

Lightning Surge Protectors for Electronics Equipment M-RESTER

ONE-PORT SURGE PROTECTOR BETWEEN NEUTRAL AND PROTECTIVE EARTH

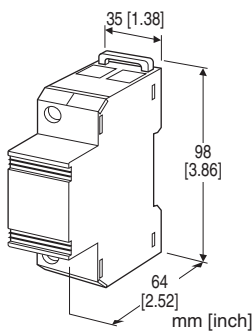
(class I)

Functions & Features

- Designed to protect electronics equipment from direct lightning surges entering through power supply cable
- One-port surge protector according to IEC61643-1
- Connected between neutral and protective earth
- High discharge current capacity of 100 kA (10/350 μ sec.)
- Protect against overvoltage between N and PE caused by earth fault

Typical Applications

- Protection between N and PE of TT system
- Installation in service entrance switch gear



MODEL: MALN-230

ORDERING INFORMATION

- Code number: MALN-230

OPERATIONAL VOLTAGE

230: 230 V AC

RELATED PRODUCTS

- Wiring bridge (model: CNB2)
- One-port surge protector for power supply use (model: MAL)

■ Coordination of surge protector (Class II)

Unnecessary when this surge protector and the device to protect are adjacent (less than 10 m).

- One-port surge protector for power supply use (model: MAKF)
- One-port surge protector between N and PE (model: MAKN)

- Lightning surge protector for three-phase power supply (model: MAT2)

GENERAL SPECIFICATIONS

Degree of protection: IP20

Surge protection type: Voltage switching type one-port SPD (IEC 61643-1)

Discharge element: Gas discharge tube

Connection: Push-lock screw terminal (torque: 4.5 N·m)

Applicable wire size: 8 - 35 mm², stripped length 15 mm

Housing material: Flame-resistant resin

INSTALLATION

Operating temperature: -5 to +55°C (23 to 131°F)

Operating humidity: 30 to 90 %RH (non-condensing)

Mounting: DIN rail

Weight: 230 g (0.51 lb)

PERFORMANCE

Response time: \leq 50 nsec.

Maximum discharge current: 100 kA (10/350 μ sec.)

Surge protection: IEC 61643-1 Class I

Uc (AC) (V)	DISCHARGE VOLTAGE (V min)	Up (V max)
255	400	4000

Uc = Maximum continuous operational voltage

Up = Voltage protection level

STANDARDS & APPROVALS

EU conformity:

Low Voltage Directive

EN 61643-11

RoHS Directive

CONNECTION EXAMPLES

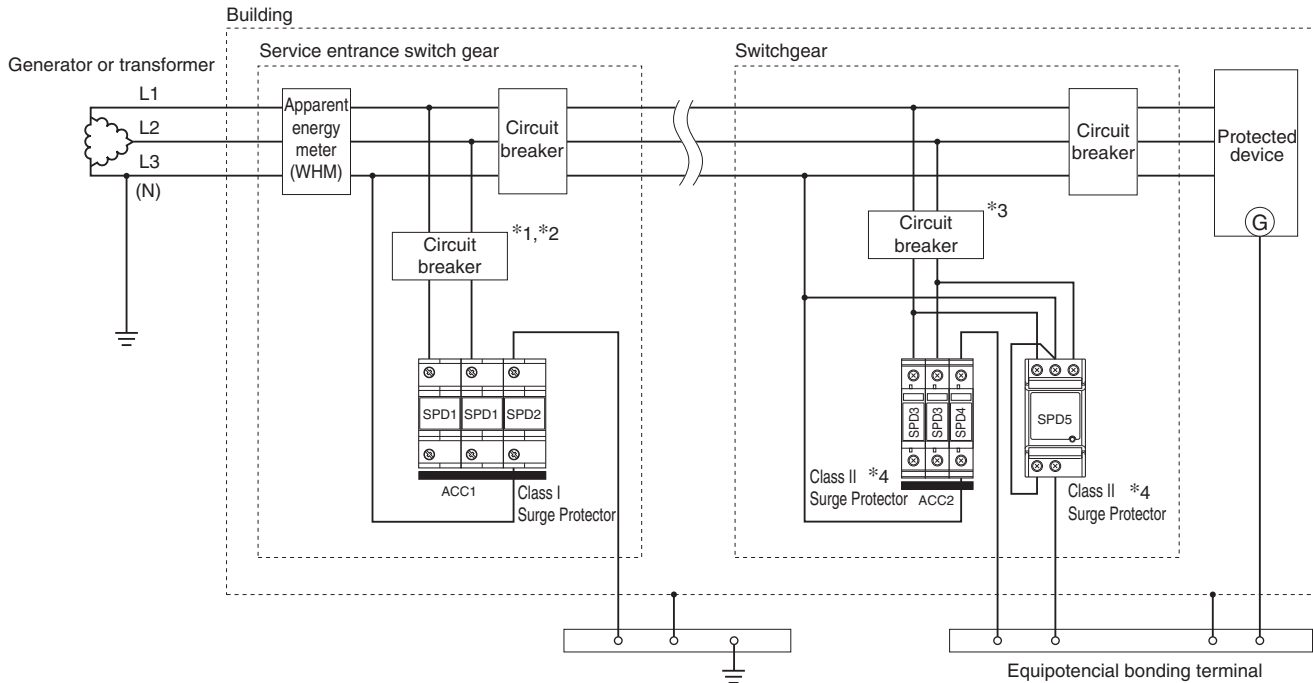
INSTALLATION EXAMPLES: Three phase/3-wire (delta connection) TT Systems

Lightning is a natural phenomenon and this unit could receive surges exceeding the discharge withstand current rating.

Then, there is a possibility of burning out and result in short-circuits because of exceeding the processing capacity.

Upon to save a backup, the circuit breaker must be installed on the power supply side of the surge protector.

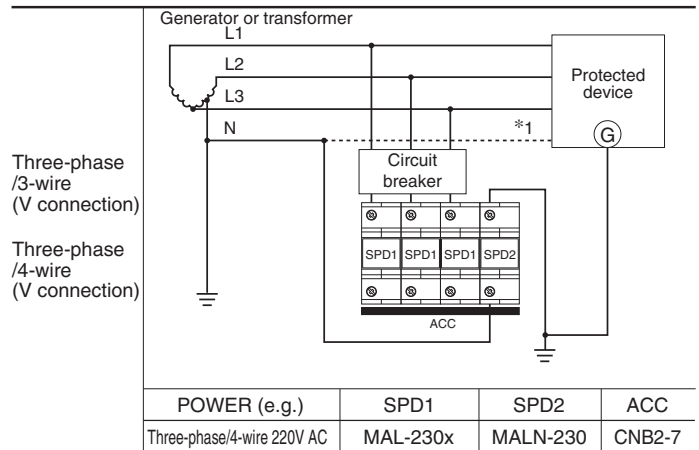
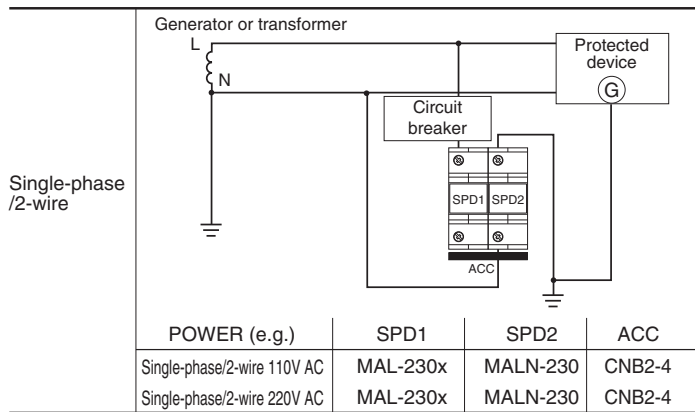
Molded-case circuit breaker (MCCB) or residual current circuit breaker with overcurrent protection (RCD) can be used.



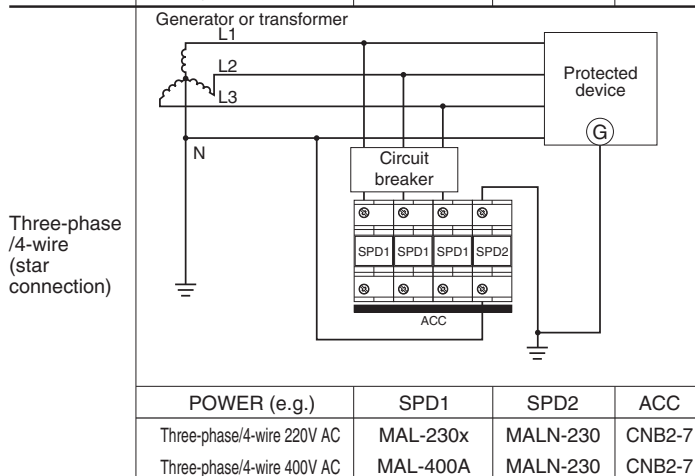
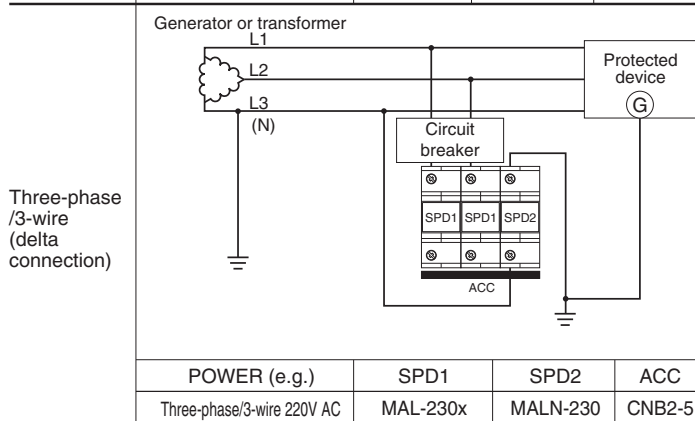
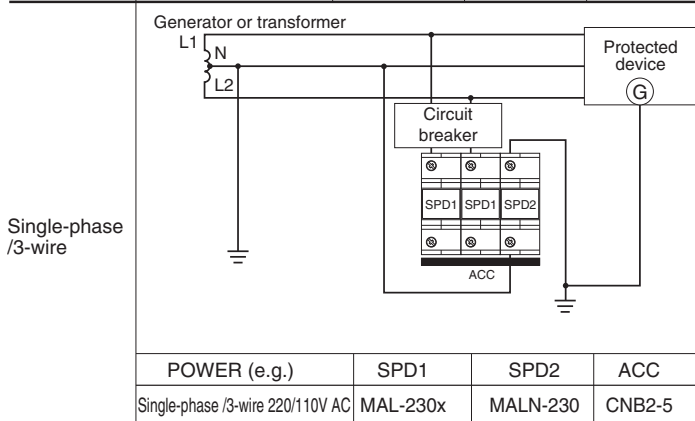
- *1. The circuit breaker's rating current must be of 150 A, and the rated interrupting capacity selected must be the greater between 30 kA or the highest amount of current that could be available in the circuit. For monitoring the operation of the circuit breaker we recommend also using the alarm switch (AL).
- *2. The use of RCD with time-delay overcurrent protection is recommended upon to prevent unnecessary operation with surge current (Recommended sensitivity current rating: 30mA)
- *3. Install an MCCB for backup saving of class II surge protector. Refer to the data sheets of the class II surge protector for details.
- *4. If the service entrance switchgear and switchgear or protective device wiring distance is more than 10 m, install the class II surge protector on the power supply downstream. Class II surge protector is the combination of SPD3 and SPD4 or SPD5

POWER (e.g.)	Class I Surge Protector		Class II Surge Protector			ACCESSORY	
	SPD1	SPD2	SPD3	SPD4	SPD5	ACC1	ACC2
Three phase/3-wire 220V AC	MAL-230x	MALN-230	MAKF-240x	MAKN-220x	MAT2-2404xx	CNB2-5	CNB-3

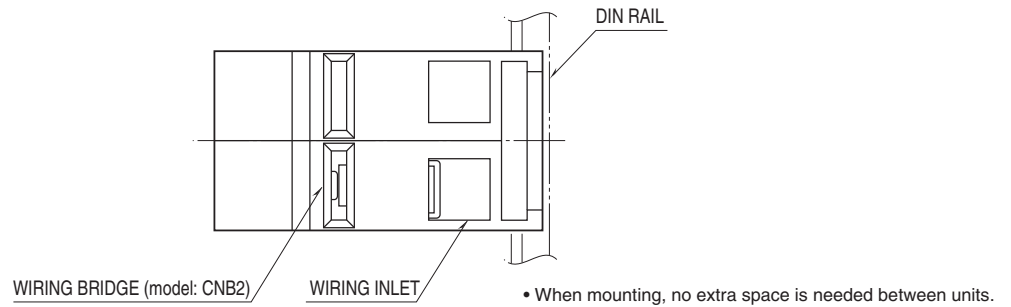
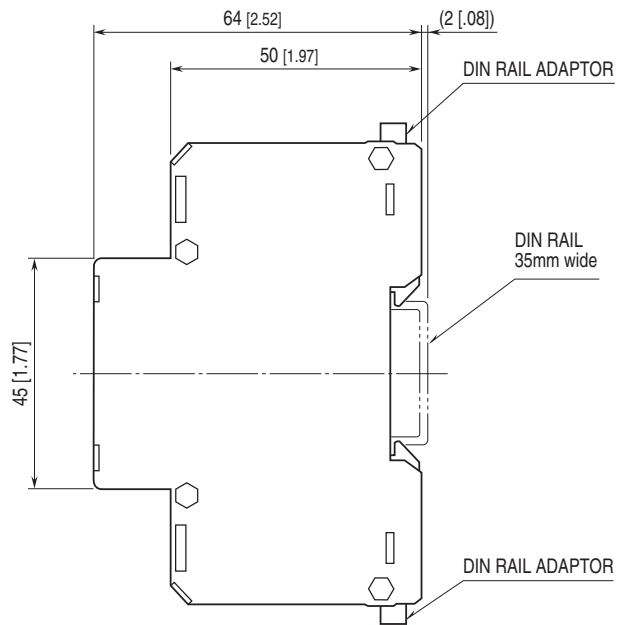
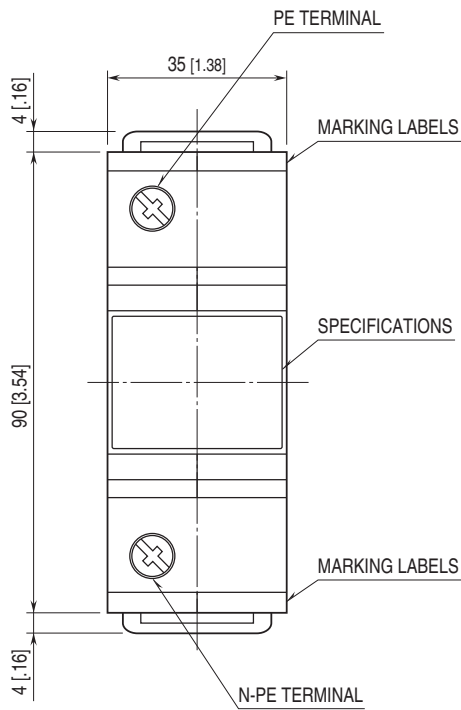
CONNECTION EXAMPLES BY POWER SYSTEMS



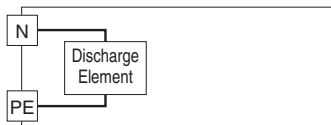
*1. Wiring only for three-phase/4-wire



EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



SCHEMATIC CIRCUITRY



Specifications are subject to change without notice.