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Siemens PLM Software

LMS SCADAS

Flexibility. Performance. Precision.

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LMS SCADAS

Take your mind off the deadline – focus on the test

Test engineers around the world count on LMS SCADAS™ systems to deliver the data quality and format required to get the job done right the first time – in the lab, in the field, with a personal computer (PC) or recording autonomously. Add in seamless integration with LMS Test.Lab™ and LMS™ Test.Xpress software for accelerated measurement setup and correctly formatted results. Then you'll see why the LMS SCADAS system is your tool to deliver reliable results and optimal testing productivity.

LMS SCADAS XS

- A pocket-sized, compact and portable solution
- Accommodates 12+ channels
- Provides 6+ hours of battery autonomy (typical use)
- Set up, monitor and validate on the go
- Replay in full standalone mode
- Use in standalone mode, with a tablet, or with a PC

LMS SCADAS Mobile

- Accommodates 8 to 216 channels in a single frame
- Compact size and low weight for optimal mobility
- Rugged design qualified for rough conditions and high temperatures

LMS SCADAS Recorder

- Enhanced functionality over the LMS SCADAS Mobile hardware
- On-the-spot validation prevents errors and annoying reruns
- Autonomous recording
- Wireless operation with tablet

LMS SCADAS Durability Recorder

- Enhanced functionality over the LMS SCADAS Recorder hardware
- Top performer in tough conditions: water and dust protected
- Vibration-resistant cable connections
- Strain, vibration and displacement measurements in a single measurement module

LMS SCADAS Lab

- Easy 19-inch rack mounting mainframe
- Configurable from 8 to hundreds of channels
- Up to 480 input channels in a single frame
- Arbitrary mix-and-match with additional SCADAS Lab/Mobile/Recorder mainframes



From lab to mobile to portable

LMS SCADAS gets the job done

Your personal testing solution

With solutions specifically designed for in-lab testing, as well as mobile front ends that cover the most challenging field test setups, the LMS SCADAS series already covers a wide range of testing needs. LMS SCADAS XS now adds a truly portable solution to further broaden this successful product range.

There is continuous pressure these days to test products in real-life circumstances and against ever-stricter deadlines. LMS SCADAS XS answers this challenge by allowing on-the-go investigation diagnostics and troubleshooting, even by nonexpert users who need to perform fast and reliable measurements. With its attractive, compact design, LMS SCADAS XS literally fits in your hand. Combined with reliable onboard data storage and a full working day's battery autonomy, it offers test engineers the flexibility they need to take testing efficiency to the next level.

Lab mobility: testing on a whole new level

Using Lab mobility, you can mix-and-match all types of LMS SCADAS systems and connect LMS SCADAS Mobile hardware or LMS SCADAS Recorder directly to your LMS SCADAS Lab hardware unit. You save time by using your LMS SCADAS Mobile to take measurements in the field. And when you return to the lab, all you have to do is connect your LMS SCADAS Mobile to the LMS SCADAS Lab to take more measurements. There's no need to spend valuable time on a new test setup, even on the roller bench or in the anechoic chamber.

On-demand channel and signal conditioning

Lab mobility lets you rethink your lab setup. Install a high-performance LMS SCADAS Lab system for day-to-day testing at each testing station. And supplement that with a selection of LMS SCADAS Mobile units for additional channel capacity and specialty work. Instead of depending on separate systems when you need a few extra channels or special conditioning, just grab your LMS SCADAS Mobile and hook it up for more capacity or more exotic testing.

Simplify your setups

The days when data acquisition hardware solutions only had to collect the data are long gone. The LMS SCADAS systems are real all-in-one multi-taskers that can handle all types of applications. The highly flexible LMS SCADAS hardware features integrated signal conditioning for a variety of transducers, such as strain gauges and accelerometers. The hardware accepts a variety of digital signals, from digital audio to CAN-bus, FlexRay, Global Positioning System (GPS) and digital wheel-force sensors. State-of-the-art synchronization guarantees seamless real-time integration of these signals in the data acquisition process. The LMS SCADAS family also includes a single universal module. With this one flexible module, you can take all types of noise, vibration and durability measurements. There is no need for separate devices.



No limits to what you can do

More channels at higher rates translates to mega-data at your fingertips. Maybe you don't need several hundreds of channels right now or a high-speed transfer rate, but with the trend toward more complex tests and upfront simulation, you might need this performance level shortly. And that is the beauty of an LMS SCADAS system – it is an investment that grows with you.

Superior data quality for effective testing

An LMS SCADAS system offers much more than supreme data quality. It offers built-in process understanding. Test engineers who use LMS SCADAS hardware are more efficient because the system lets them skip classic steps like auto-ranging. Not only does this save time, it eliminates risk factors as well. The data is delivered in the purest state possible – low noise, no unnecessary conversion and, best of all, minimal human error. Quality cables and rugged connectors ensure no-compromise data acquisition security.

A tailor-made solution that works perfectly every time

There is an LMS SCADAS data acquisition and signal conditioning system to match your exact requirements – from compact mobile units, autonomous smart recorders up to high-channel-count laboratory systems. With a large variety of supported transducers and signal conditioning, LMS SCADAS systems are optimally tuned to meet the specific needs of noise, vibration and durability testing.

The quality leader in data acquisition

With its range of signal conditioning, choice of connectors and high throughput rate, the LMS SCADAS family brings years of proven technology into the lab environment. High-precision data is guaranteed, including best-in-class limiting of harmonic distortion and interchannel specifications. The LMS SCADAS system achieves its high-level reliability through rigorous design standards, efficient quality control and a strong service organization.



An LMS SCADAS for every testing job

Covering a wide range of industry applications

LMS SCADAS XS

Compact and powerful pocket-size data acquisition system

- More than 12 channels
- More than six hours of battery autonomy (typical use)
- Set up, monitor and validate on the go
- Use in standalone mode, with a tablet or with a PC; replay in full standalone mode

LMS SCADAS Mobile

Maximum mobile measurement power

- Accommodates 8 to 216 channels in a single frame
- Compact size and low weight for optimal mobility
- Rugged design qualified for rough conditions and high temperatures

LMS SCADAS Recorder

PC-less recording and intelligent mobile data acquisition system

- On-the-spot validation prevents errors and annoying reruns
- Autonomous recording on CompactFlash cards
- Wireless operation using tablet

LMS SCADAS Lab

Fit-for-purpose laboratory solution

- Easy 19-inch rack mounting mainframe
- Configurable from 8 to hundreds of channels
- Arbitrary mix-and-match with additional LMS SCADAS Lab/Mobile/Recorder mainframes

LMS SCADAS XS

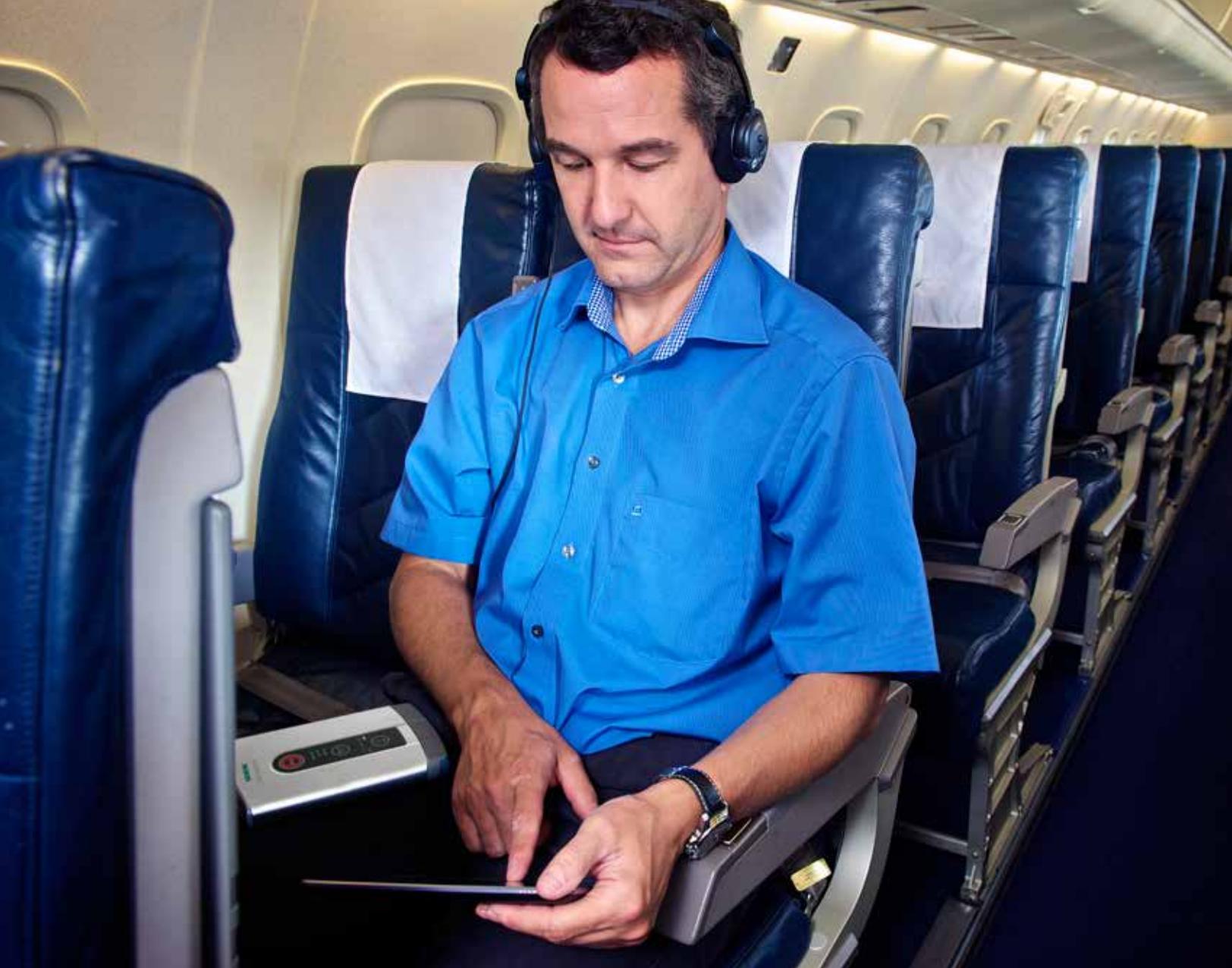
Extra small. Extra smart.

The LMS SCADAS XS is a data acquisition system designed for typical noise and vibration measurements. Next to supporting 6 or 12 traditional AC, DC or ICP® sensors, it can also be used to measure tacho signals, binaural microphone signals, CAN-bus signals and GPS.

Its small design allows it to be easily carried along while doing remote tests or when traveling. With the LMS Smart™ Control tablet application, it is possible to verify your measurement on the spot, without PC. The robust design enables it to withstand shocks and vibration levels in the toughest of circumstances. Its autonomy allows you to use it without recharging throughout a working day.

The SCADAS XS is the default tool for any noise and vibration engineer or technician: it can be used in full standalone, with a tablet or in traditional PC setups, in the lab or on the move.





LMS SCADAS XS at a glance

- Portable, easy to carry frontend with built-in battery
- Use in standalone, with a tablet or with a PC
- More than 12 channel system, supporting 12 analog AC, DC or ICP TEDS sensors in combination with a binaural headset for recording and replay, digital head support, digital CAN, dual analog, tacho and GPS

LMS SCADAS Mobile

Power and flexibility for mobile and lab testing

LMS SCADAS Mobile frontends pack the quality and acquisition power of the renowned LMS SCADAS system into a compact and rugged design, offering versatile signal-conditioning and data-acquisition capabilities. Designed for high measurement and testing productivity, LMS SCADAS Mobile represents one of the most powerful systems in its class. LMS SCADAS Mobile is supported by both LMS Test.Lab and LMS Test.Xpress for a wide range of noise, vibration and durability applications. With connectivity for hardware emergency stop, LMS SCADAS Mobile becomes a dedicated modular frontend for vibration control applications.

LMS SCADAS Mobile 01

Practical and ultra portable unit

- Accommodates 8 to 24 channels
- Ultra-lightweight and robust frame
- Nominal 2.5 hour battery autonomy

LMS SCADAS Mobile 02

Optimal flexibility

- Modular system for 8 to 48 input channels
- Compact and robust frame with optimal channel density
- Nominal 1.5-hour battery autonomy

LMS SCADAS Mobile 05

Maximum mobile measurement power

- LMS SCADAS Mobile 05 accommodates 8 to 120 channels
- Laptop-size robust frame with extensive channel density
- Nominal 1-hour battery autonomy

LMS SCADAS Mobile 09

High-channel density mobile unit

- LMS SCADAS Mobile 09 accommodates 8 to 216 channels
- Laptop-size robust frame with extensive channel density
- Nominal 1-hour battery autonomy

LMS SCADAS Mobile slave frames

Expand mobile measurement to hundreds of input channels

- LMS SCADAS Mobile 03S accommodates 8 to 72 channels
- LMS SCADAS Mobile 06S accommodates 8 to 144 channels
- LMS SCADAS Mobile 10S accommodates 8 to 240 channels
- True master-slave configuration beyond clock synchronization: fully synchronized data is saved in one measurement file
- Easy mechanical locking of frames in one unit
- Distributed acquisition through optical cabling

LMS SCADAS Mobile Vibration Control

Incrementing on LMS SCADAS Mobile

- 24-bit effective DAC output with tapered start-up and shut-down
- Status output for advanced synchronization purposes
- Safety control via hardware emergency stop and power watchdog



LMS SCADAS Mobile at a glance

- Accommodates 8 to 216 channels in a single frame
- Compact size and low weight for optimal mobility
- Rugged design qualified for rough conditions and high temperatures
- MIL-STD-810F qualified for shock and vibration
- Master-slave configurations for distributed systems and channel expansion
- DC automotive compliant
- Ultra-quiet operation, no fan cooling, ideal for acoustic measurements
- Supports IRIG-B and CAN-bus
- Up to 204.8 kHz sampling rate per channel
- 24-bit ADC technology
- 150 dB dynamic range
- Onboard dual tachometer and signal generator
- High-speed ethernet host interface

LMS SCADAS Recorder

Go anywhere reliability

PC-less recording and intelligent mobile data acquisition system

LMS SCADAS Recorder can be used as an autonomous recorder, as a smart recorder operated by a tablet or as a frontend system for in-field and laboratory applications. The integration of data acquisition and analysis considerably improves data consistency and allows users to reliably compare data sets. This extends the LMS™ platform to the broadest possible range of data acquisition and analysis tasks.

Wireless connection with a tablet provides instant data validation during the measurement process. This state-of-the-art remote control allows you to visualize and monitor real-time data, and change settings in the field if required.

By eliminating blind recording, LMS SCADAS Recorder not only saves you time, it provides the data you need to get the job done. The embedded LAN interface also allows operation of the LMS SCADAS Recorder as a PC frontend system for in-field or laboratory applications. It can be configured as a regular frontend streaming the data in parallel to a CompactFlash card and a PC through the embedded LAN interface. The data can be visualized, processed and saved on the hard disc in real-time.



LMS SCADAS Recorder at a glance

Incrementing on LMS SCADAS Mobile

- On-the-spot validation prevents errors and annoying reruns
- Autonomous recording on CompactFlash card
- Wireless tablet operation
- Easy-to-use recorder software for acquisition, measurement setup, instant data validation and data export
- Onboard GPS receiver, IRIG-B and CAN-bus
- Available as LMS SCADAS Recorder 01, 02, 05, 07 and 09

LMS SCADAS Recorder for durability testing

Measure anything, anywhere with total confidence

Designed for the extreme

Durability measurements start with quality cables and connectors for no-compromise data acquisition security. The LEMO connectors on LMS SCADAS Recorder hardware enable vibration-resistant cable connections. LMS SCADAS Recorder itself is a rugged instrument with full MIL-STD-810F compliance. Its sturdy and robust design stands up to the most diverse external climate conditions, shocks and vibrations. LMS SCADAS Recorder is also available in a 7-slot sealed version to resist dust and water.

PC-less data recording

Operating 100 percent autonomously, LMS SCADAS Recorder is particularly suited for challenging test applications, where using a PC-based data acquisition unit is often impractical. With direct 24-bit streaming, the recorder stores the acquired data on high performance, fast, read/write, solid-state CompactFlash memory cards. The acquired data is immediately available for onsite validation or further analysis back at the lab.

Expandable for high-channel count

LMS SCADAS Recorder is completely expandable, making it an ideal companion for multiple, in-field test setups, ranging from a simple 8-channel run to a complex, multi-frame, high-channel count, single-synchronized measurement.

For high-channel counts, where the channels are divided over multiple, separated testing units, the system supports a daisy-chained master-slave configuration. Fully synchronized data is automatically collected in one measurement file. The frames can easily be secured together using 50 m optical cable (rather than costly transducer cabling), thus resulting in much higher quality measurements.

Maximum measurement power

Dedicated to durability engineering, the LMS SCADAS Recorder contains flexible, built-in, universal signal conditioning. Up to 72 direct sensor measurements can be recorded in a single unit, allowing users to easily set up a variety of tests, whatever their needs.

LMS SCADAS Universal Durability Module supports 8 channels and offers a complete range of embedded signal conditioning to perform virtually any load data measurement imaginable:

- Strain gauges configurations
- Conditioners for carrier frequency support for strain gauges and LVDT or RVDT sensors
- Load cells, pressure transducers and potentiometers
- Capacitive, piezo-resistive or MEMS-based accelerometers
- ICP and TEDS IEEE 1451.4 conditioning
- 15 V active sensors
- 4-20 mA transmitters

For simpler or reduced test setups, tailored solutions are offered, like the Voltage/Bridge and Voltage/Bridge/ICP Durability Module.



LMS SCADAS Recorder for durability testing at a glance

- PC-free smart and secure data recording
- Compact and easy to install
- MIL-STD-810F, withstanding up to 7.7 grms vibrations and 60 gpk shocks
- Dust and water-splash protection: IP32 or IP54 ingress protection
- Rugged LEMO connector: MIL-STD-810F, for at least 5000 mating cycles
- Operating temperature: -20 °C to +55 °C
- No moving parts or fans: reduced risk of in-field breakdowns
- Low power consumption: less than 1 W per channel
- Flexible power supply: internal battery, vehicle DC battery or AC power supply
- Flexible setups: accessible front-panel connection points

LMS SCADAS Lab

Fit-for-purpose laboratory solution

LMS SCADAS Lab features a dedicated 19" rack-mountable frame with a channel count range from 8 to more than 1000 and AC power supply. Top data acquisition performance is standard thanks to a constantly high throughput and high-channel density of up to 480 input channels per frame.

Highly flexible, the system comes with various signal conditioning modules and a choice of connectors, such as BNC, CAMAC (LEMO) and Sub-D for patch panel configuration. Full-color LEDs indicate channel status, and dynamic displays automatically show the active channel numbers.

A great fit for high-channel lab testing

With LMS SCADAS Lab, it is easy to connect additional slave frames in a master-slave configuration using optical fiber cables. Convenient for noise and vibration laboratories, this modular solution lets operators easily configure a multi-frame system for higher channel count. Additionally, it is relatively simple to take the setup to more than 1000 channels.

Individual master frames can be configured into master-slave configurations and easily run as one unit using a simple master station. LMS SCADAS Lab offers channel-count-independent real-time processing and excellent throughput performance. This makes LMS SCADAS Lab an excellent solution for high-channel count modal testing, aircraft ground vibration testing, high-speed throughput or turbine testing applications.

Combining lab performance with optimal mobility

Each LMS SCADAS Lab setup can be supplemented with a selection of portable LMS SCADAS Mobile units for additional channel capacity and specialty work, basically eliminating the need for dedicated systems and separate devices and strengthening a company's overall hardware investment. This is called Lab-Mobility – allowing users to mix-and-match the various types of LMS SCADAS systems together to save time and effort between the field and the lab.



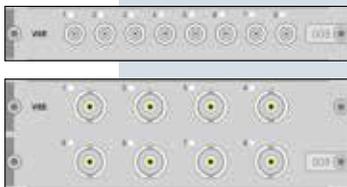
LMS SCADAS Lab at a glance

- Easy 19" rack mounting mainframe
- Configurable from 8 to hundreds of channels
- Up to 480 input channels in one frame
- Arbitrary mix-and-match with additional LMS SCADAS Lab/Mobile/Recorder mainframes
- 1.25 GBit hotlink fiber-optic master-slave connection with long optical cables for distributed system configurations
- Built-in calibration source for easy system and module calibration
- Up to 204.8 kHz sampling rate per channel
- 24-bit ADC technology
- 150 dB dynamic range
- High throughput rate
- Industrial grade components with extended temperature range for optimized reliability

A wide range of signal conditioning modules

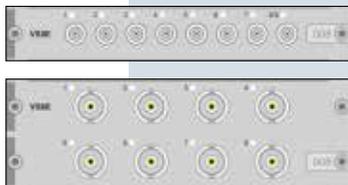
LMS SCADAS data acquisition systems accept different module types, including any combination of signal conditioning modules. Integrated signal conditioning and direct connection of each transducer to the inputs virtually eliminates interconnection problems associated with multiple units or breakout boxes, such as hum, noise and ground loops. The entire measurement chain is continuously

monitored during testing for open or short circuits. Overload checks are carried out on several places in the signal paths, including full bandwidth checks in front of the anti-alias filters. Finally, with locally-stored correction factors, the system is entirely digital to enable the highest quality data over an extended period as well as permit easy card swapping.



Eight-channel voltage / ICP / TEDS input module (V8-E)

- Single-ended input via BNC or high-quality CAMAC connectors
- Voltage and ICP modes selectable per channel
- 24-bit $\Sigma\Delta$ ADC with up to 204.8 kHz sampling frequency
- Alias-free bandwidth of 92 kHz
- 150 dB dynamic range to avoid range setting
- ICP sensor supply (2.7 mA), cable check with LED indication
- Input range up to ± 10 V



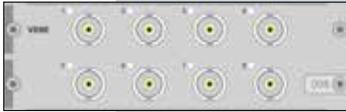
Eight-channel voltage / ICP / TEDS / digital audio input module (VS8-E)

- Incrementing on V8-E module
- Support of AES/EBU and SPDIF formats with HMS data
- Alias-free conversion to internal sample rate for accurate synchronization
- One stereo digital audio input channel



Eight-channel voltage / ICP / TEDS differential input module (VD8-E, VD8-ER and VD8MO)

- Incrementing on V8-E module
- Differential or single-ended input via BNC, high-quality CAMAC or Sub-D connectors
- AC coupling 0.05 Hz, 0.5 Hz or 7 Hz high-pass filter
- VD8-ER with additional 31.6V input range
- VD8MO monitoring output option supports each input channel with a monitoring output through grounded CAMAC connector



Eight-channel voltage / ICP / TEDS / microphone input module (VM8-E)

- Incrementing on V8-E module
- Dedicated module supporting conventional and ICP microphones
- 200 VDC polarization voltage
- 28 V preamplifier supply voltage



Eight-channel voltage / ICP / TEDS / charge input module (VC8-E)

- Incrementing on V8-E module
- Dedicated module supporting charge signal conditioning
- Industry standard microdot connectors
- Ultra low noise charge amplifiers with an input range up to ± 10000 pC



Eight-channel universal voltage / ICP / TEDS / bridge input module (VB8-II)

- Differential or single-ended input
- Voltage, ICP, DC bridge, AC bridge, AC LVDT, active sensor, transmitter and potentiometer support selectable per channel
- Bridge completion resistors 120 Ω and 350 Ω
- Internal shunt calibration
- Sensor supply: ICP, active sensor and transmitter as well as carrier frequency supply
- 24-bit Σ D ADC with up to 204.8 kHz sampling frequency and alias-free bandwidth of 92 kHz
- 150 dB dynamic range to avoid range setting



Four-channel differential charge module (DCH4)

- Dedicated conditioner for differential piezoelectric charge transducer
- Differential and single-ended charge input via shielded LEMO 1B connector
- 24-bit $\Sigma\Delta$ ADC with up to 204.8 kHz sampling frequency
- Alias-free bandwidth of 92 kHz
- 138 dB dynamic range
- Ultra low noise charge amplifiers with an input range of 10 pC to 10,000 pC
- Cable and sensor check through charge injection for day-to-day calibration



Eight-channel durability input module (DB8 A/B/C)

- Support of 1/1, 1/2 and 1/4 bridges, differential or single-ended input
- Voltage, ICP, TEDS, DC bridge, AC bridge, AC LVDT, active sensor, transmitter and potentiometer support selectable per channel
- Bridge completion resistors 120 Ω and 350 Ω with internal shunts for calibration
- Sensor supply: ICP, active sensor and carrier frequency supply
- 24-bit Σ D ADC with up to 51.2 kHz sampling frequency and alias free bandwidth of 5 kHz
- 150 dB dynamic range to avoid range setting
- DB8 A: base module, DB8 B: support of ICP sensors, DB8 C: support of ICP and AC bridge sensors and OVL LED on the module
- Not available on LMS SCADAS Lab hardware



Four-channel dynamic strain module (BDS4)

- Support of 1/1, 1/2 and 1/4 bridges
- Automatic bridge nulling using current injection
- Built-in shunt calibration
- Balanced constant current supply for single strain gauge measurements using 2 or 4 wires in a resistance configuration
- Balanced AC-coupling to measure dynamic strain with optimum signal to noise ratio
- Support of ground isolated piezo-resistive or variable capacitance sensors
- 24-bit $\Sigma\Delta$ ADC with up to 204.8 kHz sampling frequency
- Alias-free bandwidth of 92 kHz
- Selectable voltage or current bridge supply per channel



Four-channel general purpose signal output module (DAC4)

- 24-bit D/A converters for a dynamic range of 150 dB
- Bandwidth of up to 40 kHz with 1 Hz spectral resolution
- ± 10 V output voltage
- Uncorrelated baseband noise generation
- Sine and swept sine with amplitude, phase and sweep control
- Smooth transition algorithm for transient free amplitude control



Four-channel input module for rotational vibration (RV4)

- Provides tacho, torsional vibration and angular position information
- Supports any combination of analog tacho, digital tacho and incremental encoder
- Simultaneous and synchronic acquisition of rotational signals and normal analog signals
- Real-time correction for missing pulses or double pulses
- Real-time separation of static and dynamic speeds
- Ultra high speed 820 MHz counter for 1.2 nsec tacho resolution
- Tacho update rate up to 200 kHz



Eight-channel thermocouple module (T8)

- Support for type B, E, J, K, N, R, S and T thermocouples
- Channel selectable thermocouple type
- Onboard linearization in accordance with the ITS-90 standard, offering an accuracy of 0.1 °C or better
- Onboard cold junction compensation with an accuracy of 0.3 °C or better
- 24-bit oversampling SAR ADC, with an output sampling rate of 25.6 kHz
- Galvanic isolation up to 70 V



Four-channel CAN module (CN4)

- Four independent CAN-buses inputs via DB9 shielded connectors
- Input signal levels compliant with the ISO11898-2 and ISO11898-3 standards
- Message handling compliant with CAN 2.0B and support for J1939
- Support for high-speed or low-speed CAN per CAN-bus
- Color-coded LED feedback indicators
- Full galvanic isolation for each bus
- Software selectable list of CAN channels to be measured with the dynamic channels



Wheel-force interface module (WFI2)

- Supports 8 wheel-forces sensors
- Supports 2 Kistler ROADYN2000 frames per module
- Access up to 10 channels per wheel-forces sensor
- Synchronous acquisition of WFT signals without loss of accuracy through clock drift
- Sample rates up to 1280 kHz
- Not available on LMS SCADAS Lab hardware



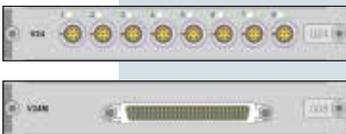
Sixteen-channel analog output module (AO16)

- Conditioned and calibrated reproduction of analog copies of the acquired input signal
- Fine-tuned for test rig signal conditioning or monitoring applications
- 24-bit D/A converters with 51.2 kHz data rate
- Accurate reproduction up to 5 kHz bandwidth with onboard gain and offset calibration
- Normalized signal output level of ± 10 V with >97 dB signal to noise ratio
- Steady latency better than 10 ms



Four-channel FlexRay module (FR4)

- Supports two dual FlexRay channel configuration for enhanced fault tolerance
- According to FlexRay protocol specifications V2.1A
- FlexRay bit rate up to 10 Mbit per second
- Delivers time-stamped FlexRay messages
- Synchronization of message stream with the internal SCADAS acquisition rate
- Full galvanic isolation for each bus



24 channel input module (V24 and V24M)

- Easy connection of up to 24 channels from triax sensors (V24) or with breakout box (V24M)
- Single-ended input via 9-pole lemo (V24) or 68 pin HD D-SUB connector (V24M)
- Voltage and ICP modes selectable per channel
- 24-bit $\Sigma\Delta$ ADC with up to 51.2 kHz sampling frequency
- Alias-free bandwidth of 23 kHz
- 150 dB dynamic range to avoid range setting
- ICP sensor supply (2.7 mA), cable check with LED indication
- Input range of ± 10 V



Dual camera interface module (CIM2)

- Support of 2 IP cameras per module
- Synchronous acquisition of video signals with dynamic data
- Support for 720p HD and VGA resolution
- Frame rates up to 30 fps
- Rugged connection through LEMO connectors
- Camera power using PoE protocol (Power-on-Ethernet)
- Fault detection with LED indication on front-panel



Eight-channel thermocouple IP67 module (TCK8)

- IP67 ingress protection
- 8 Thermocouple inputs type K (NiCr/NiAl)
- Cold junction compensation
- Measurement data output to CAN 2.0 B according to ISO 11898-2
- Galvanic isolation
- Screw less mounting



Four-channel input module for floating ICP and charge (VCF4)

- 4 floating input channels via isolated microdot connectors
- ICP and charge mode selectable per channel
- 24-bit analog to digital conversion with up to 204.8 kHz sample frequency and up to 46kHz bandwidth
- Voltage range from $\pm 100\text{mV}$ to $\pm 10\text{V}$
- Charge range from $\pm 100\text{pC}$ to $\pm 316,000\text{pC}$

LMS SCADAS family – frames overview

Frame	LMS SCADAS XS	LMS SCADAS Mobile 01	LMS SCADAS Mobile 01V	LMS SCADAS Recorder 01	LMS SCADAS Mobile 02	LMS SCADAS Mobile 02V	LMS SCADAS Recorder 02	LMS SCADAS Mobile 03S
Usage discipline	L,M,A	L,M,V	L,M,V	L,M,A	L,M,V	L,M,V	L,M,A	-
Number of free slots	na	1	1	1	2	2	2	3
Max number of channels per frame	6 or 12	24	24	24	48	48	48	72
Channel expansion via slave frame	na	-	-	-	yes	yes	yes	-
Transfer rate (Msamples/sec)	1	3,8	3,8	3,8	16	16	16	-
Embedded tachometer inputs	2	2	-	2	2	2	2	-
Embedded signal generator	-	2	2 *	2	2	2 *	2	-
Embedded CAN-bus	1	1	-	1	1	1	1	-
Embedded GPS	1	-	-	1	-	-	1	-
Embedded digital and analog IRIG-B	-	1	1	1	1	1	1	-
Tablet operation	yes	-	-	yes	-	-	yes	-
Internal data storage	yes	-	-	yes	-	-	yes	-
Ethernet interface	No, USB2.0	100 Mb	100 Mb	1 Gb	1 Gb	1 Gb	1 Gb	-
Power consumption	4 W	15 W	-	-	25 W	-	-	-
External power mode	USB	AC using external mains adapter, auto ranging DC input from 10.8VDC to 42 VDC						
Internal battery mode	Rechargeable Li-ion battery, 3.7V 4.6 Ah	Rechargeable Li-ion MN battery; rating 21.6 V-1.6 Ah						
Internal battery operation time	6 hr (typical)	2 hr 30 min			1hr 30 min			
Cooling system	-	Heat conduction via card guides, cooling via heat pipes to heat sink						
Dimensions (W x H x D) mm	114 x 170 x 23	203 x 58 x 260			216 x 76 x 271			
Weight (full configuration)	0.5kg	2.5kg			3.5 kg			
Operating temperature	-10 to + 50	Operating: -20 °C to + 55 °C, storage: -20 °C to +70 °C						
Relative humidity	Up to 95% noncondensing							
Vibration protection	MIL-STD-810F [20-2000 Hz (random): 7.7 grms]							
Shock protection	MIL-STD-810F [60 gpk applying an 11 ms sawtooth shock pulse; 3 shocks per direction]							
Ingress protection	IP32							

- L Laboratory
- M Mobile
- A Autonomous
- V Environmental/Vibration Control
- "S" Slave frame
- * Also in "RB" version for reduced bandwidth upto 5 kHz

LMS SCADAS Mobile 05	LMS SCADAS Mobile 05V	LMS SCADAS Recorder 05	LMS SCADAS Mobile 06S	LMS SCADAS Recorder 07	LMS SCADAS Recorder 08S	LMS SCADAS Mobile 09	LMS SCADAS Recorder 09	LMS SCADAS Mobile 10S	LMS SCADAS Lab 20	LMS SCADAS Lab 20S	
L,M,V	L,M,V	L,M,A	-	L,M,A	-	L,M,V	L,M,A	-	L,V	-	
5	5	5	6	7	8	9	9	10	20	21	
120	120	120	144	168	192	216	216	240	480	504	
yes	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	
16	16	16	-	3,8	-	16	16	-	16	-	
2	2	2	-	2	-	2	2	-	-	-	
2	2*	2	-	2	-	2*	2	-	2	-	
1	1	1	-	1	-	1	1	-	1	-	
-	-	1	-	1	-	-	1	-	-	-	
1	1	1	-	1	-	1	1	-	1	-	
-	-	yes	-	yes	-	-	yes	-	-	-	
-	-	yes	-	yes	-	-	yes	-	-	-	
1 Gb	1 Gb	1 Gb	-	1 Gb	-	1 Gb	1 Gb	-	1 Gb	-	
40 W	-	-	-	65 W	85 W	-	-	-	190 W	-	
									Auto ranging input, 90 VAC to 240 VAC		
									-		
1 hr				40 min		1 hr				-	
									Rear fan cooling		
345 x 92 x 300				345 x 142 x 300				448 x 177 x 448			
6.2 kg				9.5 kg		10.5 kg				18 kg	
									Operating: 0 °C to +45 °C, storage: -20 °C to +70 °C		
									-		
									-		
				IP54		IP32				-	

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