Intrinsic Safety Barrier

Universal Temperature

Safety Automation Group

MD-UT1

Universal Temperature Intrinsic Safety Barrier

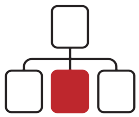
Safety Automation Group

- Support 1 Channels
- 24 VDC Supply
- Analog Signal Type
- Modbus RTU, RS-485 Interface
- Connection with Screw Terminals
- Thermocouple, RTD
- Configurable with Modbus Protocol

Product Features

RTD

Thermocouple

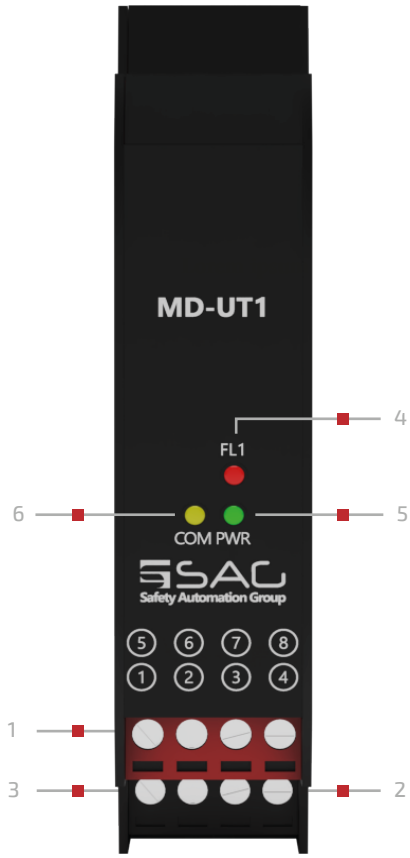


Modbus RTU

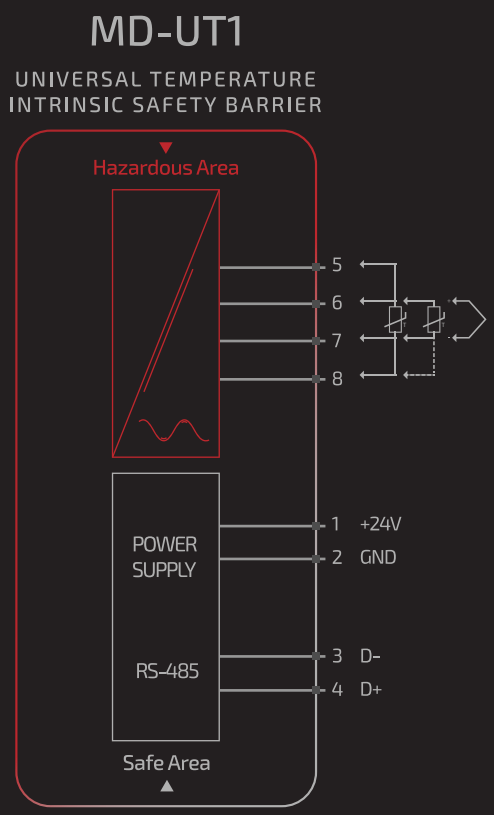
MD-UT is a universal intrinsically safe barrier.It can measure analog signal be configured with the Modbus protocol. It can be purchased 1-2 or 3 channels. The current and power consumption of the input is about 208 mA and 5W respectively, and the power dissipation is less than 1W with the 35 mm DIN mounting rail acc. The MD-UT can measure temperature and support various temperature sensors, including 2-3 and 4 wire RTDs, from PT10 to PT1000.When accuracy is not critical you can use 2-wire RTDs. Of course, 3 and 4-wire constructions are used in industries and laboratories where close accuracy is imperative. In addition to this, the thermocouple sensors can be read with different types (B, E, J, K, L, R, N, S, T-Type). The CJC is internal, and its deviation is about ±0.8 K. When installed in hazardous areas, the temperature value collected is transmitted back to the safe areas through the Modbus protocol. Also, 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 1
2. RS-485 Terminal
3. Power Supply Terminal
4. Fault LED Channel 1
5. Power LED
6. Communication LED



Connection View



MD-UT1 PIN Configuration

1. +24VDC	5. Channel 2
2. GND	6. Analog Input
3. RS-485 (D-)	7. RTD,Thermocuple
4. RS-485 (D+)	8.

Universal Temperature Barrier

TECHNICAL DATA

MD-UT1

GENERAL SPECIFICATION

Signal Type	Analog Input
Number of Channels	1 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, 2-3-4 Wire RTD
Connection	Terminals 2,3,4
Rated Values	-
Integration Time	400 ms
Input Range	±500 mV (TC/mV), 0-4 kΩ (RTD/res)

RTD

RTD	(PT10,PT50,PT100,PT500,PT1000)
Type of Measuring	2,3 and 4 Wire
Measurement Loop Monitoring	Sensor Breakage
Measuring RTD Current	323 µA

THERMOCOUPLE

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

DEVIATION

RTD	Max 0.1% of Span
Thermocouple	Deviation of CJC: ±0.8 K

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

Universal Temperature Barrier

TECHNICAL DATA

MD-UT1

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.

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-UTN

MD:
Modbus Compatible
UT:
Universal Temperature Intrinsic Safety Barrier
N:
Number of Channels

1 : One Channel 2 : Two Channel 3 : Three Channel

ORDERING INFORMATION

MD-UT1	Universal Temperature Intrinsic safety barrier, 1 channel
MD-UT2	Universal Temperature Intrinsic safety barrier, 2 channel
MD-UT3	Universal Temperature Intrinsic safety barrier, 3 channel

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