XL2 Firmware

Revision History

Oct 2023	V4.88	• Support of RTA logging together with audio for NoiseScout • Store measurement also in case of Error 100

June 2023	V4.86	• Sound Level Meter
		  ○ TaktMax levels are synchronised to absolute time and are no longer reset with the repeated timer.
		  ○ k-Values: enabled "RUN" in profiles (again) and fixed deleting of k2 values.
		• Noise Criteria:
		  ○ Updated Noise floor data.

Nov 2022	V4.84	• Sound Level Meter
		  ○ CIC support for all microphones with MA230 preamplifier
		  ○ Low and Overload indication for microphone types M2010, M2015, M2310, M2311, M2315 and M2914
		  ○ Kset Correction: Audience measurement for LA and LC may be executed separately, measurement period is 15 seconds
		• Noise Criteria:
		  ○ XL2 and Room Acoustics Reporter show same results
		• General:
		  ○ Scheduler follows the preset weekdays w/o losing days
		• Vibration Meter:
		  ○ Reference values are stored persistently

May 2022	V4.82	• Sound Level Meter ○ Added levels types LZeq63Hz and LZeq125Hz

Dec 2021	V4.80	• Sound Level Meter
		  ○ Added levels types LAF20-200 and LAFmax20-200 and LAeq20-200
		• Reverberation Time RT60
		  ○ Improved overload reporting

Oct 2021	V4.70	• Noise Curves
		  ○ Supports ANSI/ASA S12.2-2019
		• Vibration Meter
		  ○ Wave file naming supports wide sensitivity range

June 2020	V4.60	• Calibration Menu ○ Selectable spectral correction using outdoor measurement microphone M4261-WP (class 2)

		• General ○ Supporting M2340 Measurement Microphone
Nov 2020	V4.50	• Speech Intelligibility ○ STIPA edition 5 added

Oct 2020	V4.40	• Sound Level Meter
		  ○ 1/1 Octave filter in accordance with IEC 61260-1, Base 10
		  ○ Improved ½" diffuse field correction
		• Vibration Meter
		  ○ Calculated Peak and Peak-Peak levels for spectra
		  ○ Fixed units (selectable)
		  ○ Default setting changed to max and live level for spectra
		  ○ Peak particle velocity PPV and PPVmax added

Jan 2020	V4.33	• Sound Level Meter
		  ○ Added levels types Prev_LCpk and LCpk5" for DIN15905-5
		  ○ Swiss SLV profiles are replaced by V-NISSG profiles
		• STIPA
		  ○ Measurement duration for ambient noise may now be up to 10 minutes.
		• Reverberation Time RT60
		  ○ Improved cycle triggering
		• Vibration Meter
		  ○ 1/12 Octave: Frequency shifting in 1/6th and 1/12th octave resolution corrected.

Nov 2019	V4.32	• Sound Level Meter ○ RTA Percentiles always start at whole numbers.

Oct 2019	V4.30	• Sound Level Meter
		  ○ Improved RTA filters with faster settling, Base 10
		  ○ Default reporting setting: Add Spectra: All, Report Values: All
		  ○ Default logging setting: Add Spectra: LEQ, Log Values: All
		• 1/12 Octave
		  ○ New level types for fast frequency response measurements: Spectral gliding EQ1" and EQ4"
		  ○ Upper and lower frequency range limit for tolerances
		• Vibration Meter
		  ○ 1/12 Octave: New level types for smoother settling: Spectral gliding EQ1" and EQ4"
		  ○ Increased maximum accelerometer sensitivity to 10 V/(m/s^2)
		• General
		  ○ Voice note playback during load of a test
		  ○ Added Beijing time zone

May 2019	V4.20	• RT60 Reverberation Time ○ Optimized user interface • Noise Curves

		○ NR values comply with ISO R 1996 (1971) in 0.1 dB steps • General ○ Support of Room Acoustics Option ○ Default profiles with Autosave = "On"
Jan 2019	V4.10	• Scheduler ○ Supports open-ended scheduling for permanent measurements • 1/12 Octave (optional) ○ 1/6 and 1/12 octave frequencies labelling according to IEC 61260-1 2014, Base 10 • Vibration Meter (optional) ○ Extended vibration sensitivity range up to 100 V/g • General ○ Main menu offers vibration / sound mode switch (optional) ○ Projector PRO Option added
Sep 2018	V4.04	• Sound Level Meter ○ Diffuse field correction for class 2 microphones M4261/M4260 • RT60 Reverberation Time ○ Improved cycle triggering • Calibration ○ Accepted deviation limited to ±1.5 dB for class 1 and ±3dB for class 2 measurement microphones • FFT and 1/12 Octave ○ Linear audio logging available 48 kHz, 24 bit (requires optional Extended Acoustic Pack, enabled with file switch) • Vibration Meter ○ Filter 10 - 1000 Hz added • General ○ Optimized SD Card handling, especially for 32 GB cards
Apr 2018	V4.03	• Vibration Meter ○ Spectral level accuracy improved for vibration applications ○ Vibration reference values accurate to two decimal places ○ Improved user dialogues • STIPA ○ Improved user dialogue when saving background noise measurements
Apr 2018	V4.02	• Introduces Vibration Meter functionality (optional) ○ Measurement of acceleration, velocity and displacement ○ Broadband and Spectrum (RTA, 0.8 Hz – 2.5 kHz) ○ FFT: 1 – 105 Hz, 5 – 421 Hz, 23 – 1687 Hz ○ High-resolution Zoom-FFT and 1/12 Octave analysis (optional) ○ Selectable units: linear / dB, metric / imperial, g ○ Remote measurement commands support (optional) ○ Automated switching between sound and vibration domain with ASD based sensors

Oct 2017	V3.33	• Sound Level Meter
		  ○ k2 value can be measured based on LCeq
		• General
		  ○ Optimizations for NoiseScout Gateway Mode

Oct 2017	V3.32	• Sound Level Meter
		  ○ RTA supports simultaneous logging of Leq, Lmax and Lmin (optional)
		  ○ Gliding Leq over one second added
		• Reverberation Time RT60
		  ○ Improved measurement method for very long RT60

Jun 2017	V3.31	• Sound Level Meter
		  ○ Audio recording for NoiseScout, the unattended noise measurement solution
		• Remote Measurement Option:
		  ○ Basic RT60 support
		  ○ Read out of SLMeter Settling Time
		• General:
		  ○ Sound Power Option added

Dec 2016	V3.23	• RMS/THD+N
		  ○ Level measurements in dBm (with preselected load impedance)
		• Memory Menu
		  ○ Predefined file names added to Append Mode dialog
		• General
		  ○ Sound Insulation Option added

Nov 2016	V3.22	• Sound Level Meter
		  ○ Impulsiveness detection and penalty calculation in accordance with the BS 4142-2014 and NT ACOU 112-2002 standards
		• Noise Curves (optional)
		  ○ 8 kHz band added for ANSI S12.2-2008 standard

Feb 2016	V3.12	• Sound Level Meter ○ X^{-1}-Curve corresponding to SMPTE ST 202:2010 and ISO 2969:2015

Jan 2016	V3.10	• Sound Level Meter
		  ○ Gliding LCeq for live sound monitoring
		  ○ RTA view reads Leq, Lmax and Lmin broadband bars
		  ○ Correction values may be stored in profiles
		  ○ Reports list overload & underload status
		  ○ 23 kHz low pass filter added for broadband values
		• Data File Format Changed
		  ○ Sound Level Meter files list additional columns with overload & underload status
		  ○ Header includes additional line with time zone setting
		  ○ Checksum listed at the end of the report
		• Memory Menu
		  ○ Assisted saving mode added
		  ○ Handling of full SD Card improved
		• Calibration Menu
		  ○ Spectral diffuse field correction for M2230 microphone
		• Spectral Limits Tolerance Mode
		  ○ Parameter #FailDeadTime added for condition monitoring

Mai 2015	V3.03	• Fixes a bug in the "Locked run mode"

Apr 2015	V3.02	• Sound Level Meter
		  ○ "Locked run mode" for easiest operation
		  ○ Activated logging in factory default settings
		  ○ Adding event trigger setup for noise nuisance assessment with external input keypad
		  ○ Flexible setting of percentiles from 0.1% to 99.9%
		  ○ New data file generated at size exceeding 2 GB for easier handling
		• RT60 Reverberation Time
		  ○ Added T30 measurement method
		  ○ Improved auto trigger functionality
		• 1/12 Octave (optional)
		  ○ Reading sum of displayed bands for passed/failed measurements with user defined frequency range
		• STIPA Analyzer
		  ○ Adjustable wideband level LAeq for ambient noise correction
		• Calibration Menu
		  ○ Selectable spectral correction using outdoor microphone M2230-WP for horizontal noise incidents

		• System Settings
		  ○ Activation of spectral correction selection in calibration menu
		• Profile
		  ○ Manual ranging offered in profile set up
		• Remote Measurement (optional)
		  ○ Querying 10 individual levels with a single command
		  ○ Supporting FFT and 1/12 Octave data sets
		• Data Management
		  ○ Auto-saving measurement data in factory default settings

Jan 2014	V2.72	• Sound Level Meter
		  ○ Percentile sound levels
		  ▪ Customized level setting from 1% to 99%
		  ▪ Selectable reference level Lxy (x= A, C or Z, y= F, S or EQ1")
		  ○ Customized moving-time-average sound levels LAEQt
		  ○ Pressing the pause button interrupts the measurement as in the past, but the data logging is now continued. The pause status is listed in the log file.
		  ○ Individual levels below the linear measurement range are marked with "<" in accordance with IEC 61672, ed. 2 (2013)
		• General
		  ○ Long menu names for page selections within the measurement function
		  ○ Minor bug fixes

Oct 2013	V2.60	• Noise Curves (part of Spectral Limits Option)
		  ○ Added this new function
		  ○ Supported noise curve types:
		  ▪ Noise Rating NR (ISO 1996)
		  ▪ Noise Criteria NC (ANSI S12.2-2008 and -1995)
		  ▪ Room Noise Criteria RNC (ANSI S12.2-2008)
		  ▪ Room Criteria RC (ANSI S12.2-1995)
		  ▪ Preferred Noise Criteria PNC (ASA 1971)
		• Voltage (V, dBu, dBV) readout of RTA, FFT and 12OCT measurements

Feb 2013	V2.53	• Sound Level Meter
		  ○ Wideband values correlate with sum of RTA values (inserted 4.4 Hz high pass filter)
		• Calibration Menu
		  ○ Sensitivity range extended to 1uV/Pa
		• Bug Fixes

Jan 2013	V2.51	• Data storage: "Restore after power fail" behavior improved.

		• Minor bug fixes for SLMeter and STIPA measurement function.

Oct 2012	V2.50	• STIPA
		  ○ Supporting standard IEC60268-16
		  ▪ edition 4.0 - 2011
		  ▪ edition 3.0 - 2003
		  ▪ edition 2.0 - 1998
		  ○ Automated averaging of measurements
		  ○ Ambient noise correction
		  ○ Qualification scale "A+" to "U"

Aug 2012	V2.41	• Minor bug fixes for Cinema Meter

Aug 2012	V2.40	• Sound Level Meter
		  ○ 100 ms logging (available with Extended Acoustic Pack)
		  ○ RTA offers cursor read out of wideband levels
		  ○ The default report setting includes the RTA Leq report.
		  ○ SLV Profiles: Updated profile name and log interval according latest standard revision
		• Cinema Meter Option
		  ○ Solution for efficient calibration and repetitive verification of cinema loudspeaker systems according SMPTE st0202-2010 and SMPTE rp200-2012
		  ○ An interactive assistant guides the user through dedicated measurement procedures.
		• 1/12 Octave
		  ○ Frequency band listening at rear speaker
		• RT60 Reverberation Time
		  ○ Updated labeling from "T20" to "RT60(T20)"
		• System Settings
		  ○ "Power Save" renamed to "Auto power off"
		  ○ LCD Backlight can be switched off completely

Feb 2012	V2.32	• Sound Level Meter
		  ○ Scheduler offering scheduled noise monitoring measurements
		  ○ Events (available with Extended Acoustic Pack) triggered either
		  ▪ automatically by sound levels above/below a preset value
		  ▪ manually by external key press using the accessory XL2 Input Keypad
		  ○ Logging interval dt = 1 second (new default setting, previously 1 minute)
		  ○ RTA offering manual frequency band selection (previously auto only)

		○ Wav-files store date and time of the recording (according to EBU TECH 3285) ○ Correction values k1 + k2 can be shown on the 123 screen ○ Updated DIN15905 + SLV profiles (limits trigger on LAeq5"+k1 for immediate feedback at exceeded sound levels) • FFT and 1/12 Octave ○ Extended with manual frequency band selection (previously auto only) • RMS/THD+N ○ Highpass 100 Hz filter added • Calibration ○ Selectable highpass 100 Hz filter added for suppressing wind effects at outdoor calibrations • General ○ Supports overwriting of previously stored measurement reports ○ USB Mode when USB is connected during power up is COM port ○ Backlight: Auto off time = 120 seconds (previously 30 seconds) • Bug Fixes ○ VoiceNote playback activated ○ Polarity testing: Improved reliability at low input levels • XL2 Projector Software ○ Supports new XL2 Projector V2.0 ○ Direct data access to SD card of XL2 Analyzer • Remote Measurement Option ○ Query of correction values k1 + k2 supported ○ Query of Limit LED status supported ○ FFT and 1/12 Oct functions support start, stop and query of run status
Jul 2011	V2.22	• Optional Passed/Failed Measurements in FFT and 1/12 Octave Function ○ Measurement starts by automatic level trigger or external digital input ○ Tolerance files support logarithmic frequency scale • Spectral Limits Option ○ Includes true peak level measurement in 1/1 and 1/3 octave resolution
May 2011	V2.20	• Sound Level Meter ○ Capturing a reference spectra for comparative measurements

		○ Correction value setting offers k-Value reset button ○ RTA offers new A-weighing filter for perfect response (also for f > 10 kHz) • FFT Analysis ○ Maximum and minimum levels ○ Timer function and time weighting setting ○ Selectable Windowing: Hann and Dolph-Chebyshev • Delay Measurement ○ "STORE" button added for simpler user interface • New Option "Spectral Limits" The Spectral Limits Option extends the function range of the XL2 with trace capturing, relative curve display and comprehensive tolerance handling for the FFT Analysis and the new high resolution RTA function with spectral resolutions up to 1/12th octave. ○ High resolution RTA function "1/12 Oct + Tol" with selectable 1/1, 1/3 and 1/6 octave spectral resolution ○ Capturing of multiple readings into the internal memory ○ Comparing measurement results against captures with relative or absolute curve display ○ Comprehensive tolerance handling ○ Creating tolerance masks based on captures for passed/failed measurements ○ Extending the FFT Analysis with capture and tolerance functions ○ Export and Import of Tolerance and Capture files • General ○ Main Menu offers long measurement function names ○ XL2 keeps all settings and measurement results when switching between measurement functions and after power off/on cycles. ○ Microphone Pre-Amplifier MA220 recognized by Automated Sensor Detection (ASD) ○ Report and log files include project folder and file name data ○ Real Time Clock accuracy improved
Nov 2010	V2.10	• XL2 Projector ○ The XL2 Projector software displays the XL2 screen in real-time on the connected PC (including color coding for sound levels that exceed tolerances) • Sound Level Meter ○ Supports unlimited long-term noise monitoring. ○ Supports new accessory "Digital I/O Adapter" for control of external peripherals, such as displaying sound levels that exceed tolerances on a big external red-orange-green lamp. ○ Wav-file recording "Compressed+AGC" with automated gain control added for well-leveled wav-file playback on the computer. ○ Real Time Analyzer RTA offers LCPeak ("True Peak")

		measurement with optional Extended Acoustic Pack.
		
		• Optional Remote Measurement available
		  ○ The Remote Measurement option queries XL2 measurement data online, via the USB interface, for individual measurement application programming by customer.
		
		• Reverberation Time RT60
		  ○ The RUN page displays an extended dynamic range up to 140 dB.
		
		• Polarity Measurement
		  ○ Simplified input signal selection.
		  ○ Input level RMS displayed in dBu, dBV and V.
		
		• Real Time Clock
		  ○ Actual Time displayed in upper menu bar on all pages. It replaces the balance graph, which remains available for the RMS/THD function and Polarity.
		
		• Profiles
		  ○ SLV2007 & DIN15905-5: I/O Box settings order equals the Limit LED settings.
		  ○ SLV2007+Audio & DIN15905-5 + Audio: Wav format changed to COMPRESSED+AGC.
		
		• Memory
		  ○ Improved file storage system operation reduces error messages.

Jul 2010	V2.03	• Improved memory menu operation for reliable user filename handling • Improved profile import/export between XL2s with different options installed • Minor bug fixes
Jul 2010	V2.01	• Memory menu offers simplified user interface for automated or manual naming and saving of measurement data • Simplified append mode user interface for collecting one or more measurement results in one data file • Storing of measurement setup templates

Jun 2010	V2.00	• New memory features
		  ○ User filenames
		  ○ Data stored in individual project folders
		  ○ New file format for logging & reporting
		  ○ Recall of previously stored measurements in the functions SLMeter, FFT, RT60 and STI-PA
		
		• Append mode added
		Stores the results of one or more measurements in the same data file for the functions SLMeter and STI-PA, thus simplifying data analysis

		and handling on the PC. • Customizable user profiles added The measurement screens may be personalized and only a limited subset of the comprehensive functionalities enabled for simplified operator interfaces. The XL2 supports generation, exporting and importing of profiles. • SLMeter ○ "LEQ Pre" parameter added ○ RTA includes inverse X-curve for cinema installations; conforms to ISO 2969. ○ Wav files size limited to 1h (518MB) simplifies file handling; multiple files are generated for longer durations ○ Support of "Digital I/O Adapter Box" with individual limit setting (available with optional Extended Acoustic Pack) • Reverberation Time RT60 ○ 1/3rd octave resolution for RT60 added (available with Extended Acoustic Pack) • RMS/THDN ○ IEC468-4 filter added (22.4Hz - 22.4 kHz) ○ dBSPL unit added • New speaker control
Mar 2010	V1.13	• Improved recording of 48 kHz /24 Bit wave files with the Extended Acoustic Pack • Minor bug fixes
Feb 2010	V1.12	• Improved SD Card access for higher performance (for 48 kHz /24 Bit wave recording with the Extended Acoustic Pack) • Minor bug fixes
Jan 2010	V1.11	• Improved robustness of ASD communication. • Minor bug fixes
Dec 2009	V1.10	• Sound Level Meter ○ Audio logging (ADPCM compressed wave files) ○ New parameter: Leqt10', Leqt15', LPK, LPKmax ○ Limit screen for flexible limit configuration ○ Voice Note recording ○ Optional with Extended Acoustic Pack: Recording of WAV files (24 bit, 48 kHz) • Scope function • FFT: Reporting of test results • Polarity: Added subwoofer frequency range • Calibration function supporting ASD microphones

Oct 2009	V1.03	• ASD microphone recognition bug repaired. With earlier firmware versions, some ASD Microphones were not recognized (dependent on the serial number of the microphone).
Sep 2009	V1.01	• Improved settling of measurement values in the Sound Level Meter • Expanded low frequency range of Zoom FFT to 5 Hz (Extended Acoustics Pack Option) • Improved stability of firmware • Minor bug fixes
Sep 2009	V1.00	• Initial release