Lightning Surge Protectors for Electronics Equipment *M-RESTER*

LIGHTNING SURGE PROTECTOR FOR THERMOCOUPLE (ultra-slim)

MODEL **MD7TC**

MODEL & SUFFIX CODE SELECTION

MD7TC–❑❑

MODEL

SHIELD TERMINAL (line / earth)

FF : Floating / Floating (standard)
FG : Floating / Grounding
GF : Grounding / Floating
GG : Grounding / Grounding

SAFETY APPROVAL

0 : None
1 : FM intrinsically safe (future plan)
2 : CENELEC intrinsically safe (ATEX) (future plan)

ORDERING INFORMATION

Specify code number. (e.g. MD7TC-FF0)

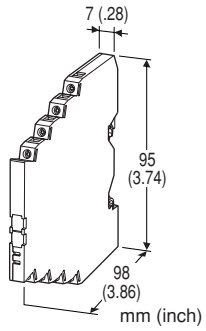
GENERAL SPECIFICATIONS

Ingress protection: IP 20
Connection: Euro terminal block (torque 0.3 N·m)
Applicable wire size: 0.2 – 2.5 mm²
Housing material: Flame-resistant resin (black)
Grounding: DIN Rail

INSTALLATION

Operating temperature: -25 to +85°C (-13 to +185°F)
Operating humidity: 30 to 90% RH (non-condensing)
Mounting: DIN Rail (TH35-7.5, 1-mm-thick)
Oxide coating of an aluminum rail may lower the electric conductivity between this module and the ground. Use a steel or copper rail.
Dimensions: W7×H98×D95 mm (0.28"×3.86"×3.74")
Weight: 70 g (2.5 oz)

CE



Functions & Features

- High discharge current capacity 20 kA (8 / 20 μs), 1 kA (10 / 350 μs)
- 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

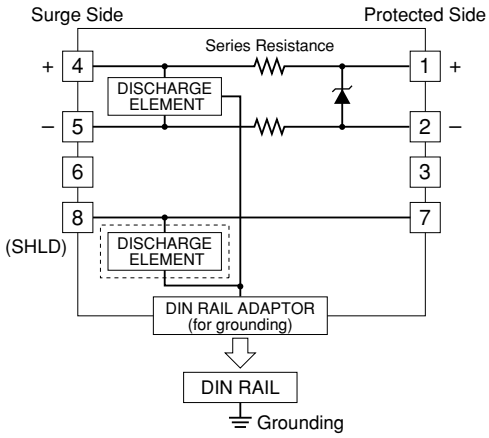
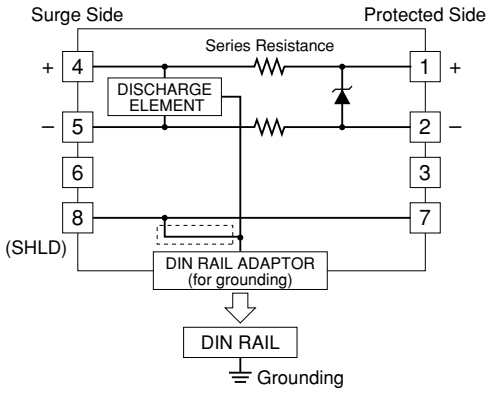
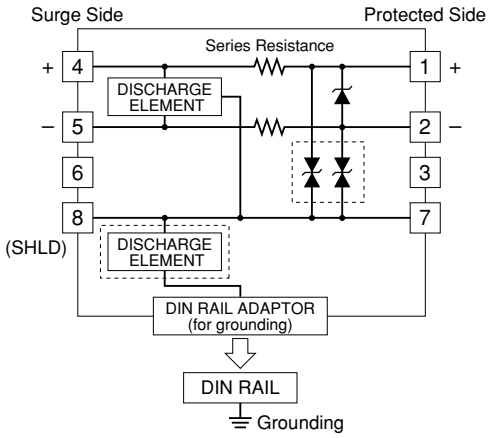
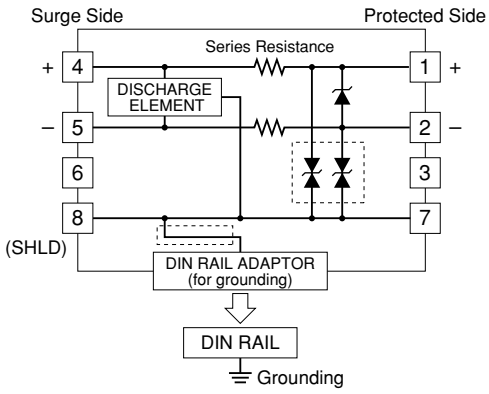
STANDARDS & APPROVALS

CE conformity: EMC Directive (89/336/EEC)
EMI EN61000-6-4
EMS EN61000-6-2
Surge protection: IEC 61643-21
(Categories C1, C2, D1)

PERFORMANCE

MODEL NO.		MD7TC-FF	MD7TC-FG	MD7TC-GF	MD7TC-GG
Max. continuous operating voltage (Uc)	Line to Line	7.5V			
	Ling to Earth	±160V			±7.5V
	Line to SHLD	±160V		±7.5V	
	SHLD to Earth	±160V	short	±160V	short
Voltage protection Level (Up) @4kV (1.2 / 50 μs)	Line to Line	25V max.			
	Ling to Earth	±800V max.			±25V max.
	Line to SHLD	±1200V max.	±800V max.	±25V max.	
	SHLD to Earth	±800V max.	short	±800V max.	short
Leakage current @Uc	Line to Line	≤5μA			
	Other sections	≤5μA			
Response time	Line to Line	≤4 nsec.			
	Other sections	≤20 nsec.			
Max. discharge current (Imax)		20kA (8 / 20 μs), 1.0kA (10 / 350 μs)			
Nominal current (I_N)		100mA			
Internal series resistance		4.7Ω ±10% per line			

SCHEMATIC CIRCUITRY

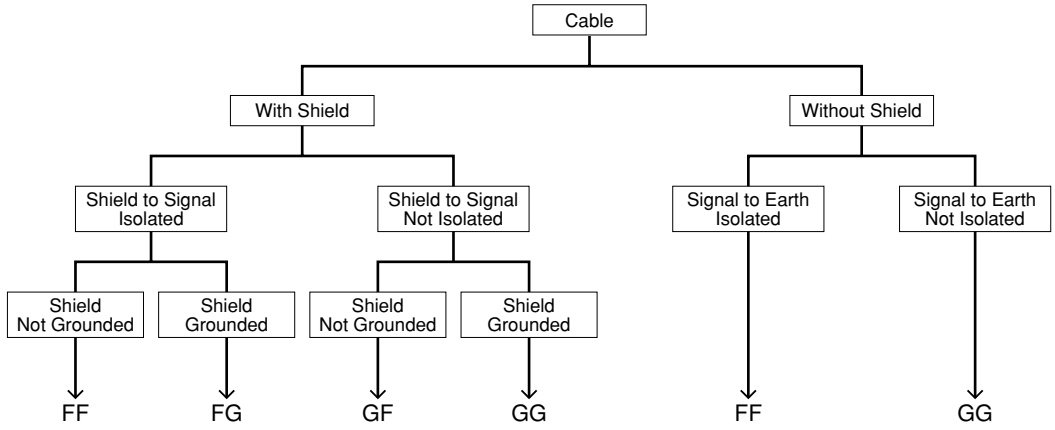
SHIELD TERMINAL	MODEL NO.	SCHEMATIC CIRCUITRY	APPLICATIONS
• Line to SHLD: Floating • Earth to SHLD: Floating	• MD7TC-FFx		• Standard type • To protect a device having isolation between Signal and Earth. • When SHLD should be floating against the earth. (single-end grounding)
• Line to SHLD: Floating • Earth to SHLD: Grounding	• MD7TC-FGx		• To protect a device having isolation between Signal and Earth. • When SHLD should be grounded. (single- or both-end grounding)
• Line to SHLD: Grounding • Earth to SHLD: Floating	• MD7TC-GFx		• To protect a device having isolation between Signal and Earth. • When SHLD wire should be connected to SG terminal of the protected device. (SHLD is not grounded to the earth.)
• Line to SHLD: Grounding • Earth to SHLD: Grounding	• MD7TC-GGx		• To protect a device which does not have a good dielectric strength between Signal and Earth.

Sections enclosed with broken line may differ depending upon the models.

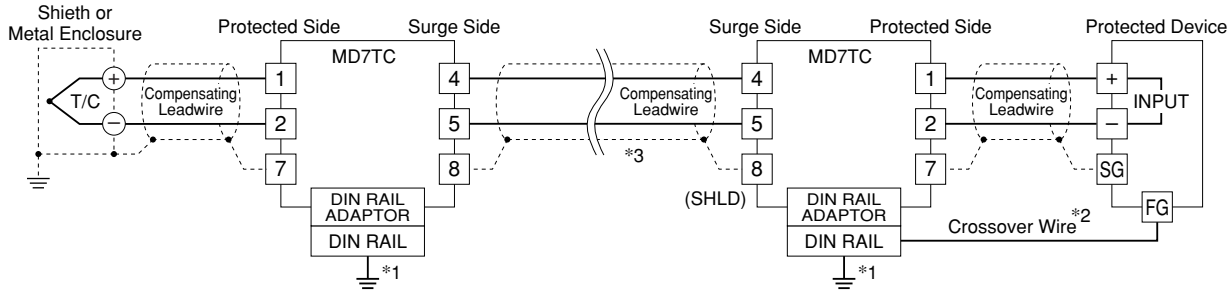
Specifications subject to change without notice.

SELECTING SHIELD TERMINAL TYPE

- The surge protector has a dedicated shield terminal effective for easy shield wiring and surge protection.
- Review the shield method (grounding, non-grounding, connecting to SG, etc.) required by the protected device or system.
- There is no electrical effect to the shield by installing the surge protector, but an appropriate shield terminal type must be selected to suit user applications.
- Refer to the flow chart below to choose.



CONNECTION DIAGRAM



*1. Be sure to ground the DIN rail. Recommended grounding resistance ≤100Ω
*2. 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.
*3. Shield wiring method is an example. Proceed according to the system requirements.

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENT (unit: mm)