

Highly versatile universal indicator and alarm controller - a one-product solution for hundreds 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
- › Optional relays & 4–20mA retransmission
- › Versatile construction With reduced depth casing and 0.8" super-bright LED display
- › Designed for harsh industrial environments
- › Simple USB powered setup Using Define ToolBox - Free download from defineinstruments.com/toolbox



Specifications

EMC influence may have a minimal impact on instrument performance (additional error of <0.2% of full scale range).

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 $\pm$ 10% (25mA max)

Display

Digits 4 digit red LED, 0.8" (20mm), 7-segment characters

Display range -1999 to 9999

Annunciators 2 x setpoint indicator LEDs (R2A model only)

NEMA 4X/IP65 sealed front bezel

Relay output (optional)

2x Form A relays (R2A model only)

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

Contact rating 2 x 3A @ 120/240V AC or 28V DC

Life expectancy 100K cycles min at full load rating

User input (optional)

One user input (R2A model only)
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)
4–20mA or 20–4mA DC

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

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

Accuracy/repeatability 0.05% of FSO

Resolution 1 μ A

Temperature drift 30ppm/ $^{\circ}$ C typical

Powered Self-powered (active)

Environmental conditions

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

Operating temp 14–122 $^{\circ}$ F (-10–50 $^{\circ}$ C)

Storage temp -4–140 $^{\circ}$ F (-20–60 $^{\circ}$ C)

Altitude Up to 1.24mi (2,000m)

Construction

Panel mount enclosure Rated for NEMA 4X/IP65 outdoor use. Panel gasket and mounting clips included. Installation Category II, Pollution Degree 2. Flame resistant.

Dimensions 1.89 x 3.74 x 2.44" (48 x 95 x 62 mm)

Cutout area 1.77 x 3.62" $\pm$ 0.02 (45 x 92mm $\pm$ 0.5)

Space behind panel 3.15" (80mm) minimum space required behind panel (inc. connectors and wiring)

Weight 6.87oz (195g)

Thermocouple input

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

Input impedance 1MΩ min

TC lead resistance 100Ω max

Cold junction comp. 14–158°F (-10–70°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: $\leq \pm 0.05^\circ\text{C/C}$
B, R, S: $\leq \pm 0.2^\circ\text{C/C}$

Sensor break output drive Function high upscale/low downscale

CJC error $\leq \pm 2^\circ\text{C}$

Response time 400msec

RTD input

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

Pt100 lead wire resistance 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 $< 0.007^\circ\text{C/C}$

Response time 400msec

NTC input

NTC -40–125°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 $< 50\text{ppm}/^\circ\text{C}$

Current input

Range 0/4–20.000mA

Excitation +22V DC, 25mA max

USB prog zero 0– $\pm 99\%$ of span

Field prog span 1μA–24mA DC

Input resistance 10Ω

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 $\pm 200\text{mV}$, -200mV 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 1MΩ min

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

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

Response time 100msec

Digital pulse

Frequency range 0–2000.0Hz

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

Sensors Open collector NPN (2 and 3 wire)/PNP (2 wire only)

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; 1–4kΩ med pot; 4–20kΩ 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 (ACCS-420, ACCS-420-L, 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 respectively; ACCS-420-L: 80/120/200A respectively

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

Power supply ACCS-010: Self powered
ACCS-420(-L): Loop pwr, 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

UL Listed Component File Number E473114

Merlin Product Codes

MER-UV	Merlin Universal Indicator Universal power supply (24–250V AC / 19.5–250V DC)
-R2A	2 x relay outputs 1 x analog output (4–20mA)

Accessories (Sold Separately)

BRIDGE-KEY	USB Bridge Key for PC programming (Not UL Approved)
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