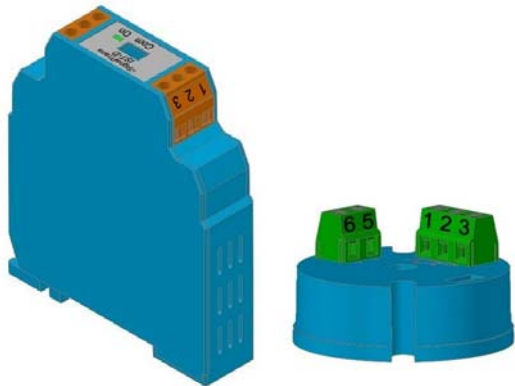


iSignalTrans®

Microprocessor Based Programmable Isolated Transmitter

Model IST-D
Model IST-H

Installation and Operation Manual



IST-D

IST-H

iSignalTrans® is a 2-wire loop-powered isolated signal transmitter. Microprocessor based designed make it flexible to accept various input signals including mV, V, mA, Pt100 and 9 different thermocouples. The measuring unit and range are also configurable with a user-friendly software iSignalWin® via PC.

Features

- DIN rail mount type IST-D
- Head mount type IST-H
- PC programmable for various input signals, measuring range
- Configurable without external Loop Power Connected.
- Input:
 - Resistance thermometer (Pt100)
 - Thermocouple (J,K,T,E,B,R,S,N,C)
 - Voltage/Current transmitter (mV/V/mA)

- Output:
 - 2-wire loop-power technology, 4 to 20 mA analogue output.
- High accuracy in total ambient temperature range.
- Fault signal on sensor break presettable.

Specification

- 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. Maximum range refer to 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 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)	±1°C
Thermocouple T	-270 to 400°C (-454 to 752°F)	±1°C
Thermocouple E	-50 to 1000°C (-58 to 1832°F)	±1°C
Thermocouple B	250 to 1800°C (-58 to 1832°F)	±2°C (Note1)
Thermocouple R	-50 to 1750°C (-58 to 1832°F)	±2°C
Thermocouple S	-50 to 1750°C (-58 to 1832°F)	±2°C
Thermocouple N	-50 to 1300°C (-58 to 1832°F)	±2°C
Thermocouple C	-50 to 1800°C (-58 to 1832°F)	±2°C
Pt100	-200 to 850°C (-58 to 1832°F)	±0.2°C
mV	-60mV to 60mV	±0.02mV
Voltage (Note2,3)	-10 to 10Vdc	±2mV
Current (Note2,3)	0 to 24mAdc	±2µA

Note 1 : Accuracy is not guaranteed between 0 and 400°C (0 and 752°F) for type B, R and S.

Note 2 : An internal jumper in IST-D should be set. See Table 2 in detail.

Note 3 : Not selectable for IST-H type, Please contact supplier for special request.

Table 1 Input Signal

- Output signal :** Analogue 4 to 20 mA, 20 to 4 mA.
- 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.
- Galvanic isolation :** 2.5 KV 1min. between input and output
- Input current required** ≤ 3.5 mA
- Current limit** ≤ 23 mA
- Operating temperature :** -40 to 85°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 : IST-D 65 g, IST-H ??g.

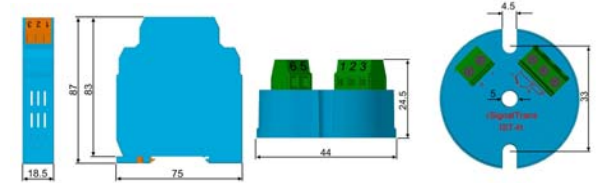


Figure 1. Dimension in mm

Electrical connection

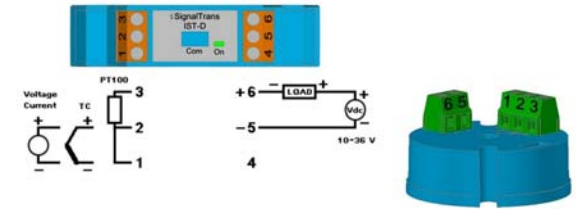


Figure 2. Terminal connections

Wiring Specification :

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

Wiring Precaution :

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

The various input signals of IST-D 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 of IST-D 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

Note : Special request of 0~24mA and -10~10Vdc input for IST-H, Please contact your supplier.

Table 2. Internal DIP switch setting

To change the SW1 of IST-D, please open the cover as shown in Figure 3.

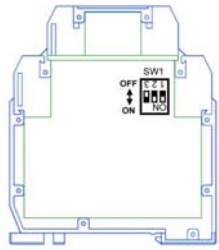


Figure 3. Internal DIP Switch

Operation

All input signals and the output current are calibrated within the specified accuracy at factory. However, a recalibration is implemented to provide fine adjustments to the input and output signal in the field. This is accomplished by *iSignalWin*® software.

Configuration

The *iSignalTrans*® transmitter can be configuration using a PC with *iSignalWin*® software and **interface cable**.

- *iSignalWin*® is user-friendly software. The latest release version can be download free from website. www.vertex-tw.com
- **Interface cable** consist of interface converter and USB plug. It can be purchased separately from *iSignalTrans*® supplier.

During configuration the transmitter can work alone with or without connecting to a power source. The configuration connection is shown in Figure 4.

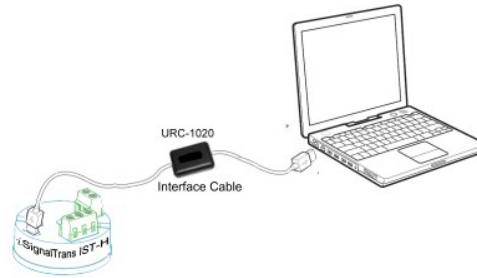
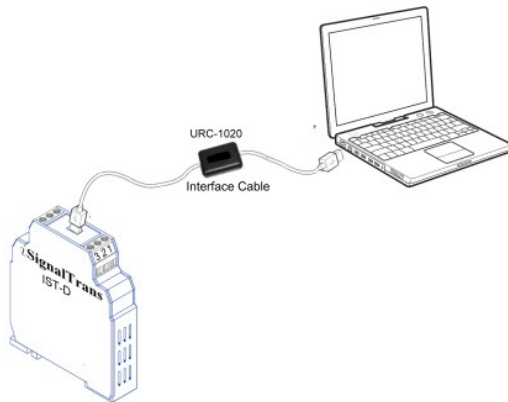


Figure 4. Configuration connection

Figure 5 show the configuration screen of *iSignalWin*®. 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 *iSignalTrans*® converting input signals into an scalable 4 to 20 mA 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 upscale ($>20\text{mA}$) or downscale ($<4\text{mA}$) on sensor break.
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 shoule 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.

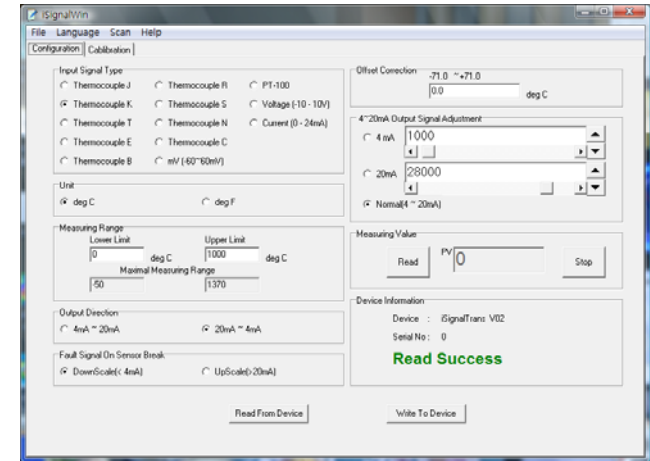


Figure 5. Configuration screen

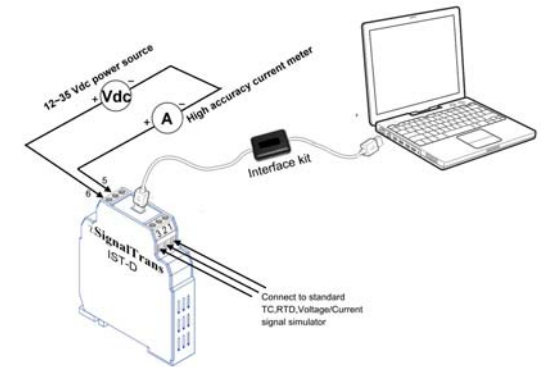


Figure 6. Calibration connection