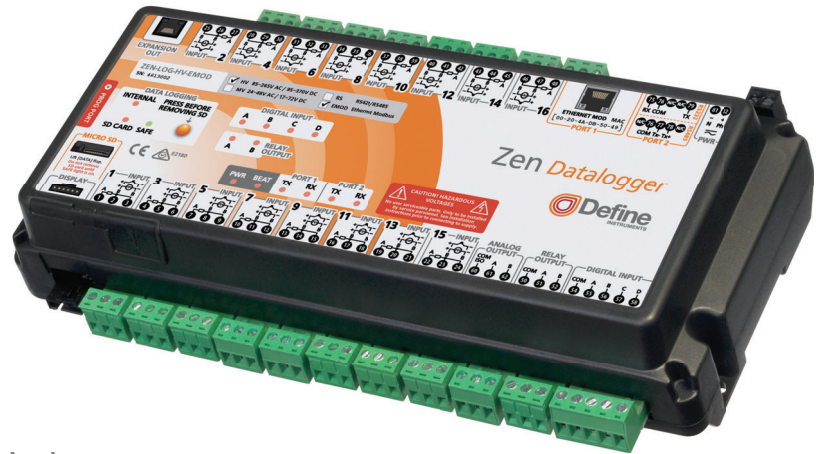


The Zen Data logger is perfect for applications that require acquisition and visualization of data from multiple sources.

## 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

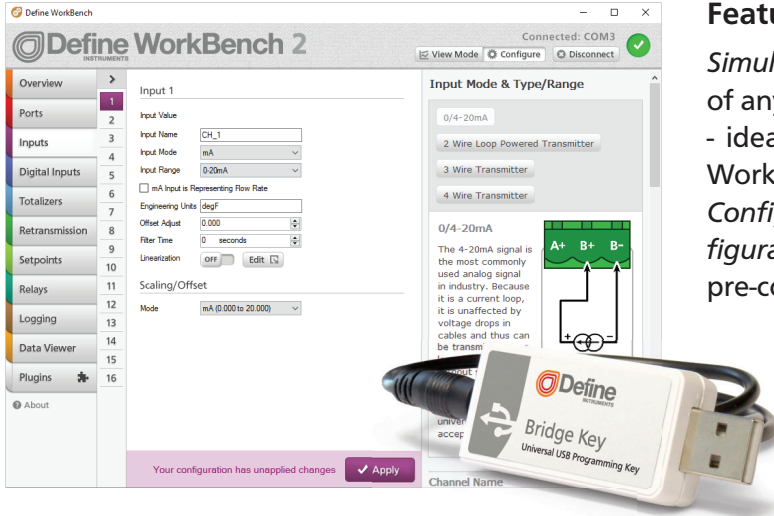
Like its predecessor (ZEN-16), the Zen Datalogger accepts TC, RTD, mA, mV, V, Frequency and Counter inputs, and shares many of its capabilities. This means you can reduce the number of separate instruments you need for your application, keeping things simple for maintenance and troubleshooting.

## 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**

# 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.

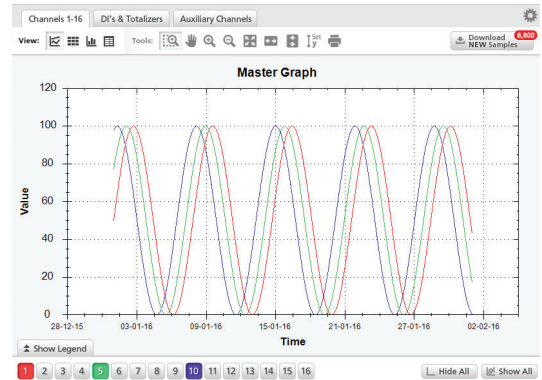
## Bridge Key Compatible

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

<b>ZEN-LOG</b>	<b>16x Universal Isolated Inputs</b> , 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.
<b>Power Supply:</b>	
<b>-HV</b>	85–265V AC / 95–370V DC
<b>-MV</b>	24–48V AC / 17–72V DC
<b>Port 1:</b>	
<b>-RS</b>	RS485 / RS422 (auto-selecting)
<b>-EMOD</b>	Ethernet Modbus

## Accessories (Sold Separately)

<b>BRIDGE-KEY</b>	USB Bridge Key, required for PC programming using our free WorkBench software.
<b>FM1602</b>	LCD Remote Display, Front Mount
<b>ZEN-RIO</b>	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 (E<sup>2</sup>ROM)** 100,000 writes per input parameter

### Analog output

**2x Isolated analog outputs** 4–20mA

**Resolution** 15 bits, 16,000 steps

**Compliance voltage** 10V 500 $\Omega$

**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 Defi ne 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 Defi ne 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