

Signal Tower

Type : LES / LE / LEL

INSTALLATION MANUAL

Notice to Customer

Thank you very much for purchasing our PATLITE product.

- Request the installation and wiring be performed by a professional contractor if construction work is involved.
- Prior to installation, read this manual thoroughly before using this product to ensure correct use.
- After reviewing this manual, if there are any questions regarding this product, please contact the nearest PATLITE office listed on the back cover of this manual.

Notice to Contractor

- Read this manual carefully prior to installation.
- Be sure to return this manual to the customer.

Safety Precautions

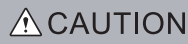
In order to prevent any damage to the user and other personnel or to assets, note the following:

- The following symbols classifies the following precautions into two categories and explains the level of harm inflicted when caution is disregarded while using this product.



WARNING

Indicates an immediately dangerous condition: failure to follow the instructions may lead to death or serious injury.



CAUTION

Indicates a potentially dangerous condition: failure to follow the instructions may lead to slight injury or property damage.

1 Safety Precautions

Safety Precautions

! WARNING

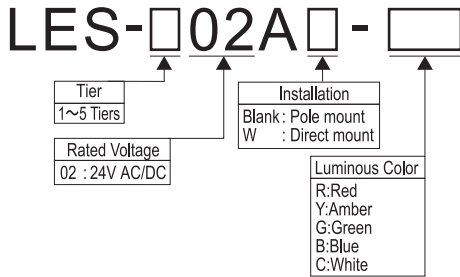
- Make sure the power is off before wiring, repairing, or replacing parts to avoid a short-circuit, electric shock, or burn.
- Please use this product in a properly maintained condition.
(If parts such as the Body or LED Unit are damaged, they should be repaired.)
- Do not use this product with the lens damaged or removed, or without the head cover in order to avoid an electric shock.
- If installing this product requires construction work, please ask a specialist in order to avoid electric shock, fire, or personal injury.
- When this product is used for security purposes, it should be inspected daily. In case a malfunction should occur, it is recommended that you use this product together with other security products.
- Do not use this product to support your weight while climbing onto a machine. Mount the product so that it is clear of any moving parts - such as a machine cover.

! CAUTION

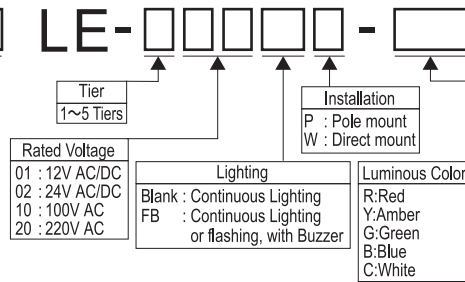
- Concerning replacement parts, such as LED unit, bulb or fuse, be sure to use those specified in this manual.
- For safety, make sure to connect an external fuse to the power source as shown in the wiring example.
- Do not substitute parts from other products as this may cause a breakdown.

2 Model Number Configuration

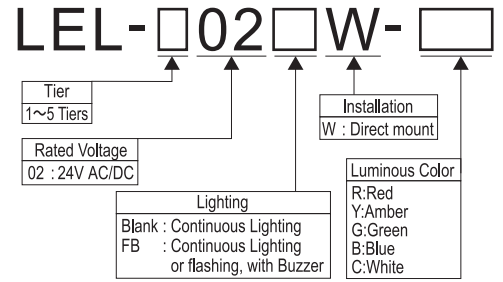
Type LES



Type LE



Type LEL



3 Part Names and Outer Appearance

Parts Names

(Pole mount)

■Type LES-A

■Type LE-P (12V,24V AC/DC)

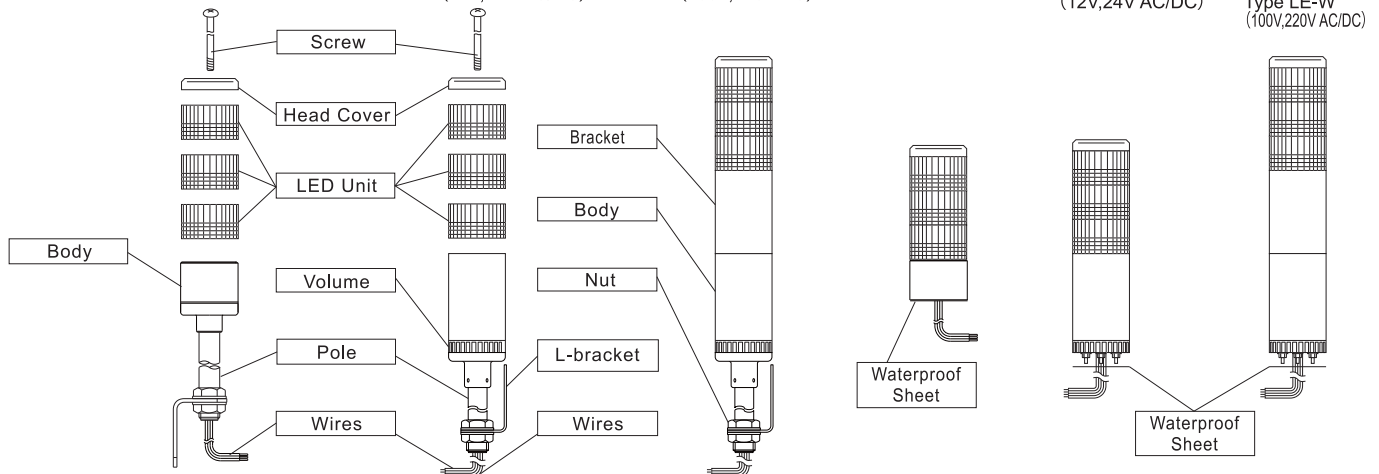
■Type LE-P (100V,220V AC)

(Direct mount)

■Type LES-AW

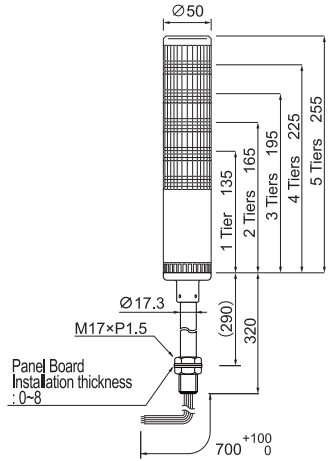
■Type LE-W (12V,24V AC/DC)

■Type LEL-W (100V,220V AC/DC)
Type LE-W (100V,220V AC/DC)

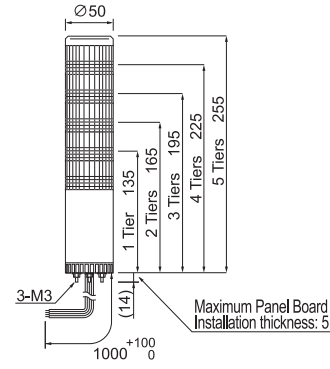


Dimensions

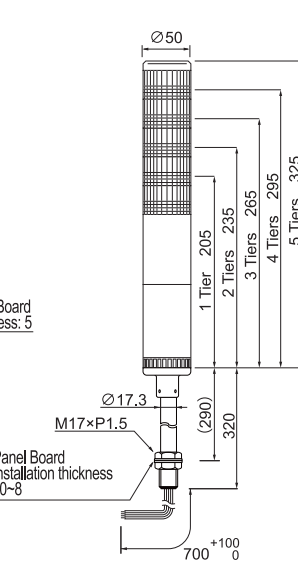
■Type LE-P (12V,24V AC/DC)
[Pole mount]



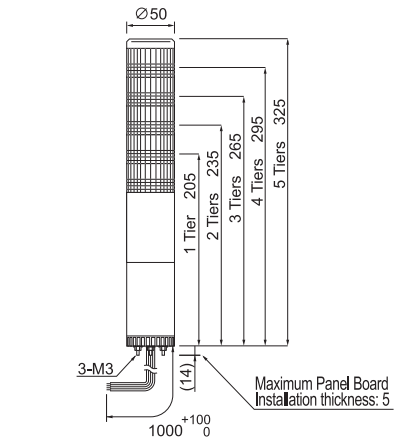
■Type LE-W (12V,24V AC/DC)
[Direct mount]



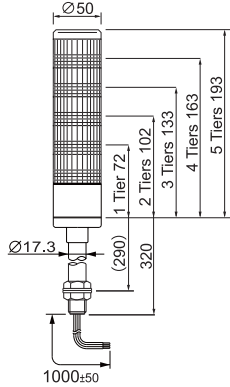
■Type LE-P (100V,220V AC)
[Pole mount]



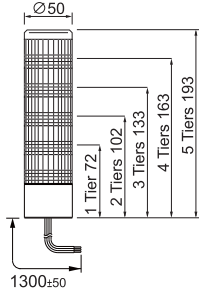
■Type LEL-W
Type LE-W (100V,220V AC)
[Direct mount]



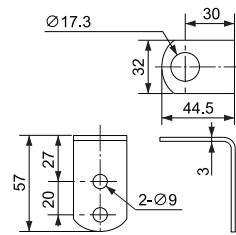
■Type LES-A (Pole mount)



■Type LES-AW (Direct mount)



■L-bracket



4 Installation

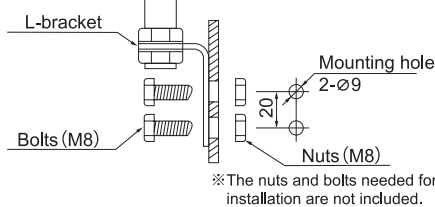
CAUTION

- The following requirements are necessary for proper installation.
 - Install where no excessive vibration is present.
 - Install on a strong surface.
 - Install in an upright position. (Do not install the Signal Tower sideways or inverted.)
- This product can only be used indoors. (Do not use it outdoors.)
- Use a soft cloth moistened with water when the LED Unit or Body must be cleaned up. (Do not use thinner, benzine, gasoline or oil.)
- When installing this product, do not use excessive torque, or the product may be damaged.
- During installation, do not remove the waterproof sheet, it will increase possible water penetration and may cause a malfunction.
- This product also has 1mm thick waterproof packing at the bottom of the pole bracket. However, because installation surface unevenness may cause a lack of waterproofing protection, it is recommended to apply waterproof sealant between the unit and the installation surface to maintain waterproof conditions.

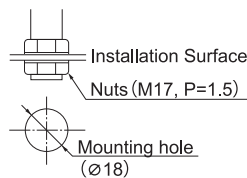
How to Install

- Drill mounting holes in the wall for L-bracket installation, or in the panel for direct mount installation.
- Secure the L-bracket with hex bolts and hex nuts (not supplied), or the accessory nuts (supplied).
- ※ With buzzer models, the alarm can be heard best from the front direction. Therefore, make sure the Signal Tower is facing the correct direction before installation.

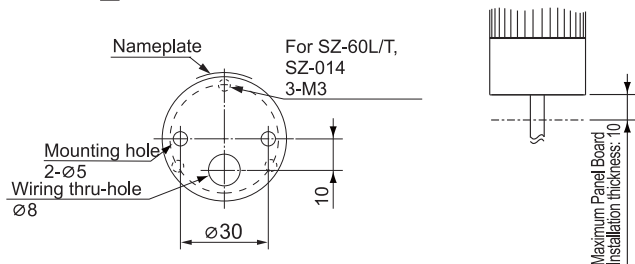
■Type LE-P/LES-A
(Side Mounting Installation)



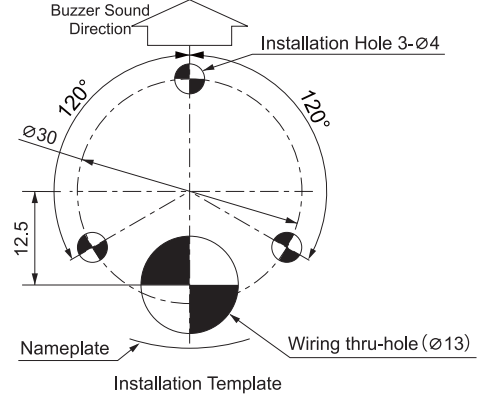
(Flat Surface Installation)



■LES-AW型



■Type LE(L)-W (Unit : mm)



Using this template

1. Verify the hole positions on the product.
 2. Secure the template onto the installation surface using adhesive tape.
 3. Mark the installation holes using a nail punch, etc.
 4. Drill the holes in the installation surface.
- ※ Confirm the direction of the name plate and the wiring route before you drill the holes.

※ When LES-W type is installed in pole bracket (SZ-60L/T type), Three screws (Pan head screw with flat and spring washer M3x7) are needed. When LES-W type is installed in Bracket (SZ-014 type), Three screws (M3x6) are needed. (The tightening torque is about 0.59N·m.)

5 Wiring

⚠ CAUTION

- Make sure the power is OFF before wiring. A short circuit may damage internal circuits or cause an electric shock.
- Enough attention shall be paid for wiring because if there is any mistakes in wiring a circuit may break down.
- Install the external contact fuse on the power supply side as shown in the wiring example in order to prevent burn in case of a wiring error.
- [100V/220VAC Type] Do not apply voltage directly to signal wires and common wires. It may damage the circuit.
- Do not apply voltage directly to the brown wire. It may cause a breakdown.(FB type)
- Do not pull out the lead wire or push it into the pole or the body.

Caution

- Simultaneously turning on the external contact for both constant lighting and flashing for the same light (color), may cause another light (color) to light up. To avoid this, provide separate switches for flashing or continuous lighting.
- When turning on the same function, such as flashing or alarms, for more than one product simultaneously, be sure to use separate external contacts for each product and function.
- When using both alarm sounds on one product, use separate contacts for the alarms and the lights.

How to perform wiring

- Turn the power OFF.
- Make wiring connection according to wiring example.
- When wiring 5 layers or less, please make wiring connection by increasing or decreasing external contacts in each layer according to wiring example.
- When using LED units of the same color, calculate the contact current capacity to be equal to the number of the LED units multiplied by the contact capacity for 1 light. (This is because current passes through one signal line for the LED units of the same color.)
- When wiring is completed, insulate the end of each unused lead wire with insulation tape.
- Any questions regarding applications for multiple units, or other special operations, contact your nearest PATLITE Sales Representative before wiring. [To be recognized as a UL standard.]
- Fuse for protection of external contact should be installed within 305mm from the connected point of the power source wire.
- Use a "Class 2 Circuit" for the power supply source (Type: 24V DC) and be sure to use the fuse and fuseholders authorized by UL, Inc.
- Use the fuse conforming to the rated current of the machine which the product was installed on. (Example : Class J type fuse)

Wire Color Table

LED Unit

Luminous Color	Wire Color
Red	Red
Amber	Orange
Green	Green
Blue	Blue
White	White

Buzzer (FB Type)

Buzzer	Wire color
Buzzer1: Continuous	Purple
Buzzer2: Intermittent	Skyblue

- ※ Lead wires are only included with the flashing/buzzer option.
- ※ Buzzer 1 is priority when connected simultaneously to common with buzzer 2.

External Contact Capacity

External Contact (Transistor) Capacity

Voltage Specifications		12V AC/DC	AC/DC 24V	AC 100V	AC 220V
LED Unit (Per Light)	Current Consumption	Red·Amber : 43.0mA Green·Blue·White : 24.0mA		Red·Amber : 25.0mA Green·Blue·White : 14.8mA	
	Contact Capacity	$I_s \geq 100\text{mA}$, $V_s \geq 30\text{V AC}$		$I_s \geq 50\text{mA}$, $V_s \geq 50\text{V AC}$	
Buzzer	Current Consumption	40mA			
	Inrush Current	2A		250mA	
	Contact Capacity	$I_s \geq 300\text{mA}$, $V_s \geq 50\text{V AC}$			
Power Supply	Current Consumption	400mA	360mA	40mA	20mA
	Contact Capacity	$I_s \geq 500\text{mA}$ $V_s \geq 30\text{V AC}$	$I_s \geq 500\text{mA}$ $V_s \geq 50\text{V AC}$	$I_s \geq 100\text{mA}$ $V_s \geq 125\text{V AC}$	$I_s \geq 50\text{mA}$ $V_s \geq 250\text{V AC}$
Leakage Current		$I_l \leq 0.1\text{mA}$			

※: I_s : Current Capacity, V_s : Withstand Voltage, I_l : Leakage Current

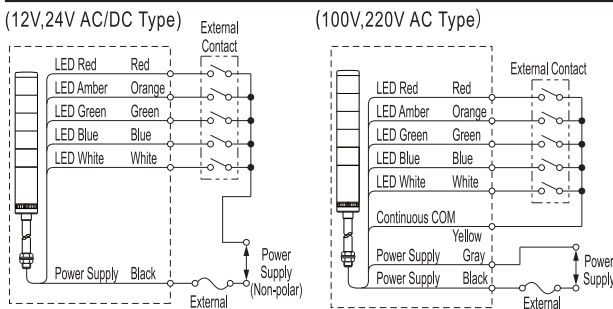
External Fuse

Voltage	Fuse Rating
All Model	250V 1A

※Use the fuse conforming to the rated current of the machine which the product was installed in. (Example : Class J type fuse)

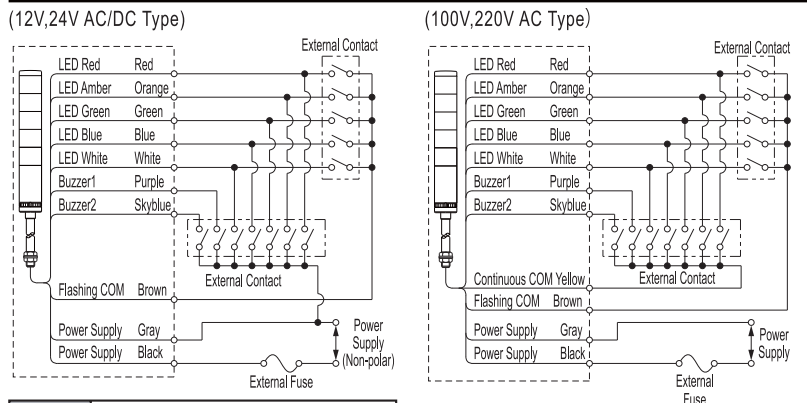
Wiring Example

LE(L)/LES [Continuous Lighting] Type



CAUTION Only apply voltage to the Power Supply Wire.

LME-FB [Continuous Lighting, Flashing/Buzzer] Type



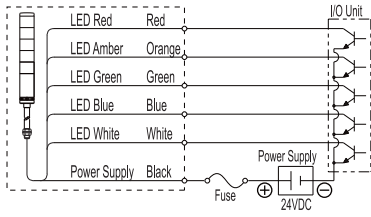
CAUTION Do not apply voltage to the Flashing COM (Brown) wire.

CAUTION Only apply voltage to the Power Supply Wire.

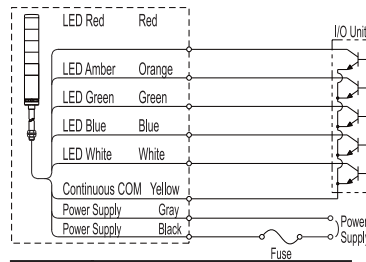
Wiring Example (NPN/PNP Transistor drive)

Continuous Lighting

NPN Transistor (12V,24V Type)

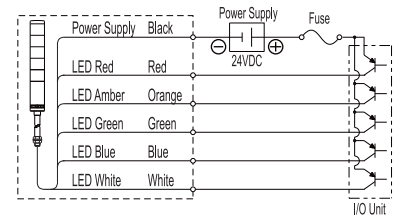


NPN Transistor (100V,220V Type)



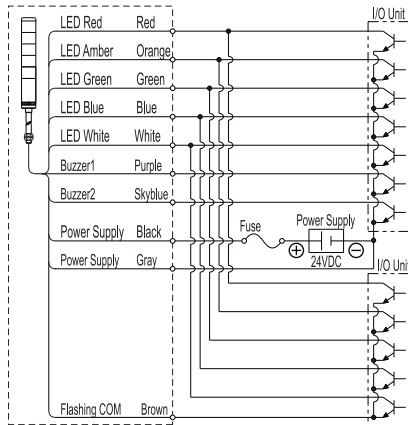
CAUTION Only apply voltage to the Power Supply Wire.

PNP Transistor (12V,24V Type)



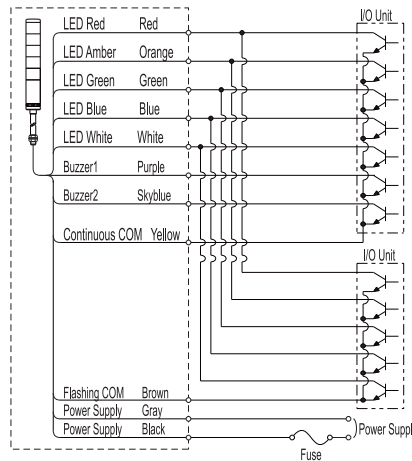
Continuous Lighting, Flashing/Buzzer (FB Type) (When using the FB type, use a separate I/O unit for flashing)

NPN Transistor (12V,24V Type)



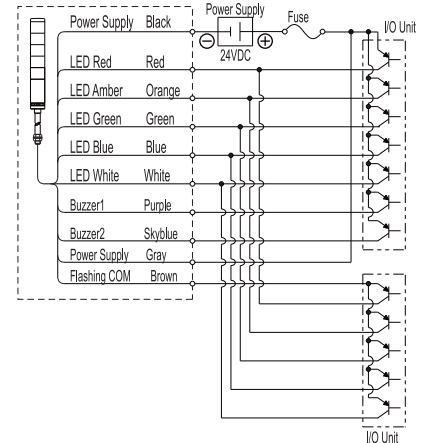
CAUTION Do not apply voltage to the Flashing COM (Brown) wire.

NPN Transistor (100V,220V Type)



CAUTION Only apply voltage to the Power Supply Wire.

PNP Transistor (12V,24V Type)



CAUTION Do not apply voltage to the Flashing COM (Brown) wire.

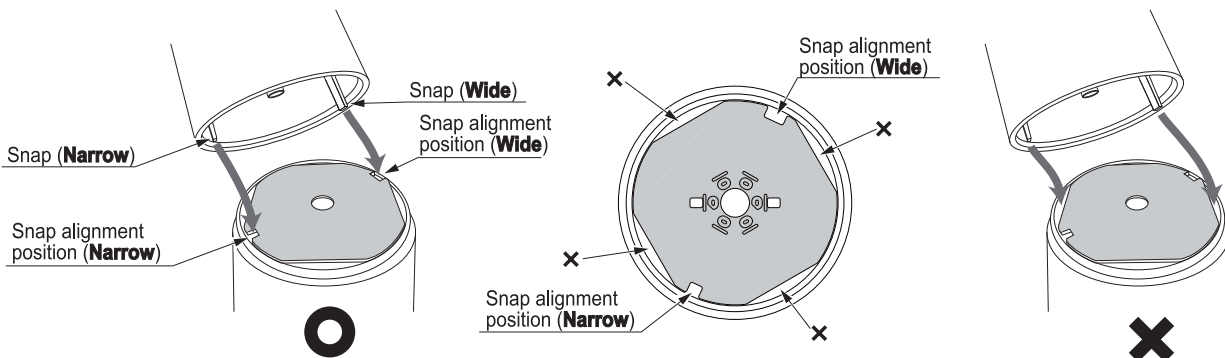
6 Changing LED Unit positions

CAUTION

- Make sure the power is off before wiring, repairing, or replacing parts to avoid a short-circuit, electric shock, or burn.
- Do not remove the LED unit forcibly as it may damage the unit.
- When the center screw is loosened or removed, the LED units become unstable and may separate. Therefore, handle carefully to avoid damage.
- Handle the LED units carefully to avoid warping or damage when changing their positions on the tower.
- Screwing the head cover too tight may damage it. The recommended torque is about 0.59N·m.

Changing LED Unit positions

- Turn the power off before changing LED unit positions.
- Unscrew the head cover and remove the lens.
- Each LED unit is secured by 2 small snaps of different sizes to ensure that the module is assembled correctly.
- When changing the number of modules, install a center screw to match the number of tiers.
- LES-A has the lead wires of adapted LED module for the factory default color only. The LED module of LES-A cannot be adapted, removed or interchanged.
- In case of LES Type, bottom LED unit can not be removed or interchanged.



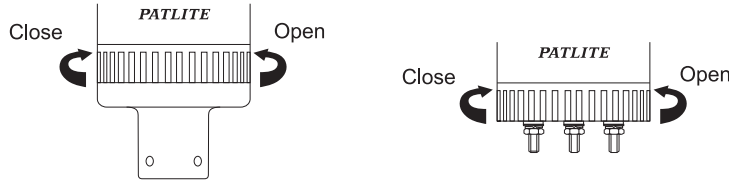
7 Volume Adjustment

⚠ CAUTION

- Do not move the lever forcibly as it may damage the volume control.

Volume Adjustment

- The volume can be adjusted by moving the lever near the bottom of the base to the left or right.
- The volume is at maximum when the lever is positioned right side.
 [Pole mount type] [Direct mount type]



8 Specifications

■ Type LE

Tiers	Model	UL Registration Model	Rated Voltage	Power Consumption	Mass	Flash Cycle (fpm) and sound level	Wire type /Diameter						
1 Tier	-101(FB)P/W	LE- 01(FB)P/W	12V AC/DC	12,24V Type Red·Amber· Green·Blue·White : 0.6W Buzzer : 0.5W (12V) 1.0W (24V)	0.69kg(P)	Flashing cycle FB Type 60 Flashes per minute	(12,24V Type) Black wire UL1007AWG20 Others UL1007/AWG22						
	-102(FB)P/W	LE- 02(FB)P/W	24V AC/DC		0.31kg(W)								
	-110(FB)P/W	x	100V AC		0.78kg(P)								
	-120(FB)P/W	x	220V AC		0.40kg(W)								
2 Tiers	-201(FB)P/W	LE- 01(FB)P/W	12V AC/DC		100V,220V Type Red·Amber : 1.0W Green·Blue·White: 0.8W Buzzer : 1.2W Standby : 3.5W			0.74kg(P)	Sound level FB Type 70~85 dB (1m)	(100,220V Type) Power source wire UL1007AWG20 Lead wire UL1007AWG22			
	-202(FB)P/W	LE- 02(FB)P/W	24V AC/DC					0.36kg(W)					
	-210(FB)P/W	x	100V AC					0.83kg(P)					
	-220(FB)P/W	x	220V AC					0.45kg(W)					
3 Tiers	-301(FB)P/W	LE- 01(FB)P/W	12V AC/DC					100V,220V Type Red·Amber : 1.0W Green·Blue·White: 0.8W Buzzer : 1.2W Standby : 3.5W			0.79kg(P)	Sound level FB Type 70~85 dB (1m)	(100,220V Type) Power source wire UL1007AWG20 Lead wire UL1007AWG22
	-302(FB)P/W	LE- 02(FB)P/W	24V AC/DC								0.41kg(W)		
	-310(FB)P/W	x	100V AC								0.88kg(P)		
	-320(FB)P/W	x	220V AC								0.50kg(W)		
4 Tiers	-401(FB)P/W	LE- 01(FB)P/W	12V AC/DC	100V,220V Type Red·Amber : 1.0W Green·Blue·White: 0.8W Buzzer : 1.2W Standby : 3.5W		0.84kg(P)	Sound level FB Type 70~85 dB (1m)				(100,220V Type) Power source wire UL1007AWG20 Lead wire UL1007AWG22		
	-402(FB)P/W	LE- 02(FB)P/W	24V AC/DC			0.46kg(W)							
	-410(FB)P/W	x	100V AC			0.93kg(P)							
	-420(FB)P/W	x	220V AC			0.55kg(W)							
5 Tiers	-501(FB)P/W	LE- 01(FB)P/W	12V AC/DC		100V,220V Type Red·Amber : 1.0W Green·Blue·White: 0.8W Buzzer : 1.2W Standby : 3.5W	0.89kg(P)			Sound level FB Type 70~85 dB (1m)	(100,220V Type) Power source wire UL1007AWG20 Lead wire UL1007AWG22			
	-502(FB)P/W	LE- 02(FB)P/W	24V AC/DC			0.51kg(W)							
	-510(FB)P/W	x	100V AC			0.98kg(P)							
	-520(FB)P/W	x	220V AC			0.60kg(P)							

■ Type LEL

Tiers	Model	UL Registration Model	Rated Voltage	Power Consumption	Mass	Flash Cycle (fpm) and sound level	Wire type /Diameter
1 Tier	-102(FB)W	LEL- 02(FB)W	24V AC/DC	Red·Amber· Green·Blue·White : 0.6W Buzzer : 1.0W	0.31kg	60 Flashes per minute Sound level 70~85 dB (1m)	UL1007/AWG22
2 Tiers	-202(FB)W				0.36kg		
3 Tiers	-302(FB)W				0.41kg		
4 Tiers	-402(FB)W				0.45kg		
5 Tiers	-502(FB)W				0.51kg		

■ Type LES

Tiers	Model	UL Registration Model	Rated Voltage	Power Consumption	Mass	Wire type /Diameter
1 Tier	-102A(W)	LES- 02A(W)	24V AC/DC	Red·Amber· Green·Blue· White: 0.6W	0.50kg	UL1007/AWG20
2 Tiers	-202A(W)				0.07kg(W)	
3 Tiers	-302A(W)				0.53kg	
4 Tiers	-402A(W)				0.10kg(W)	
5 Tiers	-502A(W)				0.56kg	
					0.13kg(W)	
					0.59kg	
					0.16kg(W)	
					0.62kg	
					0.19kg(W)	

- This product is recognized as a UL standard. (12V, 24V AC/DC type)
 For recognition as a UL standard;
 - Use on a flat surface with a Type 1 Enclosure.
 - Maximum surrounding air temperature is at 60°C.
- This product conforms to EN standard and shows the CE Marking. (12V, 24V AC/DC type)
 This product has been tested and found to comply with the limits for a Class A device, pursuant to EMC DIRECTIVE.
 These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
 This product must not be used in residential areas.

Caution

- PATLITE Corporation disclaims all liability for any malfunction or damage occurring as a result of handling contrary to the instructions, cautions and warnings mentioned in this manual.
- Specifications may change without notice due to continual product improvement.

PATLITE Corporation

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