

Get multiple signals into your PLC or SCADA system

The Zen RTU Mini is ideal for applications requiring collation of multiple signal types 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.

Smaller with bigger cost savings

With a footprint of only 3.98 x 1.38 x 4.72", the Zen RTU Mini fits into smaller enclosures and saves DIN rail space, shaving more off the cost of installation.

Kill the cost of cabling

There's no need to run wires to this unit, the Zen RTU Mini has a Wifi option, retaining the portability of your application and unburdening you from the cost of cabling.

Enjoy the flexibility of universal inputs

The Zen RTU Mini accepts TC, RTD, mA, mV, V, Frequency and Counter. This reduces the number of separate instruments required, keeping things simple for maintenance and troubleshooting.

Cleans up noise

Each of the Zen RTU Mini's channels is isolated, so there's zero cross-talk. The isolation ensures high reliability in harsh industrial environments.



Key features:

- › Up to 16 Universal isolated inputs
TC, RTD, mA, mV, V, Potentiometer, Frequency, Counter and more
- › Modbus RTU or TCP connection options
For simple connection to SCADAs and PLCs
- › Optional WiFi connectivity
Cutting the cost of cabling
- › Compact DIN rail mount design
- › 4 Digital inputs
- › Easy USB programming
defineinstruments.com/workbench



No calibration!

Simple setup in just minutes with WorkBench.

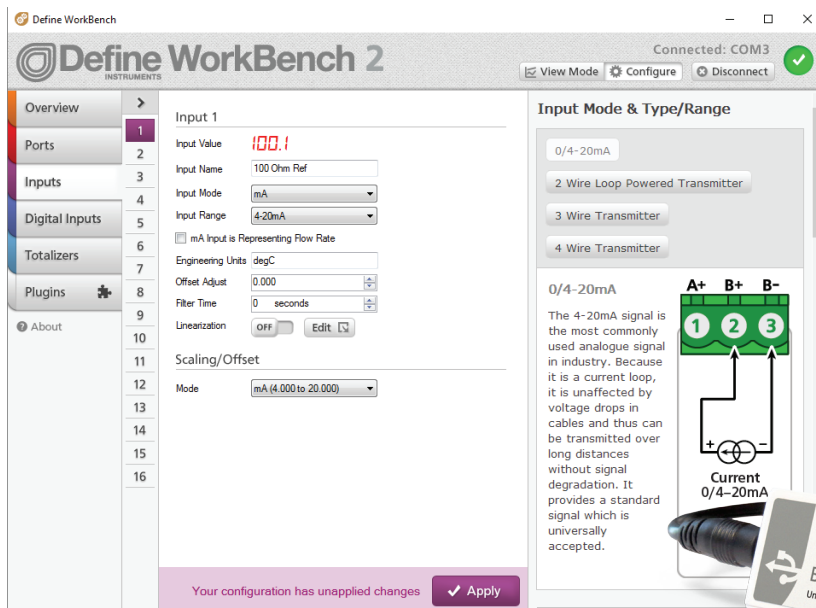
With a range of smart features to simplify setup of your input channels, digital inputs and totalizers, as well as presets for easy scaling (with no calibration required!), WorkBench offers an intuitive and simple setup experience for your Zen RTU Mini.

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.



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Bridge Key Compatible

The Zen RTU Mini 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.

General specifications

Power

Power supply

Low Voltage (10–32V DC)

Isolation test voltage 2500V AC 50Hz for 1min to analog inputs

Isolation to digital inputs None

Analog input

Universal isolated analog inputs

Zen RTU Mini4: 4 Input channels

Zen RTU Mini12: 12 Input channels

Zen RTU Mini16: 16 Input channels

PTO for input 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 $\leq \pm 0.1\%$ FSO (unless otherwise stated for individual input type)

General specifications

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

Channel separation 125db minimum

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

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

Permanent memory (E²ROM)

100,000 writes per input parameter

Digital input

4 x Digital inputs

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 types NPN, Clean Contact, Voltage 2–30V DC

Threshold 1.2V typical

Debounce counter range 0–100Hz

Isolation Not isolated to power supply

Programming

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

Simple configuration using Define WorkBench:

defineinstruments.com/workbench

Comms

Protocols Modbus RTU, Modbus TCP

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

Isolation test voltage 1000V DC for 1min (Comm to analog input, Comm to digital input)

Optional additional comm (front panel) Ethernet Modbus/TCP

Construction

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

Dimensions (H x W x D)

Zen RTU Mini4 = 3.98 x 1.38 x 4.72" (101 x 35 x 120mm)

Zen RTU Mini12 = 3.98 x 2.36 x 4.72" (101 x 60 x 120mm)

Zen RTU Mini16 = 3.98 x 3.35 x 4.72" (101 x 85 x 120mm)

Height with antenna

4.65" (118mm), WiFi model only

Environmental conditions

Operating temperature –40 to 176°F (–40 to 80°C)

Storage temperature –40 to 176°F (–40 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

Ordering Options

ZEN-RTU-MINI4	4 x Universal Isolated Inputs , 4 digital inputs, Up to 2 comm ports. Low voltage power supply (10-32V DC). <i>Case width 1.38" (35mm)</i>
ZEN-RTU-MINI12	12 x Universal Isolated Inputs , 4 digital inputs, Up to 2 comm ports. Low voltage power supply (10-32V DC). <i>Case width 2.36" (60mm)</i>
ZEN-RTU-MINI16	16 x Universal Isolated Inputs , 4 digital inputs, Up to 2 comm ports. Low voltage power supply (10-32V DC). <i>Case width 3.35" (85mm)</i>
Comms Configuration (Select One)	
	1 x RS485 / RS232 (default)
-EMOD	1 x RS485 / RS232, 1 x Ethernet Modbus/TCP
-WIFI	1 x RS485 / RS232, WiFi (3dBi antenna included)

Accessories (Sold Separately)

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

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

RTD Input

RTD input type

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

Range

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

Lead wire resistance 10Ω/lead max recommended

Sensor current 0.6mA continuous

Sensor fail Upscale

Accuracy

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

Ambient drift 0.003°C/°C typical

Voltage Input

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

Input impedance >500KΩ on 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

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

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%

Linearity & repeatability <±0.05% FSO typical

Response time 100msec

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 Define Instruments 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