

Intrinsic Safety Barrier

Universal



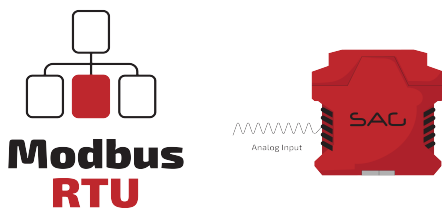
MD-U2

Universal Intrinsic Safety Barrier



- Support 2 Channels
- 24 VDC Supply
- Analog Signal Type
- Modbus RTU, RS-485 Interface
- Connection with Screw Terminals
- Thermocouple, RTD, Voltage Input, Current

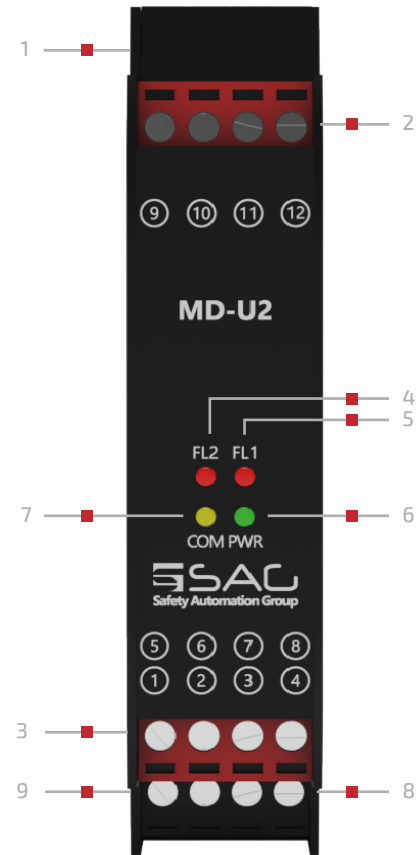
Product Features



MD-U is a universal temperature intrinsically safe barrier that can measure analog signals and be configured with the Modbus protocol, which is done with an integrated CPU platform. It is available in 1-2 or 3 channels, with a 35 mm DIN mounting rail acc.

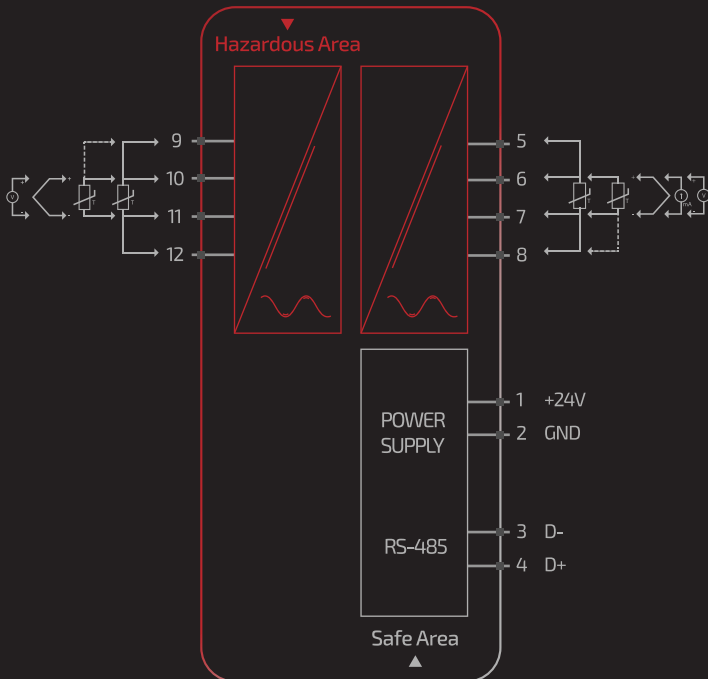
The SAG **MD-U** is a multi-function barrier that can measure temperature, voltage and current. It supports a variety of temperature sensors, including 2-3-4- wire RTDs from PT10 to PT1000. It can also read different types of Thermocouple sensors (B, E, J, K, L, N, R, S, T-type). In addition to temperature, it can measure a wide span of voltage from -10 to 10 volts. And one of its channels can read current in the range of 0-20 mA and 4-20 mA. Furthermore, the data collected from electrical devices in hazardous areas is transmitted to the safe area via the MODBUS Protocol, with a bit rate up of to 115.2 kbps for Monitor/ Configuration. This allows for remote monitoring at a safe distance.

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



Connection View

MD-U2 UNIVERSAL INTRINSIC SAFETY BARRIER



MD-U2 PIN Configuration

1. +24VDC	5. Channel 1
2. GND	6. Analog Input
	7. RTD,TC,Voltage,Current
3. RS-485 (D-)	8. Channel 2
4. RS-485 (D+)	9. Analog Input
	10. RTD,TC,Voltage,Current
	11. RTD,TC,Voltage,Current
	12. RTD,TC,Voltage,Current

TECHNICAL DATA

MD-U2

GENERAL SPECIFICATION

Signal Type Analog Input

Number of Channels 2 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, Voltage, Current

Connection Terminals 2,3,4

Rated Values -

Integration Time 400 ms

Input Range ± 500 mV (TC/mV), 0-4 k Ω (RTD/res), (sink, -10 to 10 volts), (sink 0-20mA)

RTD

RTD (PT10,PT50,PT100,PT500,PT1000)

Type of Measuring 2,3 and 4 Wire

Measurement Loop Monitoring Sensor Breakage

Measuring RTD Current 323 μ A

THERMOCOUPLE

Thermocouple B, E, J, K, L, N, R, S, T – Type (IEC 584-1: 1995)

Cold Junction Compensation Internal

Measurement Loop Monitoring -

VOLTAGE

Range 0 ... 10 V, 2 ... 10 V, 0 ... 1 V, -100 ... 100 mV, -10 ... 10V

Resolution -

CURRENT

Range 0 ... 20mA, 4 ... 20 mA

Resolution -

TECHNICAL DATA

MD-U2

DEVIATION

RTD	Max 0.1% of Span
Thermocouple	Deviation of CJC: ± 0.8 K
Voltage	0.1 % of Span
Current	0.02%

DATA CONNECTION

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

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

MOUNTING

Mounting	On 35 mm DIN Mounting Rail Acc. to EN 60715:2001
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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-U2

MD-UN

MD:

Modbus Compatible

U:

Universal Intrinsic Safety Barrier

N:

Number of Channels

1 : One Channel

2 : Two Channel

3 : Three Channel

ORDERING INFORMATION

MD-U1	Universal Intrinsic safety barrier, 1 channel
MD-U2	Universal Intrinsic safety barrier, 2 channel
MD-U3	Universal Intrinsic safety barrier, 3 channel



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