

# Intrinsic Safety Barrier

Temperature Barrier (RTD)



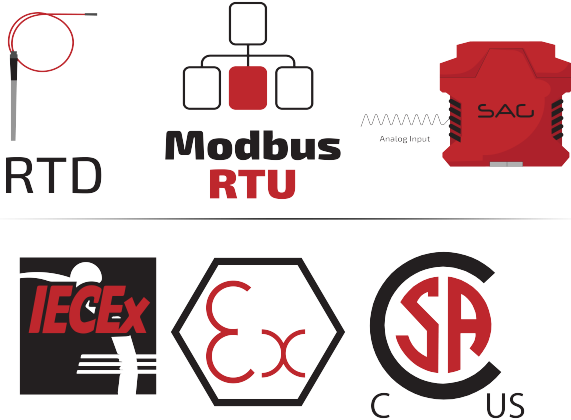
# MD-RT1

Temperature Intrinsic Safety Barrier (RTD)



- Support 1 Channels
- 24 VDC Supply
- Analog Signal Type
- Modbus RTU, RS-485 Interface
- Connection with Screw Terminals
- Configurable with Modbus Protocol
- Measuring Temperature from RTDs

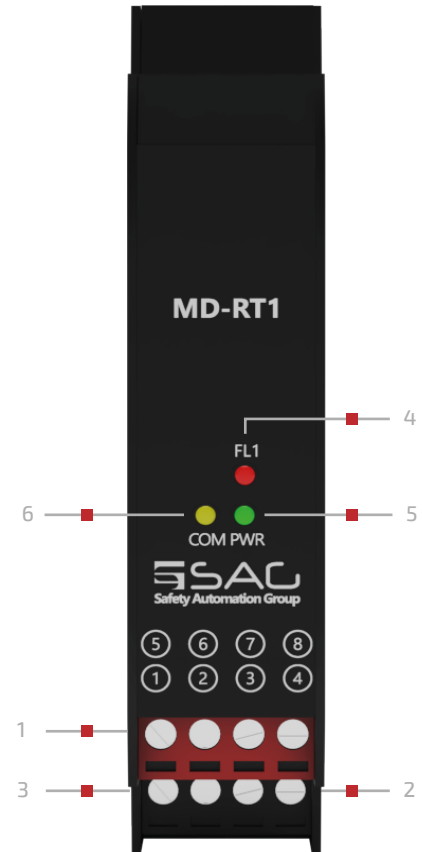
## Product Features



**MD-RT** isolated barrier is designed to measure the temperature of devices installed in hazardous areas, so as to promote intrinsic safety. This is achieved by preventing excess energy from possible faults on the safe side from reaching the hazardous area. Featuring up to three channels, it supports analog signals and can be configured with the Modbus protocol. The **MD-RT** also measures the temperature of 2-3-4 wire RTDs. And it supports various types of RTDs, including PT10, PT50, PT100, PT200, PT500, PT1000. Since it is installed in a safe area, measured values in hazardous areas are transmitted back to the safe area through the MODBUS – RTU protocol, with a bit rate up to 115.2 kbps for Monitor/ Configuration. Also, the loop monitoring measures faults like sensor break-ages and sensor shortages of device and warn users by fault LED. Furthermore, the **MD-RT** consumes about 208 mA and 5W current. The power dissipation is less than 1W. The environmental conditions are -20 to +60 °C as an operation, and -25 to +65 °C as storage temperature.

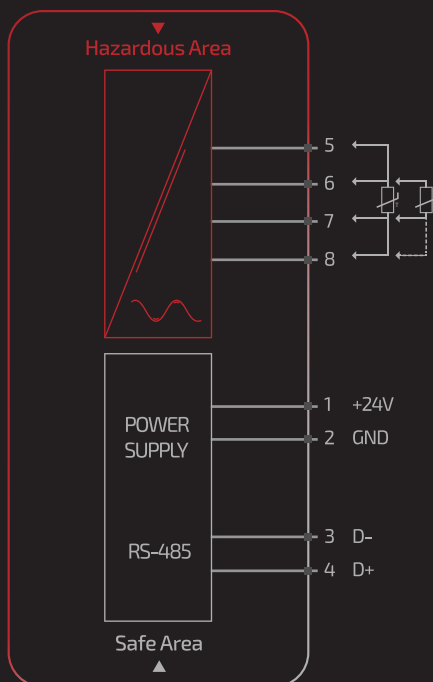
# Front View

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-RT1 RTD TEMPERATURE INTRINSIC SAFETY BARRIER



### MD-RT1 PIN Configuration

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

# Temperature Barrier(RTD)

## TECHNICAL DATA

MD-RT1

### 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	2-3-4 wire RTD
Connection	Terminals 2
Rated Values	-
Integration Time	400 ms
Input Range	0-4 k $\Omega$ (RTD/res)

### RTD

RTD	(PT10,PT50,PT100,PT500,PT1000)
Types of measuring	2,3 and 4 wire
Measurement Loop Monitoring	Sensor Breakage
Measuring RTD Current	323 $\mu$ A

### DEVIATION

RTD	Max 0.1% of Span
-----	------------------

### 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
----------	--

### ISOLATION

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

# Temperature Barrier(RTD)

## TECHNICAL DATA

MD-RT1

### 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      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

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-RT

MD:

Modbus Compatible

RT:

Temperature Intrinsic Safety Barrier (RTD)

N:

Number of Channels

1 : One Channel

2 : Two Channel

3 : Three Channel

### ORDERING INFORMATION

MD-RT1      Temperature Intrinsic Safety Barrier (RTD), 1 channel

MD-RT2      Temperature Intrinsic Safety Barrier (RTD), 2 channel

MD-RT3      Temperature Intrinsic Safety Barrier (RTD), 3 channel



[www.sagco.ca](http://www.sagco.ca)

HB Safety Automation Group  
#250 - 997 Seymour St.  
Vancouver, BC, Canada  
V6B 3M1