

LIGHTNING SURGE PROTECTOR FOR
ISDN CIRCUIT USE

MODEL MD-INS

BEFORE USE

Thank you for choosing us. 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 our sales office or representatives.

■ PACKAGE INCLUDES:

Lightning surge protector (body + base socket).....(1)

■ 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.

GENERAL

■ FUNCTION & FEATURES

- Designed specifically to protect devices connected to ISDN circuit from lightning surges

■ SPECIFICATIONS

	Between Lines	Line to Gnd
Discharge voltage	±65V min.	±290V min.
Max. surge voltage*	±100V max.	±650V max.
Leakage current	≤ 50μA @±65V DC	≤ 50μA @±140V DC
Response time	≤ 0.1 μsec.	
Discharge current capacity (8 / 20 μsec.)	500A for modular jack connection 10000A for screw terminal connection	
Max. load current	100mA	
Internal series resistance	Approx. ≤ 4Ω including return	
Max. line voltage	±65V	

*The maximum voltage that could pass through M-RESTER. Protected equipment must be able to withstand this voltage for a very short time period.

POINTS OF CAUTION

■ GENERAL PRECAUTIONS

- Before you remove the body from its base socket or mount it, or connect/disconnect leadwires to the surge protector, turn off the input signal to the surge protector and power supply for peripheral devices for safety.
- DO NOT DO any maintenance work for the surge protector during thunder storms.

■ 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 -5 to +55°C (23 to 131°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.
- Be sure that the ventilation slits are not covered with cables, etc.

■ DIELECTRIC STRENGTH TEST

- The maximum applicable voltage for testing insulation between ISDN circuit and the housing is 250V DC. If a greater voltage is applied, the element will start discharging at discharge voltage, which can cause insulation failure or loss of dielectric strength.

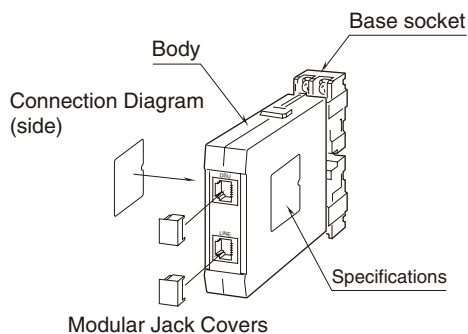
If a greater voltage must be applied, remove the element body from the base socket, close across its terminals 5 – 3 and 6 – 4, before conducting a test.

Be sure to open these terminals again and return the body after the test.

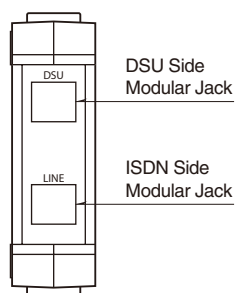
■ AND

- 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



■ FRONT PANEL

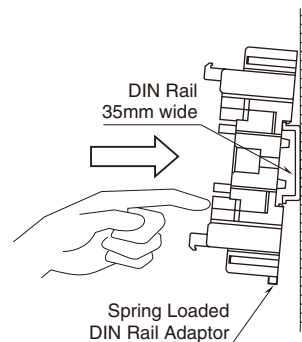


INSTALLATION

Pull out the body in pressing the clamps located at the top and bottom of the unit to separate it from the base socket.

■ DIN RAIL MOUNTING

Set the base socket so that its DIN rail adaptor is at the bottom. Hang the upper hook at the rear side of base socket on the DIN rail and push in the lower. When removing the socket, push down the DIN rail adaptor utilizing a minus screwdriver and pull.



■ WALL MOUNTING

Refer to "EXTERNAL DIMENSIONS."

TERMINAL CONNECTION

Connect the unit as in the diagram below or refer to the connection diagram on the side of the unit. Be sure to cross-wire between Ground terminal of the protected equipment and one of the ground terminals (G) of the MD-INS. When the protected device has no ground terminal such as in the case of our products, ground only the one of the MD-INS.

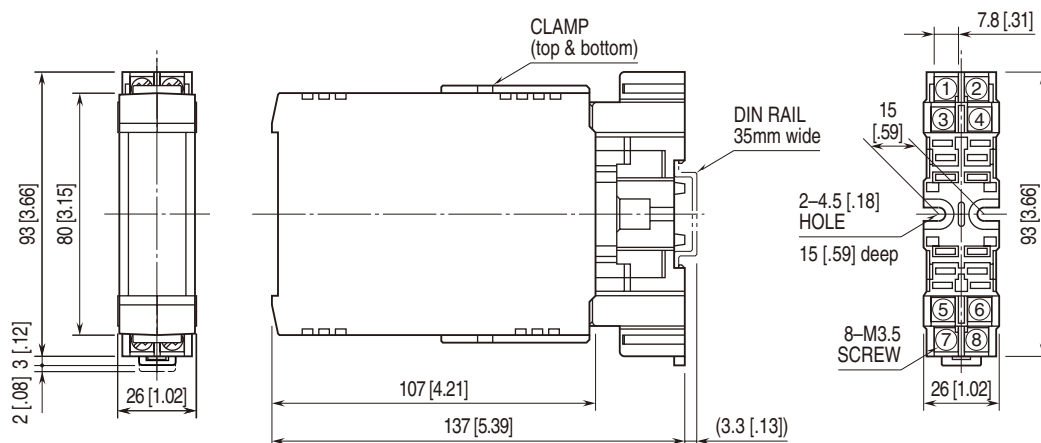
The MD-INS can be connected to ISDN circuit via modular jack ports or screw terminals. We recommend, however, to use the screw terminals because the MD-INS is capable of a discharge current up to 10000A (8/20 μ sec.) when it is connected via these terminals, while it is up to 500A (8/20 μ sec.) with modular jacks.

There is no difference in discharge current capacity at the DSU side by either means.

■ MODULAR JACK COVERS

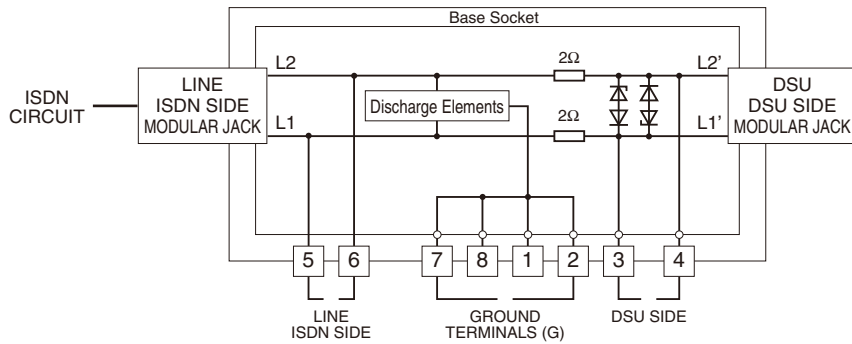
Be sure to put modular jack covers when they are not used.

■ EXTERNAL DIMENSIONS unit: mm [inch]



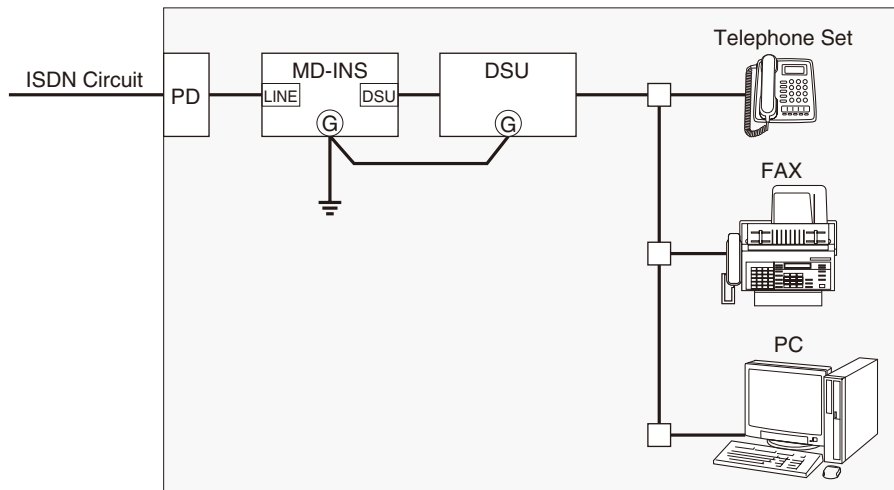
•When mounting, no extra space is needed between units.

■ SCHEMATIC CIRCUITRY

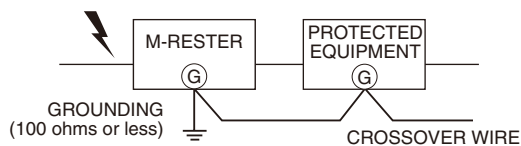


Be sure to cross-wire between the G terminal of telephone set and one of the terminals 7, 8, 1, or 2 of the MD-INS.

■ CONNECTION DIAGRAM



■ GROUNDING



A crossover wire between M-RESTER ground and ground or metallic housing of equipment is required for protection.
If the protected equipment has no ground terminal, ground the M-RESTER only.

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

- 1) Make sure that wiring is done as instructed in the connection diagram.
- 2) Make sure that the Ground terminal (G) is connected to the metallic housing of protected equipment.
- 3) Make sure that the Ground terminal (G) is grounded to earth.

DISCHARGE ELEMENTS

Approximate checking can be conducted as following.

- 1) Remove all wiring connected to the surge protector when you test the element module.
- 2) 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).
Terminals (5) – (6), (5) – (7), (6) – (7)
- 3) Check that discharging occurs across the same terminals with a 500V DC/1000M Ω megger (The megger will show 20M Ω or less).

If any of the above tests shows negative, replace the protector.