Precision Sound & Vibration Analyser

Nor150

Norsonic

Norsonic have always been at the forefront introducing new technology to sound level meters. The Nor150 Sound and Vibration analyser sets new standards in user-friendliness. Featuring the largest colour touchscreen in a handheld meter on the market today, the Nor150 provides the user friendliness of a smartphone. Further features include, built in web server, camera, GPS and advanced voice and text notes bringing the sophistications normally found in laboratory instrumentation out in the field. The instrument is a dual channel analyser designed to cover a variety of applications such as environmental noise assessments, sound insulation and sound intensity measurements among many other measurement tasks.

Applications

- Environmental noise assessments
- Noise monitoring
- Noise at work
- Product noise testing
- Vibration measurements

Future Proof

Your Nor150 Analyser is designed to be expanded and upgradeable to give you a complete measurement tool for years to come. Norsonic's retrofit policy ensures regular software updates with new features and new options followed by a 3 years warranty. As a general noise analyser, advanced environmental and occupational noise meter you can be sure your Nor150 will be up to date as requirements and standards change over the coming years.

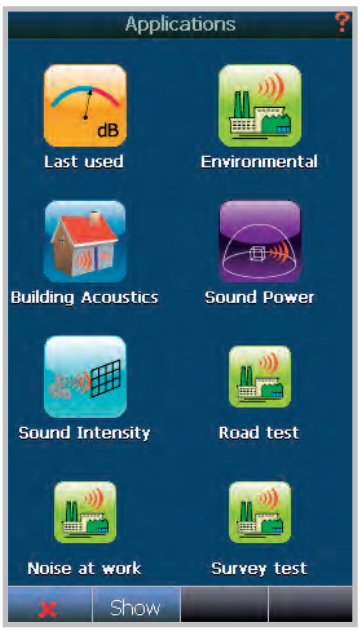
Coming soon will be the following applications:

- Sound Intensity
- Reverberation time
- Single and dual channel sound insulation
- Un-attended noise monitoring scheduler

Internal camera for documentation purpose.

Features

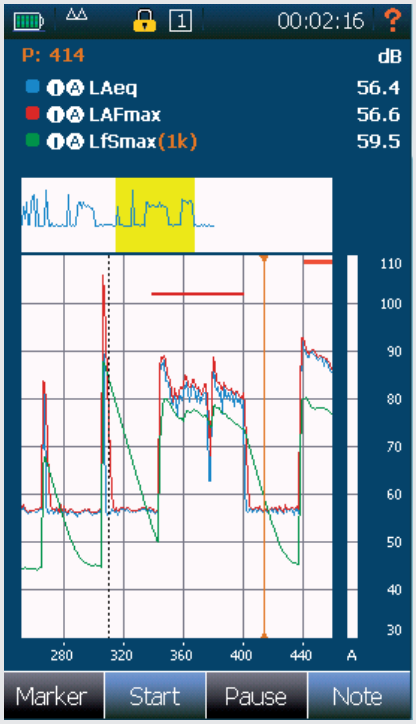
- Large colour touch-screen (4.3”).
- Intuitive user interface with graphical icons for selection of mode and custom made user setups. Markers edited directly on the touch screen. Real keyboard for quick operation in challenging environments.
- Built in webserver makes your Nor150 available through the internet from anywhere in the world whether you configure it for LAN, USB, WLAN, GPRS, 3G or 4G communication.
- Audio recording on trigger or softkey. You can immediately listen to recordings using a standard headset.
- Voice and text notes, built in GPS and camera notes help you document your measurements with all.
- Wide frequency range for vibration and low frequency measurements (0,4 Hz – 20kHz in 1/3 octave band).
- 120dB measurement range broadband and filter.



Start up menu with icons for the various measurement applications. Smaller icons are user defined setups. User may create setups and store as icons or as a list.

Use your fingertip to change scale, move cursor, zoom and expand – easy and intuitive.

Level/time display single view



Single marker, toggle marker, audio recording marker.

- Three or more parameters may be displayed simultaneously to give a detailed display of your measurement, The fast processors enable high resolution logging down with 1/3 octave multi-spectrum and recordings enabled!
- The X-axis can be set to period #, relative or absolute time.
- The upper graph is a compressed graph covering the entire measurement to give you a complete overview. The yellow field is the current view in the main graph.

The tool for Environmental Noise Applications

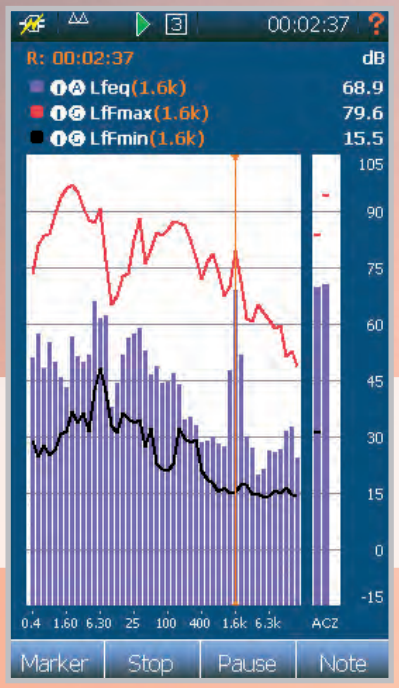
The Nor150 is ideal for all types of environmental noise measurements. Measurements with markers audio recordings and event triggered pictures are easily made with the meter. The GPS position is captured and stored along with your measurement to give accurate positioning of your device and time synchronisation. The large 4.3" display gives you all the necessary information. Up to three parameters may be displayed simultaneously in the L/t display out of more than 60 measurement parameters that may be logged simultaneously.

The sophisticated trigger facilities enable different trigger levels for Day, Evening or Night together with the event triggers to collect markers, audio recordings and pictures to ensure that you have all the data needed for you measurement tasks. The data can be displayed remotely on any PC, notepad or smartphone. From the same units you may change settings or simply check the status of the Nor150. Data can be automatically downloaded to a server or your PC for further evaluation and reporting using NorReview or other reporting tools.

Voice annotation and replay of the audio recording is easy using a standard headset with microphone.

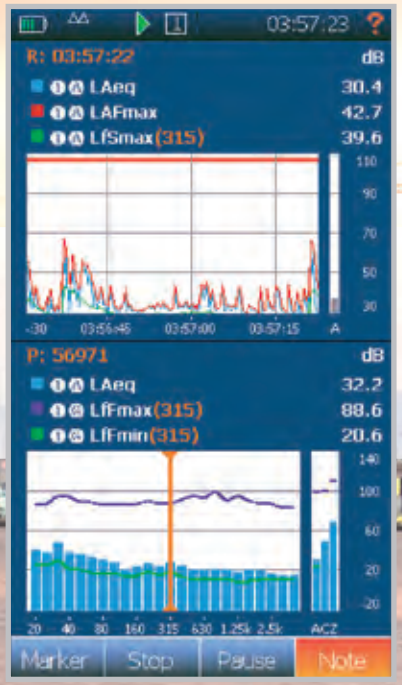
Nor150 Large display – intuitive use

Up to 4 different views may be configured. A view may be a single view or dual view. Each graphical display is accomplished by a numerical display. Just push the TBL button to toggle between numerical and graphical.



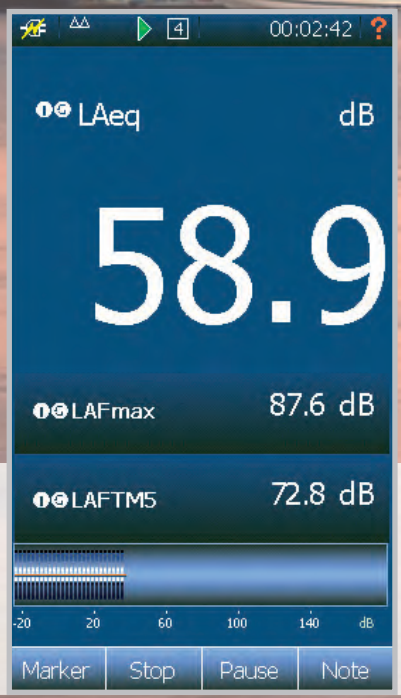
Level vs frequency, graphical and numerical

- 4 different graphical styles are supported in L/f mode; step line, line, filled or open bargraph.



Dual view with L/t and L/f

The follow cursor function allows simultaneously movement of the cursor in the L/f and L/t display. A special jump function between markers makes it easy to jump from one marker to the next. Replay of audio recording is easy by positioning the cursor at the audio recording marker.

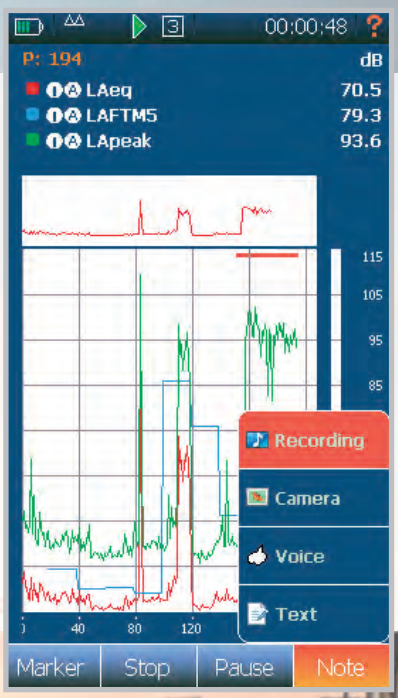


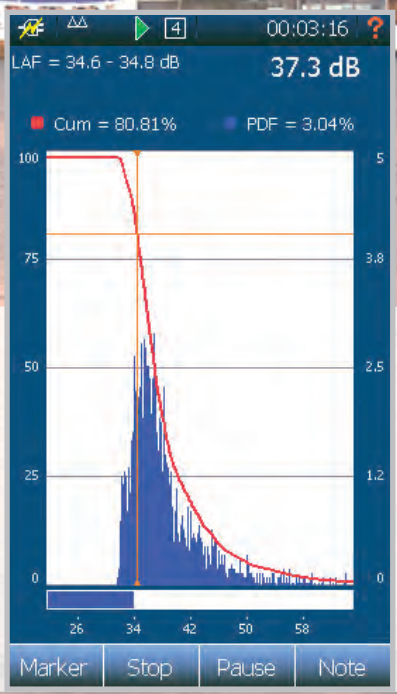
Sound level meter display

The graphical display shows three freely selectable parameters, from more than 60 measurement parameters. The bar graph shows the instantaneous value.

Advanced marker management

The Nor150 features a sophisticated, but yet easy to use marker management. Up to ten markers may be selected. The user can name the marker, select between single and toggle marker, colour and associate an action to the marker. The action can be; enable a reference tone, start a recording, take a picture or set one of the digital outputs on the 15 pin digital I/O socket. It is easy to add markers to an ongoing measurement. The marker menu can be hidden from the full overview of the L/t display. Notes may in the same way as markers be added to an ongoing measurement.





Cumulative and Probability Distribution Function (PDF)

- combined in one display with a horizontal instantaneous sound pressure level graph. Both the value of the PDF and the Cummulative value at the cursor positiionis displayed simultaneously.

Up to 8 freely selectable percentile values may be measured. Any value from 0,1% to 99,9% can be selected. All frequency bands and weighting networks are calculated, both for the entire measurement, global, and for every period in the time profile, provided that the profile resolution is set larger than 2 minutes.

NorRemote
– a new generation of remote control and data acquisition from a sound level meter

The Nor150's built in web server opens up a new world of remote communication and acquisition of data from a Sound level meter. Simply connect to your instrument via LAN, GPRS or WiFi using a web browser to control, download or view the measurement in real time. The program covers all applications from downloading files to full control of your analyser to add markers, start a recording or just check the battery status.

NorReview

Evaluate, calculate and create reports. The NorReview software is your complete tool for environmental noise assessments. It features a powerful calculation module, marker and event handling, replay of audio recording with moving cursor and more. NorReview is the right tool for all acousticians dealing with environmental noise or all tasks where a time profile of an acoustical signal is measured.

A complete range of accessories are available

Norsonic is offering a variety of accessories like enclosures, calibrators, outdoor microphones etc.
Whether you are in the artics or in the desert or a place between, Norsonic has the equipment you need to protect your instrument and data.

Environmental noise monitoring introduces challenges for the weather protection and operating temperature of your sound level meter. Norsonic has a carefully balanced range of enclosures and weather protected microphones to deal with the harshest of conditions.

The Outdoor Microphone Nor1216 and Nor1217 are the new generation of outdoor microphones. The Nor1216 is a measurement microphone for all-weather conditions designed for use with the Nor140 and Nor150. It features SysCheck verification and a heated preamplifier. It is intended for permanent outdoor applications. A semi-permanent version of the Nor1216 is the Nor1217 which features the same weather protection and SysCheck, but is designed for use with the standard preamplifier and microphone supplied with the Nor150, making the Nor1217 in combination with the Nor150 a very cost-effective solution.

Nor1216 and Nor1217 outdoor microphone

Nor150 Innovative design for simplifying measurements

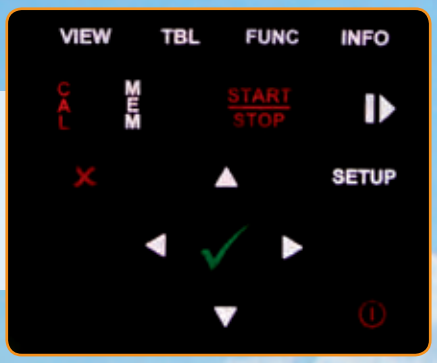
Status LED provides useful information by changing colour such as measurement running, overload, battery low, audio recording etc.

The instrument case is designed around a sturdy milled aluminium frame combined with a moulded plastic housing. Personalize your instrument by adding your company logo and name.

Input channel 2 located on left side. All input connectors are protected from dust and rain by silicone rubber covers.

On the right hand side is the power socket, Trigger input and output for synchronized sampling of several Nor150 and the Norsonic standard 15 pin digital I/O contact hosting a high speed RS232 interface, 3 digital input, 4 digital outputs, Signal generator, AC output, SPDIF, 3,3Vdc - 50 mA power for auxiliary equipment

Back lit keyboard and display.
To extend battery time, both brightness and time out is adjustable in the power setting menu.



Built in LAN, USB A and mini B connectors, Micro SD card and Headset connector for voice comments and audio recording playback. WLAN and GPRS/3G-4G modems through USB.

The battery pack has a built in battery gauge. Batteries can be easily replaced in field. Charging time is 2 hours. Battery lifetime is dependent on use and connected accessories. Average time is 8 hours.

Option 1 is built in Camera and GPS. Camera can be used before, during or after a measurement. It can be controlled by the event trigger taking pictures based on the noise level. The GPS is used for position and exact time synchronisation. The exact time synchronisation is especially useful when several Nor150 units are used for capture the same noise events, such as blast monitoring.

Specifications

The Nor150 Precision Sound and Vibration Analyser are supplied with ½" preamplifier Nor1209 and the ½" measurement microphone Nor1225. It conforms to the latest revision of the following National and International standard including amendments, all type 1 / class 1; IEC61672, IEC60651, IEC60804, IEC61260, DIN45657, ANSI S1.4, ANSIS1.11, and ANSI S1.43.

Measured Parameters

Simultaneous measurement of SPL, L_{eq}, L_{eql}, L_{Max}, L_{Min}, L_E L_{EI}, L_{Peak}, L_n and T_{max5}.

Time weighting functions: Fast, Slow and Impulse.

Spectral weighting functions: A, C and Z - weighting.

Frequency analysis: 1/1 and 1/3 octave real time filters from 0,4 Hz to 20 kHz.

Statistical calculations: 8 individual adjustable percentiles from L0,1% to L99,9%, The statistical calculations are performed in real time within each frequency band and for each profile period if period length is set longer than 2 minutes.

Measurement control

Time profile resolution: 10ms – 24 hours including full frequency spectra.

Overall measurement duration: 1 sec – 7 days. (If set to Repeat or Synchro mode a new measurement will be started automatically, with no time gap between each measurement.)

0-20 sec free selectable graphical back erase.

Audio recording

12 and 48 kHz sampling rate / 8 , 8MU, 16 and 24 bits / 5 sec pretrigger.

Measurement range

One range covering 120dB without any range adjustments.

Self noise measured with ½" microphone with a nominal sensitivity of 50mv/Pa: 17dBA.

Maximum RMS level 137dBA, Maximum Peak level 140dB PeakC.

The high SPL mode enables measurements up to 194dB using a suitable 1/4" microphone.

Built in GPS for position and exact time synchronization.

Display

4,3" colour display, ¼ VGA with capacitive touch. Protected by an anti-smudge coated and scratch-proof glass.

GPS / Camera

Built in GPS for position and exact time synchronization.

Built in Camera for annotation before, during and after a measurement. Camera can be set up to capture noise event based pictures.

Datastorage / Datatransfer

Internal memory: 350MB

Micro SD card: Up to 64 GB, supports XC and HC standard.

Data can also be stored on an external USB stick. Data transfer via LAN, USB and high speed RS232. Supports WLAN and GPRS - 3G/UMTS - 4G/LTE via USB. Internal web server may push data to any server or external device.

Inputs

Microphone input: Two microphone inputs (Second channel optional). Supports standard 7 pin lemo preamplifiers including SysCheck, Microphone heating, TEDS and IEPE. Polarization voltage: 0, 70 and 200V. Preamplifier voltage is ± 15V.

Comment microphone: Via 3 pin mini jack.

Analogue outputs

AC out, 100mV full scale on 15 pin I/O socket.

3 pin mini jack headphone socket for replay of voice notes, listen to microphone AC signal or replay of audio recordings. Comment microphone for voice notes is connected to same plug.

Signal generator on 15 pin I/O socket with Pink, White, Band-pass filtered, sine and impulse noise.

Power

Rechargeable 3,5Ah Li-Ion batteries with fuel gauge

External power 10-28Vdc 3-5Watt.

Typical battery lifetime: 8 hours.

Dimensions (ex. preamplifier and microphone LxWxH): 240 x 82 x 39mm.

Weight (including preamplifier and microphone): 700g.