Major Features and Functions

1. Ultra-long detecting distance
   When the selector switch is set to TURBO, the 8827 provides approximately double the detecting distance.

2. Fine adjustment
   The detecting distance changes linearly according to the number or trimmer of turns

Warning!
The 8827 are intended for target detection. Do not use these products in a safety circuit for protecting the human body. The 8827s are not explosion-proof. Do not use these products in an atmosphere where inflammable gas, liquid or powder is present

Structure and Part Names

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>8827</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light source</td>
<td>Red Led</td>
</tr>
<tr>
<td>Mode Selection</td>
<td>8-turn trimmer (with indicator) / FINE/TURBO switch-selectable</td>
</tr>
<tr>
<td>Response time</td>
<td>250 µs (FINE), 500 µs (TURBO)</td>
</tr>
<tr>
<td>Operation mode</td>
<td>LIGHT ON/DARK ON (switch selectable)</td>
</tr>
<tr>
<td>Indicators</td>
<td>Output indicator: Red LED, Stable operation indicator: Green LED</td>
</tr>
<tr>
<td>Timer function</td>
<td>ON-delay: 40 ms, OFF-delay: 40 ms, Timer OFF (switch-selectable)</td>
</tr>
<tr>
<td>Control Output</td>
<td>PNP open collector 100 mA max (40 V max.) Residual voltage: 1 V max.</td>
</tr>
<tr>
<td>Stability Output</td>
<td>PNP open collector 50 mA max (40 V max.) Residual voltage: 1 V max.</td>
</tr>
<tr>
<td>Protection Circuit</td>
<td>Reverse polarity protection, Over current protection, Surge protection</td>
</tr>
<tr>
<td>Power supply voltage</td>
<td>12 to 24 VDC ± 10%, Ripple (P-P) 10% max.</td>
</tr>
<tr>
<td>Current Consumption</td>
<td>35 mA max.</td>
</tr>
<tr>
<td>Ambient illumination</td>
<td>Candescent lamp: 10,000 lx max. Sunlight: 20,000 lx max.</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>35 to 85%, No condensation</td>
</tr>
<tr>
<td>Vibration</td>
<td>10 to 55 Hz, 1.5 mm double amplitude in X, Y and Z directions for 2 hours</td>
</tr>
<tr>
<td>Shock immunity</td>
<td>500 ms/s in X, Y and Z directions, three times each</td>
</tr>
<tr>
<td>Housing Material</td>
<td>Body/Cover: Polycarbonate</td>
</tr>
<tr>
<td>Weight (including 2 m cable)</td>
<td>Approx. 75 g</td>
</tr>
</tbody>
</table>

Connections

To connect the 8827 to a voltage input device, provide a 4.7kΩ resistor between the blue and black or orange cables.

When the stability output is not used, cut the orange cable at the root, or connect this cable to the positive terminal of the power supply.
Setting Sensitivity

**Indicator:** Indicates the current position of the sensitivity adjustment trimmer. One turn of the trimmer changes the pointer position by one division on the indicator scale.

**Sensitivity adjustment trimmer (8-turn):** Turning the trimmer clockwise increases the sensitivity. Turning the trimmer counterclockwise decreases the sensitivity.

**Note:**
- Do not turn the trimmer until the pointer exceeds the indicator’s transparent window range. If the trimmer is turned more than the specified number of times, the pointer position may be displaced by approximately one division, although the trimmer will not be damaged.
- The pointer position varies depending on the characteristics of each unit. Adjust the sensitivity using the individual amplifier.
- Depending on the combination of the amplifier and fiber unit, the trimmer may not be turned 8 times.

**To detect presence absence of a target**
1. Set the selector switch to the L.ON mode.
2. Set the sensitivity to the minimum. (Turn the trimmer so that the pointer is within the transparent window range.)
3. With a target in place, turn the Sensitivity Adjustment Trimmer clockwise. Find point A at which the operation indicator (red LED) lights.
4. When the operation indicator (red LED) is unlit with no target, turn the Sensitivity Adjustment Trimmer clockwise to find point B at which the operation indicator lights. When the operation indicator (red LED) is lit with no target, turn the Sensitivity Adjustment Trimmer counterclockwise to turn off this indicator. Then, turn the trimmer clockwise to find point B at which the operation indicator lights.
5. Set the sensitivity to the midpoint between points A and B.
6. After sensitivity adjustment, select the L.ON or D.ON mode depending on whether the sensor is to be turned on or off when a target is in place.
   - When the sensitivity difference is smaller than one division on the indicator scale, adjust the sensitivity based on the position of the sensitivity adjustment trimmer. If there is a difference of at least half a turn between points A and B, stable detection is possible.

**Selecting FINE/TURBO Mode**

**FINE mode:**
- For detection of a minute difference, or highly accurate positioning
- Response speed: 250 µs

**TURBO mode:**
- Used when detecting distance provided in the FINE mode is insufficient, for detection of long distance, or detection of a target with low reflectivity
- Response speed of 250 µs

**Note:** After switching the FINE/TURBO mode, be sure to readjust the sensitivity.

**Self-diagnostic function**
When the received light quantity exceeds the detection level but does not exceed the stable operation level “31 times continuously” or “for 8 seconds continuously” the stability output is activated.

**Reset:** When the stability output is activated, clean the front surface of the fiber unit or re-align the optical axis so that the stable operation indicator (green LED) lights again. The stability output is reset when detection is done after turning on the stable operation indicator (green LED).
Mounting Amplifier

Mounting/Detaching the amplifier to/from a DIN rail or the mounting bracket.

Hook the claw located at the amplifier cable side onto the DIN rail, and then hook the front side claw to the rail while pressing the amplifier forward. To detach the amplifier, unhook the front claw by lifting the amplifier front side while pressing it forward.

Side mounting

Using the side holes of the supplied mounting bracket, fix the amplifier with screws.

Connecting Fiber Unit

Tilt the quick-release lever, insert the fiber unit until it stops, and then lift the quick-release lever.

Note. If the fiber unit is improperly connected, the sensor cannot meet the specifications.
Note. Fiber optic probe thread size is M4 x .07

I/O Circuit

Hints on Correct Use

- If the amplifier cable is placed together with power lines or high-voltage lines in the same conduit, detection error may occur due to noise interference, or the sensor may be damaged. Isolate the amplifier cable from these lines.
- When using a commercially available switching regulator, ground the F.G. terminal and ground terminal.
- Do not use the 8827 Series outdoors, or in a place where extraneous light can enter the light receiving surface directly.
- During maximum sensitivity setting, the detecting distance may vary due to the difference in characteristics of each unit.
- If the wiring is incorrect, the unit may heat up, or the sensitivity setting may fluctuate. (See “Connections” on p.1)
- When the stability output is not used, cut the orange cable at the root, or connect this cable to the OV terminal of the power supply.*

*When cutting the cables at the root, be sure not to contact other cables.

Dimensions

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