DIGITAL INDUSTRIES SOFTWARE

Simcenter SCADAS Mobile and Lab Eight-channel Microphone Input Module

Simcenter/VM8/2406/20240625

Product Information Sheet

Summary

VM8 input module

The VM8 is a one slot wide input module Simcenter SCADAS Mobile and Simcenter SCADAS Lab, supporting eight channel signal conditioning and signal processing for all types of microphones.

The VM8 offers the unique combination of ultra-low power consumption, high performance 204.8 kHz 24-bits analogue to digital conversion, and a spurious free dynamic range of 150 dB.

Supported transducers

Typical applications

BENEFITS

- 8 input channels via 7-pole LEMO connectors
- Conventional and (pre-polarized) ICP Microphone support

FEATURES

- IEEE1451.4 TEDS support
- Analog and digital overload detection with LED indication on front-panel
- 24-bit analog to digital conversion with 92 kHz bandwidth maximum
- 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.

The VM8 supports both conventional and pre-polarized microphones, offering not only 28 V preamp supply and 200 V polarization voltage, but also a standard ICP® current supply.

Analogue to digital conversion
The VM8 uses low-power high performance 24-bit sigma-delta analogue to digital converters. A 4-pole analogue anti-alias filter precedes each ADC.
Running at a maximum sample rate of 204.8 kHz, the VM8 supports all high-end vibration and acoustic applications.

In case less bandwidth is required, a wide range of digital decimation filters reduces bandwidth in steps of 2 and 2.5.

Input function
Single ended microphone/voltage/ICP input via 7-pole LEMO connector

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

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

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 TEDS (For conventional microphone: pin 5 on LEMO)

Product Information Sheet

General information	V8M specifications
Product name	SCM-VM8-E, SCL-VM8
Description	Simcenter SCADAS Mobile and Lab Eight-channel Microphone Input Module
Input ranges differential input	N.A.
Input ranges charge input	-
Input ranges V/ICP input	±10 V, ±3.16 V, ±1 V, ±0.316 V
Digital interface	-
Outputs	N.A.
Transducer connector	Eight (8) LEMO 7pin connector for sensor input
Supported transducers	
	AC, DC and ICP coupled sensors Voltage and ICP sensors Conventional microphones Pre-polarized microphones
A/D Converter	
Max. sampling rate	204.8 kHz, can be downsampled in steps of 2 and 2.5
Max. bandwidth (filter off, -3 dB)	92 kHz
ADC Architecture	24-bit Sigma Delta ADC
Coupling	DC, AC, ICP
Filter	
High Pass Filter	Software selectable high pass filter with 0.5 Hz, 7 Hz, 25 Hz and 60 Hz cut off frequencies.
AC Coupling	0.48 Hz ±6 %, 7 Hz ±2 %
Decimation filter	Reduces bandwidth prior to signal processing; bandwidth can be down-sampled in steps of 2 and 2.5.
Analog anti-alias filter	4-pole Equal Time Delay filter with 164 kHz cut-off frequency and 0.01 dB flatness, 150 dB/oct digital filter with 100 dB alias protection provides an alias free bandwidth of 92 kHz
Transducer identification	
TEDS	TEDS class 1 (ICP sensors) supported according to IEEE 1451.4 Maximum TEDS cable length is 80 m
Power	
Power consumption/power budget	3.8 W (during normal operation, no overload and ICP supply switched on).

Power feedback	LED on the module front panel, providing information on connection, power status and any sensor supply overload/underload. During system booting and startup, the LED on channel 1 will be used to indicate module status (active) using a different LED color and/or blinking pattern. **LED Modes** ICP: Green TEDS reading: Yellow blinking **Alarm** Overload: Red ICP error: Yellow/Red blinking TEDS listen mode: Green or Blue blinking
ICP sensor supply	3.5 mA ±0.1mA over the SCADAS Mobile operating temperature range. Microphone conditioning 28 V preamp supply, and 0/200 V polarization.
Input impedance	
Single ended mode	1 MΩ ±1% || 260 pF
Signal to noise ratio (SNR)	**Single ended input (typical)**
±10 V ±3.16 V ±1 V	115 dB
±0.316 V	110 dB Measured between 100Hz to 20KHz, with 32k block size, 16 averages
Spurious Free Dynamic Range (SFDR)	**Single ended input (typical)**
±10 V ±3.16 V ±1 V	150 dB
±0.316 V	148 dB Measured between 100Hz to 20KHz, with 32k block size, 16 averages
Crosstalk	**Single ended input (typical)**
±10 V ±3.16 V ±1 V ±0.316 V	120 dB Tested at 1.5kHz frequency

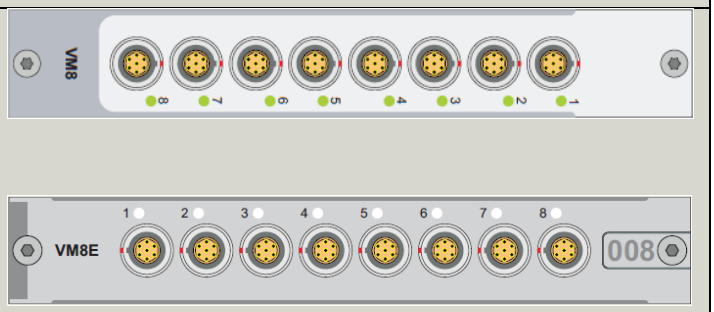
Total Harmonic Distortion (THD)	Single ended input (typical)
±10 V ±3.16 V ±1 V	94 dB
±0.316 V	91 dB
Amplitude accuracy	**Single ended input (typical)**
	At 1 kHz better than +/- 0.1% at 23 °C
Gain drift	**Single ended input (typical)**
	< ± 0.1 % between 5 ºC and 40 ºC
Residual offset	**Single ended DC input (typical)**
	< ± 0.1 % between 5 ºC and 40 ºC
Phase match between any two channels (at 9.9 kHz)	**Single ended input (typical)**
±10 V ±3.16 V ±1 V ±0.316 V	0.2°
Protection	
Input protection	28Vrms continuously without damage.
Sensor check	ICP sensor check for open loop and short circuit detection with indication by LED in the front panel.
ESD protection	According to EN61000-4-2, level 2 and ISO10605
EMC protection	Comply with CE-EMC directive, when installed in a SCADAS Mobile frame
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.
Error detection methods	Overload detection and ICP check indication
Shock protection	MIL-STD-810G specified in MIL-STD-810G method 516.5, Shock Amplitude: 60 gpk.
Vibration protection	MIL-STD-810G method 514.5, procedure 1, Category 24: RMS 7.694 g
Ambient operating temperature range	-20 ºC to +55 ºC
Storage temperature range	-20 °C to +70 °C

Product Information Sheet

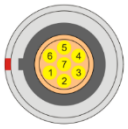
Housing

Dimensions

One SCADAS slot



Connector and pinning layout

CONNECTION	DETAILS	REMARKS
7-pin LEMO: VM8-E - channels 1 to 8  Chassis = Analog Ground	Connector type: LEMO-EGG.0B.307 Pin details: 1) SIG - Ground 2) SIG - Ground 3) MIC - 200V 4) SIG - OUT 5) TEDS 6) MIC - 28V (pre-amp supply) 7) Power - Ground	Mating connector: LEMO-FGG.0B.307.CLADxx

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-VM8-E: Simcenter SCADAS Mobile enhanced MIC/V/ICP/TEDS 8-channel 24-bit input module

SCL-VM8: Simcenter SCADAS Lab enhanced MIC/V/ICP/TEDS 8-channel 24-bit input module

Included accessories
Eight LEMO 0B to LEMO 1B adapter cables (SCX-CAS11)

Optional accessories
SCx-CAS12: Simcenter SCADAS optional 7 pin LEMO to BNC cable adapter set for VM8.

Eight, LEMO to BNC cables, for use of the VM8 with standard MIC/V/ICP transducers.
SCx-ABH04-C2B: BNC (female) to Camac (female) adaptor plug for use with SCx-ABH04 headset
SCx-ABH04-V: Simcenter SCADAS 3D binaural headset adapter cable V8-E (LEMO to Camac)

Connection of SCx-ABH04 headset

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