

This DIN Rail unit can be used for a myriad of control and alarm applications. It will also be at home in the signal conditioning arena.

- › **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
- › **Optional retransmission** 0(4)–20mA or 0–10V (software selectable)
- › **Optional 0.4" display** – Ideal for commissioning and fault-finding
- › **Designed for harsh industrial environments**
- › **Simple USB powered setup** Using Define ToolBox - Free download from [defineinstruments.com/toolbox](http://defineinstruments.com/toolbox)



## Specifications

### General

**Power supply** 24–250V AC / 19.5–250V DC, 47–63Hz, 6VA max

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

**Simple software programming using Define ToolBox** Bridge Key required, sold separately

**Universal input** Specifications below

**Excitation** 22V ±10% (25mA max)

### Display

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

**Display range** -1999 to 9999

**Annunciators** 2 x setpoint LEDs

### Relay output

**Number of relay outputs** 2

**Type** 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

**One user input** is available, and can be programmed for manual relay reset, latching or zero functions

**Max continuous input** 20V DC

**Not isolated to sensor input common**

### 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)

### 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)

### 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")

**Weight** 177g (6.2oz), including plugs

**Plastic flap** To protect front display. (Swing upward to access programming port)

## Thermocouple input

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

**Input impedance** 1M $\Omega$  min

**TC lead resistance** 100 $\Omega$  max

**Cold junction comp.** -10 to 70°C

**Accuracy** E, J, K, N, T:  $\leq \pm 1^\circ\text{C}$   
B, R, S:  $\leq \pm 2^\circ\text{C}$

**Temp. drift** E, J, K, N, T:  $\leq \pm 0.05^\circ\text{C}/\text{C}$   
B, R, S:  $\leq \pm 0.2^\circ\text{C}/\text{C}$

**Sensor break output drive** Function high upscale/low downscale

**CJC error**  $\leq \pm 1^\circ\text{C}$

**Response time** 400msec

## RTD input

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

**Pt100 lead wire resistance**  
50 $\Omega$ /wire max. 0.02% FSO offset error per  $\Omega$  of lead resistance mismatch

**Pt1000 lead wire resistance**  
20 $\Omega$ /wire max. 0.002% FSO offset error per  $\Omega$  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**  $< 0.007^\circ\text{C}/\text{C}$

**Response time** 400msec

## NTC input

**NTC** -55 to 125°C (various thermistors)

**Sensor types** 10K Beta 3984/3435

**Response time** 100msec

**Accuracy** Better than 0.4°C

**Temperature drift**  $< 50\text{ppm}/^\circ\text{C}$

## Current input

**Range** 0/4–20.000mA

**USB prog zero** 0– $\pm 99\%$  of span

**Field prog span** 1 $\mu\text{A}$ –24mA DC

**Input resistance** 10 $\Omega$

**Max over-range** 50mA DC continuous

**Linearity and repeatability**  
 $\leq \pm 0.02\%$  FSO typical

**Temperature drift**  $< 50\text{ppm}/^\circ\text{C}$

**Response time** 100msec

## Voltage input

**Ranges**  $\pm 200\text{mV}$ ,  $-200\text{mV}$  to 1V, 0–10V,  $\pm 10\text{V}$ , -10 to 30V, 0–300V

**USB prog zero** 0– $\pm 99\%$  of span

**USB prog span** 95% of FSO

**Input resistance** 1M $\Omega$  min

**Linearity and repeatability**  
 $\leq \pm 0.02\%$  FSO typical  
(0–10V=  $\leq \pm 0.05\%$ ; 0–300V=  $\leq \pm 0.1\%$ )

**Temperature drift**  $< 50\text{ppm}/^\circ\text{C}$

**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**  $< 50\text{ppm}/^\circ\text{C}$

## Potentiometer input

**Potentiometer input** 3 wire

**Excitation voltage** Variable

**Potentiometer resistance**  $< 1\text{k}\Omega$  low pot; 1–4k $\Omega$  med pot; 4–20k $\Omega$  high pot

**Field prog zero** 0–90% of span

**Field prog span** 0.1–100%

**Linearity and repeatability**  $\leq \pm 0.05\%$  FSO typical

**Response time** 100msec

**Temperature drift**  $< 50\text{ppm}/^\circ\text{C}$

## 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 Trip Amplifier 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)
-ND	No LED display

## Accessories (Sold Separately)

BRIDGE-KEY	USB Bridge Key for PC programming
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