

**LIGHTNING SURGE PROTECTOR FOR
ANALOG TELECOM LINE USE (life monitor)**

MODEL **MDA-TL**

BEFORE USE

Thank you for choosing M-System. Before use, check the 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 (body + base socket) (1)

■ MODEL NO.

Check that model No. described on the specification label is 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 telecommunication equipment from lightning surges entering through telecommunication line network

■ SPECIFICATIONS

	Btwn Lines	Line to Gnd
Discharge voltage	±190V min.	±180V min.
Max. surge voltage*	±500V max.	±900V max.
Leakage current	≤100µA @±160V DC	≤100µA @±160V DC
Response time	≤0.01 µsec.	
Discharge current capacity		
Modular jack connection	500A (8 / 20 µsec.)	
Screw terminal connection	10000A (8 / 20 µsec.)	
Max. load current	200mA	
Internal series resistance	Approx. ≤4Ω including return	
Frequency band	Approx. 100 kHz/-3 dB at 600Ω terminating resistance	
Max. line voltage	±160V DC	

*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

■ POWER INPUT RATINGS

• Power input ratings are specified by the model number suffix code. Check the power input voltage for the unit on the specification label.

AC power: 85 – 264V, 47 – 66 Hz, approx. 2 – 4VA

DC power: 24V ±10% or 85 – 150V, approx. 1.5W

■ UNPLUGGING THE UNIT

• Before you remove the unit from its base socket or mount it, turn off the power supply and the signal for safety.

■ ENVIRONMENT

- Indoor use
- When heavy dust or metal particles are present in the air, install the unit inside proper housing and ventilate it.
- Do not install the unit where it is subjected to continuous vibration. Do not apply physical impact to the unit.
- 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.

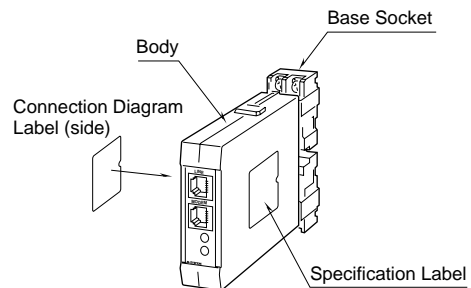
■ WIRING

- Do not install cables (power supply, input and output) close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.

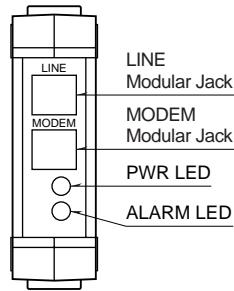
■ AND

- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

COMPONENT IDENTIFICATION



■ FRONT PANEL COFIGURATION



PWR LED (green)

The green LED turns on while the power is supplied; turns off when the power supply is removed and the alarm output contact is also turned on.

ALM LED

The tricolor LED turns off, then on in green, amber, and red according to the unit status.

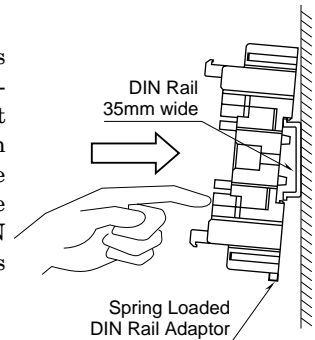
- 1) Remains OFF when the power supply is first turned on.
- 2) Green: The unit has received one or more surges. (The LED does not turn on when the power is not supplied.)
- 3) Amber: Replacement is recommended.
- 4) Red: The life span has ended. Replace the unit immediately. The alarm contact is turned on.

INSTALLATION

Pull out the body in pressing the clamps located at the top and bottom of the unit for separating it 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 a minus screwdriver and pull.



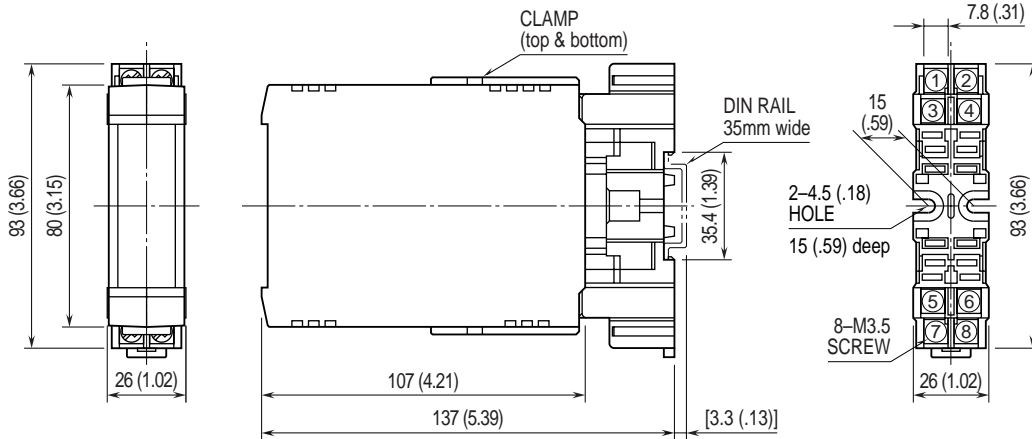
■ **WALL MOUNTING**

Refer to the drawings in the figure below.

TERMINAL CONNECTIONS

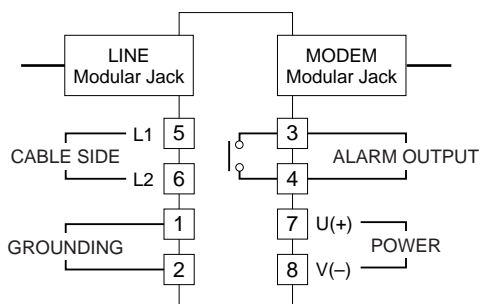
Connect the unit as in the diagram below or refer to the connection diagram label on the side of the unit. Be sure to make cross-wiring as shown in "GROUNDING". If the protected equipment is not provided with a G terminal, ground only this unit's G terminal.

■ **EXTERNAL DIMENSIONS mm (inch)**



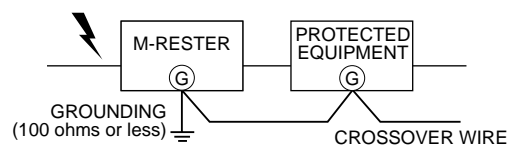
•When mounting, no extra space is needed between units.

■ **CONNECTION DIAGRAM**



■ **GROUNDING**

A crossover wire between the M-RESTER unit's ground and the equipment's ground or metallic housing is required for protection.



CHECKING

■ WIRING

- 1) Make sure that wiring is done as instructed in the connection diagram.
- 2) Power input: Check voltage across the terminal 7 – 8 with a multimeter.
- 3) Make sure that Ground terminal 1 is connected to the metallic housing of protected equipment.
- 4) Make sure that Ground terminal 1 is grounded to earth.

■ ELEMENT MODULE

- 1) Shortcircuit: Check resistance across the following terminals on the high-resistance range of multimeter ($\geq 100\text{M}\Omega$ or infinite standard).
Terminals (L1) – (L2), (L1) – (G), (L2) – (G)
- 2) Discharging: Check that discharging occurs across the same terminals with a 500V DC meggar. (Indicator of the meggar must show $\leq 20\text{M}\Omega$.)

MAINTENANCE

While the ALM LED is green, regular inspections are recommended.

When it is turned to amber, replacement of the unit is recommended.

When it is turned to and remain red, replace the unit immediately.

CAUTION

Before replacing the unit, be sure to turn off the power supply for safety. Other factors such like an alarm system connected to the line should also be considered.

The life monitoring circuit remain alive due to the internal backup power even when the external power supply is removed. The LED is turned off in that case. The backup power is normally effective for approximately one week depending upon environmental conditions.

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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