

LIGHTNING SURGE PROTECTOR FOR POWER SUPPLY USE (DC power use)	MODEL MDH
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BEFORE USE

Thank you for choosing M-System. Before use, check the package you received as below.

If you have any problems or questions on the product, please contact M-System's Sales Office or representatives.

■ PACKAGE INCLUDES:

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

■ MODEL NO.

Check that model No. described on specification label is exactly what you ordered.

■ INSTALLATION / INSTRUCTION MANUAL

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

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

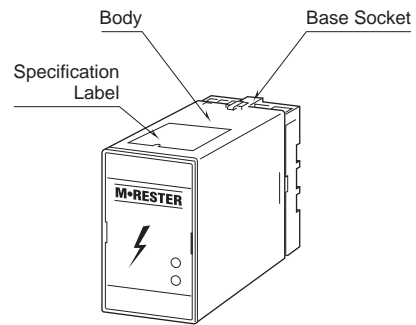
- Designed specifically for DC power supplies up to 5 amps
- Discharge current capacity 2000A
- Absorbs surges only without affecting instrumentation signal
- Indicator LEDs ON with surge absorber failure
- Fuse provided for detaching the discharge elements

■ SPECIFICATIONS

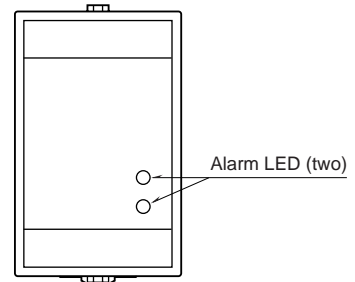
	BETWEEN LINES			LINE TO GND
	MDH-12	MDH-24	MDH-48	
Discharge voltage	24V min.	50V min.	88V min.	±380V min.
Max. surge voltage*	70V max.	140V max.	210V max.	±700V max.
Leakage current	≤15mA @15V DC	≤15mA @30V DC	≤20mA @70V DC	≤1mA @±380V DC
Response time	≤0.1 μsec.			
Discharge current	2000A (8 / 20 μsec.)			
Max. load current	5A			
Voltage drop	≤1V			

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

COMPONENT IDENTIFICATION



■ FRONT PANEL CONFIGURATION



INSTALLATION

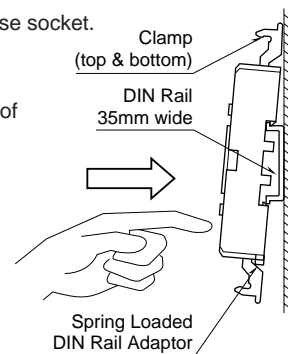
Detach the yellow clamps located at the top and bottom of the unit for separating the body from the base socket.

■ DIN RAIL MOUNTING

Set the base socket so that its DIN rail adapter is at the bottom. Hung 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 adapter utilizing screwdriver (-) and pull.

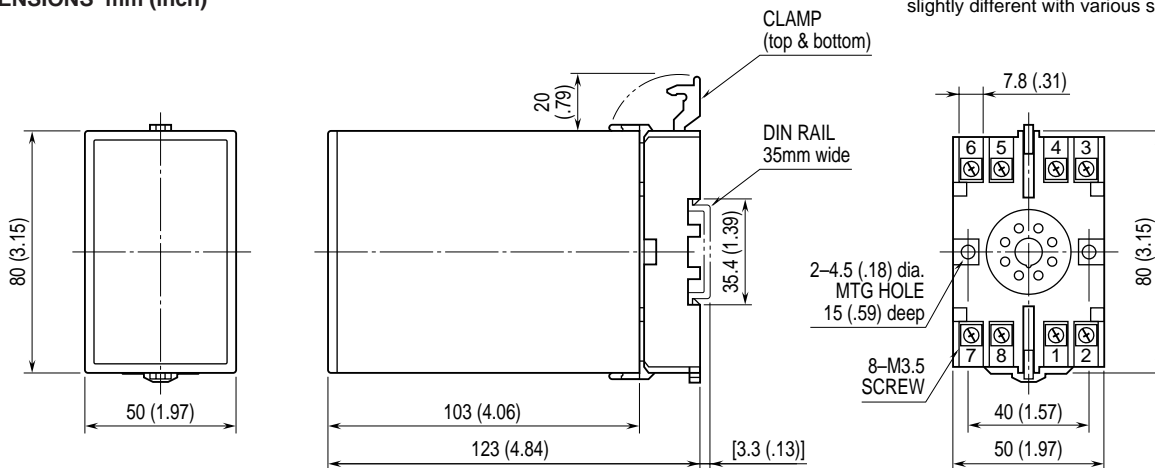
■ WALL MOUNTING

Refer to the drawings below.



Shape and size of the base socket are slightly different with various socket types.

■ DIMENSIONS mm (inch)

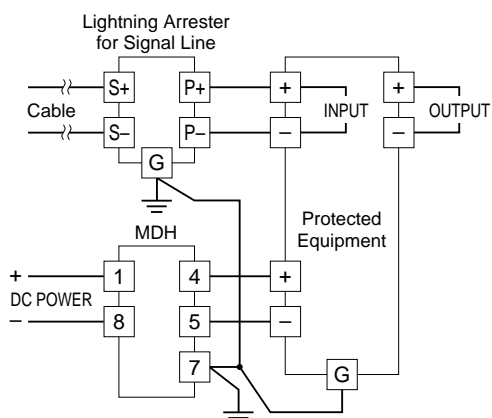


•When mounting, no extra space is needed between units.

TERMINAL CONNECTIONS

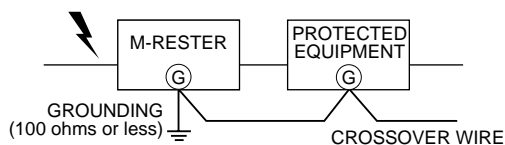
Connect the unit as in the diagram below.

Be sure to cross-wire between the Ground terminal (2 or 7) and metallic housing of the protected equipment. (100Ω max.)



Ground one of the terminals 2, 3, 6 and 7.

■ 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.

POINTS OF CAUTION

■ ENVIRONMENT

- When heavy dust or metal particles are present in the atmosphere, install M-RESTER inside proper housing and ventilate it.
- Do not install the M-RESTER where it is subjected to continuous vibration. Do not apply physical impact to the M-RESTER.
- Environmental temperature must be within -5 to +55°C in order to ensure adequate life span and operation.

■ WIRING

- Remove cables connected to the ground terminals (2, 3, 6 or 7) from the base socket before conducting a dielectric strength test. Otherwise the element will start discharging at discharge voltage, which can cause insulation failure. Be sure to return the cables as they were after the testing is complete.

■ RATED CURRENT

- Be sure that the rated current of protected equipment does not exceed the maximum load current specification of the M-RESTER.
- Be sure to install a breaker which matches the current rating at the power source side of the M-RESTER.

ALARM INDICATOR LED

The front LEDs turn ON when the power is supplied, and OFF in an abnormality.

When one or more LEDs are OFF, check the following:

- 1) Measure voltage across the power supply terminals with a multimeter.
- 2) When DC power supply is confirmed, replace the M-RESTER with a new one.
- 3) When the voltage is 0V, supply appropriate DC voltage and check the LEDs. If one or more LEDs are OFF, replace the M-RESTER with a new one.

MAINTENANCE

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

Even with the alarm indicator LEDs on the MDH unit, we recommend that you check your M-RESTER 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.
- Make sure that the Ground terminal (2, 3, 6 or 7) is connected to the metallic housing of protected equipment.
- Make sure that the Ground terminal (2, 3, 6 or 7) is grounded to earth.

DISCHARGE FUNCTION

Remove all the wires before testing its discharge capability as follows:

- Check resistance across the terminals indicated below. (Indicator of the tester shows $\geq 10M\Omega$.)
(1) – (8), (1) – (2), (8) – (2)
- Check that discharging occurs across the same terminals with a 500V DC meggar. (Indicator of the meggar shows $\leq 20M\Omega$.)
- If any of the above tests shows negative, replace the whole M-RESTER unit.

M-SYSTEM WARRANTY

M-System warrants such new M-System M-Rester which it manufactures to be free from defects in materials and workmanship during the 12-month period following the date that such M-Rester was originally purchased if such M-Rester has been used under normal operating conditions and properly maintained, M-System's sole liability, and purchaser's exclusive remedies, under this warranty are, at M-System's option, the repair, replacement or refund of the purchase price of any M-System M-Rester which is defective under the terms of this warranty. To submit a claim under this warranty, the purchaser must return, at its expense, the defective M-System M-Rester to the below address together with a copy of its original sales invoice.

THIS IS THE ONLY WARRANTY APPLICABLE TO M-SYSTEM M-RESTER AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. M-SYSTEM SHALL HAVE NO LIABILITY FOR CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES OF ANY KIND WHATSOEVER.

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