PRODUCT DATA SHEET

FS-STI

Audio & Acoustic Analyser

PRODUCT DESCRIPTION

Besides being an advanced, integrating Sound Level Meter, the XL2 provides a number of high level features. The FireSense FS-STI Kit also comes with the speech intelligibility STIPA Option.

Public Address (PA) systems and Emergency Warning & Intercom Systems (EWIS) installed within buildings have to clearly inform persons in danger about escape information and directions in case of an emergency.

Using a hand-held instrument, it is possible to commission the entire building by measuring just how intelligible the PA announcements will be when clarity is most needed.

Speech intelligibility is measured by playing a known signal (the STIPA test signal) through the PA and measuring the quality of that signal as it reaches each of the measurement positions.

STIPA is now seen as the successor to RASTI intelligibility index for almost every application.

Factors that influence the intelligibility of speech are the signal-to-noise ratio (quality of the system), sound pressure level (loud enough but not too loud), ambient noise level (crowds or passing traffic), reverberation time RT60 (sound reflects off smooth surfaces; the announcement is masked by another louder sound).

EQUIPMENT INCLUDED

XL2 Audio & Acoustic Analyser

XL2 Class 2 Measurement Microphone

Speech Intelligibility Option for XL2 (STIPA)

Talkbox Speaker

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FEATURES

- ✓ Sound Levels:
  - SPL actual, Lmin, Lmax, Lpeak, Leq, gliding Leq
  - Frequency weighting: A, C, Z (=flat) simultaneously
  - Indicators show when sound level limits are exceeded
  - Digital I/O interface for the control of external peripherals

- ✓ Speech Intelligibility
  - Using the XL2 with the TalkBox component allows for easy STI measurements

- ✓ Logging and Reporting
  - All levels simultaneously
  - Short-time levels including spectrum for 1 second or longer
  - Data logging

SOUND LEVEL METER

The XL2 is a powerful sound level meter for noise measurement applications. The instrument is ready to measure literally seconds after you press the power button. The intuitive navigation and flexible user interface assist in simplifying every task.

Sound Level Reporting Tool (available via download)

A full report can be generated within minutes of completing the measurement. The Sound Reporting Tool can be opened with Microsoft Excel and the data file from the XL2 Sound Level Meter can be loaded. The tool extracts all available data such as measurement date, start time, etc. and generates sound level charts.

SPEECH INTELLIGIBILITY (STIPA) OPTION *[Requires both the TalkBox and the XL2 Analyser]*

The XL2 Analyser that comes as part of the FireSense FS-STI Kit comes with the STIPA Option installed and measures the speech intelligibility according to the latest revision of standard IEC 60268-16:2011 (edition 4) and older editions.

TalkBox
The measurement results on the XL2 Analyser are acquired from the dedicated STIPA test signal source (TalkBox) which is supplied with the FireSense FS-STI Kit. The TalkBox is an acoustic signal generator, required for audio systems with voice microphones.

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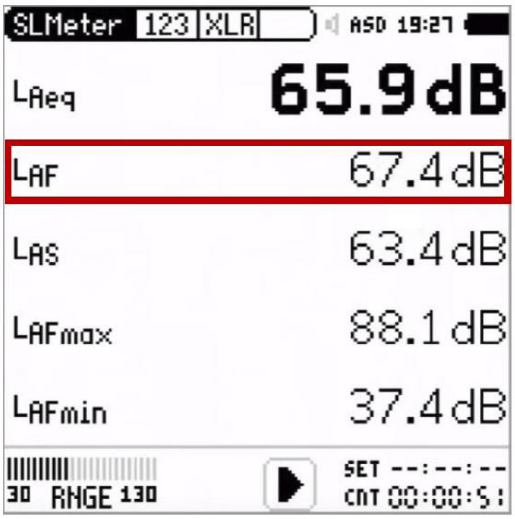
SOUND LEVEL TEST PROCEDURE



1/ Select the measurement functions and weightings according to the applicable standard.

2/ Record the average ambient level for 60 seconds.

3/ Commence evacuation tones.

4/ Ensure the measurements are taken at the correct height above the floor.

5/ Document findings and determine if adjustment to system required.

Actions to Improve:

- ✓ Speech Intelligibility
- ✓ Improve the PA System
  - Changing of speaker tappings
  - Installation of more speakers

STI TEST PROCEDURE

1/ Record the average ambient level for 60 seconds.

2/ Commence the STIPA test signal with the TalkBox mounted adjacent to the PA microphone. Commence the STIPA measurement on the XL2 unit.

- On the XL2, select 123 from the second menu
- On the XL2, press the Play button
- Remain silent during the next 15 seconds while the STI value is measured

3/ Press the button to view the screens with auxiliary information.

4/ Execute several STIPA measurements in each location as required

5/ Save the measurement results.

6/ Document findings and determine if adjustment to system required.

Actions to Improve:

- ✓ Optimise the alarm signal level (amplifier gain)
- ✓ Improve the PA System
  - Changing of speaker tappings
  - Installation of more speakers

Figure 1: Speech Intelligibility may be expressed by a single number value. Two scales are most commonly used: STI (Speech Transmission Index) and CIS (Common Intelligibility Scale)

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TECHNICAL SPECIFICATIONS

XL2 Specifications - Sound Level Meter Information

Product Configuration Class 2	XL2 with M4261 microphone Class 2 in accordance with IEC 61672 and ANSI S1.4
Weighting	- **Frequency Weighting:** A, C, Z (simultaneous) - **Time Weighting:** Fast, Slow, *Optional;* Impulse (simultaneous)
Level Details	- **Measurement bandwidth (-3dB):** 4.4Hz - 23.0kHz - **Level Resolution:** 0.1dB - **Internal Noise:** 1.3µV A-0 Weighted
Audio Recording	- Recording of wav-files (ADPCM - 4 bit, 24 kHz) - a new wav-file starts every 12 hours (max. wav-file size 512mB) - *Optional:* Recording of linear wav-files (24 bit, kHz), a new wav-file starts every 1 hour (max. wav-file size 512mB) - **Bandwidth:** 2.0Hz - 23.0kHz
Measurement ranges with different microphones	**XL2+M2230:** 17dB(A) - 137dB
Linear Measurement Range acc. IEC61672 / ANSI S1.4	**XL2+M2230:** 24dB(A) - 137dB 27dB(C) - 137dB @ typical microphone sensitivity
Stablisation Time	<10 seconds
Integration Time	**Minimum** - 1 second **Maximum** - 100 hours, minus 1 second
Display Measurement Ranges	Three level ranges depending on the microphone sensitivity with manual setting: - M2230 @ sensitivity = 42mV/Pa » **LOW**, lower level range: 0 - 100dBSPL » **MID**, mid-level range: 20 - 120dBSPL » **HIGH**, upper level range: 40 - 140dBSPL - M2215 @ sensitivity = 8mV/Pa » **LOW**, lower level range: 20 - 120dBSPL » **MID**, mid-level range: 40 - 140dBSPL » **HIGH**, upper level range: 60 - 160dBSPL - M2211 @ sensitivity = 20mV/Pa » **LOW**, lower level range: 10 - 110dBSPL » **MID**, mid-level range: 30 - 130dBSPL » **HIGH**, upper level range: 50 - 150dBSPL - M4261 @ sensitivity = 16mV/Pa » **LOW**, lower level range: 10 - 110dBSPL » **MID**, mid-level range: 30 - 130dBSPL » **HIGH**, upper level range: 50 - 150dBSPL

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