

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:

Lightning surge protector.....(1)

■ MODEL NO.

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

■ INSTALLATION / INSTRUCTION MANUAL

This manual describes necessary points of caution when you use this product, including 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 AC power supplies up to 2 amps
- 2A fuse provided to protect the power source in case of breakdown of discharge element itself due to surges in far excess of peak voltage
- Power indicator LED provided
- Simple installation with compact plug-in construction

■ SPECIFICATIONS

	BETWEEN LINES		LINE TO GND
	MGA-100	MGA-200	
Discharge voltage (p-p)	190V min.	410V min.	410V min.
Max. surge voltage*	400V max.	800V max.	800V max.
Leakage current	<2mA @150V DC	<2mA @300V DC	<1mA @300V DC
Response time	<0.1 μsec.		
Discharge current	1000A (8 / 20 μsec.)		
Max. load current	2A		
Rated line voltage	120V AC or 170V DC (MGA-100) 250V AC or 350V DC (MGA-200)		

*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

■ 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

- DO NOT perform dielectric strength tests with wires connected to the unit. Otherwise the element will start discharging at discharge voltage, which can cause insulation failure. Be sure to return the wires after the test.

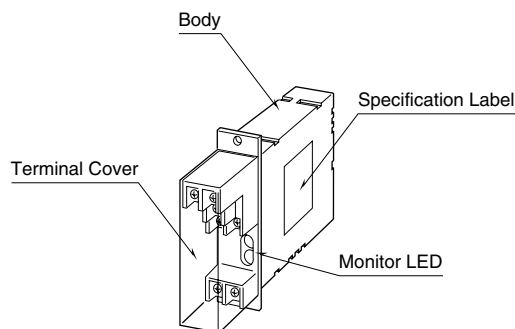
■ FUSE

- Even when a strong lightning surge exceeding discharge current capacity of lightning arrester enters to power supply cables, the MRESTER protects the equipment to some extent but its discharge element may fail. The fuse will be blown in such a case, which is indicated with the monitor LED turned OFF. We recommend that you immediately replace the M-RESTER with a new one.

■ AND

- We recommend that you keep spare M-RESTERs so that you can replace them when necessary.

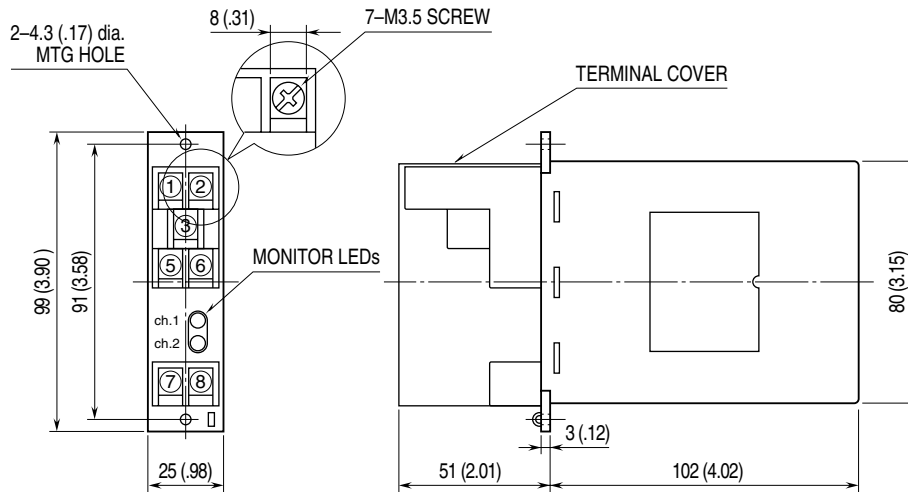
COMPONENT IDENTIFICATION



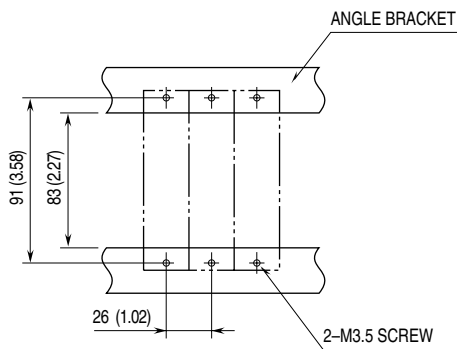
INSTALLATION

Refer to the following drawings.

EXTERNAL DIMENSIONS unit: mm (inch)



MOUNTING REQUIREMENTS mm (inch)

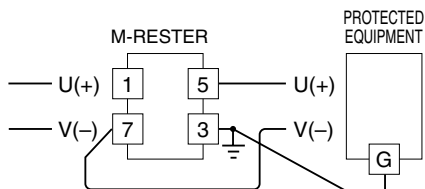


TERMINAL CONNECTIONS

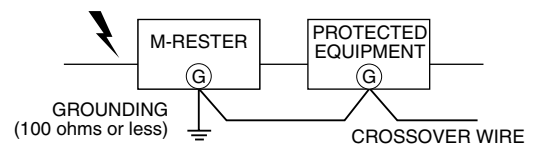
Connect the unit as in the diagram below.

Be sure to cross-wire between the Ground terminal (3) and metallic housing of the protected equipment. (100W max.)

Connection example with Ch.1



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 M-RESTER periodically. Many cases of lightning are ignored, and even lightning at a far distance often causes inductive surges. 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 (3) is connected to the metallic housing of protected equipment.
- Make sure that the Ground terminal (3) is grounded to earth.

■ DISCHARGE FUNCTION

Remove all the wires connected to the M-RESTER and test its discharge capability as follows:

- Apply 150V DC across the terminals (1) – (7) and (2) – (8) with a resistor of approx. 10kW in serial. Measure leakage current. ($\leq 1\text{mA}$ standard) Check also that the power indicator LED is ON.
- Then apply 250V DC and check that discharging occurs. ($\geq 2\text{mA}$ standard)
- Apply 300V DC across the following terminals and measure leakage current. ($\leq 1\text{mA}$ standard)
Terminals (1) – (3), (7) – (3), (2) – (3), (8) – (3)
- Then apply 500V DC and check that discharging occurs. ($\geq 2\text{mA}$ standard)
- If DC power source is not available, check resistance across the following terminals on the high resistance range of multimeter (infinite standard).
Terminals (1) – (7), (1) – (3), (7) – (3), (2) – (8), (2) – (3), (8) – (3)
- Check that discharging occurs across the same terminals with a 500V DC megger. (Indicator of the megger reaches over-scale.)
- If any of the above tests shows negative, replace the whole M-RESTER unit.