It is recommended that the installation and wiring be performed by a professional contractor if construction work is involved.

Prior to installation or using this product, please read this manual thoroughly 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.

Thank you very much for purchasing PATLITE products.

- It is recommended that the installation and wiring be performed by a professional contractor if construction work is involved.
- Prior to installation or using this product, please read this manual thoroughly 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.

Notice to Customer
1 Safety Precautions

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

To prevent 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.)

It is recommended that 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.

Do not modify or disassemble the signal light.

To ensure proper safety while using the signal light, observe the following:
- Perform periodic pre-maintenance.
  (→ "Inspection" (P.11))
- As a precaution, we suggest using this product with other back up safety 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.
(Buzzer included specifications)

Do not disassemble or detach the unit while the unit is in 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 for future reference.
2 Model Number Configuration

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Number of LED Modules</th>
<th>Rated Voltage</th>
<th>Body Color</th>
<th>Flashing</th>
<th>Buzzer</th>
<th>Mounting</th>
<th>Wiring</th>
<th>Adaptor Color</th>
<th>LED Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS7-02-W-RYGBC</td>
<td>5 LED Tiers</td>
<td>24 V DC</td>
<td>Off-white</td>
<td>none</td>
<td>none</td>
<td>Direct Installation Only</td>
<td>none</td>
<td>-RYGBC</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5 LED Tiers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LS7-502WC9N-RYGBC</td>
<td>3 LED Tiers</td>
<td></td>
<td>Dark Gray</td>
<td>Illumination Only</td>
<td>Buzzer not Included</td>
<td></td>
<td>Lead Wires</td>
<td>C IP69K Adaptor, Off-white</td>
<td></td>
</tr>
<tr>
<td>9N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LS7-502SBWH9D-RYGBC</td>
<td></td>
<td></td>
<td>Silver</td>
<td>Illumination and Flashing</td>
<td>Buzzer Included</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D Model Number Example</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3 Part Names and Outer Appearance

- Buzzer not included C M12 connector specifications
- B Buzzer included H Lead wires specifications

**About the M12 Connector**
- It is recommended to use the optional connector with cable for wiring. (Refer to "Option Parts" (P.15))
- Because the M12 connector is inside the signal light, be sure to allow a sufficient length of cable.

(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.

A 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 Optional Parts. (→ “Optional Parts” (P.15))

1 Unlock the base.

Hold the base and the 1/2" NPT socket base, 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
For models equipped with a buzzer, the signal light is equipped with a buzzer case instead of a base.

WARNING: Incorrect installation of the 1/2" NPT Adaptor can result in the loss of the IP69K rating.

5 Block Diagram

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

(Note) The diagram illustrates flashing, illuminating and specifications for Buzzer equipped models. Functions will vary upon product specifications. The diagram is only an example.
## 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.**

   - 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)
     - Make sure ½"NPT mounting is provided.

2. **Provide proper hardware needed for mounting.**

   - ½"NPT
   - Rotate to separate. Refer to Section 4 for removing the socket base.

3. **Prepare mounting surface as required.**

   - Attach and install the pole into the desired location.
   - For use on a flat surface of a type 1 enclosure when device is installed as intended.

### 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.

- Install the signal light in an upright position.

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

- The buzzer is unidirectional. Position the signal light so that the buzzer diaphragm is facing 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.)

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

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

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

- Type 1 Enclosure
4 Attach the main unit to the mount.

Thread the lead wires through the socket base and pipe, before installing the main unit to the mount.

Tip

- For the M12 connector option, thread the cable through the wiring hole and mount before connecting it to the main unit.
- Refer to "Stackable Tower Construction" (P.4) 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 "Volume Adjustment" (P.10)
- Make sure to allow some slack for the lead wires or cable in order to adjust the volume.


## 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. (Illumination and flashing specifications)

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

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

Do not pull on the lead wire. Do not push lead wires up into the main unit.

When there are unused lead wires for the LED tiers, be sure to separate each unused lead wire.

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

Quick Tips

- If the leakage current from equipment, such as a PLC unit output, is 1mA 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. (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.

### General Wiring Example

<table>
<thead>
<tr>
<th>Name of function</th>
<th>Lead wire color</th>
<th>PIN No. (M12 connector specifications)</th>
<th>Refer to the &quot;M12 Connector Pin Layout&quot; illustration to the right.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red LED</td>
<td>Red</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### M12 Connector Pin Layout

- **Tip**: It is recommended to use the optional connector with cable for wiring. (See "Option Parts" (P. 15))

### Product specifications

- **Illumination only**: Buzzer not included / B Buzzer included

### Model

- LS7-502 (B) W 9

---

**External Contact**

- Relay Contact
  - LS7
  - No Buzzer
  - Buzzer
  - Red LED
  - Amber LED
  - Green LED
  - Blue LED
  - White LED
  - Buzzer 1
  - Power Supply Wire
  - Fuse 1A
  - DC 24V (No polarity)

### External Contact

- PLC (PNP transistor type)
  - LS7
  - No Buzzer
  - Buzzer
  - Red LED
  - Amber LED
  - Green LED
  - Blue LED
  - White LED
  - Buzzer 1
  - Power Supply Wire
  - Fuse 1A
  - DC 24V

---

**External Contact**

- PLC
  - Output Unit
  - Transistor Symbol
  - For Illumination

---

**External Contact**

- PLC
  - Output Unit
  - Transistor Symbol
  - For Illumination

---

**External Contact**

- PLC
  - Output Unit
  - Transistor Symbol
  - For Illumination
(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.
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.4) for details on removing the buzzer case.

CAUTION
Do not rotate the volume any further than its specified range of movement when adjusting.
To ensure safe operation, it is recommended to perform the following:

<table>
<thead>
<tr>
<th>Inspection Item</th>
<th>Inspection Repair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are all the LEDs illuminated?</td>
<td>Refer to the “Troubleshooting” section (P.12) if they do not illuminate.</td>
</tr>
<tr>
<td>Are all the buzzer functions sounding? (For models equipped with the Buzzer function, only)</td>
<td>Refer to the “Troubleshooting” section (P.12) if they do not sound.</td>
</tr>
<tr>
<td>Check the outside appearance. Is there any damage?</td>
<td>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 “Replacement Parts” (P.14)).</td>
</tr>
</tbody>
</table>
If a problem occurs, check the following table to remedy the problem before calling for service.

<table>
<thead>
<tr>
<th>No.</th>
<th>Problem</th>
<th>Where to Check</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The LEDs do not illuminate.</td>
<td>Is the wiring properly connected?</td>
<td>Refer to “7 Wiring” (→P.7-9) to double-check the wiring connection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is the power supply at the correct voltage?</td>
<td>Be sure to use a 24V DC power supply.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is the fuse blown?</td>
<td>If the fuse is blown, replace it.</td>
</tr>
<tr>
<td>2</td>
<td>A different LED light turned on from what I was expecting.</td>
<td>Is the wiring properly connected?</td>
<td>Refer to “7 Wiring” (→P.7-9) to double-check the wiring connection.</td>
</tr>
<tr>
<td>3</td>
<td>The buzzer does not sound.</td>
<td>Is the wiring properly connected?</td>
<td>Refer to “7 Wiring” (→P.7-9) to double-check the wiring connection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is the power supply at the correct voltage?</td>
<td>Be sure to use a 24V DC power supply.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is the fuse blown?</td>
<td>If the fuse is blown, replace it.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double-check the product model.</td>
<td>Only signal lights with a [B] in the model type are equipped with a buzzer function.</td>
</tr>
<tr>
<td>4</td>
<td>The buzzer volume is too low.</td>
<td>Is the buzzer volume set to minimum?</td>
<td>Refer to “8 Volume Adjustment” (→P.10) for adjusting the volume.</td>
</tr>
<tr>
<td>5</td>
<td>When I connect to the “buzzer 2” connection, “buzzer 1” will sound.</td>
<td>Is the external contact for “Buzzer 1” turning on?</td>
<td>Priority is given to “buzzer 1” when simultaneous signal inputs to “buzzer 1” and “buzzer 2” are applied.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is the wiring properly connected?</td>
<td>Refer to “7 Wiring” (→P.7-9) to double-check the wiring connection.</td>
</tr>
<tr>
<td>6</td>
<td>The LEDs do not flash.</td>
<td>Is the wiring properly connected?</td>
<td>Refer to “7 Wiring” (→P.7-9) to double-check the wiring connection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Are the external contacts for lighting turning on?</td>
<td>Priority is given to the lighting input over the flashing input when simultaneous signals are applied.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double-check the product model.</td>
<td>Only signal lights with an [F] in the model type are equipped with a flashing function.</td>
</tr>
<tr>
<td>7</td>
<td>How is the outer cover and base (buzzer case) removed?</td>
<td>Only designated parts of the signal light’s stackable structure allows removable parts.</td>
<td>Refer to “4 Stackable Tower Construction” (→P.4) for proper assembly and disassembly. (Never disassemble or remove any parts other than the stackable parts.)</td>
</tr>
</tbody>
</table>

If the problem is not corrected, even after the above solutions 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
- The PATLITE Office (Refer to back cover)

<table>
<thead>
<tr>
<th>Product Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product name</td>
</tr>
<tr>
<td>Model</td>
</tr>
<tr>
<td>Purchase Date</td>
</tr>
<tr>
<td>Symptoms of Problem</td>
</tr>
</tbody>
</table>
### 11 Specifications

#### Product Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>UL Registration model</th>
<th>Rated Voltage</th>
<th>Installation Location</th>
<th>Maximum surrounding air temperature rating</th>
<th>Power Consumption</th>
<th>Standby Current</th>
<th>Buzzer Duration</th>
<th>Sound Pressure (at 1m)</th>
<th>Inrush Current</th>
<th>Flashing Frequency</th>
<th>Wire Type</th>
<th>Wire Gauge</th>
<th>Mass</th>
<th>Ingress Protection Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LS7.02 (Blank/D/S) WC9(D/N)</td>
<td>DC 24V</td>
<td>Indoor use only</td>
<td>60°C</td>
<td>LED: 30mA per tier (Red:20mA)</td>
<td></td>
<td>10mA</td>
<td>520msec.</td>
<td>Approx.82dB</td>
<td>60±12 times/min.</td>
<td>UL1007</td>
<td>AWG22</td>
<td>Approx.460g</td>
<td>IP69K - Suitable for high pressure, high temperature washdowns</td>
</tr>
<tr>
<td></td>
<td>LS7.02 (Blank/D/S) WH9(D/N)</td>
<td></td>
<td></td>
<td></td>
<td>Buzzer 1: Approx.82dB</td>
<td></td>
<td></td>
<td>Buzzer 2: Approx.85dB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LS7.02 (Blank/D/S) BWC9(D/N)</td>
<td></td>
<td></td>
<td></td>
<td>Approx.85dB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LS7.02 (Blank/D/S) FBWH9(D/N)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

#### External Contact Specifications

- **Contact Relay Type (Switch)**

<table>
<thead>
<tr>
<th>Rated Voltage Load</th>
<th>Rated Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC24V</td>
<td></td>
</tr>
<tr>
<td>LED</td>
<td>100 mA or more per level</td>
</tr>
<tr>
<td>Buzzer</td>
<td>200 mA or more</td>
</tr>
</tbody>
</table>

- **PLC Output Unit**

<table>
<thead>
<tr>
<th>Rated Voltage Load</th>
<th>Rated Current</th>
<th>Leakage Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC24V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED</td>
<td>100 mA or more per level</td>
<td></td>
</tr>
<tr>
<td>Buzzer</td>
<td>200 mA or more</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.1 mA or less</td>
<td></td>
</tr>
</tbody>
</table>
The following are replacement parts available for this product. For further details, visit www.patlite.com.

**Outer Cover**
- **PART #:** B45110011-F1
- O-ring included

**O-ring**
- **PART #:** Z35721039-F1

**1/2" NPT Bracket**
- **PART # (Natural White):** SZI-130-IP69K-N
- **PART # (Dark Gray):** SZI-130-IP69K-D

**NOTE:**
Please refer to section 4, Stackable Tower Construction, P.4, for instructions on how to attach to the base to the 1/2" NPT Adaptor.

**WARNING:**
Incorrect installation of the 1/2" NPT Adaptor can result in the loss of the IP69K rating.
13 Option Parts

This product includes the following option parts. For details, refer to www.patlite.com.

M12 Connector with Cable

(Lengths: 2m · 5m · 10m)

<table>
<thead>
<tr>
<th>PART NUMBERS:</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SZ-120-02</td>
<td>2m 8 pole M12 female cable with leads</td>
</tr>
<tr>
<td>SZ-120-05</td>
<td>5m 8 pole M12 female cable with leads</td>
</tr>
<tr>
<td>SZ-120-10</td>
<td>10m 8 pole M12 female cable with leads</td>
</tr>
</tbody>
</table>

14 Dimensions for Mounting*

* Drawing is not to scale and does not represent the actual size.
The latest product information can be viewed on our company's website.

www.patlite.com

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