

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.

SIGNAL LIGHT

Model **LS7**

LED SIGNAL LIGHT

INSTRUCTION MANUAL

[Maintenance Version]

Installation Operation Maintenance

	Page
1 Safety Precautions	16
2 Model Number Configuration	17
3 Part Names and Outer Appearance	17
4 Stackable Tower Construction	18
5 Block Diagram	18
6 Installation	19
7 Wiring	21
8 Volume Adjustment	23
9 Post-installation Relocation	24
10 Inspection	24
11 Troubleshooting	25
12 Specifications	26
13 Replacement Parts	26
14 Option Parts	27

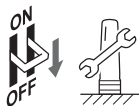
1 Safety Precautions

Safety Precautions



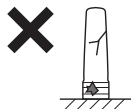
WARNING

Failure to observe the following may result in death or serious injury.



To prevent from short-circuits, electric shock or damage, observe the following:

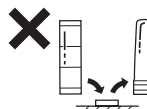
- Be sure the signal light is disconnected from the power supply before wiring or performing repair work.



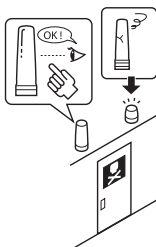
- Use the signal light in a properly maintained condition.
(If parts such as the base or outer cover are cracked, they should be repaired.)



Request the installation and wiring be performed by a professional contractor if construction work is involved.
Failure to comply may result in fire, electric shock or falling from high places may occur.



Do not modify or disassemble the signal light.



To ensure proper safety while using the signal light, observe the following:

- Perform periodic pre-maintenance.
(→ "10 Inspection" (P.24))
- As a precaution against problems occurring, use this product together with other equipment.



To ensure safety when the signal light is installed onto equipment, observe the following.



- Do not use the signal light as leverage when climbing up onto the equipment. Failure to comply will result in falling from a high place, or damage to the product.
- When performing tasks such as opening the covers of the equipment, be careful not to snag anything on the signal light. Failure to observe may result in damage.

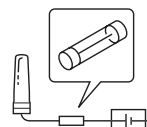


CAUTION

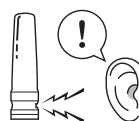
If the following are not observed, injury to personnel or physical damage may result.



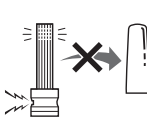
Use only the specified replacement parts listed in this manual.



To protect the power supply and other internal circuitry, be sure to install an external fuse.



Avoid long exposure to the buzzer sound from a close distance. Failure to observe this may lead from irritation to permanent damage to the ears.
([B] Buzzer included specifications)



Do not disassemble or detach during operation.

Signal Light Application

This product is a multipurpose signal light, designed principally for giving notifications of the operating status for FA (Factory Automation) equipment in factories, etc., using LEDs and buzzers※.

※ [B] Buzzer included specifications only

Instruction Manual Objective

- The images in this manual may vary in comparison to the actual product and are only for the purpose of illustration.
- Store this manual in a location for future reference.

2 Model Number Configuration

	Model	Number of Lighting Units	Rated Voltage	Body Color	Lighting	Buzzer	Mounting	Wiring	Color
Model No.	LS7-	↓	02	↓	↓	↓	W	↓	-RYGBC

5 5 LED Tiers
3 3 LED Tiers

Common to all models Rated Voltage : 24 V DC

(None) Off-white
D Dark Gray
S Silver

(None) Illumination Only
F Illumination and Flashing

(None) Buzzer not Included
B Buzzer Included

Common to all models
'Direct Installation' Only

LED colors in order from top to bottom:
(5 Tiers)
Red, Amber, Green, Blue and White.
(3 Tiers)
Red, Amber, Green, and N, N.
※ N (Blank)

C M12 Connector
H Lead Wires ※

※ **F** 'Illumination and Flashing' function is only available for the **H** Lead wires specifications.

Model Number Example

LS7-502WC-RYGBC

· Body color : Off-white
· Lighting : Illumination only
· Buzzer : Not Included
· Input : M12 connector

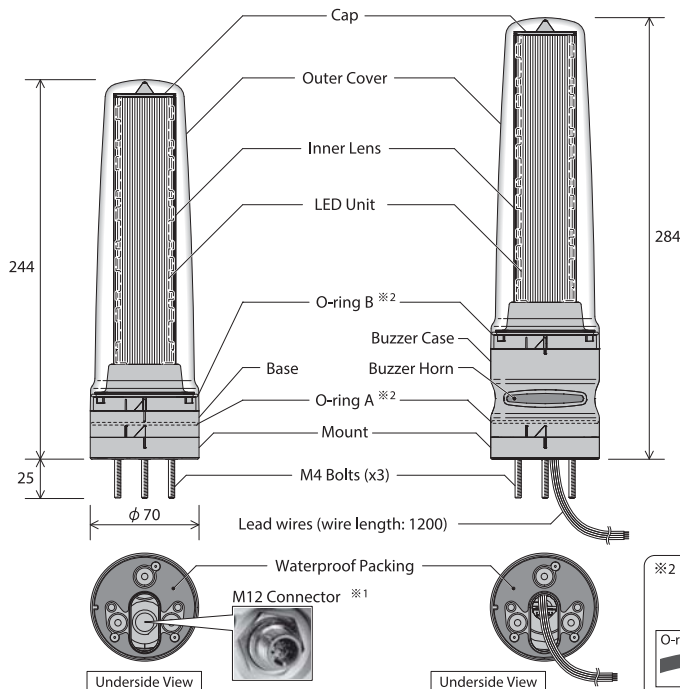
LS7-302SFBWH-RYGN

· Body color : Silver
· Lighting : Illumination and flashing
· Buzzer : Included
· Input : Lead wires

3 Part Names and Outer Appearance

■ Buzzer not included **C** M12 connector specifications

■ **B** Buzzer included **H** Lead wires specifications

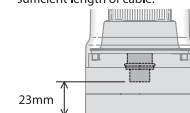


Accessories	
Nuts (M4)	x3
Mount Cover	x1
→ 9 Post-Installation Relocation" (P.24)	

※1 About the M12 Connector

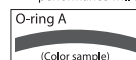
· It is recommended to use the optional connector with cable for wiring. (→ **14** Option Parts" (P.27))
(Note) It is not included for this product (LS7).

· Because the M12 connector is inside the signal light, be sure to allow a sufficient length of cable.



(For **B** Buzzer included specifications, the length is 55 mm.)

※2 Separate "O-ring A" from "O-ring B" by color. Caution: do not mix-up "O-ring A" from "O-ring B" when replacing. Waterproofing performance will deteriorate.



(Note) The color sample is standard. However, minor variance in color may occur with the actual product.

(Note) The Signal Light LED array is not replaceable.

(Units: mm)

4 Stackable Tower Construction

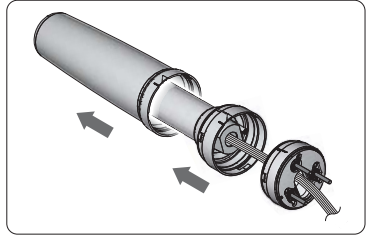
What is a 'Stackable Structure'?

The 'stackable structure' is a feature which allows the main signal light unit and the outer cover to be separated with just a single touch. (Previous signal lights require tools to disassemble, such as removing screws.)

The 'stackable structure' makes maintenance and inspection easier.

CAUTION

Never disassemble or remove any parts outside the stackable parts.



Procedure for removing the stackable parts

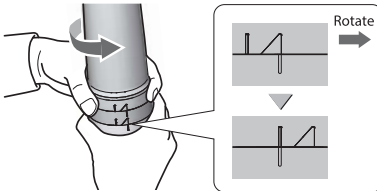
Refer to the procedure below to remove the stackable parts.

To reinstall, follow the procedure in the reverse order.

The following example is for a model without a buzzer included.

The removal procedure is the same for the outer cover or the Option Parts. (→ "14 Option Parts" (P.27))

1 Unlock the base.

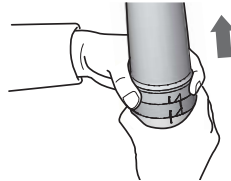


Hold the base and the mount, and rotate until the bar marks are aligned.

Tip

- The lock may be stiff.
- When reinstalling, fully rotate the base until the triangle mark and bar mark are aligned.

2 Remove the base.



Pull the base in the upward direction to remove it.

Tip

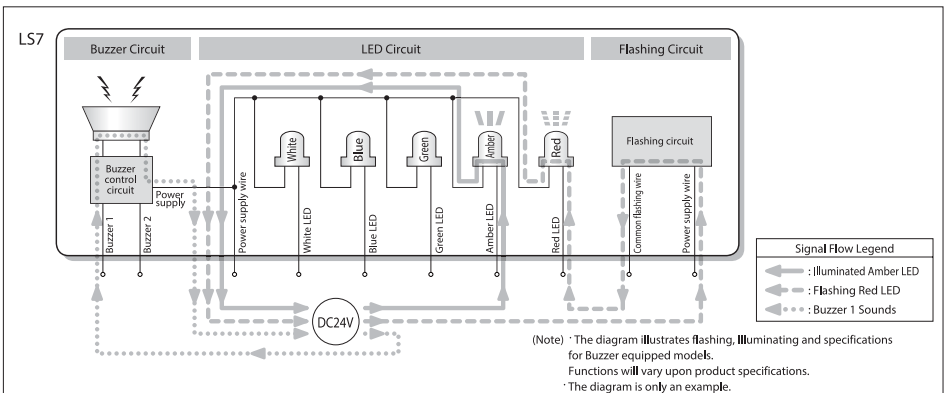
- Do not twist the base too hard when removing it.

Tip

The signal light is equipped with a buzzer case instead of a base for the models equipped with the buzzer.

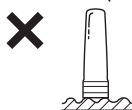
5 Block Diagram

The following illustrates the internal block diagram for the signal light. Use it as reference when wiring.



6 Installation

⚠ CAUTION



The following requirements are necessary for proper installation.

- Install the signal light where excessive vibration is not present.
- Install the signal light on a sturdy surface.
- Install the signal light on a level surface.



The buzzer is unidirectional, therefore it is most easily audible in the buzzer source direction. Position the signal light so that the buzzer diaphragm is facing in the desired sound direction.

(**B** Buzzer included specifications)

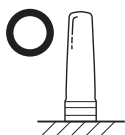


Use a soft cloth, etc., dampened with water to wipe the main signal light unit.

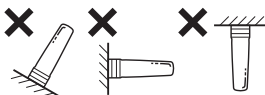
(Do not use cleaners containing chemicals such as thinner, alcohol, gasoline or oil.)



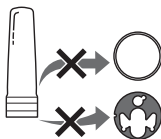
- Thinner
- Alcohol
- Gasoline
- Oil



Install the signal light in an upright position.



Sound Pressure might decrease in an environment where water is splashing.



To ensure the waterproofing performance of this product, do not remove the O-ring or the waterproof packing.



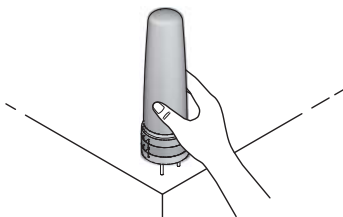
○ Type1 Enclosure

For use on a flat surface of a type 1 enclosure when device is installed as intended.

General Installation

(Note) Refer to the individual Instruction manuals for the Platform bracket and Wall-mount bracket when installing.

1 Verify the signal light installation position.

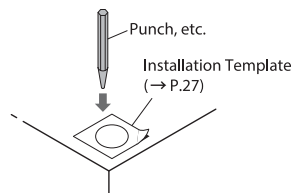


Tip

- Use the following tips to check the following:
 - Will it obstruct other equipment?
 - Can the wiring be routed properly?
 - Where is the buzzer direction facing?

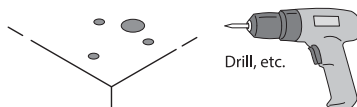
(**B** Buzzer included specifications)

2 Marking holes for wiring and installation.



Use the installation template located on P.27 and a punch, etc. to mark the places to make the holes.

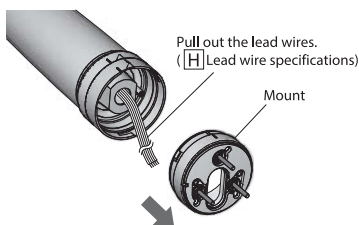
3 Making the installation and wiring holes.



Use a drill, etc., to make holes for installation and wiring.

Continued on next page

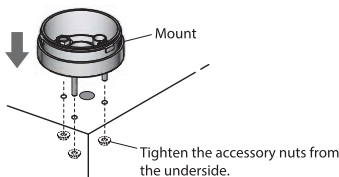
4 Remove the signal light from the mount.



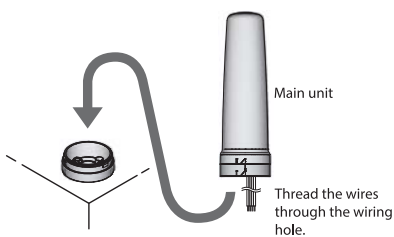
Tip

- Refer to "4 Stackable Tower Construction" (→P.18) for details on how to remove the mount.

5 Place the mount in the installation holes.



6 Attach the main unit to the mount.



Thread the lead wires through the mount and wiring hole, before installing the main unit to the mount.

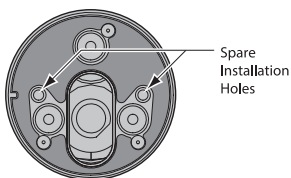
Tip

- For the [C] M12 connector option, thread the cable through the wiring hole and mount before connecting it to the main unit.
- Refer to "4 Stackable Tower Construction" (→P.18) for details on how to remove the mount.
- Be careful not to pinch the lead wires or cable.
- Adjust the sound to the desired level.
(Refer to "8 Volume Adjustment" (→P.23))
- [B] Buzzer included specifications
- Make sure to allow some slack for the lead wires or cable in order to adjust the volume.
- [B] Buzzer included specifications

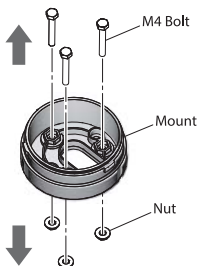
Optional Installation Method

If it is difficult to work on the underside by tightening the nuts when installing the mount, use the spare installation holes.

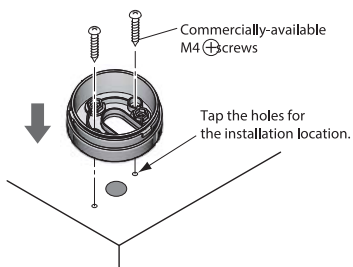
Underside View



1 Remove the existing bolts and nuts.



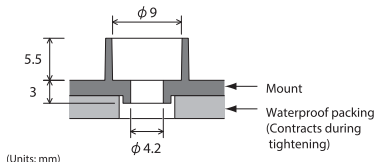
2 Install with commercially-available screws.



Tip

- Be sure to use screws long enough, keeping in mind the thickness of the mount, waterproof packing and mounting material's thickness, by referring to the illustration below.

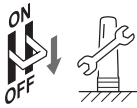
■ Cross-section for the spare installation holes



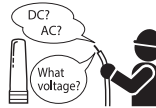
(Units: mm)

7 Wiring

⚠ WARNING



Prior to wiring, ensure the power supply is disconnected from the signal light.



Verify the power supply voltage and whether it is direct current or alternating current.

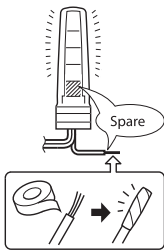
⚠ CAUTION



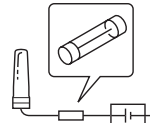
Never apply a voltage to the "flashing common" wire. Failure to observe will result in damage to the circuitry. ([E] Illumination and flashing specifications)



Never connect the power supply wire to the "flashing common" wire. Failure to observe will result in damage to the circuitry. ([E] Illumination and flashing specifications)



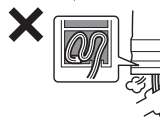
When there are unused lead wires for the LED tiers, be sure to separately insulate the ends of each unused lead wire.



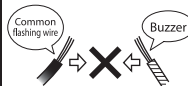
To protect the power supply and other internal circuitry, be sure to install an external fuse.



Do not pull on the lead wire.

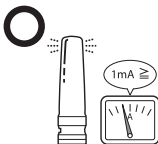


Do not push lead wires up into the main unit.

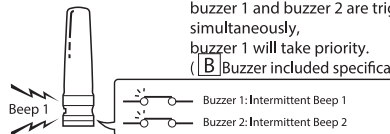


Do not connect the "flashing common" wire with the buzzer wire. ([B] Buzzer included specifications)

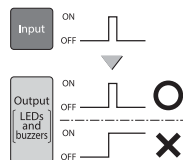
Quick Tips



If the leakage current from equipment, such as a PLC unit output, is 1 mA or more, the LEDs may show a dim illumination, but it is not the sign of a problem.



For models with the buzzer, if buzzer 1 and buzzer 2 are triggered simultaneously, buzzer 1 will take priority. ([B] Buzzer included specifications)



The LEDs and the buzzers will only operate when a signal input is present. (They do not operate on one-shot signal pulses.)

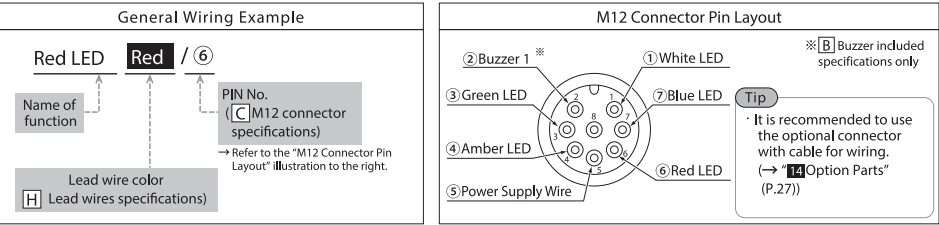


When adding an additional length of wire, use the appropriate wire lengths and wire diameters to ensure there are no voltage drops.

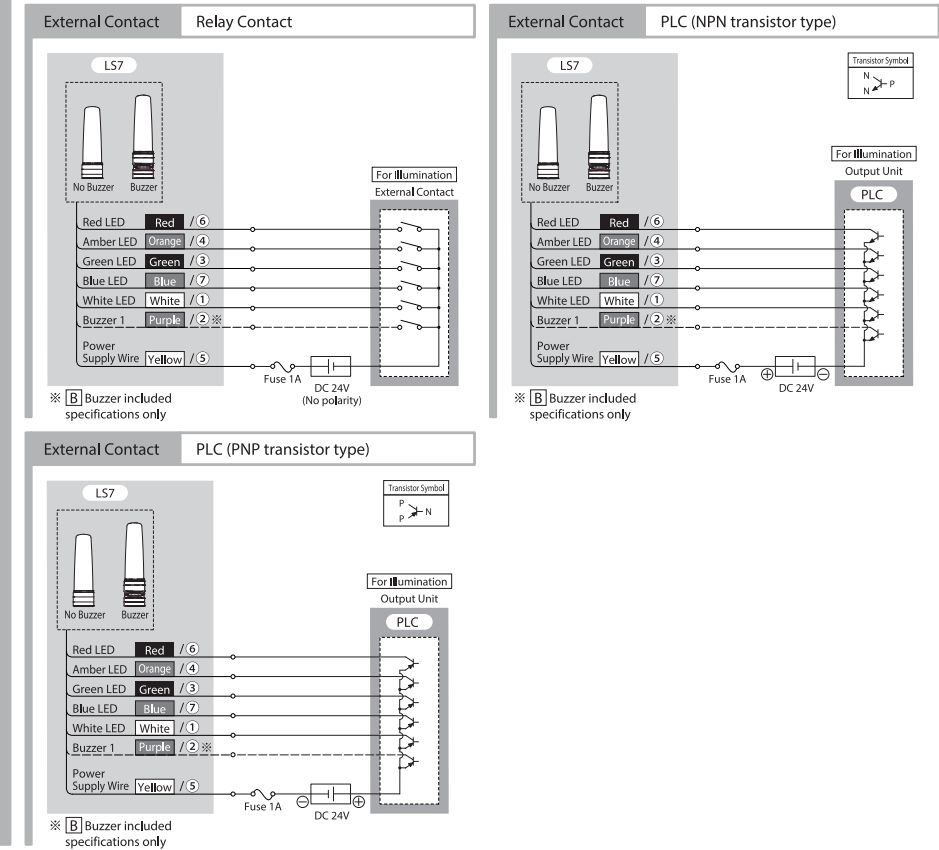
Wiring Examples

Wiring examples are shown in accordance to the signal light model and external contact type. If the signal light is being used under special conditions and there are any questions, contact our PATLITE office prior to performing any wiring.

CAUTION Do not connect unused lead wires to external contacts when unnecessary. Insulate all unused lead wires with insulation tape, etc.



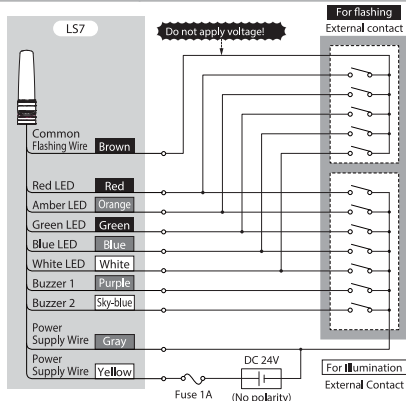
Product specifications	Illumination only Buzzer not included / B Buzzer included	Model	LS7-502□(B) W □
------------------------	---	-------	-----------------



(Note) When using illuminating and flashing features together, it is necessary to have separate output units for the illuminating and flashing functions at the PLC side.

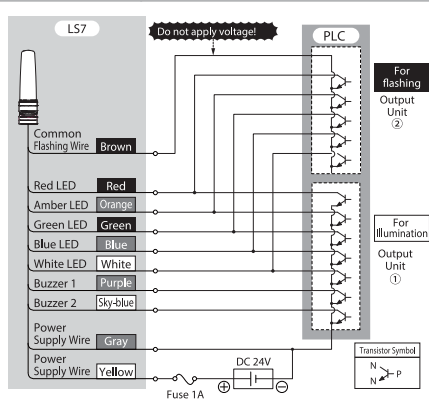
External Contact

Relay Contact



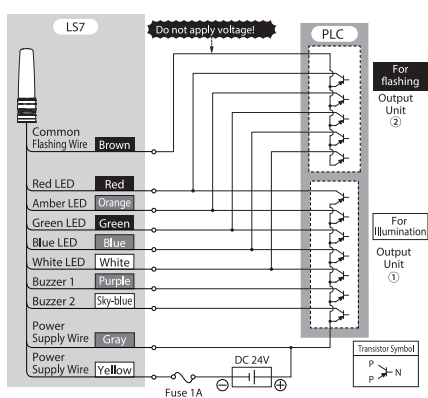
External Contact

PLC (NPN transistor type)



External Contact

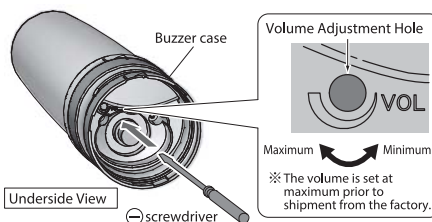
PLC (PNP transistor type)



8 Volume Adjustment

The volume adjustment of the buzzer is done by inserting a screwdriver into the volume adjustment hole of the buzzer case.

Refer to "4 Stackable Tower Construction" (→ P.18) for details on removing the buzzer case.



Underside View

screwdriver

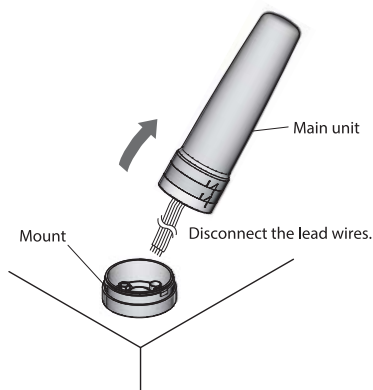
CAUTION

Do not rotate the volume any further than its specified range of movement when adjusting.

9 Post-installation Relocation

When installing the signal light to equipment which is portable, observe the following when moving the equipment.

1 Detach the main unit from the mount.

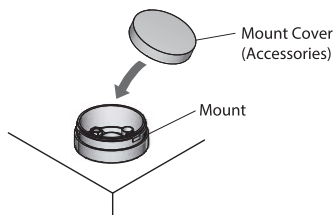


Remove the main unit from the mount.

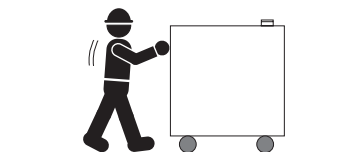
Tip

- Refer to “**4** Stackable Tower Construction” (→P.18) for reattaching the main unit to its original position.
- For models with the M12 connector, disconnect the cable from the main unit.

2 Install the optional mount cover.



3 Transport the equipment.



After relocating, remove the mount cover and reinstall the main unit in its original position.

Tip

- Store the mount cover in a safe place after using it.

10 Inspection

To ensure safe operation, it is recommended to perform the following:

Inspection Item	Inspection Repair
Are all the LEDs illuminated?	Refer to the “ 11 Troubleshooting” section (→P.25) if they do not illuminate.
Are all the buzzer functions sounding? (For models equipped with the Buzzer function, only)	Refer to the “ 11 Troubleshooting” section (→P.25) if they do not sound.
Check the outside appearance. Is there any damage?	If there is any external damage such as cracks, or missing parts, stop using the signal light and replace the necessary parts or the main unit. (Refer to “ 13 Replacement Parts” (→P.26))

11 Troubleshooting

If a problem occurs, check the following table to remedy the problem before calling for service.

No.	Problem	Where to Check	Solution
1	The LEDs do not illuminate.	Is the wiring properly connected?	Refer to " 7 Wiring" (→P.22,23) to double-check the wiring connection.
		Is the power supply at the correct voltage?	Be sure to use a 24V DC power supply.
		Is the fuse blown?	If the fuse is blown, replace it.
2	A different LED color from what I thought lights up when I make it turn on.	Is the wiring properly connected?	Refer to " 7 Wiring" (→P.22,23) to double-check the wiring connection.
3	The buzzer does not sound.	Is the wiring properly connected?	Refer to " 7 Wiring" (→P.22,23) to double-check the wiring connection.
		Is the power supply at the correct voltage?	Be sure to use a 24V DC power supply.
		Is the fuse blown?	If the fuse is blown, replace it.
		Double-check the product model.	Only signal lights with a B in the model type are equipped with a buzzer function.
4	The buzzer volume is too low.	Is the buzzer volume set to minimum?	Refer to " 8 Volume Adjustment" (→P.23) for adjusting the volume.
5	When I connect to the "buzzer 2" connection, "buzzer 1" will sound.	Is the external contact for "Buzzer 1" turning on?	Priority is given to "buzzer 1" when simultaneous signal inputs to "buzzer 1" and "buzzer 2" are applied.
		Is the wiring properly connected?	Refer to " 7 Wiring" (→P.22,23) to double-check the wiring connection.
6	The LEDs do not flash.	Is the wiring properly connected?	Refer to " 7 Wiring" (→P.22,23) to double-check the wiring connection.
		Are the external contacts for lighting turning on?	Priority is given to the lighting input over the flashing input when simultaneous signals are applied.
		Double-check the product model.	Only signal lights with an F in the model type are equipped with a flashing function.
7	How is the outer cover and base (buzzer case) removed?	Only designated parts of the signal light's stackable structure allows removable parts.	Refer to " 4 Stackable Tower Construction" (→P.18) for proper assembly and disassembly. (Never disassemble or remove any parts other than the stackable parts.)

If the problem is not corrected, even after the above remedies have been performed, use the table below to make detailed notes of the product, its problem, and then contact either the place of purchase or your nearest PATLITE Sales Representative.

● The place of purchase ● A PATLITE office (Refer to back cover)

Product Details			
Product name	LED SIGNAL LIGHT	Purchase Date	/ /
Model	(→ 2 Model Number Configuration" (P.17))	Symptoms of Problem	With as much detail as possible

12 Specifications

Product Specifications

Model	LS7-□02 (None/D/S) WC	LS7-□02 (None/D/S) WH	LS7-□02 (None/D/S) BWC	LS7-□02 (None/D/S) FBWH
UL Registration model	LS7-_02 (None/D/S) WC	LS7-_02 (None/D/S) WH	LS7-_02 (None/D/S) BWC	LS7-_02 (None/D/S) FBWH
Rated Voltage	DC 24V			
Installation Location	Indoor use only			
Maximum surrounding air temperature rating	60°C			
Power Consumption	LED	30 mA per tier (Red:20mA)		
	Buzzer	—	40mA	30mA
Standby Current	—			10mA※
Buzzer Duration	—			520msec.
Sound Pressure (at 1m)	—			Approx.82dB Buzzer 1 : Approx.82dB Buzzer 2 : Approx.85dB
Inrush Current	—			150mA
Flashing Frequency	—			60±12 times/min.
Wire Type	UL1007			
Wire Gauge	AWG22			
Mass	Approx.260g	Approx.280g	Approx.320g	Approx.370g

※The standby current is based on a product with an operating LED, with the buzzer included, the current will be higher.

. This product conforms to the RoHS directive (DIRECTIVE 2002/95/EC).

. This product complies with EN regulations and shows the CE symbol. (EN61000-6-4, EN61000-6-2)

External Contact Specifications

■ Contact Relay Type (Switch)





Rated Voltage Load	Rated Current	
	LED	Buzzer
DC24V	100 mA or more per level	200 mA or more

■ PLC Output Unit

Rated Voltage Load	Rated Current		Leakage Current
	LED	Buzzer	
DC24V	100 mA or more per level	200 mA or more	0.1 mA or less

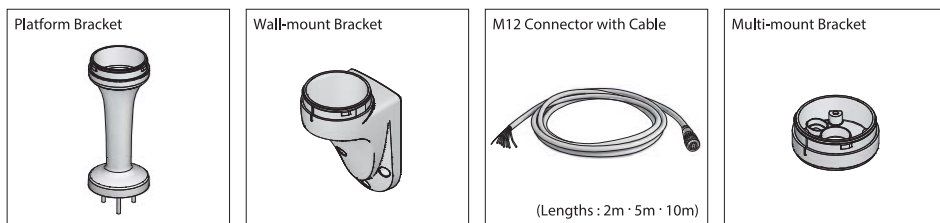
13 Replacement Parts

The following are replacement parts available for this product. For further details, refer to our company website.

<p>Outer Cover</p>  <p>"O-ring B" is included</p>	<p>O-ring A</p> 	<p>O-ring B</p> 	<p>Mount Cover</p> 
--	---	---	--

14 | Option Parts

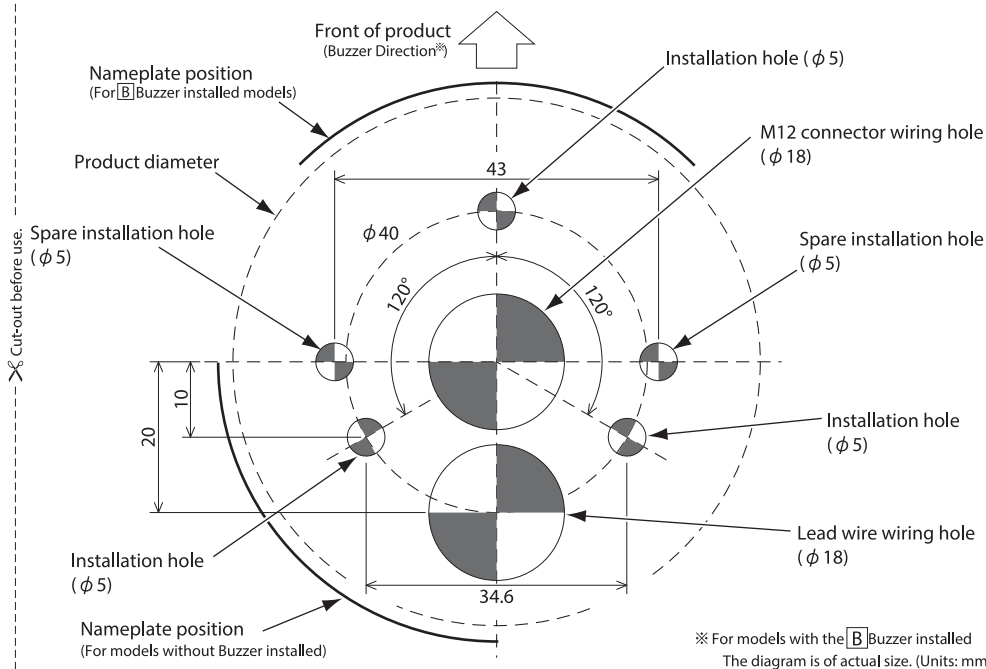
This product includes the following option parts. For details, refer to our company website.



(Note) When mounting the option parts, refer to the operation manual included with it.
("M12 Connector with Cable" not applicable)

LS7 Installation Template

Make the necessary holes according to the product model and installation method. (For more details on installation, refer to P.19)



世界中に「安心・安全・楽業」をお届けする	
株式会社 パトライト	
J1A	
本社	〒542-0067 大阪市中央区松屋町8-8
※記載内容は、変更されることがあります。あらかじめご了承ください。	
http://www.patlite.co.jp	
受付時間 9:00～17:00 土/日/祭日と夏期/年末年始の休日は、 留守番電話でお受けいたします。※ご注文・価格・商品内容等は、各営業所拠点または代理店にお問い合わせください。	(無料) 技術相談窓口 ■ TEL 0120 (497) 090 ■ FAX 079 (568) 6604 <small>シグナル オフレ</small>

PATLITE Corporation		G1B
International Division Sales & Marketing Department		TEL. +81-6-6763-8220
8-8 Matsuya-machi, Chuo-ku, Osaka 542-0067 Japan		FAX. +81-6-6763-8221
PATLITE (U.S.A.) Corporation		TEL. +1-310-328-3222
20130 S. Western Avenue, Torrance, CA 90501 U.S.A.		FAX. +1-310-328-2676
PATLITE Europe GmbH		TEL. +49-811-99819770-0
Am Soeldnermoos 8, D-85399 Hallbergmoos, Germany		FAX. +49-811-99819770-9
PATLITE (SINGAPORE) PTE LTD		TEL. +65-6226-1111
No.2 Leng Kee Road, #05-01 Thyee Hong Centre, Singapore 159086		FAX. +65-6324-1411
PATLITE (CHINA) Corporation		TEL. +86-21-6630-8969
Room 512, Jufeng Business Building, No.697-3 Lingshi Road, Shanghai 200072, China		FAX. +86-21-6630-8938
PATLITE KOREA CO., LTD.		TEL. +82-2-523-6636
A-2603, Daesung D-POLIS, 543-1 Gasan-dong, Geumcheon-gu, Seoul, 153-803 Korea		FAX. +82-2-861-9919
http://www.patlite.com/		

最新の製品情報などがホームページでご覧になれます。	http://www.patlite.co.jp
---------------------------	---

The latest product information can be viewed on our company's website.	http://global.patlite.com
--	---

〈注〉・寸法・仕様および構造などは、改善のため予告なく変更することがあります。

・パトライトおよび PATLITE は、株式会社パトライトの日本及び各国の登録商標または商標です。

(Note) ・ Dimensions, specifications and structure are subject to change for improvement without notice.

・ PATLITE is a trademark or registered trademark of the PATLITE Corporation in JAPAN and/or other countries.

3443-E
'13.4.UBC

Copyright © 2011 PATLITE Corporation All Rights Reserved.

(Installation template)

Do not write here.