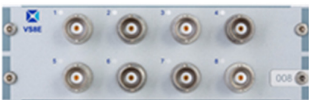
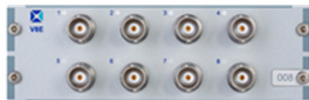


Answers for industry

## LMS SCADAS Mobile Eight-channel Voltage/ICP® Input Module E series

[V8-E / VS8-E]



### Summary

#### V8-E input module

The V8-E is an LMS SCADAS Mobile input module supporting full voltage and ICP signal conditioning and signal processing for eight channels. The V8-E offers the unique combination of ultra-low power consumption, high performance 204.8kHz 24-bits analog to digital conversion and a spurious free dynamic range of 150dB.

VS8-E has the same functionality as V8-E, with additional support for SPDIF digital audio sources.

#### Signal conditioning

Each input channel has a voltage amplifier with an input range from  $\pm 316\text{mV}$  to  $\pm 10\text{V}$ , and includes ICP power supply to the transducers. The V8-E 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 7Hz AC coupling reduces low frequency signals that might otherwise overload the input amplifier. The overload LED indicates both analog overloads, detected

at the input amplifier, and digital overloads, detected by digital signal processor. The V8-E supports smart sensors according to IEEE 1451.4. Without changing cables, LMS SCADAS Mobile can read the Transducer Electronic Data Sheet (TEDS) with essential information including sensor type, sensitivity, calibration date, coordinates etc.

#### Analog to digital conversion

The V8-E 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 V8-E supports both vibration and acoustic applications. A wide range of digital decimation filters reduces bandwidth in steps of 2 and 2.5.

#### Signal processing

The V8-E is equipped with a low-power high-performance DSP56321 and 512Kx24-bit memory for digital filtering, calibration; overload handling, 1/1 and 1/3rd octave filtering, independent of the number of channels.

### Features & Benefits

- 8 input channels via CAMAC connectors or via BNC connectors (occupying two slots)
- Smart sensor support
- Analog anti-alias filter
- Analog and digital overload detection with LED indication on front-panel
- 24-bit analog to digital conversion with 92kHz bandwidth
- 150dB dynamic range eliminates the need for range setting
- Built-in calibration for improved specifications over a longer period
- Real time 1/1 and 1/3rd octave analysis
- Time domain A-weighting filter
- VS8-E: additional support of SPDIF digital audio formats for all standard audio sample rates

### Specifications V8-E and VS8-E

#### Input function:

Single ended voltage input via grounded CAMAC socket

#### Input voltage:

±316mV, ±1V, 3.16V, ±10V

#### Maximum input voltage:

28Vrms continuously

#### Input impedance:

1MΩ//260pF

#### Input coupling:

DC, AC, ICP in single ended mode

AC coupling:

0.48Hz ±6%, 7Hz ±2%

#### Supply for ICP sensors:

2.7mA±15% from 28V 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

#### Digital audio interface (VS8-E):

Channel 7 and 8 can be set to either analog or digital mode for support of SPDIF

formats (one stereo channel) with HMS data; accurate synchronous sample rate conversion provides an alias suppression of 125dB; all standard audio sample rates (32kHz, 44.1kHz, 48kHz, 96kHz) are supported

#### Dynamic range

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

(20 kHz bandwidth, 32k block, 16 averages)  
Overall dynamic range with gain: 178 dB

#### Crosstalk:

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

#### Accuracy:

At 1kHz better than ± 0.2% between 5°C and 40°C

#### Residual Offset:

< ± 0.1% between 5°C and 40°C

#### 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 0.01dB flatness

**Analog to digital conversion:**

24-bit  $\Sigma\Delta$  ADC with a maximum sampling frequency of 204.8 kHz; 150dB/oct digital filter with 100dB alias protection provides an alias free bandwidth of 92kHz

**Total Harmonic Distortion:**

Better than -98dB @ 3dB below full scale

**Smart sensor interface:**

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

**Phase match:**

Better than 0.2° @ 10kHz with 10V input range

**DSP section:**

DSP 56321 with 512Kx24-bit SRAM

**Decimation filter**

Reduces bandwidth prior to signal processing; bandwidth can be down-sampled in steps of 2 and 2.5.

**Signal processing****1. Fixed sampling:**

Continuous time data output; bandwidth selection via the decimation filters, including support for multiple sample rates

**2. Octave filters**

Time domain third octave filters with maximum band of 20kHz according to ANSI S1.11-2004 class 1 and IEC 61260:1995 class 1; time domain A-weighting according to ANSI S1.42 can be switched on or off

**Dimensions:**

One 20 mm high SCADAS Mobile slot or one 40 mm high SCADAS Mobile occupying two slots

**Power consumption:**

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

### Ordering information:

- SCM-V8-E: LMS SCADAS Mobile enhanced V/ICP/TEDS 8-channel 24-bit input module, including adaptor cables to BNC
- SCM-VS8-E: LMS SCADAS Mobile enhanced V/ICP/TEDS 8-channel 24-bit input module with digital audio support, including adaptor cables to BNC, AES/EBU converter with RCA to BNC cable for direct SPDIF connection

*“Note: V8 and VS8 are available in IP54 format. Availability in BNC version (occupying two slots) is limited to non-IP54 format”*



When installed in SCM/SCR/SCD platforms,  
V8-E and VS8-E complies with the standards:  
EN61010 & EN60950, EN50081-1, EN50082-1  
LMS SCADAS is a product of LMS Instruments

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