Sentry

Signal Conditioner

The Sentry provides a versatile solution for various control, alarm, and signal applications in demanding EMC environments.

This universal transmitter offers universal input, a wide-range AC/DC power supply, and simple setup via USB, delivering a highly flexible and easily customizable solution for a wide range of applications.

- **Universal input** Thermocouple, RTD, NTC, mA, V, mV, potentiometer, digital pulse and AC current sensors
- **Universal wide range AC/DC power supply**
- **22V excitation** Powers two wire transmitters without an external power supply
- **Relay outputs** 1 x Form A, 1 x Form C
- **0.4" display** – Ideal for commissioning and fault-finding
- **Optional retransmission** 0(4)–20mA or 0–10V (software selectable)
- **Designed for harsh industrial environments**
- **Simple USB powered setup** Using Define ToolBox - Free download from defineinstruments.com/toolbox

R-NZ E2180

Specifications

General specifications

Input signal type Universal Thermocouple, RTD, NTC, mA, V, mV, potentiometer, digital pulse and AC current sensors*
** See page 2 for input specifications*

Output range 0-10 V DC, 0/4-20mA

Supply voltage 24–250V AC / 19.5–250V DC, 47–63Hz, 6VA max

Mounting type DIN rail mount

Isolation 2,300Vrms for 1min to all inputs and outputs

Excitation 22V ±10% (25mA max)

Simple software programming using Define ToolBox (Bridge Key required)

Relay output

2x Relay outputs
1 x Form C, 1 x Form A

Isolation to sensor and user input commons 2,300Vrms for 1min
Working voltage 240Vrms

Contact rating
Form C relay: 10A @ 120/240V AC or 28V DC (resistive load)
Form A relay: 3A @ 120/240V AC or 28V DC (resistive load)

Life expectancy 100K cycles min at full load rating

User input

1x User input*
* *Can be programmed for manual relay reset, latching or zero functions*

Max continuous input 20V DC

Not isolated to sensor input common

Construction

35mm DIN rail mount casing
IP20 rated - Install in a protective enclosure.
Installation Category II, Pollution Degree 2.
Flame resistant.

Dimensions (H x W x D)
101 x 23 x 120 mm (3.98 x 0.91 x 4.72")

Display 4 digit red LED, 0.4" (10mm)
7-segment characters

Display range -1999 to 9999

Annunciators 2 x setpoint LEDs

Weight 177g (6.2oz), including plugs

Plastic flap To protect front display
Swing upward to access programming port

Environmental conditions

Operating humidity
5–85%RH max (non-condensing)

Operating temperature
-10 to 50°C (14 to 122°F)

Storage temperature
-20 to 60°C (-4 to 140°F)

Altitude Up to 2,000m (approx 1.2mi)

Analog output (optional)

Analog output (R2A model only)
1 x 0(4)–20mA or 0–10V DC
Software selectable

Isolation to sensor and user input commons 1,400Vrms for 1min
Working voltage 125V

Max output drive 20mA (600Ω max load at 12V DC)

Accuracy/repeatability 0.05% of FSO

Resolution 0(4)–20mA = 1µA
0–10V = 1mV

Temperature drift 30ppm/°C typical

Powered Self-powered (active)

Thermocouple input

TC types J, K, B, E, N, R, S, T

Input impedance 1MΩ min

TC lead resistance 100Ω max

Cold junction comp. -10 to 70°C

Accuracy E, J, K, N, T: <±1°C
B, R, S: <±2°C

Temp. drift E, J, K, N, T: <±0.05°C/C
B, R , S: <±0.2°C/C

Sensor break output drive Function high upscale/low downscale

CJC error <±1°C

Response time 400msec

RTD input

RTD Pt100/Pt1000 DIN 3-wire type (2-wire can be used with offset trim)

Pt100 lead wire resistance
50Ω/wire max. 0.02% FSO offset error per Ω of lead resistance mismatch

Pt1000 lead wire resistance
20Ω/wire max. 0.002% FSO offset error per Ω of lead resistance mismatch

Sensor current 0.3mA nominal

Sensor break output drive
Function high upscale/low downscale

Accuracy Better than 0.2°C

Temperature drift <0.007°C/C

Response time 400msec

NTC input

NTC -40 to 125°C (various thermistors)

Sensor types 10K Beta 3984/3435
10K Beta 3691 (Type 3)

Response time 100msec

Accuracy Better than 0.4°C

Temperature drift <50ppm/°C

Current input

Range 0/4–20.000mA

USB prog zero 0–±99% of span

Field prog span 1µA–24mA DC

Input resistance 10Ω

Max over-range 50mA DC continuous

Linearity and repeatability
<±0.02% FSO typical

Temperature drift <50ppm/°C

Response time 100msec

Voltage input

Ranges ±200mV, -200mV to 1V, 0–10V, ±10V, -10 to 30V, 0–300V

USB prog zero 0–±99% of span

USB prog span 95% of FSO

Input resistance 1MΩ min

Linearity and repeatability
<±0.02% FSO typical
(0–10V= <±0.05%; 0–300V= <±0.1%)

Temperature drift <50ppm/°C

Response time 100msec

Digital pulse

Frequency range 0–2000.0Hz

Sensors Open collector (NPN, PNP)

Software modes General frequency, Flow rate (pulse), or RPM (pulse)

Excitation +22V DC, 25mA max

Response time 100msec

Linearity and repeatability 0.05%

Temperature drift <50ppm/°C

Potentiometer input

Potentiometer input 3 wire

Excitation voltage Variable

Potentiometer resistance <1kΩ low pot; 1–4kΩ med pot; 4–20kΩ high pot

Field prog zero 0–90% of span

Field prog span 0.1–100%

Linearity and repeatability <±0.05% FSO typical

Response time 100msec

Temperature drift <50ppm/°C

AC current sensor input

Sensor type Current transformer
Define ACCS-420(-L) and ACCS-010

Header selectable amperage range
ACCS-420/010 = 100/150/200A
ACCS-420-L = 10/20/50A

Overload (continuous)
ACCS-420/010 = 175/300/400A
ACCS-420-L = 80/120/200A

Output Representing 0–100% of full scale input range. ACCS-010: 0–10V DC
ACCS-420: 4–20mA DC loop powered

Power supply ACCS-010: Self powered
ACCS-420: Loop powered, 15–36V DC

Accuracy 1% of full scale

Response time 250ms (10–90%)

Isolation voltage 2,000V

Frequency 50–60Hz

Compliances

EN 61326-1 Immunity to Industrial Locations

Emission CISPR 11 Class A (EN 61326)

Safety requirements for electrical equipment for measurement control, and laboratory use
EN 61010-1 General Requirements; EN 61010-2-030 Particular Requirements for Testing and Measuring Circuits

IP20 Enclosure rating

Sentry Product Codes

SEN-UV	Sentry Signal Conditioner Universal power supply (24–250V AC / 19.5–250V DC)
-R2	2 x relay outputs (default)
-R2A	2 x relay outputs 1 x analog output (4–20mA)

Accessories (Sold Separately)

BRIDGE-KEY	USB Bridge Key for PC programming

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