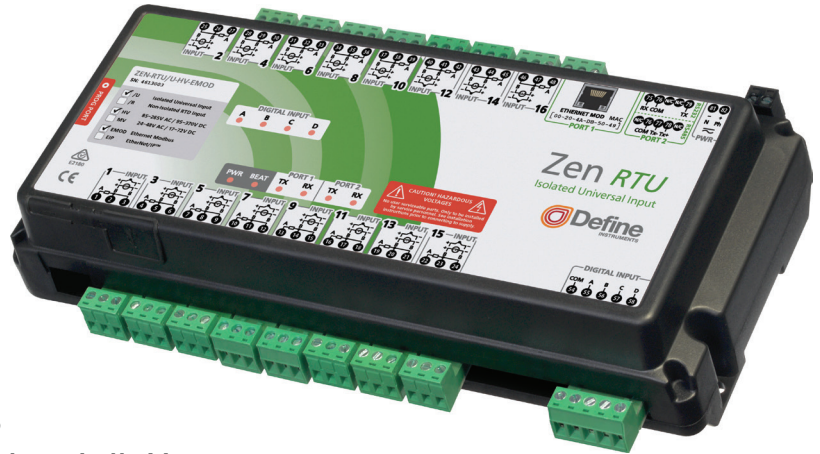


Get 16 signals into your PLC or SCADA system

If you need to collate multiple signal input types and route them to your PLC or SCADA system, choose the Zen RTU. This exceptionally flexible and powerful monitoring and control station is the last word in RTU technology.



Perfect for SCADAs and PLCs, as well as Logix Controllers and FactoryTalk View

The Zen RTU is ideal for applications which require collation of multiple signals routed directly to a master console for connecting straight to SCADA systems and PLCs.

It has four digital inputs and an RS485 Modbus/RTU port. Additionally, it has an Ethernet port that can be selected as Modbus TCP for connection to Logix Controllers, FactoryTalk View etc.

The Zen RTU is available with either isolated or non-isolated inputs, with the non-isolated option offering a low-cost solution for RTD applications:

Zen RTU/U Universal Isolated Inputs

Enjoy the flexibility of universal inputs
The Zen RTU/U accepts TC, RTD, mA, mV, V, Frequency and Counter. This means you can reduce the number of separate instruments you need for your application, keeping things simple for maintenance and troubleshooting.

Cleans up noise

Each of the Zen RTU/U channels is isolated so there's zero cross-talk.

Zen RTU/R RTD Non-isolated Inputs

Why pay more for channel isolation you don't need?

The Zen RTU/R is designed specifically for applications with temperature signals. It has non-isolated inputs specifically for PT100 / PT1000 RTD signals.



No calibration!

Simple setup in just minutes with WorkBench.

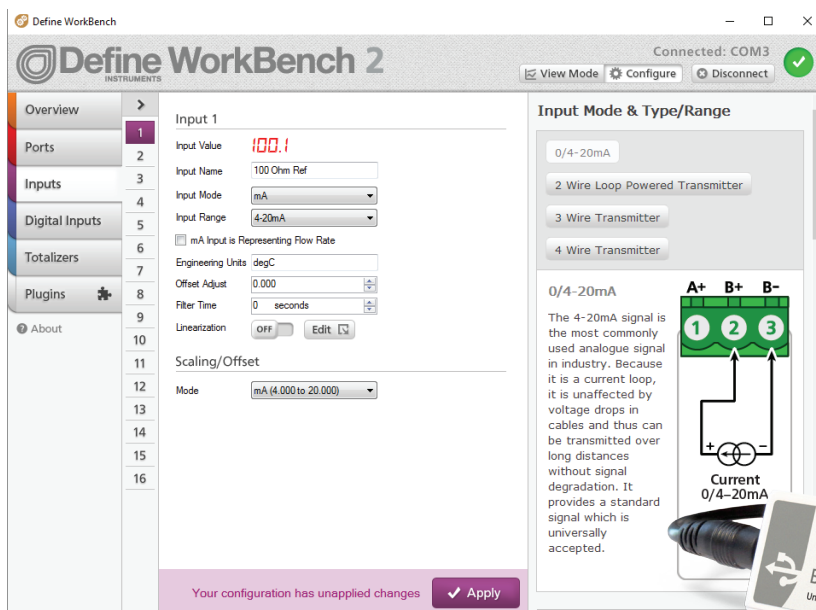
With a range of smart features to simplify setup of your input channels, digital inputs and totalizers, as well as presets for easy scaling (with no calibration required!), WorkBench offers an intuitive and simple setup experience for your Zen RTU.

Dynamic Help Panel

The dynamic help sidebar tracks your setup progress and unobtrusively presents wiring diagrams, explanations, and examples of use.

Feature Packed

Simulation Mode enables simulated configuration of any Zen product without a physical connection - ideal for product demos and off site support. WorkBench also has the ability to *Import/Export Configuration Settings*, and generate a *PDF Configuration Certificate* - perfect for dispatch with a pre-configured product.



Bridge Key Compatible

The Zen RTU utilizes our universal Bridge Key for PC connection, so if you've already purchased a USB programmable Define Instruments product, your USB programmer will work for both.



Ordering Codes for Zen RTU

ZEN-RTU/U	16x Universal Isolated Inputs , 4 digital inputs 2 comm ports (Port 1= Selectable, Port 2= RS485 / RS232)
ZEN-RTU/R	16x RTD Non-isolated Inputs , 4 digital inputs 2 comm ports (Port 1= Selectable, Port 2= RS485 / RS232)
Power Supply:	
-HV	85–265V AC / 95–370V DC
-MV	24–48V AC / 17–72V DC
Port 1:	
	No Port 1
-EMOD	Ethernet Modbus

Accessories (Sold Separately)

BRIDGE-KEY	USB Bridge Key, required for PC programming using our free WorkBench software.
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General specifications

Power

Power supply

HV= 85–265V AC / 95–370V DC, OR
MV= 24–48V AC / 17–72V DC

Supply frequency 50/60Hz, 10VA

Mains isolation 250V AC

Mains isolation test voltage to all inputs and outputs 3000V AC 50Hz for 1min

General specifications

Linearity & repeatability $<\pm 0.1\%$ FSO

Channel separation 125db minimum

RF immunity $<\pm 1\%$ effect FSO typical

Noise immunity (CMRR) 160dB tested at 300V RMS 50Hz

Permanent memory (E²ROM) 100,000 writes per input parameter

Analog input ZEN-RTU/U

16x Isolated Universal Inputs

See overleaf for input type specifications

Input isolation 2,500V AC 1 minute between all input channels

Isolation test voltage 1000V DC for 1min (Analog input to analog input)

Input resolution 16 bits

Accurate to $<\pm 0.1\%$ FSO (unless otherwise stated for individual input type)

Analog input ZEN-RTU/R

16x Non-Isolated RTD Inputs

See overleaf for specifications

Input isolation Not isolated

Input resolution 16 bits

Digital input

4 x Opto isolated inputs with LED indication of each input

Functions Status, up counter, up/down counter with direction, debounced counter, frequency, gated frequency

Counter register output 32 bit

Frequency range 0–10,000Hz

Input voltage 5–30V DC

Threshold 4.6V typical

Debounce counter range 0–100Hz

Load At 5V DC: 1.1mA; At 24V DC: 7mA

Isolation test voltage 1000V DC for 1min (Digital input to analog input)

Comms

Protocols Modbus RTU, RS232 or RS485

Port 1 Select one of the following:
No Port 1 Comm OR
EMOD= Ethernet Modbus (10/100/Auto)

Port 2 RS232 / RS485 auto-select
Selectable baud rate 2400–230000 baud. Format 8 bit, no parity, 1 stop

Isolation test voltage 1000V DC for 1min between comms and analog/digital input

Programming

USB programmable Via USB prog port using Bridge Key USB programmer (sold separately)

Simple configuration using Define WorkBench:

defineinstruments.com/workbench

Construction

Casing DIN 35 rail mounting; Material: ABS inflammability V0 (UL94)

Dimensions (H x W x D, with plugs)
2.32 x 10.04 x 5.67"
(59 x 255 x 144mm)

Environmental conditions

Operating temperature 14 to 140°F
(–10 to 60°C)

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

Operating humidity 5–85% RH max, non-condensing

Compliances

EN-61326-1:2006

EMC Emissions EN 558022-A;
Immunity EN 50082-1; **Safety** EN 60950

RTD input - Zen RTU/U & Zen RTU/R

RTD input type

Pt100 3 wire RTD DIN 43760: 1980
Pt1000 3 wire RTD standard

Range -328 to 572°F (-200 to 300°C),
0.02°F (0.01°C) resolution;
-328 to 1472°F (-200 to 800°C), 0.1°F
(0.1°C) resolution

Lead wire resistance 10Ω/lead max
recommended

Sensor current 0.6mA continuous

Sensor fail Upscale

Ambient drift 0.003°C/ typical

Accuracy (RTU/R)

-328–572°F (-200–300°C) = ±0.2°C
-328–1472°F (-200–800°C) = ±0.3°C

Accuracy (RTU/U)

-328–572°F (-200–300°C) = ±0.1°C
-328–1472°F (-200–800°C) = ±0.3°C

Other input types - Zen RTU/U only

Thermocouple Input

Thermocouple types

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

Input impedance >500KΩ

T/C lead resistance 100Ω max

Cold junction compensation

14 to 140°F (-10 to 60°C)

CJC drift <0.02°C/°C typical for all
inputs

Accuracy 0.1% of FSO ±1°C typical

Sensor open Upscale

Current Input

Range 0–20mA, 4–20mA

Input impedance 45Ω

Max over-range Protected by PTC to
24V DC

Linearity & repeatability 0.1% FSO
max

Accuracy 0.1% FSO max

Channel separation 0.001% max

Ambient drift 0.003%/°C FSO typical

RF immunity 1% effect FSO typical

Fail safe micro switch Prevents exter-
nal loops from being interrupted in
the event of a power loss to the Zen

Voltage Input

Ranges ±200mV, -200mV to 1V,
0–10V, 0–18V

Input impedance >500KΩ (all ranges)

Maximum over voltage 24V DC

Linearity & repeatability 0.1% FSO
max

Accuracy 0.1% FSO max

Channel separation 0.001% max

Ambient drift 0.003%/°C FSO typical

RF immunity 1% effect FSO typical

Digital Pulse Input

Frequency range 0–2500.0Hz

Fast counter range 0–2500.0Hz

Sensors Open collector (NPN, PNP),
TTL or Clean Contact

Frequency resolution 0.1Hz

Debounce counter range 0–50Hz max

Counter register output 32 bit

Accuracy ±0.5%

Potentiometer Input

Potentiometer input 3-wire

Excitation voltage Variable

Potentiometer resistance <2kΩ low
pot; >2kΩ high pot

Field prog. zero 0–90% of span

Field prog. span 0.1–100%

Response time 100msec

Linearity & repeatability <±0.05%
FSO typical

Ambient drift <50ppm/°C

AC Current Sensor Input

Sensor type Current transformer
ACCS-420, ACCS-420-L and ACCS-010

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

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

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

Power supply ACCS-420(-L)= Loop
powered, 15–36V DC
ACCS-010= Self powered

Accuracy 1% of full scale

Response time 250ms (10–90%)

Isolation voltage 2,000V

Frequency 50–60Hz

Attenuator Input

Attenuator type HVA-1000,
differential resistive attenuator

Max input voltage 1000V DC

Attenuation factor 1000 ±0.1%

Input impedance 3.8MΩ

Output impedance 3.8kΩ

Ambient drift 50ppm/°C max