A.4 Specifications for the CPU 224

Table A-4 Specifications for CPU 224 DC/DC/DC and CPU 224 AC/DC/Relay

Description Order Number	CPU 224 DC/DC/DC 6ES7214–1AD20–0XB0	CPU 224 AC/DC/Relay 6ES7214–1BD20–0XB0
Physical Size		
Dimensions (W x H x D)	120.5 mm x 80 mm x 62 mm	120.5 mm x 80 mm x 62 mm
Weight	360 g	410 g
Power loss (dissipation)	8 W	9 W
CPU Features		
On-Board digital inputs	14 inputs	14 inputs
On-Board digital outputs	10 outputs	10 outputs
High speed counters (32 bit value) Total Single phase counters Two phase counters	 6 High-speed counters 6, each at 20 kHz clock rate 4, each at 20 kHz clock rate	 6 High-speed counters 6, each at 20 kHz clock rate 4, each at 20 kHz clock rate
Pulse outputs	2 at 20 kHz pulse rate	2 at 20 kHz pulse rate
Analog adjustments	2 with 8 bit resolution	2 with 8 bit resolution
Timed interrupts	2 with 1 ms resolution	2 with 1 ms resolution
Edge interrupts	4 edge up and/or 4 edge down	4 edge up and/or 4 edge down
Selectable input filter times	7 ranges from 0.2 ms to 12.8 ms	7 ranges from 0.2 ms to 12.8 ms
Pulse Catch	14 pulse catch inputs	14 pulse catch inputs
Time of Day Clock (clock accuracy)	2 minutes per month at 25° C 7 minutes per month 0° C to 55° C	2 minutes per month at 25° C 7 minutes per month at 0° C to 55° C
Program size (stored permanently)	4096 words	4096 words
Data block size (stored permanently): Stored permanently Backed by super capacitor or battery	2560 words 2560 words 2560 words	2560 words 2560 words 2560 words
Number of expansion I/O modules	7 modules	7 modules
Maximum digital I/O	256 points	256 points
Maximum analog I/O	16 inputs and 16 outputs	16 inputs and 16 outputs
Internal memory bits Stored permanently on power down Backed by super capacitor or battery	256 bits 112 bits 256 bits	256 bits 112 bits 256 bits
Timers total Backed by super capacitor or battery 1 ms 10 ms 100 ms	256 timers 64 timers 4 timers 16 timers 236 timers	256 timers 64 timers 4 timers 16 timers 236 timers
Counters total Backed by super capacitor or battery	256 counters 256 counters	256 counters 256 counters
Boolean execution speed	0.37 µs per instruction	0.37 µs per instruction
Move Word execution speed	34 µs per instruction	34 µs per instruction
Timer/Counter execution speed	50 µs to 64 µs per instruction	50 µs to 64 per µs instruction
Single precision math execution speed	46 µs per instruction	46 µs per instruction
Real math execution speed	100 µs to 400 µs per instruction	100 µs to 400 µs per instruction
Super capacitor data retention time	190 hours, typical, 120 hours minimum at 40° C	190 hours, typical, 120 hours minimum at 40° C

Table A-4 Specifications for CPU 224 DC/DC/DC and CPU 224 AC/DC/Relay (continued)

Description Order Number	CPU 224 DC/DC/DC 6ES7214–1AD20–0XB0	CPU 224 AC/DC/Relay 6ES7214–1BD20–0XB0
On-board Communication		
Number of ports	1 port	1 port
Electrical interface	RS-485	RS-485
Isolation (external signal to logic circuit)	Not isolated	Not isolated
PPI/MPI baud rates	9.6, 19.2, and 187.5 kbaud	9.6, 19.2, and 187.5 kbaud
Freeport baud rates	0.3, 0.6, 1.2, 2.4, 4.8, 9.6, 19.2, and 38.4 kbaud	0.3, 0.6, 1.2, 2.4, 4.8, 9.6, 19.2, and 38.4 kbaud
Maximum cable length per segment up to 38.4 kbaud 187.5 kbaud	 1200 m 1000 m	 1200 m 1000 m
Maximum number of stations Per segment Per Network	 32 stations 126 stations	 32 stations 126 stations
Maximum number of masters	32 masters	32 masters
PPI master mode (NETR/NETW)	Yes	Yes
MPI connections	4 total, 2 reserved: 1 for PG and 1 OP	4 total, 2 reserved: 1 for PG and 1 OP
Cartridge Options		
Memory cartridge (permanent storage)	Program, Data, and Configuration	Program, Data, and Configuration
Battery cartridge (data retention time)	200 days, typical	200 days, typical
Power Supply		
Line voltage–permissible range	20.4 to 28.8 VDC	85 to 264 VAC 47 to 63 Hz
Input current CPU only/max load	120/900 mA at 24 VDC	35/100 mA at 240 VAC 35/220 mA at 120 VAC
In rush current (maximum)	10 A at 28.8 VDC	20 A at 264 VAC
Isolation (input power to logic)	Not isolated	1500 VAC
Hold up time (from loss of input power)	10 ms at 24 VDC	80 ms at 240 VAC, 20 ms at 120 VAC
Internal fuse, not user-replaceable	2 A, 250 V, Slow Blow	2 A, 250 V, Slow Blow
+5 Power for Expansion I/O (max)	660 mA	660 mA
24 VDC Sensor Power Output		
Voltage range	15.4 to 28.8 VDC	20.4 to 28.8 VDC
Maximum current	280 mA	280 mA
Ripple noise	Same as input line	Less than 1 V peak-to-peak (maximum)
Current limit	600 mA	600 mA
Isolation (sensor power to logic circuit)	Not isolated	Not isolated

Table A-4 Specifications for CPU 224 DC/DC/DC and CPU 224 AC/DC/Relay (continued)

Description Order Number	CPU 224 DC/DC/DC 6ES7214–1AD20–0XB0	CPU 224 AC/DC/Relay 6ES7214–1BD20–0XB0
Input Features		
Number of integrated inputs	14 inputs	14 inputs
Input type	Sink/Source (IEC Type 1)	Sink/Source (IEC Type 1)
Input Voltage		
Maximum continuous permissible	30 VDC	30 VDC
Surge	35 VDC for 0.5 s	35 VDC for 0.5 s
Rated value	24 VDC at 4 mA, nominal	24 VDC at 4 mA, nominal
Logic 1 signal (minimum)	15 VDC at 2.5 mA, minimum	15 VDC at 2.5 mA, minimum
Logic 0 signal (maximum)	5 VDC at 1 mA, maximum	5 VDC at 1 mA, maximum
Isolation (Field Side to Logic Circuit)		
Optical isolation (galvanic)	500 VAC for 1 minute	500 VAC for 1 minute
Isolation groups of	8 points and 6 points	8 points and 6 points
Input Delay Times		
Filtered inputs and interrupt inputs	0.2 to 12.8 ms, user-selectable	0.2 to 12.8 ms, user-selectable
HSC clock input rate		
Single Phase		
Logic 1 level = 15 to 30 VDC	20 kHz	20 kHz
Logic 1 level = 15 to 26 VDC	30 kHz	30 kHz
Quadrature		
Logic 1 level = 15 to 30 VDC	10 kHz	10 kHz
Logic 1 level = 15 to 26 VDC	20 kHz	20 kHz
Connection of 2 Wire Proximity Sensor (Bero)		
Permissible leakage current	1 mA, maximum	1 mA, maximum
Cable Length		
Unshielded (not HSC)	300 m	300 m
Shielded	500 m	50 m
HSC inputs, shielded	50 m	50 m
Number of Inputs ON Simultaneously		
40 ° C	14	14
55 ° C	14	14
Output Features		
Number of integrated outputs	10 outputs	10 outputs
Output type	Solid state–MOSFET	Relay, dry contact
Output Voltage		
Permissible range	20.4 to 28.8 VDC	5 to 30 VDC or 5 to 250 VAC
Rated value	24 VDC	–
Logic 1 signal at maximum current	20 VDC, minimum	–
Logic 0 signal with 10 K Ω load	0.1 VDC, maximum	–
Output Current		
Logic 1 signal	0.75 A	2.00 A
Number of output groups	2	3
Number of outputs ON (maximum)	10	10
Per group – horizontal mounting (maximum)	5	4/3/3
Per group – vertical mounting (maximum)	5	4/3/3
Maximum current per common/group	3.75 A	8 A
Lamp load	5 W	30 W DC/200 W AC
ON state resistance (contact resistance)	0.3 Ω	0.002 Ω, maximum when new
Leakage current per point	10 µA, maximum	–
Surge current	8 A for 100 ms, maximum	7 A with contacts closed
Overload protection	No	No

Table A-4 Specifications for CPU 224 DC/DC/DC and CPU 224 AC/DC/Relay (continued)

Description Order Number	CPU 224 DC/DC/DC 6ES7214–1AD20–0XB0	CPU 224 AC/DC/Relay 6ES7214–1BD20–0XB0
Isolation (Field Side to Logic)		
Optical isolation (galvanic)	500 VAC for 1 minute	–
Isolation resistance	–	100 M Ω, minimum when new
Isolation coil to contact	–	1500 VAC for 1 minute
Isolation between open contacts	–	750 VAC for 1 minute
In groups of	5 points	4 points/3 points/3 points
Inductive Load Clamping		
Repetitive Energy dissipation < 0.5 LI^2 x switching rate	1 W, all channels	–
Clamp voltage limits	L+ minus 48V	–
Output Delay		
Off to On (Q0.0 and Q0.1)	2 µs, maximum	–
On to Off (Q0.0 and Q0.1)	10 µs, maximum	–
Off to On (Q0.2 through Q1.1)	15 µs, maximum	–
On to Off (Q0.2 through Q1.1)	100 µs, maximum	–
Switching Frequency (Pulse Train Outputs)		
Q0.0 and I0.1	20 kHz, maximum	1 Hz, maximum
Relay		
Switching delay	–	10 ms, maximum
Lifetime mechanical (no load)	–	10,000,000 open/close cycles
Lifetime contacts at rated load	–	100,000 open/close cycles
Cable Length		
Unshielded	150 m	150 m
Shielded	500 m	500 m

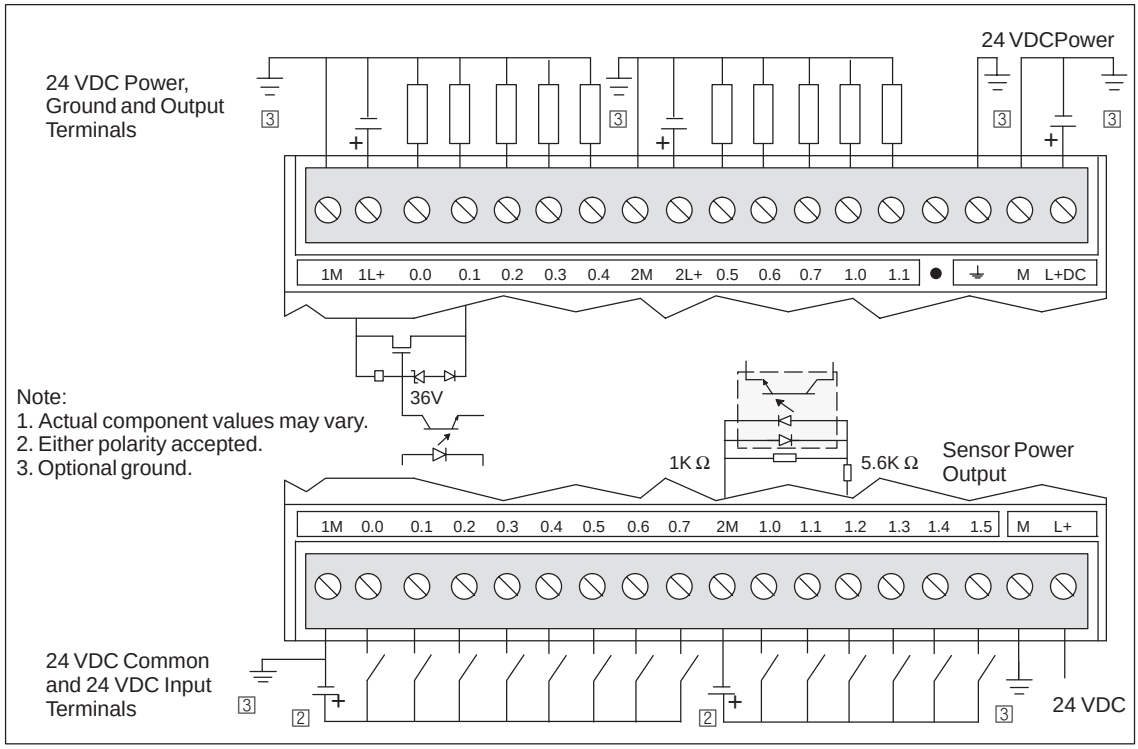

Figure A-6 Connector Terminal Identification for CPU 224 DC/DC/DC

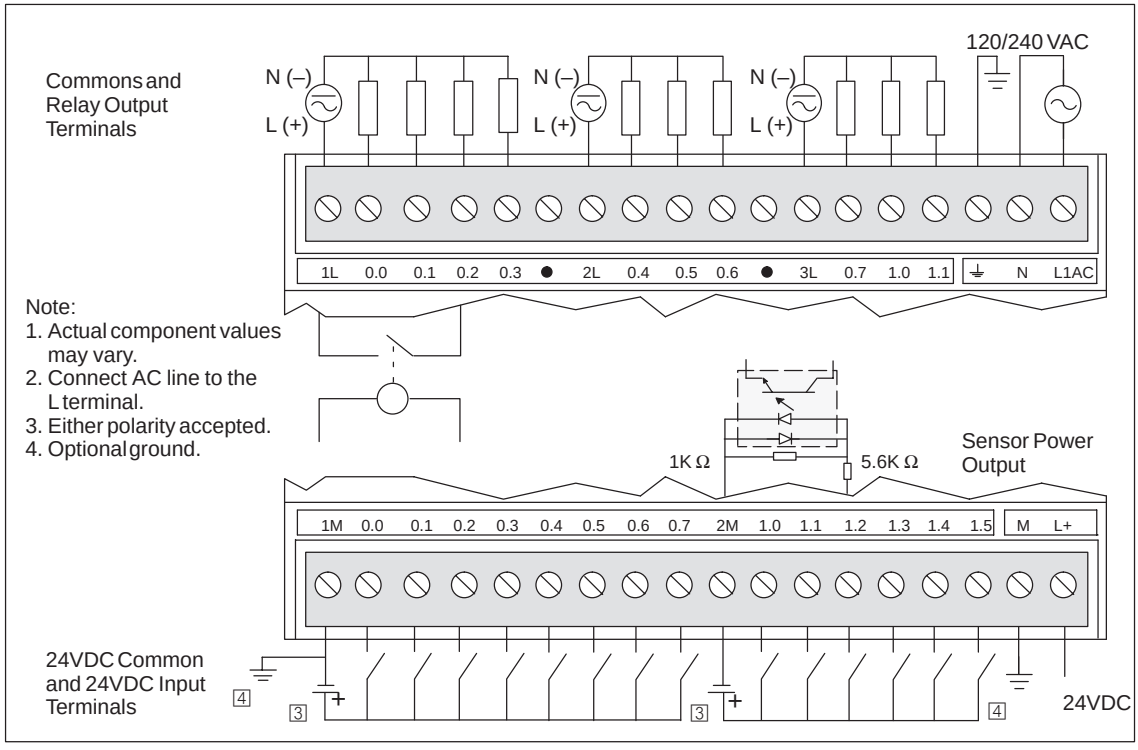

Figure A-7 Connector Terminal Identification for CPU 224 AC/DC/Relay