

BEFORE USE

Thank you for choosing M-System. Before use, please check contents of the package you received as outlined below. If you have any problems or questions with the product, please contact M-System's Sales Office or representatives.

■ PACKAGE INCLUDES:

- Surge protector.....(1)
- LAN cable.....(1)
- Single mount DIN rail.....(1)
- (Only for option code 'DR' selected)

■ MODEL NO.

Confirm Model No. marking on the product to be exactly what you ordered.

■ INSTRUCTION MANUAL

This manual describes necessary points of caution when you use this product, including installation, connection and basic maintenance procedures.

LIMITATION APPLICABLE TO M-RESTER

The M-RESTER will protect electronics equipment from damage caused by lightning by absorbing most of the surge voltages.

However, M-RESTER may not be effective against certain extremely high voltages caused by a direct or almost direct hit by lightning.

M-RESTER must be installed according to this installation / instruction manual.

POINTS OF CAUTION

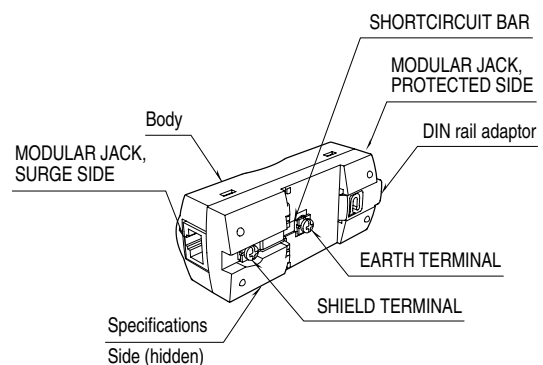
■ ENVIRONMENT

- Indoor use.
- When heavy dust or metal particles are present in the air, install the surge protector inside proper housing with sufficient ventilation.
- Do not install the surge protector where it is subjected to continuous vibration. Do not subject the unit to physical impact.
- Environmental temperature must be within -25 to +85°C (-13 to +185°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.
- This unit can be earthed via a DIN rail. Oxide film on the surface of an aluminum rail may lower the electric conductivity between this module and the ground. When this unit is earthed via a DIN rail, use a steel or copper rail.
- Steel rails may be coated with thin oxide film. Discharging surge current may produce sparks with the film. However, this does not affect the surge protection. If you need to avoid sparks, prior to mounting on the DIN rail, remove the film by a wire brush.
- Single mount DIN rail for option code 'DR' is made of aluminum. Connect to ground with ground terminal when this DIN rail is used.

■ AND

- We recommend that you keep spare surge protectors so that you can replace them when necessary.
- Lightning surge can enter not only through signal lines but also through power supply lines. We recommend that you also use the surge protectors for power line for sufficient protection.

COMPONENT IDENTIFICATION

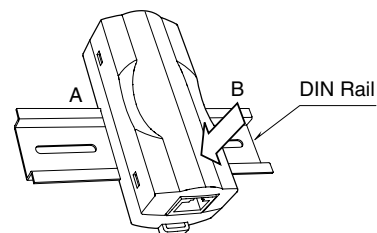


INSTALLATION

Mount the unit on a DIN rail. Once installed, do not move it to another DIN rail.

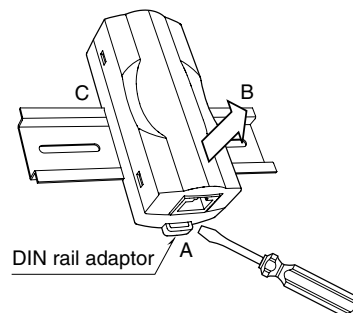
■ MOUNTING THE UNIT ON A DIN RAIL

- A) Hang the upper hook of the DIN rail mounting adaptor at the rear side of unit, on the DIN rail.
- B) Push in the lower in keeping pressing the unit to the DIN rail.



■ REMOVING THE UNIT

- A) Pull down the DIN rail adaptor utilizing a minus screwdriver.
- B) Pull out the lower part of the unit.
- C) Detach the upper part from the DIN rail.



GENERAL

FUNCTION & FEATURES

- Designed specifically for Ethernet network
- Conforms with 1000 Base-T, PoE and PoE Plus
- LAN cable's shield wire can be floating or grounding by a shortcircuit bar
- DIN rail mounting

SPECIFICATIONS

	LINE TO LINE (pair)		LINE TO LINE (PoE)	LINE TO EARTH
	MDCAT-5E	MDCAT-6		
Max. continuous operating voltage (Uc)	±6V	±3.3V	±58V	±150V
Voltage protection level (Up)	±15V @2kV	±10V @2kV	±100V @2kV	±600V @4kV
Leakage current @Uc	25µA	5µA	25µA	5µA
Response time	≤ 4 nsec.	≤ 4 nsec.	≤ 4 nsec.	≤ 20 nsec.
Max. discharge current (Imax)	100A	100A	100A	10kA
Nominal current (In)	1A			
Series resistance	Approx. 0Ω			

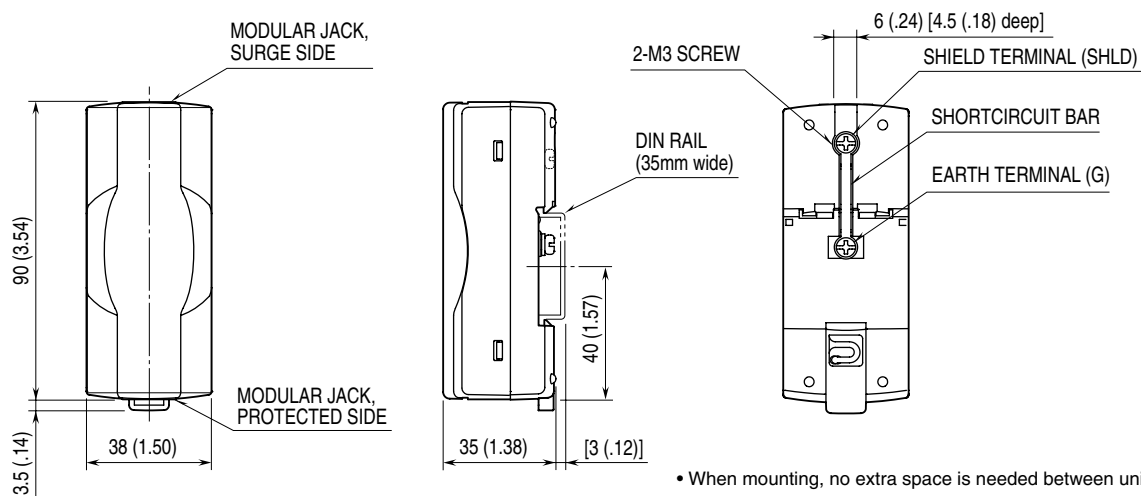
Transmission performance: TIA/EIA-568-B.2
 CAT5e (MDCAT-5E)
 CAT6 (MDCAT-6)

TERMINAL CONNECTIONS

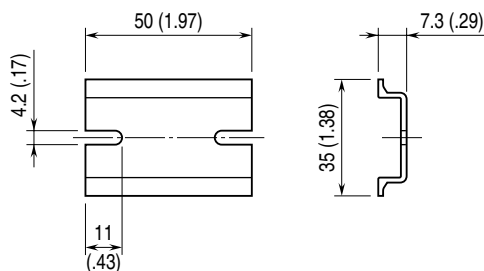
Connect the unit as in the diagram below.

EXTERNAL DIMENSIONS unit: mm (inch)

UNIT

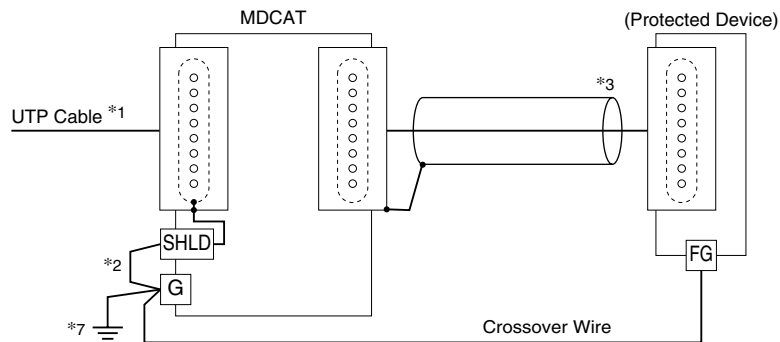


DIN RAIL

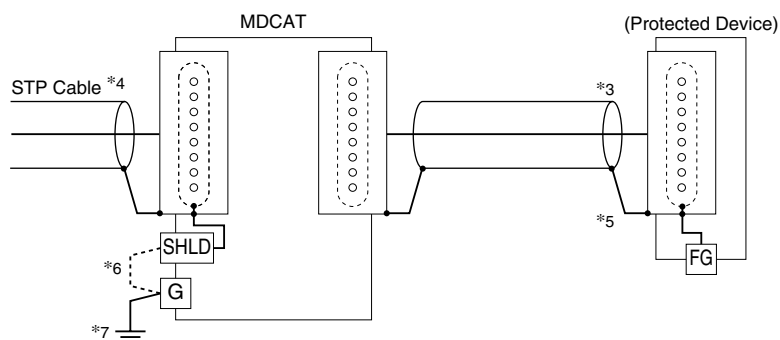


■ CONNECTION DIAGRAM

■ PROTECTING NON-STP (UTP) DEVICE

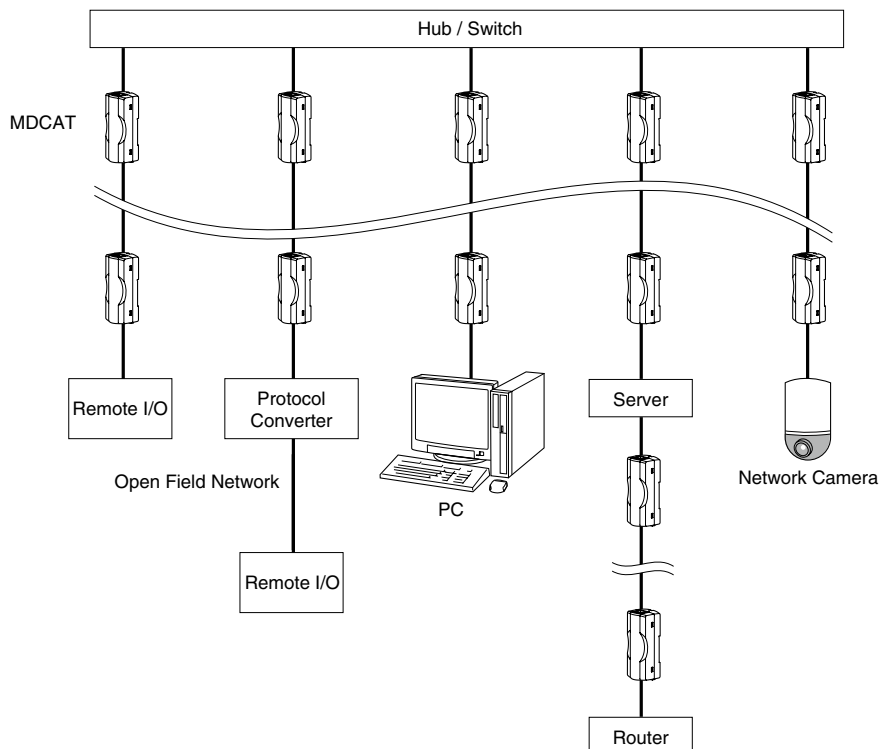


■ PROTECTING STP DEVICE



- *1. Unshield twisted-pair cable
- *2. Maintain the shortcircuit bar. The protected device is earthed.
- *3. Cable included in the product package or provided by customer.
- *4. Shield twisted-pair cable
- *5. STP cable's shield wire serves as the crossover wiring.
- *6. The protected device is 'earthed' when the shortcircuit bar is connected. Remove the bar in order to switch to 'floating' state.
- *7. Use a DIN rail made of steel or copper when connecting to ground via the DIN rail.
Single mount DIN rail for option code 'DR' is made of aluminum.
Connect to ground with ground terminal when this DIN rail is used.

■ NETWORK CONNECTION EXAMPLE



MAINTENANCE

Check surge protectors periodically. Many cases of lightning are ignored, and even lightning at a far distance often causes inductive surges.

We recommend that you check your surge protector about twice a year, before and after the rainy season. Check whenever you experience a strong lightning occurrence.

Checking procedure is explained in the following:

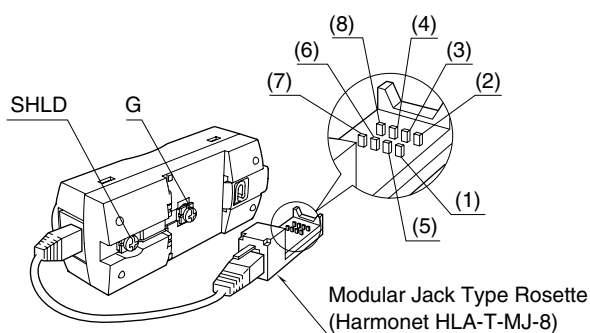
■ CHECKING WIRING

- Make sure that wiring is done as instructed in the connection diagram.

DISCHARGE ELEMENT

Approximate checking can be conducted as following.

- 1) Remove all LAN cables connected to the MDCAT.
- 2) Remove also the shortcircuit bar.
- 3) Connect between the surge side modular jack and a modular jack type rosette with a LAN cable and remove the rosette's cover to expose its connecting pines.



4) Shortcircuit Test

Check resistance across the following terminals on the high resistance range of multimeter and confirm no conduction. (The meter will indicate the same value as it will show when these terminals are open.)

SHLD – G

Then, apply $\pm 6V$ DC (for MDCAT-5E) or $\pm 3.3V$ DC (for MDCAT-6) across the following terminals and measure leakage current to show $\leq 25\mu A$ (for MDCAT-5E) or $\leq 5\mu A$ (for MDCAT-6). If a voltage generator is not available, check resistance with a multimeter and confirm no conduction. (Use of a voltage generator is strongly recommended.)

Rosette pins (1) – (2), (3) – (6), (4) – (5), (7) – (8)

Then, apply $\pm 58V$ DC across the following terminals and measure leakage current to show $\leq 5\mu A$. If a voltage generator is not available, check resistance with a multimeter and confirm no conduction. (Use of a voltage generator is strongly recommended.)

Rosette pins (1) – (3), (2) – (6), (4) – (7), (5) – (8)

5) Discharging Test

Check that discharging occurs across the following terminals with a $\pm 500V$ DC 1000 M Ω insulation tester. (The tester shows $\leq 20M\Omega$.)

Each rosette pin of (1) through (8) – G, SHLD – G