



The Nor121 Analyser

– optional features for any need!

Software version 4.x



Nor121 basic instrument features:

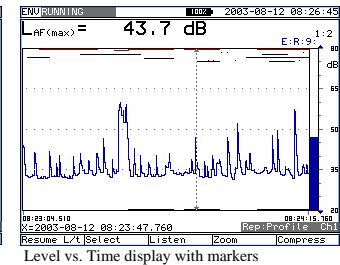
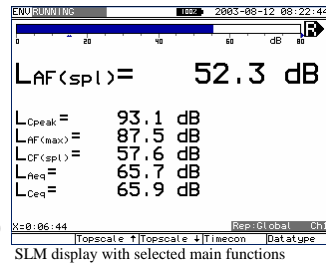
- A lightweight, rugged, hand-held single channel analyser
- Precision integrating sound level meter to IEC 61672 class 1
- Measures all time constants (F, S and I) and the A, C and Flat (or Z) weighting networks simultaneously
- Measures SPL, Leq, LE, Lmax, Lmin functions with all weighting networks and time constants simultaneously plus the Lpeak values
- 80 dynamic range adjustable in 5 dB steps covering all levels from microphone noise floor at 15 dBA to peak levels at 140 dB
- Measurement duration selectable from 10 milliseconds to 200 hours
- Pause/Continue function with option to delete the last 0-15 seconds
- Parallel measurement reports with six levels of nesting each having individual time settings for selected profile and event based data
- Comprehensive marker functions with user selectable data labels
- Built-in 8 Gb hard disk for storing measurement results
- PC-card slot (for PCMCIA cards)
- Manual or automatic storage of results
- Includes 2 pcs. high-speed serial interfaces plus parallel port
- High-resolution backlit graphical display and keyboard
- Full size graphics display
- Displays and menus can be set in several languages.
- Results can be exported via the PC slot, RS-232 serial or the parallel ports
- Powered by rechargeable internal batteries (up 12 hours) or from external 11-18 V supply
- Numerical printouts
- Dual AC signal outputs

The Nor121 can be what you want it to be, with its multitude of possibilities combined with the ability to create user-defined setups. *Made to measure - by you!*

All the optional features in the Nor121 can be added as retrofit whenever required. Take a look at the following pages for further details. In this way you don't pay for features that are not needed.

Nor121 without any optional features

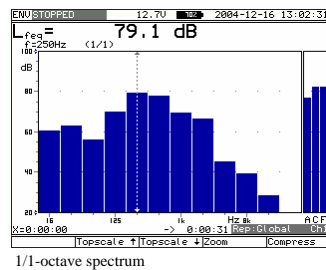
- Overall "Global" measurement duration selectable from 1 second to 200 hours
- Up to 6 additional level vs. time profile reports with individual sample intervals (10 msec - 24 hours)
- Selection of measured parameters within each report from any combination of the functions (SPL, Leq, LE, Lmax, Lmin and Lpeak) with any weighting network (A-, C- and Flat) and with any timeconstant (F, S and I)
- Up to 10 different user defined markers available along the level vs. time line during measurements



Option 0A: 1/1-octave real-time filters

- Parallel 1/1-octave real-time filters covering the 0.125 – 16000 Hz frequency range
- All filters fulfill the IEC 61260 class 1 digital IIR base 10 requirements
- Results are displayed graphically and numerically
- A-preweighting feature available on displayed results

V 4.x

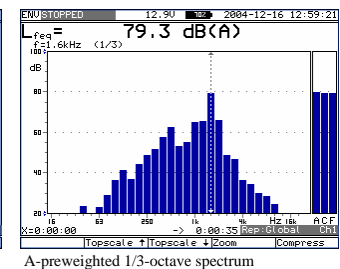
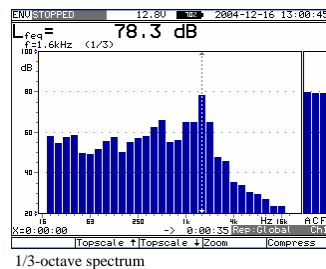


Freq/Netw	Leq Global	Leq Profile	LF(spl) Profile
16Hz	68.4 dB	56.0 dB	
31.5Hz	62.9 dB	60.0 dB	
63Hz	55.9 dB	49.1 dB	
125Hz	70.1 dB	41.3 dB	
250Hz	73.4 dB	43.4 dB	
500Hz	77.9 dB	41.5 dB	
1kHz	69.4 dB	39.9 dB	
2kHz	66.4 dB	29.5 dB	
4kHz	45.2 dB	22.8 dB	
8kHz	39.1 dB	17.6 dB	
16kHz	28.3 dB	17.1 dB	
A-netw	76.7 dB	43.0 dB	43.3 dB
C-netw	82.3 dB	59.7 dB	60.0 dB
F-netw	82.4 dB	63.6 dB	63.7 dB

1/1-octave numerical table

Option 0B: 1/3-octave real-time filters

- Parallel 1/3-octave real-time filters covering the 0.1 – 20000 Hz frequency range
 - All filters fulfill the IEC 61260 class 1 digital IIR base 10 requirements
- Option 0B requires that minimum option 0A be installed!

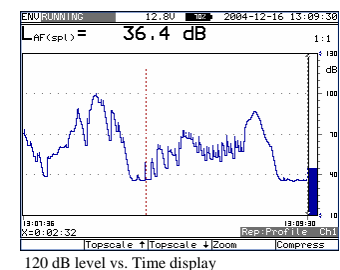


Option 1: True sound recordings plus operator voice comments

- Stores the sound signal direct from the AD-converter onto the internal hard-disk based on pre-selected sampling rate and storage format.
- Initiated by front panel push-keys or external TTL signal, or alternatively by a threshold trigger if option 8 is installed.
- Replay the recordings via the AC-output, whilst the measurement is still running, or, via the dedicated post-processing software (NorReview).
- Additional operator voice comments are stored on demand via speech recorded at comment microphone on the frontpanel. No need for pen & paper during the measurement to give hands free operation.

Option 2: "One-range" 120dB measurement range

- Cover the entire range from 10—130 dB in one single measurement range
- No need for adjusting the measurement range with varying noise signals
- The 120dB range is also used for the optional frequency bands (Option 0A/0B) and the optional statistical analysis (Option 10).



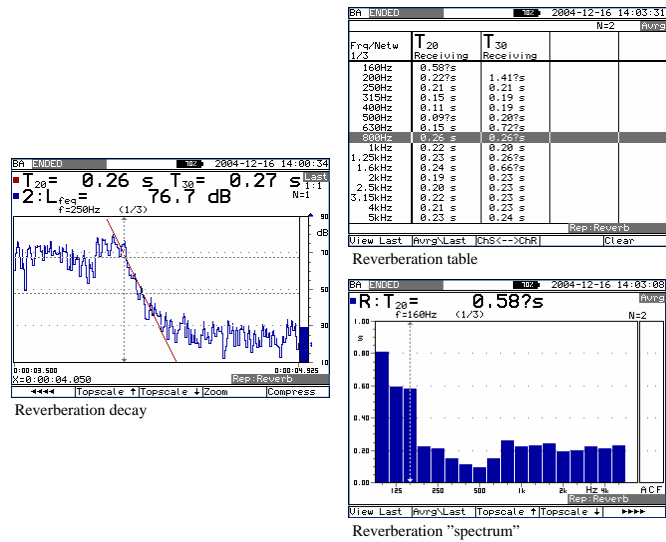
Option 3A: Noise Generator

- Produces white, pink and bandpass filtered noise excitation signals
- Adjustable noise level of output signal (maximum 1Vrms)
- Synchronization of noise signal with measurement being undertaken

Option 4: Reverberation time measurements

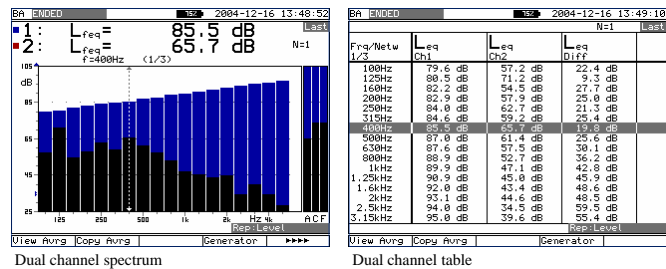
- Reverberation time measurements based on impulse excitation (using backward integration of decay)
- Reverberation time measurements based on noise excitation if the noise generator (Option 3A) is installed
- Calculates two RT values simultaneously (choose from T15, T20 or T30)
- Displays the graphical reverberation decay for each frequency band
- Manual adjustment of automatic calculated decay line
- Results presented as numerical table for all frequency bands
- Covers the 8 – 4000 Hz frequency bands for the 1/1-octave filters
- Covers the 6,3 – 5000 Hz frequency bands if the 1/3-octave filters (Option 0B) is installed

Option 4 requires that minimum option 0A be installed!



Option 5: Dual-channel measurements

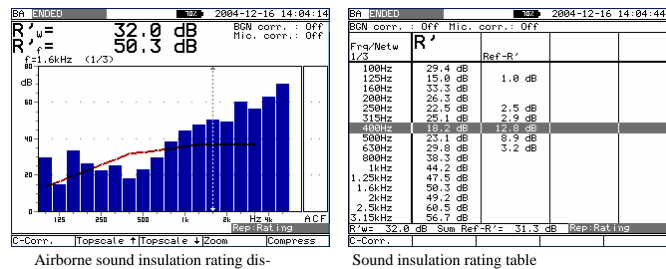
- Measures all the selected A-, C- and Flat-weighted functions in two independent channels
- Both channels cover 80dB dynamic ranges with individual range settings
- Covers the 8 – 4000 Hz frequency bands if the 1/1-octave filters (Option 0A) are installed
- Covers the 6,3 – 5000 Hz frequency bands if the 1/3-octave filters (Option 0B) are installed
- The dual-channel feature may be used both in environmental and building acoustic measurement modes



Option 6: Building acoustic rating calculations

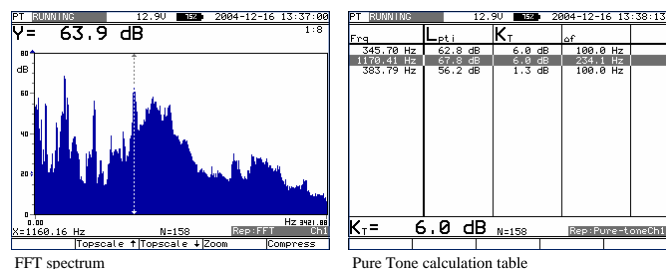
- Allows multiple microphone position averaging
- Calculation of the airborne rating indices (R_w, D_{n,w}, D_{nT,w}) and the impact rating index (L_{n,w})
- Displays the results graphically and numerically
- Averaged receiving room level may be corrected for measured background noise level
- Both channels may be adjusted for the individual microphone frequency characteristics

Option 6 requires that minimum options 0A, 0B and 4 be installed!



Option 7: Pure Tone FFT measurement mode

- 8000 line FFT analysis with 1.46Hz line resolution
- Covers the 0 – 9600 Hz frequency range
- Pre-selection of 1 – 9999 FFT averages
- Display FFT results with compression in a binary sequence 1 – 32
- Performs Pure Tone analysis as per the following Standards: ISO/DIS 1996-2 Annex C (2003), the Joint Nordic Method Version 2, the JNM for Wind Turbines and the German DIN 45681 Draft 06.01
- Useful for rotating machinery problems



Option 8: Advanced trigger features

- Allows noise events and/or sound recordings to be triggered at pre-selected thresholds
- Allows noise events and/or sound recordings to be triggered by external TTL pulse
- Allows noise events and/or sound recordings to be triggered by pre-selected markers
- Pre-trigger up to 5 seconds for noise events and/or sound recordings
- Very flexible parameter settings for level threshold triggering
- Threshold trigger for level above, below, between and even relative to other functions

Sound recordings requires that option 1 be installed!

Trigger selection menu

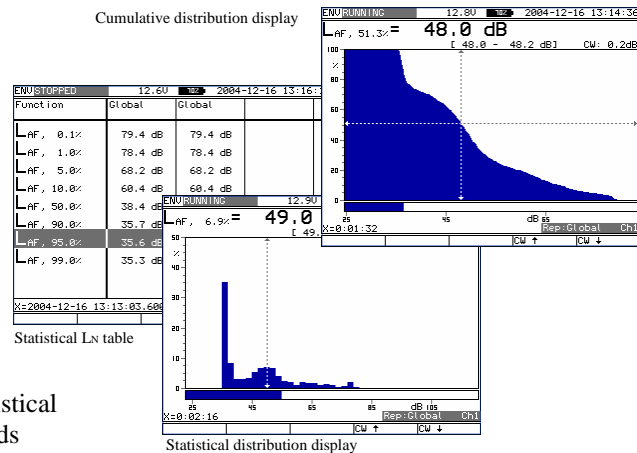
Option 9: Measurement timer

- Allows flexible long-term noise monitoring without operator continued presences at measurement point
- Pre-selection of date and time for overall start and end of the noise monitoring
- Pre-selection of the number of repeated measurements and pauses as well as the individual measurement length
- Pre-selection of repeat intervals for outdoor microphone sensitivity checks

Measurement Timer setup menu

Option 10: Statistical calculation of LN values

- Calculates 8 user defined LN values selectable within the range 0.1 – 99.9 %
- Parallel statistical calculation on all A-, C- and Flat-weighted networks
- Calculated results are also available as probability and cumulative distribution graphical displays as well as a numerical LN table
- All statistical calculations are based on 0.2 dB class widths covering the entire dynamic range
- All results may be viewed in wider classes (1-2-5-10 dB) if required
- If real-time filters are installed (option 0A or 0B), the statistical calculations are also available for the individual filter bands



Option 11: Weather data collection

- Communicates with Reinhardt Weather Station type MWS 9-5 via serial interface
- Reads-in pre-selected averaged weather data at -selected intervals (minimum 1 minute)
- Stores weather data in dedicated environmental mode weather report parallel to noise data

Weather station type Reinhardt MWS 9-5 must be ordered separately!

Weather data selection menu

Option 13: SMS control and reporting

- Allows communication between mobile telephones and a Nor121 instrument connected to a GSM-Modem (type Siemens T35i)
- Measurement start and stop controlled via SMS text messages
- Measurements results and weather data (Option 11) read-out via SMS text messages
- Automatic SMS text messages at measurement end or during noise events
- SMS text messages may be limited to only pre-selected mobile phone(s)

GSM-Modem type Siemens T35i must be ordered separately!

SMS reporting setup menu