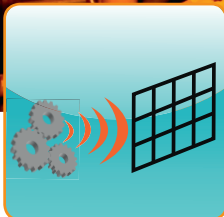# Nor150 Sound Intensity Option
Sound intensity probe Nor1290

- **Sound Power measurements in accordance with**
    - **ISO 9614**
    - **ANSI S12.12**
    - **ECMA 160**

- **Noise Mapping**

- **Noise Source locations**

The Nor150 equipped with the sound intensity option and the Nor1290 probe kit is a powerful tool for all types of sound intensity measurements. Every effort has been made to make a robust and user-friendly solution capable of handling all kinds of measurement situations, from high-precision laboratory conditions to demanding and rough field use.

Features

- Compliant to IEC 61043 Class 1
- Full on-board support for ISO 9614-2
- Unique phase correction allows measuring 25 Hz to 10 kHz with 12 mm spacer
- Intuitive warning indicators
- Measurement-based suggestions for improving results
- Automatic measurement sequence
- Pause and back-erase with graphical display
- Full measurement edit support (segment exclusion, resize, retake)
- Add segment support
- Export to Nor850 mapping and reporting software
- Photo, text and voice annotation
- NorRemote app for smartphone remote control
- Support for ½" and ¼" microphones

Current segment

Highest priority warning for current segment

Highest priority warning for cursor

Negative values in opposite direction

Non-compliant band

Sound pressure level

Sound intensity with direction

FUNC toggles between Intensity and Power

Press **INFO** to open the Warning window as shown on the next page

Band might need attention

Norsonic

Intuitive user-interface

With simplicity in mind, the Nor150 user interface is designed for easy and intuitive operation. The user is presented with only the key information needed to decide whether a measurement is successful or not. Full-text warnings and improvement suggestions provides the necessary detail without confusion.

If full, in-depth graphical or tabular representation of field indicators or difference functions is desired, the advanced view is readily available to the user. Presentations include analysis of extraneous noise, repeatability, uncertainty values and dynamic capability.
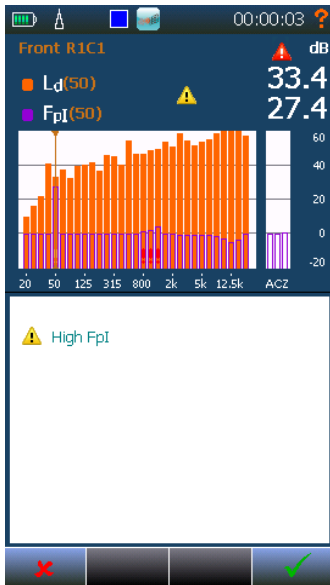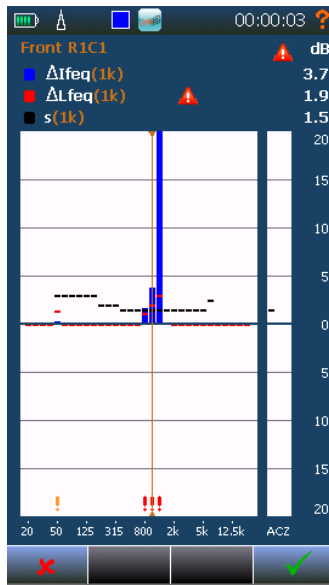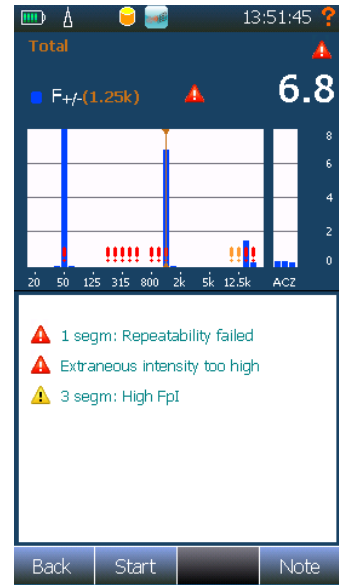

The warning codes available in Intensity mode

Advanced View

Dynamic capability analysis shows the dynamic capability of the probe and instrument, along with the field indicator FpI from the current measurement
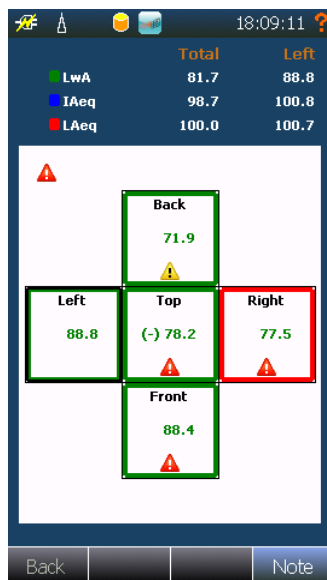
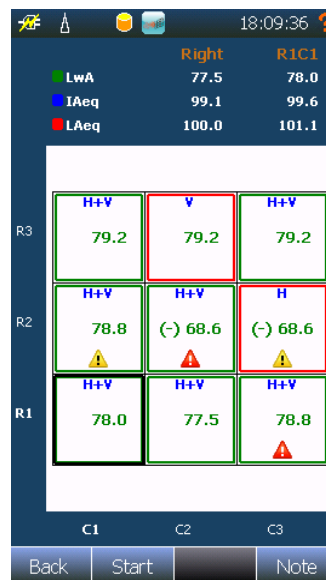The Δ-view shows the difference between two orthogonal scans

The Extranous Intensity view shows the F+/- indicator for the total surface

Scope View

Full overview of surface values and warnings, along with the total values

Several segments in a surface. Warnings indicate problems, borders indicate if the segment is completly measured or excluded

Norsonic

Profile time sets the resolution of the time-analysis graph

Choose which standard to base measurement method and calculations on

Select desired Accuracy. May be changed during a project

Desired filter range. A-weightet spectrum is calculated from the range defined in "Calculated total range"

Select desired Segment scanning procedure. May be changed during a project

The total range is the frequency range of which the networks are calculated from. May be changed during a project

A menu for excluding bands if needed. May be changed during a project

Measurement

Global Time
00:00:10:00

Profile A
00:00:00.100

Filter
1/3, 20 Hz - 20 kHz

Standard
ISO 9614-2

Accuracy
Engineering

Scanning Direction
Horizontal+Vertical

Calculated Total Range
50 Hz - 6.3 kHz

Excluded bands
None

A smart probe

The Nor1290 probe kit offers a lightweight and rugged solution in demanding environments. The probe is equipped with a smartphone, providing single hand operation and the same measurement displays as on the Nor150. The system is fully synced, allowing the user to exploit several probe configurations in the same measurement situation.

Specifications Sound Intensity Probe Nor1290

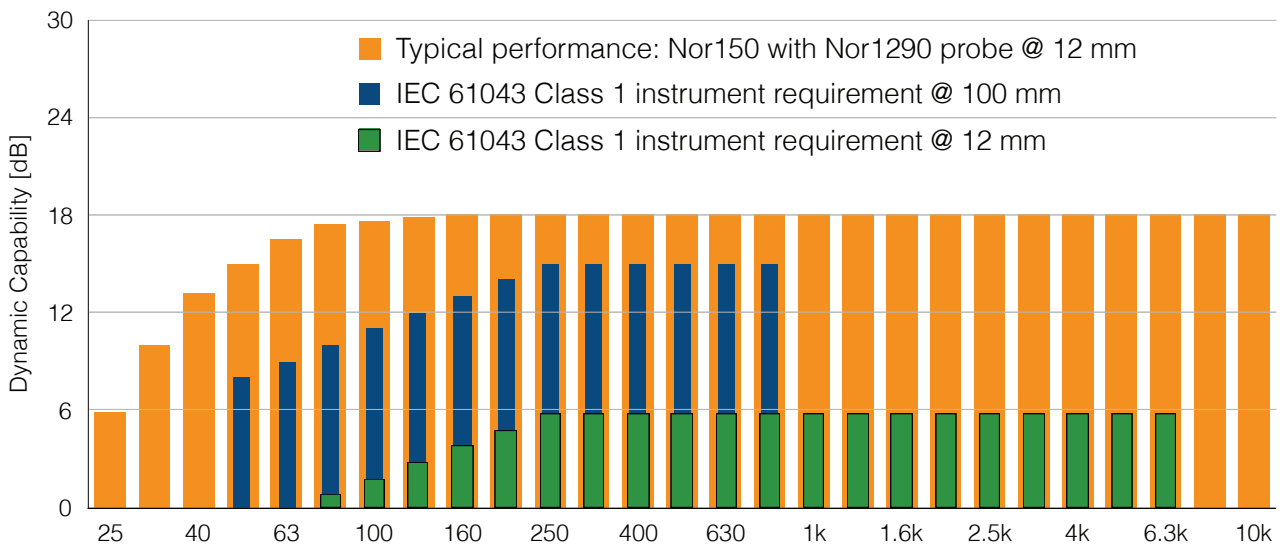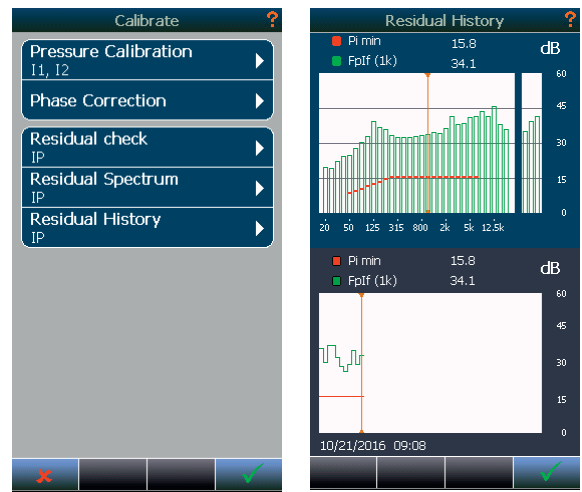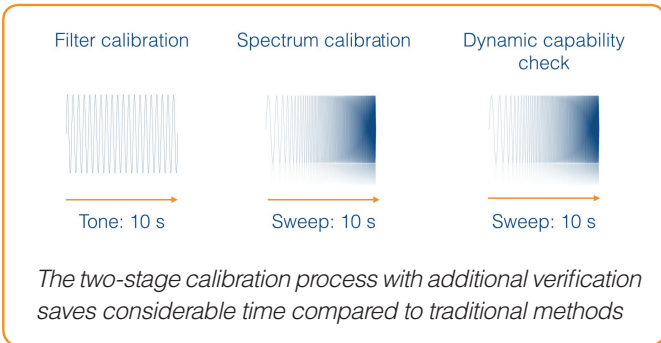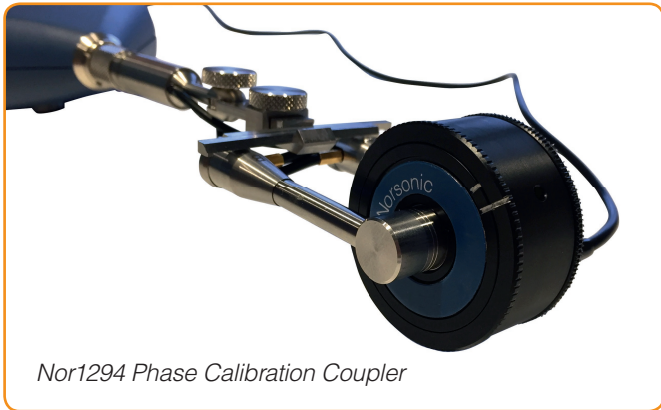|		
Frequency range (±2 dB)	Ref. IEC 61043 Class 1	
Dynamic range lower limit (microphone thermal noise)	dB(A)	27
Dynamic range upper limit	dB	146
Nominal sensitivity @ 250 Hz (±2 dB)	mV/Pa	12.5
Microphone type	½" Rear vented, Prepolarised	
Preamplifier	¼", IEPE powered	
Temperature range, operation	°C / °F	5 to 40 / 41 to 104
Temperature coefficient @250 Hz	dB/°C / dB/°F	-0.01 / -0.006
Humidity range non condensing	% RH	0 - 100
Humidity coefficient @250 Hz	dB/% RH	-0.001
Influence of axial vibration @1 m/s^2	dB re 20 µPa	66
Spacers included	mm	12, 25, 50, 100
Cable length	m / feet	3 / 10
Connector type	7pin Lemo	
CE/RoHS compliant/ WEEE registered	Yes/Yes/Yes	

The Nor150/Nor1290 kit

Performance

Using our unique phase correction system, the Nor150 Sound Intensity Option is capable of measuring intensity with extremely high dynamic capability. The Nor1290 probe configured with the default 12 mm spacer will typically have better dynamic capability than required by the IEC 61043 for a 100 mm spacer. This is achieved using an advanced two-stage phase calibration system and the accompanying Nor1294 Phase Calibration Coupler.

The first stage in the correction process includes a phase correcting filter for each channel, directly targeting the error introduced by the ventilation on intensity probes. The Nor1294 enables calibration at very low frequencies, thus obtaining a high precision correction.

The second stage involves a per-band calibration. Using a deterministic log-swept sine, the complete process time is dramatically reduced compared to pink-noise excitation.

To prove compliance to the standard and persistent performance, all calibration data is stored in the Nor150, and may easily be presented at a later time.

Nor1294 Phase Calibration Coupler

Filter calibration	Spectrum calibration	Dynamic capability check
Tone: 10 s	Sweep: 10 s	Sweep: 10 s

The two-stage calibration process with additional verification saves considerable time compared to traditional methods

Calibration history for each probe

The Nor150/Nor1290 kit provides a dynamic capability never seen before

Flexibility

The Nor150 supports advanced measurement surface editing. Segments may be excluded, resized or even substituted, both before a project is complete, and after.

Reconfiguring the grade of accuracy is easy. This may be done either before, during or after the measurement process. Including and excluding frequency bands is just as easy. All segments are recalculated immediately.

An important feature is the ability to pause the measurement during a scan if unwanted noise occurs. Using the dedicated Pause/Continue button, a time display shows a time graph and allows a chosen number of seconds to be removed from the measurement before proceeding with the scan.

Full overview

Although the Nor150 shows all measurement data as clearly and neat, the user may later want to analyse the measurement and generate reports on a computer. The Nor850 sound intensity software tool is designed for this purpose.

All the familiar views from the Nor150 is available in the Nor850. In addition, advanced 2D- and 3D-renderings of the measurement surface is available, which gives the user unique insight about the sound field.
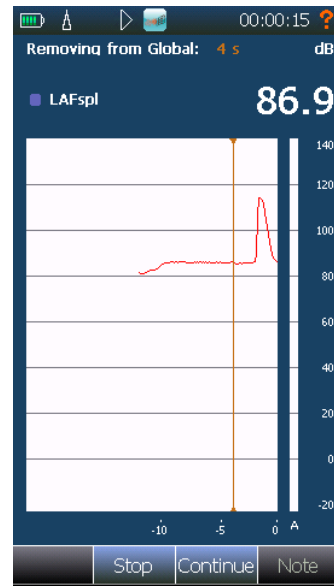
The Pause display allows a chosen number of seconds to be removed from the measurement
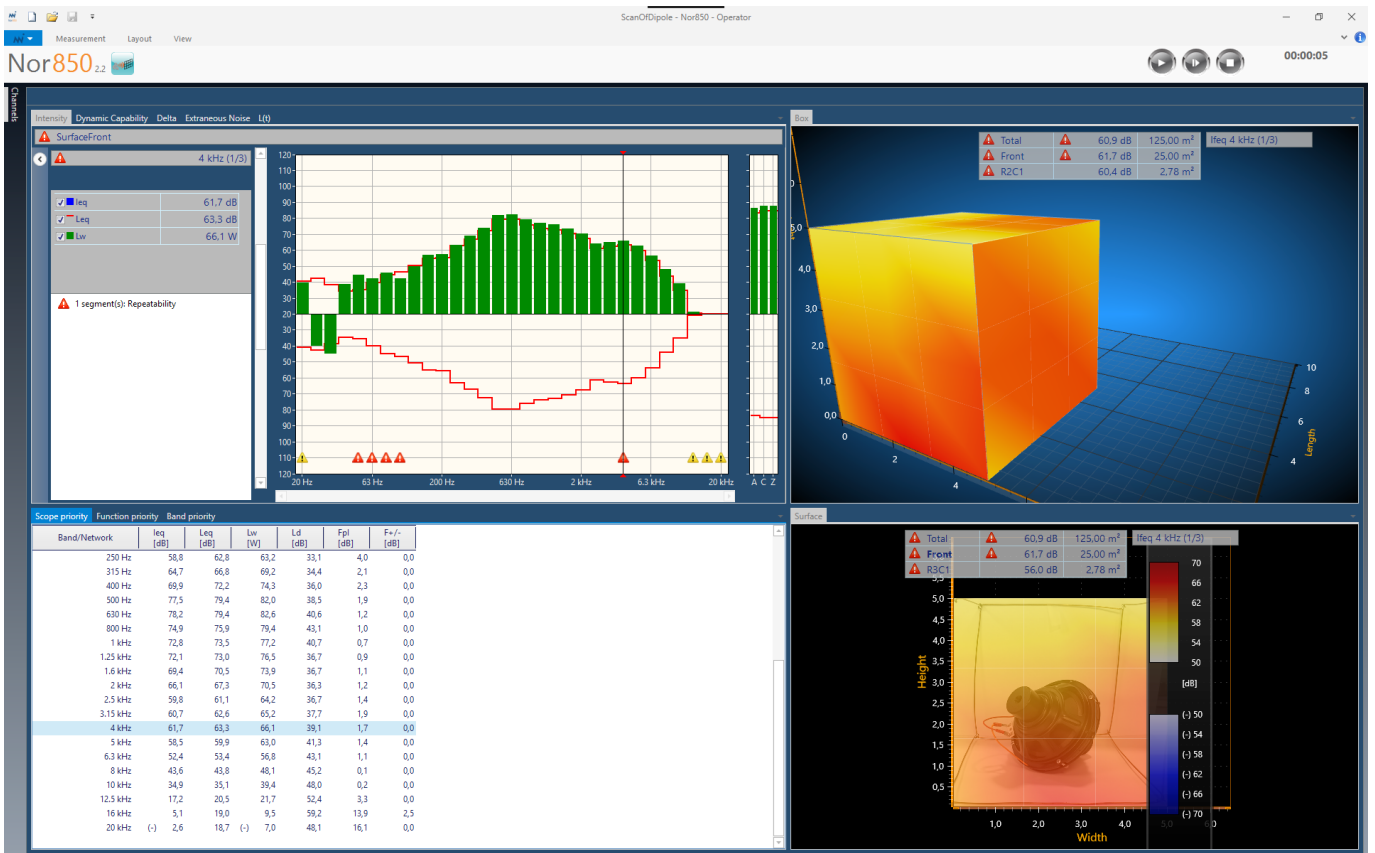
Advanced measurement analysis in the Nor850 software tool.