

INSTRUCTION MANUAL

Surge protective device (SPD)

Type LD-42EFS

OTOWA
OTOWA ELECTRIC Co., Ltd.

Please read the instructions before installing the product, as this installation manual explains how to use the SPD effectively and safely.

The SPD conforms to the lightning current test specified in class I of IEC61643-1. Please confirm the detailed specification, size, etc. using the brochure or data sheet.

⚠ Safety instruction

● Instruction for use

- Since lightning is a natural phenomenon, in the event of a direct lightning strike exceeding the specification, SPD may break and not protect the equipment connected.
- The SPD should be installed in a grounded metal enclosure (Ex : metal distribution board).
- Install a Molded Case Circuit Breaker (MCCB) for the inspection of the SPD (Recommended MCCB: above 225A for both frame and rated current) on the electric input side of the SPD as shown in Fig.1. However, if there are any requests from customer, please follow them.
- Do not install the SPD on circuits where it is subjected to voltages above the specified Maximum Continuous Operating Voltage U_c (AC510V). Do not use the SPD above the peak value at $721 (510 \times \sqrt{2})$ V, if the voltage has incomplete wave shapes.
- Application temperature : -40°C to $+60^\circ\text{C}$
Do not expose the SPD to high temperatures such as direct sunshine and adjacent to hot objects and so on.
- Do not expose the SPD to high temperature and humidity conditions such as steam.
- Do not expose the SPD to adverse environmental conditions such as acid, alkali, corrosive object, solvent, cutting oil, grease, dust, and salt.
- Handle the SPD carefully to prevent mechanical shock (e.g. drop) or vibration, as this may cause cracking of its plastic housing.

● In the unlikely event of failure of the SPD or if there is operation of the Earth Leakage Breaker (ELB).

- Personnel without authorization to work on electrical circuitry — immediately contact the relevant authorized personnel but do NOT touch the SPD
- Authorized person — Follow the regular maintenance on back page

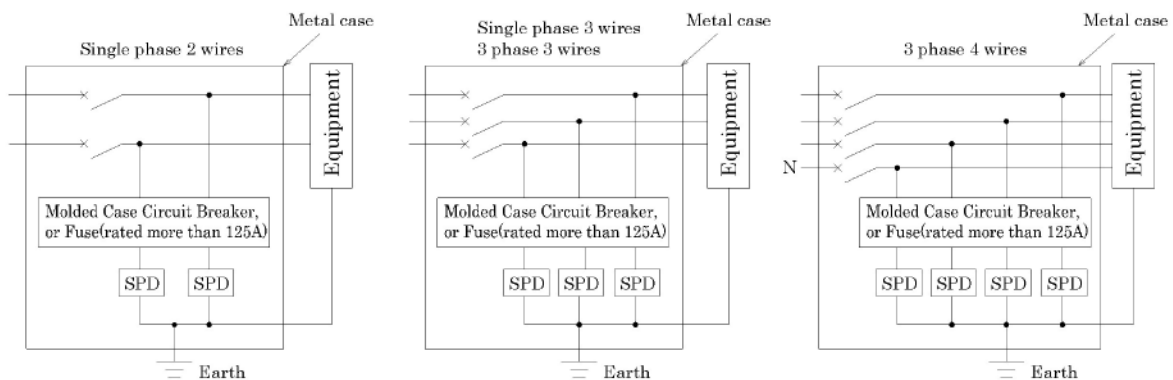
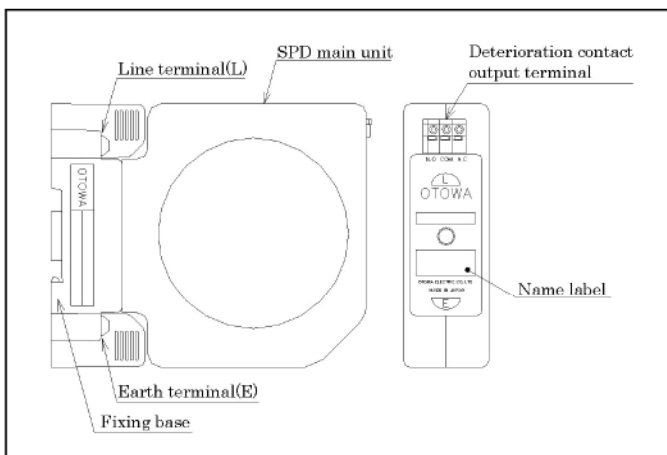
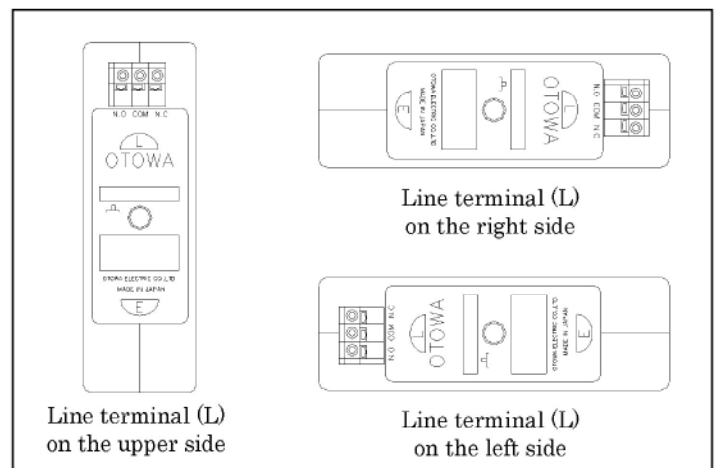


Fig.1 Circuit of the SPD

■ Part name



■ Note of installation

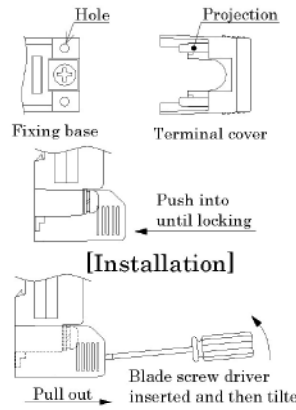
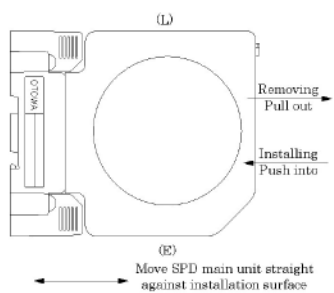
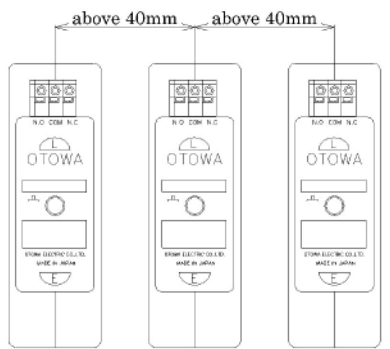
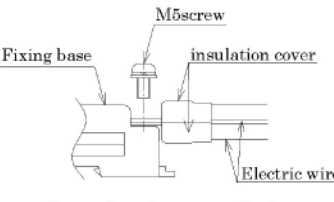
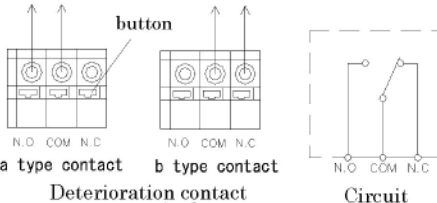


SPD should normally be installed to vertical surface.

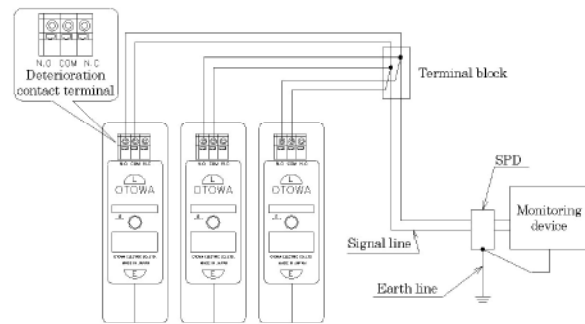
When SPD is installed to horizontal surface, name label should be on the upper side.

When the distribution board which the SPDs are installed in is transported, fix the SPD main units not to fall off it from the fixing base.

■Installation method

Terminal cover	SPD main unit	Spacing of SPDs
 <p>Push the two projections of the terminal cover into the two holes provided on the side of the terminal part of the fixing base.</p> <p>Insert a flat blade screwdriver into the hole and tilt the driver towards the fixing base. Keep the driver as it is and pull out the terminal cover while holding on the sides of it.</p> <p>[Installation]</p> <p>[Removing]</p>	 <p>The removal procedure is to pull out the SPD main unit from the fixing base during holding it.</p>	 <p>above 40mm above 40mm</p>
<p>Installing the fixing base</p> <p>(DIN rail) (Using screw)</p> <p>[Fixing]</p> <p>Fix the detent to DIN rail and push into slider side of fixing base</p> <p>Push into</p> <p>[Removing]</p> <p>During pulling the slider, pull off the fixing base</p> <p>Pull off</p> <p>Insert screws into the holes on the installation board and tighten. (Torque: 2.0 to 2.5N · m)</p> <p>Wipe off the cutting oil and grease cleanly. (They make plastics deteriorated.)</p>	<p>Connecting lead wire</p> <p>Connect the lead wire using crimp terminals (provided with insulation cover) (Torque : 2.0 to 2.5N · m)</p> <p>Use insulation wire of 8 to 22mm² and keep the wire for connection as short as possible. If use the wire of 22mm², use the small type crimp terminals.</p>  <p>Connection of example of 2 wires</p> <p>When connecting 2 wires to each terminal of fixing base, fix the 2 crimp terminals attached with opposite side.</p>	<p>Deterioration contact terminal</p>  <p>a type contact b type contact Circuit</p> <p>Deterioration contact output terminal</p> <ul style="list-style-type: none"> • Insert or remove the electric wire during pushing the button. (Electric wire : Rigid $\phi 0.4$ to $\phi 1.2\text{mm}$, or stranded 0.75 to 1.25mm²/ Diameter of core wire above 0.18mm, length of core wire 11mm) • Insert electric wire until the end, and confirm it not to be out from the terminal block. • Maximum rated AC250V 0.5A DC125V 0.2A

■Protection of monitoring device



Installation method for monitoring device (Example of a type)

Installation example is shown in above diagram. If monitoring device is far from the SPDs, install the SPD adjacent to the monitoring device to protect it from the lightning surge that invades from signal line.

Recommended SPD for protecting monitoring device

Voltage on signal line	Applied SPD
AC100V	LT-121
AC200V	LT-122
DC12V	SL-GV12J
DC24V	SL-GV24J
DC48V	SL-GV48J
DC100V	LT-121

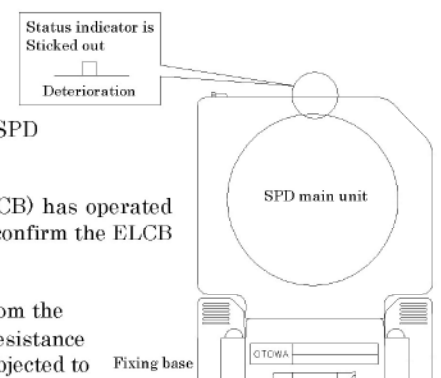
■Regular maintenance

During the lightning season and after lightning strikes, maintain the SPD as follows. Before maintenance, **switch off the isolating switch for inspection (or Earth Leakage Current Breaker (ELCB)) on the electric input side of the SPD.**

< Pass criteria for SPD >

Replace the SPD main unit if the SPD is under follow condition. (If the fixing base has also changed color or shape, replace the fixing base.)

- Appearance check
 - The plastic housing has changed color or shape.
 - Status indicator sticks out. (After status indicator sticks out, the SPD cannot be reused.)
- Leakage current check
 - Earth Leakage Circuit Breaker (ELCB) has operated many times. (After replacing ELCB, confirm the ELCB has no operation.)
- Measurement of insulation resistance
 - After removing the SPD main unit from the fixing base, measure the insulation resistance of the SPD main unit and it is not subjected to the value shown in below table.



	Insulation resistance
500V insulation tester	Above 10M Ω
1000V insulation tester	Below 10M Ω

It is recommended that the SPD is replaced about every 15 years, though the condition of the SPD is determined during regular maintenance. (15 years is the nominal life of the part, but cannot be guaranteed, due to the differences in service conditions.)

■Contact points

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