Simcenter SCADAS Mobile and Lab Eight-channel Voltage/ICP® Differential Input and Output Module

Simcenter/VD8/VD8MO/2406/20240625

Product Information Sheet

Summary

VD8 input module

The VD8 is a Simcenter SCADAS module with differential and single-ended inputs supporting full voltage and ICP signal conditioning and signal processing for eight channels.

The VD8 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.

SIEMENS

Supported transducers

Typical applications

BENEFITS

- 8 input channels via CAMAC, Sub-D or BNC (occupying two slots) connectors

- Eight, fail-safe, single ended monitor outputs (VD8MO only)

- Floating ICP with differential input to eliminate ground loops

FEATURES

- Smart sensor (TEDS) support

- Fast AC coupling settling time even at very low high-pass filter frequency (from 0.05 Hz to 7 Hz)

- Combined analog and digital anti-alias filters for a guaranteed alias suppression of 100 dB

- Analog and digital overload detection with LED indication on front-panel

- Built-in calibration for improved specifications over a longer period

Monitoring output (VD8MO only)
Corresponding to each input channel a monitoring output is available through grounded CAMAC connector. The full-scale output signal is±10V with 0dB gain and is AC coupled through a first order high-pass filter (0.5Hz).
Each output channels are protected against short circuit and electrostatic discharge.

Signal conditioning
Each input channel has a voltage amplifier with an input range from ±100mV to ±10V. It includes floating ICP with differential input to eliminate ground loops and power supply for ICP sensors.

The VD8 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.

Selectable AC coupling from 0.05 Hz to 7 Hz equipped with boost function for fast setup time 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 VD8 supports smart sensors according to IEEE 1451.4.

Without changing cables, Simcenter SCADAS Mobile can read the Transducer Electronic Data Sheet (TEDS) with essential information including sensor type, sensitivity, calibration date, coordinates etc.

Analogue to digital conversion
The VD8 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 VD8 supports both vibration and acoustic applications. A wide range of digital decimation filters reduces bandwidth in steps of 2 and 2.5.

SCM-VD8E

SCL-VD8

SCM-VD8b-E

General information	VD8 specifications
Product name	SCL-VD8b, SCL-VD8MO-E, SCL-VD8s, SCM-VD8b-E, SCM-VD8-E, SCM-VD8MO-E, SCM-VD8s-E
Description	Simcenter SCADAS Mobile and Lab, Eight-channel (8) Voltage/ICP® Differential Input and Output Module
Inputs	Eight (8) time-sychronous V/ICP inputs, single ended or differential voltage input via grounded CAMAC, BNC or SUB-D connectors
Input ranges differential input	±100 mV, ±316 mV, ±1 V, 3.16 V, ±10 V
Input ranges V/ICP input	±100 mV, ±316 mV, ±1 V, 3.16 V, ±10 V
Digital interface	-
Outputs	SCM-VD8MO-E, SCL-VD8MO-E provides eight (8) conditioned AC coupled ±10V output via BNC connectors
Transducer connector	Eight (8) CAMAC or BNC (double slot B version) connector for sensor input
Supported transducers	
	AC, DC and ICP coupled sensors
	Voltage and ICP sensors
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 in single ended & differential modes
Filter	
High Pass Filter	Software selectable high pass filter with 0.05Hz, 0.5 Hz, 7 Hz, 25 Hz and 60 Hz cut off frequencies.
AC Coupling	0.05 Hz ±1 %, 0.5 Hz ±1 %, 7 Hz ±1 %. Boost function for fast setup time.
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	6 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	4.5 mA±15 % from 28 V isolated source, (optional 9 mA±15 %) over the LMS SCADAS Mobile operating temperature range.
Input impedance	
Single ended mode	1 MΩ ±1% || 260 pF
ICP mode (AC)	100 kΩ
Slew rate	
V/ICP (single ended)	2V/μs
Differential input	2V/μs
Signal to noise ratio (SNR)	Typical
±10 V	115 dB
±3.16 V	110 dB
±1 V	110 dB
±0.316 V	103 dB
±0.1 V	93 dB
	Measured between 100Hz to 20KHz, with 32k block size, 16 averages
Common mode rejection (CMMR)	Typical
±10 V, ±3.16 V, ±1 V	86 dB
±0.316 V, ±0.1 V	100 dB
Spurious Free Dynamic Range (SFDR)	Typical

±10 V	150 dB	
±3.16 V	147 dB	
±1 V	147 dB	
±0.316 V	140 dB	
±0.1 V	130 dB	
	Measured between 100Hz to 20KHz, with 32k block size, 16 averages	
Crosstalk	**Typical**	
±10 V, ±3.16 V, ±1 V, ±0.316 V, ±0.1 V	116 dB	
	Tested at 1.5kHz frequency	
Total Harmonic Distortion (THD)	**Typical**	
±10 V, ±3.16 V, ±1 V, ±0.316 V, ±0.1 V	87 dB	
	At 1 kHz frequency, 25.6 kHz bandwidth, measured with a block size of 6400 Hz	
Amplitude accuracy	**Differential input (typical)**	**Single ended input (typical)**
	At 1 kHz better than +/- 0.1% at 23 °C	
Gain drift	**Typical**	
	< ± 0.1 % between 5 ºC and 40 ºC	
Residual offset	**Differential input (typical)**	**Single ended input (typical)**
	Better than 0.1% at 22°C ± 2°C	
Offset drift	**Typical**	
	< ± 0.1 % between 5 ºC and 40 ºC	
Phase match between any two channels (at 9.9 kHz)	**Typical**	
±10 V, ±3.16 V, ±1 V, ±0.316 V, ±0.1 V	0.3°	
Protection		
Input protection	40V peak (28V RMS) continuously without damage	
Monitoring output	**SCM-VD8MO-E and SCL-VD8MO-E**	
Description	Corresponding to each input channel a monitoring output is available through grounded CAMAC connector and provides continuous output delivering an exact copy of the inputs.	
Raw	The full-scale output signal is ±10V with 0dB gain and is AC coupled through a first order high-pass filter (0.5Hz).	

Ordering information VD8 for Simcenter SCADAS Mobile

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-VD8-E: Simcenter SCADAS Mobile 8-channel V/ICP/TEDS module (CAMAC)

Package contains: 50 cm adapter cables from CAMAC to BNC

SCM-VD8s-E: Simcenter SCADAS Mobile 8-channel V/ICP/TEDS module (Sub-D)

Package contains: SUB-D mating connector

SCM-VD8b-E: Simcenter SCADAS Mobile 8-channel V/ICP/TEDS module (BNC 2 slot wide)

SCM-VD8MO-E: Simcenter SCADAS Mobile 8-channel input V/ICP/TEDS – module (CAMAC) with monitor output. The module supports differential and single-ended signal conditioning modes and occupies two input slots.

Ordering information VD8 for Simcenter SCADAS Lab

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.

SCL-VD8: Simcenter SCADAS Lab 8-channel V/ICP/TEDS module with differential inputs (CAMAC) including adaptor cables to BNC

SCL-VD8b: Simcenter SCADAS Lab 8-channel V/ICP/TEDS module with differential inputs (BNC)

SCL-VD8s: Simcenter SCADAS Lab 8-channel V/ICP/TEDS module with differential inputs (Sub-D) including Sub-D mating connector

SCL-VD8MO-E:Simcenter SCADAS Lab 8-channel input/output module V/ICP/TEDS – module (CAMAC). The module supports differential and single-ended signal conditioning modes and occupies two input slots.

siemens.com/simcenter