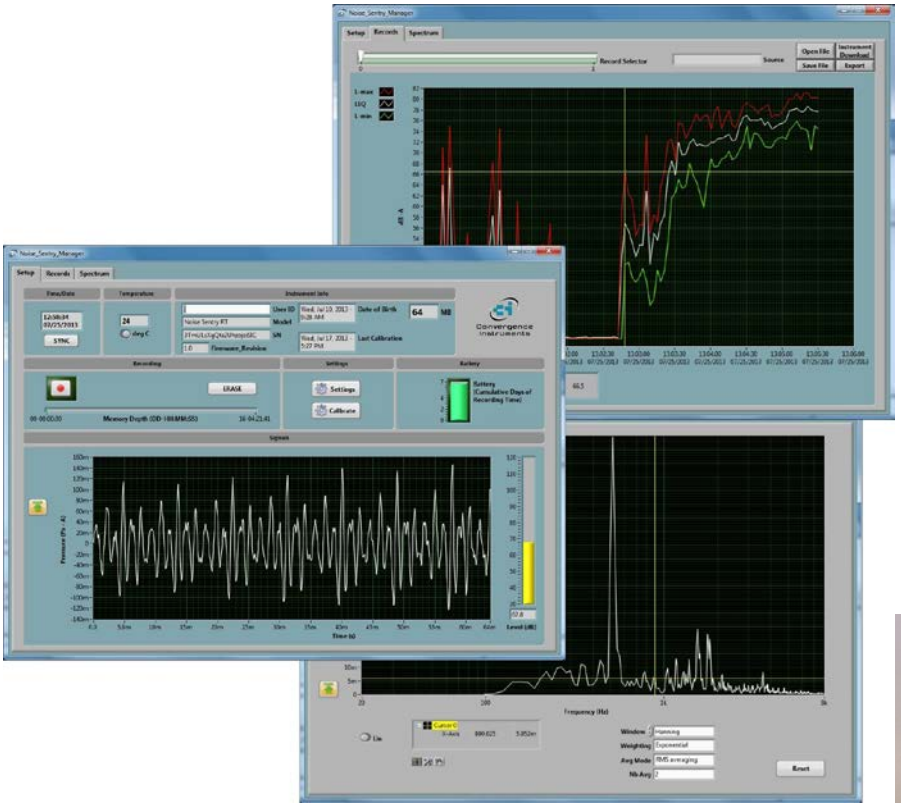
Convergence Instruments

NSRTW_mk2

Data Sheet



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Bruno Paillard

1 PRODUCT DESCRIPTION 2

2 APPLICATIONS 2

3 SPECIFICATIONS 3

3.1 Frequency Response 4

4 NS_RT_MANAGER APPLICATION SPECIFICATIONS 5

5 OTHER APPLICATIONS 5

1 Product Description

NSRTW_mk2 is the second generation of Convergence Instrument's generation of *WiFi*™ enabled smart integrating sound-level meter/datalogger. It includes a digital MEMS microphone, an accurate date/time clock, a non-volatile 128 Mb recording memory and *wireless* connectivity. Running on battery, it can record sound pressure levels and report them through *WiFi*™ 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 *NSRTW_mk2* 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.
- *WiFi*™ connectivity to report measured levels remotely and automatically at preset intervals.
- Open TCP/IP protocol, allows the customer to control the instrument remotely through a custom application.
- Email alarms for sound detected over specified threshold, as well as low-battery.
- Digital very sensitive MEMS microphone (30 dBA typical noise floor)
- Completely sealed weatherproof enclosure designed for outdoors applications.
- 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 and *WiFi* connection from hard-reset or battery loss.

2 Applications

- Sound level and acoustic dose measurement and recording.
- Monitoring of safe working conditions.
- Email Alarms when the noise is too loud.
- 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)	• 123 dB-A • 123 dB-C • 123 dB-Z
Temperature Error	• Better than 0.1 dB (0 degC < T < 60 degC) • Better than 0.5 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)	• 29 dB-A • 40 dB-C • 45 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 1/2” calibrator
Connectivity	• USB • WiFi
Radio Standard	• IEEE 802.11 b/g/n
Radio Certification	• FCC • IC • Japan • Korea • CE
Battery Type	• Integral Li-Poly - USB-Rechargeable
Recharge Time	• 2 H 30 (Typical)
Battery Autonomy (Full-	• 7 days while recording (WiFi operation will drain battery slightly

Charge)	more, depending on rate of connect
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	• 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	• 76.2 mm x 39.4 mm x 59 mm • (3” x 1.55” x 0.81”)
Weight	• 100 g
Construction	• Fully Potted Weather-Proof ABS Enclosure
WiFi Security	• Open • WEP • WPA / WPA2
Server Connection	• IP address/Domain Name
Protocol	• TCP/IP – Open protocol

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.

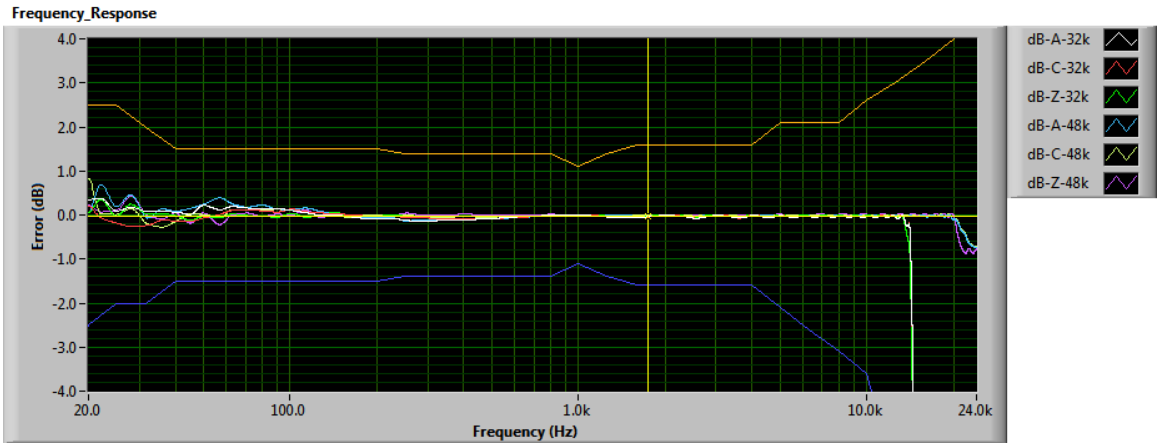

Figure 1

4 NS_RT_Manager Application Specifications

Category	Specification
Compatibility	• Windows 7, Windows 8, Windows 10
Supported Instruments	• All in Noise Sentry RT 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
NSRTW_Listener	Must be running on PC to allow instruments to connect and download their data via WiFi.
Noise Sentry RT Community Noise Metrics	Application to calculate various noise metrics, such as CNEL, LDEN, and many others.
NSRT_Recorder	Allows the NSRTW_mk2 to be used as a digital high-quality recorder.

Table 3