Class 1 Sound Level Meter NL-53
Class 2 Sound Level Meter NL-43

RION CO., LTD.
https://www.rion.co.jp/english/

Instruction Manual Quick Start Guide

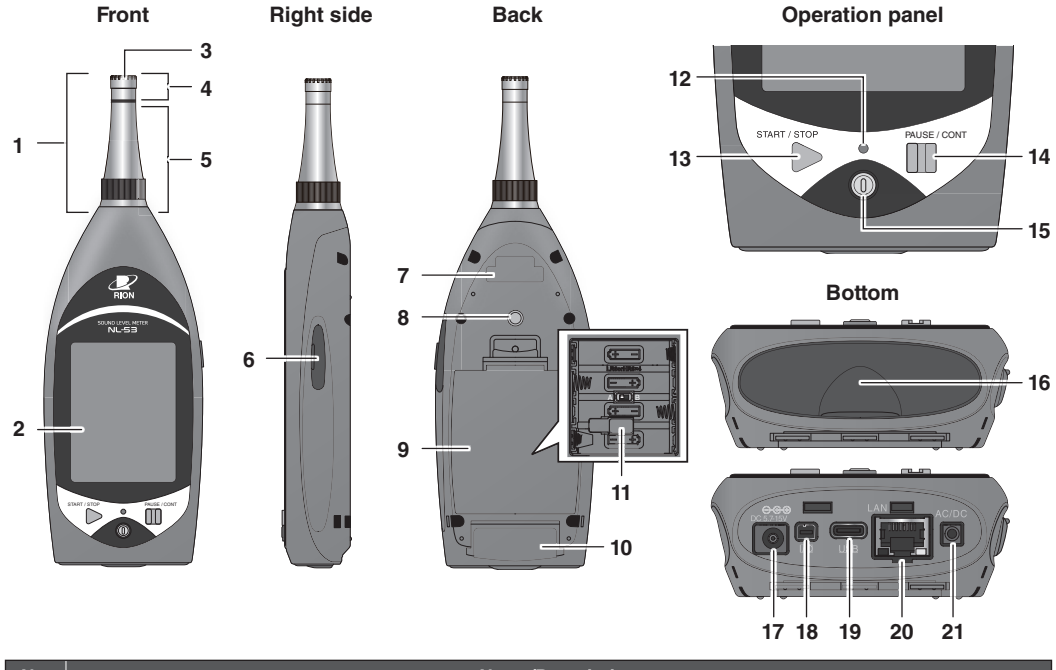
- Before use, please read the safety precautions and then follow them carefully.
- Keep this manual in a safe place and refer to it as necessary.

Organization of the Instruction Manual

- Quick Start Guide (This Document)
- Operation Guide
- Communication Guide
- Technical Guide

You can download the Instruction Manuals from our website:
https://rion-sv.com/nl-43_53_63/manual/

Name and Function of Each Part



No.	Name/Description
1	**Microphone and preamplifier** The microphone and preamplifier can be separated from the main unit. They can be installed at a distance from the main unit using an extension cable (optional).
2	**Touch panel** LCD display with backlight. The sound level is displayed numerically and as a bar graph. Also displayed are the operating status of the device, set measurement conditions, warnings, and other information. The display can be operated by touch.
3	**Microphone grid**
4	**Microphone**
5	**Preamplifier**
6	**Card slot (SD)** A slot for inserting an SD card.
7	**Serial number label** The serial numbers of the microphone, preamplifier, and sound level meter are listed here.
8	**Tripod mounting screw** This screw can be used to mount the device to a camera tripod.
9	**Battery compartment** Install four AA batteries to use the device. There is a power-on mode switch in the battery compartment.
10	**Nameplate** It shows necessary information such as the model, date of manufacture, and applicable standards of the device.
11	**Sticker** The sticker guarantees the dustproof and waterproof performance of the unit.
12	**Indicator LED** Lights or flashes red or blue depending on the operation and status of the device.
13	**START/STOP key** Used when starting or ending measurement. Press the START/STOP key from the current state (sound level display) to enter the measurement state. Press again to end the measurement. Returns to the measurement screen if pressed while operating the menu.
14	**PAUSE/CONT key** Used to pause the screen display. Also, when pressed during measurement in Manual mode, measurement can be paused. Press again to resume. During PAUSE in Manual mode, the indicator LED flashes blue. *When back erase is set, you can omit from the calculation the measured values from the time of pressing up to several seconds before (1, 3, or 5 seconds can be selected). Returns to the previous screen if pressed while operating the menu.
15	**POWER key** Press and hold for several seconds to turn the power on or off. To forcibly turn the power off when the key lock is enabled, press and hold for 10 seconds or longer.
16	**Bottom cover** A cover to protect the ports. Ports can be accessed by opening the bottom cover.
17	**External power supply port (DC IN)** This is the port for connecting AC Adapter NE-21P (optional) (input voltage of 100 V to 240 V, 50/60 Hz). You can also use DC Polarity Converter CC-43J (optional) by connecting it to the NC-98 series dedicated AC adapter for sound level meters NL-42A/52A/62A and NL-42/52/62. The Battery Pack BP-21A (optional) can also be used by connecting CC-43J.
18	**I/O port** An RS-232C port for connecting a computer or printer.
19	**USB port (Type-C)** A port for connecting a computer. It is also possible to connect a commercially available USB charger such as a mobile battery to supply power via USB.
20	**LAN port** A port for connecting a computer or router. This can be used by installing NX-43EX.
21	**AC/DC port** This port outputs AC signals corresponding to the sound pressure waveform after frequency weighting, and DC signals corresponding to the sound level after frequency weighting and time weighting.

Safety precautions

The precautions shown here are intended to help you use the product safely and correctly, and to prevent harm and damage to you and other people. Incidents that could occur as a result of incorrect handling are divided into two categories: “WARNING” and “CAUTION”. Make sure to follow the contents of all these categories because they are serious matters related to safety.

Examples of pictorial indications

⃠	Prohibitions	❗	Instructions

⚠WARNING	Indicates a possibility of death or serious injury due to incorrect handling.
⚠CAUTION	Indicates a possibility of personal injury or property damage due to incorrect handling.

Handling of the batteries

⚠WARNING

❗ **If electrolyte leaking from the batteries gets into your eyes, rinse with water without rubbing and immediately seek medical attention.**
Failing to do so may result in blindness.

If electrolyte leaking from the batteries gets on your skin or clothes, wash it off immediately with water.

Handling of this product

⚠WARNING

Do Not Disassemble **Never disassemble, repair, or modify the product.**
Doing so may cause a fire, electric shock, or an accident.

No Wet Hands **Do not connect the power cable or remove the main unit with wet hands.**
Doing so may cause electric shock or injury.

Keep Dry **Do not immerse the main unit in water or splash water on it.**
The microphone is not waterproof. Immersing it in water or splashing it with water may cause electric shock or malfunction. The water resistance of the main unit only mitigates potential damage caused by a small amount of rainfall, etc. If the main unit is exposed to more than a small amount of rainfall, etc., it may cause electric shock or malfunction.

⃠ **Do not use the device for purposes other than for what it is originally intended.**

Keep the product away from heat sources such as fire and stoves.
Failure to do so may cause a fire, electric shock, or malfunction.

Do not use the device if any abnormality such as damage is discovered.
Continuing to use the device regardless of an abnormality may cause electric shock or fire. In such circumstances, please contact your dealer.

Do not use the device if there is something wrong with it, such as it becomes abnormally hot.
Doing so may result in a malfunction or fire.

Do not use or connect to the power supply in a humid place such as a bathroom or in a place where it may get wet.
Doing so may cause electric shock or malfunction.

Do not use, store, or leave the product in a hot place such as in a place exposed to fire, direct sunlight, or inside a car on a hot day.
Doing so may cause fire, battery breakage, or overheating.

When disposing of the product, do not set it alight.
Doing so may cause a fire or the batteries to explode. When disposing of the product, follow the regulations of your country or local municipality.

Do not use the power cable connected to the optional AC adapter with a voltage other than 100 V AC.
The power cable connected to the AC adapter is a 100 V AC compatible cable that conforms to electrical safety standards. We cannot guarantee the safety of the device if it is used with a voltage other than 100 V AC. Use the power cable that complies with the laws and regulations of your area.

❗ **If there is dust on the external power supply port, wipe it off before connecting the AC adapter.**
Failure to do so may result in electric shock, short circuit, or fire.

Wipe off any water on the main unit and the external power supply port before connecting to the power supply.
Failure to do so may result in electric shock, short circuit, or fire.

If there is a problem with the device during use, turn off the power and disconnect the AC adapter and remove the batteries.
In such circumstances, please contact your dealer.

Always turn off the power after use.
Turn off the power and remove the batteries if you intend to store the product for a long time without using it. Leaving the batteries may cause the electrolyte to leak. Remove the AC adapter.

Make sure to hold the plug or connector when disconnecting a cord or cable.
Do not apply excessive force, such as holding the cord or cable and pulling them out.

⚠CAUTION

⃠ **Do not use or store the product within the reach of children or pets.**
Doing so may result in electric shock, injury, or accidental ingestion.

Do not store the device in places in which it will be subject to water, dust, high temperatures, high humidity, or in direct sunlight. Do not use or store the device in places where it may be adversely affected by salt, sulfur, chemicals, gases, etc.
The operating temperature for this device is -10°C to +50°C and the humidity range is 10% to 90% RH.

* In the event of a product defect caused by RION, RION will repair or replace the device.

Precautions for use

- If there is a drastic change in the surrounding temperature, the product may malfunction due to internal condensation.
- As the main unit is a precision electronic device, avoid using or storing it in locations subject to shock or vibration.
- Do not insert wires, metal pieces, conductive plastics, etc. through any holes or gaps in the product. Doing so may result in a malfunction.
- Do not replace the microphone or preamplifier with those with numbers different from those specified on the serial number label.
- Do not use the preamplifier of this device with other sound level meters. Doing so may damage the preamplifier.
- If you are using the device outdoors and it starts raining, stop taking measurements and keep the device dry. If the device gets wet, wipe it off with a dry cloth and dry it in a well-ventilated environment.
- Make sure the microphone and microphone grid are installed securely before using or storing the device. If there is any looseness, turn off the power, retighten the microphone and microphone grid before using or storing the device.
- Store the device in an appropriate position in the included carrying case.
- Two device units can be stored in the carrying case. If storing a device in an empty space in the case, wrap the device with bubble wrap to protect it. Note that we assume no responsibility for any damage or malfunction of the device if it is stored in an empty space.
- The touch panel surface is easily damaged, so do not poke or hit it with an object such as a pen, pencil, or screwdriver.
- To maintain the accuracy of measurements, inspect the device regularly. When using the device for transactions or certification activities, the device needs to be subject to an authorized inspection according to the rules and regulations of the relevant country.
- Be aware that removing the sticker will cause the device to be no longer subject to the dustproof and waterproof performance warranty.
- Note the following points to maintain the dustproof and waterproof performance of the device:
  - Make sure that the battery compartment cover and bottom cover are closed securely.
  - Do not open the battery compartment cover or bottom cover while the device is wet.
  - Do not leave the device in a wet state. Wipe off any water droplets and dry the device.
  - To check the dustproof and waterproof performance of the device, send it for regular inspection and calibration.
  - We recommend regularly having the packing inside the case and the bottom cover replaced (for a fee). For replacement of the packing and the bottom cover, please contact your dealer.
- The rechargeable backup battery for the clock of this device is a consumable item. We recommend regularly having the battery replaced (for a fee). For replacement of the rechargeable battery, please contact your dealer.
- Be sure to turn off the power before inserting or removing the SD card.
- Never format the optional program card such as NX-43EX and NX-43WR with SD card formatting software (such as SD Formatter). 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 guaranteed.

[Disclaimer]

- RION shall not be held accountable for the following damages:
  Any damage caused by earthquakes, lightning, wind and floods, fires for which RION is not responsible, actions or accidents by a third party, intentional or negligent misuse by the customer, or use under other abnormal conditions.
- RION shall not be held accountable for the following incidental damages arising from the use or inability to use this product:
  Alteration or loss of recorded content, loss of business profits, or the interruption of business, etc.
- RION shall not be held accountable for any damage caused by not following the contents of this document.

[Cleaning the product]

- To clean the device, use a dry, soft cloth or a cloth wrung out with lukewarm water. Do not use organic solvents such as benzene or alcohol.

[What to do when disposing of the product]

- When disposing of this product or batteries, make sure to consult with your local municipality.

Specifications

Applicable standards	NL-43	IEC 61672-1:2013 class 2 ANSI/ASA S1.4-2014/Part1 class 2 JIS C 1509-1:2017 class 2 JIS C 1516:2020 class 2
	NL-53	IEC 61672-1:2013 class 1 ANSI/ASA S1.4-2014/Part1 class 1 JIS C 1509-1:2017 class 1 JIS C 1516:2020 class 1
	NL-43/NL-53 common	CE Marking • EMC Directive Directive 2014/30/EU EN 61326-1:2013 • RoHS Directive Directive 2011/65/EU EN IEC 63000:2018 • Low Voltage Directive Directive 2014/35/EU EN 61010-1:2010/A1:2019 UKCA Marking, China RoHS, KC mark, VCCI Class B

Measurement function	Simultaneous measurement of up to four channels (Main channel, Sub1 to Sub3 channels) with selected time weighting and frequency weighting		
	Instantaneous value	Time-weighted sound level	L_p
	Calculated value	Equivalent continuous sound level	L_{eq}
		Sound exposure level	L_E
		Maximum sound level	L_{max}
		Minimum sound level	L_{min}
		Percentile sound level	L_N
		Peak sound level	L_{peak}
		Takt-max sound level	L_{tm5}

Measurement time	10 s, 1 m, 5 m, 10 m, 15 m, 30 m, 1 h, 8 h, 24 h, User Setting (1 s to 24 h)	
Microphone and preamplifier		NL-43 / NL-53
	Microphone	UC-52 / UC-59
	Sensitivity level (representative value)	-33 dB (re.1 V/Pa at 1 kHz) / -27 dB (re.1 V/Pa at 1 kHz)
	Preamplifier	NH-24 / NH-25
Measurement level range	A-weighting	25 dB to 138 dB
	C-weighting	33 dB to 138 dB
	Z-weighting	38 dB to 138 dB
	C-weighted peak sound level	55 dB to 141 dB
	Z-weighted peak sound level	60 dB to 141 dB

Self-generated noise		NL-43	NL-53
	A-weighting	19 dB or less (Typical 17 dB)	17 dB or less (Typical 15 dB)
	C-weighting	27 dB or less (Typical 25 dB)	25 dB or less (Typical 23 dB)
	Z-weighting	32 dB or less (Typical 30 dB)	30 dB or less (Typical 28 dB)

Entire linear operating range	25 dB to 138 dB
Linear operating range	113 dB

Measurement frequency range	NL-43	20 Hz to 8 kHz
	NL-53	10 Hz to 20 kHz
Standard frequency	1 kHz	
Reference sound pressure level	94 dB	
Frequency weighting	A-weighting, C-weighting and Z-weighting	
Time weighting	F (Fast), S (Slow)	
Input range	Automatic switching	

Bar graph display	Upper range	70 dB to 130 dB can be set in 10 dB increments
	Lower range	20 dB to 60 dB can be set in 10 dB increments

Sampling interval	L_p, L_{eq}, L_E, L_{max}, L_{min}, L_{peak}	20.8 µs (sampling frequency 48 kHz)
	L_N	L_p : 100 ms L_{eq} : 1 s
	L_{tm5}	L_{max} : 5 s

Calibration	A reference signal is input using sound calibrator NC-75/NC-74 or pistonphone NC-72B/NC-72A, and the signal input sensitivity is adjusted Up to 30 calibrations can be managed in the calibration history, and saved to an SD card		
		NC-75 / NC-74	NC-72B / NC-72A
	Nominal frequency	1 kHz	250 Hz
	Nominal sound level	94 dB	Refer to the instruction manuals of NC-72B/72A respectively

Reference signal output to external devices	Frequency	1 kHz
	Output level	Bar graph upper limit -6 dB

Correction function	Windscreen correction function (WS-10, WS-15, WS-16)	Corrects the influence on the frequency response when the windscreen is installed
	Diffuse sound field correction function	Corrects the influence on the frequency response when used in a diffuse sound field

Delay time	After the operation to start measuring, the device starts measuring after the specified time elapses	
	Setting time	Off, 1 s, 3 s, 5 s, 10 s

Back erase function	Excludes, from the calculation, data from the specified time before using this function	
	Setting time	Off, 1 s, 3 s, 5 s

Display	Device	3.5 inch TFT-LCD (with touch panel functionality)
	Touch panel	Resistive film method (pressure-sensitive)
	Screen size	QVGA (320 x 240)
	Backlight	Light Off, Brightness can be set 1-4
	Time-Level graph/ bar graph update cycle	100 ms
	Numeric value update cycle	1 s

Key lock	Touch panel and key input can be locked to prevent operation User name (up to 12 characters) and password (4 digits) can be set to unlock the device
Languages	Japanese, English, German, Spanish, French, Chinese, Korean
Overload indication / Under-range indication	Notifies under the following conditions for each measurement channel: • OVER is displayed for a signal input that is larger than the upper measurement limit • UNDER is displayed for a signal input that is smaller than the lower measurement limit • OUTPUT OVER is displayed for a signal output that is larger than the output level range

Manual store	Data per address is saved to internal memory or SD card • Calculated values L_{eq}, L_E, L_{max}, L_{min}, L_{peak} and L_N are saved • L_p data can also be saved when the device is paused	
	Data storage capacity	Internal memory: Data of up to 1,000 addresses can be stored SD card: Data an be saved with store names from 0000 to 9999 (up to 1,000 addresses for each store)
Data format	CSV file (a text file in which information is separated by commas)	
Screenshot	Saving screen display contents in BMP format	
Data recall	Browses stored data and screenshot images	

Memorizing and recalling settings	Setting information can be saved to the internal memory or SD card and recalled at startup or at a specified time	
SD card formatting	Initializes the contents of the SD card to free up space so that you can use it	
Output	AC output	Output voltage : 1 Vrms at the output level range Output resistance : 50 Ω Load impedance : 10 kΩ or more
	DC output	Output voltage : 2.5 V, 25 mV/dB at the output level range Output resistance : 50 Ω Load impedance : 10 kΩ or more
	DC/AC simultaneous output	Enables simultaneous output of DC output and AC output
Output range	Can be linked to the bar graph upper limit, or set from 70 dB to 130 dB in 10 dB increments	

Communication/ RS-232C	Communication	Measurement values can be acquired and settings can be changed by using communication commands
	Print	Printing is possible using the dedicated printer DPU-414 or BL2-58 Prints the measurement screen or saved data screen
	Baud rate	9600 bps, 19200 bps, 38400 bps, 57600 bps, 115200 bps

USB	Communication	Measurement values can be acquired and settings can be changed by using communication commands
	Data transfer	Enables the transferring of data by making the computer recognize the SD card as a removable disk

Power supply	4 × AA batteries, power supply to DC jack and USB port	
	Operating time (at 23°C, ECO setting)	Alkaline battery LR6: Approx. 12 hours Ni-MH rechargeable battery HR6: Approx. 12 hours * The operating time varies depending on the device settings and the battery manufacturer
	AC adapter	NE-21P (Input: 100 to 240 V AC, 50/60 Hz, Output: 12 V DC)
	External power supply voltage	5.7 V to 15 V (rated voltage 12 V) USB port: 5 V
	Primary side (100 V side) power consumption	Approx. 3 W

Operating temperature and humidity range	Temperature	-10°C to 50°C
	Humidity	10% to 90% RH (no condensation)

Dustproof and waterproof performance	IP rating	IP54 (excluding microphone)

Dimensions, weight	Approx. 258 mm (H) x 83.5 mm (W) x 34.5 mm (D), approx. 400 g (including batteries)

Accessories

Carrying case	×1	Size AA alkaline batteries	×4
Windscreen WS-10	×1	Instruction Manual: Quick Start Guide	×1
Windscreen fall prevention rubber	×1	Supplied Accessories & Inspection Certificate	×1
Hand strap	×1		

Optional accessories

Optional programs	
Extended Function Program	NX-43EX
Waveform Recording Program	NX-43WR
Octave·1/3 Octave Real-time Analysis Program	NX-43RT
FFT Analysis Program	NX-43FT
512MB SD Card	MC-51SD1
2GB SD Card	MC-20SD2
32GB SD Card	MC-32SP3
AC adapter (100 V to 240 V AC)	NE-21P
Battery pack (Using four D alkaline batteries)	BP-21A
Microphone extension cable	EC-04 series
All-Weather Windscreen	WS-15
Rain-protection Windscreen	WS-16
BNC pin output cable	CC-24/CC-24S
Printer cable	CC-42P
RS-232C serial I/O cable	CC-42R
Comparator Output / Trigger Input Cable	CC-43CT
AC/DC Output Splitter Cable	CC-43S
DC Polarity Converter	CC-43J
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
Waveform Analysis Software	AS-70
Sound calibrator	NC-75
Pistonphone	NC-72B
Tripod for sound level meter	ST-80
Tripod for All-Weather Windscreen	ST-91
4 channel Data Recorder	DA-21
Level recorder	LR-07
Dedicated soft case	
Rubber cover for external power use	

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