

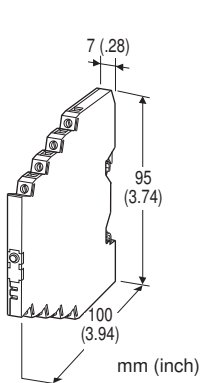
## Lightning Surge Protectors for Electronics Equipment M-RESTER

### LIGHTNING SURGE PROTECTOR FOR STANDARD SIGNAL LINE

(ultra-slim; life monitor)

#### Functions & Features

- High discharge current capacity 20 kA (8 / 20  $\mu$ s), 1 kA (10 / 350  $\mu$ s)
- Ultra-thin 7-mm-wide module can be mounted in high density
- Excellent protection employing multi-stage SPD circuits
- DIN rail mounting and grounding
- Shield terminal provided
- Life monitor function helps you to decide when you should replace the surge protector; reduces maintenance and prevents downtime
- Incorporated battery
- Pressing CHK (Check) button confirms with LEDs the degradation and life span of the surge protection circuits



**MODEL: MD7AST-[1][2][3]**

#### ORDERING INFORMATION

- Code number: MD7AST-[1][2][3]
- Specify a code from below for each [1] through [3].  
(e.g. MD7AST-24FF/Q)
- Specify the specification for option code /Q  
(e.g. /C01)

#### [1] NOMINAL VOLTAGE

- 24: 24 V DC
- 60: 60 V DC

#### [2] SHIELD TERMINAL (line / earth)

- FF: Floating / Floating
- FG: Floating / Grounding

#### [3] OPTIONS

- blank: none
- /Q: With options (specify the specification)

#### SPECIFICATIONS OF OPTION: Q

**COATING (For the detail, refer to M-System's web site.)**

- /C01: Silicone coating
- /C02: Polyurethane coating

#### GENERAL SPECIFICATIONS

- Construction:** Slim-sized front terminal structure
- Degree of protection:** IP20
- Connection:** Euro terminal block (torque 0.3 N·m)
- Applicable wire size:** 0.2 - 2.5 mm<sup>2</sup>, stripped length 8 mm
- Grounding:** DIN Rail
- Housing material:** Flame-resistant resin (black)
- Indicators:** Activated by CHK (Check) button
- BAT:** Green LED
- ALM:** Red LED
- Degradation judged:** When the leakage current at the voltage limiter exceeds approx. 7.5  $\mu$ A.
- Life time judged:** When the count of the discharge element discharging reaches the expected life span.
- CHK button:** Push button; momentary
- Battery:** Lithium; No recharge or replacement available.
- Battery life:** 10 years (when used  $\leq$  2 minutes/month)

#### INSTALLATION

- Operating temperature:** -5 to +55°C (23 to 131°F)
  - Operating humidity:** 30 to 90 %RH (non-condensing)
  - Mounting:** DIN Rail (TH35-7.5, 1-mm-thick)
- Oxide film on the surface of an aluminium DIN rail may lower the electric conductivity between this module and the ground. Use a steel or copper rail.
- Weight:** 70 g (2.5 oz)

## PERFORMANCE

MODEL NO.	NOMINAL VOLTAGE SHLD TERMINAL	MD7AST-24		MD7AST-60	
		FF	FG	FF	FG
Max. continuous operating voltage (Uc)	Line to Line	30V		70V	
	Line to Earth	±160V		±160V	
	Line to SHLD	±160V		±160V	
	SHLD to Earth	±160V	short	±160V	short
Voltage protection level (Up) @6kV (1.2 / 50 μs)	Line to Line	60V		115V	
	Line to Earth	±800V		±800V	
	Line to SHLD	±1200V	±800V	±1200V	±800V
	SHLD to Earth	±800V	short	±800V	short
Leakage current @Uc	Line to Line	≤ 5μA		≤ 5μA	
	Other sections	≤ 5μA		≤ 5μA	
Response time	Line to Line	≤ 4 nsec.		≤ 4 nsec.	
	Other sections	≤ 20 nsec.		≤ 20 nsec.	
Max. discharge current (Imax)	20kA (8 / 20 μs), 1.0kA (10 / 350 μs)				
Nominal current (I <sub>N</sub> )	250mA				
Internal series resistance	4.7Ω ±10% per line		10Ω ±10% per line		
Surge protection	IEC 61643-21 Categories C1, C2, D1				

## STANDARDS & APPROVALS

### EU conformity:

EMC Directive

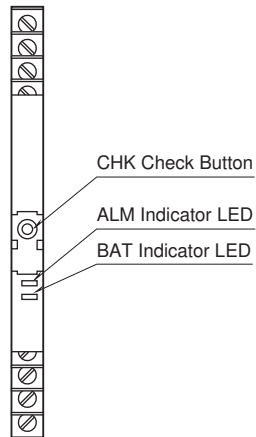
EMI EN 61000-6-4

EMS EN 61000-6-2

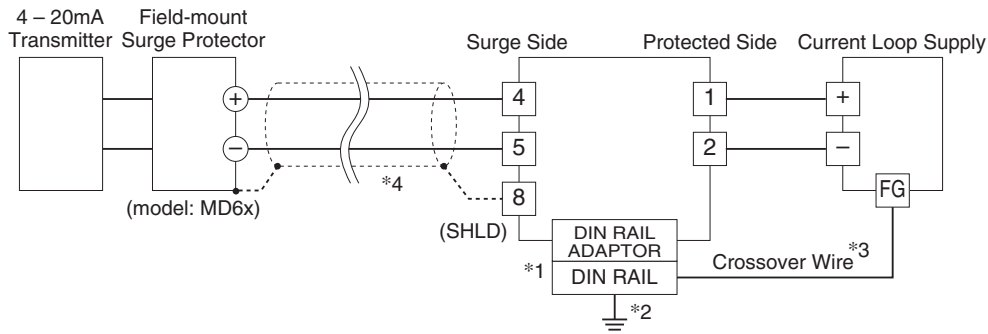
RoHS Directive

EN 50581

## EXTERNAL VIEW

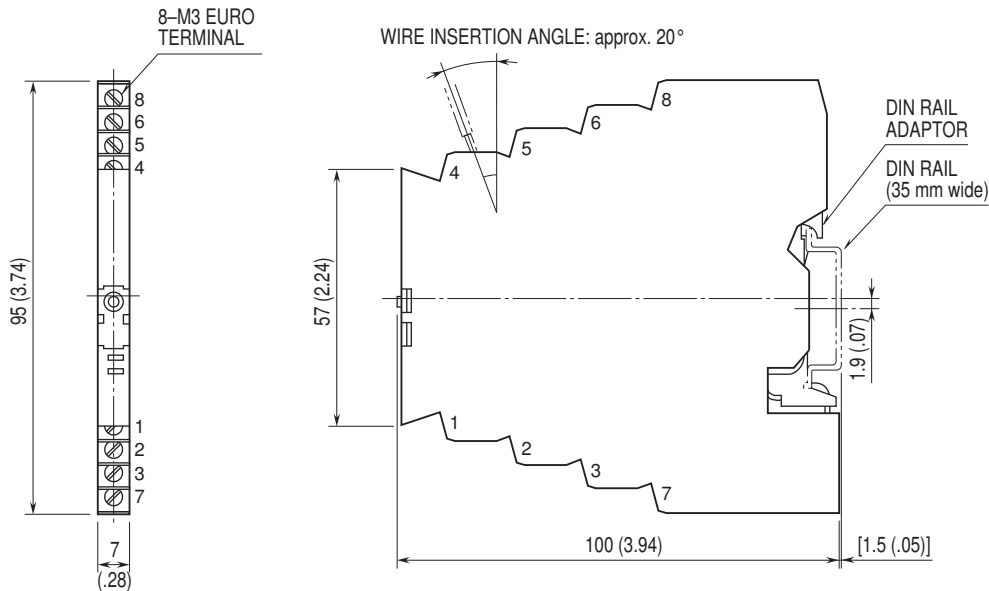


## CONNECTION EXAMPLES



- \*1. Oxide film on the surface of an aluminium rail may lower the electric conductivity between this module and the ground. Use a steel or copper rail.
- \*2. Be sure to ground the DIN rail. Recommended grounding resistance  $\leq 100\Omega$
- \*3. Cross-wire between the DIN rail and the metal housing of the protected device to equalize the earth potential. Ground only the surge protector when the protected device has no ground terminal.
- \*4. Shield wiring method is an example. Proceed according to the system requirements.

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



## SCHEMATIC CIRCUITRY

SHIELD TERMINAL	SCHEMATIC CIRCUITRY	APPLICATIONS
<ul style="list-style-type: none"> <li>• Line to SHLD: Floating</li> <li>• Earth to SHLD: Floating</li> </ul>	<p>• MD7AST-xFF</p>	<ul style="list-style-type: none"> <li>• Standard type</li> <li>• To protect a device having isolation between Signal and Earth.</li> <li>• When SHLD should be floating against the earth. (single-end grounding)</li> </ul>
<ul style="list-style-type: none"> <li>• Line to SHLD: Floating</li> <li>• Earth to SHLD: Grounding</li> </ul>	<p>• MD7AST-xFG</p>	<ul style="list-style-type: none"> <li>• To protect a device having isolation between Signal and Earth.</li> <li>• When SHLD should be grounded. (single- or both-end grounding)</li> </ul>



Specifications are subject to change without notice.