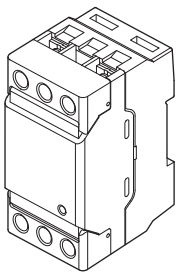
Lightning Surge Protectors for Electronics Equipment M-RESTER

SURGE PROTECTOR FOR PHOTOVOLTAIC SYSTEM

(750V DC,1000V DC USE)

Functions & Features

- Surge protection for photovoltaic array and power conditioner.
- High discharge current capacity 20 kA
- Degraded head element is automatically separated from the power lines by the incorporated thermal breaker, and the LED lamp (turns off) and the relay contact alerts the failure status.
- Breakdown of the surge protector remotely detected with the alarm output
- Photovoltaic system's resistance to earth is measurable without removing the SPD due to spark gap employed between line and earth.



CE

MODEL: MATPH-[1]M[2]

ORDERING INFORMATION

- Code number: MATPH-[1]M[2]

Specify a code from below for each of [1] and [2].
(e.g.MATPH-1000MA)

[1] OPERATIONAL VOLTAGE

750: 750 V DC
1000: 1000 V DC

MAXIMUM DISCHARGE CURRENT

M: 20kA (8/20 µsec.)

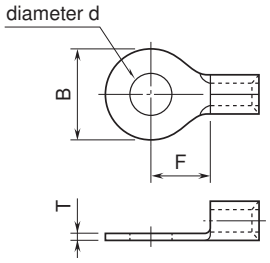
[2] ALARM OUTPUT

A: With
Y: Without

GENERAL SPECIFICATIONS

Construction: Standalone; terminal access at the front
Degree of protection: IP20 (If the solderless terminals are covered with insulation tubes.)
Surge protection type: One-port combination type SPD
Connection
Line: M5 screw terminal (torque: 2.5 N·m)
Alarm output: Tension clamp
Applicable wire size
Line: See the drawing below.
Alarm output: 0.13 to 1.5 mm^2, stripped length 8 mm
Screw terminal
Line: Nickel-plated steel
Alarm output: Tin-plated copper alloy
Housing material: Flame-resistant resin (black)
Alarm output: Trips when the thermal breaker operates. (N.C. contact)
Rated load:
250 V AC @50 mA (resistive load)
24 V DC @50 mA (resistive load)
Safety function: Thermal breaker incorporated
Monitor LED: Green LED turns on during normal conditions (100 V DC to operational votage), and turns off during failure condition, power off and the thermal breaker operating.

- **Applicable Solderless Terminal Size**



d : M5 use
B ≤ 12.5 mm
F ≥ 7.0 mm
(F ≥ 8.2 mm for sharing terminals)
T ≤ 1.8 mm

INSTALLATION

Operating temperature: -25 to +80°C (-13 to +176°F)
Operating humidity: 30 to 90 %RH (non-condensing)
Mounting: DIN Rail
Weight: 200 g (0.44 lb)

PERFORMANCE

Max. continuous operating voltage (Uc, Line to line):
750 V DC for MATPH-750
1000 V DC for MATPH-1000
Discharge voltage (Line to earth): 500 V DC
Voltage protection level (Up):

- MATPH-750

Line to line: 2.5 kV (@In)
Line to earth: 1.8 kV (@In)

- MATPH-1000

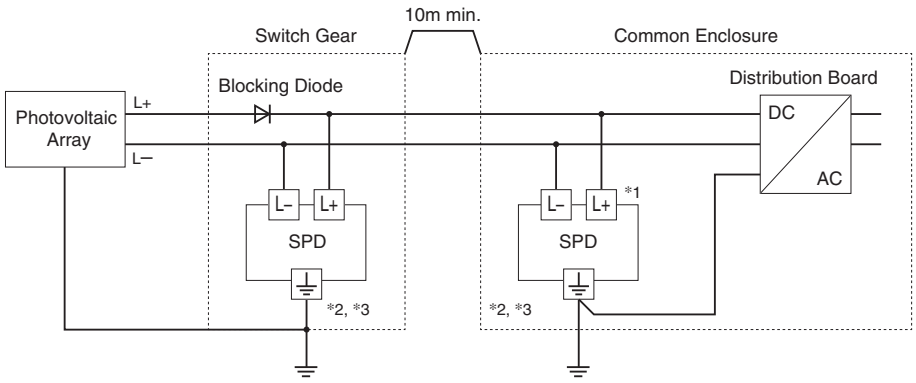
Line to line: 3.3 kV (@In)
Line to earth: 2.1 kV (@In)
Maximum discharge current (Imax): 20 kA (8/ 20 µs)
Nominal discharge current (In): 10 kA (8/ 20 µs)
Response time:
Line to line: ≤ 4 nsec.
Line to earth: ≤ 20 nsec.
Leakage current: ≤ 1 mA
Insulation resistance: ≥ 100 MΩ with 500 V DC (line to alarm output)
Dielectric strength: 2000 V AC @ 1 minute (line to alarm output)
Surge protection: IEC 61643-1 Class II
EN 61643-11 Class II

STANDARDS & APPROVALS

Refer to the manuals to comply with the standards.
EU conformity:
Low Voltage Directive
EN 61643-11
RoHS Directive

CONNECTION EXAMPLES

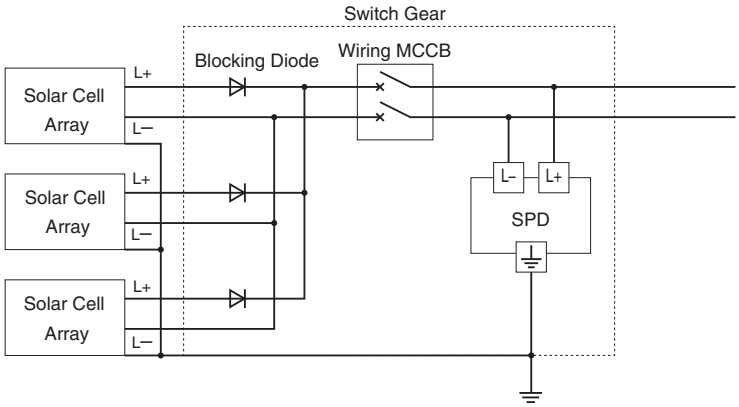
■ CONNECTION DIAGRAM



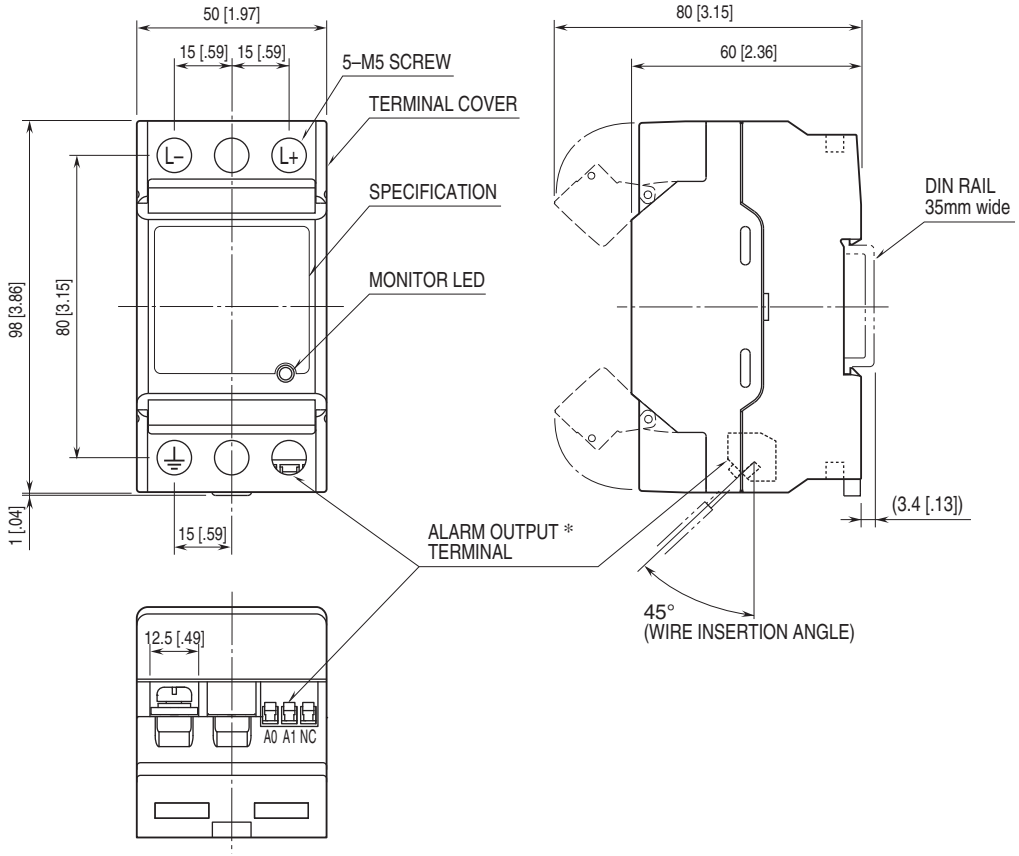
*1. When the wiring distance is longer than 10 m between the power conditioner and the surge protector in the switch gear, install near the power conditioner.
*2. Cable length between the branch point and the earthing: 0.5 m or less recommended
*3. When the solar panel manufacturer requires earthing at negative line of DC side, do NOT use the earth terminal of the SPD but use the L- terminal. If also, earthing at positive line is necessary, earth the L+ terminal.

■ CIRCUIT BREAKER POSITION

If you want to use circuit breaker as SPD maintenance switch, insert a wiring MCCB for DC on SPD power side (diagram below).
Even when the output current of solar cell array is low, use 20 AT or more for wiring MCCB.

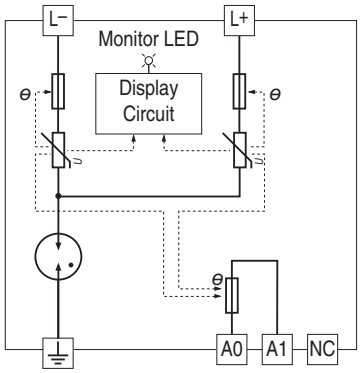


EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



* Only for 'Alarm output' code 'A.'

SCHEMATIC CIRCUITRY



ϴ: Thermal breaker
Note: Terminals A0 & A1 are available for 'Alarm output' code 'A.'

⚠ Specifications are subject to change without notice.