

LIGHTNING SURGE PROTECTOR FOR SIGNAL LINE WITH EXCITATION USE

MODEL **MDK-LV**

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 (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**

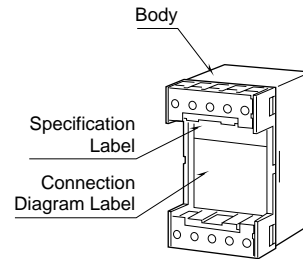
- Specifically designed to protect level sensors, pressure sensors or their transmitters from damage caused by lightning surges
- Voltage signals 10V DC max.
- Excitation 30V DC max.
- Absorbs surges only without affecting transmitted signals.

■ **SPECIFICATIONS**

	EXC. SIDE	SIGNAL SIDE	LINE TO GND
Discharge voltage	30V min.	10V min.	±290V min.
Max. surge voltage*	40V max.	20V max.	±650V max.
Response time	≤0.1 μsec.		
Discharge current capacity	5000A (8/20 μsec.)		
Max. load current	100mA		
Int. series resist.	10Ω ±5%		
Leakage current	≤10μA @30V DC	≤10μA @10V DC	≤10μA @±290V DC
Maximum voltage	30V	10V	—

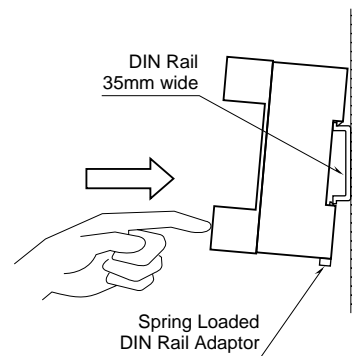
*The maximum voltage that could pass through M-RESTER. Protected equipment must be able to withstand this voltage for a very short time period.

COMPONENT IDENTIFICATION

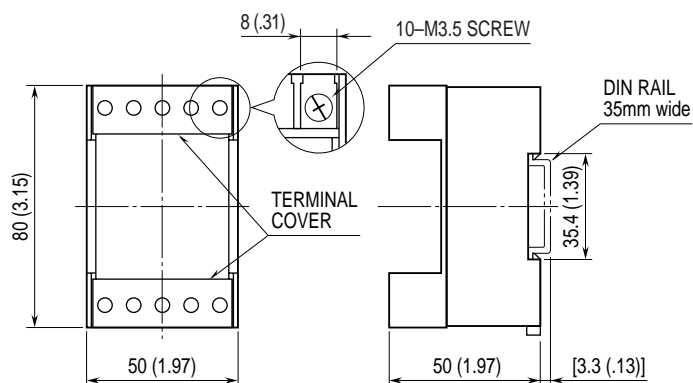


INSTALLATION

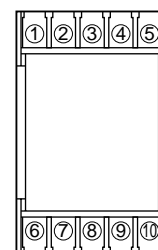
Set the unit so that its DIN rail adapter is at the bottom. Hung the upper hook at the rear side of unit on the DIN rail and push in the lower. When removing the unit, push down the DIN rail adapter utilizing screwdriver (→) and pull.



DIMENSIONS mm (inch)



■ TERMINAL ASSIGNMENT



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

TERMINAL CONNECTIONS

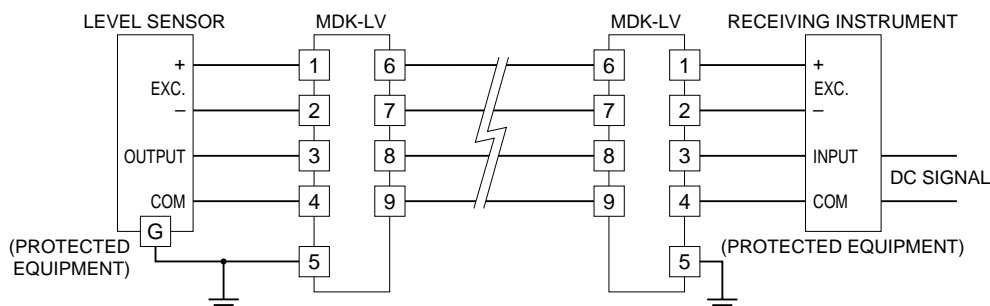
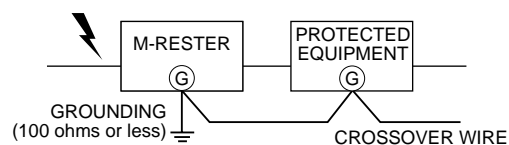
Connect the unit as in the diagram below.

Be sure to cross-wire between the ground terminal (No. 5 or 10) and that of the protected equipment.

When the M-RESTER is connected with a device which has no ground terminal such like M-System's (See figure to the right), ground the M-Rester ground terminal (No. 5 or 10) only.

■ GROUNDING

A cross-over wire between M-RESTER and ground or metallic housing of equipment is required for protection.



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 (23 to 131°F) and relative humidity within 30 – 90% RH in order to ensure adequate life span and operation.

■ DIELECTRIC STRENGTH TEST

- The unit will start discharging when 290V or greater voltage is applied between lines and ground. DO NOT perform dielectric strength tests with wires connected to the unit.

■ AND

- We recommend that you keep spare M-RESTERs 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 Lightning Arrester for Power Lines for sufficient protection.

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 (No. 5 or 10) is connected to the metallic housing of protected equipment.
- Make sure that the ground terminal (No. 5 or 10) is grounded to earth.

DISCHARGE ELEMENTS

Remove all wiring connected to M-RESTER when you test the discharge elements.

- Check resistance across the following terminals on the high resistance range of multimeter (infinite standard). When measuring across (6) – (7) or (8) – (9), connect the multimeter so that positive voltage is applied to (6) or (8) terminal.

Terminals (6) – (7), (6) – (10), (7) – (10),
(8) – (9), (8) – (10), (9) – (10)

- Check that discharging occurs across the same terminals with a 500V DC meggar. (Indicator of the meggar reaches over-scale.)
- If any of the above tests shows negative, replace the M-RESTER.

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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