DIGITAL INDUSTRIES SOFTWARE

Simcenter SCADAS Mobile Four-channel Voltage/ICP® Input Module E series

Simcenter/V4/2406/20240625

Product Information Sheet

Summary

V4 input module

The V4 is a Simcenter SCADAS Mobile input module supporting full voltage and ICP signal conditioning and signal processing for four channels. The V4 offers the unique combination of ultra-low power consumption, high performance 204.8 kHz 24-bits analog to digital conversion and a spurious free dynamic range of 150 dB.

Supported transducers

Typical applications

BENEFITS

- Four input channels via BNC connectors
- Low power and high bandwidth

FEATURES

- Smart sensor support
- Analog anti-alias filter
- Analog and digital over-load detection with LED indication on front-panel
- 24-bit analog to digital conversion with 92 kHz bandwidth
- 150 dB dynamic range eliminates the need for range setting
- Built-in calibration for improved specifications over a longer period

Signal conditioning
Each input channel has a voltage amplifier with an input range from ±316 mV to ±10 V and includes ICP power supply to the transducers. The V4 has an ICP cable check circuit to detect an open loop in the sensor cable; errors are indicated through a front-panel LED for optimum user feedback and simultaneously transferred to the host. For acoustic applications, an additional 7 Hz AC coupling reduces low frequency signals that might otherwise overload the input.

Specifications
Input function
Single ended voltage input via BNC

Connectors
amplifier. The overload LED indicates both analog overloads, detected at the input amplifier, and digital overloads, detected by digital signal processor. The V4 supports smart sensors according to IEEE 1451.4. Without changing cables, Simcenter SCADAS systems can read the Transducer Electronic Data Sheet (TEDS) with essential information including sensor type, sensitivity, calibration date, coordinates etc.

Analog to digital conversion
The V4 uses low-power high performance 24-bit sigma-delta analog to digital converters. A 4-pole analog anti-alias filter precedes each ADC. Running at a maximum sample rate of 204.8 kHz, the V4 supports both vibration and acoustic applications. A wide range of digital decimation filters reduces bandwidth in steps of 2 and 2.5.

Input voltage
±316 mV, ±1 V, 3.16 V, ±10 V

Maximum input voltage
28 Vrms continuously

Input impedance
1M Ω/260 pF

Input coupling
DC, AC, ICP in single ended mode

AC coupling
0.48 Hz ±6 %, 7Hz ±2 %

Supply for ICP sensors
2.7 mA±15 % from 28 V source

ICP cable check
Checking the sensor bias voltage continuously for open loop and short circuit with indication by LED in the front panel

Overload detection and indication
Analog overload detection at the input is combined with digital overload detection after the ADC; overloads are indicated on the front panel LED and transmitted to the host

Smart sensor interface
Full support of IEEE 1451.4 smart sensors to read out Transducer Electronic Data Sheet (TEDS)

Dynamic range

Input range	Signal to Noise Ratio	Spurious Free Floor
10 V	115 dB	-150 dB
3.16 V	115 dB	-150 dB
1 V	115 dB	-150 dB
316m V	110 dB	-148 dB

(20 kHz bandwidth, 32k block, 16 averages)

Crosstalk Between any two channels
-123 dB at 1 kHz typical, independent of input range settings

Accuracy
At 1 kHz better than ± 0.2 % between 5 ºC
and 40 ºC

Residual Offset
< ± 0.1 % between 5 ºC and 40 ºC

Calibration
Factory gain & offset calibration factors are stored in non-volatile RAM

Analog anti-alias filter
4-pole Equal Time Delay filter with 164 kHz cut-off frequency and 0.01 dB flatness

Analog to digital conversion
24-bit ΔΣ ADC with a maximum sampling frequency of 204.8 kHz; 150 dB/oct digital filter with 100 dB alias protection provides an alias free bandwidth of 92 kHz

Total Harmonic Distortion
Better than -98 dB @ 3 dB below full scale

Phase match
Better than 0-0.2º @ 10 kHz with 10 V input range
Decimation filter
Reduces bandwidth prior to signal processing; bandwidth can be down-sampled in steps of 2 and 2.5.

Dimensions
One 20 mm high SCADAS Mobile slot

Power consumption
During normal operation, no overload and ICP supply switched on: 3.8 W

Ordering information

Support of Simcenter SCADAS Frames and Modules may be restricted in specific Simcenter Testlab application workbooks.

Please check with your local representative for full details.
SCM-V4-E: Simcenter SCADAS Mobile enhanced V/ICP/TEDS 4-channel 24-bit input module (BNC)