Intrinsic Safety Barrier

HART and Modbus Smart Transmitter

Safety Automation Group

MAD-STC1

Smart Transmitter Intrinsic Safety Barrier (HART and Modbus)

- Support 1 Channels
- 24 VDC Supply
- Analog Signal Type
- Modbus RTU, RS-485 Interface
- Connection with Screw Terminals
- 2 Wire Smart Transmitters
- Configurable with Modbus Protocol

Product Features

HART

4-20 mA

Modbus RTU

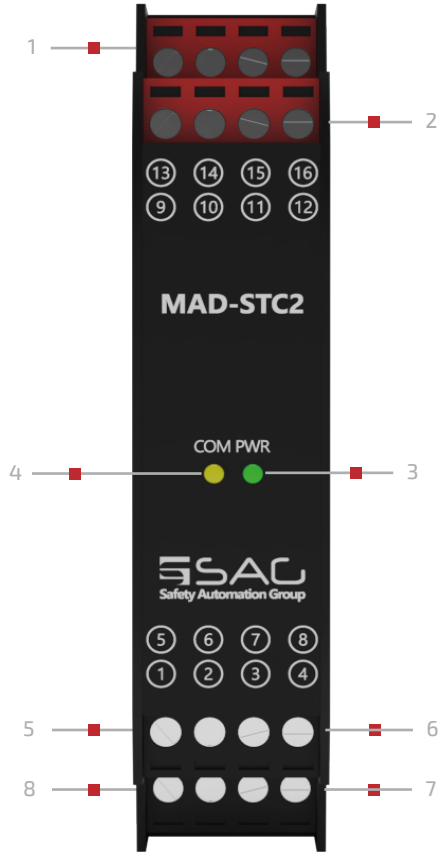
IECEx

Ex

SA C US

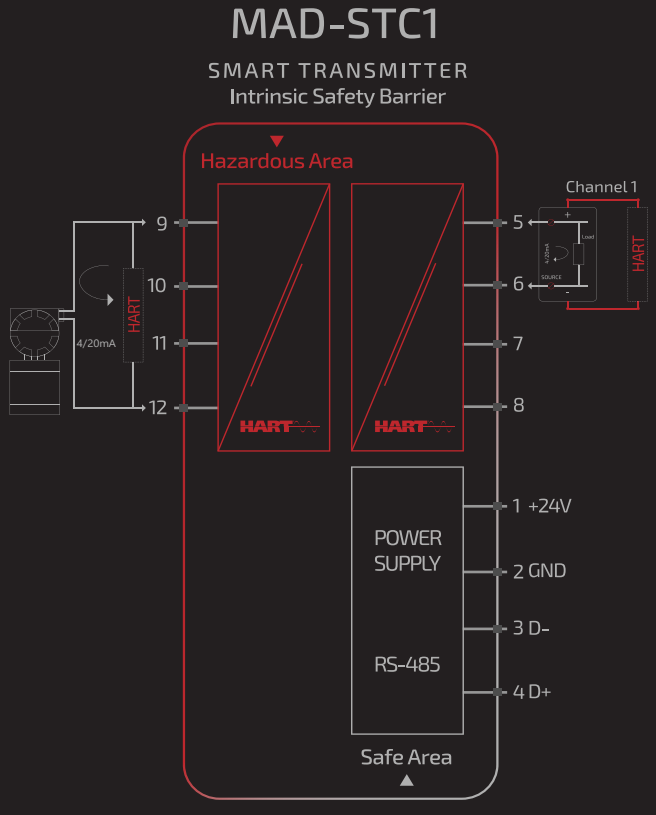
MAD-STC is an intrinsically safe barrier, designed for reading 2-wire smart transmitters in hazardous areas. It contains 1 or 2 channel(s). One of the main features of the MAD-STC is that it can be used as a HART to MODBUS converter. The MAD-STC provides a HART compatible source loop of power to the hazardous area, and it then repeats the measured current in a safe area. In fact, the analog input signals transferred to the safe area are as an isolated current value, in the range of 4 ~ 20 mA. It then carries the hart signal for the smart transmitter bi-directionally. In addition to HART transmitting technology, the MODBUS RTU is also another option to transfer and configure data, with a bit rate of up to 115.2 kbps via the RS-485 serial port. This makes it ideal for convenient, remote monitoring in a safe area. In this case, the user can choose data transfers via the Modbus, or reproduce loop power in the safe area.

Front View



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

Connection View



MAD-STC2 PIN Configuration

1.	+24VDC	5.	HART Interface Channel 1
2.	GND	6.	
		7.	Not Connected
		8.	
		9.	Channel 1
		10.	Analog Input
		11.	HART/4-20 mA
		12.	

Smart Transmitter Barrier

TECHNICAL DATA

MAD-STC1

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	4...20 mA
Connection	Terminals 3
Connection Side	Field Side
Available Voltage	> 16 V at 20 mA

OUTPUT

Output	4...20 mA
Connection	Terminals 2
Connection Side	Control Side
Load	0...550 Ω at 20 mA
Ripple	max. 50 µA rms

GALVANIC 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.
Output/ Power Supply	Functional Insulation, Rated Insulation Voltage 50 V AC
Output/ Output	Functional Insulation, Rated Insulation Voltage 50 V AC

TRANSFER CHARACTERISTICS

Deviation	At –20 to +60 °C, 4...20 mA : ≤10 µA incl.
Influence of Ambient Temperature	0.25 µA/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+)

Smart Transmitter Barrier

TECHNICAL DATA

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MOUNTING

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

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

MAD-STC N

MAD:
Modbus and HART Compatible
STC:
2 Wire Smart Transmitters
N:
Number of Channels
1 : One Channel 2 : Two Channel

ORDERING INFORMATION

MAD-STC1	HART and Modbus Smart Transmitter, 1 Channel
MAD-STC2	HART and Modbus Smart Transmitter, 2 Channel

SAG
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