

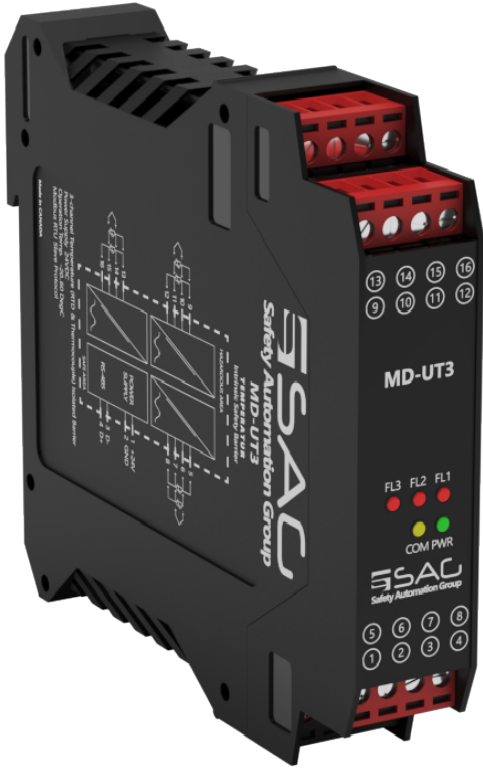
Intrinsic Safety Barrier

Temperature Barrier (Thermocouple)



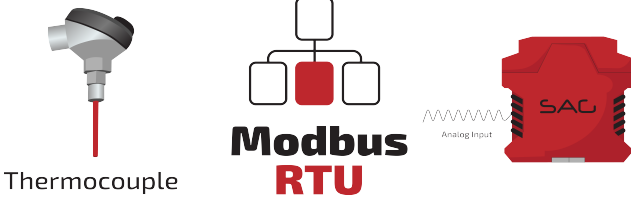
MD-TT3

Temperature Intrinsic Safety Barrier
(Thermocouple)



- Support 3 Channels
- 24 VDC Supply
- Analog Signal Type
- Modbus RTU, RS-485 Interface
- Connection with Screw Terminals
- Configurable with Modbus Protocol
- Measuring Temperature from Thermocouples

Product Features



Thermocouple

**Modbus
RTU**

Analog Input

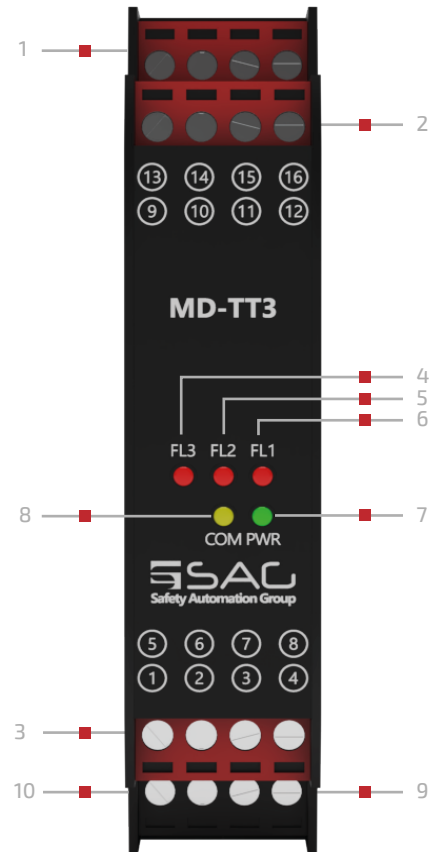


MD-TT is an isolated barrier that prevents the risk of excess temperature, arcs, and sparks igniting the explosive atmosphere present in a hazardous area. It features up to three channels, and every single of them supports analog signals and can be configured with the MODBUS protocol.

The **MD-TT** can measure temperature from a thermocouple. It supports a wide range of sensors including B, E, J, K, N, R, S, and T sensor types with an internal cold junction. The temperature value transmits to a safe area through the MODBUS protocol for processing and monitoring purposes, which is done via an integrated CPU platform.

Moreover, the **MD-TT** consumes current and power up to 208 mA and 5W respectively. Its power dissipation is acceptably less than 1W. And the environmental conditions are -20 to +60 °C as an operation, and -25 to +65 °C as storage temperature.

Front View

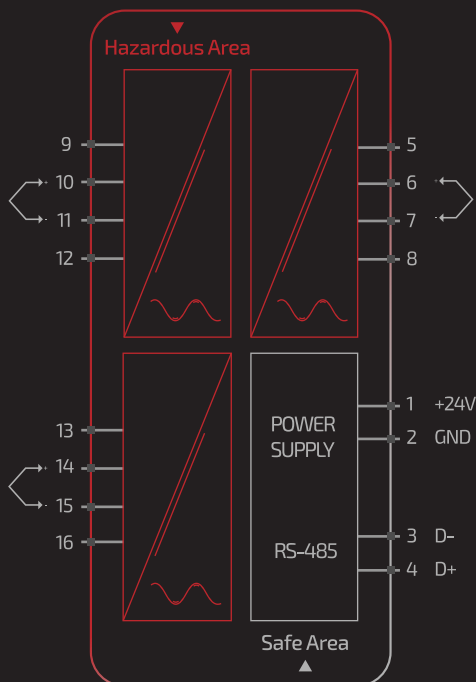


1. Analog Input : Channel 3
2. Analog Input : Channel 2
3. Analog Input : Channel 1
4. Fault LED Channel 1
5. Fault LED Channel 2
6. Fault LED Channel 3
7. Power LED
8. Communication LED
9. RS-485 Terminal
10. Power Supply Terminal

Connection View

MD-TT3

THERMOCOUPLE TEMPERATURE
INTRINSIC SAFETY BARRIER



1. +24VDC	5. Channel 1
2. GND	6. Analog Input
	7. Thermocouple
	8.
	9. Channel 2
	10. Analog Input
	11. Thermocouple
	12.
3. RS-485 (D-)	13. Channel 3
4. RS-485 (D+)	14. Analog Input
	15. Thermocouple
	16.

MD-TT3 PIN Configuration

Temperature Barrier(Thermocouple)

TECHNICAL DATA

MD-TT3

GENERAL SPECIFICATION

Signal Type	Analog Input
Number of Channels	3 Channel

SUPPLY

Rated Voltage	24 VDC Nom (20-30 VDC) Reverse Polarity Protected
Connection	Terminal 1 PIN 1(+24 VDC), Terminal 1 PIN 2 (GND)
Power Dissipation	< 1 W
Current Consumption	Approx. 208mA
Max. Power Consumption	5 W

INPUT

Input	Thermocouple
Connection	Terminals 2,3,4
Rated Values	-
Integration Time	400 ms
Input Range	±500 mV (TC/mV)

THERMOCOUPLE

Thermocouple	B, E, J, K, L, N, R, S, T – Type (IEC 584-1: 1995)
Cold Junction Compensation	Internal
Measurement Loop Monitoring	-

DEVIATION

Thermocouple	Deviation of CIC: ±0.8 K
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DATA CONNECTION

Modbus RTU	RS-485 connection up to 115.2 kbps for Monitor/ Configuration
Connection	Terminal1 PIN 3 (D-), Terminal1 PIN 4 (D+)

MOUNTING

Mounting	On 35 mm DIN Mounting Rail Acc. to EN 60715:2001
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ISOLATION

Input / Power Supply	1500 VDC
	Example. safe electrical isolation by reinforced insulation according to IEC/EN 61010 ⁻¹ Rated insulation voltage 300 Veff test voltage 3 kV, 50 Hz, 1 min.

Temperature Barrier(Thermocouple)

TECHNICAL DATA

MD-TT3

ENVIRONMENTAL CONDITIONS

Operation Temperature Temperature Limits -20 to +60 °C

Storage Temperature Temperature Limits -25 to +65 °C

APPROVALS

IEC60079-0, IEC60079-11, IEC60079-15

FM & FM-C No.3024643,3029921C,conforms to Class 3600,3610,3611,3810

LOCATION

Safe Area/Non-Hazardous Locations or Zone 2, Group IIC T4, Class I, Division 2, Groups A, B, C, D

Temperature Code T4 and Class I, Zone 2, Group IIC, IIB, IIA T4 installation.

SAFETY DESCRIPTION

ATEX II 1 G Ex ic [ia Ga] IIC T4 Gc, II 3 G Ex ic [ic] IIC T4 Gc, II 1 D Ex ic [ia IIIC Da] IIC Gc
II 3 D Ex ic [ic IIIC Dc] IIC Gc

IECEX Ex ic [ia Ga] IIC T4 Gc, Ex ic [ic] IIC T4 Gc, Ex ic [ia IIIC Da] IIC Gc, Ex ic [ic IIIC Dc] IIC Gc

North American Zones Class 1, Zone 2 AEx ic [ia Ga] IIC T4 Gc, Class I, Zone 2 AEx [ic] IIC T4 Gc
Zone 20 Ex ic [ia IIIC Da] IIC Gc, Zone 2 Ex ic [ic IIIC Dc] IIC Gc

North American Div Class I, Division 2, Groups A, B, C, D T4, Class II, Division 2, Groups F, G

ASSOCIATED ELECTRICAL APPARATUS

Vo/Voc 17.0 V, Io/Isc = 85 mA, Po/Po = 1.45 W

IECEX 24V, Ci = 6 nF, Li = 0 nH. Um = 30 V, -20 °C ≤ Ta ≤ 60°C.

ORDERING INFORMATION

MD-TT N

MD:

Modbus Compatible

TT:

Temperature Intrinsic Safety Barrier (Thermocouple)

N:

Number of Channels

1 : One Channel

2 : Two Channel

3 : Three Channel

ORDERING INFORMATION

MD-TT1 Temperature Intrinsic Safety Barrier (Thermocouple), 1 channel

MD-TT2 Temperature Intrinsic Safety Barrier (Thermocouple), 2 channel

MD-TT3 Temperature Intrinsic Safety Barrier (Thermocouple), 3 channel



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