

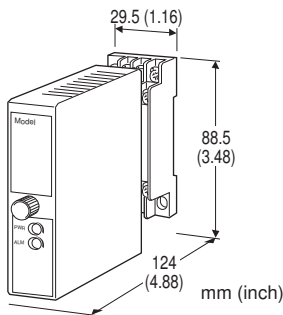
## Lightning Surge Protectors for Electronics Equipment M-RESTER

### LIGHTNING SURGE PROTECTOR FOR RS-485 / RS-422

(life monitor)

#### Functions & Features

- Designed specifically for RS-485 or RS-422 transmission line
- Life monitor function helps you to decide when you should replace the M-RESTER; reduces maintenance and prevents downtime
- LED indicator and alarm contact output indicate the degradation and life span of the surge protection circuits



### MODEL: MDW2A-4R-[1]

#### ORDERING INFORMATION

- Code number: MDW2A-4R-[1]  
Specify a code from below for [1].  
(e.g. MDW2A-4R-M2)

#### [1] POWER INPUT

##### AC Power

**M2:** 100 - 240 V AC (Operational voltage range 85 - 264 V, 47 - 66 Hz)

##### DC Power

**R:** 24 V DC

(Operational voltage range 24 V  $\pm$ 10 %, ripple 10 %p-p max.)

**P:** 110 V DC

(Operational voltage range 85 - 150 V, ripple 10 %p-p max.)

#### APPLICABLE NETWORK

RS-485 or RS-422 conformed network: Modbus, SINNET, MsysNet

#### GENERAL SPECIFICATIONS

**Construction:** Plug-in

**Connection:** M3 screw terminals (torque 0.8 N·m)

**Screw terminal:** Chromated steel

**Housing material:** Flame-resistant resin (black)

#### Alarm indicators

**PWR:** The green LED turns on while the power is supplied.

**ALM:** Tricolor LED (green/amber/red)

- Remains off when the power supply is first turned on.
- Green: The unit has received one or more surges.
- Amber: Replacement is recommended.
- Red: The life span has ended.

**Degradation judged:** When the leakage current at the voltage limiter exceed approx. 0.25 mA.

**Life time judged:** When the number of discharges of the discharge element reaches the expected life span.

**Alarm contact:** The N.C. contact is on when the life span of the discharge elements has ended, when the voltage limiter has degraded or when the power supply is removed.

**Rating:** 125 V AC @ 0.5 A (cos  $\phi$  = 1)

30 V DC @ 1 A (resistive load)

**Maximum switching voltage:** 125 V AC or 110 V DC

**Maximum switching power:** 62.5 VA or 30 W

**Minimum load:** 5 V DC @ 10 mA

#### INSTALLATION

##### Power consumption

##### •AC:

Approx. 3 VA at 100 V

Approx. 4 VA at 200 V

Approx. 5 VA at 240 V

##### •DC: Approx. 2 W

**Operating temperature:** -5 to +55°C (23 to 131°F)

**Operating humidity:** 30 to 90 %RH (non-condensing)

**Mounting:** Surface or DIN rail

**Weight:** 200 g (0.44 lb)

## PERFORMANCE

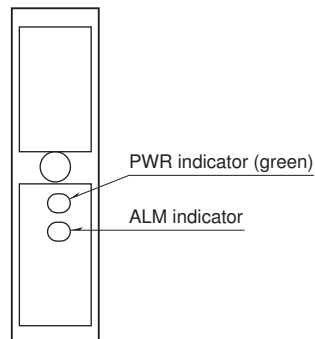
**Insulation resistance:**  $\geq 100 \text{ M}\Omega$  with 500 V DC  
(surge protector circuit to alarm output to power)

**Dielectric strength:** 2000 V AC @ 1 minute  
(surge protector circuit to power to ground)

	BETWEEN LINES	LINE TO SG	LINE TO GROUND
Discharge voltage	$\pm 5\text{V}$ 7 to 8	5V 7 / 8 to 9	$\pm 160\text{V}$ (7 / 8 / 9 to G)
Max. surge voltage*	$\pm 25\text{V}$ 4 to 5	25V 4 / 5 to 6	$\pm 600\text{V}$ (4 / 5 / 6 to G)
Leakage current	$\leq 0.2\text{mA}$ @ $\pm 5\text{V}$ 7 to 8	$\leq 0.2\text{mA}$ @5V 7 / 8 to 9	$\leq 10\mu\text{A}$ @ $\pm 160\text{V}$ (7 / 8 / 9 to G)
Response time	$\leq 4 \text{ nsec.}$	$\leq 4 \text{ nsec.}$	$\leq 20 \text{ nsec.}$
Capacitance (approx.)	500 pF @10 kHz	500 pF @10 kHz	100 pF @10 kHz
Discharge current	5000A (8 / 20 $\mu\text{sec.}$ )		
Max. load current	100mA		
Internal series resist.	approx. $5\Omega$ including return		
Max. line voltage	$\pm 5\text{V}$		
Input attenuation	-1 dB max. @DC...1 MHz, $Z_0 = 110\Omega$		

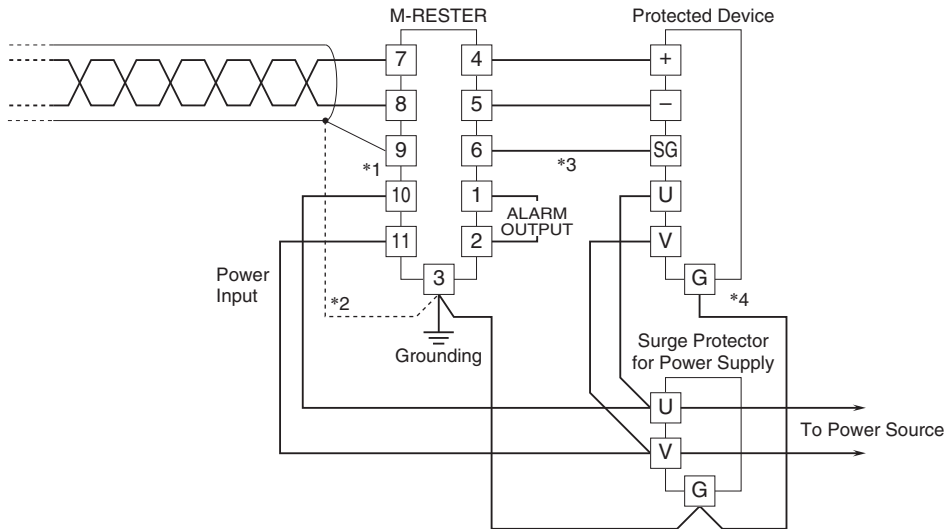
\*The maximum voltage that could pass through M-RESTER.  
Protected equipment must be able to withstand this voltage for a very short time period.

## EXTERNAL VIEW

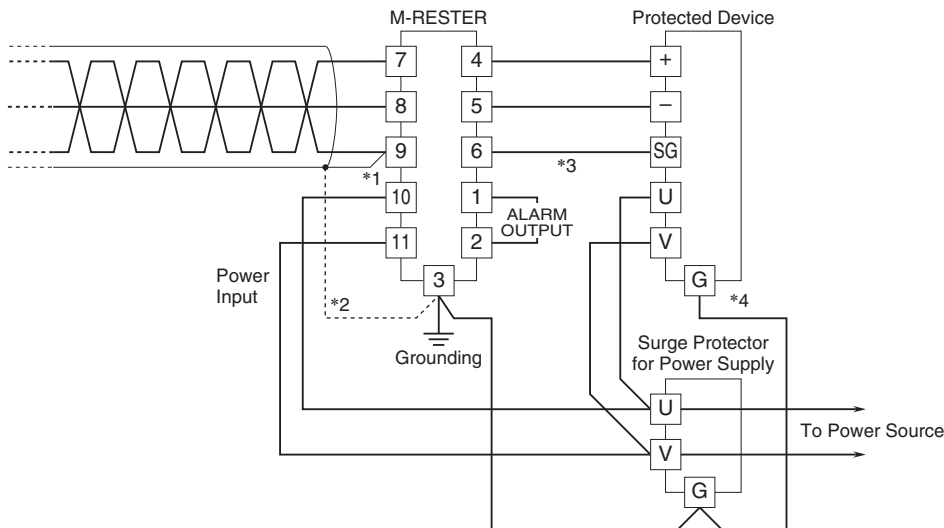


## CONNECTION EXAMPLES

### ■ DUAL-CORE CABLE

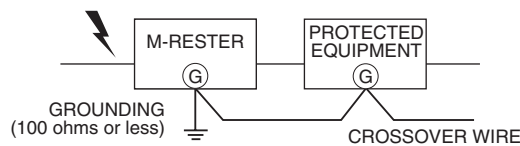


### ■ TRIPLE-CORE CABLE



- \*1. No need of this part of the wiring if the cable has no shield.
- \*2. Ground the shield via Terminal 3 if necessary.
- \*3. No need of wiring to Terminal 6 if the protected device has no SG (Signal Ground) Terminal.
- \*4. Cross wire from the protected device's G terminal to the surge protector's Terminal 3.  
If the protected device has no G terminal, ground only the surge protector.

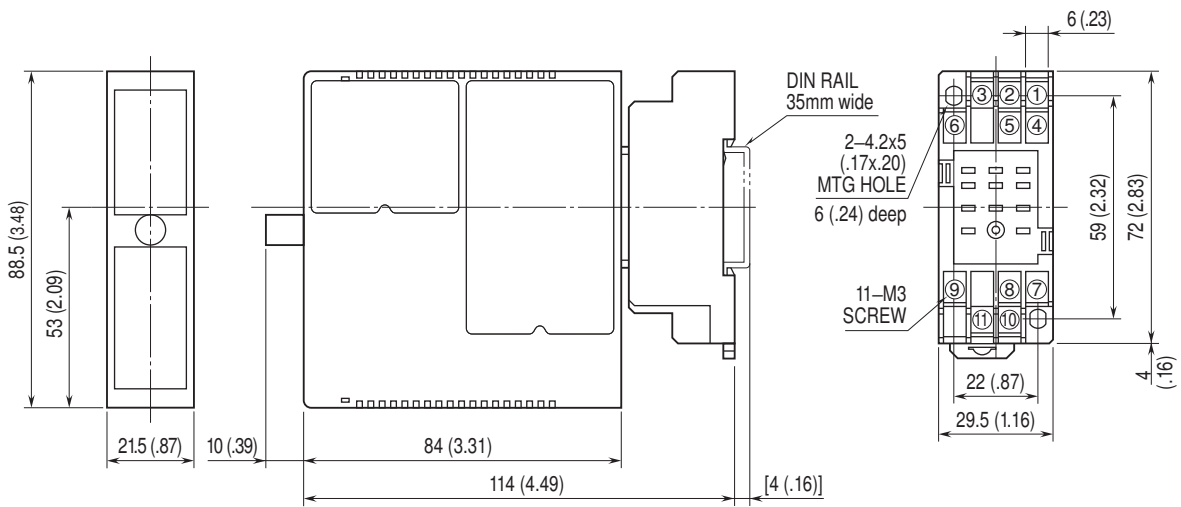
## GROUNDING



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.

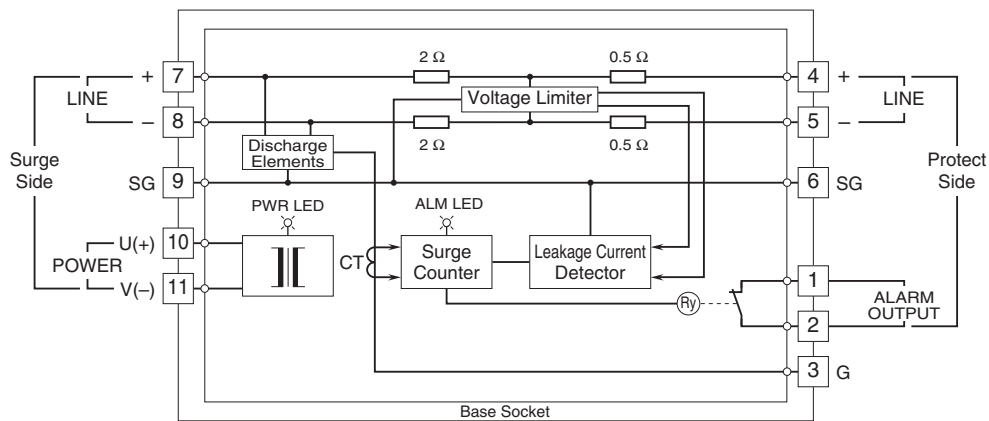
# MODEL: MDW2A-4R

## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



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

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.