INSTRUCTION MANUAL

Octave · 1/3 Octave
Real-time Analysis Program

NX-42RT

RION CO., LTD.

Organization of this manual

This manual describes functions and other operation principles of the Octave · 1/3 Octave Real-time Analysis Program NX-42RT.

The manual consists of the chapters listed below. You should also consult the documentation for the Sound Level Meter NL-42/NL-52.

Outline
Gives basic information on the functions of the NX-42RT.

Change the function to the NX-42RT
Explains how to change to the function of the NX-42RT.

Reading the display
Explains various items that appear on the display and menu screen.

Measurement
Explains the basic procedures for measurement.

Store data format and file structure
Explains the format of stored data and how the files are organized.

Card capacity and store time
Lists the data store time corresponding to the SD memory card capacity, etc.

Recall data
Explains screen and display settings of the recall data.

Default settings
Lists the factory default settings of the NX-42RT.

Communication commands
Explains commands about functions of the NX-42RT.

Octave, 1/3 octave band filter
Lists the characteristics of the octave and 1/3 octave band filter in the NX-42RT.

Noise floor
Lists the residual noise (reperesentative value) of the NL-42/NL-52.

Specifications
Lists the technical specifications of the NX-42RT.

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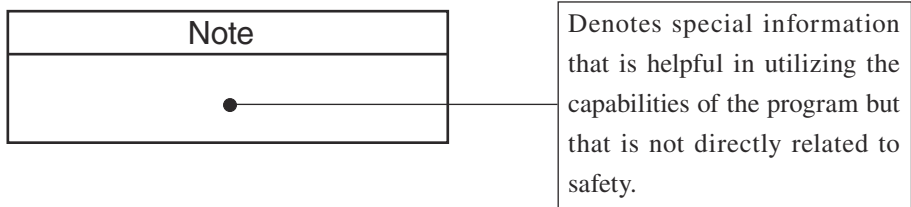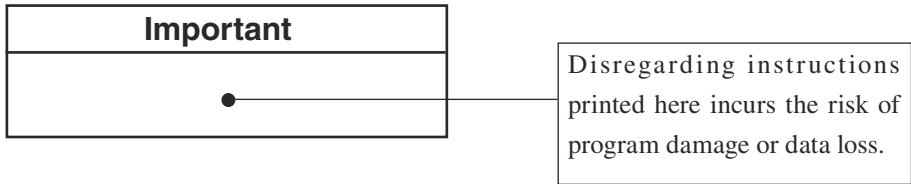
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FOR SAFETY

In this manual, important safety instructions are specially marked as shown below. To prevent the risk of severe damage to the program or peripheral equipment, make sure that all instructions are fully understood and observed.

Important
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Disregarding instructions printed here incurs the risk of program damage or data loss.

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Note
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Denotes special information that is helpful in utilizing the capabilities of the program but that is not directly related to safety.

Contents

Outline

The NX-42RT software is designed for installation in the Sound Level Meter NL-42/NL-52, allowing the unit to function as an octave band and 1/3 octave band real-time analyzer.

Measurement data can be displayed as a graph or in numerical format.
The graph display allows overlaying with previous measurement data.
The indoor noise rating (NC-value) can also be displayed.
Data are stored in CSV format, which allows processing on a computer, using general application software.

Octave and 1/3 octave band analysis can be carried out for the following items.

- 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 level L_N (1 to 99) 1-increment steps, max. 5 values

Using the partial over all for selected frequency bands, the following items can be measured.

- Instantaneous sound pressure level L_p
- Equivalent continuous sound pressure level L_{eq}
- Sound exposure level L_E
- Maximum sound pressure level L_{max}

As an additional processing 2 function, one of the following items can be measured together with the additional processing value of the NL-42/NL-52.

- C-weighted equivalent continuous sound level L_{Ceq}
- I-time-weighted equivalent continuous sound level L_{AIeq}
- S-time-weighted maximum sound pressure level (Slow) L_{ASmax}

For details on the NL-42/NL-52 including information on how to use the operation keys, please refer to the Instruction Manual of the NL-42/NL-52.

Change the function to the NX-42RT

NX-42RT installation

Follow the procedure described in the separate "Optional program installation / uninstallation" to install the NX-42RT program in the NL-42/NL-52 unit.

Important
Never format the optional program card with SD memory card formatting software (such as SD Formatter, etc.). Otherwise the program data on the card will be erased and the respective functions can no longer be used. Restoration of the erased program is not warranted.
Upgrade the firmware of the sound level meter to the latest version before installing the optional program. The latest version firmware can be downloaded from "Software downloads" of Support Room on our web site (http://www.rion.co.jp/english/).

Note
The NX-42RT program can only be installed if the Extended Function Program NX-42EX has been installed in the NL-42/NL-52 first.

Switching to the NX-42RT function

On the menu list screen of the NL-42/NL-52, select [Option] and press the MENU/ENTER key.

The option screen appears. Use the $\triangle/\triangledown$ keys to move to the [NX-42RT Octave · 1/3 Octave Real-time Analysis Program] and press the MENU/ENTER key.

When the message "Please wait" disappears, the function switching procedure is completed, and the unit shows the NX-42RT measurement screen.

Reading the display

Measurement screen

There are two types of measurement screens: graph screen and numeric list screen. You can switch between the two screen types using the controls at the bottom of the menu list screen or in the [Display] screen.

Graph display (GRP)

Analysis mode

Channel name and center frequency

Measurement in progress symbol

Measurement value

Level indication

Cursor

NC curve

Sub channel level bar

Main channel level bar

Partial over all level bar

Overlay graph

Frequency band level bars

Frequency indication

Setting of output, etc
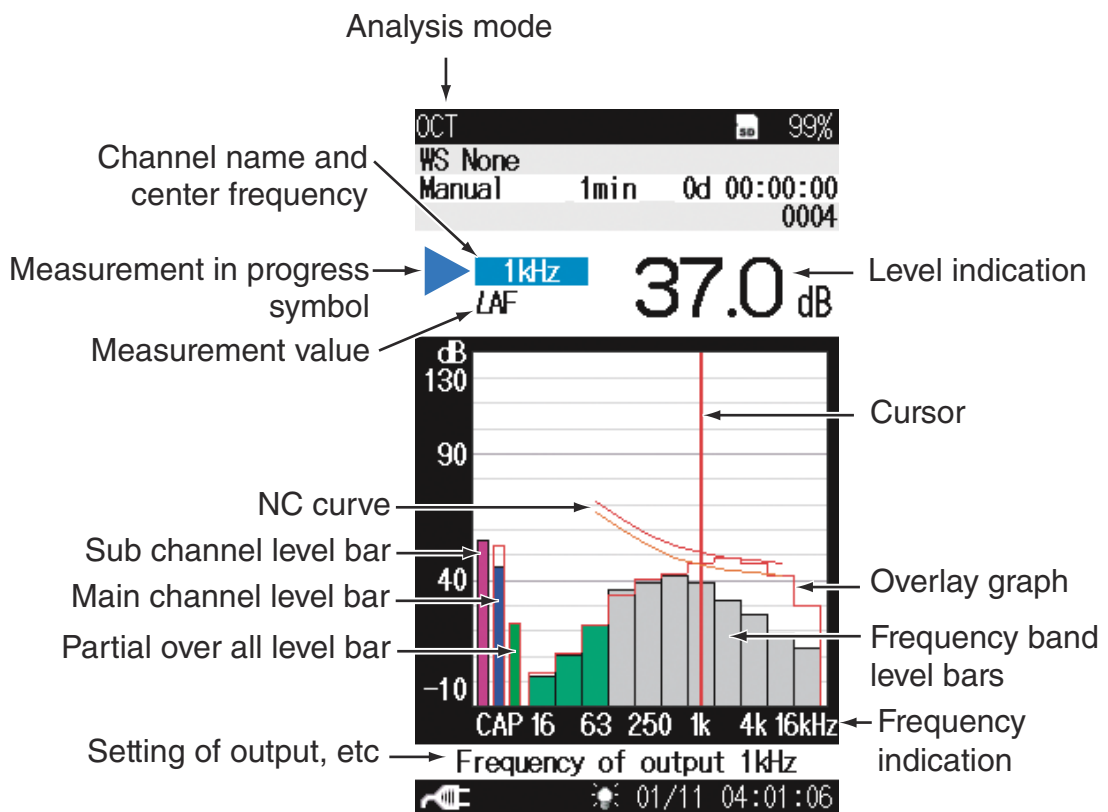
Analysis mode

Shows the selected analysis mode for the currently displayed screen. "OCT" indicates octave band analysis, and "OCT1/3" indicates 1/3 octave band analysis (see pages 9, 15).

Level indication

Shows the level of the bar selected by the cursor.

Cursor

Selects a channel and frequency band in the currently displayed graph. Use the ◁/▷ keys to move the cursor.

Overlay graph

When the [Overlapping] setting is ON, the measured data are shown together with a graph for saved data (see page 11).

Frequency band level bars

Show the level value in each frequency band as a bar graph. When octave band analysis is selected, 11 bands from 16 Hz to 16 kHz are shown. When 1/3 octave band analysis is selected, 33 bands from 12.5 Hz to 20 kHz are shown. The frequency bands selected for partial over all are shown in light green in the graph.

Frequency indication

Indicators for 16 Hz, 63 Hz, 250 Hz, 1 kHz, 4 kHz, and 16 kHz are shown here on a horizontal axis, as a guide to the frequencies of the level bar graph display.

Setting of output, etc

Pressing and holding the DISPLAY key cycles the display through the following indications: The number of waveform recording, Freq. response for AC OUT (or Output frequency), POA upper and lower frequency, The number of waveform recording...

- The number of waveform recording (during measurement only)

  When the [Wave Rec Mode] on the Wave recording screen was selected, the number of recorded WAV files is shown here.

- Freq. response for AC OUT

  When the frequency weighting characteristic was selected on the [AC OUT] of the [I/O] menu screen, the selected characteristic is shown here.

- Output frequency

  When "BAND" was selected on the [AC OUT] of the I/O menu screen, the set output frequency band is shown here.

- POA upper and lower frequency

  Shows the frequency band range selected on the [Partial Over All] of the Measure menu screen.

Partial over all level bar

If [Partial Over All] is selected on the Measure menu screen, the partial over all (POA) for the selected frequency band range is shown by this green level bar. The indication "P" is shown below the bar (see page 16).

Main channel level bar

The level of the main channel (MAIN) is shown by this blue bar. The frequency weighting characteristic is indicated below the bar.

Sub channel level bar

The level of the sub channel (SUB) is shown by this pink bar. The frequency weighting characteristic is indicated below the bar.

NC curve

Shows the NC curve selected on the Display menu screen (see page 12).

Measurement value

Shows the measurement value of the bar selected with the cursor.

Measurement in progress symbol

Flashes during measurement.

Channel name and center frequency

Shows the name and center frequency of the frequency band selected with the cursor.

Numeric list display (NUM)
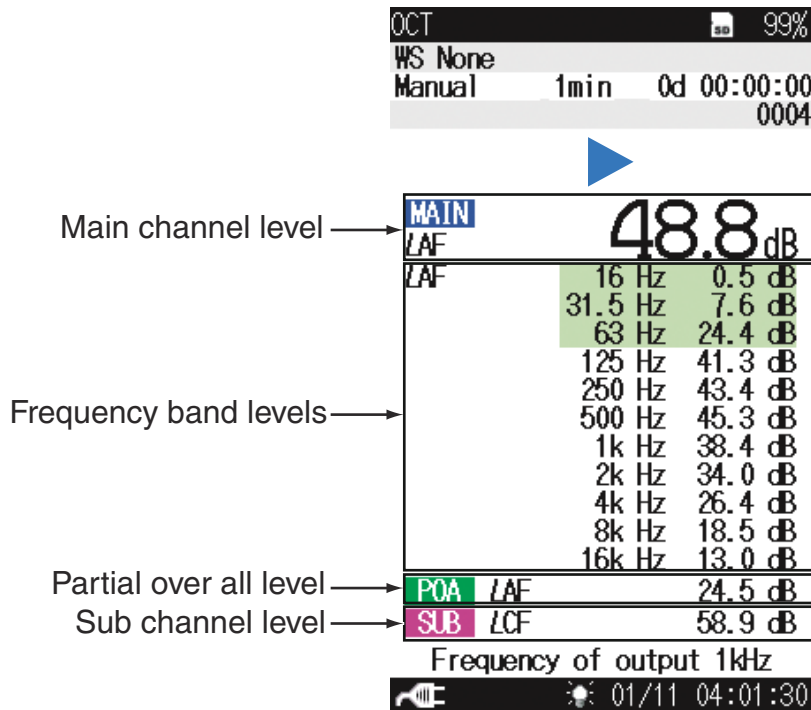
Main channel level

Shows the level value and the measurement calculation of the main channel (MAIN).

Frequency band levels

Show the level value in each frequency band and the measurement calculation. During 1/3 octave band analysis, the ◁ / ▷ keys can be used to shift the frequency band. The frequency bands selected for partial over all are highlighted in light green.

Partial over all level

Shows the partial over all (POA) level value and the measurement calculation.

Sub channel level

Shows the level value and the measurement calculation of the sub channel (SUB).

Note
"--.-" is shown when the indicated value is −10 dB or lower.

Menu list screen

When the measurement screen is displayed, pressing the MENU/ENTER key brings up the menu list screen as shown below.

Use the $\triangle$ / $\triangledown$ / $\triangleleft$ / $\triangleright$ keys to select the desired menu and press the MENU/ ENTER key.

Pressing the DISPLAY key displays explanation screen of the item that has been selected.

Pressing the PAUSE/CONT key or the START/STOP key switches back to the measurement screen.

Analysis mode

Analysis display
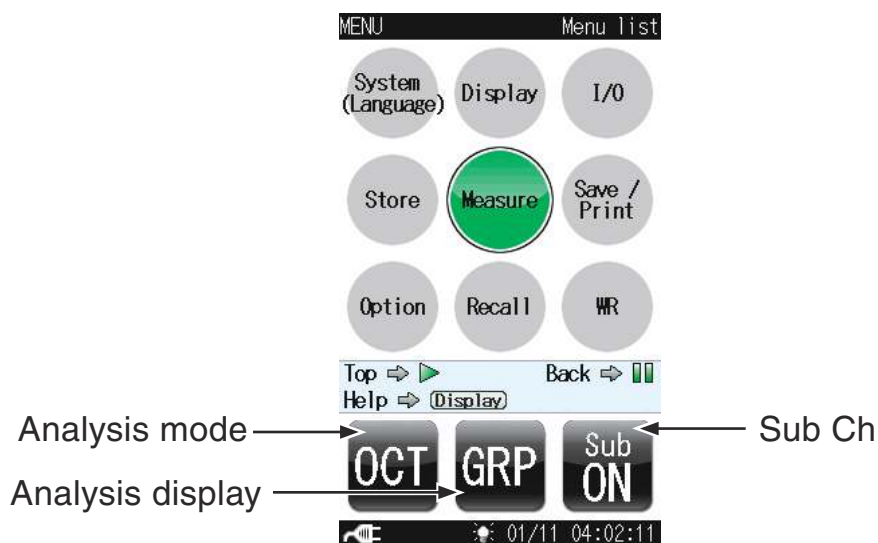
Sub Ch

Note
Because the explanation shown when the DISPLAY key is pressed applies in part also to the sound level meter function, there will be functions that cannot be used.

The following settings of Analysis mode, Analysis display and Sub Ch can be done with the touch panel. (The current setting is shown when the menu list screen is displayed.) Touch the screen directly with your finger.

Analysis mode

Selects the analysis mode.

Each press of the "Analysis mode" on the screen with the finger cycles through the following settings.

"OCT", "1/3 OCT"

Analysis display

Selects the analysis display.

Each press of the "Analysis display" on the screen with the finger cycles through the following settings.

"GRP", "NUM"

Sub Ch

Selects whether or not to display the measurement calculation of the sub channel measurement.

Each press of the "Sub Ch" on the screen with the finger cycles through the ON and OFF.

Explanation of menu screen items

This section explains items on the various menu screens that are related to the NX-42RT function. For information on other items, please refer to the Instruction Manual of the NL-42/NL-52.

Display

This screen sets the measurement calculation and other items displayed on the measurement screen.

MENU	Display
Analysis display	
	Graph
Overlapping	
	ON
Data delete	
	There is data.
NC Curve	
	NC-50
*L*eq	
	ON
*L*E	
	ON
*L*max	
	ON
*L*min	
Top ⇨ ▷	Back ⇨ ‖
Help ⇨ (Display)	
⊶▥	☀ 01/11 04:03:11

MENU	Display
*L*min	
	ON
*L*Cpeak	
	ON
*L*Ceq	
	ON
*L*Ceq-*L*Aeq	
	ON
*L*5	
	ON
*L*10	
	ON
*L*50	
	ON
*L*90	
Top ⇨ ▷	Back ⇨ ‖
Help ⇨ (Display)	
⊶▥	☀ 01/11 04:04:01

MENU	Display
	ON
*L*50	
	ON
*L*90	
	ON
*L*95	
	ON
Time-Level	
	ON
Time Scale	
	20s
Output Level Range Upper	
	130dB
Output Level Range Lower	
	-10dB
Top ⇨ ▷	Back ⇨ ‖
Help ⇨ (Display)	
⊶▥	☀ 01/11 04:04:26

Analysis display

Switches the format in which data are shown.

Selecting [Analysis display] and pressing the MENU/ENTER key brings up the screen to select the display format. Use the △/▽ keys to select [Graph] or [Numeric list] and press the MENU/ENTER key. The setting made here has the same effect as using the touch panel on the menu list screen.

Overlapping

Selects whether the measurement data preceding the currently displayed data are shown as an overlay.

Select [Overlapping] and press the MENU/ENTER key. The ON/OFF setting screen appears.

Use the △/▽ keys to select the ON/OFF setting and press the MENU/ENTER key.

Note
For some settings, overlapping data may not be available.

Data delete

This item is shown when [Overlapping] was set to ON.

When the display shows [There is data], loaded data are used for overlay when a new measurement is started in graph display mode.

When the display shows [There is no data], overlay display is activated only after data have been loaded. For information on how to load data, refer to page 27.

When the display shows [There is data], pressing the MENU/ENTER key brings up a confirmation screen for deleting data. Select [Yes] and press the MENU/ENTER key if the data can be deleted. Selecting [No] and pressing the MENU/ENTER key causes the unit to return to the Display menu screen.

NC Curve

Shows a noise criteria curve based on permissible noise values for each frequency. This is used to evaluate room noise levels etc.

Select [NC Curve] and press the MENU/ENTER key. The NC curve selection screen appears. Use the △/▽ keys to select [OFF], [NC-15], [NC-20], [NC-25], [NC-30], [NC-35], [NC-40], [NC-45], [NC-50], [NC-55], [NC-60], or [NC-65], and press the MENU/ENTER key.

Note
The NC curve is displayed only when the store mode is Manual and octave band analysis is carried out.
The NC curve is shown for two values: the selected value and the one below. (If [NC-50] is selected, the curve for "NC-50" and "NC-45" is shown.) If [NC-15] is selected, only that curve is shown.
The frequency weighting characteristic C or Z of the measurement frequency band is recommended for evaluation with NC curve.
NC-value and NC curve are not saved in store data.

Output Level Range Lower

Displays the screen to set the lower bound value of the bar graph on the measurement screen.

Select [Output Level Range Lower] and press the MENU/ENTER key. The lower limit of bar graph screen appears.

Use the △/▽ keys to set the value (-10 dB to 80 dB, 10 dB step: differs from NL-42/NL-52). Then press the MENU/ENTER key.

The value of lower limit cannot be set the value set by the [Output Level Range Upper] or more.

I/O

This screen sets the type of output signal etc.
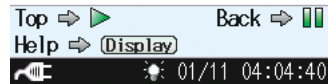
Note
The NX-42RT program does not support comparator signal output.

AC OUT

Displays the screen to select the type of frequency weighting characteristic of the signal output from the AC OUT connector of the unit.

Select [AC OUT] and press the MENU/ENTER key. The AC OUT setting screen appears.

Use the $\triangle/\triangledown$ keys to select the frequency weighting characteristic (OFF, Inter lock, A, C, Z, BAND) and press the MENU/ENTER key.

When [BAND] is selected, the AC signal for the frequency band selected under [Band of output] is output.

DC OUT

Displays the screen to select the type of DC signal output from the DC OUT connector of the unit.

Select [DC OUT] and press the MENU/ENTER key. The DC OUT setting screen appears.

Use the △/▽ keys to select the type of DC signal output (OFF, MAIN, BAND) and press the MENU/ENTER key.

When [MAIN] is selected, a DC signal corresponding to the level in the main channel is output. When [BAND] is selected, a DC signal corresponding to the level in the frequency band selected under [Band of output] is output.

Note
If [BAND] is selected for the [AC OUT] or [DC OUT], [BAND] will also be selected for the other output.
When [BAND] is selected for [AC OUT] and [DC OUT], and the setting for [AC OUT] is changed to another setting, the setting for [DC OUT] will be changed to [MAIN]. When the setting for [DC OUT] is changed from [BAND] to another setting, the setting for [AC OUT] will be changed to [Inter lock].

Band of output

This setting is shown when [BAND] is selected for the [AC OUT] or [DC OUT]. The setting selects the frequency band for which a corresponding signal is output at the AC OUT connector and DC OUT connector of the unit.

Select [Band of output] and press the MENU/ENTER key. The frequency band selection screen appears. Use the △/▽ keys to select the frequency band and press the MENU/ENTER key.

For octave band analysis, the available settings are as follows:
[16Hz], [31.5Hz], [63Hz], ..., [16kHz].

For 1/3 octave band analysis, the available settings are as follows:
[12.5Hz], [16Hz], [20Hz], ..., [20kHz].

Measure

This screen sets the analysis mode, measurement correction, etc.

MENU	Measure
Analysis	
	Octave
Frequency Weighting	
	A
Time Weighting	
	F(Fast)
Frequency band measurement ▼ setting	
Lmax/Lmin type	
	Band
Windscreen Correction	
	WS None
Diffuse Sound Field Correction (DF)	
	OFF
Top ⇨ ▶	Back ⇨ ❚❚
Help ⇨ Display	
⌁⊏	☀ 02/08 03:15:58

MENU	Measure
Correction (DF)	
	OFF
Delay Time	
	OFF
Back Erase	
	OFF
Partial Over All	
	ON
Upper frequency of power sum	
	63Hz
Lower frequency of power sum	
	16Hz
Sub Channel Settings ▼	
	ON
Top ⇨ ▶	Back ⇨ ❚❚
Help ⇨ Display	
⌁⊏	☀ 02/08 03:16:28

Analysis

Displays the screen to select the analysis mode.

Select [Analysis] and press the MENU/ENTER key. The analysis screen appears.

Use the △/▽ keys to select the analysis mode (Octave, 1/3 octave) and press the MENU/ENTER key. The same can be performed using the touch panel on the menu list screen.

Frequency band measurement setting ▼

Sets the frequency weighting and time weighting for the frequency band. (It is necessary to set up aside from a setup of a main channel and a sub channel.)

Select [Frequency band measurement setting] and press the MENU/ENTER key. The frequency band screen appears.

Frequency Weighting

Displays the screen to select the frequency weighting characteristics for the frequency band.

Select [Frequency Weighting] and press the MENU/ENTER key. The frequency weighting screen appears.

Use the △/▽ keys to select the frequency weighting characteristics (A, C, Z) and press the MENU/ENTER key.

Time Weighting

Displays the screen to select the time weighting characteristics for the frequency band.

Select [Time Weighting] and press the MENU/ENTER key. The time weighting screen appears.

Use the $\triangle/\triangledown$ keys to select the time weighting characteristics (F[Fast], S[Slow]) and press the MENU/ENTER key.

Lmax/Lmin type

Sets the format in which the maximum value and minimum value analysis result is displayed.

Select [Lmax/Lmin Type] and press the MENU/ENTER key. The display type selection screen appears. Use the $\triangle/\triangledown$ keys to select "Band" or "AP" and press the MENU/ENTER key.

When "Band" is selected, the maximum and minimum analysis result values occurring within the processing time are shown for each frequency band.

When "AP" is selected, the maximum and minimum analysis result values occurring within the processing time are shown for the all-pass level of the main channel.

Partial Over All

Selects whether the partial over all (POA) for a range of user-selected frequency bands is displayed.

Select [Partial Over All] and press the MENU/ENTER key. The ON/OFF selection screen appears. Use the $\triangle/\triangledown$ keys to select the ON/OFF setting and press the MENU/ENTER key.

Note
When POA is displayed, each value of the L_N and $L_{\min}$ is disabled.

Upper frequency of power sum

This item is shown when [Partial Over All] was set to ON. Specify the highest frequency band to use for partial over all calculation.

Select [Upper frequency of power sum] and press the MENU/ENTER key. The upper limit frequency band selection screen appears. Use the △/▽ keys to select the frequency band to use as upper limit and press the MENU/ENTER key.

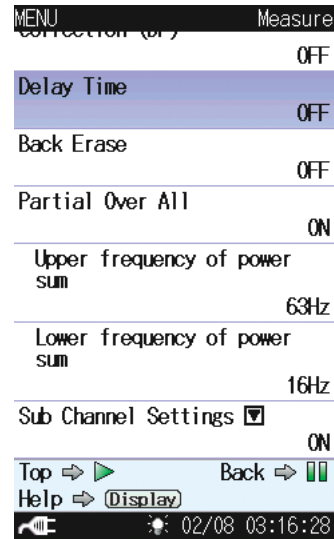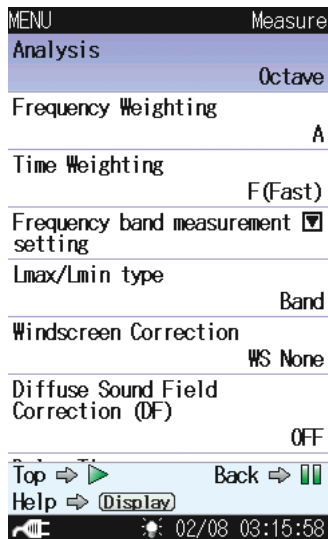For octave band analysis, the available settings are as follows: [16Hz], [31.5Hz], [63Hz], ..., [16kHz].

For 1/3 octave band analysis, the available settings are as follows: [12.5Hz], [16Hz], [20Hz], ..., [20kHz].

If the frequency band selected for [Upper frequency of power sum] is lower than the frequency band selected for [Lower frequency of power sum], the frequency band for [Lower frequency of power sum] will be set to the same frequency band as the [Upper frequency of power sum] setting.

Lower frequency of power sum

This item is shown when [Partial Over All] was set to ON. Specify the lowest frequency band to use for partial over all calculation.

Select [Lower frequency of power sum] and press the MENU/ENTER key. The lower limit frequency band selection screen appears. Use the △/▽ keys to select the frequency band to use as lower limit and press the MENU/ENTER key.

The available settings are same as [Upper frequency of power sum].

If the frequency band selected for [Lower frequency of power sum] is higher than the frequency band selected for [Upper frequency of power sum], the frequency band for [Upper frequency of power sum] will be set to the same frequency band as the [Lower frequency of power sum] setting.

Setting the Additional Processings 2

When [Sub Channel Settings] is set to ON, one of the following values can also be measured, along with the regular additional processing function that is carried out simultaneously with the main channel measurement. (The measurement calculation is fixed.)

- C-weighted equivalent continuous sound level L_{Ceq}
- I-time-weighted equivalent continuous sound level L_{AIeq}
- S-time-weighted maximum sound pressure level (Slow) L_{ASmax}

Note
The additional processing data will only be displayed if the Additional Processing 2 item under [Display] in the menu list screen is set to [ON].
When the frequency weighting for the main channel is set to [A], the Additional Processing 2 setting can be used to show the difference between L_{Ceq} and L_{Aeq} in the main channel or the difference between L_{AIeq} and L_{Aeq} in the main channel.
Measurement value of additional processing 2 is displayed as $Ly2$ within store data.

Measurement

Measurement procedure

1. Press the POWER key to turn the unit on.
    After the power-on screen has been shown, the measurement screen appears.
    The measurement parameter settings that were active before the unit was turned off will show on the screen. Therefore the actual display may not always be the same.

2. Set the analysis mode. Press the MENU/ENTER key and use the touch panel on the menu list screen to select "Octave analysis" or "1/3 octave analysis". The analysis mode can also be selected via the [Measure] item in the menu list screen.

3. Set the display screen for measurement. Use the touch panel on the menu list screen to select "GRP" (Graph) or "NUM" (Numeric list). The setting can also be made via the [Display] item in the menu list screen.

4. Select [Display] on the menu list screen and set the upper and lower limit of the bar graph. Choose a setting in which the bar graph indication registers to about the middle of the range.

5. Set the required items under "Measure" in the menu list screen.

6. Using the [Display] item in the menu list screen, select [ON] for the measurement calculation that should be shown in addition to the sound level. Also make settings for graph overlay and NC curve display, as required.

7. Using the [Store] item in the menu list screen, select the store mode and the measurement parameters.

8. Return to the measurement screen and press the START/STOP key to start the measurement.

   At this point, previous measurement values are cleared.

   While the measurement is in progress, the ▶ symbol flashes and the elapsed time is displayed. In addition, the indicator LED flashes red.

   When the measurement time has elapsed, the measurement is terminated automatically.

   To terminate the measurement before the allocated time, press the START/STOP key.

   During measurement, the PAUSE/CONT key can be used to pause and resume the measurement (only manual store mode). During pause, the pause symbol (II) is shown and the indicator LED flashes blue.

- Pressing the DISPLAY key during or after measurement switches the measurement value shown on the display screen in the following order.

    $L_p \rightarrow L_{eq} \rightarrow L_E \rightarrow L_{max} \rightarrow L_{min} \rightarrow L_{N1} \rightarrow L_{N2} \rightarrow L_{N3} \rightarrow L_{N4} \rightarrow L_{N5} \rightarrow$ Additional processings $\rightarrow$ Time-Level $\rightarrow L_p$

    The measurement value which is set [OFF] is skipped except L_p.

- While the graph display screen is shown during or after measurement, the $\triangleleft/\triangleright$ keys can be used to move the cursor that selects the center frequency to display. The frequency band under the cursor and its numeric value reading are shown at the top of the screen.
    The center frequencies for the band level bar graphs are as follows.

    For octave band analysis:
        From left 16 Hz, 31.5 Hz, 63 Hz, ..., 16 kHz

    For 1/3 octave band analysis:
        From left 12.5 Hz, 16 Hz, 20 Hz, ..., 20 kHz

- After measurement is completed, you can use the menu list screen or the [Display] item on the menu list screen to switch between graph display and numeric list display.

- While no measurement is in progress, pressing the PAUSE/CONT key will freeze the sound level displayed at that point. Press the PAUSE/CONT key again to cancel the display freeze.

- The number of L_p store data per file is 36000 for the NL-42/NL-52 and 18000 for the NX-42RT.
    For example, if the L_p store interval is set to [100ms], the NL-42/NL-52 will create one file per hour and the NX-42RT will create one file per 30 minutes.

Note
After installation is complete, the SD memory card from which the NX-42RT program was installed can be used as a memory card for storing data.
Prior to measurement, it is recommended first to format the memory card for storing data with this unit.

Store data format and file structure

Data stored on the SD memory card are in CSV format (.rnd). Various files and subdirectories are created on the card.

Folder and file names that are used for saving data differ, depending on the selected store mode.

Store destination folder

Files are saved in the store folder specified by store name. The store name specified on the menu screen is created as a 4-digit number under the subdirectory name.

When a file with the same name exists in the same directory, it will always be overwritten. A sample configuration is shown below.

```
NX-42RT
   ├─Manual_0000
   │     ├──NL_001_OCT_MAN_0000_0000.rnd
   │     └──SOUND
   │
   ├─Auto_0000
   │     ├──AUTO_LP
   │     │     └──NL_001_OCT_Lp_0000_0001.rnd
   │     ├──AUTO_LEQ
   │     │     └──NL_001_OCT_Leq_0000_0001.rnd
   │     ├──SOUND
   │     └──Auto_0000.rnh
```
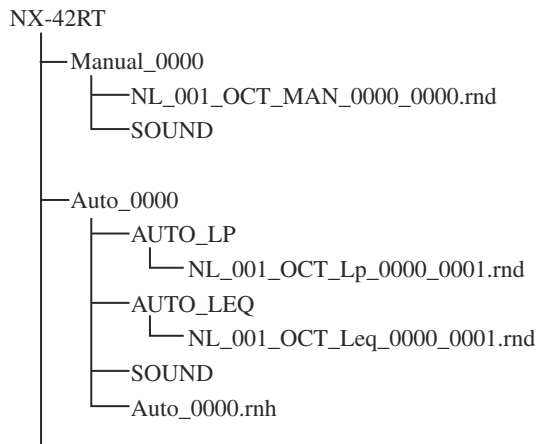
Important
Use SD memory cards provided by Rion. The performance of other cards is not guaranteed.
Note that we assume no responsibility for any damage or loss of stored measurement data.

File name of data

Files of data are named as shown below.

NL_001_OCT_MAN_0123_0000.rnd

Store mode   Address

Index number   Store name

Store mode: The file name varies depending on the store mode.

Manual store: MAN

Auto store (L_p store):   Lp

Auto store (L_{eq} calculation):   Leq

Store name: 0000 to 9999

Address: Manual store is fixed to 0000

Card capacity and store time

The measurement duration for which data can be stored on an SD memory card depends on the capacity of the inserted card. Approximate times are listed below. The SD memory card capacity may be less than the capacity indicated depending on the type of the SD memory card.

Using Auto store

Octave band analysis

Only L_p store interval set

		SD memory card capacity	
		512 MB	2 GB
L_p store interval	100 ms	66 h.	260 h.
	200 ms	136 h.	532 h.
	$L_{eq, 1s}$	682 h.	2663 h.
	1 s	682 h.	2663 h.

Only L_{eq} processing interval set

All processed data except sound level are considered as a single data set, and up to 100,000 data sets can be stored continuously and automatically per a store.

In the case of L_{eq} processing interval set is 10 min, it will be 100,000 sets in about 690 days.

Data set number of total that can be saved on the SD memory card are as follows.

	SD memory card capacity	
	512 MB	2 GB
Data sets	354,000 sets	1,380,000 sets

1/3 Octave band analysis

Only L_p store interval set

		SD memory card capacity	
		512 MB	2 GB
L_p store interval	100 ms	36 h.	142 h.
	200 ms	70 h.	275 h.
	$L_{eq, 1s}$	353 h.	1378 h.
	1 s	353 h.	1378 h.

Only L_{eq} processing interval set

All processed data except sound level are considered as a single data set, and up to 100,000 data sets can be stored continuously and automatically per a store.

In the case of L_{eq} processing interval set is 10 min, it will be 100,000 sets in about 690 days.

Data set number of total that can be saved on the SD memory card are as follows.

	SD memory card capacity	
	512 MB	2 GB
Data sets	160,000 sets	625,000 sets

Octave band and 1/3 octave band analysis

Number of bytes per header file

About 1500 bytes per file

When performing waveform recording

Using Auto store, 16 bit

		SD memory card capacity	
		512 MB	2 GB
Sampling frequency (Hz)	48 k	1 h.	4 h 40 min.
	24 k	2 h 10 min.	9 h 20 min.
	12 k	4 h 20 min.	18 h 50 min.

The duration of recording with 24 bit becomes shorter than that with 16 bit because the data volume of 24 bit is about 1.5 times more.

Recall data

Use the [Recall] item in the menu list screen to call up saved measurement data onto the display (see the NL-42/NL-52 Instruction Manual).
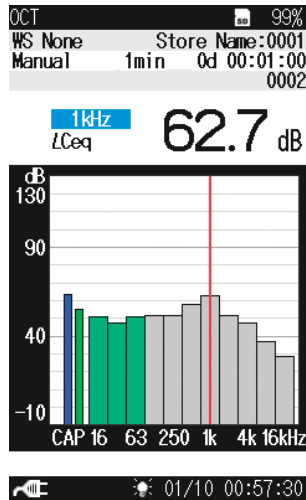
Recall data display screen (graph display)

Pressing the MENU/ENTER key while the recall data display screen is shown brings up the recall data menu list screen. Pressing the PAUSE/CONT key returns the unit to the recall data display screen.

Selection of data for display
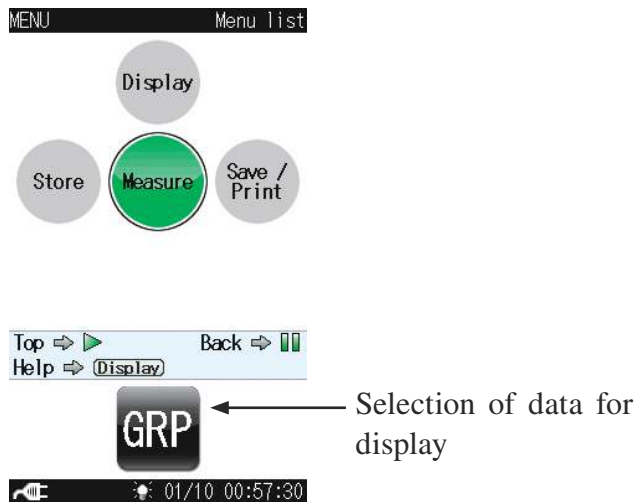
Recall data menu list screen

The touch panel function allows direct selection of data for display, and switching between graph display and numeric list display.

Selecting [Display] on the recall data menu list screen and then pressing the MENU/ENTER key brings up the following screen. Pressing the PAUSE/ CONT key returns the unit to the recall data menu list screen.

```
MENU                Display
Analysis display
                    Graph
Overlapping data storage
         There is no data.
NC Curve
                    OFF
```

```
Top ⇨ ▷           Back ⇨ ❚❚
Help ⇨ (Display)
◢▥       ☀ 01/10 00:57:30
```

Analysis display

Switches the format in which data are shown.

Selecting [Analysis display] and pressing the MENU/ENTER key brings up the screen to select the display format. Use the $\triangle/\triangledown$ keys to select [Graph] or [Numeri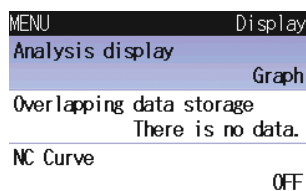c list], and press the MENU/ENTER key. The setting made here has the same effect as using the touch panel on the recall data menu list screen.

Overlapping data storage

Saves recalled data for use on the overlay display. If there are already saved data, the indication "There is data." is shown, otherwise the indication "There is no data." is shown. Selecting [Overlapping data storage] and pressing the MENU/ENTER key saves the recalled data for overlay use.

Note
Data saved for overlay use have a yellow background on the graph display.

NC curve

Selects whether NC curves are shown for recalled data. Select [NC Curve] and press the MENU/ENTER key, select [ON], and press the MENU/ENTER key again. This will cause all NC curves from NC-15 to NC-65 to be shown on the recall data display screen. The applicable rating is shown below the measurement results.

Note
Ratings for measurement results are shown only when the store mode is Manual, and the L_{eq} graph screen for saved octave analysis data is shown.
The frequency weighting characteristic C or Z of the measurement frequency band is recommended for evaluation with NC curve.
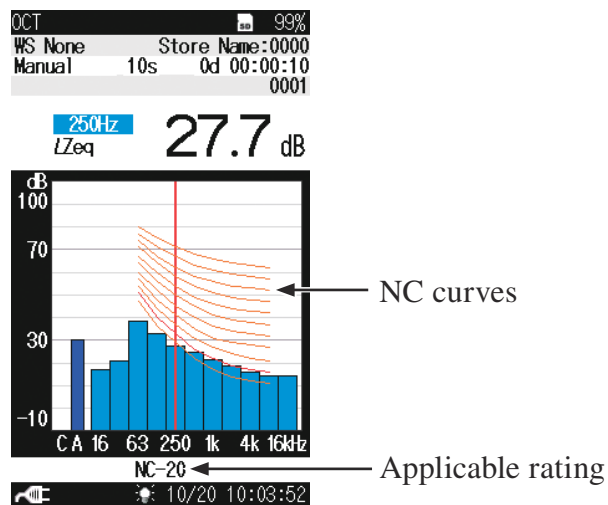
Recall data display screen with NC curves

Default settings

The factory default settings of the unit are listed below.

Analysis ....Octave

Main channel frequency weighting ....A

Main channel time weighting..F(Fast)

Frequency band measurement frequency weighting ....A

Frequency band measurement time weighting.............................F(Fast)

L_{max}/L_{min} Type...Band

Windscreen correction ....WS None

Diffuse sound field correction (DF) ....OFF

Delay time ....OFF

Back erase..OFF

Partial over all ....OFF

Upper frequency of power sum ....16 kHz

Lower frequency of power sum..16 Hz

Sub channel settings...OFF

Sub channel frequency weighting..A

Sub channel time weighting ....F(Fast)

Setting the additional processings ....OFF

Setting the additional processings 2 ....OFF

Backlight auto off ....30 s

Backlight brightness..2

LCD auto off at auto store...OFF

Battery type ....Alkaline

Index..1

Touch panel lock ....OFF

Analysis display ....Graph

Overlapping ....OFF

NC curve..OFF

L_{eq}..ON

L_E...OFF

L_{max} ....ON

L_{min} ....OFF

L_{N1}	(L05)	OFF
L_{N2}	(L10)	OFF
L_{N3}	(L50)	ON
L_{N4}	(L90)	OFF
L_{N5}	(L95)	OFF

Time-Level ....ON

Time scale...20 s

Output level range upper ....130 dB

Output level range lower ....30 dB

AC OUT ....Inter lock

DC OUT ....MAIN

Band of output (only AC OUT and DC OUT are set to BAND) .....16 Hz

Communication interface..OFF

Baud rate...9600 bps

Store mode...Manual

Store name 0000

Measurement time..10 min

Calibration mode ....Internal

When you turn power to the unit on while holding down the START/STOP key, the unit will be initialized to the above settings. When wishing to set the unit to the factory default values, select [menu] → [system – Read/Save Setting] → [Load Default Settings] and then press the MENU/ENTER key (please refer to the chapter "Setup Files" of the NL-42/NL-52 instruction manual). The time, language and store data are not initialized.

Communication commands

This section lists commands about the function of the NX-42RT. For information on other commands, please refer to the documentation (Serial Interface Manual) of the NL-42/NL-52.

List of commands

S: Setting command (for making NX-42RT settings)

R: Request command (for obtaining information on NX-42RT status and the measurement value)

Wave Level Trigger Band Offset

Command description

Display Calculate Type

Display calculate type

Setting the calculate type displayed on a screen

Setting command	Display ⌴ Calculate ⌴ Type, p1
Parameter	p1= "Lp"
	p1= "Leq"
	p1= "LE"
	p1= "Lmax"
	p1= "Lmin"
	p1= "LN1"
	p1= "LN2"
	p1= "LN3"
	p1= "LN4"
	p1= "LN5"
	p1= "Ly" (Additional processing)
Request command	Display ⌴ Calculate ⌴ Type?
Response data	d1
Returned value	Same as for setting command

AC OUT

AC out

Setting AC output

Setting command	AC ⌴ OUT, p1
Parameter	p1= "Off"
	p1= "Main" (Inter lock)
	p1= "A"
	p1= "C"
	p1= "Z"
	p1= "Band"
Request command	AC ⌴ OUT?
Response data	d1
Returned value	Same as for setting command

DC OUT

DC out

Setting DC output

Setting command	DC ␣ OUT, p1
Parameter	p1= "Off"
	p1= "Main"
	p1= "Band"
Request command	DC ␣ OUT?
Response data	d1
Returned value	Same as for setting command

Output Band Frequency

Output band frequency

Setting frequency band for BAND output of AC signal and DC signal

Setting command	Output ␣ Band ␣ Frequency, p1
Parameter	p1= "16Hz"
	p1= "31Hz"
	p1= "63Hz"
	p1= "125Hz"
	p1= "250Hz"
	p1= "500Hz"
	p1= "1kHz"
	p1= "2kHz"
	p1= "4kHz"
	p1= "8kHz"
	p1= "16kHz"
Request command	Output ␣ Band ␣ Frequency?
Response data	d1
Returned value	Same as for setting command

Output Band Offset

Output band frequency offset

Setting output band offset

Divides the frequency of the output band for 1/3 octave band analysis into three values

Example: When the output band is set to "1kHz", "Low" will be 800 Hz, "Center" 1 kHz, and "High" 1.25 kHz.

Setting command	Output ⎵ Band ⎵ Offset, p1
Parameter	p1= "Low"
	p1= "Center"
	p1= "High"
Request command	Output ⎵ Band ⎵ Offset?
Response data	d1
Returned value	Same as for setting command

Lmax Type

L_{max}/L_{min} type

Setting Lmax/Lmin type on measure screen

Setting command	Lmax ⎵ Type, p1
Parameter	p1= "Band"
	p1= "AP"
Request command	Lmax ⎵ Type?
Response data	d1
Returned value	Same as for setting command

Lp Store Interval

L$_p$ store interval

Setting *L$_p$* store interval

Setting command	Lp ⌴ Store ⌴ Interval, p1
Parameter	p1= "Off"
	p1= "100ms"
	p1= "200ms"
	p1= "Leq1s"
	p1= "1s"
Request command	Lp ⌴ Store ⌴ Interval?
Response data	d1
Returned value	Same as for setting command

Meas Parallel

Additional processing 2

Setting additional processing 2 type

Setting command	Meas ⌴ Parallel, p1
Parameter	p1= "Off"
	p1= "LAIeq"
	p1= "LCeq"
	p1= "LASmax"
Request command	Meas ⌴ Parallel?
Response data	d1
Returned value	Same as for setting command

Frequency Weighting (Band)

Frequency weighting of frequency band

Setting frequency weighting of frequency band

Setting command	Frequency ⌴ Weighting ⌴ (Band), p1
Parameter	p1= "A"
	p1= "C"
	p1= "Z"
Request command	Frequency ⌴ Weighting ⌴ (Band)?
Response data	d1
Returned value	Same as for setting command

Time Weighting (Band)

Time weighting of frequency band

Setting time weighting of frequency band

Setting command	Time ⌴ Weighting ⌴ (Band), p1
Parameter	p1= "F"
	p1= "S"
Request command	Time ⌴ Weighting ⌴ (Band)?
Response data	d1
Returned value	Same as for setting command

Octave Mode

Analysis mode

Setting analysis mode

Setting command	Octave ⌴ Mode, p1
Parameter	p1= "Octave"
	p1= "1/3 ⌴ Octave"
Request command	Octave ⌴ Mode?
Response data	d1
Returned value	Same as for setting command

Display Partial Over All

Display partial over all

Setting ON/OFF of partial over all display

Setting command	Display ⌴ Partial ⌴ Over ⌴ All, p1
Parameter	p1= "Off"
	p1= "On"
Request command	Display ⌴ Partial ⌴ Over ⌴ All?
Response data	d1
Returned value	Same as for setting command

Upper Limit Frequency

Upper limit frequency

Setting upper limit frequency band of partial over all

Setting command	Upper ␣ Limit ␣ Frequency, p1
Parameter	p1= "16Hz"
	p1= "31Hz"
	p1= "63Hz"
	p1= "125Hz"
	p1= "250Hz"
	p1= "500Hz"
	p1= "1kHz"
	p1= "2kHz"
	p1= "4kHz"
	p1= "8kHz"
	p1= "16kHz"
Request command	Upper ␣ Limit ␣ Frequency?
Response data	d1
Returned value	Same as for setting command

Upper Limit Frequency Offset

Upper limit frequency offset

Offset for upper limit frequency band for partial over all

Divides the frequency of the upper limit band for 1/3 octave band analysis into three values

Example: When the upper limit frequency is set to "1kHz", "Low" will be 800 Hz, "Center" 1 kHz, and "High" 1.25 kHz.

Setting command	Upper ␣ Limit ␣ Frequency ␣ Offset, p1
Parameter	p1= "Low"
	p1= "Center"
	p1= "High"
Request command	Upper ␣ Limit ␣ Frequency ␣ Offset?
Response data	d1
Returned value	Same as for setting command

Lower Limit Frequency

Lower limit frequency

Setting lower limit frequency band of partial over all

Setting command	Lower ␣ Limit ␣ Frequency, p1
Parameter	p1= "16Hz"
	p1= "31Hz"
	p1= "63Hz"
	p1= "125Hz"
	p1= "250Hz"
	p1= "500Hz"
	p1= "1kHz"
	p1= "2kHz"
	p1= "4kHz"
	p1= "8kHz"
	p1= "16kHz"
Request command	Lower ␣ Limit ␣ Frequency?
Response data	d1
Returned value	Same as for setting command

Lower Limit Frequency Offset

Lower limit frequency offset

Offset for lower limit frequency band for partial over all

Divides the frequency of the lower limit band for 1/3 octave band analysis into three values

Example: When the lower limit frequency is set to "1kHz", "Low" will be 800 Hz, "Center" 1 kHz, and "High" 1.25 kHz.

Setting command	Lower ␣ Limit ␣ Frequency ␣ Offset, p1
Parameter	p1= "Low"
	p1= "Center"
	p1= "High"
Request command	Lower ␣ Limit ␣ Frequency ␣ Offset?
Response data	d1
Returned value	Same as for setting command

Wave Level Trigger Band
(only when the NX-42WR is installed)

Wave level trigger band position

Setting the band to use as trigger for waveform level recording

Setting command	Wave ⌴ Level ⌴ Trigger ⌴ Band, p1
Parameter	p1= "Main"
	p1= "Sub"
	p1= "16Hz"
	p1= "31Hz"
	p1= "63Hz"
	p1= "125Hz"
	p1= "250Hz"
	p1= "500Hz"
	p1= "1kHz"
	p1= "2kHz"
	p1= "4kHz"
	p1= "8kHz"
	p1= "16kHz"
Request command	Wave ⌴ Level ⌴ Trigger ⌴ Band?
Response data	d1
Returned value	Same as for setting command

Wave Level Trigger Band Offset (only when the NX-42WR is installed)

Wave level trigger band position offset

Setting wave level trigger band position offset

Divides the frequency of the wave level trigger band for 1/3 octave band analysis into three values

Example: When the wave level trigger band is set to "1kHz", "Low" will be 800 Hz, "Center" 1 kHz, and "High" 1.25 kHz.

Setting command	Wave ⌴ Level ⌴ Trigger ⌴ Band ⌴ Offset, p1
Parameter	p1= "Low"
	p1= "Center"
	p1= "High"
Request command	Wave ⌴ Level ⌴ Trigger ⌴ Band ⌴ Offset?
Response data	d1
Returned value	Same as for setting command

DOD

Output displayed value

Getting displayed value

Send the request command at one second interval or longer.

    Request command   DOD?

    Response data   d1,d2,...,dn (The number of data changes with the kind of displayed values.)

Octave band analysis

    Returned value   d1 = "xxx.x"   Sub channel L_p

    (When [Sub Channel Settings] is set to OFF, d1 is returned as "␣--.-")

                          d2 = "xxx.x"   Main channel L_p, L_{eq}, L_E, L_{max}, L_{min}, L_N

                          d3 = "xxx.x"   Partial over all L_p, L_{eq}, L_E, L_{max}

    (When [Partial Over All] is set to OFF, d3 is deleted)

                          d4 = "xxx.x"   16 Hz

                          d5 = "xxx.x"   31.5 Hz

                          d6 = "xxx.x"   63 Hz

                                    •

                                    •

                                    •

                        d14 = "xxx.x"   16 kHz

                        d15 = 0 or 1   Overload information

                                      (1: Yes, 0: No)

                        d16 = 0 or 1   Under-range information

                                        (1: Yes, 0: No)

1/3 octave band analysis

Returned value   d1 = "xxx.x"   Sub channel L_p
(When [Sub Channel Settings] is set to OFF, d1 is returned as " $\sqcup$ --.-")
d2 = "xxx.x"   Main channel L_p, L_{eq}, L_E, L_{max}, L_{min}, L_N
d3 = "xxx.x"   Partial over all L_p, L_{eq}, L_E, L_{max}
(When [Partial Over All] is set to OFF, d3 is deleted)
d4 = "xxx.x"   12.5 Hz
d5 = "xxx.x"   16 Hz
d6 = "xxx.x"   20 Hz

•

•

•

d36 = "xxx.x"   20 kHz
d37 = 0 or 1   Overload information
(1: Yes, 0: No)
d38 = 0 or 1   Under-range information
(1: Yes, 0: No)

Additional processings display

Returned value   d1 = "xxx.x"   Additional processing

(When [Setting the additional processings.] is set to OFF, d1 is returned as " ␣ --.-")

d2 = "xxx.x"   Additional processing 2

(When [Setting the additional processings 2.] is set to OFF, d2 is returned as " ␣ --.-")

d3 = "xxx.x" L_{Ceq} - L_{Aeq}

(When the calculation is not realized, d3 is returned as " ␣ --.-")

d4 = "xxx.x" L_{AIeq} - L_{Aeq}

(When the calculation is not realized, d4 is returned as " ␣ --.-")

d5 = 0 or 1   Overload information

(1: Yes, 0: No)

d6 = 0 or 1   Under-range information

(1: Yes, 0: No)

* d1 to d*n* are fixed to 5 digit length as "xxx.x". Higher digits are padded with spaces as required.

* " ␣ --.-" shows there is no data. (with a leading space [␣]).

There is no setting command

DRD

Continuous output

L_p data values are sent continuously to the computer every 100 msec

To stop the data transfer, send the stop request code <SUB> (hexadecimal notation: 1A$_H$)

This command can be used only when [Communication Interface] is set to [USB]

When the [Wave Rec Mode] on the Wave recording screen is selected, the DRD? is not available. (when optional NX-42WR is installed)

Request command	DRD?
Response data	d0,d1,d2,...,d*n* (The number of data changes with the analysis mode.)

Octave band analysis

Returned value	d0 = "xxx"	Counter (1 to 600)
	d1 = "xxx.x"	Sub channel
	(When [Sub Channel Settings] is set to OFF, d1 is returned as " ␣--.-")	
	d2 = "xxx.x"	Main channel
	d3 = "xxx.x"	Partial over all
	(When [Partial Over All] is set to OFF, d3 is deleted)	
	d4 = "xxx.x"	16 Hz
	d5 = "xxx.x"	31.5 Hz
	d6 = "xxx.x"	63 Hz
	•	
	•	
	•	
	d14 = "xxx.x"	16 kHz
	d15 = 0 or 1	Overload information
		(1: Yes, 0: No)
	d16 = 0 or 1	Under-range information
		(1: Yes, 0: No)

1/3 octave band analysis

Returned value   d0 = "xxx"   Counter (1 to 600)

d1 = "xxx.x"   Sub channel

(When [Sub Channel Settings] is set to OFF, d1 is returned as " ‿ --.-")

d2 = "xxx.x"   Main channel

d3 = "xxx.x"   Partial over all

(When [Partial Over All] is set to OFF, d3 is deleted)

d4 = "xxx.x"   12.5 Hz

d5 = "xxx.x"   16 Hz

d6 = "xxx.x"   20 Hz

•

•

•

d36 = "xxx.x"   20 kHz

d37 = 0 or 1   Overload information

(1: Yes, 0: No)

d38 = 0 or 1   Under-range information

(1: Yes, 0: No)

* d1 to dn are fixed to 5 digit length as "xxx.x". Higher digits are padded with spaces as required.

* " ‿ --.-" shows there is no data. (with a leading space [‿]).

There is no setting command

Octave, 1/3 octave band filter

Octave, 1/3 octave band filter characteristics

The characteristics of the octave and 1/3 octave band filter in the NX-42RT correspond to the JIS C 1513:2002 class 1, ANSI/ASA S1.11-2014/Part 1 class 1, and IEC 61260-1: 2014 class 1 specifications.
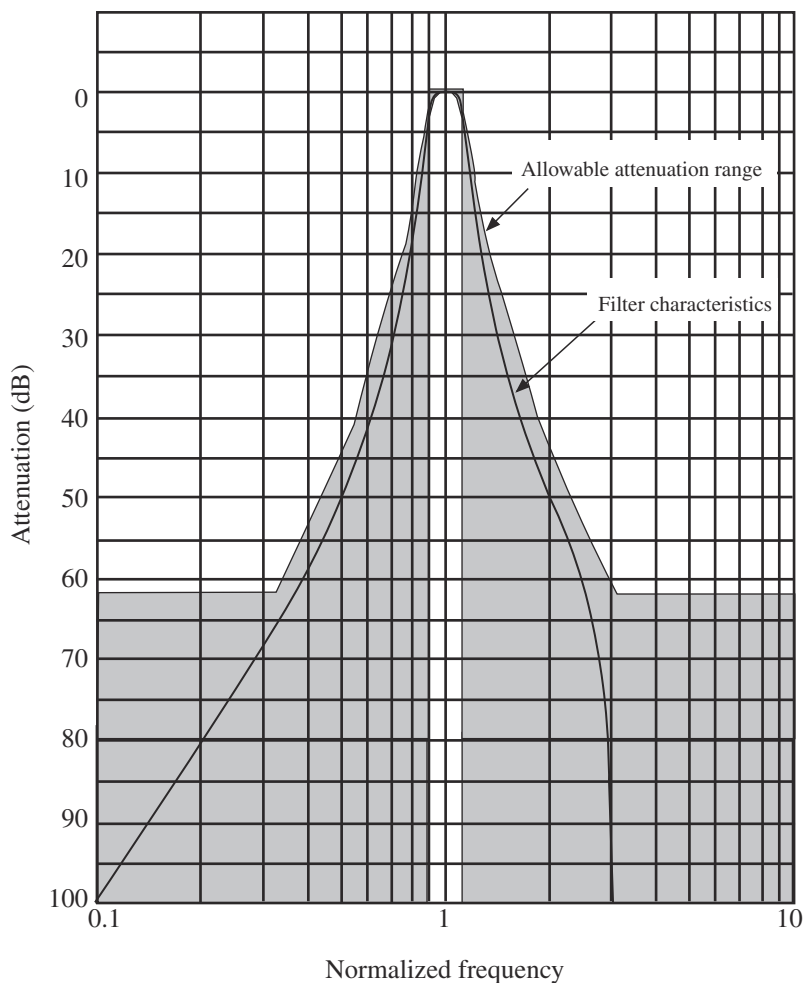
Octave band filter characteristics

The graph below shows the allowable attenuation tolerance according to JIS and IEC, and the actual characteristics of the octave band filter in the NX-42RT.
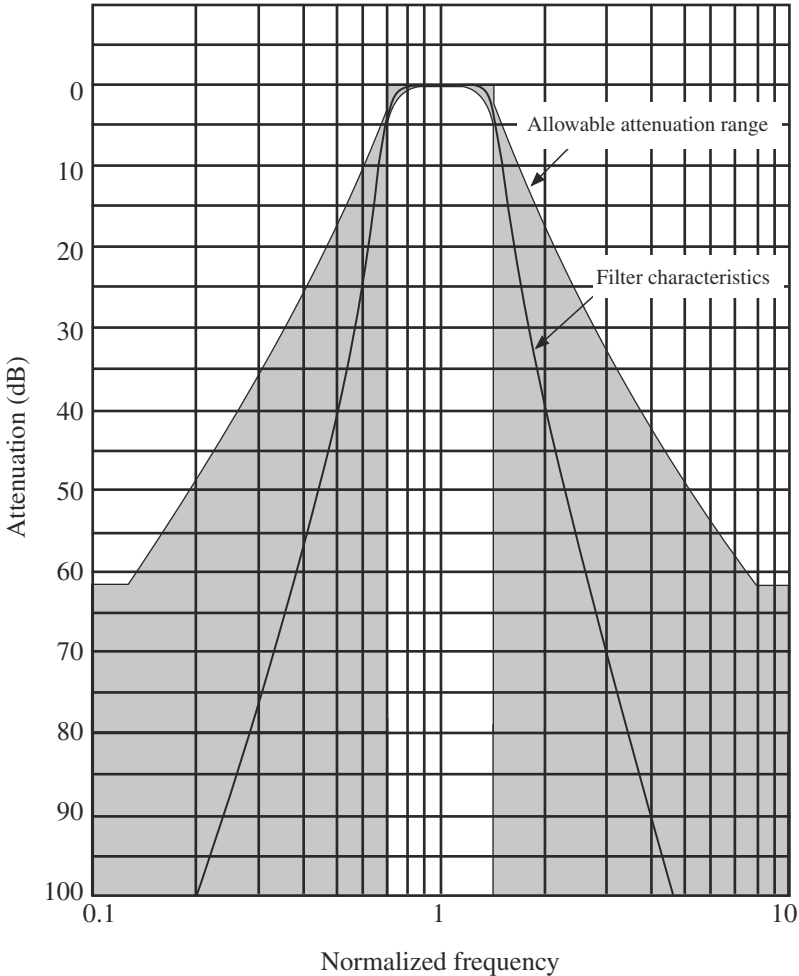

Frequency ratio f/fc (f: Frequency, fc: Center frequency at 1 kHz)
Attenuation tolerance according to IEC 61260-1:2014 class 1
and octave band filter characteristics of NX-42RT

1/3 octave band filter characteristics

The graph below shows the allowable attenuation tolerance according to JIS
and IEC, and the actual characteristics of the 1/3 octave band filter in the
NX-42RT.

Frequency ratio f/fc (f: Frequency, fc: Center frequency at 1 kHz)
Attenuation tolerance according to IEC 61260-1:2014 class 1
and 1/3 octave band filter characteristics of NX-42RT

Noise floor

The digrams below show the residual noise (representative value) of the NL-42, in the frequency weighting "A", "C" and "Z" positions. The measurement was made with a 1/3 octave band filter and a frequency analyzer.

A weighting

C weighting
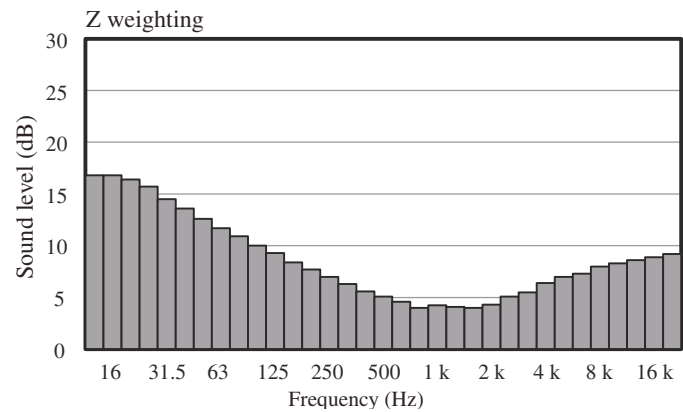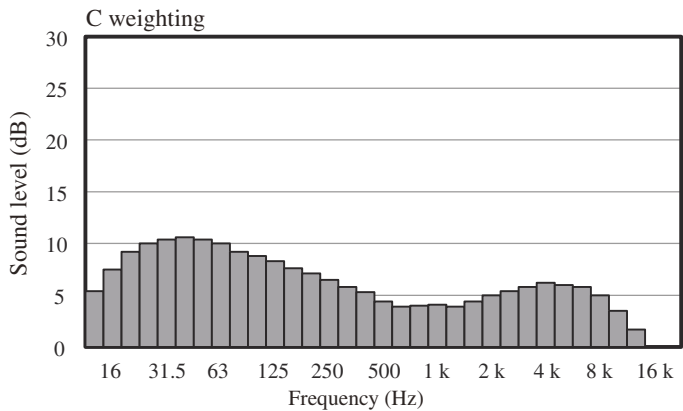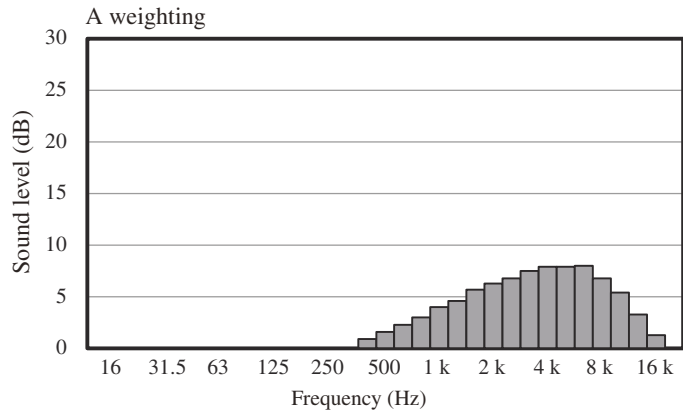
Z weighting

The digrams below show the residual noise (representative value) of the NL-52, in the frequency weighting "A", "C" and "Z" positions. The measurement was made with a 1/3 octave band filter and a frequency analyzer.

A weighting

C weighting

Z weighting
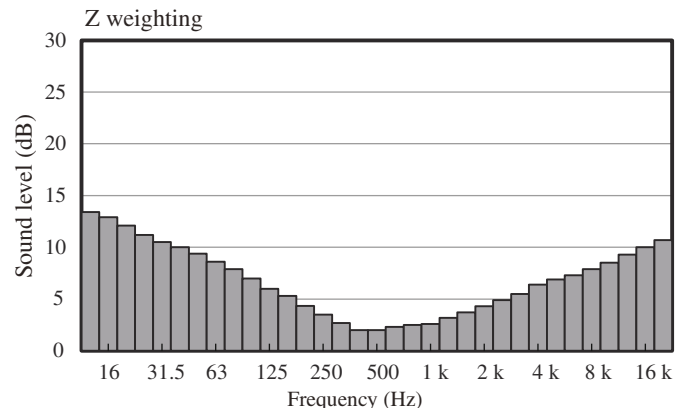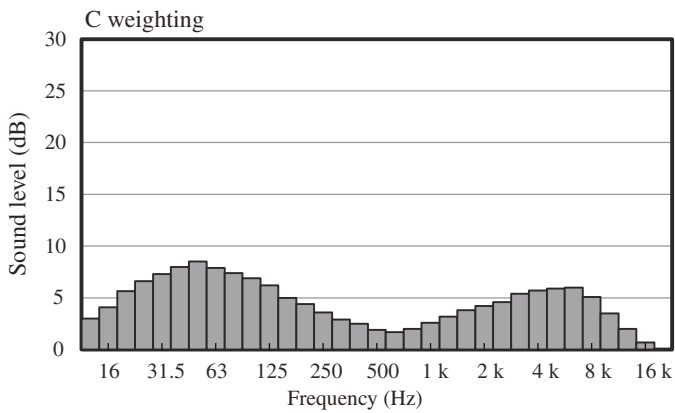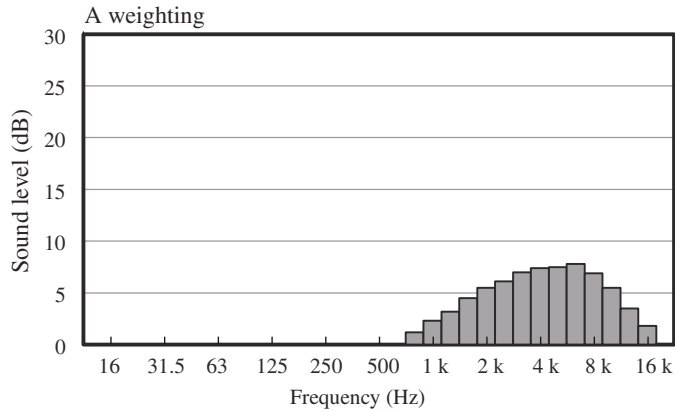
Specifications

Compatible model	Sound Level Meter NL-42/NL-52
Media	SD memory card, 512 MB

Applicable standards

NL-42/NL-52	IEC 61260-1:2014 class 1
	ANSI/ASA S1.11-2014/Part 1 class 1
	JIS C 1513:2002 class 1
	JIS C 1514:2002 class 1

Measurement function Simultaneous measurement of following items, using selected time weighting and frequency weighting.

Processing (main channel)

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 level L_N (1 to 99, 1-increment steps, max. 5 values)

Processing (sub channel)

Instantaneous sound pressure level L_p

Additional processing

One of the following measurements can also be selected for simultaneous processing with main 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_{AIeq}

Tact-max A-weighted sound level L_{Atm5}

Maximum I-time-weighted equivalent continuous sound level L_{AImax}

The frequency response of additional processing is associated with that of sub channel. Therefore, L_{AIeq}, L_{Atm5} or L_{AImax} can be selected when the sub channel has A-weighting, L_{Ceq} or L_{Cpeak} can be selected when the sub channel has C-weighting, L_{Zpeak} can be selected when the sub channel has Z-weighting.

Additional processing 2

One of the following measurements can also be selected for simultaneous processing with main processing. C-weighted equivalent continuous sound level

$$L_{\text{Ceq}}$$

I-time-weighted equivalent continuous sound level

$$L_{\text{AIeq}}$$

S-time-weighted maximum sound pressure level (Slow)

$$L_{\text{ASmax}}$$

Partial over all for frequency bands

Measurement of following items, using partial over all for selected frequency bands.
Instantaneous sound pressure level L_p
Equivalent continuous sound pressure level

$$L_{\text{eq}}$$

Sound exposure level	L_E
Maximum sound pressure level	L_{max}

Bands   Instantaneous sound pressure level L_p
Equivalent continuous sound pressure level

$$L_{\text{eq}}$$

Sound exposure level	L_E
Maximum sound pressure level	L_{max}
Minimum sound pressure level	L_{min}
Percentile sound level	L_N (1 to 99, 1-increment steps, max. 5 values)

Linearity range   113 dB

Analysis frequency range

      Analysis results are weighted with selected frequency characteristics.

Octave analysis

  Octave band pass filter

      16 Hz to 16 kHz

  Configuration   12th-order Butterworth band pass digital filter

  Center frequencies

      Base-10

1/3 octave analysis

  1/3 octave band pass filter

      12.5 Hz to 20 kHz

  Configuration   6th-order Butterworth band pass digital filter

  Center frequencies

      Base-10

Store

  Manual store   Measurement result and measurement start time are stored manually on an address to address basis.

  Measurement time

      1 sec to 24 hours

  Data store capacity

      Up to 1000 data sets in the internal memory.
      External memory depends on the card capacity (only the performance of Rion genuine cards is guaranteed).

  Auto store   The processing result obtained using the specified time interval will be recorded on SD memory card continuously.

  L_p store interval

      100 ms, 200 ms, $L_{eq, 1s}$, 1 s
      Main channel L_p, L_{eq}, L_{max}, L_{min} *
      *Only L_p value is stored except 100 ms
      Sub channel L_p
      Partial over all for frequency bands
            L_p
      Band pass level L_p

L_{eq} calculation interval

      1 sec to 24 hours

Main channel	L_{eq}, L_{max}, L_{min}, L_E, L_N
Additional processing	Selected processing item
Additional processing 2	Selected processing item
Partial over all for frequency bands	
	L_{eq}, L_{max}, L_E
Band pass level	L_{eq}, L_{max}, L_{min}, L_E, L_N

Data store capacity

      The processing result is not stored in the internal memory.

      External memory depends on the card capacity (only the performance of Rion genuine cards is guaranteed).

Timer Auto store Start time and repeat interval of trigger occurrence settable

Output

  DC output   Outputs DC signals corresponding to the level in the frequency weighting selected for processing or frequency band analysis.

DC output:	2.5 V, 25 mV/dB at display full-scale point
Output impedance:	approx. 50 Ω
Load impedance:	10 kΩ minimum

  AC output   Outputs AC signals with the frequency weighting selected for processing or frequency band analysis.

Output voltage:	1 Vrms (rms) at display full-scale point
Output impedance:	approx. 600 Ω
Load impedance:	10 kΩ minimum

DC/AC simultaneous output

      Enables simultaneous output of DC output and AC output.

Comparator output

      None

Overload characteristics

>OVER (including OUTPUT OVER) appears in all-pass level AP field when level reaches +8.3 dB of full scale point.

Indoor noise rating (based on the following literature)

   NC-value   L.L.Beranek (ed) : Noise and vibration control. McGraw-Hill Book Company, New York, 1971

Overlay graph   Displays the measured data together with the graph based on the recalled data.

Power requirements   Four AA batteries or external power supply.

   Battery life (at 23°C):

>Alkaline batteries LR6:   Approx. 12 hours
>Ni-MH secondary batteries: Approx. 12 hours
>(Depending on the manufacturer)
>Battery life varies depending on the setting of this unit.

   Current Consumption

>130 mA (normal operation, rated voltage)

Dimensions   32 mm (H) × 24 mm (W) × 2.1 mm (D)

Weight   Approx. 5 g

Supplied accessories

   Inspection certificate   1