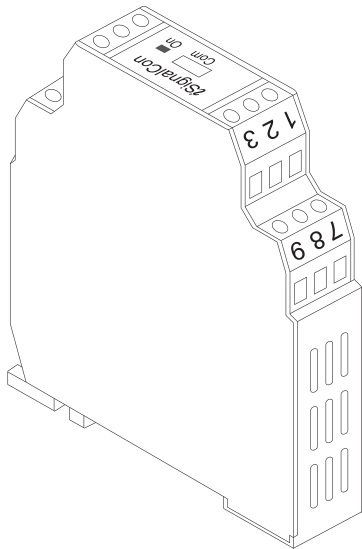# *i*SignalCon®

2-Channel Isolated Universal Signal Conditioner/Converter

Model ISA-D
Model ISA-C

## Installation and Operation Manual

iSignalCon® is a user programmable 2-channel isolated universal signal conditioner / converter. 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

■ PC programmable for various input signals, measuring range.
■ Configurable with or without external Power Connected.
■ Dual channel Input:
Voltage/Current transmitter (mV/V/mA)
• Dual analog Output: (Model ISA-D)
0/4 to 20 mA or 0~10V analog output.
• RS485 communication: (Model ISA-C)
Modbus RTU protocol.
• High accuracy in total ambient temperature range.
• Fault signal on sensor break presettable.
Defines the output signal to be upscale (>20mA) or downscale (<4 mA) on Sensor break Or cut the output signal on upscale (20mA) or downscale (4 mA)
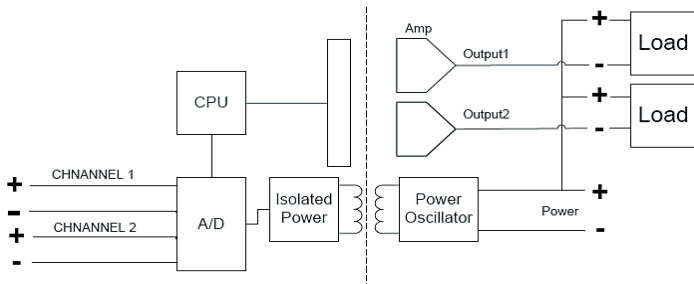
Specification

Input signal: User programmable. refer to Table 1.
■ Voltage: mVdc or Vdc.
■ Current: mA
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
Voltage	-480mV ~ 480mV	±0.2mV
Voltage	-240mV ~ 240mV	±0.02 mV
Voltage	-120mV ~ 120mV	±0.02mV
Voltage	-60mV ~ 60mV	±0.02mV
Voltage	-30mV ~ 30mV	±0.02mV
Voltage	-15mV ~ 15mV	±0.02mV
Voltage	-96V ~ 96V	±0.02V
Voltage	-48V ~48V	±0.02V
Voltage	-24V ~ 24V	±0.02V
Voltage	-12V ~ 12V	±0.02V
Voltage	-6V ~ 6V	±0.02V
Voltage	-3V ~ 3V	±0.02V
Current	0 ~ 177mA	±0.02 mA
Current	0 ~ 88mA	±0.02 mA
Current	0 ~ 44mA	±0.02 mA
Current	0 ~ 22mA	±0.02 mA
Current	0 ~ 11mA	±0.02 mA
Current	0 ~ 5.5mA	±0.02 mA

Note 1: Accuracy is not guaranteed between 0 and 400°C (0 and 752°F) for type B.
Note 2: The internal DIP switch should be set. See Table 2 in detail.

Table 1 Input Signal

Output signal:
Model ISA-D: Two analog outputs, 0/4~20mA, 0~10V
Model ISA-C: One analog output, one RS485
Output resolution: 0.6uA.
Output response time: < 200mS.
Power supply: 24 Vdc, internal protection against polarity inversion.
Common Mode Rejection Ratio(CMRR): >80dB
Galvanic isolation: 3.75 KV 1min. between input and output
Input current required ≤ 50 mA
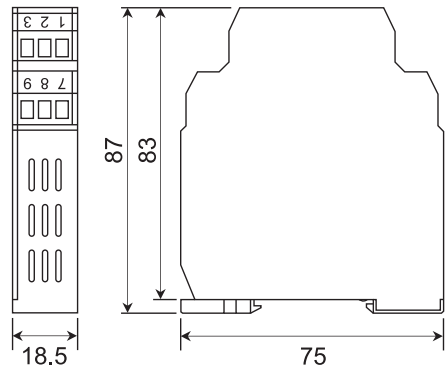**Current limit** ≤ 23 mA
Operating temperature: -40 to 85°C
Humidity: 0 to 90% RH
Electromagnetic compatibility (EMC): En 50081-2, En 50082-2
Dimension: shown in Figure 1.
Housing material: ABS plastic. UL 94V0
Weight: 85g

Figure 1. Dimension in mm

Electrical connection
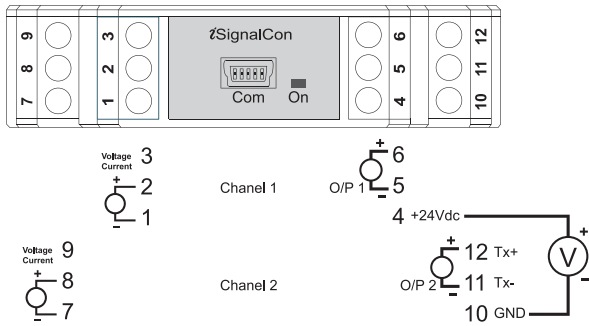

Figure 2. Terminal connections

Wiring Specification:
Srew 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 **iSignalCon®** should not be shared with contactors, electrical motor and other inductive devices.

The various input signals are divided into two groups.
1. Current: mA
2. Voltage: mVdc or Vdc.

For the two different groups of input signal type, The SW1 and SW2 should be set according to the Table 2 for each channel separately.

	1	2	3
	OFF	OFF	ON
	ON	OFF	ON
	OFF	ON	OFF

* Factory Setting

Table 2. Internal DIP switch setting

To change the DIP switch setting, please open the **iSignalCon®** cover as shown in Figure 3.
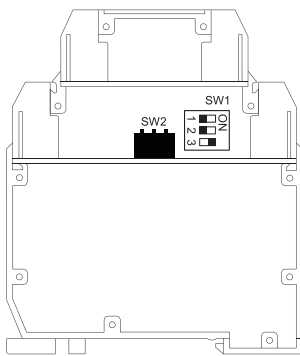

Figure 3. Internal DIP Switch

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 output signal in the field. This is accomplished by **iSignalWin®** software.

Configuration

The **iSignalCon®** can be configuration using a PC with **iSignalWin®** software and **URC-1020 interface cable.**

• **iSignalWin®** is user-friendly software. The latest release version can be download free from website.

www.vertex-tw.com

• **URC-1020 Interface cable** consist of interface converter and USB plug. It can be purchased separately from **iSignalCon®** supplier.

During configuration the **iSignalCon®** can work alone without connecting to a power source. The configuration connection is shown in Figure 4.
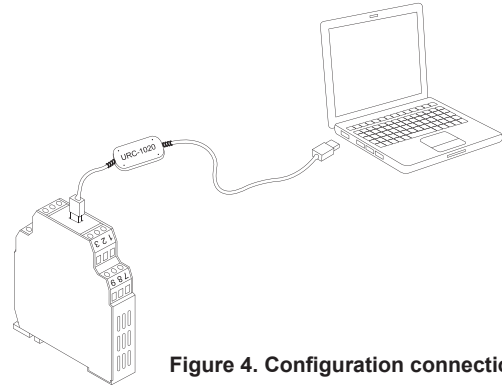

Figure 4. Configuration connection

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. **Measuring range :** Defines the lowest and highest value of measuring range. Within the range, the iSignalCon® converting input signals into an scalable analogue output signal.

3. **Fault signal on sensor break :** Defines the output signal to be upscale(>20mA) or downscale (0mA) on sensor break. Or cut the output signal on upscale (20mA) or downscale (4 mA)Unit : Select the unit (°C or °F) of temperature measurement. For linear input (voltage or current),it doesn't effect the measurement.

4. **Output direction :** Defines the scalable analogue output signal to be 4 to 20mA or 20 to 4 mA.

5. **Offset Correction :** Allows to eliminate the offset error of measuring value.

6. **0/4~20mA Output Signal Calibration :** Zero and Span adjustment of output signal. A power source should be connected.

7. **ID and Baud Rate :** Set device ID and communication baud rate.

8. **Device information :** Indicate the device model, firmware version, series number and communication status.

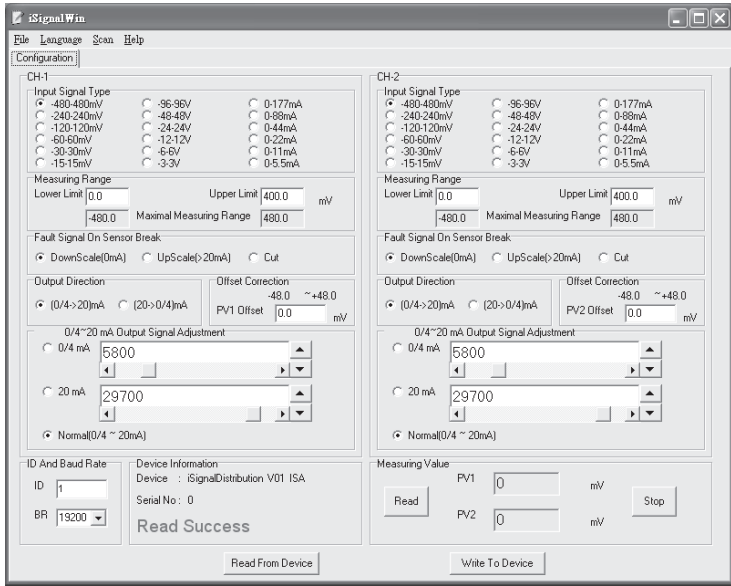9. **Measuring value :** Read the measuring value of channel 1 (PV1), channel 2 (PV2)

Figure 5. Configuration screen

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