

1. Features

- Direct operation from AC source (AC220~240V) is available.
- New LED driving method is adopted.
- Product lineup consists of luminous flux 800lm, color temperatures of 3000k, 4000k.
- High dielectric strength voltage is equipped.
- Small and thin size.
- Compliant with RoHS directives.
- Compliant with CE standard (Europe).



2. Application

- Downlights
- Spotlights and so on.

3. Outline drawing

- Unit : mm
- Tolerance :  $\pm 0.8$
- Tc point: Case temperature measuring point
- wire color: Brown(live), Blue(neutral)

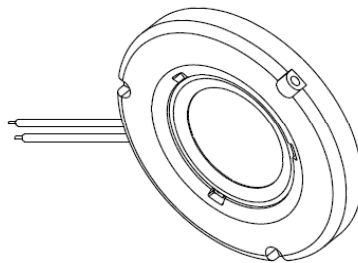
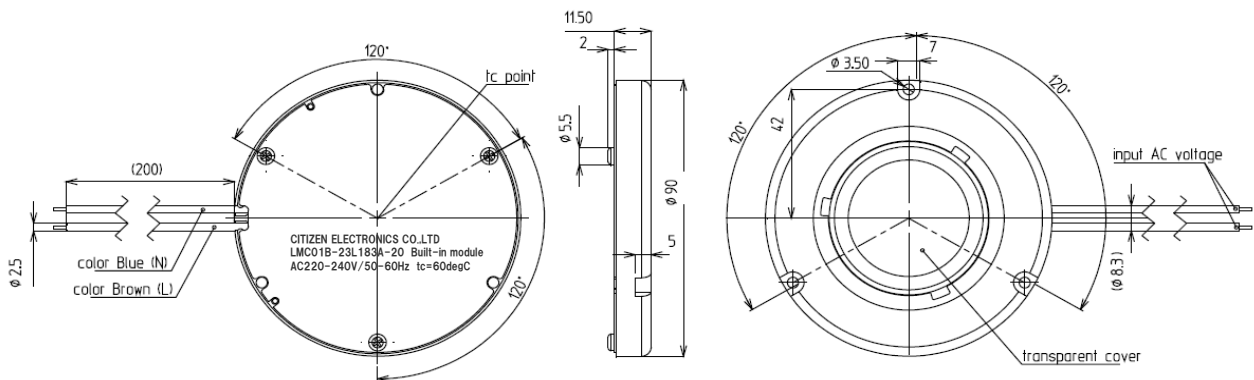
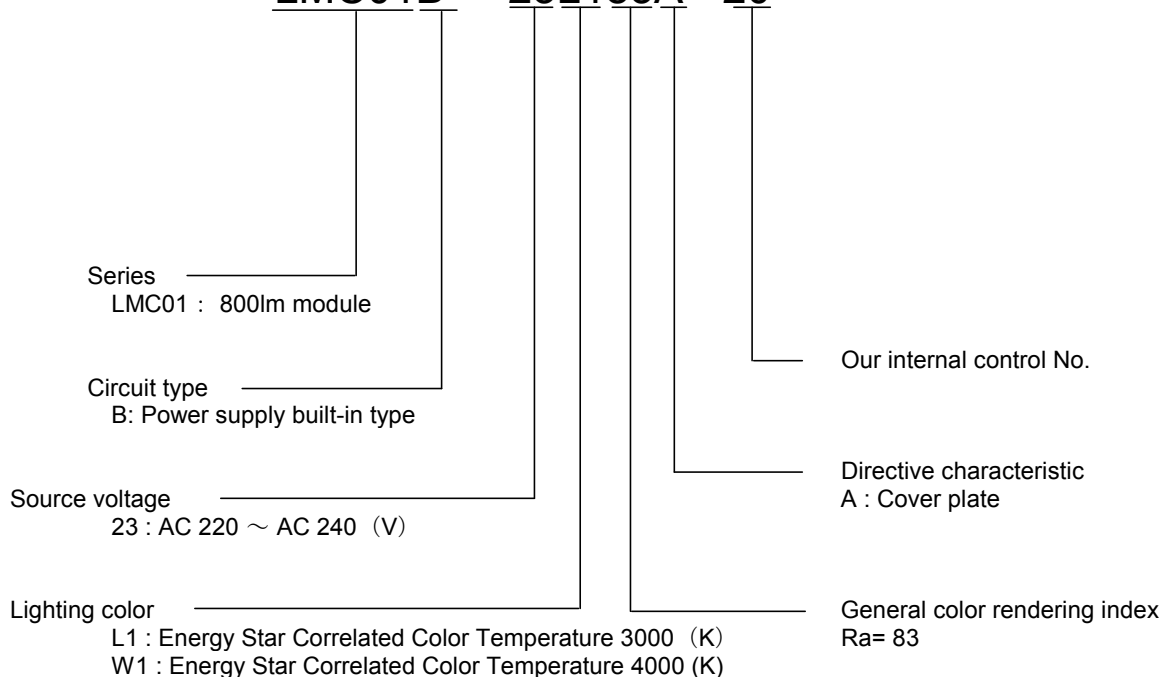


image drawing [scale:free]

4. Parts code

**LMC01B - 23L183A - 20**



5. Performance

(1) Absolute Maximum Rating

Parameter	Symbol	Rating Value	Unit
Input voltage	Vin	264	V
Operating temperature range	Top	- 20 ~ + 40	°C
Storage temperature range	Tst	- 30 ~ + 65	°C
Case temperature	Tcmax	75	°C
Dielectric strength voltage *1	Viso(rms)	4	KV

\*1 Between the end of the wire of power source input and the module surface, Ta=25°C, 40~60%RH, AC (50Hz,60Hz), for one minutes.

(2) Recommended Operating Range

Parameter	Symbol	Rating Value	Unit
Input voltage	Vin	220 ~ 240	V
Input frequency	Frq	50 ~ 60	Hz
Ambient temperature	Ta	- 20 ~ + 40	°C
Case temperature	Tc	60	°C

(3)Electro-optical characteristics

Model : LMC01B-23L183A-20

(Tc= 60°C)

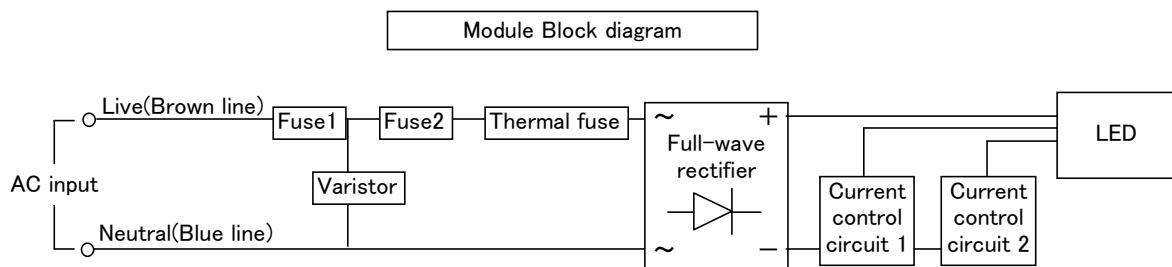
Parameter	Symbol	For 220V		For 230V		For 240V	
		Min	Typ	Min	Typ	Min	Typ
Input voltage/Frequency	Vin[V]/F[Hz]	-	220/50	-	230/50	-	240/50
Input power	P[W]	-	15	-	16	-	18
Luminous flux	Φv[lm]	550	800	585	850	620	900
Efficacy	LPW[lm/W]	-	53	-	53	-	50
Color temperature	CCT[K]	-	3000	-	3000	-	3000
CRI *2	Ra	80	83	80	83	80	83
Directive characteristic	FWHM[deg.]	-	120	-	120	-	120
Current consumption	I[mA]	-	70	-	73	-	76
Power factor	PF[%]	90	97	90	97	90	97
LED off duration	Toff[%]	-	28	-	26	-	25
Flicker frequency	[Hz]	-	100	-	100	-	100

Model : LMC01B-23W183A-20

(Tc= 60°C)

Parameter	Symbol	For 220V		For 230V		For 240V	
		Min	Typ	Min	Typ	Min	Typ
Input voltage/Frequency	Vin[V]/F[Hz]	-	220/50	-	230/50	-	240/50
Input power	P[W]	-	15	-	16	-	18
Luminous flux	Φv[lm]	590	860	630	915	670	970
Efficacy	LPW[lm/W]	-	57	-	57	-	54
Color temperature	CCT[K]	-	4000	-	4000	-	4000
CRI *2	Ra	80	83	80	83	80	83
Directive characteristic	FWHM[deg.]	-	120	-	120	-	120
Current consumption	I[mA]	-	70	-	73	-	76
Power factor	PF[%]	90	97	90	97	90	97
LED off duration	Toff[%]	-	28	-	26	-	25
Flicker frequency	[Hz]	-	100	-	100	-	100

\*2 General color rendering index



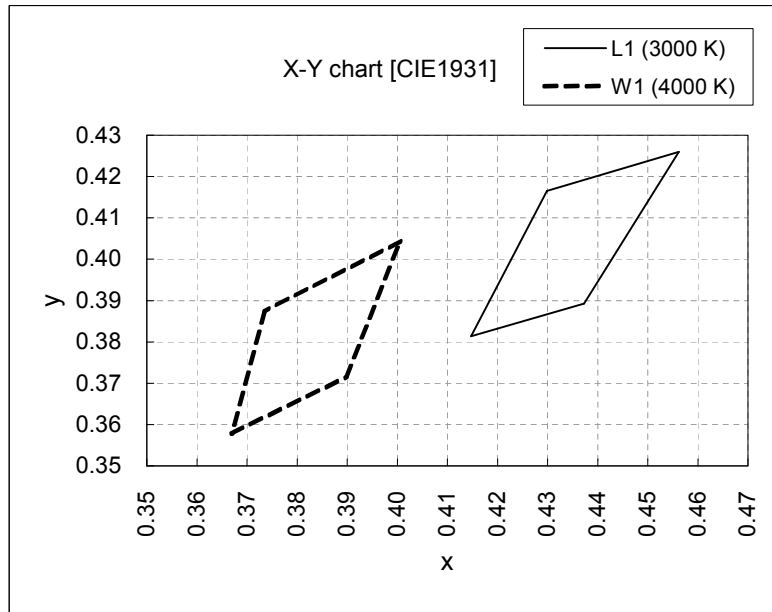
• Material of rear of the product is aluminium. For the sake of safety, earth connection must be avoided.

Note: The tolerance of measurement at our tester is Vf+/-3%, ΦV+/-10%, Chromaticity(x,y)+/-0.005 and Ra+/-1.

Chromaticity coordinate

Color rank		x	y
L1	a	0.456	0.426
	b	0.430	0.417
	c	0.415	0.381
	d	0.437	0.389

Color rank		x	y
W1	a	0.401	0.404
	b	0.374	0.387
	c	0.367	0.358
	d	0.390	0.372



Note: The tolerance of measurement at our tester is Vf $\pm$ 3%,  $\Phi$ V $\pm$ 10%, Chromaticity(x,y) $\pm$ 0.005 and Ra $\pm$ 1.

## 6. Precautions for use

### (1) Usage environment and storage

- Do not use or store the product under the environment where gas of chlorine, sulfur, acidity, chlorine, or salt are compressed or condensed, or any substance which causes corrosion exists. Avoid using the product in the sealed space.
- In the case the product is used by bonding, or connected to other parts as one unit, ensure that there is no quality influence on the product through an appropriate verification.
- Store the product in the ambient temperature of 5-40 degree C, humidity of 20-70%, Recommended storage period is three(3) months. If you use the product after 3 months are passed, please check electrical connectivity before use.
- Use in dry place in doors. (The product is not waterproof.)
- Do not use as a light fitting or an indicating light for an emergency exit.
- Do not connect the product to the fitting which connects to dimming equipment.

### (2) Handling

- For the sake of safety, do not look at LED lighting source directly.
- Flicker is created due to direct operation from AC source.  
Sufficient verification is required when the product is equipped with a device.
- Since this product is designed so as to be used as being assembled in a general lighting fixture, please do not use this product only.  
When assembling to a lighting fixture, ensure sufficient evaluation as a lighting fixture.
- Reflow soldering is not applicable.  
Ultrasonic cleaning is not applicable.
- Do not use cleaning agent nor chemical agent as they can cause discoloration or quality deterioration.
- Excessive shock such as a drop, vibration, or heat which exceeds absolute maximum rating must not be applied to the product because not only deterioration of performance of the product but also degradation of the value of equipped dielectric strength voltage can occur by handling.
- Avoid contacting the product with a sharp metallic nail and so on to the resin portion.  
Do not bend nor twist by adding exterior stress.  
Such handling brings about stress to the soldering part or to the insulation layer of PCB and causes the product no-lighting up, shortning lifetime and destruction as a worst case.
- As LEDs of this product are driven by applying AC source directly, LED part is in high voltage. Do not detach the transparent cover which is equipped covering LED top face of the module, nor use the product without the cover, as such usage is very risky.
- Although this product is equipped with fuses and a temperature fuse, ensure safety measures sufficiently on your product.
- When using this product, make sure to check that there is no contamination nor foreign substances on the transparent cover over the light emission part.  
(For example, black dots, colored tapes or markings etc.)  
Or, in the worst-case scenario, such contamination or foreign substances on the transparent cover cause melting of the cover.
- When handling electric wire for connecting power source, pay full attention not to scratch the coat of wire nor apply pressure by nipping forcibly.

### (3) Handling of static electricity

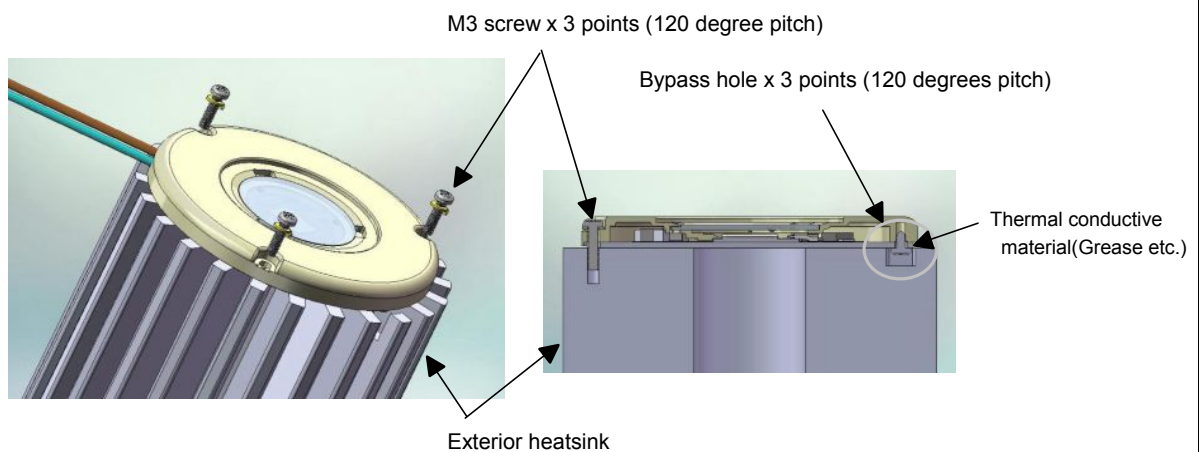
- As these products are sensitive to statistics electricity charge, pay attention when handling and take measures to prevent any static electricity being produced by wearing of a wristband or anti-static gloves and so on.
- All equipment and devices relating to this product must be properly grounded.
- After assembling in device, make sure that there is no damage (leak).
- Detect any damage due to static by a light-on test.
- Although dielectric strength voltage of 4KV is equipped in this product, for the sake of safety, adding insulating function is strongly recommended in your product, for example by insulating your product doubly or triply.

### (4) Driving circuit

- This product must be used within the range of rated voltage.

**(5) Fixing to a heatsink**

- This product should be secured firmly by fastening three M3 screws as shown in the under drawing. When screwing, pay attention not to add stress to the product.
- Material of rear of the product is aluminium.  
When fixing, place thermal conductive material (sheet or grease et cetera) which is heat conductive between the rear of the product and the heatsink and check carefully whether the product and the heatsink are fully bonded before use.
- As three salients by screws are on the rear of the product (heatsink fixing face) at 120 degrees pitch, create bypass holes for them on the heatsink side.
- Do not add any additional process such as mounting holes.  
Do not replace the wiring or disassemble.

**(6) Heat generation**

- This product is designed in consideration of heat release by a luminair, therefore a heatsink must be fixed to the product.  
If this product is used without fixing to a heatsink, smoking and/or ignition can occur.
- Appropriate heat release design is required to use this product efficiently.  
As for heat generation, pay attention to use within the range of rating of the case temperature.
- Factors responsible for an increase in temperature include heat geration attributed to ambient temperature conditions or power dissipation. Thus, drive conditions should be taken into consideration, depending on ambient temperature ( $T_a$ ).

**(7) Others**

- This product complies with RoHS directives.

#### 7. Precautions with regard to product use

1. This document is provided for reference purposes only so that CITIZEN ELECTRONICS' products are used as intended. CITIZEN ELECTRONICS neither makes warranties or representations with respect to the accuracy or completeness of the information contained in this document nor grants any license to any intellectual property rights or any other rights of CITIZEN ELECTRONICS or any third party with respect to the information in this document.
2. All information included in this document such as product data, diagrams, charts, is current as of the date this document is issued. Such information, however, is subject to change without any prior notice. Before purchasing or using any CITIZEN ELECTRONICS' products listed in this document, please confirm the latest product information with a CITIZEN ELECTRONICS' sales office, and formal specifications must be exchanged and signed by both parties prior to mass production.
3. CITIZEN ELECTRONICS has used reasonable care in compiling the information included in this document, but CITIZEN ELECTRONICS assumes no liability whatsoever for any damages incurred as a result of errors or omissions in the information included in this document.
4. Absent a written signed agreement, except as provided in the relevant terms and conditions of sale for product, and to the maximum extent allowable by law, CITIZEN ELECTRONICS assumes no liability whatsoever, including without limitation, indirect, consequential, special, or incidental damages or loss, including without limitation, loss of profits, loss of opportunities, business interruption and loss of data, and disclaims any and all express or implied warranties and conditions related to sale, use of product, or information, including warranties or conditions of merchantability, fitness for a particular purpose, accuracy of information, or no infringement.
5. Though CITIZEN ELECTRONICS works continually to improve products' quality and reliability, products can malfunction or fail. Customers are responsible for complying with safety standards and for providing adequate designs and safeguards to minimize risk and avoid situations in which a malfunction or failure of a product could cause loss of human life, bodily injury or damage to property, including data loss or corruption. In addition, customers are also responsible for determining the appropriateness of use of any information contained in this document such as application cases not only with evaluating by their own but also by the entire system. CITIZEN ELECTRONICS assumes no liability for customers' product design or applications.
6. Please contact CITIZEN ELECTRONICS' sales office if you have any questions regarding the information contained in this document, or if you have any other inquiries.