# Merlin
## Universal Indicator

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

E2180

## 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 ±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 (600Ω max load at 12V DC)

**Accuracy/repeatability** 0.05% of FSO

**Resolution** 1µA

**Temperature drift** 30ppm/°C typical

**Powered** Self-powered (active)

### Environmental conditions

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

**Operating temp** 14–122°F (-10–50°C)

**Storage temp** -4–140°F (-20–60°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" ±.02 (45 x 92mm ±.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: <±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** -67–257°F (-55–125°C) various thermistors

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

**Response time** 100msec

**Accuracy** Better than 0.4°C

**Temperature drift** <50ppm/°C

## Current input

**Range** 0/4–20.000mA

**Excitation** +22V DC, 25mA max

**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

**Temperature drift** <50ppm/°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** <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 (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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