Product Catalogue 2015

# "The pursuit of simplicity makes our jobs harder but the lives of our customers easier."

*Anthony Glucina, CEO, Define Instruments*

Define INSTRUMENTS

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### USB Programming



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## 4–20mA / 0–10V (Process Input)

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### Panel Mount



See also...



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### Panel Mount



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### Panel Mount



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**Panel Mount**



## Humidity

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**Panel Mount**



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## Software



# What's New? Latest products

### Merlin (see page 4)

**Launched at the Africa Automation Fair, the Merlin is a UL and CE certified next-generation panel meter.**

40% shallower than standard panel meters, it requires no power supply during programming.

The Merlin accepts both AC and DC power and boasts 6 input types and 31 modes/ranges, making it one of the most flexible meters in the market.


### Twin Link (see page 10)

**Uses wireless technology to communicate to and control devices over distances of up to 4km (with LoS).**

The pre-paired units come "out of the box ready" for 4-20mA I/O applications but can accept a variety of input types including mA, RTD and Frequency. Unit has 2 analogue inputs plus 4 digital I/O switches. Channels are isolated and units are industrial strength.

### Javelin (see page 16)

**Perfect for tight spaces – this UL and CE certified, loop powered transmitter is just 12.5mm wide!**

No power supply or input signal is required during setup and all programming is via USB. The Javelin is isolated to 2500V AC and accepts Voltage, Current, Thermocouple, RTD or Potentiometer input types and outputs 4–20mA.

# Merlin

## Universal Indicator


The Merlin universal digital indicator accepts analogue inputs from a range of industrial sensors, including: process, temperature, flow, frequency, and voltage from 200mV to 300V. It features a wide range power supply that suits both AC mains and 24V DC applications, and supplies the excitation required for common sensors and transmitters.

### At a glance:

- Universal input
- 22V excitation
- Smart, simple, USB powered setup (see p63).
- Optional relays and isolated analogue output
- Designed for harsh environments
- Large 0.8" super-bright display
- Flexible 32 point linearization table

The Merlin can be scaled into any engineering unit, and the result displayed on the large 0.8" 4 digit super-bright LED display. Auto ranging is available to increase the dynamic range of viewable data.

The Merlin R2A adds two Form A 3 Amp relays for a variety of control and alarm functions, and a 4-20mA active output for retransmission to PLCs and SCADA systems.

The unit boasts a 1 minute setup time using the **Define Toolbox configuration software** (see p63). All functions and features are explained expertly in the dynamic sidebar help - perfect for the novice starting out who can use it to learn about industrial sensors and applications, or the expert who wants to save commissioning time.

The Merlin has been designed for harsh industrial environments. With an IP65 sealed bezel and extensive testing of noise effects to and beyond CE requirements, the meter provides a tough and reliable application solution.

c UL US LISTED CE E2180

### Power

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

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

### Universal input

**Universal input**, all types listed below accepted

**Thermocouple input**

| | | |
|---|---|---|
| *K* | -200 to 1372°C | (-328 to 2502°F) |
| *B* | 400 to 1800°C | (752 to 3272°F) |
| *E* | -200 to 800°C | (-328 to 1472°F) |
| *J* | -200 to 1000°C | (-328 to 1832°F) |
| *R* | -50 to 1760°C | (-58 to 3200°F) |
| *S* | -50 to 1760°C | (-58 to 3200°F) |
| *T* | -200 to 400°C | (-328 to 752°F) |
| *N* | -200 to 1300°C | (-328 to 2372°F) |

**RTD input** PT100 or PT1000 DIN 3-wire type (2-wire can be used with offset trim). Input range -200 to 320°C (-328 to 608°F)

**NTC input**

| | | |
|---|---|---|
| *10K Beta 3984* | -55 to 125°C | (-67 to 257°F) |
| *10K Beta 3435* | -50 to 110°C | (-58 to 230°F) |

**Current input** 0/4–20.000mA. +22V DC excitation (25mA max)

**Voltage input** ±200mV, –200mV to 1V, 0–10V, ±10V, –10 to 30V, 0–300V

**Digital pulse** Open collector (NPN, PNP sensors), 0–2000.0Hz. +22V DC excitation (25mA max). General frequency, flow rate or RPM

**Potentiometer input** 3-Wire; <1kΩ low pot; 1–4kΩ med pot; 4–20kΩ high pot

**AC current sensor input** Current transformer (Define ACCS-420/010) 0-10V or 4-20mA output

### Programming

**USB programmable** using Define ToolBox (see p63). Bridge Key required (sold separately, see p34).

### Relay output (optional)

**Type** 2x Form A relays

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

**Contact rating** One Relay energized: 3amps @ 120/240V AC or 28V DC (resistive load)
Both Relays energized: 3amps max total current

**Life expectancy** 100K cycles min at full load rating

## User input (Optional)

**One user input** is available on R2A model only. It can be programmed as a manual relay reset switch or a latching switch

**Max continuous input** 20V DC

**Isolation to sensor input common** Not isolated

## Analogue output (Optional)

**Type** 1x 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 temperature** -10 to 50°C

**Storage temperature** -20 to 60°C

**Altitude** Up to 2,000m

## Certifications & 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** File Number E473114

**IP65** Enclosure rating (face only)

## Construction

**Panel mount enclosure** Rated for IP65 indoor use. Installation Category II, Pollution Degree 2. Flame resistant. Panel gasket and mounting clips included.

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

**Cutout area** 45 x 92mm ±.5 (1.77 x 3.62" ±.02)

**Space behind panel** 80mm (3.15") minimum space required behind panel (includes space for connectors/wiring)

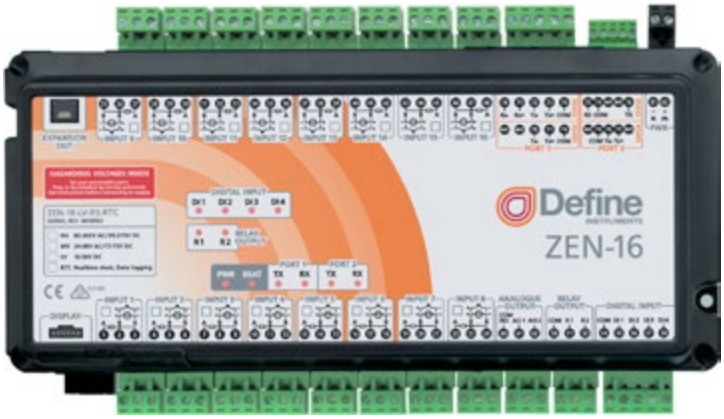
**Weight** 195g (6.87oz)

## Ordering Options

| Series | Power Supply | Output |
|---|---|---|
| **MER** | **UV** | **R2A** |
| MER= Merlin | UV= 24–250V AC / 19.5–250V DC | [ ]= No output<br>R2A = 2x relay outputs, 1x analogue output (4–20mA) |

# ZEN-16

## Monitoring & Control Station - USB Programmable, with 16 Isolated Universal Inputs




This friendly featured monitoring and control station features 16 isolated universal inputs which can be easily configured using our intuitive WorkBench software.

### At a glance:

- 16 isolated universal inputs, independently configurable for Thermocouple, RTD, mA, mV, V or frequency
- 4 digital inputs for counters & flow metering
- 2 relay contact outputs for alarms or control
- 2 analogue outputs (4-20mA)
- 2 isolated auto-detecting serial ports for RS232, RS485, RS422 or Ethernet connections
- Easy Relay I/O expansion using ZEN-RIO

### Wide Range of Applications

The ZEN-16 is designed for flexibility and can be used in a virtually endless list of applications, including Factory wide monitoring, Cold stores, Energy management, Mining, Water treatment, Food processing, Textiles, Laboratories, and much more...

### Easy Software Programming

One of the key features of the ZEN-16 is its simple setup, using our purpose-built **WorkBench software (see p64)**, which offers an intuitive interface and simple connection via USB, RS, Ethernet or Wireless (modem required).

CE E2180

### Universal inputs

**Universal inputs**, 16x isolated inputs, individually selectable and scalable

**Thermocouple inputs** B, E, K, J, N, R, S, T with CJC

**RTD inputs** PT100/PT1000. 0.01°C (–200.00 to 300.00). 0.1°C (–200.00 to 800.0).

**mV inputs** 0–200mV, ±100mV

**Voltage inputs** 0–1V, 0–18V

**Current inputs** 0(4)–20mA

**Digital input** Frequency, counter (2kHz)

### Power

**Universal AC/DC power supply** (select one)

| | |
|---|---|
| *HV* | 85–265V AC / 95–370V DC |
| *MV* | 24–48V AC / 17–72V DC |
| *LV* | 10–30V DC |

### General specifications

**DIN rail mountable unit**, 35mm DIN rail. External dimensions 59 x 255 x 144 (HxWxDmm, with plugs)

**Easy USB programming** using Define WorkBench (p64). Bridge Key included with purchase (p34).

**Internal memory refresh rate**, 1 sec for all channels

**Expansion interface** for ZEN-RIO

**HMI interface** for FM1602 remote display

### Comm ports

**Port 1** (select one, RS default)

| | |
|---|---|
| *RS* | Isolated auto-detecting RS485/RS422 (selectable baud rate, 2400 to 230kB) |
| *ETH* | Ethernet 10 Base-T or 100 Base-TX (auto-sensing) |

**Port 2** Isolated auto-detecting RS485/RS232. Selectable baud rate, 2400 to 230kB

### Outputs

**Relay outputs** 2x 30V DC, 3A

**Analogue outputs** 2x 4-20mA, 10V compliance

### Digital inputs

**Digital inputs**, 4x high speed opto-isolated count, frequency (10kHz), state

### Data logging (optional)

**Data logging**

| | |
|---|---|
| *RTC* | Data logging with real time clock – 32MB (30,000 samples) for all channels |
| *RTC-SD* | Data logging with real time clock PLUS Micro SD slot for up to 1GB data storage. Includes 2x micro SD cards |

Ordering Options

| Series | Power Supply | Comm Port 1 | Data Logging |
|---|---|---|---|
| ZEN-16 | HV | RS | |

HV= 24–250V AC / 19.5–250V DC
MV= 24–48V AC / 17–72V DC
LV= 10–30V DC

RS= RS485/422
ETH = Ethernet

[ ]= No data logging
RTC= 32MB data logging + RTC
RTC-SD= Data logging + RTC + SD card (up to 1GB)

# FM1602

## LCD Remote Display

Compatible with the ZEN-16, the FM1602 display provides a simple and flexible display solution for a multitude of application requirements. With its transflective polariser and simple surface mounting, this display is ideal for outdoor and building management system applications.


Order Code **FM1602**

### Display

**High resolution LCD** with green backlight

**Characters** 32 characters (2x 16 characters, 10mm high). 27H x 100W total (mm).

**Transflective polariser**

**4x status indication LEDs**, for use as alarms or setpoints

### Connection & Power

**Interface cable** for easy connection to ZEN-16, 1m (3.3ft) length

**Powered by the ZEN-16** through the HMI interface

### Casing & Mounting

**Case dimensions** 72H x 144W x 25D (mm). Depth dimension includes foam seal.

**Easy surface mounting**

**Ingress protection** IP65 rated (dust and splash proof)

# HVA-1000

## High Voltage Attenuator, 0-1000V

Another useful accessory for the ZEN-16, the HVA-1000 accepts a voltage of up to 1000V DC, and safely attenuates it to a suitable low voltage, which can then be input into almost any low voltage input measuring device.

### Specifications

**Attenuation factor** 1000 ±0.03%

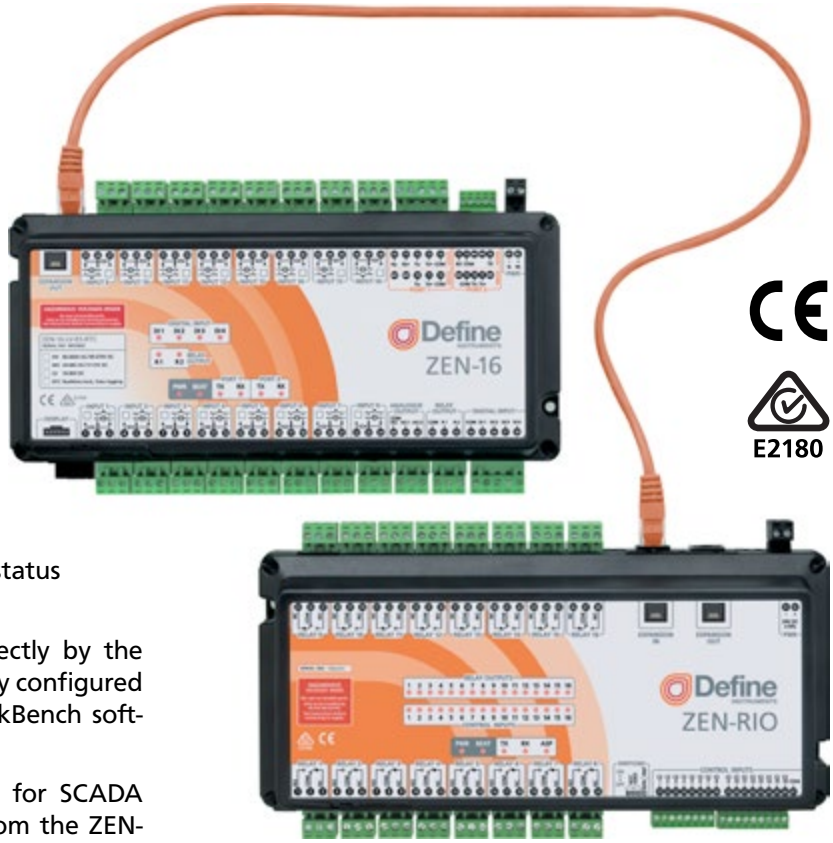
**Maximum input voltage** 1000V DC

**Temperature drift** 50ppm/°C typical

Order Code **HVA-1000**

# ZEN-RIO

## Expansion - 16 Relay Outputs & 16 Digital Control Inputs




ZEN-RIO is a relay output and digital input expansion which is designed for seamless integration with the ZEN-16 control and monitoring station.

At a glance:

- The perfect add-on to extend your ZEN-16: Effortlessly adds **16 relay outputs** and **16 digital control inputs**
- Ideal for on/off control and alarm or status control

The ZEN-RIO's relays are controlled directly by the ZEN-16's setpoints, which are in turn easily configured using our user-friendly and flexible WorkBench software.

The digital control inputs are designed for SCADA applications and can be read directly from the ZEN-16's com ports.

### Specifications

**16 isolated relay outputs**
Change over Form C (10A 250V AC or 10A 30V DC), 1kHz scan rate. Software selectable relay state.

**16 selectable digital control inputs**
Input type select NPN (sink) or PNP (source). 1kHz input sample rate. Input voltage 5-24V.

**Compatible with** ZEN-16 Control & Monitoring Station

**LED indication** on each relay output and digital control input channel

**Communication** via i2C bus, 400kHz

**DC power supply**, 24 V DC ±15%

**DIN rail mountable unit**, 35mm DIN rail. External dimensions 59 x 255 x 144 (HxWxDmm, with plugs in).

| Order Code | **ZEN-RIO** |
|---|---|

# RIO-MOD-RTU

## Relay I/O with Modbus/RTU


The RIO-MOD-RTU is a Modbus Slave device which can be used as an RTU for any Modbus system. It is ideal for direct connection to Modbus Master PLC's or SCADA systems.

The RIO-MOD-RTU is capable of providing **16 isolated relay outputs** and **16 digital inputs**. 32 indicator LED's are conveniently placed on the unit, ideal for commissioning and fault finding.

CE E2180

### General specifications

**16 isolated relay outputs** Change over Form C (10A 250V AC or 10A 30V DC), 1kHz scan rate. Software selectable relay state. Relay auto shutoff feature.

**16 selectable digital inputs** Input type select NPN (sink) or PNP (source). 1kHz Input sample rate. Input voltage 5–24V.

**DC power supply** 24V DC ±15%

**LED indication** on each relay output and digital input channel

**Cable termination switches** to switch 120Ω termination resistors across the RS485/RS422 cables

**DIN rail mountable unit** 35mm DIN rail. External dimensions 59H x 255W x 144D (mm) with plugs in

### Modbus/RTU

**Modbus type** RTU slave device

**Slave addresses** Up to 15 hardware selectable slave addresses, and 1 software selectable slave address

**Baud rate** 9600, 19200, 38400 or 115200 baud (hardware selectable)

**Parity** None or even (hardware selectable)

**Data bits** 8

**Stop bits** 1

**Supported Modbus function codes**

| | |
|---|---|
| *1* | Read single coils |
| *2* | Read single discrete inputs |
| *3* | Read holding register |
| *4* | read input register |
| *5* | Force single coil |
| *6* | Write single holding register |
| *15* | Force multiple coils |
| *16* | Write multiple holding register |

| Order Code | **RIO-MOD-RTU** |
|---|---|

# Twin Link

## Point-to-Point Paired Wireless I/O Units

When it's just too far or too expensive to lay cable for signal communications, turn to Define Instruments Twin Link units. These sophisticated wireless Point-to-Point nodes combine powerful control and communication capabilities with simple, no-fuss PC setup.

They transmit data up to 1.5km (0.9mi) line of sight (with default antenna), and if your line of sight is obscured or you need to reach further, the P2P Repeater provides the perfect solution.

### Everything you need:

- **Input Node (P2P-I)**
  2x universal isolated analogue input channels accepting T/C, RTD, Process inputs (current & voltage), NPN/PNP open collectors, Potentiometer input up to 20kΩ, and AC current sensors
- **Output Node (P2P-O)**
  2x 4-20mA isolated analogue outputs that are easy to scale to your desired range
- **Flexible IO**
  Each of the Twin Link units also offers 4 digital inputs, 2 digital outputs, and 2 relay outputs, which are simple to program for a range of setpoint functions

### Simple setup using your PC

Setting up your wireless Point-to-Point system is fast and easy with Define ToolBox (see p63).


Simply connect the Twin Link Input Node (P2P-I) to your PC via USB (Bridge Key required, see p34), and you'll be up and running in no time.

Select from a wide range of pre-calibrated input types, easily scale your analogue outputs, and configure your IOs for mimicking, alarms, and sophisticated remote control of other equipment.

FC 2ACTT-1409 CE R-NZ E2180

### Power

**Power supply** 9–36V DC, 2.5VA max

**Isolation** 1500V AC between power supply and input or output channels

### Transmission

**RF data rate** 250Kb/s

**RF frequency range** 2405-2475MHz

**RF transmission power** +20dBm
(10dBm selectable in soft ware for regions with transmission power restrictions)

**Transmission range** Up to 1.5km (0.9mi) LOS with supplied antenna (WG-3DBI). All nodes must be set to full power (+20dBm) for max range.

**RF receiver sensitivity** -110dBm

**Number of RF channels** 15

**Number of wireless nodes** Up to 17 nodes per mesh (1x P2P-I, 1x P2P-O, 15x P2P-R)

**Spreading method** Direct sequence

**Modulation** O-QPSK

### USB programming

**Simple programming** using Define ToolBox (p63). Requires Bridge Key (sold separately, p34).

**Protocols** Modbus RTU

**Serial data rate** 9600 baud, 8-N-1

### 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 120mm (3.98 x 0.91 x 4.72")

**Dimensions (H x W x D, with included antenna)** 150 x 23 x 146mm (5.91 x 0.91 x 5.75")

**Single unit weight** 156g (5.5oz), with included antenna and plugs

## Universal inputs

**2x Input channels** Universal input

**Available on** P2P-I (Input)

**Thermocouple input**

| | | |
|---|---|---|
| *K Type* | -200 to 1260°C | (-328 to 2300°F) |
| *B Type* | 400 to 1800°C | (752 to 3272°F) |
| *E Type* | -200 to 700°C | (-328 to 1292°F) |
| *J Type* | -200 to 1000°C | (-328 to 1832°F) |
| *R Type* | 0 to 1700°C | (32 to 3092°F) |
| *S Type* | 0 to 1700°C | (32 to 3092°F) |
| *T Type* | -200 to 400°C | (-328 to 752°F) |
| *N Type* | -200 to 1300°C | (-328 to 2372°F) |

**RTD input**

*PT100* 3-wire RTD DIN 43760:1980
*PT1000* 3-wire RTD standard
-200 to 300°C (-328 to 572°F), 0.01°C res
-200 to 800°C (-328 to 1472°F), 0.1°C res

**Current input** 0/4–20mA

**Voltage input** ±200mV, -200mV to 1V, 0-10V, 0-18V

**Potentiometer input** 3-Wire; Low range (<2KΩ) or High range (>2KΩ)

**Digital pulse** Open collector (NPN, PNP sensors), 0–2500Hz. General frequency, flow rate or RPM

**AC current sensor input** Current transformer (Define ACCS-420/010) 0-10V or 4-20mA output

## Analogue outputs

**Available on** P2P-O (Output)

**2x Analogue outputs** Isolated 4–20/20–4mA DC

**Power supply** Loop powered

**Resolution** 15 bits, 16000 steps

**Loop drop** 10V max

**Linearity & repeatability** 0.1% FSO max

**Accuracy** 0.1% FSO max

**Ambient drift** 50ppm/°C FSO max

**Isolation to Digital IO GND** 1400Vrms for 1min. Working voltage 125V DC

## Digital IO's

**Available on** P2P-I (Input) & P2P-O (Output)

**4x Digital inputs** Max rate 1Hz. Selectable sink/source. Suitable for clean contacts, NPN, PNP and voltage inputs (low input <1.4V DC, high input 1.4–30V DC)

**Max continuous input** 20V DC

**Not isolated to power supply common**

**2x Digital outputs** Open drain (1A, 30V DC max)

## Relay outputs

**Available on** P2P-I (Input) & P2P-O (Output)

**2x Form A relays** 5A 250V AC / 5A 30V DC

**Isolation to sensor and user input commons** 2300Vrms for 1min. Working voltage 250V AC

**Life expectancy** 100K cycles min at full load rating

## Environmental conditions

**Operating temperature** -20 to 55°C (-4 to 131°F)

**Storage temperature** -20 to 65°C (-4 to 149°F)

**Operating humidity** 0–85% non-condensing

**Altitude** 2000m (6561ft )

## Compliances

**IP20 enclosure rating**

**FCC ID: 2ACTT-1409** 47 Code of Federal Regulations; Part 15 - Radio Frequency Devices; Subpart C - Intentional Radiators, including Section 15.247 - Operation in the band 2400 –2483.5MHz

**AS/ANS 4268:2012** Radio equipment and systems - Short range devices - Limits and methods of measurement

**ETSI EN 300 440-2, V1.4.1, 2010** Electromagnetic compatibility and Radio spectrum matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 1GHz to 40GHz frequency range; Part 2: Harmonised EN under article 3.23 of the R&TTE Directive

**EN 301 489-3, V1.6.1, 2013** Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short Range Devices (SRD) operating on frequencies between 9kHz and 40GHz

Order Code **TWIN-LINK**

*(See p15 for accessories)*

# Repeater

## Point-to-Point Wireless Repeater Unit

The Point-to-Point Repeater is the perfect addition to a Twin Link system where the Input and Output nodes are out of range, or a line of sight connection is interrupted by buildings or hilly terrain.

It works by retransmitting incoming signals from other nodes in the network, enabling you to boost your range and navigate around obstacles.

### The perfect addition to your Twin Link:

- **Extend the range of your Twin Link** by up to 1.5km (0.9mi) line-of-sight (using default antenna)
- **Get around buildings** by positioning Repeaters at corners
- **Add up to 15 repeaters** in a single Point-to-Point system
- **Simple integration** with your existing Twin Link system

FC 2ACTT-1409 CE R-NZ E2180

### General specifications

**Power supply** 9–36V DC, 2.5VA max

**RF data rate** 250Kb/s

**RF frequency range** 2405-2475MHz

**RF transmission power** +20dBm (10dBm selectable in soft ware for regions with transmission power restrictions)

**Transmission range** Up to 1.5km (0.9mi) LOS with supplied antenna (WG-3DBI). All nodes must be set to full power (+20dBm) for max range.

**RF receiver sensitivity** -110dBm

**Number of RF channels** 15

**Number of wireless nodes** Up to 17 nodes per mesh (1x P2P-I, 1x P2P-O, 15x P2P-R)

**Spreading method** Direct sequence

**Modulation** O-QPSK

**Protocols** Modbus RTU

**Serial data rate** 9600 baud, 8-N-1

### 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 120mm (3.98 x 0.91 x 4.72")

**Dimensions (H x W x D, with included antenna)** 150 x 23 x 146mm (5.91 x 0.91 x 5.75")

**Weight** 156g (5.5oz), with included antenna

### Environmental conditions

**Operating temperature** -20 to 55°C (-4 to 131°F)

**Storage temperature** -20 to 65°C (-4 to 149°F)

**Operating humidity** 0–85% non-condensing

**Altitude** 2000m (6561ft )

### Compliances

**IP20 enclosure rating**

**FCC ID: 2ACTT-1409** 47 Code of Federal Regulations; Part 15 - Radio Frequency Devices; Subpart C - Intentional Radiators, including Section 15.247 - Operation in the band 2400 –2483.5MHz

**AS/ANS 4268:2012** Radio equipment and systems - Short range devices - Limits and methods of measurement

**ETSI EN 300 440-2, V1.4.1, 2010** Electromagnetic compatibility and Radio spectrum matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 1GHz to 40GHz frequency range; Part 2: Harmonised EN under article 3.23 of the R&TTE Directive

**EN 301 489-3, V1.6.1, 2013** Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short Range Devices (SRD) operating on frequencies between 9kHz and 40GHz

| Order Code | **P2P-R** |
|---|---|

*(See p15 for accessories)*

# Pathfinder

## Dual Function Wireless Base or Remote Node

Define Instruments Wireless Pathfinders are the perfect solution for applications that require low data rates and wireless mesh networking across large areas. They employ the Modbus/RTU protocol, simplifying setup and integration with PLCs, and offer a variety of communication methods and topologies to suit different needs for small, medium or large networks.

The dual function **Wireless Pathfinder** can be used as either a **Base Node** or a **Remote Node**. So to start a Modbus-to-wireless mesh network, two Pathfinders are all it takes!

- Configured as a Modbus slave device for easy PLC integration
- Serial or ethernet comms
- Optional digital I/O
- Now includes **boosted transmission range**, to transmit data up to 1.5km (0.9mi) line-of-sight (using standard antenna)
- Optional Sleeper Nodes also available

R-NZ E2180

### General specifications

**Unit function** 2.4GHz wireless base/remote

**Power** 9–35V DC supply

**Serial connection** (select one)
*S* 1 x RS232 and 1 x RS485/422, **or**
*E* 1 x Ethernet (Modbus/RTU)

**Input/output** (optional) 4 x digital inputs, 2 x digital outputs and 2 x relay outputs

**Data rate** 9600, 19200, 57600 or 115200 baud

**Parity bit** even or none

### Construction

**Front panel** 4 x LEDs for network status and error indication. Antenna. Front panel serial port(s). Reset button.

**35mm DIN rail mount case**, 101H x 21W x 120D (mm)

### Transmission

**RF data rate** 250Kb/s

**RF frequency range** 2405–2485MHz

**RF transmission power** +20dBm (Boosted Power Range)

**Transmission range** Up to 1.5km (0.9mi) line-of-sight with default antenna

**RF receiver sensitivity** -100dBm

**Number of RF channels** 16

**Number of wireless nodes** Up to 1 Base node, 63 Remote nodes and 32 Sleepers in a single mesh network

**Spreading method** Direct sequence

**Modulation** O-QPSK

### Environmental conditions

**Operating temperature** ⁻40 to 85°C

### Ordering Options

*See p15 for accessories*

| Series | Comm Port Configuration | Digital I/O |
|---|---|---|
| WG-PTH | S | IO |
| | S= 1 x RS232, 1 x RS485/422<br>E= 1x Ethernet (Modbus/RTU) | [ ]= No IO<br>IO= 2x relay OP, 4x digital IP, 2x digital OP |

# Sleeper

## Wireless Sleeper Module with Dual Analogue Input

Wireless Sleepers are fully compatible with the Define Pathfinder, and integrate seamlessly with existing WG mesh networks. Up to 32 Sleepers can be configured to send data to the Base node at user-configured intervals, and 'sleep' between transmissions.

- **2x analogue input channels**, USB programmable: 4-20mA, 0-10V, TC or RTD PT100/1000
- Enables additional network topologies and functions
- **Boosted transmission range model** available with 9-35V DC power adaptor (WG-SLB)
- **Power saving model** available with long-life lithium battery and reduced transmission range (WG-SLB-PS)

R-NZ E2180

### Specifications

**Unit function** 2.4GHz wireless sleeper

**Power**

| | |
|---|---|
| *WG-SLB* | 9-35V DC power supply with lithium backup battery |
| *WG-SLB-PS* | 3V DC lithium battery (DC power adaptor optional) |

**Analogue input** 2 x channels, USB programmable. Available inputs: Current (0/4-20mA), Voltage (0-10V), T/C (universal) or RTD (PT100/1000)

**Sleep period** 1, 2, 5, 15, 30 or 60 minutes (DIP switch selectable)

### Construction

**Front panel** 2 x LEDs for network status indication. Antenna. USB programming IP jack. Reset button.

**35mm DIN rail mount case** 101H x 45W x 120D (mm)

### Transmission

**RF data rate** 250Kb/s

**RF frequency range** 2405-2485MHz

**RF transmission power**

| | |
|---|---|
| *WG-SLB* | +20dBm (Up to 1.5km [0.9mi] line-of-sight) |
| *WG-SLB-PS* | +4.5dBm (Approx 80m [262ft] line-of-sight) |

**RF receiver sensitivity** -100dBm

**Number of RF channels** 16

**Number of wireless nodes** Up to 32 Sleepers and 64 Pathfinders (1 Base node and 63 Remote nodes) in a single mesh network

**Spreading method** Direct sequence

**Modulation** O-QPSK

### Environmental Conditions

**Operating temperature** -40 to 85°C

### Ordering Options

*See p15 for accessories*

| Series | Power Configuration |
|---|---|
| WG-SLB | |

[ ]= 9-35V DC power supply with lithium backup battery
PS= Power save configuration: 3V DC lithium battery, power adaptor optional (sold separately)

# Antennas

Optional antenna upgrades for Wireless Gateways

## WG-3DBI

Monopole antenna

DEFAULT

**Gain** 3dBi

**Frequency** 2.4GHz

**Length** 119mm (4.7")
Right angle at 30mm (1.2")

**Diameter** 9mm (0.35")

## WG-8DBI

Monopole antenna

**Gain** 8dBi

**Frequency** 2.4GHz

**Length** 280mm (11")
Right angle at 37mm (1.5")

**Diameter** 13mm (0.5")

## WG-12DBI

Mini directional antenna

**Gain** 12dBi

**Frequency** 2.4GHz

**Dimensions** 102 x 102 x 102mm (4 x 4 x 4")

**Mounting** 25.4 to 43.2mm Ø masts (1 to 1.7")

## WG-19DBI

Die cast directional grid wireless antenna

**Gain** 19dBi

**Frequency** 2.4GHz

**Grid dimensions** 400 x 600mm (15.7 x 23.6")

**Mounting** 50.8mm (2") Ø mast

## WG-24DBI

Dual polarity airMAX RocketDish antenna

**Gain** 24dBi

**Frequency** 2.4GHz

**Dimensions** 648mm Ø (25.5")

**Mounting** 38-100mm Ø mast (1.5-3.9")

# Wireless Gateway Accessories

| | | |
|---|---|---|
| **Bridge Key** | USB programming kit (see p34) | *(Twin Link & Repeater only)* |
| **WG-AEC** | Antenna extension cable, 30cm | |
| **WG-PSU** | Power adaptor with multi-region connections | |
| **WG-BAT** | Replacement lithium battery | *(WG Sleeper only)* |

# Javelin

## USB Programmable Transmitter


The Javelin is a loop powered, isolated transmitter. One of its key features is its easy software setup using Define ToolBox. ToolBox enables simple and flexible programming of the Javelin in less than a minute, with no input signal or power supply required.

At a glance:

- **2-wire universal input**: Accepts mA, V, mV, RTD, TC and potentiometer signals
- **4–20mA current loop output**
- **Isolated**
- **Hassle-free DIN-rail mounting**, with a space-saving (12.5mm wide) case
- **Simple USB setup** Using Define ToolBox (see p63)

The Javelin offers flexible input options to suit a virtually endless range of industries. High quality signal conditioning is a popular application. Another widely used application is as a simple 4–20mA in, and 4–20mA out isolator, to protect inputs of PLC's and SCADA systems from ground loops, transients, and the effects of EMC.

The Javelin can also be used to convert other standard process signals (such as ±10V, 1–5V, and 0–10V) to a 4–20mA signal.

More sophisticated applications are also catered to. For example, a level signal from an odd shaped tank can be converted to a 4–20mA signal representing volume, by using the in-built linearization table.

c UL US LISTED CE E2180

### Universal input

**Universal 2-wire isolated input** All input types listed below accepted

**Thermocouple input**

| | | |
|---|---|---|
| *J type* | -200 to 1000°C | (-328 to 1832°F) |
| *K type* | -200 to 1260°C | (-328 to 2300°F) |
| *B type* | 400 to 1800°C | (752 to 3272°F) |
| *E type* | -200 to 700°C | (-328 to 1292°F) |
| *R type* | 0 to 1700°C | (32 to 3092°F) |
| *S type* | 0 to 1700°C | (32 to 3092°F) |
| *T type* | -200 to 400°C | (-328 to 752°F) |
| *N type* | -200 to 1300°C | (-328 to 2372°F) |

**RTD input**

*PT100* 3-wire RTD DIN 43760:1980 or
*PT1000* 3-wire RTD standard
Calibrated range -200 to 850°C (-328 to 1562°F), 0.1°C res

**Current input** 0/4–20mA

**Voltage input** ±200mV, –100mV to 1V, 0–10V, ±10V, 0–50V DC

**Potentiometer input** 3-wire; Low range (<2KΩ) or High range (<1MΩ)

### Power

**Power supply** 10.5–36V DC

**Supply voltage sensitivity** < ±0.005%/V FSO

### Output

**Output** 4–20mA or 20–4mA (loop powered)

**Resolution** 1µA

**Output load resistance** 650Ω at 24V DC (50Ω/V above 10.5V DC)

**Max output current** Limited to <28mA

**Accurate to** <±0.03% FSO typical

**Ambient drift** <±0.003%/°C FSO typical

**Isolation test voltages between input/output** 2500V AC for 1min

**Response time** 400msec typical (10–90% 300msec typical)

### USB programming

**Simple software programming** using Define ToolBox (see p63). Bridge Key required (sold separately, see p34).

## Construction

**35mm DIN rail mount casing** IP20 rated. Installation Category II; Pollution Degree 2; Flame resistant

**Dimensions (H x W x D)** 90 x 12.5 x 112mm ( 3.54 x 0.49 x 4.41")

**Weight** 77g (2.7oz)

**Status LED**

## Environmental conditions

**Operating temperature** -20 to 55°C (-4 to 131°F)

**Storage temperature** -20 to 65°C (-4 to 149°F)

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

**Altitude** 2000m (6561ft )

## Compliances

**IP20 enclosure rating**

**EMC compliance** Emissions (EN 61326). Immunity (EN 61326). Safety (EN 61010-1).

**UL Listed** File Number E473114

| Order Code | **JAV-2DLI** |
|---|---|

# TM-2DLI

## 2-Wire Universal Transmitter (DIN Mount, Loop Powered, Isolated)


This versatile 2-wire transmitter accepts a range of standard input types, and outputs a 4-20mA loop. USB programming is hassle free, and takes less than a minute using Define ToolBox (see p63).

At a glance:

- 2-wire universal transmitter (DIN-mount, isolated)
- Current, voltage, thermocouple, RTD and potentiometer input
- Loop powered, 4-20mA output
- LED indicator for error notification
- Potentiometer for fine offset adjustment of current output

### Universal input

**Input type** Isolated universal input, as below

**Thermocouple input** B, E, J, K, N, R, S, T types

**RTD input** PT100 or PT1000 DIN 3-wire type, -200 to 850°C (-328 to 1562°F)

**Current input** 1µA–24mA DC

**Voltage input** 100mV to ±10V DC (bipolar)

**Potentiometer input** 3-wire, 0–2KΩ low pot, 0–1MΩ high pot

### Output

**Output** 4-20mA or 20-2mA (loop powered)

**Output load resistance** 650Ω at 24V DC (50Ω/V above 10.5V DC)

**Max output current** Limited to <28mA (emission and immunity)

### Power

**Power supply** 10.5-36V DC

**Supply voltage sensitivity** <±0.005%/V FSO

### USB programming

**Simple programming** using Define ToolBox (see p63) & Bridge Key (sold separately, see p34)

### General specifications

**Accurate to** <±0.03% FSO typical

**Ambient drift** <±0.003%/°C FSO typical

**Isolation test voltages between input and output** 3750V AC for 1min

**Noise immunity** 125dB CMRR avg (2.0kV DC limit)

**R.F. immunity** <1% effect FSO typical

**Response time** 400msec typical (10-90% 300msec typical)

**Accuracy** ≤ ±0.1% of span

**Maximum load** 1,200Ω (at 20mA with 36V input)

**32-point flexible linearization available**

**EMC Compliance** EN61326 (Emissions); EN61326 (Immunity); EN61010-1 (Safety)

### Construction

**Casing** 35mm DIN mount case: 79 x 20 x 68mm (H x W x D)

**Status LED** for sensor errors (3.8mA, 21.5mA) - LED flashing= normal operation, LED on= fault

**Potentiometer** For fine offset adjustment of current output

**USB port** for PC programming (requires Bridge Key, see p34)

### Environmental conditions

**Operating temperature** –20 to 85°C (–4 to 185°F)

**Storage temperature** –20 to 100°C (–4 to 212°F)

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

| Order Code | **TM-2DLI** |
|---|---|

# TM-4DPI

## 4-Wire Universal Transmitter (DIN Mount, User Powered, Isolated)


The TM-4DPI is designed for applications that have an auxiliary supply to power the transmitter. It can be powered directly from a 24V DC source, or a mains connection (85–265V), making it one of the most flexible units on the market.

The TM-4DPI is also ideal for applications that are not possible with loop powered transmitters, providing outputs such as 0–10V DC, ±10V DC, and 0–20mA.

USB programming is hassle free, and takes less than a minute using Define ToolBox (see p63).

### Universal input

**Input type** Isolated universal input, as below

**Thermocouple input** B, E, J, K, N, R, S, T types

**RTD input** PT100 or PT1000 DIN 3-wire type (2-wire can be used with offset calibration)
-200 to 850°C (-328 to 1562°F)

**Current input** 1µA–24mA DC

**Voltage input** 100mV to ±10V DC (bipolar)

**Potentiometer input** 3-wire, 0–2KΩ low pot, 0–1MΩ high pot

### Output

**Current** 0–20mA, 20–0mA, 4–20mA, or 20–4mA 20mA max output drive (650Ω max load at 13V DC)

**Voltage** 0–10V or ±10V DC

### Power

**Supply voltage** 21–300V DC or 85–265V AC

### USB programming

**Simple programming** using Define ToolBox (see p63) & Bridge Key (sold separately, see p34)

### General specifications

**Accurate to** <±0.03% FSO typical

**Ambient drift** <±0.003%/°C FSO typical

**Noise immunity** 125dB CMRR average (2.0kV DC limit)

**Isolation voltage** between input and output: 3,750V AC for 1min (test)

**R.F. immunity** <1% effect FSO typical

**Temperature coefficient** ≤ ±0.01% of span/°C

**Response time** 400msec typical (10–90% 300msec typical)

**Resolution** 0.5µA

**Accuracy** ≤ ±0.1% of span

**Load stability** ≤ 0.01% of span/100Ω

**32-point flexible linearization** may be applied to current/voltage inputs

**EMC compliance** Emissions (EN 61326), Immunity (EN 61326), Safety (EN 61010-1)

### Environmental conditions

**Operating temperature** –20 to 85°C (–4 to 185°F)

**Storage temperature** –20 to 100°C (–4 to 212°F)

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

### Construction

**Casing** 35mm DIN rail mount case, 79H x 30W x 70D (mm)

**Status LED** for sensor errors (3.8mA, 21.5mA) - LED flashing= normal operation, LED on= fault

**Potentiometer** allows fine field offset adjustment of the output

**USB port** for PC programming (requires Bridge Key, see p34)

| Order Code | **TM-4DPI** |
|---|---|

# TM-2HL

## 2-Wire RTD Transmitter
## (Head Mount, Loop Powered)


The TM-2HL is a DIN B style head mount transmitter that accepts a 2-wire or 3-wire PT100/1000 input signal, and converts it to an industry standard 4–20mA output.

- Loop powered
- Fast, hassle-free USB programming using Define ToolBox (see p63)
- Enhanced EMC specifications

*Temperature probe not included.*

### RTD input

**RTD input** PT100 or PT1000 DIN 3-wire type (2-wire can be used with offset calibration)

**Sensor current** 0.15mA nominal

**Lead wire resistance** PT100: 10Ω/wire max, PT1000: 5Ω/wire max (0.02% FSO offset error per Ω of lead resistance)

**Accuracy** ≤0.3°C

**USB programmable zero** 0–±99% of the span

**USB programmable span** –200 to +850°C (–328 to 1562°F)

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

**Linearity (PT100)** 0.02% FSO (for span inputs ≤200°C); 0.1% FSO (for span inputs ≤850°C)

**Linearity (PT1000)** 0.02% FSO (for span inputs ≤200°C); 0.2% FSO (for span inputs ≤520°C)

### Output

**Output** 4–20 or 20–4mA (loop powered)

**Output load resistance** 700Ω at 24V DC (50Ω/V above 9.5V DC)

**Maximum output current** Limited to <28mA (Emission & immunity)

### General specifications

**Supply voltage** 9.5–36V DC

**Supply voltage sensitivity** < ±0.005%/V FSO

**Simple programming** using Define ToolBox (see p63) & Bridge Key (sold separately, see p34)

**EMC compliance** Emissions (EN 61326). Immunity (EN 61326). Safety (EN 61010-1).

**Accurate to** <±0.03% FSO typical

**Ambient drift** <±0.003%/°C FSO typical

**Noise immunity** 125dB CMRR avg. (2.0kV DC limit)

**R.F. immunity** <1% effect FSO typical

**Response time** 400msec typical (10–90% 300msec typical)

### Construction

**Mounting** In head mount (probe not supplied)

**Dimensions** 44 x 44 x 23mm (1.7 x 1.7 x 0.9")

**USB port** for PC programming (requires Bridge Key, see p34)

### Environmental conditions

**Operating temperature** –20 to 65°C (–4 to 149°F)

**Storage temperature** –20 to 100°C (–4 to 212°F)

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

| Order Code | **TM-2HL** |
|---|---|

# TM-2HLI

## 2-Wire RTD/TC Transmitter
## (Head Mount, Loop Powered, Isolated)


The TM-2HLI is a DIN B style head mount transmitter that accepts either an RTD PT100/1000 input signal, or a thermocouple input signal, and converts it to an industry standard 4–20mA output. The TM-2HLI offers 3750V AC isolation between the input and output.

- Loop powered
- Fast, hassle-free USB programming using Define ToolBox (see p63)
- Enhanced EMC specifications
- Isolated

*Temperature probe not included.*

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### RTD input

**RTD input** PT100 or PT1000 DIN 3-wire type (2-wire can be used with offset calibration)

**Sensor current** 0.15mA nominal

**Lead wire resistance** PT100: 10Ω/wire max, PT1000: 5Ω/wire max (0.02% FSO offset error per Ω of lead resistance)

**Accuracy** ≤0.3°C

**USB prog. span** –200 to +850°C (–328 to 1562°F)

**Linearity (PT100)** 0.02% FSO (for span inputs ≤200°C); 0.1% FSO (for span inputs ≤850°C)

**Linearity (PT1000)** 0.02% FSO (for span inputs ≤200°C); 0.2% FSO (for span inputs ≤520°C)

### Thermocouple input

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

**Input impedance** 1MΩ min

**Thermocouple lead resistance** 100Ω max

**Cold junction comp.** –4 to 90°C

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

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

**CJC error** < ±1°C

### Output

**Output** 4–20 or 20–4mA (loop powered)

**Output load resistance** 700Ω at 24V DC (50Ω/V above 9.5V DC)

**Maximum output current** Limited to <28mA (Emission & immunity)

### General specifications

**Supply voltage** 9.5–36V DC

**Supply voltage sensitivity** < ±0.005%/V FSO

**Simple programming** using Define ToolBox (see p63) & Bridge Key (sold separately, see p34)

**Isolation test voltages between input/output** 3750V AC for 1min

**USB programmable zero** 0–±99% of the span

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

**EMC compliance** Emissions (EN 61326). Immunity (EN 61326). Safety (EN 61010-1).

**Accurate to** <±0.03% FSO typical

**Ambient drift** <±0.003%/°C FSO typical

**Noise immunity** 125dB CMRR avg. (2.0kV DC limit)

**R.F. immunity** <1% effect FSO typical

**Response time** 400msec typical (10–90% 300msec typical)

### Construction

**Mounting** In head mount (probe not supplied)

**Dimensions** 44 x 44 x 23mm (1.7 x 1.7 x 0.9")

**USB port** for PC programming

**Status LED** Flashing= normal, On= fault

**Potentiometer** For fine field offset adjustment of the output (use with caution)

### Environmental conditions

**Operating temperature** –20 to 85°C (–4 to 185°F)

**Storage temperature** –20 to 100°C (–4 to 212°F)

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

| Order Code | **TM-2HLI** |
|---|---|

# SLIM-1I to SLIM-5I

## 4–20mA Loop Powered Isolators


Define Instruments SLIM loop powered isolators receive 4–20mA process current inputs, and provide 4–20mA loop powered output signals. They are ideal for measuring signals commonly produced by position, acceleration, current, and a vast range of other industrial sensors, and offer a low cost isolation solution with top-of-the-line specs.

At a glance:

- **4–20mA DC input**
- **4–20mA DC output (loop powered)**
- **Lightning fast 2msec response time** Ensures accurate measurement of rapidly changing signals
- **No fuss installation** No DIP switches, no calibration, simple wiring
- **High accuracy – better than 0.03%!**
- **Superior noise resistance** Designed for stable, accurate performance, even in noisy environments, with excellent resistance to electromagnetic interference
- **Up to 5 isolated channels in a compact 12.5mm case** - Industry leading 2.5mm DIN space per channel!

Along with high speed, accuracy and stability, they also offer input and output protection for polarity and inadvertent connection to 30V DC. With up to 5 independent channels which are isolated up to 2.5kV, your control system will be protected from transients and noise:

- No more signal cross talk
- No more ground loops
- DC/AC common mode voltage rejection
- Over range protection

| General specifications |
|---|
| **Input** 4–20mA DC (up to 5 channels) |
| **Loop powered output** 4-20mA DC, load resistance 875Ω at 24V DC |
| **External power supply** 6.5–28V |
| **Response time** <2ms (0-90%, 100-10%) |
| **Input compliance voltage** 5V max |
| **Accuracy** <0.03% of span (typical) |
| **Isolation voltage test** 2500V RMS |
| **Working isolation voltage** 300V AC |
| **Specification range** –20 to 70°C (–4 to 158°F) |
| **Storage temperature** –20 to 85°C (–4 to 185°F) |

| |
|---|
| **Calibration temperature** 20–28°C (68–82°F) |
| **Ambient drift** <0.01% of span/°C |
| **Input voltage protection** To 30V inadvertently supplied |
| **Current protection** By PTC |
| **Linearity & repeatability** <0.03% of span (typical) |
| **RF immunity** <0.5% of span |
| **EMC compliance** Emissions (EN 61326-1). Immunity (EN 61326-1). Safety (EN 61010-1) |
| **DIN rail Case** 90 x 12.5 x 112mm (H x W x D) |

Ordering Options

| Series | Output |
|---|---|
| SLIM | 1I |

1I= 1 channel 2I= 2 channels 3I=3 channels
4I= 4 channels 5I= 5 channels

# SLIM-1/2I-P

## 4–20mA Isolators, 24V DC Powered


Define Instruments SLIM auxiliary powered isolators receive 4–20mA process current inputs and proved active 4–20mA output signals. They are ideal for measuring signals commonly produced by position, acceleration, current, and a vast range of other industrial sensors, and offer a low cost isolation solution with top-of-the-line specs.

At a glance:

- **4–20mA DC input**
- **4–20mA DC active output**
- **No fuss installation** No DIP switches, no calibration, simple wiring
- **High accuracy – better than 0.03%!**
- **Superior noise resistance** Designed for stable, accurate performance, even in noisy environments, with excellent resistance to electromagnetic interference
- **Up to 2 isolated channels in a compact 12.5mm case**

Along with high speed, accuracy and stability, they also offer input and output protection for polarity and inadvertent connection to 30V DC. With up to 2 independent channels which are isolated up to 2.5kV, your control system will be protected from transients and noise:

- No more signal cross talk
- No more ground loops
- DC/AC common mode voltage rejection
- Over range protection

### General specifications

**Input** 4–20mA DC (up to 2 channels)

**Active output** 4–20mA DC active output (500Ω max load)

**Power supply** 10–30V DC (0.8W max per output channel)

**Response time** <50msec (0–90%, 100–10%)

**Input compliance voltage** 5V max

**Accuracy** <0.03% of span (typical)

**Isolation voltage test** 2500V RMS

**Working isolation voltage** 300V AC

**Specification range** –20 to 70°C (–4 to 158°F)

**Storage temperature** –20 to 85°C (–4 to 185°F)

**Calibration temperature** 20–28°C (68–82°F)

**Ambient drift** <0.01% of span/°C

**Input voltage protection** To 30V inadvertently supplied

**Current protection** By PTC

**Linearity & repeatability** <0.03% of span (typical)

**RF immunity** <0.5% of span

**EMC compliance** Emissions (EN 61326-1). Immunity (EN 61326-1). Safety (EN 61010-1)

**DIN rail Case** 90 x 12.5 x 112mm (H x W x D)

### Ordering Options

| Series | Output | Powered |
|---|---|---|
| SLIM | 1I | P |
| | 1I= 1 channel<br>2I= 2 channels | P= 24V DC powered |

# SLIM-IS

## 4–20mA Isolated Signal Splitter, 24V DC Powered


Define Instruments SLIM auxiliary powered splitter receives a single 4–20mA process current input, and provides two identical active 4–20mA output signals. These are commonly used in industry when one signal is required to go to two devices.

For example, one signal may be required to go to a PLC, and also to a separate SCADA system. The splitter will ensure that there will be no interaction between the two systems.

CE

### General specifications

**Input** 4–20mA DC

**Active output** 2x 4–20mA DC active outputs (500Ω max load)

**Power supply** 10–30V DC (0.8W max per output channel)

**Response time** <50msec (0–90%, 100–10%)

**Input compliance voltage** 5V max

**Accuracy** <0.03% of span (typical)

**Isolation voltage test** 2500V RMS

**Working isolation voltage** 300V AC

**Specification range** –20 to 70°C (–4 to 158°F)

**Storage temperature** –20 to 85°C (–4 to 185°F)

**Calibration temperature** 20–28°C (68–82°F)

**Ambient drift** <0.01% of span/°C

**Input voltage protection** To 30V inadvertently supplied

**Current protection** By PTC

**Linearity & repeatability** <0.03% of span (typical)

**RF immunity** <0.5% of span

**EMC compliance** Emissions (EN 61326-1). Immunity (EN 61326-1). Safety (EN 61010-1)

**DIN rail Case** 90 x 12.5 x 112mm (H x W x D)

| Order Code | **SLIM-IS** |
|---|---|

# ACCS-420

## AC Current Sensor (4–20mA output)

The ACCS-420 is a loop powered transmitter that converts and isolates a high current AC signal into an industry standard 4–20mA DC signal. It can be used to monitor AC current loads in switchboards, motors and machines, and is principally used for machine protection and energy monitoring.

| General specifications |
|---|
| **Sensor type** Current transformer |
| **Power supply** 15–36V DC |
| **Output** 4–20mA, representing 0–100% of full scale input range |
| **Header selectable current range** ACCS-420: 100/150/200A. ACCS-420-L: 10/20/50A |
| **AC to DC conversion technique** Averaging scaled in RMS |
| **Response time** 250ms (10–90%) |
| **Accuracy** 1% of full scale |
| **Operating temperature** –10 to 50°C (14 to 122°F) |
| **Operating humidity** 0–95% non condensing |
| **Casing** Split core hinged type, screw mounting case, ABS material |
| **Dimensions** 66H x 100W x 32D (mm) |
| **Connectors barrier strip** UL 94 V-O rated |

# ACCS-010

## AC Current Sensor (0–10V output)

The ACCS-010 is a self powered transmitter with no external supply required. It converts a high current AC signal into an industry standard 0–10V DC isolated output. The ACCS-010 can be used to monitor AC current loads in switchboards, motors and machines, and is principally used for machine protection and energy monitoring.

| General specifications |
|---|
| **Sensor type** Current transformer |
| **Output** 0–10V DC self powered |
| **Header selectable current range** 100/150/200A |
| **AC to DC conversion technique** Averaging scaled in RMS |
| **Response time** 250ms (10–90%) |
| **Accuracy** 1% of full scale |
| **Operating temperature** –10 to 50°C (14 to 122°F) |
| **Operating humidity** 0–95% non condensing |
| **Casing** Split core hinged type, screw mounting case, ABS material |
| **Dimensions** 66H x 100W x 32D (mm) |
| **Connectors barrier strip** UL 94 V-O rated |

### Ordering Options

| Series | Output | Header Selectable Current Range |
|---|---|---|
| ACCS | 420 | |
| | 420= 4–20mA<br>010= 0–10V | [ ]= 100/150/200A (default)<br>L= 10/20/50A (ACCS-420 only) |

# TDH30

## Pressure Transducer

The TDH30 Series Pressure Transducer utilizes piezoresistance technology in an all stainless steel body. It is compact in size, has long term stability, ease of installation, and is very economical as well as reliable.

The TDH30 sets a new price-performance standard for low cost, high volume commercial and industrial applications.

### Features

- 3 to 10,000psi range
- Various outputs
- Compact design
- 316 Stainless steel housing
- Low cost
- Industrial 1% accuracy
- OEM tested and approved
- Low power consumption

### Input

**Supply voltage** 12–36 VDC

**Pressure range** 3 to 10,000 psi

**Proof pressure** 1.5x full scale

**Burst pressure** 3x full scale

**Fatigue life** More than 4 million cycles

### Performance @ 25°C (77°F)

**Accuracy** 1% full scale, BFSL

**Stability** 0.2% full scale

**Compensated temperatures** -10 to 75°C (14 to 167°F)

**Operating temperatures** -20 to 80°C (-4 to 176°F)

**Zero and span offset tolerance** 1.5%

**Current consumption** Approx 3mA for voltage output, 22mA for current output (4–20mA)

### Mechanical configuration

**Pressure port** 1/4 NPT (standard)

**Electrical connection** 9.4 mini DIN, 3 pin packard

**Ingress rating** IP65 with T-Direct standard 9.4 DIN cable

**Housing** 316 stainless steel

**Diaphragm material**

| | |
|---|---|
| *3–75psi* | 316 SS |
| *>75–1600psi* | ceramic |
| *>1600–10,000psi* | 17-4 SS |

316SS is available instead of ceramic upon request

**Sealing material** Neoprene

### Ordering Options

| Series | Output | Pressure Type | Pressure Range | Pressure Port | Electrical Connection | Accuracy |
|---|---|---|---|---|---|---|
| TDH30 | B | G | 0500 (psi) | 03 | D00 | 4 |
| | B= 4–20mA<br>C= 0-5V (3-wire) | G= Gauge | 0015 0500<br>0025 1000<br>0050 3000<br>0100 5000<br>0250 | 03= 1/4" NPT Male | D00= 4 pin Mini 9.4 DIN<br>B00= 3 pin Packard | 4= 1% |

# TDH33

## Pressure Transducer, Stainless Steel Wetted Parts

The TDH33 Series Pressure Transducer utilizes piezoresistance technology in an all stainless steel body. It is compact in size, has long term stability, ease of installation, and is very economical as well as reliable.

The TDH33 sets a new price-performance standard for low cost, high volume commercial and industrial applications.

### Features

- Vac to 285psi or 3 to 10,000psi range
- Various outputs
- Compact design
- 316 Stainless steel housing
- All stainless steel wetted parts
- Low cost
- Industrial 1% accuracy
- OEM tested and approved
- Low power consumption

### Input

**Supply voltage** 12–36 VDC

**Pressure range** Vac to 285psi, or 3 to 10,000 psi

**Proof pressure** 2x full scale

**Burst pressure** 3x full scale

**Fatigue life** More than 4 million cycles

### Performance @ 25°C (77°F)

**Accuracy** 1% full scale, BFSL

**Stability** 0.2% full scale

**Compensated temperatures** -10 to 75°C (14 to 167°F)

**Operating temperatures** -20 to 80°C (-4 to 176°F)

**Zero and span offset tolerance** 1.5%

**Current consumption** Approx 3mA for voltage output, 22mA for current output (4–20mA)

### Mechanical configuration

**Pressure port** 1/4 NPT (standard)

**Electrical connection** 9.4 mini DIN, 3 pin packard

**Ingress rating** IP65 with T-Direct standard 9.4 DIN cable

**Housing** 316 stainless steel

**Diaphragm material**

*<1400psi* 316 SS
*>1400psi* 17-4 SS

Wetted parts are SS, no internal Orings

### Ordering Options

| Series | Output | Pressure Type | Pressure Range | Pressure Port | Electrical Connection | Accuracy |
|---|---|---|---|---|---|---|
| TDH33 | B | G | 0500psi | 03 | D00 | 4 |
| | B= 4–20mA<br>C= 0-5V (3-wire) | G= Gauge | V000 0015<br>V015 0025<br>V045 0050<br>V085 0100<br>V135 0250<br>V185 0500<br>V285 1000<br>3000<br>5000 | 03= 1/4" NPT Male | D00= 4 pin Mini 9.4 DIN<br>B00= 3 pin Packard | 4= 1% |

# TDH40

## Pressure Transducer, High Accuracy

The TDH40 Series Pressure Transducer utilizes piezoresistance technology in an all stainless steel body. It is compact in size, has long term stability, ease of installation, and is very economical as well as reliable.

The TDH40 sets a new price-performance standard for low cost, high volume commercial and industrial applications.


### Features

- 0 to 10,000psi range
- Various outputs
- Compact design
- 316 Stainless steel housing
- Low cost
- Better 0.4% accuracy
- OEM tested and approved
- Low power consumption

### Input

**Supply voltage** 12–36 VDC

**Pressure range** 3 to 10,000 psi

**Proof pressure** 1.5x full scale

**Burst pressure** 3x full scale

**Fatigue life** More than 4 million cycles

### Performance

**Accuracy** 0.4% full scale, BFSL

**Stability** 0.2% full scale

**Compensated temperatures** -10 to 75°C (14 to 167°F)

**Operating temperatures** -20 to 80°C (-4 to 176°F)

**Zero and span offset tolerance** 1.5%

**Current consumption** Approx 3mA for voltage output, 22mA for current output (4–20mA)

### Mechanical configuration

**Pressure port** 1/4 NPT (standard)

**Electrical connection** M12 (standard), 9.4 mini DIN

**Ingress rating** IP67 when used with T-Direct TDM12 cable

**Housing** 316 stainless steel

**Diaphragm material**

| | |
|---|---|
| *0–75psi* | 316 SS |
| *100–1500psi* | ceramic |
| *2000–10,000* | 17-4 SS |

316 SS is available instead of ceramic upon request

**Sealing material** Neoprene

### Ordering Options

| Series | Output | Pressure Type | Pressure Range | Pressure Port | Electrical Connection | Accuracy |
|---|---|---|---|---|---|---|
| TDH40 | B | G | 0500 (psi) | 03 | Q00 | 5 |
| | B= 4–20mA<br>C= 0-5V (3-wire) | G= Gauge | 0015 0500<br>0025 1000<br>0050 3000<br>0100 5000<br>0250 | 03= 1/4" NPT Male | Q00= M12<br>D00= 9.4 Mini DIN | 5= 0.4% |

# TD1000

## Pressure Transducer, Ultra High Resolution Digital

The TD1000 Series digital/configurable industrial pressure transducer features stability and accuracy over a wide temperature range, and is plug and play with most lower grade competitive units.

With its proprietary digital/ASIC technology, the TD1000 Series features field proven redundant sensing elements without the need for solder in resistors or trim pots that can drift over time. This provides years of excellent performance and reliability even in the harshest/demanding applications. The TD1000 series also offers optional 4x or 10x over pressure and the optional integrated temperature or pressure digital switch feature.

For extreme applications where power washers are used for wash down, the TD1000 Series' optional IP69K seal makes it ideal no matter what the environment.

With its flexible low power design and lower manufacturing costs, the TD1000 Series offers outstanding value and makes it ideal for custom wireless applications.

### Features

- Totally digital proprietary design
- Innovative redundant sensing elements
- 24V digital output for pressure or temp switch point
- Voltage and current outputs
- Vacuum and compound pressure ranges available
- Optional 4x or 10x over pressure (on most ranges)
- 0.25% and 0.15% accuracy available
- ASIC technology, no zero/span potentiometers
- All stainless steel welded housing
- IP69K rated seal available (high pressure wash down)
- Innovative low current consumption, ideal for custom wireless solutions

### Performance @ 25°C (77°F)

**Accuracy** 0.25% (optional 0.15%) BFSL - (vac to zero range with 4–20mA outupt, 0.5% BFSL), TD1010 units: 0.5% BFSL

**Overange protection** 2x Rated pressure or optional 4x and 10x

**Pressure range** See ordering options below. Up to 6000 psi (414 bar)

**Burst pressure** 5x or 20,000 psi, whichever is less

**Pressure cycles** >100 million

**Update time** ≤1msec

**Digital output** Optional digital output for pressure, maintenance or temp switch point (not available on 4–20mA output units), max load current 20mA

### Environmental data

**Compensated temperatures** -40 to 100°C (-40 to 212°F)

**Operating temperatures** -40 to 100°C (-40 to 212°F)

**Storage temperature** -40 to 125°C (-40 to 250°F)

**TEB** 0.9% BFSL (includes: Non-linearity, Hysteresis and Non-repeatability)

**Long term drift** 0.2% FS/year (non-cumulative)

**Shock** 100g, 11ms, 1/2 sine

**Vibration** 20g, peak, 20 to 2400 Hz

**EMI/FRI protection** Yes

**Rating** Up to IP-69K available (high pressure wash down)

### Mechanical configuration

**Pressure connections** See ordering options below

**Wetted material** 17-4PH stainless steel

**Electrical connection** Cable, 9.4 Din, IP-69K 4 pin M12 Connector

**Case** 304 stainless steel housing

### Electrical data

**Excitation** 4–28VDC, Typ (must be at least 0.3V above full output voltage), 7.5VDC min for 4-20mA

**Output** See ordering options below

**Output impedance** <100Ω, Nominal

**Current consumption** 25mA max (current output), <5mA (voltage output)

**Output noise** <2mV RMS

**Reverse polarity protection** Yes

**Zero and span offset tolerance** 1%

**Setpoint % for pressure or temp**
For pressure, this is done by selecting a percentage of your transducer's full range and this will be the set point (40% of a 1000psi range will have the setpoint at 400psi) "P40".
For temperature, select what percentage of 80°C you want the setpoint to be (70% of 80°C is 56°C [132.8° F] and this will be the setpoint) "T70".

**Maintenance mode** The maintenance mode output indicates 1/2 bridge failure

## Ordering Options

| Series | Output | Pressure Type | Pressure Range | Pressure Connection | Electrical Connection | Accuracy | Pressure or Temp SP % (P or T) |
|---|---|---|---|---|---|---|---|
| TD1000 | BB | G | 0015 | 03 | Q00 | 2 | T40 |
| TD1000= 2x Over Pressure<br>TD1004= 4x Over Pressure<br>TD1010= 10x Over Pressure | BB= 4–20mA<br>CC= 0–5VDC<br>DD= 0–10VDC<br>HH= 1–5VDC<br>JJ= 1–6VDC<br>GG= 0.5–5.5VDC (non-ratiometric)<br>WW= 0.5–4.5VDC (non-ratiometric) | G= Gauge | V000 0300<br>V015 0400<br>V045 0500<br>V085 0600<br>V135 0700<br>V185 0800<br>V285 0900<br>1000<br>0015 2000<br>0025 3000<br>0050 4000<br>0100 5000<br>0150 6000<br>0200 010K<br>0250 | 03= 1/4" NPT Male<br>09= 7/16" x 20 | Q00= IP69K M12<br>D00= 4 pin 9.4 Mini DIN | 2= 0.25%<br>1= 0.15%<br>5= 0.5% (TD1010) | P/T10= 10% of pressure range or 10°C<br>P/T20= 20% of pressure range or 20°C<br>P/T30= 30% of pressure range or 30°C<br>P/T40= 40% of pressure range or 40°C<br>P/T50= 50% of pressure range or 50°C<br>P/T60= 60% of pressure range or 60°C<br>P/T70= 70% of pressure range or 70°C<br>P/T80= 80% of pressure range or 80°C<br>P90= 90% of pressure range<br>(P= % of the full pressure range selected)<br>(Full temp range is 10 to 80°C) |

# TDWLB

## Pressure Transducer, Bluetooth

Another Industry First! The first Bluetooth® certified wireless pressure transducer with long battery life and patent pending design makes the Transducers Direct CirrusSense™ TDWLB a perfect fit for many applications for Industrial and Home Automation.

Download the free app, install the transducer and wirelessly connect - no confusing wiring to figure out. From HVAC in marine, campers, motor homes, residential and commercial applications to water, hydraulic, irrigation, pools, medical and sprinkler systems or anywhere you need to monitor pressure without the need of wires.

Built on TD1000 proprietary technology, the TDWLB ensures high quality and high accuracy.

### Features

- Connects to smart phones and tablets with BLE (Bluetooth® Low Energy)
- Certified Bluetooth® Wireless technology
- Pressure ranges from Vacuum to 10,000 psi
- Long battery life (proprietary technology)
- 1% Standard accuracy with optional 0.25% ultra high accuracy
- Stainless Steel and high impact polycarbonate construction
- Alarm set points
- Secure field programmable naming
- Schrader, NPT, SAE and G ¼ pressure connection

### Performance @ 25°C (77°F)

**Accuracy** 0.25% or 0.2 psi, whichever is greater, 1% BFSL

**Overange protection** 2x Rated pressure

**Pressure range** See ordering options below - up to 5,000 psi (345 bar)

**Burst pressure** 5x or 20,000 psi, whichever is less

**Pressure cycles** >100 million

**Update time** Bluetooth® wireless technology (1sec)

### Environmental data

**Compensated temperatures** -10 to 85°C (14 to 185°F)

**Operating temperatures** -10 to 85°C (14 to 185°F)

**Storage temperature** -40 to 125° C (-40 to 257°F) without battery

**TEB** 3% BFSL (includes: Non-linearity, Hysteresis and Non-repeatability)

**Long term drift** 0.2% FS/year (non-cumulative)

**Shock** 50g, 11 ms, 1/2 sine

**Vibration** 10g, peak, 20 to 2400 Hz

**EMI/RFI Protection** Yes

**Rating** IP-65

### Mechanical configuration

**Pressure connections** 1/4" NPT Male, 7/16-20 UNF Male, G1/4 Male, 7/16-20 UNF Female w/ 45° flare & valve depressor (Schrader)

**Wetted material** 17-4PH stainless steel

**Case** 304 stainless steel and high-impact polycarbonate housing

### Electrical data

**Power supply** Replacement battery, battery life: 12-18 months, typical

**BatteryrRemoval** If battery pack is removed, you must wait 90 seconds to reinstall or unit may lock up

### Compatible devices

**Software** iOS 7.1 or greater

**iPad** iPad Gen 3, iPad Gen 4, iPad Mini Gen 1, iPad Mini Gen 2, iPad Air
**iPhone** iPhone 5, iPhone 5C/5S, iPhone 6/6 Plus

## Ordering Options

| Series | Accuracy | Pressure Range | Pressure Connection | Battery Pack |
|---|---|---|---|---|
| TDWLB | 100 | 0500 (psi) | 03 | |
| | 100= 1.0%<br>200= 0.25% | 0050 1000<br>0100 3000<br>0250 5000<br>0500 010K<br>0650 | 03=1/4" NPT Male<br>09=7/16-20 UNF Male<br>13=G1/4 Male<br>42=7/16-20 UNF Female w/ 45° flare & valve depressor (Schrader) | [ ]= Standard battery pack<br>T-24= 24" cable with external temperature sensor |

# TDEPD

## Pressure Transducer, Integrated LED Display

What makes the patented TDEPD Series stand apart is the unique LED display - which allows for 360° scrolling, or you can lock the display in one location. It also features field programmable set points and hysteresis.

Because it is built on Transducers Direct's TD1000 technology, the TDEPD Series incorporates redundant sensing elements, allowing for notification that the sensor needs to be replaced should one of the sensing elements fail (maintenance mode), eliminating operational downtime.

The TDEPD Series pressure switch/transducer comes standard with one digital output and optional analog output available. Unit operates from 10.5 to 28 VDC, and is IP67 certified.

### Features

- Maintenance Mode (redundant sensing notification)
- 10.5–28V DC Power supply
- 4-digit, Bi-color display (red or green)
- 360° Scrolling display, or lock in location
- Pressure port: ¼-inch NPT, 7/16-20 UNF, G 1/4
- Digital outputs: 250 mA max (PNP) or 200 mA max (NPN), and/or optional analog output: up to 10V DC or up to 20 mA (field selectable)
- Wide variety of pressure ranges up to 10K psig
- Spike Monitoring Technology™ (SMT)

| Performance @ 25°C (77°F) |
|---|
| **Accuracy** 0.5% of maximum operating pressure |
| **Overange protection** 2x rated pressure or optional 4x |
| **Pressure range** Up to 10,000 psi (689 bar) - see ordering options below |
| **Burst pressure** 5x or 20,000 psi, whichever is less |
| **Pressure cycles** >100 million |
| **Update time** ≤1msec |

| Environmental data |
|---|
| **Compensated temp** –40 to 85°C (–40 to 185°F) |
| **Operating temp** –40 to 100°C (–40 to 212°F) |
| **Storage** –40 to 125°C (–40 to 257°F) |
| **TEB** 1% BFSL (includes: Non-linearity, Hysteresis and Non-repeatability), analog output |
| **Long term drift** 0.2% FS/year (non-cumulative) |
| **Shock** 50g, 11 ms, 1/2 sine |
| **Vibration** 10g, peak, 20 to 2400Hz |
| **EMI/FRI protection** Yes |
| **Ingress protection** Up to IP67 |

## Mechanical configuration

**Pressure connections** 1/4" NPT Male, 7/16-20 UNF, G1/4 Male

**Wetted material** 17-4PH stainless steel

**Electrical connection** M12 (5-pin)

**Case (housing)** 304 stainless steel and high-impact polycarbonate (display)

## Electrical data

**Power supply** 10.5–28V DC

**Switch/Analog output** 10.5–28V DC at 250mA max (PNP) or 200mA max (NPN) (digital), Field-programmable: voltage up to 10V DC or current up to 20mA

**Output impedance** <100 Ohms, Nominal

**Current consumption**

*30mA* @ 24V / voltage output
*40mA* @ 12V / voltage output
*50mA* @ 24V / current output
*60mA* @ 12V / current output

**Output noise** <2mV RMS

**Reverse polarity protection** Yes

**Setpoints** No setpoints in vacuum range, 5psi min setpoint with <100psi range, 10% of configured pressure min setpoint with >100psi range

**Spike counter** Press button #1 for 10 seconds to view quantity of pressure spikes and the highest spike seen

**Zero/Tare display** Press button #2 for 10 seconds. If the pressure reading on the display is between -14.7 and 128psi, the display will change to zero (0). If pressure is above 128 psi, display will not change.

## Ordering Options

| Series | Version | Pressure Range | Pressure Port | Electrical Connection | Overpressure Protection |
|---|---|---|---|---|---|
| TDEP | D1 | 0050 | 03 | Q9 | |
| | D1= 1 switch output with display<br>D2= 2 switch outputs with display<br>D3= 1 analog output, 1 switch output with display | 0015 1000<br>0025 2000<br>0050 3000<br>0100 4000<br>0250 5000<br>0500 6000<br>0750 010K | 03= 1/4" NPT Male<br>09= 7/16-20 UNF<br>13= G1/4 | Q9= M12 (5-pin) | [ ]= 2x (standard)<br>4x= 4x (5000psi max) |

# Bridge Key

## Universal USB Communications Kit


The reusable Bridge Key and communications kit is compatible with all USB-programmable Define Instruments products. It contains the hardware required for PC connection to your compatible device.

### The kit contains:

- 1x USB Bridge Key
- 1x Interface cable
- 1x Head-mount adaptor (for head-mount transmitters only)
- 1x USB extension cable

### Compatible with:

- Merlin (p4)
- ZEN-16 (p6)
- Twin Link (p10)
- All transmitters (p16–21)

CE

### Kit contents

**Bridge Key** USB programmer, type A USB connection

**Interface cable** 70cm, connects Bridge Key programmer to your compatible device

**Head mount adaptor** Enables connection to TM-2HL and TM-2HLI transmitters

**USB extension cable** 1m length,Type A male/female USB connectors. Simplifies access for USB ports mounted at the rear of the computer etc.

### Software compatibility

**Define ToolBox** Download it from defineinstruments.com/toolbox
See p63 for more info.

**Define WorkBench** Download it from defineinstruments.com/workbench
See p64 for more info.

### Hardware compatibility

**Universal indicators** Merlin (p4) and GF40 (now superseded by Merlin)

**Multi-channel control station** ZEN-16 (p6)

**Wireless gateways** Twin Link (p10)

**Transmitters**
Javelin (p16), TM-2DLI (p18), TM-4DPI (p19), TM-2HL (p20) and TM-2HLI (p21)
*Note: The Bridge Key replaces the now obsolete 'TM-USB' which was only compatible with TM transmitters.*

| Order Code | **BRIDGE-KEY** |
|---|---|

# Multicom

## USB RS232/485/422 Converter


This multifunctional unit converts USB to RS232/485/422, or RS232 to RS485/422. It can be powered via USB port or external power adaptor, and can be hand-held or wall/DIN rail mounted.

It features application auto-detection, allowing you to simply wire up your Multicom to suit your needs, and let the unit configure itself!

### At a glance:

- Multifunctional unit, converts:
  USB ⇆ RS232/485/422 or
  RS232 ⇆ RS485/422
- Powered via USB port or external power adaptor
- Compact unit, easily hand-held or wall/DIN rail mounted
- Application auto-detection! Simply wire up your Multicom to suit your needs, and let the unit configure itself!

### General specifications

**Kit contains**
1x Multicom converter
1x USB type A to type B cable
1x 4-core RS232 cable + 2 x DB9-female to RJ11 adaptors

**Converts** USB ⇆ RS232/485/422 or RS232 ⇆ RS485/422

**Supply voltage** 5V DC. Powered via USB port or external power adaptor (sold separately)

**Current** 130mA max

**Operating temperature** –10 to 70°C (14 to 158°F)

**Isolated data transmission**

**RS485/422 isolation** galvanic and RF coupling eliminates long term optocoupler drift. 2500V RMS 1 minute.

**Supports multiple baud rates**

| | |
|---|---|
| *USB ⇆ RS232/485/422* | 300–230.4K baud |
| *RS232 ⇆ RS485/422* | 300–115.2K baud |

### Software

**Multicom Configurator & Driver**, with 1-click conversion from RS232 ⇆ RS485/422. Download it from: defineinstruments.com/mc-config

### Construction

**Available terminals**

| | |
|---|---|
| *USB (B type)* | USB 2.0 (5V DC) |
| *DB9 male (or female)* | RS232 |
| *RJ11* | RS232 |
| *5-pin screw terminal* | RS485/422 |

**Dimensions** 25H x 70W x 108D (mm)

**Ingress protection** IP20

**Mounting** The Multicom can be used without mounting, however optional mounting brackets are available for applications that require the unit to be fixed in place.

| | |
|---|---|
| *DIN rail* | 35mm. Requires MC-DR bracket |
| *Wall mount* | Requires MC-WM wall mount bracket |

| Order Code | **MULTICOM** |
|---|---|

### Accessories

| | |
|---|---|
| **MC-PWR-ADP** | Power adaptor, 250V/5V 1A with USB connector |
| **MC-WM** | Wall mount bracket |
| **MC-DR** | DIN rail bracket |

# PSU-24

## 24V Power Supply


This instrument power supply is designed differently from a general purpose power supply. Emphasis is placed on withstanding and rejecting EMI events, such as transients associated with close by unsnubbered contactors etc.

This is achieved by second and third stage filtering in both common and normal mode configurations, and constructing the transformer with inherent shielding to reject unwanted signals. This combination of techniques eliminates the need for a Y cap between the primary and secondary, increasing the impedance to high frequency transients by an order of magnitude or more.

At a glance:

- Powers up to 10x 4-20mA 2-wire loops
- Overload protection
- Low noise
- High accuracy (2%)
- Compact DIN rail mounting unit

### General specifications

**Output** 24V DC, 200mA

**Supply voltage** 85-265V AC/DC

**Output ripple** 4mV rms/25mVpp max

**Load regulation** < 0.1%

**Line regulation** < 0.1%

**Short circuit tolerance** indefinite

**Compliance** EN55022-A (EMC Emission). EN50082-1 (EMC Immunity). EN60950 (Safety).

**Mains isolation** 250V AC

**Isolation voltage** Mains to output: 3000V AC, 50Hz. Mains to earth: 1500V AC, 50Hz.

**Ambient drift** ≤ ±0.01%/°C FSO typical

**RF immunity** < 1% effect FSO typical

### Environmental conditions

**Operating temperature** 0–60°C (32–140°C)

**Storage temperature** –20 to 80°C (–4 to 176°F)

**Operating humidity** 5–85% RH max

### Construction

**Casing** 35mm DIN rail mount case, 79H x 30W x 70D (mm)

**Status LED** for output voltage indication

*LED On=* Output exceeds 18V

*LED Off=* No output

| Order Code | **PSU-24** |
|---|---|

# OVP-100

## Over Voltage Protection Unit


This overvoltage protection unit offers a simple and affordable way to insure your expensive instrumentation against power surges. Enjoy all the benefits of a high level of protection concentrated in a compact space.

At a glance:

- Compact DIN rail mounting unit
- High level of protection
- Uses gas discharge tubes and transient voltage suppressors

### Gas discharge tubes

**8x20µs** 5000A

**10x1000µs** 10A

**DC spark voltage** 60–90V at 100V/s

**Impulse spark over voltage** <600V at 1kV/µs

### Transient voltage suppressors

**10x1000µs** 600W

**Response time** <5ns from 0–41V

**Stand off voltage** 33V typical

### Environmental conditions

**Operating temperature** 0–60°C (32–140°C)

**Storage temperature** –20 to 80°C (–4 to 176°F)

**Operating humidity** 5–85% RH max

### General specifications

**EMC compliances** EN55022-A (Emissions), EN 50082-1 (Immunity, <1% effect FSO typical)

**Leakage current** 10µA at 24V DC

**Casing** 35mm DIN rail mount case, 79H x 20W x 70D (mm)

| Order Code | **OVP-100** |
|---|---|

# SD-50X

## 4-20mA Loop Powered Display (Short Depth Panel Mounting)


From the makers of the world's first 4-20mA loop powered display comes the SD-50X indicator – designed to be powered from the 4-20mA current loop input signal. This versatile, compact meter can be used to measure a variety of process variables.

At a glance:

- 4-20mA DC input – powered by input signal
- Selectable decimal point position
- Wide variety of possible applications
- Compact, short-depth case

### General specifications

**Input signal** 4–20mA DC (minimum input 3.5mA, maximum continuous output 100mA)

**Powered by 4–20mA** current loop input signal

**Input impedance** approximately 200Ω. 3.4V drop, plus 20Ω (3.9V at 20mA)

**A/D converter** 16 bit sigma delta

**Accuracy** ±0.02% of reading (plus 2 digits)

**Temperature coefficient** 30ppm/°C typical (plus 0.1 counts/°C for zero offset)

**Conversion rate** 3 readings/second

**Casing** short depth panel mount case, 48H x 96W x 19D (mm)

### Display

**Display** 5 digit (13mm), alphanumeric LCD

**Includes a 6'th display digit** as a descriptor - choose °C, °F or dummy zero

**Ingress protection** IP65 dust/splash proof

**Buttons** 3x front panel buttons

**Adjustable decimal point**, 6 positions

**+/- Over-range** display shows - - - - - -

**Full scale range** adjustable to any display span between –19.999 and 30,000

**Resolution** 50,000 counts max (from any input span between 3.5 and 27.5mA)

| Order Code | **SD-50X** |
|---|---|

# LPI610

## 4-20mA Loop Powered Display (Front Mounting)


The LPI610 4-20mA display is ideal for displaying a variety of process variables, and is easy to scale to your required engineering units.

This unit has been designed for easy installation, and mounts on the surface of the panel without taking up any space behind it.

### At a glance:

- Easy installation (front mounting unit takes up no space behind the panel)
- IP65 rated for dust and water resistance
- Display backlight charges off the loop input signal
- Wide variety of possible applications
- Protection against reverse wiring and accidental 24V supply
- Simple to set up and operate
- Display lock feature

### General specifications

**Input configuration** Series connection to 4-20mA DC current loop

**Powered from the input signal** Min input 3.5mA, max continuous input 100mA. 3.6V drop plus 40Ω (equivalent to 4.3V at 20mA). Typically load is 220Ω.

**Full scale ranges** Adjustable to any display span between -99,999 and +999,999. Max resolution (50,000 counts) from any signal input span between 3.5 and 27.5mA

**A/D converter** 16 bit Sigma Delta

**Accuracy** ±0.02% of reading (plus 2 digits)

**Temperature range** -10 to 60°C

**Temperature coefficient** Typically 30ppm/°C (plus 0.1 counts/°C for zero off set).

**Conversion rate** 10 readings per second

**Protection** Protected against reverse wiring and accidental 24V supply

### Construction

**Case dimensions** 72H x 144W x 25D (mm) – Depth dimension includes foam seal.

**IP65 rated** For dust and water resistance

### Display

**Display** 17.5mm Liquid Crystal Display, 6 digits

**Units** Select KG, LB, T or a custom character (i.e. C, F, L etc)

**Decimal point** Select up to 4 decimal places

**+/- Over-range** Display shows UNDER or OVER

| Order Code | **LPI610** |
|---|---|

# SC-PRC

## Process Controller (0/4–20mA)

This popular and versatile process controller has a virtually endless range of possible applications, and can be used either on its own, or in conjunction with a transmitter outputting current.

It supplies 24V excitation, allowing you to power a 2/3-wire input loop, and features a built in LCD dual display for simple operator interface.

At a glance:

- Current (0-20mA or 4-20mA) input
- Dual relay outputs
- Input signal averaging
- Suits a variety of applications, including depth or level sensors and pressure, temperature or humidity transmitters
- Dual display rows
- Simple, intuitive interface with scrolling text prompts
- Security PIN protected setup and setpoint access

### Specifications

**Input signal** Current (0/4–20mA)

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 2 x 8 digit (8mm), alphanumeric LCD

**35mm DIN rail mount case**, 101H x 45W x 120D (mm), 5 front panel buttons. Front panel serial connector (disabled for non-serial models)

**Relay outputs** 2 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Serial port** (optional) 1 x isolated RS232 or RS485

**Excitation** 24V DC (50mA max)

**Sampling rate** 10Hz

**Resolution** 16 bit

**Accuracy** 0.05% of reading

**Temperature drift** 50ppm/°C typical

**Factory calibrated** and set up for 4-20mA

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output | Comms |
|---|---|---|---|---|---|
| SC | PRC | HV | R2 | | |
| | PRC= Process input | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | R2= 2x relays (default) | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V | [ ]= Not connected (default)<br>S2S= 1x RS232<br>S4S= 1x RS485 |

# PRO-PRC

## Quad Process Controller (4 x 0/4-20mA)


This advanced quad channel process controller is ideal for numerous industrial applications with 0-20mA or 4-20mA DC inputs. It can be used either on its own, or in conjunction with another instrument (such as a transmitter).

### At a glance:

- 4 x process inputs (0-20mA or 4-20mA)
- Input signal averaging
- Channel averaging across 2, 3 or 4 input channels
- Selectable decimal point position and rounding
- Factory precalibrated. Key-in recalibration (no input signal needed)
- Simple, intuitive interface with scrolling text prompts
- Optional data logging available
- Security PIN protected calibration and setpoint access

### Specifications

**Input signal** 4 x Current (0/4–20mA)

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 1 x 6 digit (13mm), 14 segment alphanumeric LED. IP65 dust/splash proof. 5 buttons, 6 setpoint indicator LED's.

**Panel mount case**, 48H x 96W x 120D (mm)

**Relay outputs** (optional) 2 or 4 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Serial port** (optional) 1 x isolated RS232 or RS485

**Data logging** (optional) 3,328KB (serial port required)

**Excitation** 24V DC (50mA max)

**Sampling rate** 5Hz per channel

**Resolution** 100,000 counts

**Zero drift** 0.05µA/°C typical

**Span drift** ±25ppm/°C typical

**Non-linearity** ±0.01% full scale max

**Input noise** 0.03µAp-p typical (at 1Hz output rate)

**Noise rejection** 50/60Hz

**Factory calibrated** and set up for 4-20mA (0.00–100.00 display counts). Simple key in recalibration

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output | Comms | Data Logging |
|---|---|---|---|---|---|---|
| PRO | PRC | HV | | | | |
| | PRC= Process input | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | [ ]= None (default)<br>R2= 2x relays<br>R4= 4x relays | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V | [ ]= None (default)<br>S2R= 1x RS232 (RJ11)<br>S4S= 1x RS485 (screw) | [ ]= None (default)<br>D= 3,328KB |

# TEX-PRC

## Process Controller (0/4–20mA or 0–2/10V)


This popular and versatile process controller has a virtually endless range of possible applications, and can be used either on its own, or in conjunction with a transmitter. It supplies 24V excitation, allowing you to power a 2/3-wire input loop.

At a glance:

- Current (0/4-20mA) or voltage (0-2/10V) input
- Input signal averaging
- Simple, intuitive interface with scrolling text prompts
- Easy to scale using high and low display values
- Security PIN protected calibration and setpoint access
- Selectable decimal point position and rounding

### Specifications

**Input signal** Current (0/4–20mA) or Voltage (0–2/10V)

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 1 x 6 digit (13mm), 14 segment alphanumeric LED. IP65 dust/splash proof. 5 buttons, 6 setpoint indicator LED's.

**Panel mount case**, 48H x 96W x 120D (mm)

**Relay outputs** (optional) 2 or 4 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Serial port** (optional) 1 x isolated RS232 or RS485

**Excitation** 24V DC (50mA max)

**Sampling rate** 10Hz

**Resolution** 16 bit

**Accuracy** 0.05% of reading

**Temperature drift** 50ppm/°C typical

**Factory calibrated** for all input ranges. Input set up for 4-20mA by default (simple header adjustment necessary for voltage input)

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output | Comms |
|---|---|---|---|---|---|
| TEX | PRC | HV | | | |
| | PRC= Process input (0/4-20mA, 0-2/10V) | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | [ ]= None (default)<br>R2= 2x relays<br>R4= 4x relays | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V | [ ]= None (default)<br>S2R= 1x RS232 (RJ11)<br>S4S= 1x RS485 (screw) |

# LD-PRC

## Process Controller (0/4–20mA or 0–2/10V)


This no-fuss process indicator is ideal for a wide variety of applications. One key feature is its simple (key-in) calibration procedure, which removes the need for an input signal during calibration.

### At a glance:

- Current (0/4-20mA) or voltage (0-2/10V) input
- Input signal averaging
- Large, easy to read display
- Simple, intuitive interface with scrolling text prompts
- Easy to scale using high and low display values
- Security PIN protected calibration and setpoint access
- Selectable decimal point position and rounding

### Specifications

**Input signal** Current (0/4–20mA) or Voltage (0–2/10V)

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 1 x 4 digit (20mm), 7 segment alphanumeric LED. IP65 dust/splash proof. 5 buttons, 4 setpoint indicator LED's.

**Panel mount case**, 48H x 96W x 120D (mm)

**Relay outputs** (optional) 2 or 4 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Excitation** 24V DC (50mA max)

**Sampling rate** 10Hz

**Resolution** 16 bit

**Accuracy** 0.05% of reading

**Temperature drift** 50ppm/°C typical

**Factory calibrated** for all input ranges. Input set up for 4-20mA by default (simple header adjustment necessary for voltage input)

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output |
|---|---|---|---|---|
| LD | PRC | HV | | |
| | PRC= Process input | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | [ ]= None (default)<br>R2= 2x relays<br>R4= 4x relays | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V |

# TEX-BAR

## Bar Graph Process Controller (0/4–20mA or 0–2/10V)


This controller is ideal for a variety of applications where instant, visual indication of the process variable is required. It features a front panel bar graph display, making it particularly suited to level measurement or rate movement indication.

At a glance:

- Current (0/4-20mA) or voltage (0-2/10V) input
- Input signal averaging
- 0-100% bar graph for instant, visual indication
- Simple, intuitive interface with scrolling text prompts
- Factory precalibrated. Key-in recalibration (no input signal needed)
- Security PIN protected calibration and setpoint access
- Selectable decimal point position and rounding

### Specifications

**Input signal** Current (0/4–20mA) or Voltage (0–2/10V)

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 1 x 5 digit (8mm), 7 segment alphanumeric LED. IP65 dust/splash proof. 3 buttons, 6 setpoint indicator LED's. 0-100% bar graph.

**Panel mount case**, 96H x 48W x 120D (mm)

**Relay outputs** (optional) 2 or 4 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Serial port** (optional) 1 x isolated RS232 or RS485

**Excitation** 24V DC (50mA max)

**Sampling rate** 10Hz

**Resolution** 16 bit

**Accuracy** 0.05% of reading

**Temperature drift** 50ppm/°C typical

**Factory calibrated** for all input ranges. Input set up for 4-20mA by default (simple header adjustment necessary for voltage input)

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output | Comms |
|---|---|---|---|---|---|
| TEX | BAR | HV | | | |
| | BAR= Bar graph with process input (0/4-20mA, 0-2/10V) | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | [ ]= None (default)<br>R2= 2x relays<br>R4= 4x relays | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V | [ ]= None (default)<br>S2R= 1x RS232 (RJ11)<br>S4S= 1x RS485 (screw) |

# SC-WEI

## Loadcell Batching Controller
## (4/6 Wire Strain Gauge, 1–5mV/V)

This popular weighing/load cell meter and controller is designed to accept standard 4-6 wire bridge type load cell inputs directly, and features a built in 2 x 8-digit LCD display for simple operator interface.

It includes advanced batching features and is ideal for filling and emptying applications.

At a glance:

- 4-wire or 6-wire strain gauge, 1-5mV/V
- Signal conditioning
- Dual relay outputs
- Optional advanced batching functions for filling/emptying applications
- Customisable display, front panel button and rear input pins
- Gross/batch weight
- Zero offset
- Automatic zero maintenance
- Input signal averaging

### Specifications

**Input signal** 4-wire or 6-wire strain gauge, 1–5mV/V

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 2 x 8 digit (8mm), alphanumeric LCD

**35mm DIN rail mount case**, 101H x 45W x 120D (mm), 5 front panel buttons. Front panel serial connector (disabled for non-serial models)

**Relay outputs** 2 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Serial port** (optional) 1 x isolated RS232 or RS485

**Excitation** 5V DC, supplied by controller (powers up to 8 x 350Ω loadcells)

**Sampling rate** up to 50Hz

**Resolution** 18 bit

**Accuracy** 0.005% of reading

**Temperature drift** 3ppm/°C typical

**Factory calibrated** and set up for 0–10,000 counts (2mV/V sensor gain at full scale). Simple recalibration using auto (zero and span values), mV/V or zero offset.

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output | Comms |
|---|---|---|---|---|---|
| SC | WEI | HV | R2 | | |
| | WEI= Load cell input | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | R2= 2x relays (default) | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V | [ ]= Not connected (default)<br>S2S= 1x RS232<br>S4S= 1x RS485 |

# PRO-WEI100

## Loadcell Batching Controller (4/6 Wire Strain Gauge, 1–5mV/V)


This intelligent, fully featured load cell meter and controller has an advanced batching system that is designed to suit a variety of industrial weighing requirements.

It can be configured for either filling or emptying applications, and maintains the gross weight in the background while simultaneously monitoring and controlling the batch weight.

### At a glance:

- 4-wire or 6-wire strain gauge, 1-5mV/V
- Optional advanced batching functions for filling/ emptying applications
- Customisable front panel button and rear input pins
- Gross/batch weight measurement
- Zero offset
- Automatic zero maintenance
- Signal averaging

### Specifications

**Input signal** 4-wire or 6-wire strain gauge, 1–5mV/V

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 1 x 6 digit (13mm), 14 segment alphanumeric LED. IP65 dust/splash proof. 5 buttons, 4 setpoint indicator LED's + 1 NET indicator LED.

**Panel mount case**, 48H x 96W x 120D (mm)

**Relay outputs** (optional) 2 or 4 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Serial port** (optional) 1 x isolated RS232 or RS485

**Excitation** 5V DC, supplied by controller (powers up to 8 x 350Ω loadcells)

**Sampling rate** up to 50Hz

**Resolution** 18 bit

**Accuracy** 0.005% of reading

**Temperature drift** 3ppm/°C typical

**Factory calibrated** and set up for 0–10,000 counts (2mV/V sensor gain at full scale). Simple recalibration using auto (zero and span values), mV/V or zero offset.

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output | Comms |
|---|---|---|---|---|---|
| PRO | WEI100 | HV | | | |
| | WEI100= Load cell input | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | [ ]= None (default)<br>R2= 2x relays<br>R4= 4x relays | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V | [ ]= None (default)<br>S2R= 1x RS232 (RJ11)<br>S4S= 1x RS485 (screw) |

# SC-RTD

## RTD Controller
## (RTD PT100/PT1000, 385/392/120/Cn10)

This popular general purpose RTD temperature controller is ideal for a variety of temperature applications requiring high levels of precision and resolution.

It can be set to read °C or °F, and features a built in LCD dual display for simple operator interface.

At a glance:

- 2-wire, 3-wire or 4-wire RTD input
- RTD 385/392/120/Cn10 probes
- Dual relay outputs
- Choice of °C or °F, plus choose whether or not to display units
- Input signal averaging
- Suits a variety of applications requiring high precision and resolution
- Factory precalibrated for 385 RTD input
- Dual display rows
- Simple, intuitive interface with scrolling text prompts
- Security PIN protected setup and setpoint access

### Specifications

**Sensor types** RTD PT100/PT1000 (385/392/120/Cn10), 2/3/4-wire

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 2 x 8 digit (8mm), alphanumeric LCD

**35mm DIN rail mount case**, 101H x 45W x 120D (mm), 5 front panel buttons. Front panel serial connector (disabled for non-serial models)

**Relay outputs** 2 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Serial port** (optional) 1 x isolated RS232 or RS485

**Temperature units** °C or °F

**Sampling rate** 2.5Hz

**Resolution** 16 bit

**Accuracy** 0.05% of reading

**Temperature drift** 50ppm/°C typical

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output | Comms |
|---|---|---|---|---|---|
| SC | RTD | HV | R2 | | |
| | RTD= RTD input | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | R2= 2x relays (default) | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V | [ ]= Not connected (default)<br>S2S= 1x RS232<br>S4S= 1x RS485 |

# PRO-RTD

## Quad RTD Controller
## (4 x RTD PT100, 385/392/Cn10)


This advanced quad channel RTD controller is ideal for numerous industrial temperature applications. One of the key features of this instrument is its ability to average the inputs across 2, 3 or 4 temperature channels, and use this averaged value for a display source or for setpoint activation.

At a glance:

- 4 x RTD PT100Ω (385/392/Cn10)
- Channel averaging across 2, 3 or 4 input channels
- Signal averaging for individual channels
- Customisable display
- Choice of °C or °F
- Optional data logging available

### Specifications

**Sensor input** 4 x RTD PT100 (385/392/Cn10), 3-wire

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 1 x 6 digit (13mm), 14 segment alphanumeric LED. IP65 dust/splash proof. 5 buttons, 6 setpoint indicator LED's.

**Panel mount case**, 48H x 96W x 120D (mm)

**Relay outputs** (optional) 2 or 4 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Serial port** (optional) 1 x isolated RS232 or RS485

**Data logging** (optional) 3,328KB (serial port required)

**Temperature units** °C or °F

**Processing rate** 5Hz

**Excitation** 160µA

**Resolution** 0.1°C

**Span drift** ±30ppm/°C full scale max

**Non-linearity** 1°C max

**Input noise** 160nVp-p typical (at 1Hz output rate)

**Noise rejection** 50/60Hz

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output | Comms | Data Logging |
|---|---|---|---|---|---|---|
| PRO | TC | HV | | | | |
| | TC= TC input | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | [ ]= None (default)<br>R2= 2x relays<br>R4= 4x relays | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V | [ ]= None (default)<br>S2R= 1x RS232 (RJ11)<br>S4S= 1x RS485 (screw) | [ ]= None (default)<br>D= 3,328KB |

# LD-RTD

## RTD Controller
## (RTD PT100/PT1000, 385/392/120/Cn10)


This no-fuss, high accuracy controller has been designed specifically for RTD probes, and is ideal for a variety of indication and alarm control temperature applications.

### At a glance:

- 2-wire, 3-wire or 4-wire RTD sensor (PT100, PT1000)
- Input signal averaging
- Large, easy to read display
- Simple, intuitive interface with scrolling text prompts
- Security PIN protected calibration and setpoint access
- Selectable decimal point position and rounding

### Specifications

**Sensor types** RTD PT100/PT1000 (385/392/120/Cn10), 2/3/4-wire

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 1 x 4 digit (20mm), 7 segment alphanumeric LED. IP65 dust/splash proof. 5 buttons, 4 setpoint indicator LED's.

**Panel mount case**, 48H x 96W x 120D (mm)

**Relay outputs** (optional) 2 or 4 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Temperature units** °C or °F

**Sampling rate** 2.5Hz

**Resolution** 16 bit

**Accuracy** 0.05% of reading

**Temperature drift** 50ppm/°C typical

**Security** Input and setpoint setups are independently accessible and PIN protected

### Order Code: LD-RTD

| | |
|---|---|
| -HV | 85–265V AC / 95–370V DC |
| -LV | 15–48V AC / 10–72V DC |

### Options

| | |
|---|---|
| -R2 | 2 x relay outputs |
| -R4 | 4 x relay outputs |
| -A | 1 x mA/V analogue output |

E.g. Order LD-RTD-LV, LD-RTD-HV-R4-A

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output |
|---|---|---|---|---|
| LD | RTD | HV | | |
| | RTD= RTD input | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | [ ]= None (default)<br>R2= 2x relays<br>R4= 4x relays | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V |

# SC-TC

## Thermocouple Controller
## (Thermocouple B, J, K, N, R, S or T Type)

This temperature controller accepts input from a wide range of thermocouple sensor types, and is ideal for a variety of temperature applications requiring high levels of precision and resolution.

It can be set to read °C or °F, and features a built in LCD dual display for simple operator interface.

At a glance:

- Universal thermocouple input (B, J, K, N, R, S or T type thermocouple sensors)
- Dual relay outputs
- Choice of °C or °F, plus choose whether or not to display units
- Input signal averaging
- Suits a variety of applications requiring high precision and resolution
- Factory precalibrated for K-type input
- Dual display rows
- Simple, intuitive interface with scrolling text prompts
- Security PIN protected setup and setpoint access

### Specifications

**Sensor types** Thermocouple (B, J, K, N, R, S or T type)

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 2 x 8 digit (8mm), alphanumeric LCD

**35mm DIN rail mount case**, 101H x 45W x 120D (mm), 5 front panel buttons. Front panel serial connector (disabled for non-serial models)

**Relay outputs** 2 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Serial port** (optional) 1 x isolated RS232 or RS485

**Temperature units** °C or °F

**Sampling rate** 2.5Hz

**Resolution** 16 bit

**Accuracy** 0.05% of reading

**Temperature drift** 50ppm/°C typical

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output | Comms |
|---|---|---|---|---|---|
| SC | TC | HV | R2 | | |
| | TC= TC input | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | R2= 2x relays (default) | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V | [ ]= Not connected (default)<br>S2S= 1x RS232<br>S4S= 1x RS485 |

# PRO-TC

## Quad Thermocouple Controller (4 x Thermocouple J, K, N, R or T Type)


This advanced quad channel thermocouple controller is ideal for numerous industrial temperature applications.

One of the key features of this instrument is its ability to average the inputs across 2, 3 or 4 temperature channels, and use this averaged value for a display source or for setpoint activation.

### At a glance:

- 4 x Thermocouple (J, K, N, R or T type)
- Channel averaging across 2, 3 or 4 input channels
- Signal averaging for individual channels
- Customisable display
- Choice of °C or °F
- Optional data logging available

### Specifications

**Sensor input** 4 x Thermocouple (J, K, N, R or T type)

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 1 x 6 digit (13mm), 14 segment alphanumeric LED. IP65 dust/splash proof. 5 buttons, 6 setpoint indicator LED's.

**Panel mount case**, 48H x 96W x 120D (mm)

**Relay outputs** (optional) 2 or 4 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Serial port** (optional) 1 x isolated RS232 or RS485

**Data logging** (optional) 3,328KB (serial port required)

**Temperature units** °C or °F

**Processing rate** 10Hz

**Resolution** 0.1°C

**Zero drift** ±40nV/°C

**Span drift** ±20ppm/°C full scale max

**Non-linearity** 1°C max

**Input noise** 160nVp-p typical (at 1Hz output rate)

**Noise rejection** 50/60Hz

**Output rate** fixed 10Hz averaged per channel

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output | Comms | Data Logging |
|---|---|---|---|---|---|---|
| PRO | TC | HV | | | | |
| | TC= TC input | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | [ ]= None (default)<br>R2= 2x relays<br>R4= 4x relays | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V | [ ]= None (default)<br>S2R= 1x RS232 (RJ11)<br>S4S= 1x RS485 (screw) | [ ]= None (default)<br>D= 3,328KB |

# LD-TC

## Thermocouple Controller (B, J, K, N, R, S or T Type)


This universal thermocouple temperature controller is suitable for all common thermocouple probe types, and is ideal for indication and alarm control temperature applications.

### At a glance:

- Universal thermocouple input
- Input signal averaging
- B-type, J-type, K-type, N-type, R-type, S-type or T-type TC sensors
- Large, easy to read display
- Simple, intuitive interface with scrolling text prompts
- Factory calibrated for K type thermocouple
- Security PIN protected calibration and setpoint access
- Selectable decimal point position and rounding

### Specifications

**Sensor types** Thermocouple (B, J, K, N, R, S or T type)

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 1 x 4 digit (20mm), 7 segment alphanumeric LED. IP65 dust/splash proof. 5 buttons, 4 setpoint indicator LED's.

**Panel mount case**, 48H x 96W x 120D (mm)

**Relay outputs** (optional) 2 or 4 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Temperature units** °C or °F

**Sampling rate** 2.5Hz

**Resolution** 16 bit

**Accuracy** 0.05% of reading

**Temperature drift** 50ppm/°C typical

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output |
|---|---|---|---|---|
| LD | TC | HV | | |
| | TC= TC input | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | [ ]= None (default)<br>R2= 2x relays<br>R4= 4x relays | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V |

# PRO-FLO200

## Flow Batching Totalizer (NPN, PNP, TTL, Namur, Tacho, Closed Contact)

This dual display flow batching totalizer accepts a variety of flow sensor inputs, and has a variety of advanced features, including: flow batching, volumetric pulse, in flight adjustment, setpoint latching, startup inhibit and user programmable input functions.

### At a glance:

- NPN, PNP, TTL, namur, tacho or closed contact sensors
- Single totalizer
- Customisable display source, front panel button and rear input pins
- Advanced setpoint features, including setpoint trailing, volumetric pulse, latching, startup inhibit and inflight adjustment
- Batching feature
- Calibrate using direct K factor entry or pulses/unit method
- Signal averaging on the rate
- Dual display for simultaneous viewing of total and rate

### Specifications

**Sensor types** NPN, PNP, TTL, namur, tacho or closed contact

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 2 x 6 digit (10mm), 14 segment alphanumeric LED. IP65 dust/splash proof. 5 buttons, 6 setpoint indicator LED's.

**Panel mount case**, 48H x 96W x 120D (mm)

**Relay outputs** (optional) 2 or 4 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Serial port** (optional) 1 x isolated RS232 or RS485

**K factor ranges** 0.1–99.9999, 0.1–999.999 or 0.1–9999.99

**Flow rate** /sec, /min or /hour

**Flow rate multiplier** x0.0001 to x1000

**Totalizer resolution** x1, $x10^3$ or $x10^6$

**Excitation** 24V DC (50mA max)

**Noise filtering** 0.2kHz, 2kHz, 20kHz or off

**Frequency** 2Hz to 10kHz

**Accuracy** 0.005% of reading

**Temperature drift** 2ppm/°C typical

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output | Comms |
|---|---|---|---|---|---|
| PRO | FLO200 | HV | | | |
| | FLO200= Flow rate input, dual display | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | [ ]= None (default)<br>R2= 2x relays<br>R4= 4x relays | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V | [ ]= None (default)<br>S2R= 1x RS232 (RJ11)<br>S4S= 1x RS485 (screw) |

# TEX-FLO10

## Flow Rate Dual Totalizer (NPN, PNP, TTL, Namur, Tacho, Closed Contact)


This dual totalizer flow rate controller accepts a wide range of industrial pulse and frequency flow sensor types, and is ideal for a variety of flow applications including water treatment, irrigation and level control systems.

### At a glance:

- Signal averaging
- Dual totalizers with low-flow cutoff and rollover functions
- Volumetric pulse on Total 2 with adjustable pulse width
- Batching feature
- Simple, intuitive interface with scrolling text prompts
- Security PIN protected setup

### Specifications

**Sensor types** NPN, PNP, TTL, namur, tacho or closed contact

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 1 x 6 digit (13mm), 14 segment alphanumeric LED. IP65 dust/splash proof. 5 buttons, 6 setpoint indicator LED's.

**Panel mount case**, 48H x 96W x 120D (mm)

**Relay outputs** (optional) 2 or 4 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Serial port** (optional) 1 x isolated RS232 or RS485

**K factor ranges** 0.1–99.9999, 0.1–999.999 or 0.1–9999.99

**Flow rate** /sec, /min or /hour

**Flow resolution** Displays in Litres by default - easy to scale to 1/10/100ml

**Dual totalizers**. Reset via front panel or rear pins. Individually programmable for low flow cutoff and rollover. Volumetric pulse on Total 2.

**Totalizer resolution** x0.1, x1, x10, x100 or x1000 (cubic meters)

**Excitation** 24V DC (50mA max)

**Noise filtering** 0.2kHz, 2kHz, 20kHz or off

**Frequency** 2Hz to 10KHz

**Accuracy** 0.005% of reading

**Temperature** drift 2ppm/°C typical

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output | Comms |
|---|---|---|---|---|---|
| TEX | FLO10 | HV | | | |
| | FLO10= Flow rate input | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | [ ]= None (default)<br>R2= 2x relays<br>R4= 4x relays | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V | [ ]= None (default)<br>S2R= 1x RS232 (RJ11)<br>S4S= 1x RS485 (screw) |

# TEX-TOTAL

## Flow Rate Totalizer (0/4-20mA)


This rate meter and totalizer is ideal for flow rate monitoring of transmitters and sensors with mA output. It features dual totalizers with low flow cut-off and roll over, and input signal averaging to stabilise measurement.

This instrument is front panel programmable, and is easy to scale to suit your desired time and measurement units.

### At a glance:

- Current (0/4-20mA) input
- Input signal averaging
- Selectable time units (sec/min/hr) and flow resolution (0.001-1L)
- Dual totalizers with low-flow cutoff and rollover functions
- Optional volumetric pulse on Total 2 with adjustable pulse width
- Simple, intuitive interface with scrolling text prompts
- Security PIN protected setup and setpoint access

### Specifications

**Input signal** Current (0/4–20mA)

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 1 x 6 digit (13mm), 14 segment alphanumeric LED. IP65 dust/splash proof. 5 buttons, 6 setpoint indicator LED's.

**Panel mount case**, 48H x 96W x 120D (mm)

**Relay outputs** (optional) 2 or 4 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Serial port** (optional) 1 x isolated RS232 or RS485

**Flow rate** /sec, /min or /hour

**Flow resolution** Displays in Litres by default - easy to scale to 1/10/100ml

**Dual totalizers**. Reset via front panel or rear pins. Individually programmable for low flow cutoff and rollover. Volumetric pulse on Total 2.

**Totalizer resolution** x0.1, x1, x10, x100 or x1000 (cubic meters)

**Excitation** 24V DC (50mA max)

**Sampling rate** 10Hz

**Resolution** 16 bit

**Noise rejection** 50/60Hz

**Accuracy** 0.05% of reading

**Temperature drift** 50ppm/°C typical

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output | Comms |
|---|---|---|---|---|---|
| TEX | TOTAL | HV | | | |
| | TOTAL= 0/4–20mA flow rate input | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | [ ]= None (default)<br>R2= 2x relays<br>R4= 4x relays | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V | [ ]= None (default)<br>S2R= 1x RS232 (RJ11)<br>S4S= 1x RS485 (screw) |

# PRO-CTR

## Counter/Rate Batching Controller (Quad [x1, x2, x4], NPN, PNP, TTL)

This advanced controller is ideal for a wide variety of rate monitoring and batching applications. It has a variety of advanced features, including: batching, batch count modification, user programmable input functions, setpoint tracking, setpoint latching and startup inhibit.

At a glance:

- Quadrature (x1, x2, x4), NPN, PNP or TTL sensors (3 x counter inputs available)
- Choice of single/dual display
- Advanced count modes and batching functions
- Signal averaging on the rate
- Simple, intuitive interface with scrolling text prompts
- Customisable front panel button and rear input pins
- Security PIN protected setup

### Specifications

**Sensor types** Quad (x1, x2, x4), NPN, PNP or TTL. 3 x independent hardware counters

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 14 segment alphanumeric LED. Choice of single or dual. IP65 dust/splash proof. 5 buttons, 6 setpoint indicator LED's.
*PRO-CTR100* Single (1 x 6 digit, 13mm)
*PRO-CTR200* Dual (2 x 6 digit, 10mm)

**Panel mount case**, 48H x 96W x 120D (mm)

**Relay outputs** (optional) 2 or 4 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Serial port** (optional) 1 x isolated RS232 or RS485

**Excitation** 24V DC (50mA max) or 5V DC (200mA max)

**Noise filtering** 20kHz or off

### Counter

**Count modes** Quad (x1, x2 or x4), A+B, A–B, A/B independent, Up/Down or C

**Input frequency** 10kHz (Quad x4, A, B), 20kHz (Quad x1, x2), 38kHz (C)

**Sampling rate** 10msec

### Rate

**Input frequency** 20kHz max

**Sampling rate** 100msec

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output | Comms |
|---|---|---|---|---|---|
| PRO | CTR200 | HV | | | |
| | CTR100= Counter/Rate, Single display<br>CTR200= Counter/Rate, Dual display | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | [ ]= None (default)<br>R2= 2x relays<br>R4= 4x relays | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V | [ ]= None (default)<br>S2R= 1x RS232 (RJ11)<br>S4S= 1x RS485 (screw) |

# TEX-CTR10

## Counter/Rate Indicator (NPN, PNP, TTL, Namur, Tacho, Closed Contact)


This simple and affordable counter/rate indicator is compatible with a range of sensors, and is ideal for indicating totalization and monitoring rates.

At a glance:

- NPN, PNP, TTL, namur, tacho or closed contact sensors
- Signal averaging on the rate
- Simple, intuitive interface with scrolling text prompts
- User programmable function button
- Factory precalibrated
- Security PIN protected setup
- Selectable decimal point position and rounding

### Specifications

**Sensor types** NPN, PNP, TTL, namur, tacho or closed contact

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 1 x 6 digit (13mm), 14 segment alphanumeric LED. IP65 dust/splash proof. 5 buttons.

**Panel mount case**, 48H x 96W x 120D (mm)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Serial port** (optional) 1 x isolated RS232 or RS485

**Excitation** 24V DC (50mA max)

**Noise filtering** 0.2kHz, 2kHz, 20kHz or off

**Pulse width** must be > 5µs

**Input frequency**
*Rate* 10kHz max (100kHz in high-speed mode)
*Counter* 100kHz max

**Sampling rate**
*Rate* 100msec
*Counter* 10msec

**Resolution**
*Rate* 0.01Hz (1Hz in high-speed mode)

**Accuracy** 0.005% of reading

**Temperature drift** 2ppm/°C typical

**Security** Input setup is PIN protected

### Ordering Options

| Series | Model | Power Supply | Analogue Output | Comms |
|---|---|---|---|---|
| TEX | CTR10 | HV | | |
| | CTR10= Counter/ Rate input | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V | [ ]= None (default)<br>S2R= 1x RS232 (RJ11)<br>S4S= 1x RS485 (screw) |

# LD-RPM

## Rate Controller (NPN, PNP, TTL, Namur, Tacho, Closed Contact)


This no-fuss panel meter is ideal for general purpose rate indication and alarm control, and suits a variety of motor applications.

### At a glance:

- NPN, PNP, TTL, namur, tacho or closed contact sensor inputs
- Input signal averaging
- Large, easy to read display
- Simple, intuitive interface with scrolling text prompts
- Security PIN protected calibration and setpoint access
- Selectable decimal point position and rounding

### Specifications

**Sensor types** NPN, PNP, TTL, namur, tacho or closed contact

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 1 x 4 digit (20mm), 7 segment alphanumeric LED. IP65 dust/splash proof. 5 buttons, 4 setpoint indicator LED's.

**Panel mount case**, 48H x 96W x 120D (mm)

**Relay outputs** (optional) 2 or 4 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Pulses/revolution** 1–9999

**RPM range** 1–99990RPM (1ppr), 0.1–99990RPM (10ppr)

**Display resolution** 0.1, 1 or 10RPM

**Noise filtering** 0.2, 2, 20kHz or off

**Sampling rate** Nominally 3Hz

**Accuracy** 0.1RPM

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output |
|---|---|---|---|---|
| LD | RPM | HV | | |
| | RPM= RPM input | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | [ ]= None (default)<br>R2= 2x relays<br>R4= 4x relays | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V |

# SC-DEW

## Humidity/Temperature Controller (Wet & Dry Bulbs, RTD 385/392, PT100)

This controller has been designed for wet/dry bulb relative humidity applications. It comes factory precalibrated to suit 385 RTD input, and features dual 4-20mA analogue output and a dual display for temperature and R.H.

At a glance:

- Dual 3-wire RTD input (385/392, PT100). Suits wet/dry bulbs
- Dual display for simultaneous viewing of humidity and temperature
- Dual relay outputs
- Optional dual analogue outputs (4-20mA)
- Simple, intuitive interface with scrolling text prompts
- Factory precalibrated for 385RTD. Two point recalibration (no input signal needed)
- Security PIN protected calibration and setpoint access

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### Specifications

**Sensor input** 1 x wet bulb, 1 x dry bulb. Dual 3-wire RTD (385/392), PT100

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 2 x 8 digit (8mm), alphanumeric LCD

**35mm DIN rail mount case**, 101H x 45W x 120D (mm), 5 front panel buttons. Front panel serial connector (disabled for non-serial models)

**Relay outputs** 2 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** 2 x isolated 16 bit 4–20mA (humidity & temperature)

**Serial port** (optional) 1 x isolated RS232 or RS485

**Excitation** 24V DC (50mA max)

**Sampling rate** 2.5Hz

**Resolution** 0.025% full scale, 16 bit

**Accuracy** 0.05% of reading

**Temperature drift** 50ppm/°C typical

**Temperature units** °C or °F

**Precalibrated** for 385 RTD, 0–100°C. Simple recalibration (if needed) using high and low display values

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output | Comms |
|---|---|---|---|---|---|
| SC | DEW | HV | R2 | ADI | |
| | DEW= Humidity input (2x RTD) | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | R2= 2x relays (default) | ADI= 2x 4–20mA (default) | [ ]= Not connected (default)<br>S2S= 1x RS232<br>S4S= 1x RS485 |

# TEX-DEW200

## Humidity/Temperature Controller (Wet & Dry Bulbs, RTD 385/392, PT100)

This controller has been designed for wet/dry bulb relative humidity applications. It comes factory pre-calibrated to suit 385 RTD input, and features dual 4-20mA analogue output and a dual display for temperature and R.H.

### At a glance:

- Dual 3-wire RTD input (385/392, PT100). Suits wet/dry bulbs
- Dual display for simultaneous viewing of humidity and temperature
- Dual analogue output (4-20mA)
- Simple, intuitive interface with scrolling text prompts
- Factory calibrated for 385RTD – simple recalibration using high and low input signals
- Security PIN protected calibration and setpoint access

### Specifications

**Sensor input** 1 x wet bulb, 1 x dry bulb. Dual 3-wire RTD (385/392), PT100

**Power supply** (select one)
*HV* 85–265V AC / 95–370V DC
*LV* 15–48V AC / 10–72V DC

**Display** 2 x 6 digit (10mm), 14 segment alphanumeric LED. IP65 dust/splash proof. 5 buttons, 6 setpoint indicator LED's.

**Panel mount case**, 48H x 96W x 120D (mm)

**Relay outputs** (optional) 2 or 4 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** 2 x isolated 16 bit 4–20mA (humidity & temperature)

**Serial port** (optional) 1 x isolated RS232 or RS485

**Excitation** 24V DC (50mA max)

**Sampling rate** 2.5Hz

**Resolution** 0.025% full scale, 16 bit

**Accuracy** 0.05% of reading

**Temperature drift** 50ppm/°C typical

**Temperature units** °C or °F

**Precalibrated** for 385 RTD, 0–100°C. Simple recalibration (if needed) using high and low display values

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output | Comms |
|---|---|---|---|---|---|
| TEX | DEW200 | HV | | ADI | |
| | DEW200= Humidity input (2x RTD) | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | [ ]= None (default)<br>R2= 2x relays<br>R4= 4x relays | ADI= 2x 4–20mA (default) | [ ]= None (default)<br>S2R= 1x RS232 (RJ11)<br>S4S= 1x RS485 (screw) |

# SC-UAC

## Universal AC Controller (0–5A AC or 0–300V AC)

This universal AC controller is ideal for a variety of applications, including: power current measurement, noise current/voltage measurement or power factor measurement. It can be easily scaled to your preferred CT ratio, and features a built in LCD dual display for simple operator interface.

### At a glance:

- Universal AC input (0-5A or 0-300V AC)
- Dual relay outputs
- Ideal for a diverse range of applications, including power current measurement, noise current/voltage measurement and speed measurement from an AC tacho generator
- Easy to scale to your preferred CT ratio
- Key-in calibration (no input signal needed)
- Dual display rows with customisable display sources
- Simple, intuitive interface with scrolling text prompts
- Security PIN protected setup and setpoint access

### Specifications

**Input signal** Current (0–5A AC) or Voltage (0–300V AC)

**Power supply** (select one)

| | |
|---|---|
| *HV* | 85–265V AC / 95–370V DC |
| *LV* | 15–48V AC / 10–72V DC |

**Display** 2 x 8 digit (8mm), alphanumeric LCD

**Relay outputs** 2 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Serial port** (optional) 1 x isolated RS232 or RS485

**Accuracy**

| | |
|---|---|
| *True RMS current* | ±0.05% fs |
| *True RMS voltage* | ±0.1% fs from 10–100% fs |
| *Power* | ±0.2% fs |
| *Power factor* | ±0.05 |
| *Frequency* | ±0.01Hz |

**35mm DIN rail mount case**, 101H x 45W x 120D (mm), 5 front panel buttons. Front panel serial connector (disabled for non-serial models)

**Temperature drift** 60ppm/°C typical

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output | Comms |
|---|---|---|---|---|---|
| SC | UAC | HV | R2 | | |
| | UAC= Universal AC input | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | R2= 2x relays (default) | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V | [ ]= Not connected (default)<br>S2S= 1x RS232<br>S4S= 1x RS485 |

# LD-UAC

## Universal AC Controller (0–5A AC or 0–300V AC)


This no-fuss, universal AC indicator and alarm controller is ideal for monitoring and controlling input power, voltage, current or frequency.

### At a glance:

- Universal AC input – current (0-5A AC) or voltage (0-300V AC)
- Input signal averaging
- Large, easy to read display
- Simple, intuitive interface with text prompts
- Factory precalibrated. Key-in recalibration (no input signal needed)
- Security PIN protected calibration and setpoint access
- Selectable decimal point position and rounding

### Specifications

**Input signal** Current (0–5A AC) or Voltage (0–300V AC)

**Power supply** (select one)

| | |
|---|---|
| *HV* | 85–265V AC / 95–370V DC |
| *LV* | 15–48V AC / 10–72V DC |

**Display** 1 x 4 digit (20mm), 7 segment alphanumeric LED. IP65 dust/splash proof. 5 buttons, 4 setpoint indicator LED's.

**Panel mount case**, 48H x 96W x 120D (mm)

**Relay outputs** (optional) 2 or 4 x 5A form A (3A 240V AC max or 3A 30V DC max)

**Analogue output** (optional) 1 x isolated 16 bit 4–20mA/0–10V

**Accuracy**

| | |
|---|---|
| *True RMS current* | 0.05% |
| *True RMS voltage* | 0.1% |
| *Power* | 0.1% |
| *Frequency* | 0.01Hz |

**Temperature drift** 50ppm/°C typical

**Security** Input and setpoint setups are independently accessible and PIN protected

### Ordering Options

| Series | Model | Power Supply | Relay Output | Analogue Output |
|---|---|---|---|---|
| LD | UAC | HV | | |
| | UAC=Universal AC input | HV= 85–265V AC / 95–370V DC<br>LV= 15–48V AC / 10–72V DC | [ ]= None (default)<br>R2= 2x relays<br>R4= 4x relays | [ ]= None (default)<br>A= 1x 4–20mA / 0–10V |

# Define ToolBox

Smart, simple, USB setup of a range of Define Instruments products

Define ToolBox is a no-fuss, multi-purpose configuration tool that enables computer programming of a range of Define Instruments products.

This FREE software offers an easy interface for connecting to your compatible product, with a range of smart, simple configuration options.

## Simple & flexible Input/Output setup

Define ToolBox offers a range of flexible features – with easy selectable defaults for the novice user, and advanced options for the expert:

- **Selectable pre-calibrated ranges**, for easy setup and scaling without a calibrator
- **Automatic or manual output scaling**
- **Linearization tables** for complex scaling – perfect for unusual tank shapes

## Versatile setpoint modes

For compatible products with Setpoint features, ToolBox offers a wide range of setpoint modes.

Whether you need simple **Alarms** and **On/Off Controls**, or application-specific **Dual-Setpoint Modes** for heating and cooling equipment or pumps, ToolBox has a simple, selectable option to suit.

## Help sidebar

ToolBox tracks your progress as you set up your unit, displaying relevant information, wiring diagrams, and examples of use.

**Not sure what a feature is for or how to configure it?** Simply click on the control button, text box or label, and all of the information that you need will appear in the panel on the right.

## Import or export your settings

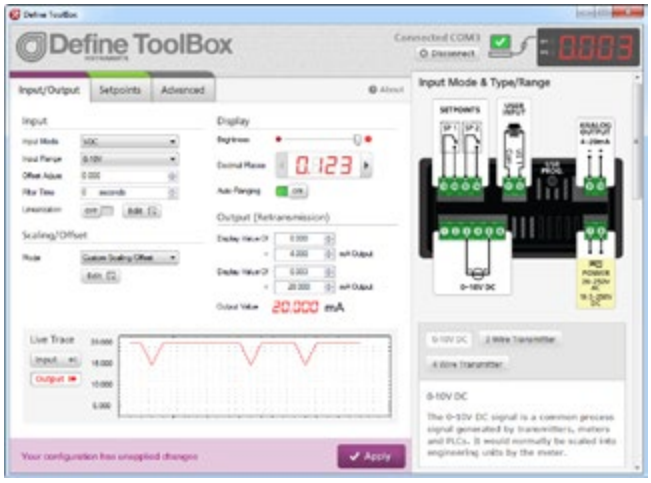
It's now easy to back up and restore your setup, using ToolBox's easy Import/Export feature. Use it to:

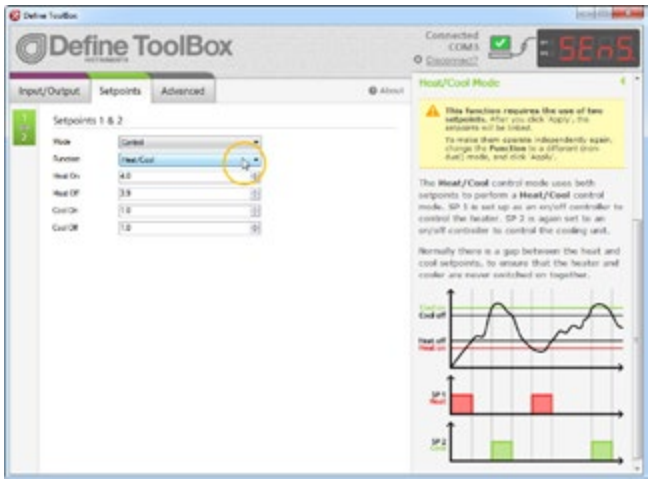
- **Clone a configuration**
- **Save a restore point** before making changes
- **Email setup files** for support and troubleshooting

## Configuration certificate

The Configuration Certificate is a formatted summary of all settings and wiring diagrams for the connected unit, presented in **PDF format** for easy printing, saving and sharing.

Designed for distributors, the certificate is **ideal for dispatch with a pre-configured product**, and offers customisable fields for support information.




Compatible with

**Merlin (& GF40)**, see p4

**Javelin**, see p16

**TM Transmitters**, see p18–21

**Twin Link**, see p10

Requires

**Bridge Key**, see p34

Download it FREE from

defineinstruments.com/toolbox

# Define WorkBench

Simple, powerful, flexible programming of your ZEN-16

Define WorkBench is our brand new, fully featured configuration and data viewing program for the ZEN-16 Multi-Channel Control Station.

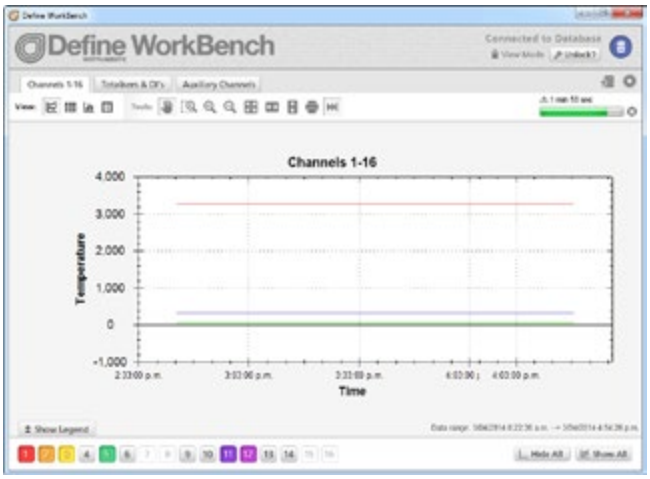
Packaged in a user-friendly, uncluttered design, WorkBench offers a simple interface for setting up and scaling input and output channels, and configuring digital inputs, setpoints and totalisers.

A wide range of options are available to suit an endless range of possbile applications.


## Advanced visualisation

With its built in Data Viewer, WorkBench facilitates retrieval of your data log, and enables simple, effective visualisation of logged data.

View your data in different types of graphs, show/hide channels, and rename channels, titles and axes for easy viewing.




## Helpful interface

WorkBench has been designed to balance powerful, flexible features with a uniquely simple and user-friendly interface.

Our dynamic help panel tracks your setup progress, and unobtrusively presents wiring diagrams, explanations and other helpful information.

## Secure

WorkBench now enables you to lock your ZEN-16 to prevent unauthorised changes to the configuration.

Also available is a password-protected view-only mode that allows access to the Data Viewer, but no changes to the configuration.

## Plugin options

Install optional plugins into WorkBench to enable advanced features:

- **Modem Plugin** enables wireless connectivity with your ZEN-16, including remote access, SMS/email alerts, and scheduled data log emails. (Requires supplementary hardware).
- **Remote I/O Plugin** allows a ZEN-16 to mirror the analogue and/or digital inputs and outputs of a second field ZEN-16 device at a remote location, via Cloud/LAN link (optional Ethernet port required) or wired RS485 link.

### Compatible with

**ZEN-16**, see p6

### Requires

**Bridge Key**, see p34 (included with ZEN-16)

### Download it FREE from

defineinstruments.com/workbench

## Warranty

Define Instruments warrants that it's products are free from defects in material and workmanship under normal use and service for a period of one year from the date of shipment.

Define Instruments' obligations under this warranty are limited to replacement or repair, at its option, at it's factory, of any of the products which are returned to Define Instruments' facility (within the applicable period after shipment), transportation charges prepaid, and which are, after examination, disclosed to the satisfaction of Define Instruments to be defective.

Warranty does not apply to any equipment which has been repaired or altered, (except by Define Instruments), or which has been subjected to misuse, negligence or accident. In no case shall Define Instruments' liability exceed the original purchase price. The aforementioned provisions do not extend the original warranty period of any product which has been either repaired or replaced by Define Instruments.

## User's Responsibility

We are pleased to offer suggestions on the use of our various products, either by way of printed matter or through direct contact with our sales/application engineering staff.

However, since we have no control over the use of our products once they are shipped, no warranty (whether of merchantability, fitness for purpose or otherwise) is made beyond repair, replacement, or refund of purchase price at the sole discretion of Define Instruments.

The user shall determine the suitability of the product for the intended application before using, and assume all risk and liability whatsoever in connection therewith, regardless of our suggestions or statements as to application or construction.

In no event shall Define Instruments' liability, in law or otherwise, be in excess of the purchase price of the product. Define Instruments cannot assume responsibility for any circuitry described. No circuit patent or software licenses are implied. Define Instruments reserves the right to change circuitry, operating software, specifications, and prices without notice at any time.

## About Define Instruments

Founded in 1990, Define Instruments is an industrial instrumentation company based in New Zealand with a branch office in Johannesburg, South Africa. It designs and manufactures innovative products for process indication and control, data logging, signal conditioning, wireless connectivity and SCADA systems.

The company is ISO 9001 quality certified and currently sells to UK, USA, Europe, AUS, NZ and South Africa.

DefineSA

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defineinstruments

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Define Instruments is a ISO 9001 certified company.



CAT-SA-2015-1E-150429