SC0390**	1	**PR4FB0006**	**DR5TE1S**
WB1KB139	560	**DR2SC0560**	470	**DR2SC0470**	1	**PR4FB0005**	**DR5TE1S**

■ Weight of resistors **DR2SC••••**: 0.030 kg (0.07 lbs).

▲ Weight of automatic coil cut-out contacts: **ZC4GM•**: 0.030 kg (0.07 lbs) and **PR4FB00••**: 0.600 kg (1.32 lbs).

♦ Weight of rectifier **DR5TE1•**: 0.100 kg (0.22 lbs). The rectifier is for use on AC only.

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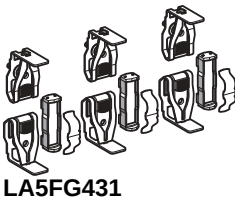
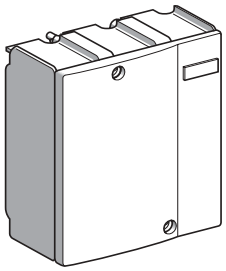
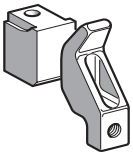
CR1F/CR1B Contactors and Accessories
Magnetic Latching Contactors – Accessories and Replacement Parts



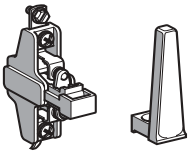
LA5FG431



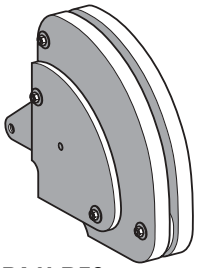
LA5F40050



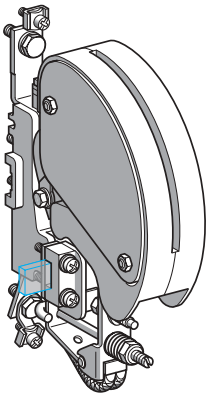
PA1LB80
(PALB76 + PA1LB75)



ZC4GM1 PA1LB89



PA1LB50



PR4FB00••

For Contactors CR1F

Description	For Contactors		Catalog Number	Weight lb (kg)
Sets of contacts for 3 or 4 poles ♦	3-pole	CR1F150	**LA5FF431**	0.59 (0.270)
		CR1F185	**LA5FG431**	0.77 (0.350)
		CR1F265	**LA5FH431**	1.45 (0.660)
		CR1F400	**LA5F400803**	1.45 (0.660)
		CR1F500	**LA5F500803**	1.45 (0.660)
		CR1F630	**LA5F630803**	1.45 (0.660)
	4-pole	CR1F1504	**LA5FF441**	0.79 (0.360)
		CR1F1854	**LA5FG441**	1.02 (0.465)
		CR1F2654	**LA5FH441**	1.94 (0.880)
		CR1F4004	**LA5F400804**	1.02 (0.465)
		CR1F5004	**LA5F500804**	1.02 (0.465)
		CR1F6304	**LA5F630804**	1.02 (0.465)
Arc chambers	3-pole	CR1F150	**LA5F15050**	1.08 (0.490)
		CR1F185	**LA5F18550**	1.47 (0.670)
		CR1F265	**LA5F26550**	2.02 (0.920)
		CR1F400	**LA5F40050**	2.86 1.300)
		CR1F500	**LA5F50050**	4.07 (1.850)
		CR1F630	**LA5F63050**	6.94 (3.150)
	4-pole	CR1F1504	**LA5F150450**	1.45 (0.660)
		CR1F1854	**LA5F185450**	2.00 (0.910)
		CR1F2654	**LA5F265450**	2.68 (1.220)
		CR1F4004	**LA5F400450**	3.83 1.740)
		CR1F5004	**LA5F500450**	5.51 (2.500)
		CR1F6304	**LA5F630450**	9.25 (4.200)

♦ Set containing the following (per pole): 2 fixed contacts, 1 moving contact , 2 deflectors, 1 back-plate, clamping screws and washers.

For Contactors CR1B

Description	For contactors	Number of sets required per pole	Unit catalog Number of set	Weight lb (kg)
Set of contacts (1 moving contact, 1 fixed contact)	CR1BL	1	**PA1LB80**	0.92 (0.420)
	CR1BM	1	**PA1LB80**	0.92 (0.420)
	CR1BP	2	**PA1LB80**	0.92 (0.420)
	CR1BR	3	**PA1LB80**	0.92 (0.420)

Description	For contactors	Composition	Catalog Number	Weight lb (kg)
Moving contact only (for one finger)	All ratings	–	**PA1LB75**	0.48 (0.220)
Fixed contact only (for one finger)	All ratings	–	**PA1LB76**	0.44 (0.200)
Blow-out horn only (for one finger)	All ratings	–	**PA1LB89**	0.26 (0.120)
Arc chambers (for a single pole)	CR1BL	–	**PA1LB50**	8.15 (3.700)
	CR1BM	–	**PA1LB50**	8.15 (3.700)
	CR1BP	–	**PA1PB50**	13.6 (6.200)
	CR1BR	–	**PA1RB50**	18.7 (8.500)
Auxiliary contact blocks	All ratings	1 N.O. contact normal	**ZC4GM1**	0.06 (0.030)
	All ratings	1 N.C. contact normal	**ZC4GM2**	0.06 (0.030)
	All ratings	1 N.O. contact gold flashed	**ZC4GM9**	0.06 (0.030)
	All ratings	1 N.C. contact gold flashed	**ZC4GM8**	0.06 (0.030)
N.C. pole for automatic cut-out coil	All ratings	–	**PR4FB00•• ■**	1.32 (0.600)
Set of moving and fixed contacts for N.C. pole	All ratings	–	**PV1FA80**	0.07 (0.035)
Arc chamber for N.C. pole	All ratings	–	**PN1FB50**	0.48 (0.220)
Electromagnet	All ratings	–	**ET1KB50**	23.3 (10.600)

Description	For contactors	No. of parts required	Catalog number	Weight lb (kg)
Return springs for moving part of electromagnet	CR1B (1 pole)	1	**DV1RT292**	0.11 (0.050)
	CR1B (2, 3 or 4 poles)	2	**DV1RT292**	0.11 (0.050)
N.O. pole springs	CR1BL, BM or BP	1 per pole	**DV1RC201**	0.04 (0.020)
	CR1BR	1 per pole	**DV1RC155**	0.04 (0.020)

■ Select complete catalog number from page 259.

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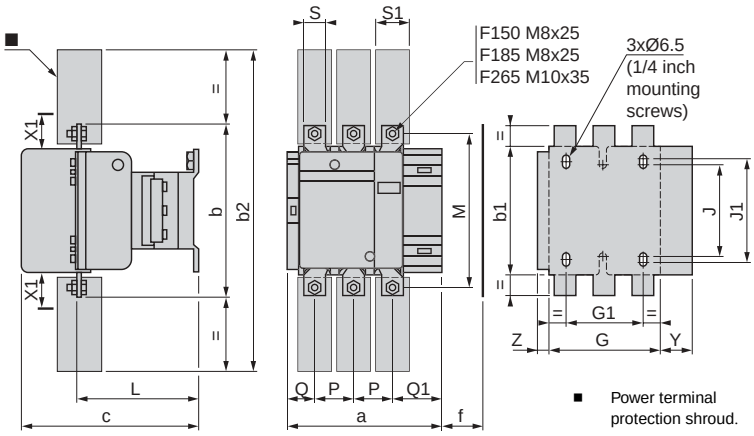
Dimensions shown in millimeters (mm x .0394 = inches)

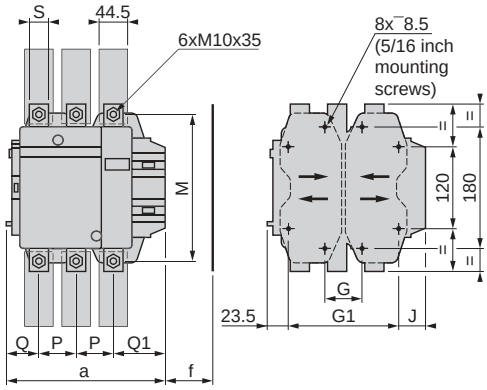
CR1F150 to CR1F500

Common side view

CR1F150, CR1F185, CR1F265



CR1F400, CR1F500



	CR1F150		CR1F185		CR1F265	
	3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
a	163.5	201.5	168.5	208.5	201.5	244.5
b	170	170	174	174	203	203
b1	137	137	137	137	145	145
b2	301	301	305	305	370	370
c	171	171	181	181	213	213
f	131	131	130	130	147	147
G	106	143	111	151	142	190
G1	80	80	80	80	96	96
J	106	106	106	106	106	106
J1	120	120	120	120	120	120
L	107	107	113.5	113.5	141	141
M	150	150	154	154	178	178
P	40	40	40	40	48	48
Q	26	26	29	29	39	34
Q1	57.5	55.5	59.5	59.5	66.5	66.5
S	20	20	20	20	25	25
S1	27	27	34	34	38	38
Y	44	44	38.5	30.5	30.5	21.5
Z	13.5	13.5	13.5	13.5	15.5	15.5

f = minimum distance required for coil removal

X1: Minimum electrical clearance according to operational voltage and breaking capacity

Voltage in V	200 to 500	660 to 1000
CR1F150	10	15
CR1F185	10	15
CR1F265	10	15

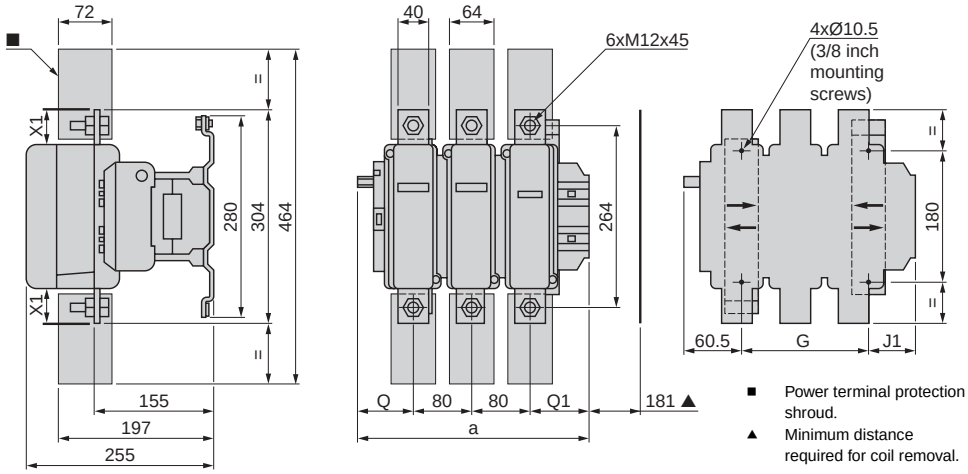
	CR1F400		CR1F500	
	3 Pole	4 Pole	3 Pole	4 Pole
a	213	261	233	288
G min	66	66	66	66
b	206	206	238	238
b2	375	375	400	400
c	219	219	232	232
f	146	146	150	150
G supplied	80	80	80	140
G max	102	150	120	175
G1 supplied	170	170	170	230
G1 min	156	156	156	156
G1 max	192	240	210	265
J1	12	60	32	27
L	145	145	146	146
M	181	181	208	208
P	48	48	55	55
Q	43	43	47	47
Q1	74	74	77	77
S	25	25	30	30

f = minimum distance required for coil removal

X1: Minimum electrical clearance according to operational voltage and breaking capacity

Voltage in V	200 to 500	660 to 1000
CR1F400	15	20
CR1F500	15	20

CR1F630



CR1F630	3 P	4 P
a	309	389
G supplied	180	240
G min	100	150
G max	195	275
J1	61	81
Q	60	60
Q1	89	89

X1: Minimum electrical clearance according to operational voltage and breaking capacity

Voltage in V	X1
200 to 500	20
690 to 1000	30

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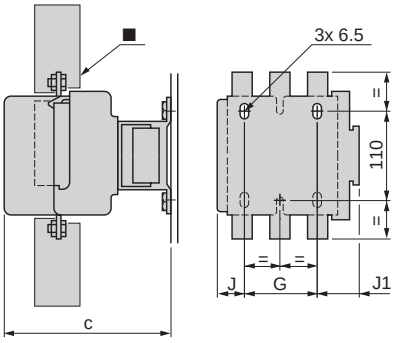
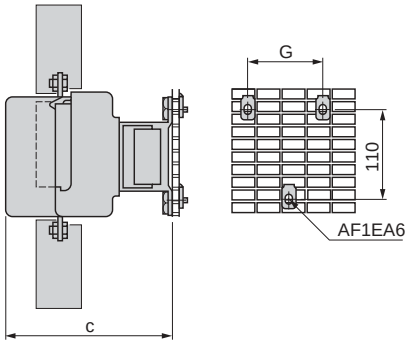
Dimensions shown in millimeters (mm x.0394 = inches)

CR1F150 to F265

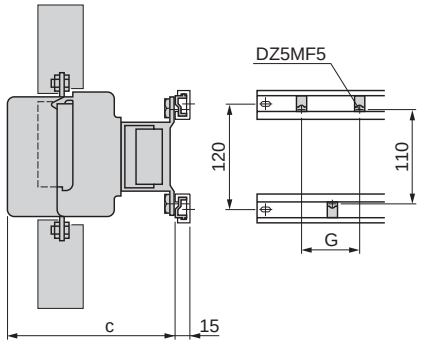
On panel



On pre-slotted mounting plate **AM1PA**, **AM1PB**, **AM1PC**



On rails **DZ5MB** at 120 mm mounting center



■ Power terminal protection shroud.

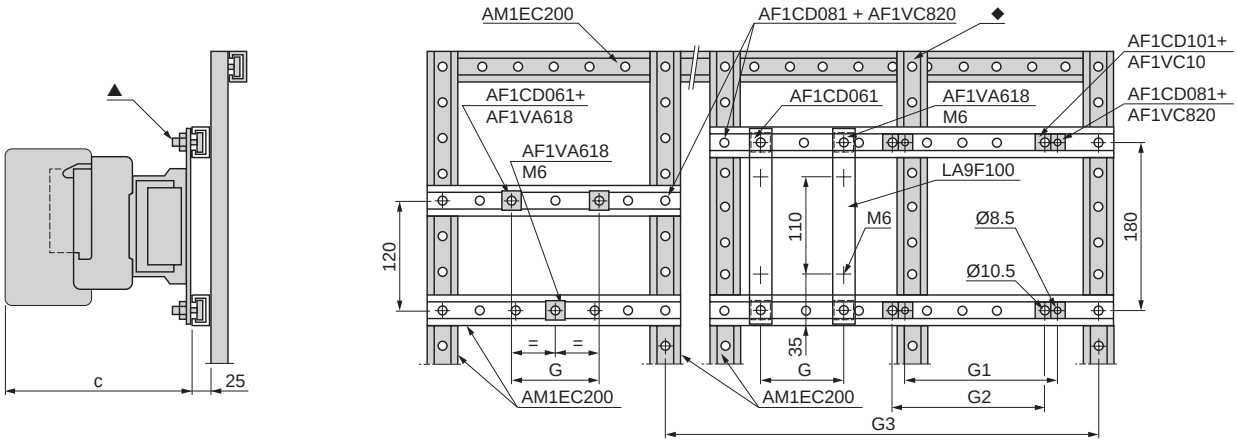
		CR1F150	CR1F185	CR1F265
c	**3P**	171	181	213
	4P	171	181	213
G	**3P**	80	80	96
	4P	80	80	96
J	**3P**	26.5	29	44.5
	4P	45	49	68.5
J1	**3P**	57	59.5	61.5
	4P	75.5	79.5	85.5

		CR1F150	CR1F185	CR1F265
c	**3P**	171	181	213
	4P	171	181	213
G	**3P**	80	80	96
	4P	80	80	96

		CR1F150	CR1F185	CR1F265
c	**3P**	171	181	213
	4P	171	181	213
G	**3P**	80	80	96
	4P	80	80	96

CR1F150 to F650

On 2 notched uprights **AM1EC•••**



▲ AF1CD••• or AF1VA•••.

♦ This upright **AM1EC200** is required when G2 or G3 is greater than 700 mm.

		CR1F150	CR1F185	CR1F265	CR1F400	CR1F500	CR1F630
c	**3P**	171	181	213	213	226	250
	4P	171	181	213	213	226	250
G (M6)	**3P**	80	80	96	–	–	–
	4P	80	80	96	–	–	–
G1 (Ø 8.5)	**3P**	–	–	–	80	80	–
	4P	–	–	–	80	140	–
G2 (Ø 10.5)	**3P**	–	–	–	–	–	180
	4P	–	–	–	–	–	240

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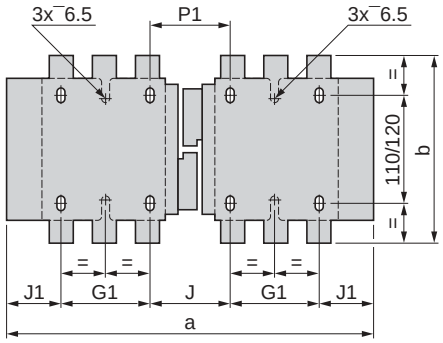
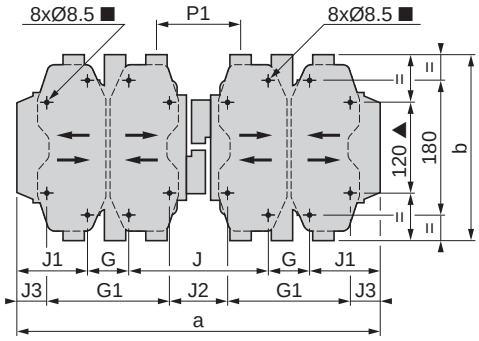
Dimensions shown in millimeters (mm x .0394 = inches)

Reversing contactors
2 x CR1F150 to CR1F265
Horizontally mounted



2 x CR1-		a	b	G	J	J1	P1
F150	3P	345	170	80	71	57	71
	4P	422	170	80	111	75.5	71
F185	3P	357	174	80	78	59.5	78
	4P	437	174	80	118	79.5	78
F265	3P	425	203	96	109	61.5	100
	4P	521	203	96	157	85.5	100

Reversing contactors
2 x CR1F400 to CR1F630



■ Except F630: 4 x Ø 10.5.
▲ Except F630.

2 x CR1-		a	b	G	G1	J	J1	J2	J3	P1
F400	3P	446	206	80	170	157	64.5	67	19.5	107
	4P	542	206	80	170	157	112.5	67	67.5	107
F500	3P	485	238	80	170	156	84.5	66	39.5	112
	4P	595	238	140	230	156	79.5	66	34.5	112
F630	3P	636	304	180	–	139	68.5	–	–	137
	4P	796	304	240	–	139	88.5	–	–	137

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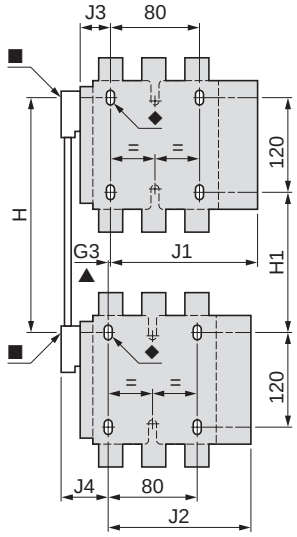
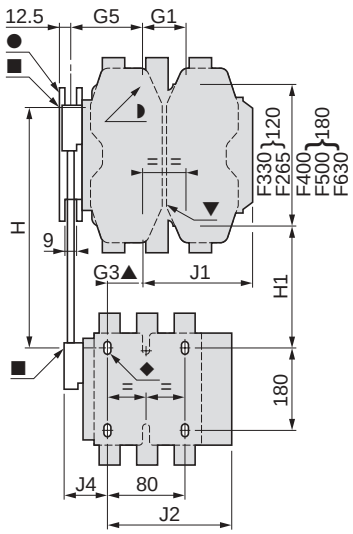
Dimensions shown in millimeters (mm x .0394 = inches)

Changeover contactor pairs
Vertically mounted with mechanical interlock **LA9F•••**
2 contactors **CR1F** of identical or different ratings (**CR1F150** to **CR1F630**), see page 240.

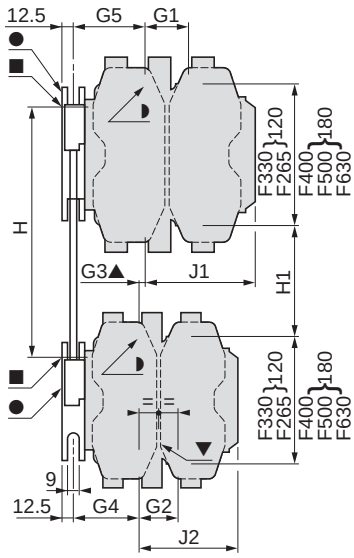
Assembly A



Assembly B



Assembly C



■ Mechanical interlock shaft.
▲ For assembly of contactors with different ratings only.
♦ 3 x Ø 6.5 mm for CR1F150 to F265.
▼ 3 x Ø 6.5 mm for CR1F265.
● Mechanical interlock guide bracket.
◗ 4 x Ø 8.5 mm for CR1F400, F500 or 4 x Ø 10.5 mm.

Assembly Type		A			B								C									
LA9-		FF4F	FG4F	FG4G	FH4F	FJ4F	FK4F	FL4F	FH4G	FJ4G	FK4G	FL4G	FH4H	FJ4H	FK4H	FL4H	FJ4J	FK4J	FL4J	FK4K	FL4K	FL4L
G1	3P	–	–	–	96	80	80	180	96	80	80	180	96	80	80	180	80	80	180	80	180	180
	4P	–	–	–	96	80	140	240	96	80	140	240	96	80	140	240	80	140	240	140	240	240
G2	3P	–	–	–	–	–	–	–	–	–	–	–	96	96	96	96	80	80	80	80	80	180
	4P	–	–	–	–	–	–	–	–	–	–	–	96	96	96	96	80	80	80	140	140	240
G3	3P	0	3	0	21	45	45	35	19	42	42	33	0	23	23	14	0	0	9 ✱	0	9 ✱	0
	4P	0	4	0	27	26	26	17	23	22	22	13	0	0	0	9 ✱	0	0	9 ✱	0	9 ✱	0
G4	3P	–	–	–	–	–	–	–	–	–	–	–	60	60	60	60	83	83	83	83	83	74
	4P	–	–	–	–	–	–	–	–	–	–	–	83	83	83	83	83	83	83	83	83	74
G5	3P	–	–	–	60	83	83	74	60	83	83	74	60	83	83	74	83	83	74	83	74	74
	4P	–	–	–	83	83	83	74	83	83	83	74	83	83	83	74	83	83	74	83	74	74
H	min	200	210	220	240	250	270	310	250	250	270	310	250	260	280	330	260	280	325	300	345	380
	max	310	300	310	380	380	380	380	380	380	380	380	380	380	380	380	380	380	380	380	380	380
H1	min	80	90	100	110	80	100	140	120	90	110	150	130	110	130	170	60	100	140	120	160	200
	max	190	180	190	250	210	210	210	250	220	220	220	260	230	230	220	200	200	195	200	195	200
J1	3P	133	134	134	149.5	137	157	241	149.5	137	157	241	149.5	137	157	24	137	157	241	157	244	241
	4P	145	146	146	164.5	185	212	321	164.5	185	212	321	164.5	185	212	321	185	212	321	212	321	321
J2	3P	133	133	134	183	133	183	133	134	134	134	134	142.5	149.5	149.5	149.5	137	137	137	157	157	241
	4P	145	145	146	145	145	145	145	146	146	146	146	164.5	164.5	164.5	164.5	185	185	185	212	212	312
J3	3P	48.5	53	53	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4P	67	73	73	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
J4	3P	48.5	54	53	48.5	48.5	48.5	48.5	53	53	53	53	–	–	–	–	–	–	–	–	–	–
	4P	67	69	73	67	67	67	67	73	73	73	73	–	–	–	–	–	–	–	–	–	–

✱ In this case G4 is larger than G5.

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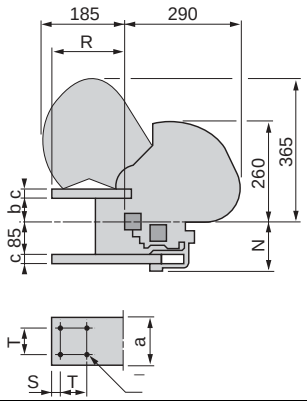
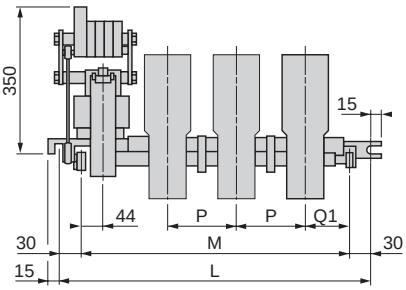
Dimensions shown in millimeters (mm x .0394 = inches)

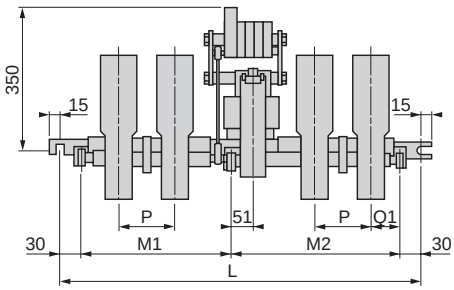
Common side view



Single-pole, 2-pole, or 3-pole contactors



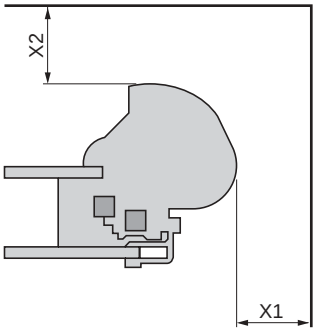
4-pole contactors



	CR1BL				CR1BM				CR1BP				CR1BR			
Number of poles	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
a	50	50	50	50	63	63	63	63	100	100	100	100	125	125	125	125
b	59	59	59	59	55	55	55	55	55	55	55	55	50	50	50	50
c	16	16	16	16	20	20	20	20	20	20	20	20	25	25	25	25
L	345	445	540	760	345	445	540	760	385	540	760	1065	445	635	885	1065
M	285	385	480	–	285	385	480	–	325	480	700	–	385	575	825	–
M1	–	–	–	308	–	–	–	308	–	–	–	455	–	–	–	455
M2	–	–	–	392	–	–	–	392	–	–	–	550	–	–	–	550
N	121	121	121	121	125	125	125	125	125	125	125	125	130	130	130	130
P	100	100	100	100	100	100	100	100	150	150	150	150	195	195	195	195
Q1	100	100	100	100	100	100	100	100	110	110	110	110	123	123	123	123
R	122	122	122	122	157	157	157	157	173	173	173	173	173	173	173	173
S	10	10	10	10	17	17	17	17	20	20	20	20	20	20	20	20
T	30	30	30	30	30	30	30	30	60	60	60	60	60	60	60	60
Ø	9	9	9	9	11	11	11	11	11	11	11	11	11	11	11	11

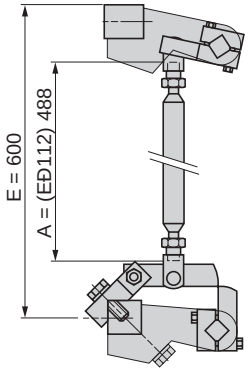
Electrical safety clearance

Values X1 and X2 are given for a breaking capacity of 10 In (3-phase AC current).



3-phase AC voltage		**CR1BL**	**CR1BM**	**CR1BP**	**CR1BR**
380-415-440 V	X1	100	100	150	200
	X2	150	150	200	250
500 V	X1	100	100	150	200
	X2	150	150	220	250
600 V	X1	150	150	200	200
	X2	200	200	250	250
1000 V	X1	200	200	200	250
	X2	250	250	250	300

Mechanical interlock
for assembly of vertically mounted reversing contactors
EZ2LB0601



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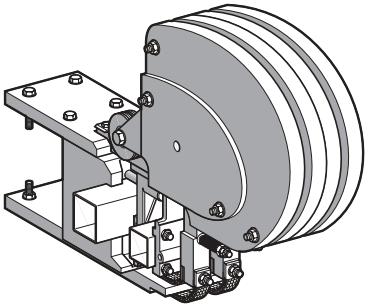
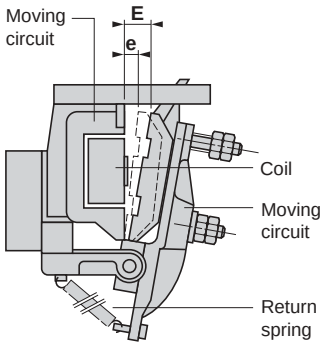
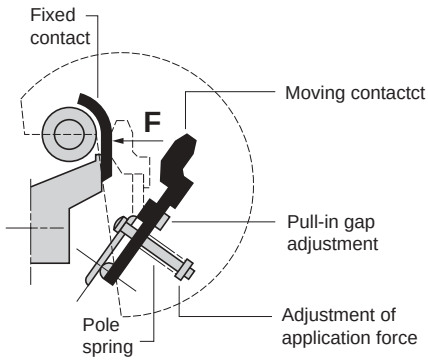
Complete pole



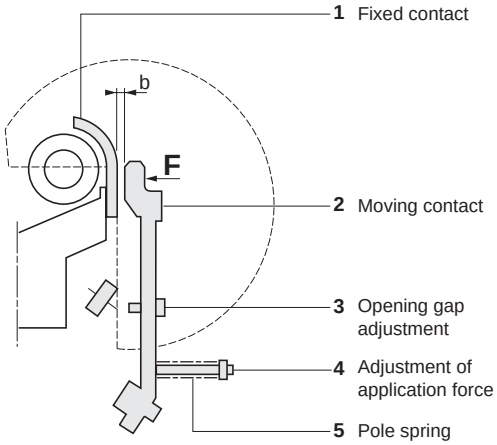
Adjustment of pick-up travel and pull-in travel



N.O. pole adjustment



N.C. automatic coil cut-out pole adjustment



AC or DC supply with economy resistor (and rectifier on AC supply)

Contactor Type			CR1BL	CR1BM	CR1BP	CR1BR
Electromagnet (**EB5KB50**)	Pick-up travel (E)	mm ♦	30	30	30	30
	Pull-in travel (e)	mm ♦	10	10	10	10
Coil WB1KB	Pull-in voltage	V	0.75 Vc	0.75 Vc	0.75 Vc	–
	Drop-out voltage	V	0.3 to 0.5	0.3 to 0.5	0.3 to 0.5	0.3 to 0.5
N.O. power pole (PA1)	Application force (F) to contact per pole	daN / lb	30/67	30/67	30/67 ■	30/67 ▲
N.C. automatic coil cut-out pole (PR4)	Application force (F)	daN / lb	0.9/2	0.9/2	0.9/2	0.9/2
	Opening gap (b) with electromagnet closed	mm ♦	3.5 ± 0.5	3.5 ± 0.5	3.5 ± 0.5	3.5 ± 0.5

♦ millimeters x 0.394 = inches.

■ Each pole has 2 contacts: the force must be applied evenly to each of these contacts.

▲ Each pole has 3 contacts: the force must be applied evenly to each of these contacts.

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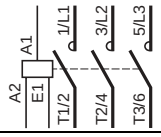
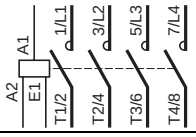
Contactors Type **CR1F**

3-pole **CR1F••33**

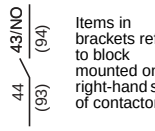


4-pole **CR1F••34**



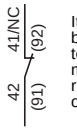
Front mounting add-on contact blocks - Instantaneous auxiliary contacts (References: pages 16 and 17)

1 N.O. **LA1DN10**



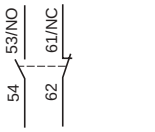
Items in brackets refer to block mounted on right-hand side of contactor.

1 N.C. **LA1DN01**

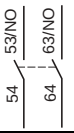


Items in brackets refer to block mounted on right-hand side of contactor.

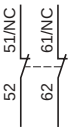
1 N.O. + 1 N.C. **LA1DN11**



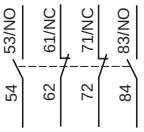
2 N.O. **LA1DN20**



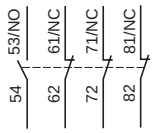
2 N.C. **LA1DN02**



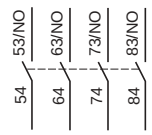
2 N.O. + 2 N.C. **LA1DN22**



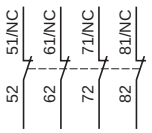
1 N.O. + 3 N.C. **LA1DN13**



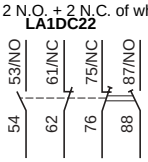
4 N.O. **LA1DN40**



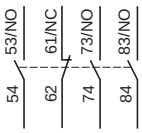
4 N.C. **LA1DN04**



2 N.O. + 2 N.C. of which 1 N.O. + 1 N.C. make-before-break **LA1DC22**

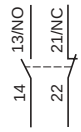


3 N.O. + 1 N.C. **LA1DN31**

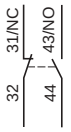


Front mounting add-on contact blocks - Instantaneous auxiliary contacts conforming to standard EN 50012 (References: pages 218 to 219)

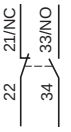
1 N.O. + 1 N.C. **LA1DN11P**



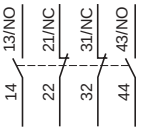
1 N.O. + 1 N.C. **LA1DN11G**



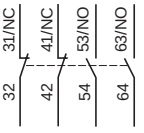
1 N.O. + 1 N.C. **LA1DN11M**



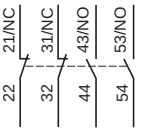
2 N.O. + 2 N.C. **LA1DN22P**



2 N.O. + 2 N.C. **LA1DN22G**

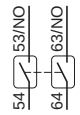


2 N.O. + 2 N.C. LA1DN22M

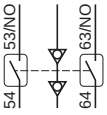


Front mounting add-on contact blocks - Dust and damp protected instantaneous auxiliary contacts (References: pages 218 to 219)

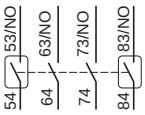
2 N.O. (24-50 V) **LA1DX20**



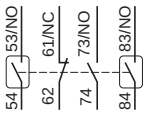
2 N.O. (5-24 V) **LA1DY20**



2 N.O. protected (24-50 V) 2 N.O. standard **LA1DZ40**

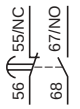


2 N.O. protected (24-50 V) + 1 N.O. + 1 N.C. standard **LA1DZ31**

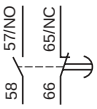


Front mounting add-on contact blocks - Time delay auxiliary contacts (References: pages 218 to 219)

OnDelay 1 N.O. + 1 N.C. **LA2DT•**



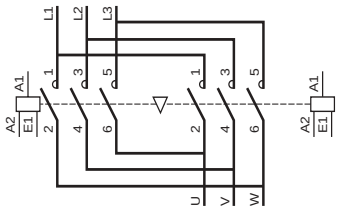
OffDelay 1 N.O. + 1 N.C. **LA3DR•**



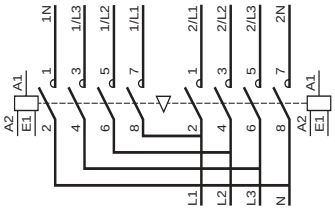
N.C. onDelay + **LA2DS•** break-before-make N.O. contact

3-pole reversing contactors 2 x **CR1F150** to **CR1F630**

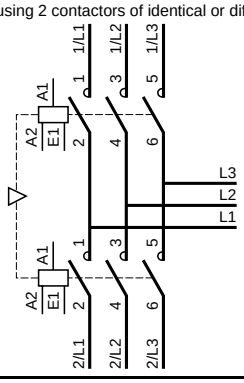
Horizontally mounted

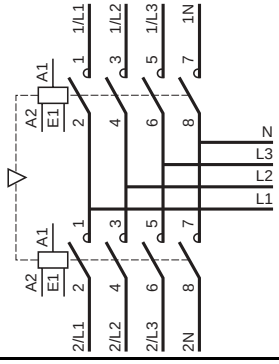


4-pole reversing contactors 2 x **CR1F1504** to **CR1F6304**



Vertically mounted contactors using 2 contactors of identical or different rating





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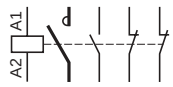
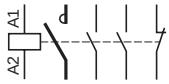
Contactors Type **CR1B**

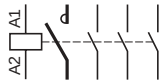
CR1B•31•12



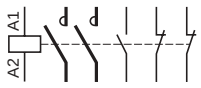
CR1B•31•21



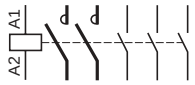
CR1B•31•30



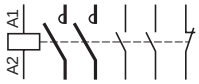
CR1B•32•12



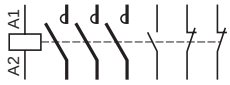
CR1B•32•21



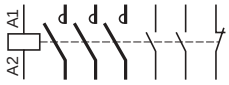
CR1B•32•30



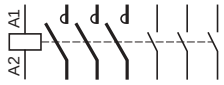
CR1B•33•12



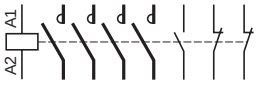
CR1B•33•21



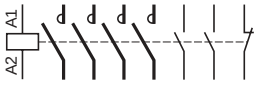
CR1B•33•30



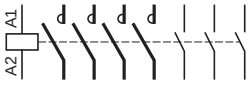
CR1B•34•12



CR1B•34•21

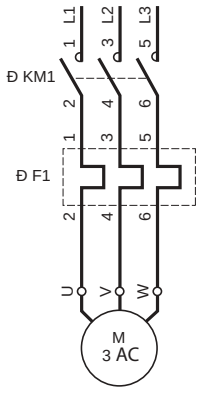


CR1B•34•30

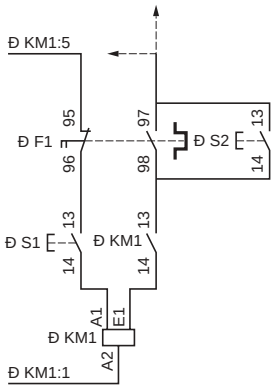


Wiring schematics

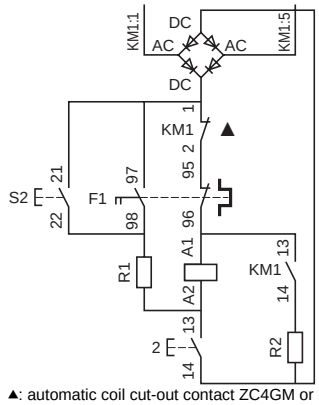
Contactors CR1F and CR1B with thermal overload relay



Contactors CR1F



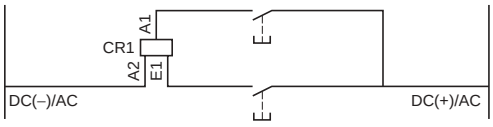
Contactors CR1B



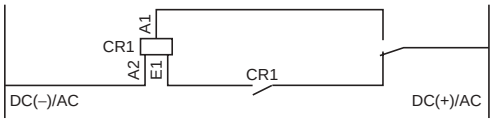
▲: automatic coil cut-out contact ZC4GM or PR4FB00••
S1: latching pushbutton
S2: unlatching pushbutton

Coils for contactors CR1F

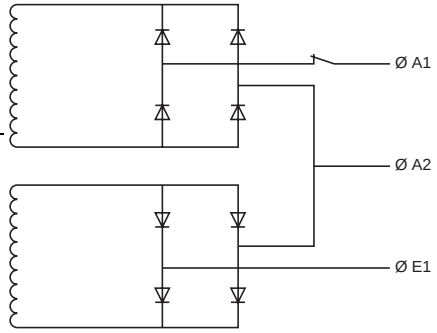
Pushbutton control



Switch control



Schematic of internal circuit



Warning: terminal A2 is common to both windings in all cases.

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