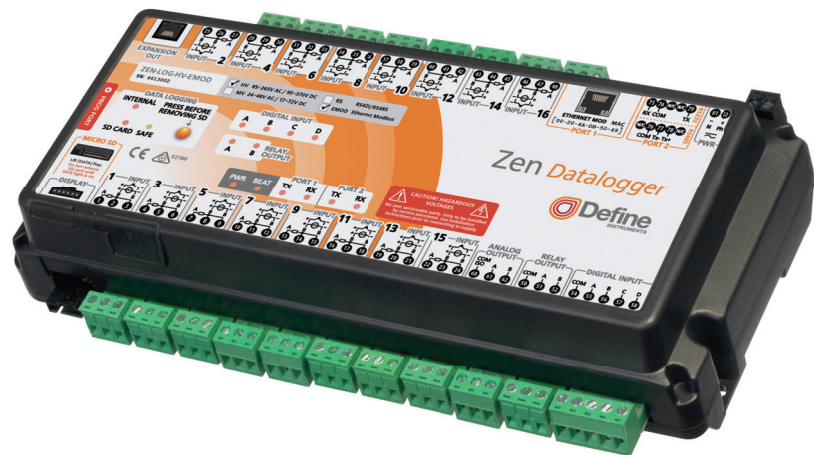


The Zen Data logger is perfect for applications that require acquisition and visualization of data from multiple sources.

Easy DAQ and onboard data logging

Get all your data acquisition (DAQ) requirements fulfilled with the Zen Datalogger.

This flexible 16 channel control and monitoring station logs data onto a 1GB micro SD card, so you can physically take your data with you or route it to other hardware.



Data visualization and graphing helps you understand your data

If logging data is vital to your application, then you'll know that interpreting that data is just as vital. The Zen Datalogger gives you a simple way (via WorkBench software) to plot graphs and visualize your data, for a better understanding of your results. You can also export your data to CSV format, for further analysis using Excel.

Enjoy the flexibility of 16 universal inputs

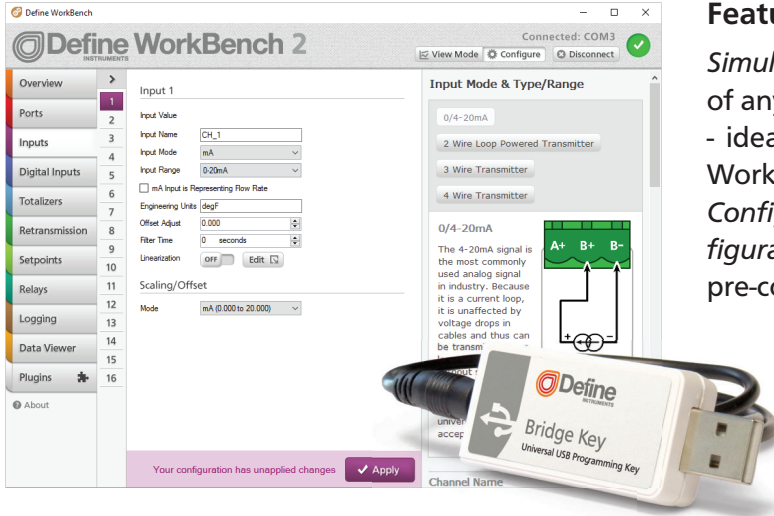
Like its predecessor (ZEN-16), the Zen Datalogger accepts TC, RTD, mA, mV, V, Frequency and Counter inputs, and shares many of its capabilities. This means you can reduce the number of separate instruments you need for your application, keeping things simple for maintenance and troubleshooting.

Key features:

- › **16 Universal isolated inputs**
TC, RTD, mA, mV, V, Potentiometer, Frequency, Counter and more
- › **Real-time clock and data logging to 1GB Micro SD card**
(7,858,683 samples for all channels!)
- › **With Modbus RTU**
For easy integration with SCADAs and PLCs
- › **4 Digital inputs**
- › **2 Analog outputs and 2 Relay contact outputs**
For control and alarm applications
- › **HMI connection**
- › **Expansion interface**
Add 16 relay outputs and 16 digital control inputs with 'ZEN-RIO' (sold separately)
- › **Easy USB programming and data log retrieval**
defineinstruments.com/workbench

No calibration! Simple setup in just minutes with WorkBench.

With a range of smart features to simplify setup of your input and outputs, setpoints and totalizers, as well as presets for easy scaling (with no calibration required!), WorkBench offers a flexible and intuitive setup experience for your Zen Datalogger.



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.

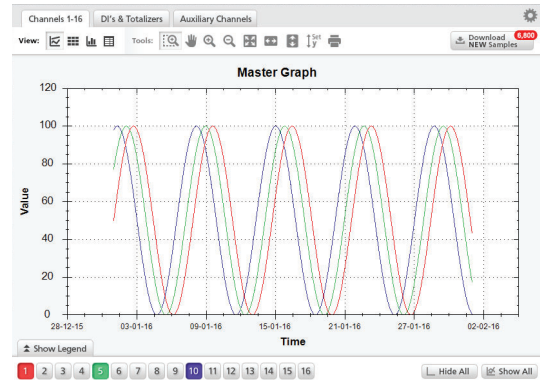
Bridge Key Compatible

The Zen Datalogger utilizes our universal Bridge Key for PC connection.

Data is logged on a 1GB micro SD card for high capacity logging and simple data log retrieval. Data visualization and graphing is accessed through Define Instruments free WorkBench software.

Define WorkBench "**Data Viewer**" enables you to view your logged data and visualize it in a line or bar graph, or as tabulated data. Display settings enable you to specify the range of viewable data, and configure your graph axes and labels. You can also export logged data to CSV format for further processing using Excel.

The Micro SD card can be removed from the Zen unit and read using a standard SD card reader, enabling fast, simple and portable data log retrieval.



Ordering Codes for Zen Datalogger

ZEN-LOG	16x Universal Isolated Inputs , 2 analog outputs, 4 digital inputs, 2 relays, 2 comm ports (Port 1= Selectable, Port 2= RS485 / RS232). Expansion interface terminal. HMI terminal. Real-time clock and data logging to 1GB Micro SD Card.
Power Supply:	
-HV	85–265V AC / 95–370V DC
-MV	24–48V AC / 17–72V DC
Port 1:	
-RS	RS485 / RS422 (auto-selecting)
-EMOD	Ethernet Modbus

Accessories (Sold Separately)

BRIDGE-KEY	USB Bridge Key, required for PC programming using our free WorkBench software.
FM1602	LCD Remote Display, Front Mount
ZEN-RIO	Relay I/O expansion, 16x Relay outputs, 16 x Digital inputs

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

Analog input

16x Universal isolated analog 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 digital output, Analog input to analog input)

Input resolution 16 bits

Accurate to $\leq \pm 0.1\%$ FSO (unless otherwise stated below)

General specifications

HMI interface For FM1602 remote display (sold separately)

Expansion interface Add 16 relay outputs and 16 digital control inputs with a ZEN-RIO Relay/IO Expansion (sold separately)

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

Analog output

2x Isolated analog outputs 4–20mA

Resolution 15 bits, 16,000 steps

Compliance voltage 10V 500 Ω

Isolation test voltage 1000V DC for 1min (Analog output to digital output)

Relay output

2x Isolated relay outputs with LED indication of each output

Relay contact rating 5A 30V DC

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/output, Digital input to digital output)

Comms

Protocols Modbus RTU, RS422, RS485 or RS232

Port 1 Select either:
RS= RS422 / RS485, **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 (Comms to analog input/output, Comms to digital input/output)

Programming

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

Simple configuration and data log retrieval using Define WorkBench: defineinstruments.com/workbench

Datalogging

Real-time clock

Data logging to Micro SD card (supplied). Logging to onboard memory when Micro SD card removed

Micro SD card capacity 1GB (7,858,683 samples for all channels)
Not compatible with higher-capacity Micro SD cards.

Onboard memory capacity 32MB (31,774 samples for all channels)
Used when Micro SD card is removed

Simple data log retrieval and visualization, 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

Intelligent multiplexer

Channel selection Clock and reset or binary (digital inputs)

Cycle time 4sec minimum to cycle through all 16 inputs

Resolution 12 bits, 4000 steps typical

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 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

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

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

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 programmable zero 0-90% of span

Field programmable 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