Intrinsic Safety Barrier

Universal

Safety Automation Group

MD-U3

Universal Intrinsic Safety Barrier

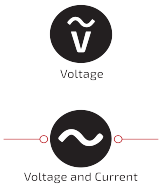
Safety Automation Group

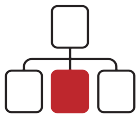
- Support 3 Channels
- 24 VDC Supply
- Analog Signal Type
- Modbus RTU, RS-485 Interface
- Connection with Screw Terminals
- Thermocouple, RTD, Voltage Input, Current

Product Features

RTD

Thermocouple



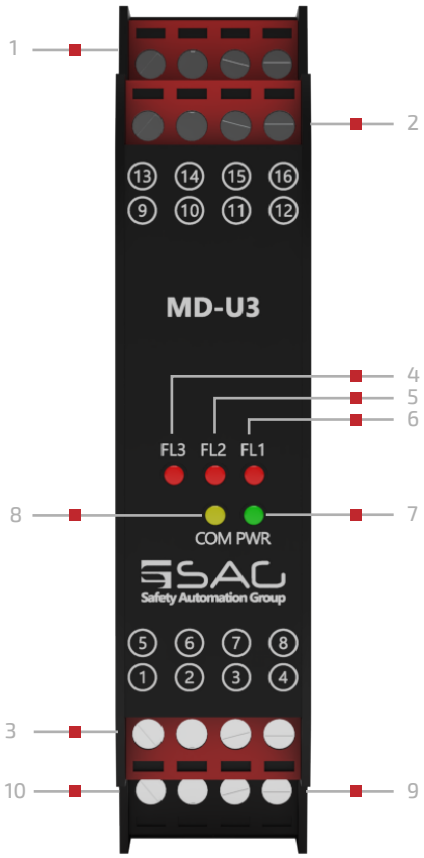


Modbus RTU

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.

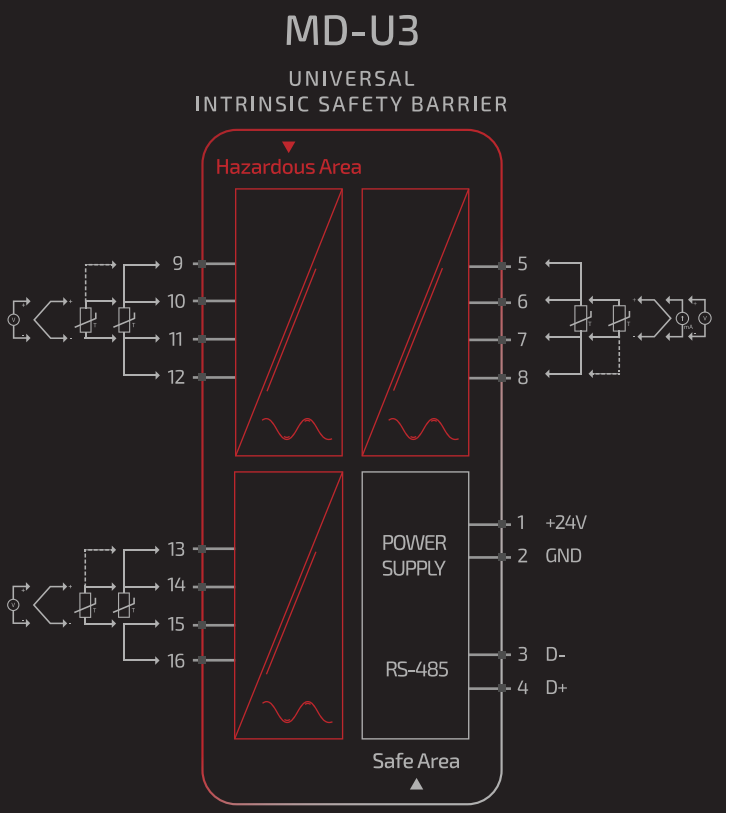
The SAG MD-U is a multi-function barrier that can measure temperature, voltage and current. It supports a variety of temperature sensors, including 2-3-4- wire RTDs from PT10 to PT1000. It can also read different types of Thermocouple sensors (B, E, J, K, L, N, R, S, T-type). In addition to temperature, 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.

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 and Power Supply Terminal
10. Power Supply Terminal

Connection View



MD-U3 PIN Configuration

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

Universal Barrier

TECHNICAL DATA

MD-U3

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, 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 kΩ (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 µA

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	-

Universal Barrier

TECHNICAL DATA

MD-U3

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

Universal Barrier

SAFETY

MD-U3

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.

Universal Barrier

ORDERING INFORMATION

MD-U3

MD-UN

MD:

Modbus Compatible

U:

Universal Intrinsic Safety Barrier

N:

Number of Channels

1 : One Channel

2 : Two Channel

3 : Three Channel

ORDERIN 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

SAG
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