INSTRUCTION MANUAL

LIGHTNING SURGE PROTECTOR FOR POWER SUPPLY USE
(10A; high discharge current capacity)

MODEL **MMA**

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 10 amps
- Discharge current capacity 10000A
- Absorbs surges only without affecting instrumentation signal
- Indicator LED turns off with surge absorber anomaly
- Fuse provided for preventing ignition caused by failure of surge absorber

■ SPECIFICATIONS

	BETWEEN LINES		LINE TO GND
	MMA-100	MMA-200	
Discharge voltage	190V min.	410V min.	680V min.
Max. surge voltage*	350V max.	700V max.	800V max.
Leakage current	≤4mA @150V DC	≤4mA @300V DC	≤0.1mA @300V DC
Response time	≤0.01 µsec.		
Discharge current	10000A (8 / 20 µsec.)		
Max. load current	10A		
Internal series resist.	≤0.5Ω including return		

*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

- The discharge element incoporated in the M-RESTER is grounded to its housing. Therefore, DO NOT do an insulation test. If you do, the element will start discharging between line and ground at the discharge voltage value.

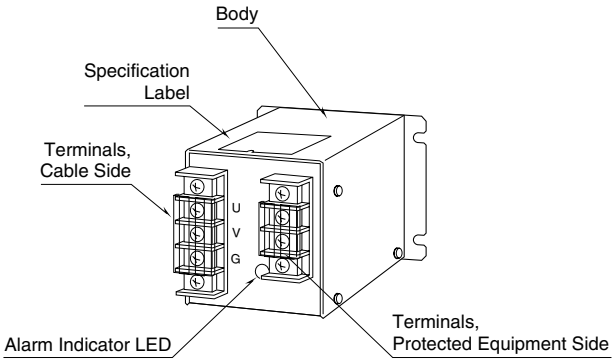
■ RATED CURRENT

- 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.

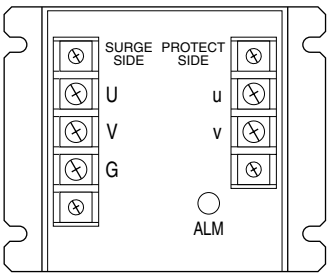
■ AND ....

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

COMPONENT IDENTIFICATION



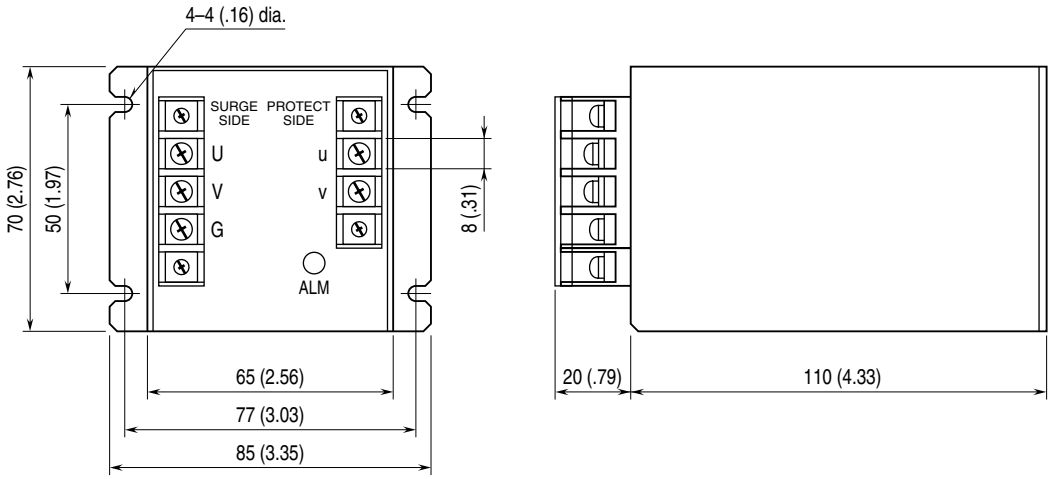
■ FRONT PANEL CONFIGURATION



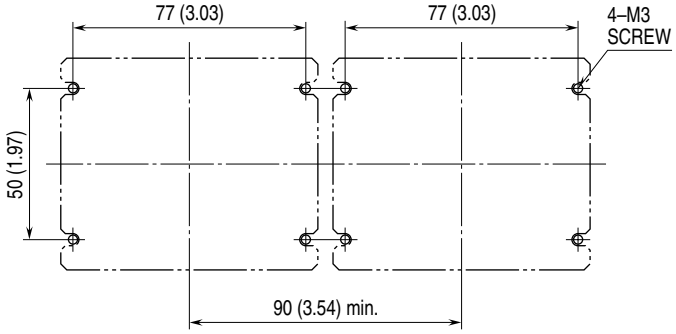
INSTALLATION

Refer to the drawings below.

■ EXTERNAL DIMENSIONS mm (inch)

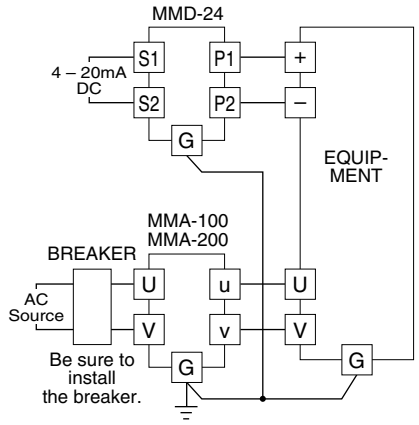


■ MOUNTING REQUIREMENTS mm (inch)

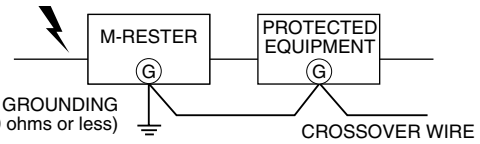


TERMINAL CONNECTIONS

Connect the unit as in the diagram below.
Be sure to cross-wire between the Ground terminal (G) and metallic housing of the protected equipment. (100Ω max.)



■ 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 occurence.
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 (G) is connected to the metallic housing of protected equipment.
- Make sure that the Ground terminal (G) is grounded to earth.

ALARM INDICATOR LED

- M-RESTER is designed to protect the equipment even when subjected to a lightning surge exceeding its discharge current capacity to certain extent. However, in such a case, the insulation of its discharge element may fail. When it happens, the fuse is blown and the green LED on the front panel of M-RESTER turns off.
- Maximum surge voltage in this condition may be up to 800V.
- When the green LED is off despite that power is supplied, replace the M-RESTER.

DISCHARGE FUNCTION

- Remove all wiring connected to M-RESTER and test its discharge capability as follows:
- Check resistance across the following terminals (infinite standard). Terminals (U) – (V), (U) – (G), (V) – (G)
- Check that discharging occurs across the following terminals with a 500V DC megger. (Indicator of the megger reaches over-scale.)
  Terminals (U) – (V), (U) – (G), (V) – (G)

LEAKAGE CURRENT (between lines)

Apply supply voltage across the terminals (U) – (V) with no load, and measure current at the terminal (U). (≤5mA standard)

- If any of the above tests shows negative, replace the M-RESTER.