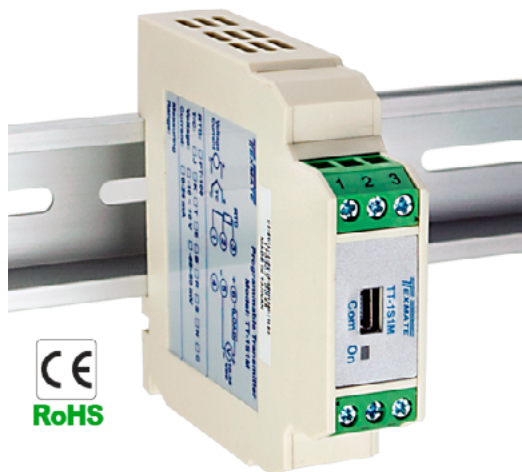


TT-1S1M

Microprocessor Based Programmable Isolated Single Channel input and Single 4-20mA output Signal Transmitter in a Compact 18.5 mm DIN Rail Mount Case



General Features

TT-1S1M is a DIN rail mount programmable 2-wire loop powered isolated signal transmitter. It converts input signal into a scalable linear 4~20mA analog output current.

The Microprocessor based designed make it flexible to accept various input signals including mV, V, mA, PT100 and 9 different thermocouples.

Easy configuration without external loop power connected.

The measuring unit and range can also be configured via a user-friendly software from a PC.

Fault signal on sensor break presettable.

Specifications

Input signal: User programmable. refer to table 1.

- **Thermocouple (T/C):** industry standard thermocouple types, J, K, T, E, B, R, S, N, C (ITS-90).
- **Pt100:** Excitation 180uA. 2 or 3 wire connection (ITS-90 $\alpha=0.00385$).
- **Voltage:** -60mVdc to 60mVdc or -10Vdc to 10Vdc.
- **Current:** 0mA to 24mA

Measuring range: User programmable. Max. range see table 1.

Measuring accuracy: Refer to Table 1. The accuracy is tested under the operating condition of 24°C±3°C.

Input sampling rate: 200mS.

Input current required: $\cong 3.8$ mA

Current limit: $\cong 23$ mA

Output signal: Analogue 4 to 20mA, 20 to 4mA.

Output resolution: 0.6uA.

Output response time: <200mS.

Load: Max. (VPower supply - 10 V) / 0.020

Power supply: 12 to 36 V, internal protection against polarity inversion.

Input signal	Maximum Range	Accuracy
Thermocouple J	-50 to 1000°C (-58 to 1832°F)	±1°C
Thermocouple K	-50 to 1370°C (-58 to 2498°F)	
Thermocouple T	-270 to 400°C (-454 to 752°F)	
Thermocouple E	-50 to 700°C (-58 to 1292°F)	±2°C ①
Thermocouple B	0 to 1750°C (32 to 3182°F)	
Thermocouple R	-50 to 1750°C (-58 to 3182°F)	±2°C
Thermocouple S		
Thermocouple N	-50 to 1300°C (-58 to 2372°F)	
Thermocouple C	-50 to 1800°C (-58 to 3272°F)	
Pt100*	-200 to 600°C (-328 to 1112°F)	±0.2°C
mV	-60.00 mV to 60.00 mV	±0.01mV
DC volt ②	-10.000 to 10.000 Vdc	±1mV
DC mA ②	0.000 to 24.000 mAdc	±3µA

* Factory setting

Table 1

- ① Accuracy is not guaranteed between 0 and 400°C (0 and 752°F) for type B, R and S.
- ② Range set by an internal DIP switch, see Table 2.

Common mode rejection ratio: >80dB.

Galvanic isolation: 2800 Vrms. between input and output

Operating temperature: 0 to 55°C

Humidity: 0 to 90% RH

Electromagnetic compatibility (EMC): En 50081-2, En 50082-2

Dimension: shown in Figure 1.

Housing material: ABS plastic. UL 94V0

Weight: 65g

CASE DIMENSIONS

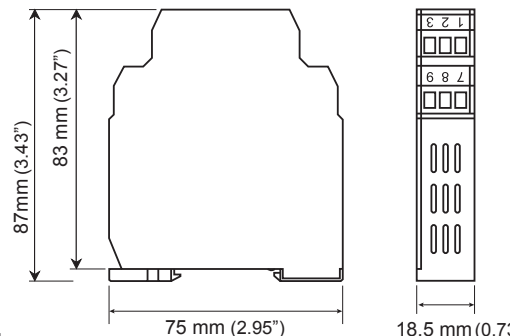


Figure 1

Terminal Connection

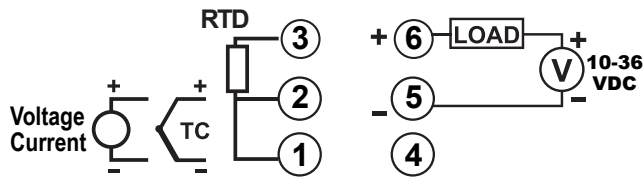
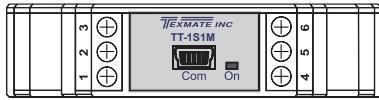


Figure 2. Terminal connections

Wiring Specification :

Screw tightening torque : 4.3 lb-in,
Wire range : 12~30 AWG.
Wire strip length : 6~7mm

Wiring Precaution :

1. Always keep signal wires away from power or contactor wires.
2. The power supply of TT-1S1M should not be shared with contactors, electrical motor and other inductive devices.

The various input signals are divided into three groups.

1. **TC/RTD/mV** : Thermocouple type (J, K, T, E, B, R, S, N, C), Pt100 and voltage input in the range of -60mVdc~60mVdc.
2. **Current** : 0~24 mA.
3. **Voltage** : -10~10Vdc.

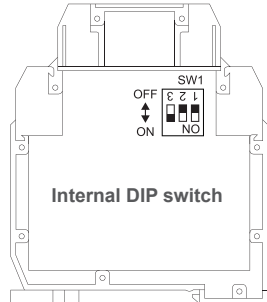
For the three different groups of input signal type, An internal DIP switch SW1 should be set according to the Table 2.

	1	2	3
TC/RTD/mV*	OFF	OFF	ON
0~24mA	ON	OFF	ON
-10V~10V	OFF	ON	OFF

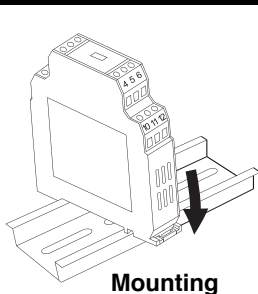
*Factory Setting

Table 2.

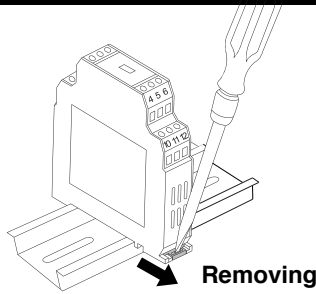
Internal DIP switch setting



Installation



Mounting



Removing

Operation

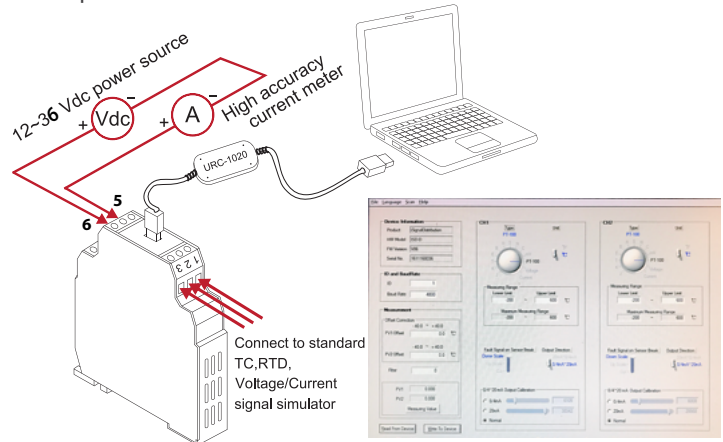
All the input signals and output current are calibrated within the specified accuracy at factory. Further custom input and output signal adjustment can be recalibrated with **TT Configurator** software.



Configuration

TT-1S1M transmitter is user configurable with the user-friendly **TT Configurator** software and URC-1020 interface cable. The latest version can be download free from www.texmate.com.

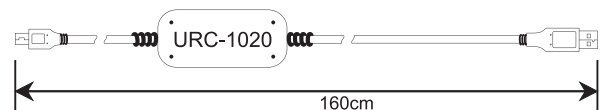
The URC-1020 Interface cable consist of interface converter and USB plug. It can be purchased separately. During configuration the transmitter can work alone with or without connecting to a power source.



The Configurable parameters are :

1. **Input signal type:** Various input signal type can be selected among the available options.
2. **Unit:** Select the unit ($^{\circ}\text{C}$ or $^{\circ}\text{F}$) of temperature measurement. For linear input (voltage or current), it doesn't effect the measurement.
3. **Measuring range:** Defines the lowest and highest value of measuring range. Within the range, the transmitter will convert input signals into an scalable 4 to 20mA analogue output signal.
4. **Output direction:** Defines the scalable analogue output signal to be 4 to 20mA or 20 to 4mA.
5. **Fault signal on sensor break:** Defines the output signal to be (1) Downscale ($<4\text{mA}$), (2) upscale ($>20\text{mA}$), (3) Cut-off. Limit the output signal within the output range when the input is out of measuring range.
6. **Offset Correction:** Allows to eliminate the offset error of measuring value.
7. **4~20mA Output Signal Calibration:** Zero and Span adjustment of output signal. A power source should be connected as Figure 6.
8. **Measuring value:** Read the measuring value from transmitter continually.
9. **Device information:** Indicate the device model, firmware version, series number and communication status.

Accessory



URC-1020 Interface cable