

The image shows a Siemens LMS Test.Xpress hardware device, a silver and black rectangular unit with a large antenna on top. The front panel is densely packed with various ports and connectors, including BNC connectors, D-sub connectors, and a USB port. Several black cables are plugged into the front ports. The device is connected to a large, black, ribbed motor or actuator. A blue cable is also visible, running from the device towards the motor. The background is a blurred industrial setting.

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LMS Test.Xpress

Powering personal productivity

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LMS Test.Xpress

Powering personal productivity

Traditional analyzers are extremely flexible tools to qualify products' noise, vibration or durability performances. They are easy to operate and immediately show the frequency content of a vibration, sound or fatigue signal. They are, however, also very limited. Why restrict measurements to just 2 or 4 channels, when productivity could be so much higher with 8 channels or more? What about direct connectivity of all sensors – from standard accelerometers and microphones, strain gauges, temperature sensors to GPS receivers and CAN bus? How much could be gained by running FFT, order, rainflow and octave analysis in real-time and in parallel?

LMS™ Test.Xpress is a no-compromise sound, vibration and durability analyzer. It combines the ease of use of a traditional analyzer with the high-speed performance and measurement quality of an advanced measurement system. It is the perfect solution for a wide range of vibration and acoustical ISO standards and comes with an easy-to-use interface. LMS Test.Xpress integrates 30 years of engineering experience and is part of a complete portfolio of scalable testing and engineering solutions.

Fit for the job – From troubleshooting to certification testing

LMS Test.Xpress has been designed for ease of use and optimal productivity for different types of vibration, acoustics or durability related tasks, such as troubleshooting, verification work, mobile testing or qualification and certification testing. LMS Test.Xpress addresses all industry needs – from automotive manufacturing or white goods to machinery components or business electronics. The intuitive user interface is available in different languages and the system displays all relevant parameters at any time.

For the ISO certification testing, all checks and requirements from the ISO standards have been hard-coded into the software so users need not to worry about details: just clicking a few buttons will generate the ISO standardized report.

With the interactive screen layout, users can drag and drop data, add displays, and easily compare measurements. This provides a short learning curve and optimal efficiency.

Real-time power – faster testing – easier diagnosis

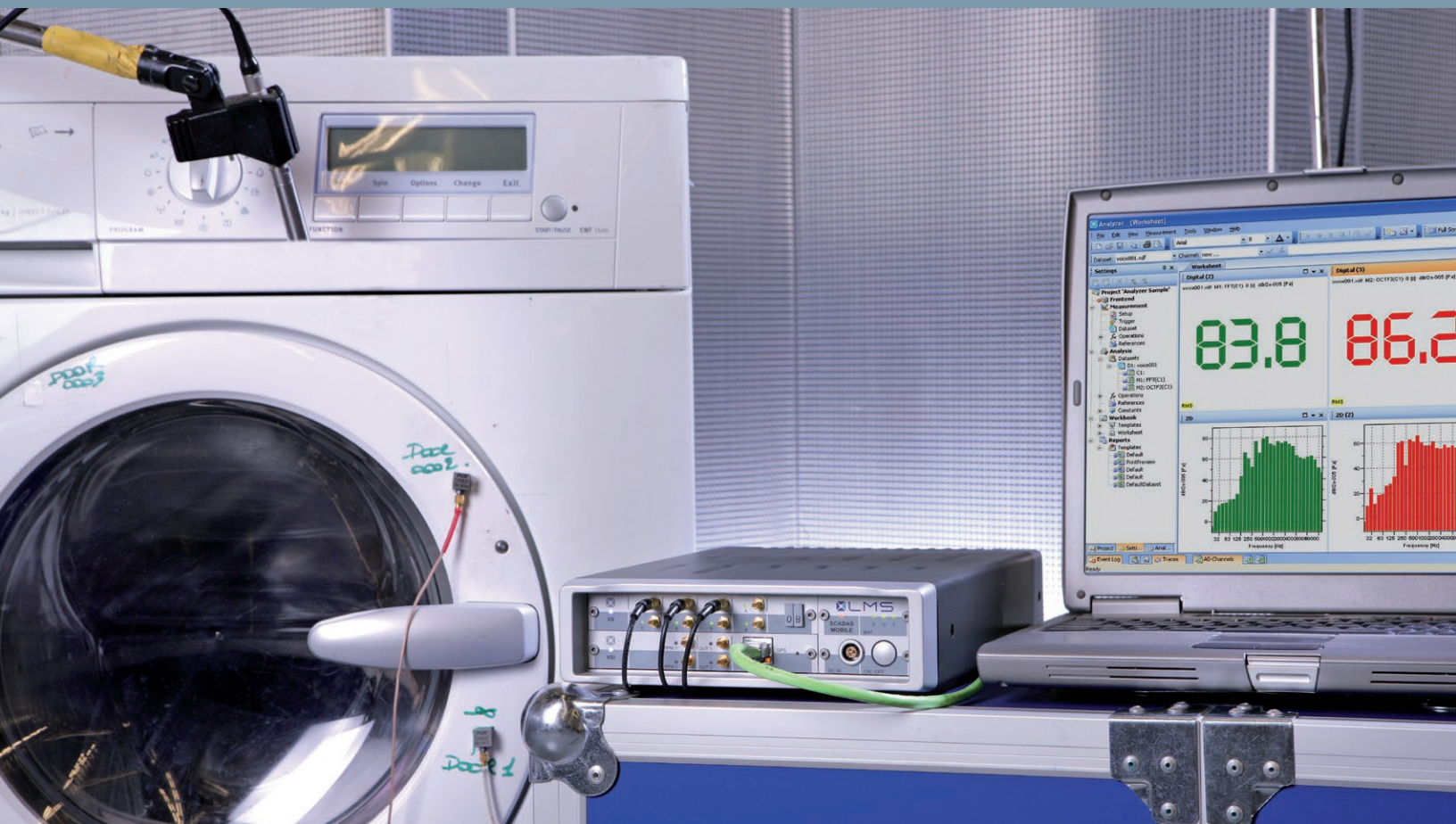
Designed for optimal productivity, LMS Test.Xpress provides the right combination of acquisition and analysis capabilities. The system shows instant results and saves raw time data for backup or further post processing. LMS Test.Xpress offers easy access to advanced online tools like filtering, smoothing, averaging and a mathematical combination of channels. In combination with specific solutions for ISO certification testing, it provides a full platform for all daily tasks.

- Perform FFT, order, octave and throughput in parallel while displaying real-time results on screen
- Validate data quality on the spot – diagnose problems during measurements

Click, test, done – Ideal tool for both troubleshooting and certification testing

LMS Test.Xpress features powerful capabilities to automate specific measurement campaigns, from measurement setup, dedicated post processing to the final report generation in MS Office.

- Automate measurement procedures from acquisition to report
- Prepare measurement campaigns upfront and reduce setup and execution time
- Use predefined ISO templates for certification testing
- Lock critical parameters to safeguard data quality and consistency



Light, compact, portable – Optimal flexibility for lab and field testing

LMS Test.Xpress is seamlessly integrated with the state-of-the-art LMS SCADAS™ Mobile data acquisition frontends. Connecting different frames expands the system from 4, 8, 16, 40 or 72 to hundreds of channels. Both systems support a wide range of sensors for direct connectivity, ranging from ICP accelerometers and microphones over temperature sensors, strain gauge sensors up to built-in GPS sensors and CAN bus systems.

Investment protection – A scalable solution that adapts to future needs

The LMS Test.Xpress system is scalable, from 4 up to hundreds of channels. It is an open system: engineers can easily import and export external formats, or exchange data from the LMS Test.Lab™ software suite. It is possible to extend the LMS Test.Xpress system with advanced LMS Test.Lab sound and vibration engineering tools, while using the same LMS SCADAS frontend.

- Scalable frontend systems and scalable software solutions
- Full data compatibility
- Easy import and export of external data formats

LMS Test.Xpress

Integrated acquisition and analysis capabilities

FFT analyzer

The FFT analysis in LMS Test.Xpress offers real-time analysis of FFTs, PSDs, crosspowers, FRFs, coherences, etc. Users can determine resonances, damping values or harmonic content from the frequency spectrum. All functions can be averaged or tracked to a specific channel. The FFT analysis can be combined with any other analyzer function.

- Real-time narrow-band frequency analysis
- Multiple real-time frequency calculations on one data set
- Includes impact functionality
- Simultaneous multi-analysis without performance loss

Modal impact testing

LMS™ Test.Xpress Modal Impact Testing software supports interactive and easy measurement using impact hammer excitation according to “roving” or “fixed hammer” techniques. The calibration wizard guides the user through the calibration process. Calibrator, channel information and data visualization in time and frequency domains are clearly displayed. Impact hammer trigger detection is fully automated through trigger detection wizard.

- Real-time and parallel measurement (windowed/un-windowed time data, APS, FRF, coherence)
- Trigger setting wizard for hammer hit
- Versatile graphical displays for measurement control

Octave analyzer

LMS™ Test.Xpress Octave Analyzer software is ideal to troubleshoot acoustic problems. The octave filter functions can be averaged or tracked against a specific channel. To perform various analyses simultaneously, combine the octave analysis with any other analyzer function. The LMS SCADAS frontend has no cooling fan and provides the silent operation required for acoustic testing.

- Real-time octaves according to IEC 61260 and ANSI S1.11 Class 1 standards
- Octave fractions 1/1, 1/3, 1/6, 1/12 and 1/24
- Reverberation time

Integrating sound level meter

The LMS Test.Xpress Octave Analyzer also replaces traditional integrating sound level meters. It supports the full set of sound level meter functions while providing

calculation on multiple channels, granting users full insight in the data with just one measurement.

- Integrating sound level meter according to IEC 61672
- Unlimited number of channels
- Parallel functions: SPL, Leq, Lmax, Lmin, Lpeak, Lperc, SEL
- Possible parallel combinations : fast-slow-impulsive and A-, C-, Z-weighting

ISO sound power

ISO certification testing is made easy with LMS Test.Xpress. To ensure compliance with the ISO measurement process and minimize operator error, the complete procedure is fully automated and protected by a user-defined password. The resulting report in MS Excel and/or Word contains all ISO required information.

- Guided 3-step automated measurement procedure according to ISO 3741, ISO 3744, ISO 3745, ISO 3746, ISO 3747 (pressure-based), ISO 9614-1 and ISO 9614-2 (intensity-based)
- Supporting EC/2000/14 directive and ISO 7779, ISO 6395, ISO 6396

ISO sound intensity and source localization

LMS Test.Xpress optimally supports sound intensity-based ISO certification tests for both point and scanning methods. Critical results such as ISO field indicators (F1, F2, F3 and F4), calculated levels (sound power, sound intensity and pressure intensity) are presented in tabular format. Corrective actions are suggested if the ISO criteria are not met.

- Guided 3-step automated measurement procedure according to ISO 9614-1 and ISO 9614-2
- Results can be used for ISO sound power calculation and source localization

ISO human body vibration

LMS™ Test.Xpress Human Body Vibration software is a powerful certification tool for ISO 2631 and ISO 5349 standards. The color-coded 2D display gives real-time feedback and clearly indicates limit values and/or violations as specified in the EC directives. In-depth root cause analysis of non-compliant results is obtainable.

- Whole body vibration test according to ISO 2631
- Hand-arm Vibration test according to ISO 5349
- Compliance with European directive 2002/44/EC



Order analyzer

LMS™ Test.Xpress Order Analyzer software calculates order maps, single order cuts and overall levels. The system re-samples data relative to a specific rpm or speed channel and clearly shows all speed-related phenomena. For industrial applications, it offers tachometer conditioning and digital processing tools to guarantee accurate measurement results, even in case of rapidly accelerating shafts.

- Real-time high-precision order tracking
- 2 dedicated tachometer conditioning inputs
- Any dynamic channel as speed input

Durability analyzer

LMS™ Test.Xpress Rainflow and Histogram Analyzer software supports in-depth analysis for durability and fatigue. Single value statistics such as maximum, minimum, mean or standard deviations are calculated on streaming channels. Detailed durability analysis includes spectral analysis, Rosette calculations, rainflow counting, range-pair

counting and time-at-level calculations, for easy determination of fatigue behavior in different loading conditions. Video images can be added and compared to measured data to better understand the circumstances of a specific event.

Throughput recorder

Parallel to the analyzer applications, LMS Test.Xpress can function as a throughput recorder. The system directly streams data to disk and saves long data sequences at high bandwidth while maintaining flexible data visualization and manipulation. Throughput of data is also possible in standalone mode. Full data security is ensured with parallel data throughput to host PC and CompactFlash card. Advanced triggering capabilities with pre- and post-trigger let the system operate independently, and start data recording when a specific event occurs.

LMS SCADAS Mobile and Recorder

Power and flexibility for lab and field testing

LMS Test.Xpress is seamlessly integrated with the state-of-the-art LMS SCADAS Mobile and LMS SCADAS Recorder frontends. The LMS SCADAS Mobile is one of the most powerful, compact and lightweight data acquisition front-ends of its class, bundled into a fully rugged and ultra portable frontend package. Built on LMS SCADAS Mobile technology, the LMS SCADAS Recorder can be used as an autonomous recorder, as a smart recorder with a wireless PDA connection or as a frontend system for in-field and laboratory applications. The LMS Test.Xpress shares the same frontends with the LMS Test.Lab software suite, offering users a scalable path for future application extensions.

Scalable system configurations

Select your channel count: from the ultra-compact 4 to 8-channel SCM01 to frontends that accommodate up to 16, 40 or 72 channels in a single frame. The modular systems can be chained for additional channels on-demand. Choose the signal conditioning that you need: the hardware features integrated signal conditioning for a variety of transducers, like strain gauges, accelerometers, ICP sensors, microphones, charge transducers and digital signals, from digital audio to CAN-bus, FlexRay, GPS and digital wheel-force sensors. The LMS SCADAS Recorder operates in standalone mode, using downloaded test templates, controlled only by a PDA smart control. Data is written onto an internal memory card and/or host PC for further analysis.

Maximum measurement power

All LMS SCADAS Mobile and Recorder frontends pack the quality and acquisition power of the renowned LMS SCADAS system into a compact and rugged design, offering versatile data acquisition and signal-conditioning capabilities. The LMS SCADAS system offers one of the most powerful analyzer configurations in its class.

A portable and solid package

LMS SCADAS Mobile frontends flexibly adapt to any kind of lab or field-testing setup. The systems are not just easy to carry; they also offer easy cable connections. The wide-range power supply accepts AC and DC input voltages. The system's low power consumption guarantees up to 2.5 hours of independent battery operation. Through its robust design, the LMS SCADAS Mobile withstands rough operating conditions, in compliance with MIL-STD-810F, and keeps running under extremely low or high temperatures. Its innovative cooling system eliminates the need for a cooling fan, offering absolute silent operation for acoustic measurements.

Professional support for full productivity

Access to highly responsive support centers around the world is offered for software and hardware maintenance. The hardware calibration services ensure calibration according to ISO and international standards. We also offer a full hardware maintenance contract, ensuring minimum downtime in case of hardware failure. A software service contract provides free software upgrades, privileged access to the online support section of our web site and expert assistance from support center lines.

LMS SCADAS Mobile and LMS SCADAS Recorder frames



Frame code	SCM01/ SCR01	SCM02/ SCR02	SCM05/SCR05	SCM09/SCR09
Number of free slots	1	2	5	9
Maximum number of channels per frame	8	16	40	72
Transfer rate (Msamples/sec)	8			
Embedded tachometer inputs	2			
Embedded signal generator	2			
Embedded CAN-bus & GPS	1			
External data storage	PC hard disc via Ethernet			
External power mode	AC using external mains adapter, Auto ranging DC input from 9VDC to 36VDC			
Internal battery mode	Rechargeable Li-ion MN battery; rating 21.6V-1.6Ah			
Internal battery operation time	150min	90min	60min	64min
Dimensions (WxHxD) mm	203x62x280	216x76x271	345x92x300	345x142x300
Weight	2.5kg	5.3kg	6.2kg	10.5kg
Operating temperature	Operating: -20°C to +55°C, Storage: -20°C to +70°C			
Relative humidity	Up to 95% noncondensing			
Vibration protection	MIL-STD-810F [20-2000Hz (random): 7.7grms]			
Shock protection	MIL-STD-810F [60gpk applying an 11ms sawtooth shock pulse; 3 shocks per direction]			

LMS SCADAS Mobile and LMS SCADAS Recorder at a glance

- 4 to hundreds of channels
- Master-slave configurations for distributed systems and channel expansion
- Up to 204.8 kHz sampling rate per channel
- 24-bit DSP technology
- 150 dB spurious-free dynamic range
- 14 Msamples/s throughput rate to host PC using high-speed ethernet connection
- DC Automotive compliant (9-36 V)
- Qualified for rough and high temperature operating conditions

LMS SCADAS Recorder – Incrementing on the LMS SCADAS Mobile

- 7.7 Msamples/s throughput rate to internal storage compact flash card
- 5 Msamples/s parallel throughput to host PC and compact flash card
- Wireless PDA remote control with bluetooth communication
- High-speed ethernet connection for direct streaming to PC
- Standard onboard GPS receiver and CAN

About Siemens PLM Software

Siemens PLM Software, a business unit of the Siemens Industry Automation Division, is a world-leading provider of product lifecycle management (PLM) software, systems and services with nine million licensed seats and 77,000 customers worldwide. Headquartered in Plano, Texas, Siemens PLM Software helps thousands of companies make great products by optimizing their lifecycle processes, from planning and development through manufacturing and support. Our HD-PLM vision is to give everyone involved in making a product the information they need, when they need it, to make the smartest decision. For more information on Siemens PLM Software products and services, visit www.siemens.com/plm.

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