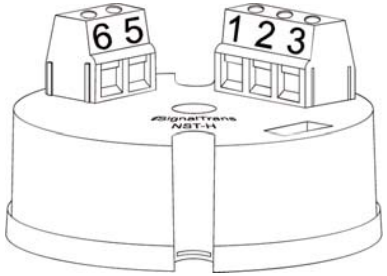
iSignalTrans®

Microprocessor Based Programmable Signal Transmitter

Model NST-H

Installation and Operation Guide



NST-H

iSignalTrans® is a 2-wire loop-powered signal transmitter. It converts input signal into a scalable linear 4 ~20mA output current. Microprocessor based designed make it flexible to accept various input signals including mV, PT100, and 9 different thermocouples. The measuring unit and range are also configurable with a user-friendly software **iSignalWin®** via PC.

Features

- Programmable for various input signals, measuring range
- Easy Configuration without external Loop Power Connected.
- Input:
  Resistance thermometer (Pt100)
  Thermocouple (J, K, T, E, B, R, S, N, C)
  mV transmitter
- Output:
  2-wire loop-power technology, 4 to 20 mA analogue output.
- 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 α =0.00385).
- Voltage: -60mVdc to 60mVdc

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)	±1C
Thermocouple T	-270 to 400˚C (-454 to 752˚F)	±1˚C
Thermocouple E	-50 to 700˚C (-58 to 1832˚F)	±1˚C
Thermocouple B	0 to 1750˚C (32 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 600˚C (-58 to 1832˚F)	±0.2˚C
mV	-60.00mVto 60.00mV	±0.01mV

***Factory Setting**

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

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 :10 to 36 V, internal protection against polarity inversion.
Common mode rejection ratio : >80dB.
Input current required ≤ 3.8 mA
Current limit ≤ 23 mA
Operating temperature : 0to 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 : 19 g.

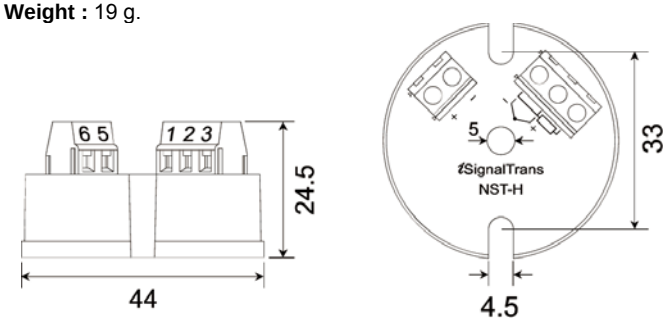
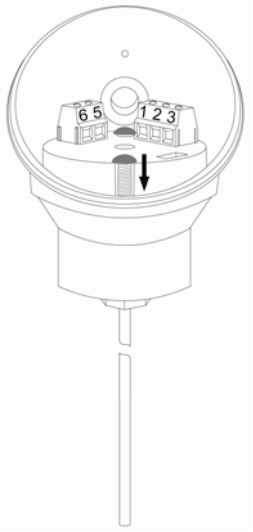


Figure 1. Dimension in mm

Installation



Mounting

Electrical connection

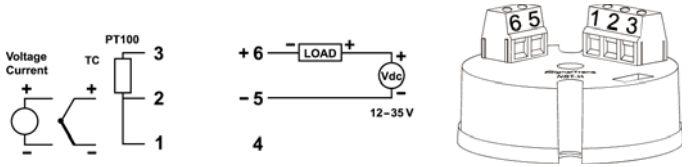


Figure 2. Terminal connections

Wiring Specification :
Srew tightening torque : 3.5 lb-in
Wire range : 16~26 AWG
Wire strip length : 5~6mm

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 are divided into three groups.
TC/RTD/mV : Thermocouple type (J, K, T, E, B, R, S, N, C), Pt100 and voltage input in the range of –60mVdc ~ 60mVdc.

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 is user configurable with the iSignalWin® **PC** software and **URC-1020 interface cable** or a **EzPro hand held programmer.**.

- iSignalWin® is user-friendly software. The lastest release version can be download free from **www.vertex-tw.com**
- **URC-1020 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 3.

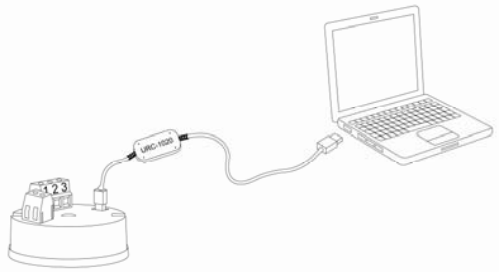


Figure 3. Configuration connection

Figure 4 show the configuration screen of iSignalWin®. The help menu provides further detail information about the transmitter and the software. The Configurable parameters are :

1. **Input signal type :** Various input signal type can be selected among the available options.
2. **Unit :** Select the unit (° C or °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 4 mA.
5. **Fault signal on sensor break :** Defines the output signal to be upscale (>20mA) or downscale (<4mA) 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.

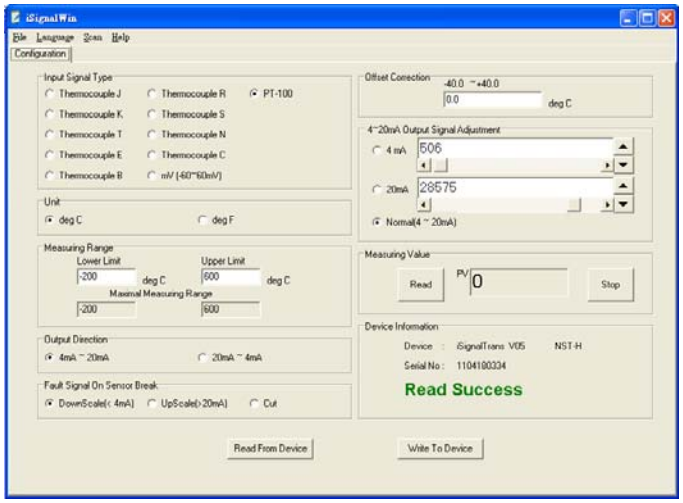


Figure 4. Configuration screen

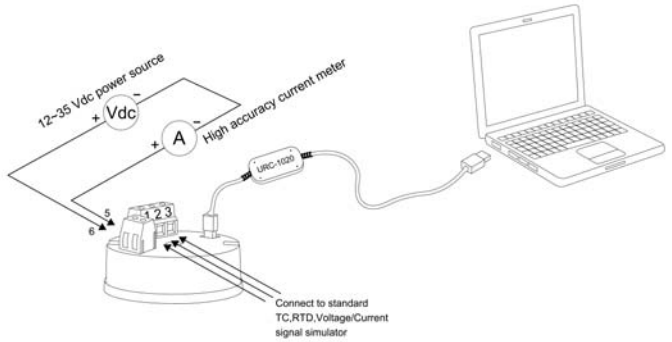


Figure 5. Calibration connection

Accessary

URC-1020 Interface cable