

Sound Level Meter Class1 NL-52

Sound Level Meter Class2 NL-42



# Measure Sounds Reliably

**Sound Level Meter  
Class1  
NL-52**

**Sound Level Meter  
Class2  
NL-42**



<http://svmeas.rion.co.jp/>

# Extremely User Friendly Rion's NL-52 and NL-42 sound level meters provide full support for the measurement process.

The NL-52 and NL-42 were developed to eliminate the trouble of reading instructions when conducting measurements.

Large and easily viewable three-inch LCD color display.

The unit (except for the microphone) is water-resistant, which means that it is unaffected by sudden rain showers.

You can use rechargeable batteries to help cut down on waste, making this an environmentally friendly product.

250 mm  
9.85 inch

Equipped with  
non-slip rubber grips

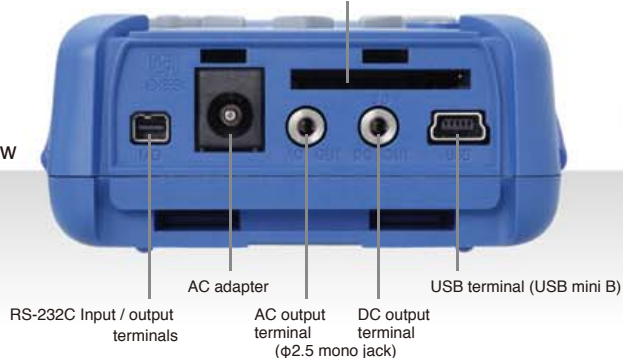
## Large color LCD screen

Three-inch LCD screen with a touch panel  
High resolution screen is easy to see indoors or outdoors and even in the dark.

### Variety of I/O Connections

SD Card slot

Bottom view



(Full scale)

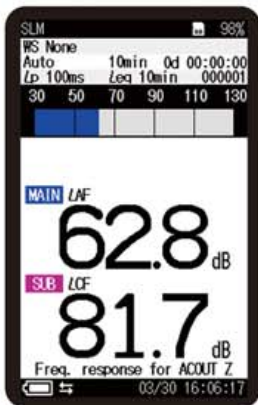


## No paper manual is needed.

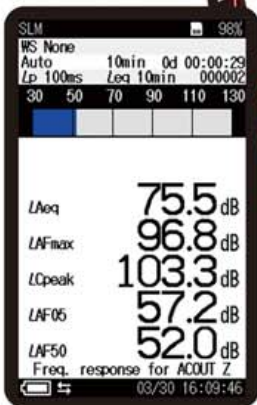
The manual and a help function can be easily accessed on the device.



Measurement Display (T-L graph)



Measurement Display (Main and Sub Simultaneous Displays)



Parameter Screen



Menu screen



Help screen

## Water-resistant (Except for the microphone)

Guaranteed water-resistant to at least level IP54 (resistant to spraying water). Helps reduce failures caused by sudden rain showers.



## Use of rechargeable batteries

In these new models it is possible to use rechargeable batteries which make these meters environmentally-friendly. 24 hour continuous measurement is possible (when using eneloop or dry alkaline batteries).



- Please use the dedicated charger to charged eneloop® batteries.
- When using eneloop batteries, please read the eneloop® battery instruction manual.
- eneloop® is a registered trademark of Panasonic group.

## Continuous detailed measurements for one month

This meter can be used to conduct long-term measurements, such as environmental measurements. (If an AC adapter is used)

Duration of recording

**NL-52/42**

1000 h (approx. one month)

Previous model

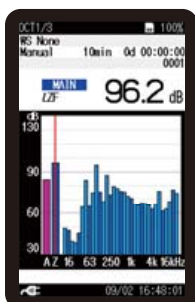
200 h (approx. one week)

Example of detailed recording

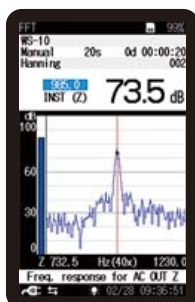
If the  $L_p$  is measured at 100 ms intervals and the  $L_{eq}$  is simultaneously measured at 10 m intervals over a 24 h period, the total size of accumulated data is approximately 74 MB (reference value)

## Functionality can be extended by a range of options

Additional functions can be added, such as simultaneous logging of raw data (100 ms  $L_p$ ) and processed data ( $L_{eq}$  and other indices), frequency analysis and long-term data recording.



1/3 octave band analysis screen



Analysis screen (x40)



Data management screen using AS-60 software

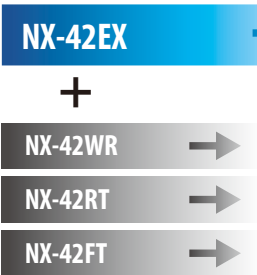
# Optional program function list

When the optional programs are installed, the following functions are added:

## Extended function program NX-42EX

### ■ Adds a number of programs.

When NX-42EX is installed\*  
NX-42WR, NX-42RT and NX-42FT  
can be added.



The NX-42EX is supplied on the 512 MB SD card. The 512 MB SD card can be used as a memory card after installing the program.

NX-42EX	
Auto store function (instantaneous value, processed value)	
Comparator function	
Continuous data output function	



Program type	NX-42WR	NX-42RT	NX-42FT
Additional function			
Real sound monitor (waveform recording)	●		
Octave, 1/3 octave band analysis		●	
Octave, 1/3 octave band filter output		●	
FFT analysis			●

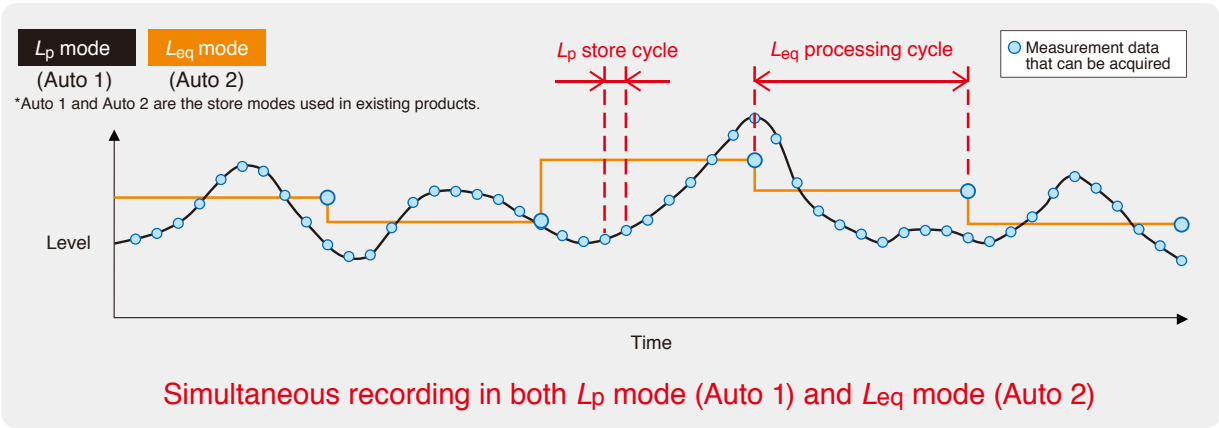
\* The NX-42EX program cannot be uninstalled.

### ■ Auto store function

This function enables continuous measurement in  $L_p$  mode (instantaneous SPL) and  $L_{eq}$  mode (equivalent continuous SPL) to be conducted simultaneously.

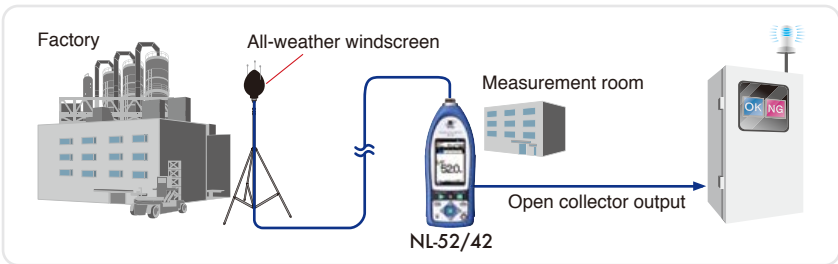
Total measuring time of Auto store function	Up to 1000 h	Equipped with a timer function
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$L_p$  mode (instantaneous SPL) and  $L_{eq}$  mode (equivalent continuous SPL) concept



### ■ Comparator function

This function turns on when the open collector output exceeds the set value (max. applied voltage 24 V, max. current 60 mA, allowable dissipation 300 mW).



### ■ Continuous data output function

This function enables the continuous acquisition of instantaneous values and processed values during both USB and RS-232C communication.

This is a convenient function for users who can design their own control programs, such as a program to be used as an indicator.

## Waveform recording program NX-42WR



The NX-42WR is supplied on the 2 GB SD card. The 2 GB SD card can be used as a memory card after installing the program.

This function enables users to record sounds and processing sound to process sound levels simultaneously. Recorded data can be played on computer and used for frequency analysis.

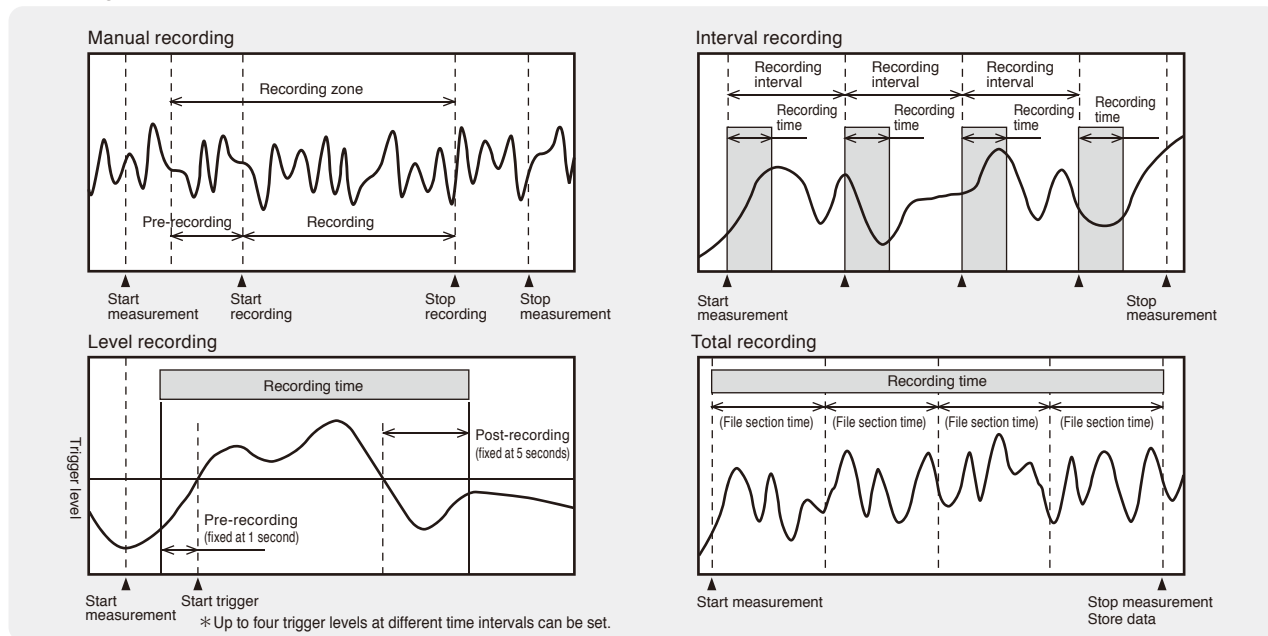
(Uncompressed waveform WAVE file)

Sampling at 48 kHz, 24 kHz, 12 kHz, Selection of 24 bit or 16 bit

Maximum recording time (16 bit)

Sampling frequency	Memory card	512 MB	2 GB
48 kHz		1 h	4 h
24 kHz		2 h	8 h
12 kHz		4 h	16 h

Recording concept

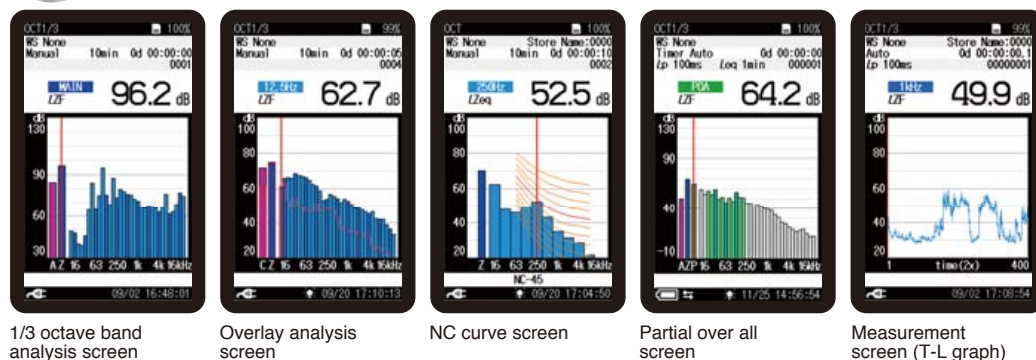


## Octave, 1/3 octave real-time analysis program NX-42RT



The NX-42RT is supplied on the 512 MB SD card. The 512 MB SD card can be used as a memory card after installing the program.

By adding a program to the NL-52/NL-42, octave band and 1/3 octave band analysis can be performed. Saved analysis results can be loaded and shown in an overlay graph display together with current analysis data. NC curve graph display and NC value calculation/display are also possible. Using the AS-60RT software, data can be utilized and managed on a computer.

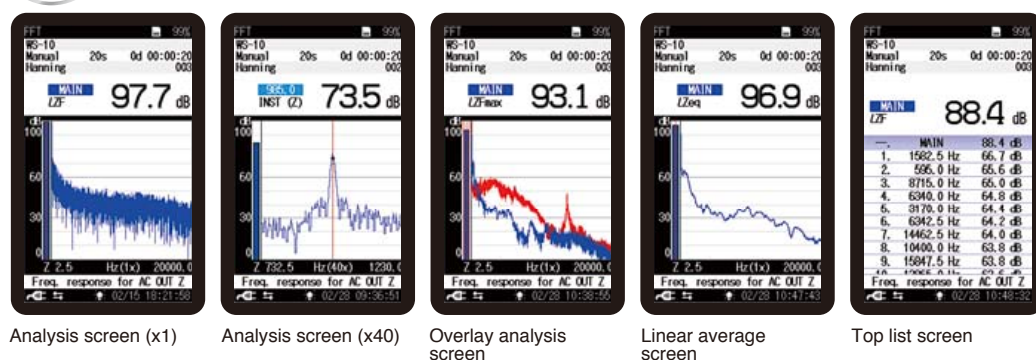


## FFT analysis program NX-42FT



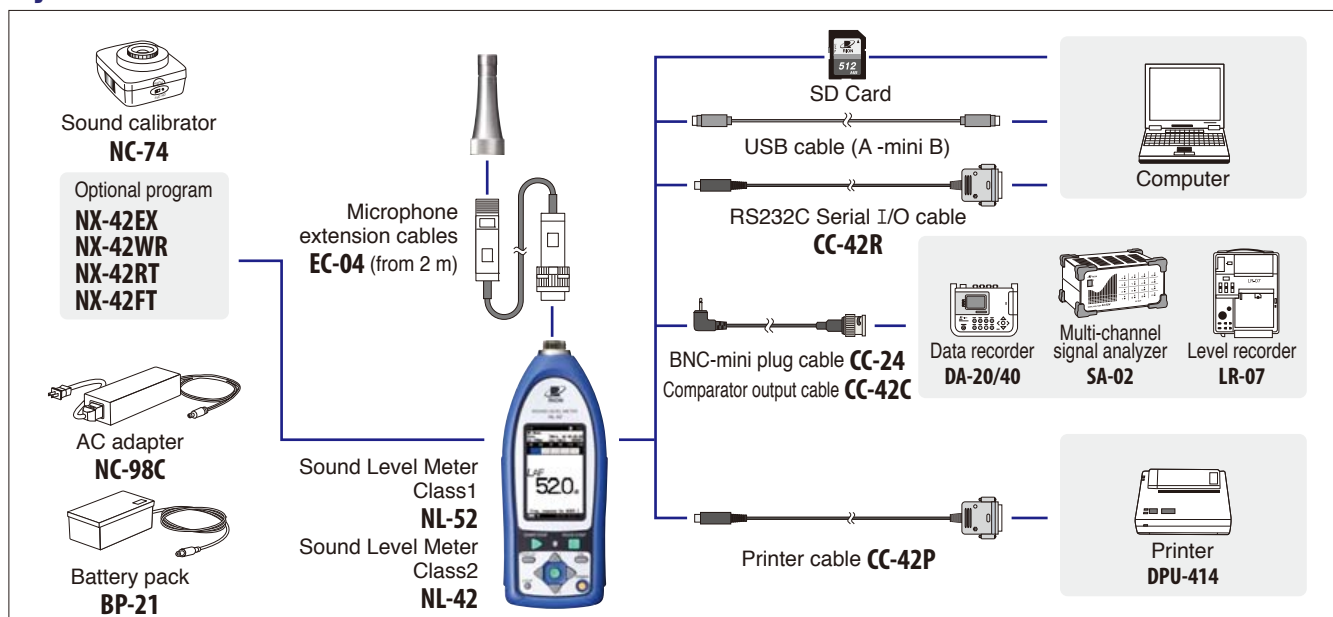
The NX-42FT is supplied on the 512 MB SD card. The 512 MB SD card can be used as a memory card after installing the program.

By adding a program to the NL-52/NL-42, FFT analysis can be performed. The analysis frequency range is 20 kHz, with 8 000 spectrum lines (200 displayed). Saved analysis results can be loaded and shown in an overlay graph display together with current analysis data. Maximum zoom ratio is x40, and the top list screen can show up to 20 lines.





## System construction



## Peripheral devices

### All-weather windscreen WS-15



This windscreen is designed for outdoor installations. It helps to reduce wind noise and is equipped with rainproof features that satisfy the **IPX3 water-resistant** specifications. It is used with a microphone extension cable. (Mounting adapter WS15006 required separately)

### Rain-protection windscreen WS-16



This screen protects the microphone against rain for a short period of time. The rainproof performance of this windscreen is designed to satisfy the **IPX3 water-resistant** specifications.

### Sound calibrator NC-74



This Sound calibrator conforms to IEC 60942 (JIS C 1515), Class 1, providing a level of performance sufficient for calibrating the precision sound level meter.

#### Specifications

Nominal acoustic pressure level	94 dB
Nominal frequency	1 kHz

### Tripod

This stand can be used for general acoustic measurements. The sound level meter and microphone can be mounted on the stand.



ST-80



ST-81

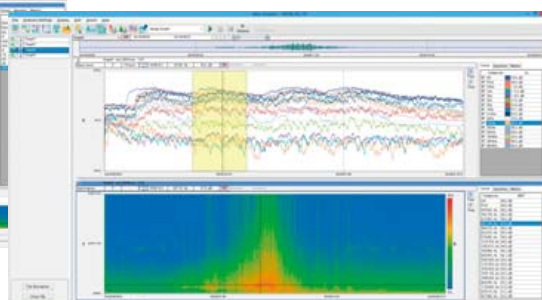
(For All-weather windscreen WS-15, use of ST-81 is recommended.)

## Waveform analysis software AS-70

This software allows you to load stored WAVE files from a RION sound level meter, vibration meter or data recorder. Octave, 1/3 octave, and FFT analyses can then be performed. Playback of the real sound files is also possible.



Frequency analysis screen



Frequency analysis screen

#### Specifications

Waveform analysis	Calculations	Maximum value, Minimum value, Average value, RMS, Variance, Differential and integral calculus, HPF, LPF
Frequency weighting		Z, A, C, G, C to A, L <sub>v</sub> (vertical) (JIS C 1510), L <sub>v</sub> (horizontal) (JIS C 1510)
FFT analysis	Analysis points	32 to 65 536 points
	Display data	Power spectrum, Power spectral density, Spectrogram
Time weighting		10 ms, F, 630 ms, S, 10 s
Octave band analysis	Applicable standards	IEC 61260 Class 1 (JIS C 1514 Class 1)
	Analysis frequency range	Octave band 0.5 Hz to 16 kHz (16 bands)
		1/3 octave band 0.4 Hz to 20 kHz (48 bands)

#### Recommended computer specifications

CPU	Intel Core™2 Duo 2 GHz or higher
RAM	2 GB or more (4 GB recommended)
HDD	20 GB free or more (100 GB or more recommended)
DISPLAY	XGA (1 024 × 768) or more
OS	Microsoft Windows XP Professional 32 bit, 7 Professional 32 bit / 64 bit, 8 Pro 32 bit/64 bit

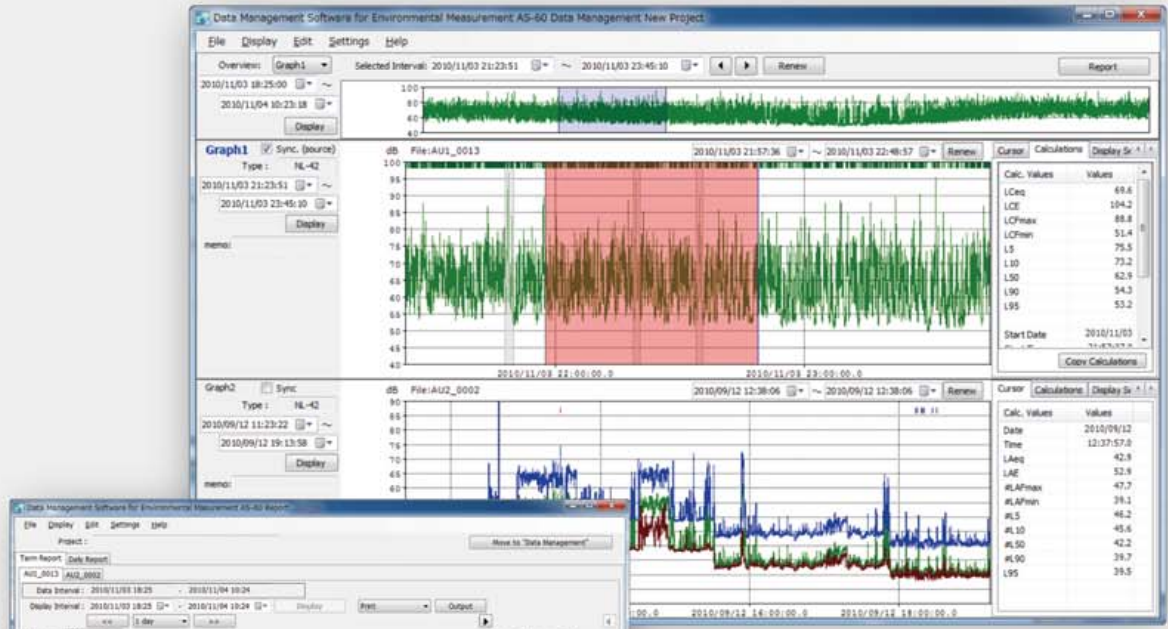
# Complete software for environmental measurements

## Data management software for environmental measurement AS-60



Data management software for environmental measurement AS-60 enables the graph display of measurement data, arithmetic processing, exclusion sound processing, preparation of reports, output of files, and playback of real sound files.

- Easy to use
- Reports easy to prepare
- Simultaneous display of multiple data items (up to 8 data items)
- Data on the data recorder can be loaded (CSV file for DA-40 Viewer)
- Data combination



Data management screen

### Supported models

- NL-62\*
- NL-52/42\*
- NL-32/31/22/21\*
- DA-40Viewer

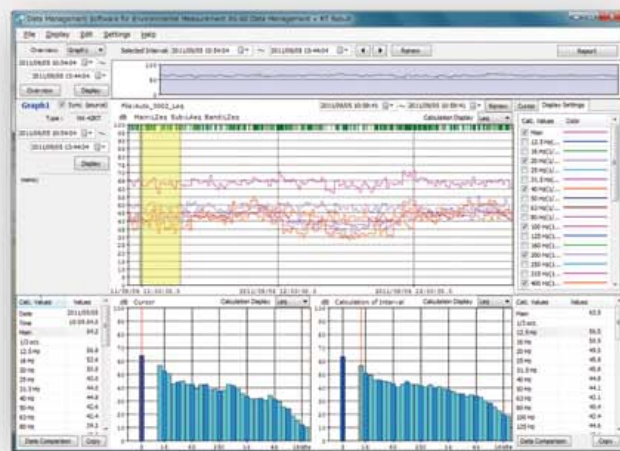
\*Only auto store data are supported.

### Recommended computer specifications (Common for AS-60/60RT/60VM)

CPU	Intel Core™2 Duo 2.0 GHz or higher
RAM	2 GB or more
DISPLAY	XGA (1024 x 768) or more, at least 65 536 colors
OS	Microsoft Windows XP Professional 32 bit, 7 Professional 32 bit and 64 bit

● If AS-60/60RT/60VM is used on the NL-52/42, the NX-42EX is also needed.

## Data management software for environmental measurement AS-60RT (Includes the octave and 1/3 octave data management software)



Data management screen

### Adds support for handling octave band analysis data to AS-60

AS-60RT is for managing data saved with the NX-62RT/42RT or data measured with the NA-28 on a computer.

### Supported models

- NX-62RT\*
- NX-42RT\*
- NA-28\*

\*Only auto store data are supported.

## Data management software for environmental measurement AS-60VM (Includes the vibration level data management software)

Adds support for handling data measured with VM-53A to AS-60

### Supported models

- VM-53A\*

\*Only auto store data are supported.

## Specifications



	NL-52	NL-42
Applicable standards	IEC 61672-1: 2002 Class 1 ANSI S1.4-1983 Type 1 ANSI S1.4A-1985 Type 1 ANSI S1.43-1997 Type 1 JIS C 1509-1: 2005 Class 1 CE Marking (EMC Directive 2004/108/EC, Low Voltage Directive 2006/95/EC), WEEE Directives, Chinese RoHS (export model for China only)	IEC 61672-1: 2002 Class 2 ANSI S1.4-1983 Type 2 ANSI S1.4A-1985 Type 2 ANSI S1.43-1997 Type 2 JIS C 1509-1: 2005 Class 2
Measurement functions	Simultaneous measurement of the following items, with selected time weighting and frequency weighting Processing (main ch) Instantaneous sound pressure level: $L_p$ Equivalent continuous sound pressure level: $L_{eq}$ Sound exposure level: $L_E$ Maximum sound pressure level: $L_{max}$ Minimum sound pressure level: $L_{min}$ Percentile sound levels: $L_N$ (0.1 to 99.9 %, 0.1-increment steps, max. 5 values) Processing (sub ch) Instantaneous sound pressure level: $L_p$ Additional processing In addition to main processing items, one of the following can be selected for simultaneous processing: C-weighted equivalent continuous sound level: $L_{Ceq}$ C-weighted peak sound level: $L_{Cpeak}$ Z-weighted peak sound level: $L_{Zpeak}$ I-time-weighted equivalent continuous sound level: $L_{A_{Teq}}^{*2}$ Maximum I-time-weighted equivalent continuous sound level: $L_{A_{Tmax}}^{*2}$ The power average of the maximum level of each 5 second interval: $L_{A_{Tm5}}$ The frequency weighting for the additional processing synchronizes with the frequency weighting of the sub-channel, so when the sub-channel has A-weighting, $L_{A_{Tm5}}$ can be selected. When C-weighting (Z-weighting) is selected, the additional processing $L_{Ceq}$ and $L_{Cpeak}$ ( $L_{Zpeak}$ ) are selectable.	
Measuring time	10 s, 1, 5, 10, 15, 30 m, 1, 8, 24 h, and manual (maximum 24 h)	
Microphone	Type UC-59 Sensitivity level -27 dB	UC-52 -33 dB
Measurement range	A-weighting: 25 dB to 138 dB C-weighting: 33 dB to 138 dB Z-weighting: 38 dB to 138 dB C-weighting peak sound level: 55 dB to 141 dB Z-weighting peak sound level: 60 dB to 141 dB	
Inherent noise	A-weighting 17 dB or less C-weighting 25 dB or less Z-weighting 30 dB or less	19 dB or less 27 dB or less 32 dB or less
Frequency range	20 Hz to 20 kHz	
Frequency weighting	A, C, and Z	
Time weighting	F (Fast) and S (Slow)	
Level range	Single range (Linearity range: 113 dB) Bar graph display range max Max. 110 dB (20 to 130 dB) Switching of bar graph display Set the upper/lower limit in 10 dB increments.	
RMS detection circuit	Digital processing method	
Sampling cycle	20.8 $\mu$ s ( $L_p$ , $L_{eq}$ , $L_E$ , $L_{max}$ , $L_{min}$ , $L_{peak}$ : sampling frequency: 48 kHz) 100 ms ( $L_N$ )	
Calibration	Measurement Law: electrical calibration performed according to IEC and JIS standards, using internally generated signals: acoustic calibration performed with the NC-74.	
Correction functions	Windscreen correction: Compliant with IEC 61672-1 and JIS C 1509-1 standards when the windscreen is installed. Diffuse sound field correction: Correction of frequency characteristics in order to comply with standards (ANSI S1.4) in diffuse sound field.	
Delay time	The meter can be set to start measuring a specified time (OFF, 1, 3, 5 or 10 s) after the start button has been pressed or when a user-set trigger is exceeded.	
Back erase function	When the PAUSE key is pressed to pause measurement, the preceding (user selectable) 0, 1, 3 or 5 s data are excluded from processing.	
Display	Backlit semitransparent color TFT LCD display WQVGA (400 x 240 dots) *LCD with touch panel (Capacitive Touch Panel) Numerical display update frequency: 1 s Bar graph update frequency: 100 ms	
Store	Manual Data for measurement results are stored manually in single address increments. Internal memory: max. 1 000 sets SD Card: depends on the capacity of the SD Card*1 Auto*2 Instantaneous values ( $L_p$ mode) and processed values ( $L_{eq}$ mode) are stored continuously and automatically at preset intervals. $L_p$ sampling cycle 100 ms, 200 ms, 1 s, $L_{eq}$ 1s $L_{eq}$ sampling cycle 10 s, 1, 5, 10, 15, 30 ms, 1, 8, 24 h Measurement Time Max. 1 000 h (depends on the capacity of the SD Card)*1	

\* Windows is a trademark of Microsoft Corporation.  
\* Specifications subject to change without notice.

Distributed by:

Data recall	Allows viewing of stored data
Setup memory	Up to five setup configurations can be saved in internal memory, for later recall Start up via file settings previously stored on SD card possible
Waveform recording*3	
File format	Uncompressed waveform WAVE file
Sampling frequency	Select 48 kHz, 24 kHz or 12 kHz
Data length	Select 24 bit or 16 bit
Outputs	DC output Output voltage 2.5 V, 25 mV / dB at bar graph display full scale AC output Output AC signals using a frequency weighting characteristic selected by processing or by A, C, Z-weighting. Output voltage 1 V (rms values) at bar graph display full scale Comparator output*2 Turns on when the open-collector output exceeds the set value (max. applied voltage 24 V, max. current 60 mA, allowable dissipation 300 mW).
USB	Allows USB to be connected to a computer and recognized as a removable disk Allows USB to be controlled via communication commands
RS-232C communication	Allows for RS-232C communication via use of a dedicated cable
Data continuous output*2	
Type of data	Instantaneous value $L_p$ Processed value $L_{eq}$ , $L_{max}$ , $L_{min}$ , $L_{peak}$
Output interval	100 ms
Print out	Printing of measurement results on dedicated printer DPU-414
Power requirements	Four IEC R6 (size AA) batteries (alkaline or rechargeable batteries) or external power supply
Battery life (23 °C)	Alkaline battery LR6 (AA): 26 h Ni-MH secondary battery: 25 h At the maximum * Depends on the setting
AC adapter	NC-98C (NC-34 for previous models cannot be used)
External power voltage	5 to 7 V (rated voltage: 6 V)
Current consumption	Approximately 90 mA (normal operation, rated voltage)
Ambient conditions	Temperature -10 to +50 °C Humidity 10 to 90 % RH (non-condensing)
Dustproof / water-resistant	IP code: IP54 (except for microphone)
performance*4	See precautions regarding waterproofing
Dimensions, weight	Approx. 250 (H) x 76 (W) x 33 mm(D), approx. 400 g (with batteries)
Supplied accessories	Storage case x 1, Windscreen WS-10 x 1, Windscreen fall prevention rubber x 1, Hand strap x 1, LR6 (AA) alkaline batteries x 4, SD card 512 MBx1 (NX-42EX preinstalled model only)

## Options

Product name	Product number
Extended function program (Inst.on 512 MB SD card)	NX-42EX
Waveform recording program*2 (Inst.on 2 GB SD card)	NX-42WR
Octave, 1/3 octave real-time analysis program*2 (Inst.on 512 MB SD card)	NX-42RT
FFT analysis program*2 (Inst.on 512 MB SD card)	NX-42FT
Data management software for environmental measurement	AS-60
Data management software for environmental measurement (Includes the octave and 1/3 octave data management software)	AS-60RT
Data management software for environmental measurement (Includes the vibration level data management software)	AS-60VM
Waveform analysis software	AS-70
SD Card 512 MB	SD-512M
SD Card 2 GB	SD-2G
AC adapter (100 V to 240 V)	NC-98C
Battery pack	BP-21
Microphone extension cables	EC-04 (from 2 m)
BNC-Pin output code	CC-24
Comparator output cable	CC-42C
Printer	DPU-414
Printer cable	CC-42P
RS 232C serial I/O cable	CC-42R
USB cable	—
Sound calibrator	NC-74
All-weather windscreen	WS-15
Windscreen mounting adapter	WS-15006
Rain-protection windscreen	WS-16
Sound level meter tripod	ST-80
All-weather windscreen tripod	ST-81

\*1 Use Rion fully guaranteed products. \*2 NX-42EX required (sold separately). \*3 NX-42WR required (sold separately).  
\*4 Protection against harmful dust and water splashing from any direction.

### Precautions regarding waterproofing

Before use, verify that the rubber bottom cover and the battery compartment lid are firmly closed.  
To maintain the water and dust proof rating, internal packing replacement is required every two years (at cost).

ISO 14001 RION CO., LTD.  
ISO 9001 RION CO., LTD.



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