Convergence Instruments

NSRT_mk3

Data Sheet

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Bruno Paillard

1 Product Description

NSRT_mk3 is the third generation of Convergence Instrument's smart integrating sound-level meter/datalogger. It includes a type 1 digital MEMS microphone, an accurate date/time clock, a non-volatile 128 Mb recording memory with fast USB download.

Running on battery, it can record sound pressure levels for a week. Connected to an external USB charger it can record and report for months. Its very small size allows it to be attached to or embedded within the monitored equipment.

The *NSRT_mk3* includes the following features:

- Type I precision
- A, C and Z weighting curves.
- *Integrating* Sound-Level Meter, records L-max, L-min and Leq levels.
- Log interval adjustable from 125 ms (8 points per second) up to hours.
- Individual Manufacturer's Certificate of Calibration from Convergence Instrument provided with every instrument purchased.
- Digital very sensitive MEMS microphone (30 dBA typical noise floor)
- Completely sealed weatherproof enclosure designed for outdoors applications. Now includes an ePTFE membrane that seals the microphone against dust and water.
- All-digital design.
- Ultra-stable sensitivity (field recalibration is easily done, but seldom required)
- Very low sensitivity variation due to temperature changes
- Very low sensitivity to vibrations
- Software function calculates global Leq and/or dose, according to ISO and OSHA methods.
- Adjustable response time.
- Preprogrammed recording start date/time.
- Integrated oscilloscope function that can show the acoustic signal in real time.
- Integrated spectral analyzer function that can show the spectrum (or 3rd-octave bands) in real time.
- Can be used as a high-quality USB digital microphone
- Allows the observation of recorded levels while the recording is ongoing.
- Works standalone, or USB connected.
- Long life internal rechargeable battery that recharges from USB and most USB chargers.
- Can be field-calibrated.
- Observes and records 100% of the acoustic signal (no missed samples).
- Editable individual custom ID for easier instrument management.
- All settings are stored in non-volatile memory. So the instrument will regain full functionality from hard-reset or battery loss.

2 Applications

- Sound level and acoustic dose measurement and recording.
- Monitoring of safe working conditions.
- Activity detection and logging.
- Long-term measurement and recording of acoustic levels for environmental impact studies.
- Specially designed for long-term outdoors applications.

3 Specifications

Category	Specification
Bandwidth	• 20 Hz to 20 kHz
Microphone Sensor	• Digital MEMS
Precision Class	• Type I
Saturation Level (typical @ 1 kHz)	• 120 dB-A • 120 dB-C • 120 dB-Z
Temperature Error	• Better than 0.6 dB (-20 degC < T < 60 degC)
Sensitivity to Vibrations	• 60 dB_{SPL}/g (20 dB lower than typical measurement microphone)
Weighting Curve	• dB-A • dB-C • dB-Z
Noise-Floor (Typical)	• 30 dB-A • 46 dB-C • 52 dB-Z
Recording Resolution	• 0.1 dB
Duty Rate of Signal Capture	• 100% - No Missed Samples
Min Log Interval	• 125 ms (8 points of Lmin, Lmax and LEQ per second)
Real-Time Spectral Display	• 2048-point Power Spectrum – dB or Lin Scale.
Calibration	• Field-calibrated using a 94 dB 1/2” calibrator
Connectivity	• USB
Battery Type	• Integral Li-Poly - USB-Rechargeable
Recharge Time	• 2 H 30 (Typical)
Battery Autonomy (Full-Charge)	• 7 days while recording
Battery Life	• > 300 Charge/Discharge Cycles
Temperature Range	• -20 degC to 60 degC (-4 degF to 140 degF)
Recording Memory	• Non-Volatile Flash Memory
Recording Memory Capacity (RT128 Model)	• 128 Mb • Ex: can continuously record Lmax, Lmin and Leq levels at

	1s intervals for 32 days, or 10s intervals for 320 days.
Recording/Erasure Cycles	• Greater than 100 000
Data Retention	• Greater than 20 Years
Dimensions	• 19 mm x 42 mm x 160 mm • (0.75” x 1.65” x 6.25”)
Weight	• 100 g
Construction	• Weather-Proof Enclosure
Microphone Dust Protection	• Expanded polytetrafluoroethylene (ePTFE) dust and water barrier

Table 1

3.1 Frequency Response

Figure 1 shows the typical spectral error in dB-A, dB-C and dB-Z, at 32 kHz and 48 kHz sampling rate, together with the type I limit lines.

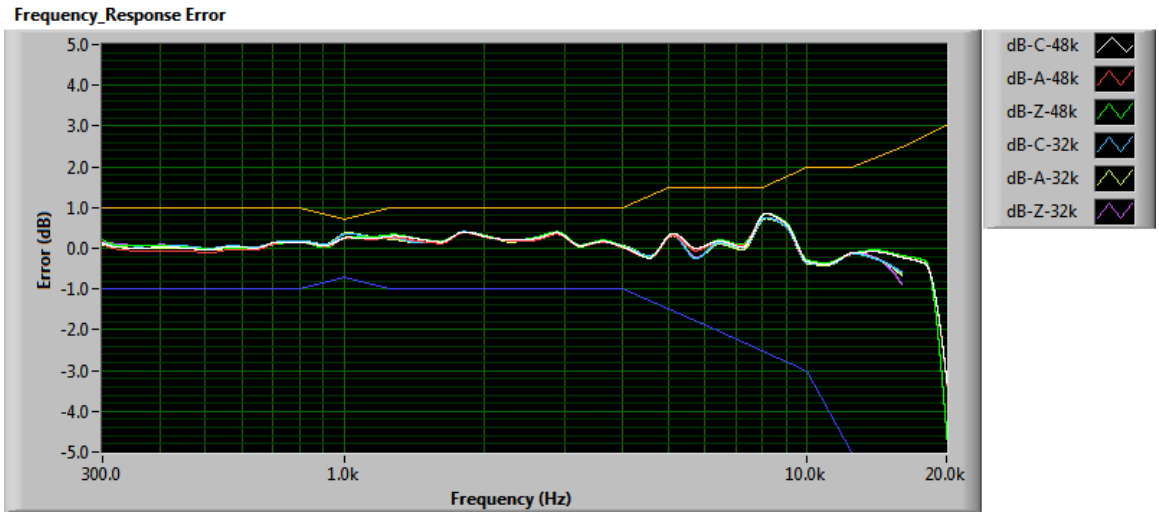

Figure 1

3.2 Directivity

Figure 2 shows the directivity of the instrument as a function of frequency.

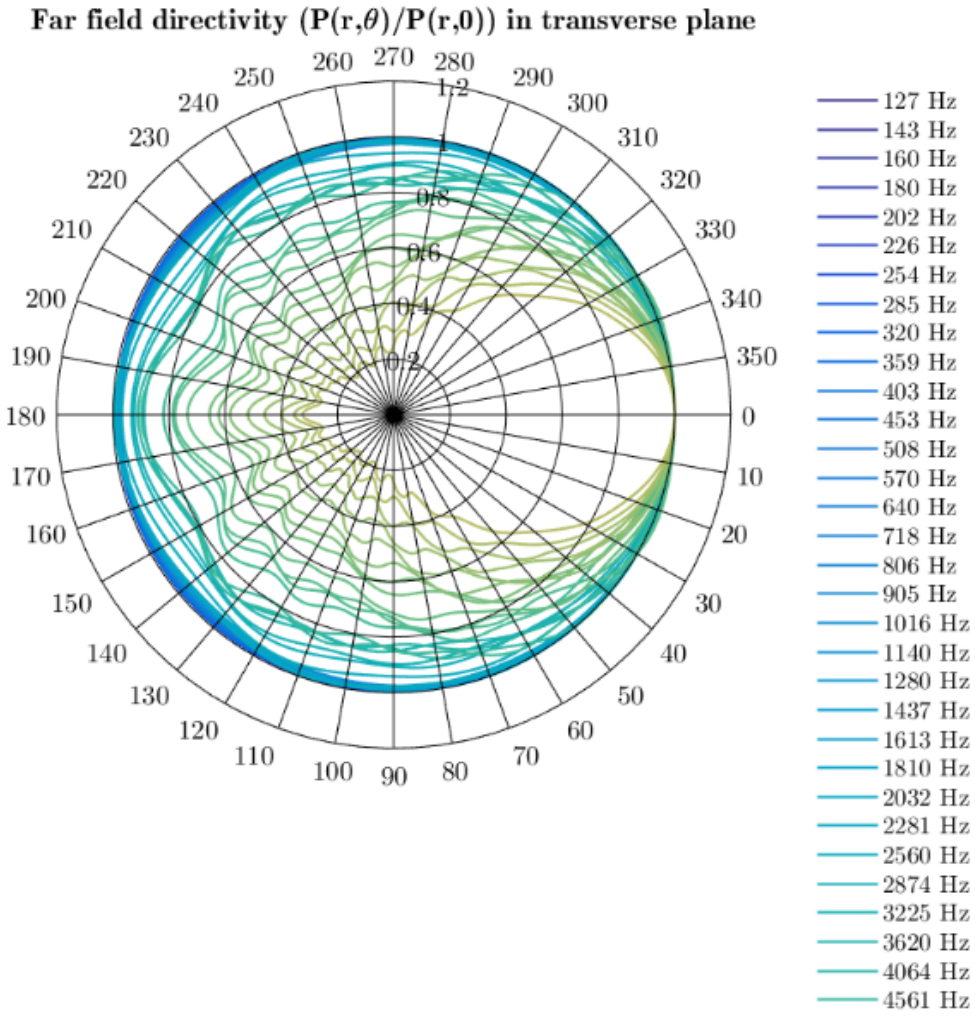

Figure 2

4 Instrument Manager Application Specifications

Category	Specification
Compatibility	• Windows 7, Windows 8, Windows 10
Supported Instruments	• All in Sentry series
Configuration	• Full Instrument Configuration • Save and Recall Configuration Files
Display	• Real-Time Acoustic Signal • Real-Time Sound Level

	• Real-Time Spectrum • Recorded Sound Levels • Global Leq/Dose Calculation (ISO and OSHA methods) • Battery Level and Charge • All graphs can be viewed in dB or Lin scale
Record Management	• Record Manual Start/Stop • Record Programmed Start/Stop • Recording Memory Download (Even while recording) • Recording Memory Clear • Auto-Calculation of Memory Depth
Data Export	• Export to Tab-Delimited Format for Use with Spreadsheet Applications

Table 2

5 Other Applications

Application	Description
Noise Sentry RT Community Noise Metrics	Application to calculate various noise metrics, such as CNEL, LDEN, and many others.
NSRT_Recorder	Allows the NSRT_mk3 to be used as a digital high-quality recorder.

Table 3