# Latrobe Valley BESS

## Post-Construction Acoustic Assessment

S6828.1C12

October 2025

sonus.

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## 1 INTRODUCTION

The Latrobe Valley BESS (the **Facility**) is a battery energy storage system (**BESS**), located south of Morwell in Victoria. Phase 1A of the Facility (forming a portion of Stage 1) has recently been constructed in the location shown on Figure 1.


*Figure 1: Subject Site and Locality*

This report has been prepared to fulfill Condition 13 of the Planning Permit (Permit No. PA2101132-2, issued 16 November 2021) and outlines the results of the noise monitoring. The noise measurements were conducted in accordance with the Noise Compliance Assessment Procedure, summarised in the Sonus report with reference S6828.1C9, dated September 2025 (the **Procedure**). The Procedure has been based on the standard noise measurement procedure outlined in the EPA Publication *1826.4 Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues* (the **Noise Protocol**) with the goal of determining compliance with the noise limits set by the Noise Protocol.

## 2 CRITERIA

The base noise limits for the assessment of noise from facilities such as the BESS are set in Part 5.3 Division 3 of the *Environment Protection Regulations 2021* (the **Regulations**). The Regulations refer to the Noise Protocol for the assessment of noise. It is noted that Condition 11 of the Planning Permit also requires the Facility to comply with the requirements of the Noise Protocol. The Noise Protocol provides guidance in determining specific noise limits for new and existing commercial, industrial and trade premises in Victoria. For the purpose of this assessment, the rural area method (suitable for areas outside of the metropolitan area) has been employed.

The Noise Protocol provides a method to determine noise criteria for utilities in rural areas, based on the Victoria Planning Provisions zone of the noise source and nearby residences. The subject site is located within an Industrial 1 Zone (IN1Z) of the Victoria Planning Provisions, while the surrounding residences are located within a Farming Zone – Schedule 1 (FZ1). Based on this, the Noise Protocol defines zoning noise levels for different periods of the day. These are as follows:

- 53 dB(A) ($L_{Aeq}$) during the day[1];
- 48 dB(A) ($L_{Aeq}$) during the evening[2]; and,
- 43 dB(A) ($L_{Aeq}$) during the night[3].

As the subject site and residences are located in different zones, the Noise Protocol requires a distance adjustment to be made to the zoning noise levels. This distance adjustment is based on the receiver distance, which is the distance the noise receiver is from the boundary of the Industrial 1 Zone. The distance adjustment reduces the zoning noise levels by 1 dB for every 100m of receiver distance, to a maximum reduction of 9 dB. The receiver distance and the distance adjustment factor for each residence can be seen in Table 1.

[1] 7:00am to 6:00pm Monday to Saturday, excluding public holidays.

[2] 6:00pm to 10:00pm Monday to Saturday and 7:00am to 10:00pm Sunday and public holidays.

[3] 10:00pm to 7:00am the following day, any day of the week.

*Table 1: Distance Adjustment Factors*

| Residence | Distance | Adjustment | Residence | Distance | Adjustment |
|---|---|---|---|---|---|
| Residence 1 | 80 | 0 dB(A) | Residence 8 | 570 | 5 dB(A) |
| Residence 2 | 360 | 3 dB(A) | Residence 9 | 530 | 5 dB(A) |
| Residence 3 | 400 | 4 dB(A) | Residence 10 | 590 | 5 dB(A) |
| Residence 4 | 130 | 1 dB(A) | Residence 11 | 640 | 6 dB(A) |
| Residence 5 | 240 | 2 dB(A) | Residence 12 | 90 | 0 dB(A) |
| Residence 6 | 480 | 4 dB(A) | Residence 13 | 110 | 1 dB(A) |
| Residence 7 | 370 | 3 dB(A) | Residence 14 | 100 | 1 dB(A) |

Based on the above, the relevant noise limits are summarised in Table 2.

*Table 2: Noise Protocol Noise Limits*

| Residence | Noise Limits | | |
|---|---|---|---|
| | Day | Evening | Night |
| Residence 1 | 53 dB(A) | 48 dB(A) | 43 dB(A) |
| Residence 2 | 50 dB(A) | 45 dB(A) | 40 dB(A) |
| Residence 3 | 49 dB(A) | 44 dB(A) | 39 dB(A) |
| Residence 4 | 52 dB(A) | 47 dB(A) | 42 dB(A) |
| Residence 5 | 51 dB(A) | 46 dB(A) | 41 dB(A) |
| Residence 6 | 49 dB(A) | 44 dB(A) | 39 dB(A) |
| Residence 7 | 50 dB(A) | 45 dB(A) | 40 dB(A) |
| Residence 8 | 48 dB(A) | 43 dB(A) | 38 dB(A) |
| Residence 9 | 48 dB(A) | 43 dB(A) | 38 dB(A) |
| Residence 10 | 48 dB(A) | 43 dB(A) | 38 dB(A) |
| Residence 11 | 47 dB(A) | 42 dB(A) | 37 dB(A) |
| Residence 12 | 53 dB(A) | 48 dB(A) | 43 dB(A) |
| Residence 13 | 52 dB(A) | 47 dB(A) | 42 dB(A) |
| Residence 14 | 52 dB(A) | 47 dB(A) | 42 dB(A) |

It is noted that these criteria are for the cumulative noise from all industrial noise sources in the vicinity. One way of demonstrating compliance with these criteria is for the contribution of noise from the Facility to be at least 10 dB(A) lower than the levels in Table 2, as this would demonstrate that the noise from the Facility is not contributing to noise at the cumulative limit at residences.

## 3 MEASUREMENT PROCEDURE

Attended noise measurements were taken on the night of the 2nd of September 2025. Measurements were initially taken near to the most exposed residence, Residence 1. Where the noise level is affected by atmospheric conditions, clause 76 of the Noise Protocol requires an alternate assessment location to be used, as stated below:

> *Where the effective noise level at the noise sensitive area is likely to be affected by atmospheric conditions, an alternative assessment location located near to the commercial, industrial or trade premises must be used unless there is no appropriate alternative assessment location (refer clause 77).*

An alternate assessment location, M1, was therefore chosen that was downwind from the Subject Site. Due to high levels of extraneous noise at this location, additional noise measurements were taken at a second location, M2, which is still noted to be located downwind from the Facility. The locations where the measurements were taken can be seen in Table 3 and graphically in Figure 2. The proposed load profile and noise testing periods are detailed in the table in Appendix A.

*Table 3: Measurement Locations*

| Location | Coordinates (UTM WGS84 55H) | |
|---|---|---|
| | Easting | Northing |
| R1 | 449369 | 5765332 |
| M1 | 449357 | 5765305 |
| M2 | 450746 | 5764399 |

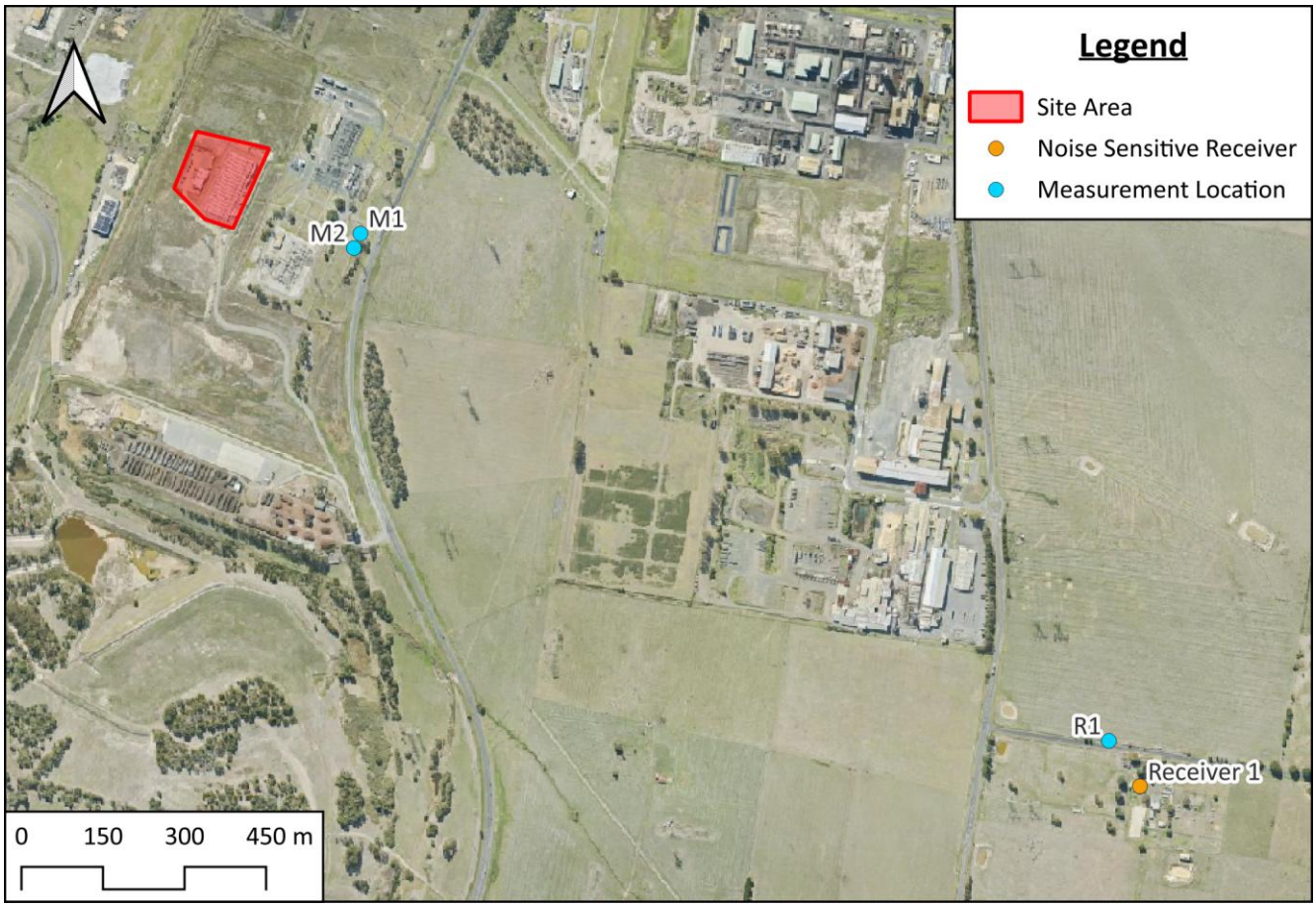


*Figure 2: Measurement Locations*

Noise measurements were taken using a Rion NL-53 sound level meter (serial number 00240810), last calibrated on 4 March 2024. The calibration certificate and datasheet for the sound level meter can be seen in Appendix B. The sound level meter was placed on a tripod to facilitate the measurements, with a typical measurement setup shown in Figure 3. The sound level meter was calibrated before and after the noise measurements to a level of 94.0 dB(A) with no significant drift observed. The measurements were taken using the 'fast' time weighting and 'A' frequency weighting.

*Figure 3: Typical Measurement Setup*

It is noted that the operation of the Facility was inaudible while conducting the measurements at R1, with noise from other industry being the dominant noise source observed, as well as some influence from natural noise sources such as frogs. Therefore, measurements were subsequently taken at an alternate assessment location positioned closer to the site. Facility operations were the dominant noise source at this alternate location, though there was a significant contribution from frogs and potentially insects. The measurements were paused to remove the effects of extraneous noise, primarily from traffic.

## 4 MEASUREMENT RESULTS

The results of the measurements and the atmospheric conditions at the time of the measurements can be seen in Table 4. The atmospheric conditions have been taken from the nearest Bureau of Meteorology station to the Subject Site, being the station at the Latrobe Valley Airport. The observations for the time closest to the start of the measurement have been reported.

*Table 4: Measurement Results*

| Measurement Number | Measurement Location | Measurement Time | Measured Noise Level | Temperature | Humidity | Wind Speed | Wind Direction |
|---|---|---|---|---|---|---|---|
| 1 | R1 | 2/9 9:45pm | 41 dB(A) | 9.1°C | 61% | 2 km/h | NE |
| 2 | M1 | 2/9 9:50pm | 49 dB(A) | 8.2°C | 65% | 4 km/h | W |
| 3 | M2 | 2/9 10:15pm | 48 dB(A) | 8.1°C | 64% | 2 km/h | W |
| 4 | M2 | 2/9 10:50pm | 44 dB(A) | 8.4°C | 61% | 7 km/h | SW |
| 5 | R1 | 2/9 11:05pm | 43 dB(A) | 8.4°C | 61% | 7 km/h | SW |

In order to determine compliance based on the measurements taken at the alternate assessment location, the noise levels were extrapolated back to the primary assessment location, R1, using the alternate assessment criterion principles of the Noise Protocol. This was accomplished by comparing the predicted noise levels at these two locations. The results of this extrapolation can be seen in Table 5.

*Table 5: Extrapolated Noise Levels*

| Measurement Number | Extrapolated Noise Level |
|---|---|
| 2 | 24 dB(A) |
| 3 | 24 dB(A) |
| 4 | 19 dB(A) |

The Noise Protocol requires the measured noise level to be adjusted for noise character where it is found to contain excessive tonality, impulsiveness, or intermittency. Observations taken at the alternate assessment location indicated that the noise produced by the facility was tonal in nature. The data for these measurements were then further analysed in accordance with the procedure outlined in Annex C of the Noise Protocol. This found that the noise was tonal in the 100 Hz, 200 Hz, 630 Hz, and 3.15 kHz one-third octave bands (though it is noted that the tone in the 3.15 kHz band is likely from frogs).

The measurements near to the residential location were also analysed for the presence of tonality in accordance with Annex C. While this did indicate that the noise was also tonal at this location, tones were only identified in the 80 Hz, 160 Hz, 315 Hz, 2 kHz, and 2.5 kHz one-third octave bands. None of the tones were in the same frequencies as those identified at the alternate assessment location. It can therefore be determined that the noise from the Facility does not exhibit tonality when considered at the nearest noise sensitive receiver.

The results of the measurements have also been extrapolated out to the other nearby noise sensitive receivers. The highest noise level at these locations can be seen in Table 6 alongside the relevant noise limits for only the contribution from the Facility (the relevant noise limits for the Facility are noted to be 10 dB(A) below the cumulative Noise Limit as per Table 2 and reproduced below).

*Table 6: Extrapolated Noise Levels – All Residences*

| Residence | Extrapolated Noise Level | Cumulative Noise Limits | Facility Noise Limits |
|---|---|---|---|
| Residence 1 | 24 dB(A) | 43 dB(A) | 33 dB(A) |
| Residence 2 | 20 dB(A) | 40 dB(A) | 30 dB(A) |
| Residence 3 | 20 dB(A) | 39 dB(A) | 29 dB(A) |
| Residence 4 | 22 dB(A) | 42 dB(A) | 32 dB(A) |
| Residence 5 | 21 dB(A) | 41 dB(A) | 31 dB(A) |
| Residence 6 | 20 dB(A) | 39 dB(A) | 29 dB(A) |
| Residence 7 | 21 dB(A) | 40 dB(A) | 30 dB(A) |
| Residence 8 | 19 dB(A) | 38 dB(A) | 28 dB(A) |
| Residence 9 | 18 dB(A) | 38 dB(A) | 28 dB(A) |
| Residence 10 | 18 dB(A) | 38 dB(A) | 28 dB(A) |
| Residence 11 | 18 dB(A) | 37 dB(A) | 27 dB(A) |
| Residence 12 | 18 dB(A) | 43 dB(A) | 33 dB(A) |
| Residence 13 | 18 dB(A) | 42 dB(A) | 32 dB(A) |
| Residence 14 | 18 dB(A) | 42 dB(A) | 32 dB(A) |

The results of the measurements indicate that the relevant noise limits determined in accordance with the Noise Protocol are easily achieved when considering the noise from the Facility.

## 5 CONCLUSION

Compliance noise monitoring was conducted on the 2nd of September 2025 for the recently constructed Phase 1A of the Latrobe Valley BESS, located south of Morwell in Victoria. Appropriate noise limits were determined in accordance with the Noise Protocol as required by the Planning Permit.

At the time of the noise monitoring, the noise from the BESS was not audible at the closest residence, even though it was located in a downwind direction under conditions conducive to noise propagation. Additional noise measurements were taken at an alternate assessment location in accordance with the Noise Protocol. The measured noise levels were then extrapolated to the location of the closest noise sensitive residence under worst-case meteorological conditions.

Based on the above, the measured noise levels from the Facility complied with the Noise Protocol and were sufficiently low to ensure that the noise from the Facility does not contribute to the overall noise level.

## APPENDIX A: LOAD PROFILE

| Time at end of dispatch window | P (MW) | Q (MVAr) | Gen (MW) | Load(MW) | Planned HP Test | Energy Available (MWh) | No Inverters |
|---|---|---|---|---|---|---|---|
| 20:30 | -100 | 0 | 0 | 100 | Commence charging at -100MW from approx 5% SoC | 8.17 | 32 |
| 20:35 | -100 | 0 | 0 | 100 | Charge at full power prior to noise test | 16.33 | 32 |
| 20:40 | -100 | 0 | 0 | 100 | Charge at full power prior to noise test | 24.50 | 32 |
| 20:45 | -100 | 0 | 0 | 100 | Charge at full power prior to noise test | 32.67 | 32 |
| 20:50 | -100 | 0 | 0 | 100 | Charge at full power prior to noise test | 40.83 | 32 |
| 20:55 | -100 | 0 | 0 | 100 | Charge at full power prior to noise test | 49.00 | 32 |
| 21:00 | -100 | 0 | 0 | 100 | Charge at full power prior to noise test | 57.17 | 32 |
| 21:05 | -100 | 0 | 0 | 100 | Charge at full power prior to noise test | 65.33 | 32 |
| 21:10 | -100 | 0 | 0 | 100 | Charge at full power prior to noise test | 73.50 | 32 |
| 21:15 | -100 | 0 | 0 | 100 | Charge at full power prior to noise test | 81.67 | 32 |
| 21:20 | -100 | 0 | 0 | 100 | Charge at full power prior to noise test | 89.83 | 32 |
| 21:25 | -100 | 0 | 0 | 100 | Charge at full power prior to noise test | 98.00 | 32 |
| 21:30 | -100 | 0 | 0 | 100 | Charge at full power prior to noise test | 106.17 | 32 |
| 21:35 | -100 | 0 | 0 | 100 | Charge at full power prior to noise test | 114.33 | 32 |
| 21:40 | -100 | 0 | 0 | 100 | Charge at full power prior to noise test | 122.50 | 32 |
| 21:45 | -100 | 0 | 0 | 100 | Charge at full power prior to noise test | 130.67 | 32 |
| 21:50 | -100 | 0 | 0 | 100 | Charge at full power prior to noise test | 138.83 | 32 |
| 21:55 | -100 | 0 | 0 | 100 | Noise Testing - charge period commence noise tests | 147.00 | 32 |
| 22:00 | -100 | 0 | 0 | 100 | Noise Testing - charge period commence noise tests | 155.17 | 32 |
| 22:05 | -100 | 0 | 0 | 100 | Noise Testing - charge period commence noise tests | 163.33 | 32 |
| 22:10 | -100 | 0 | 0 | 100 | Noise Testing - charge period commence noise tests | 171.50 | 32 |
| 22:15 | -100 | 0 | 0 | 100 | Noise Testing - charge period commence noise tests | 179.67 | 32 |
| 22:20 | -100 | 0 | 0 | 100 | Noise Testing - charge period commence noise tests | 187.83 | 32 |
| 22:25 | -100 | 0 | 0 | 100 | Noise Testing - charge period commence noise tests | 196.00 | 32 |
| 22:30 | -100 | 0 | 0 | 100 | Noise Testing - charge period commence noise tests | 200.00 | 32 |
| 22:35 | 0 | 0 | 0 | 0 | Pause | 199.83 | 32 |
| 22:40 | 0 | 0 | 0 | 0 | Pause | 199.67 | 32 |
| 22:45 | 0 | 0 | 0 | 0 | Pause | 199.50 | 32 |
| 22:50 | 100 | 0 | 100 | 0 | Noise Testing - discharge period commence noise tests | 191.00 | 32 |
| 22:55 | 100 | 0 | 100 | 0 | Noise Testing - discharge period commence noise tests | 182.50 | 32 |
| 23:00 | 100 | 0 | 100 | 0 | Noise Testing - discharge period commence noise tests | 174.00 | 32 |
| 23:05 | 100 | 0 | 100 | 0 | Noise Testing - discharge period commence noise tests | 165.50 | 32 |
| 23:10 | 100 | 0 | 100 | 0 | Noise Testing - discharge period commence noise tests | 157.00 | 32 |
| 23:15 | 100 | 0 | 100 | 0 | Noise Testing - discharge period commence noise tests | 148.50 | 32 |
| 23:20 | 100 | 0 | 100 | 0 | Noise Testing - discharge period commence noise tests | 140.00 | 32 |
| 23:25 | 100 | 0 | 100 | 0 | Noise Testing - discharge period commence noise tests | 131.50 | 32 |
| 23:30 | 0 | 0 | 0 | 0 | Resume normal operation | 131.33 | 32 |

**APPENDIX B: SOUND LEVEL METER DETAILS**

RION CO., LTD.

3-20-41 Higashimotomachi Kokubunji Tokyo 185-8533
Phone:042(359)7888, Facsimile:042(359)7442

# Certificate of Calibration

**Name** : **Class 1 Sound Level Meter**

**Model** : **NL-53** **S/No.** : **00240810**

**Date of Calibration** : **March, 04, 2024**

We hereby certify that the above product was tested and calibrated according to the prescribed Rion procedures, and that it fulfills specification requirements.
The measuring equipment and reference devices used for testing and calibrating this unit are managed under the Rion traceability system and are traceable according to official Japanese standards and official standards of countries belonging to the International Committee of Weights and Measures.

RION CO., LTD.

J. Kawamura

Manager, Quality Control Department

## ■ Specifications

| | | | Class 1 Sound Level Meter NL-63 | Class 1 Sound Level Meter NL-53 | Class2 Sound Level Meter NL-43 |
|---|---|---|---|---|---|
| Applicable standards | | | IEC 61672-1: 2013 class 1, ISO 7196: 1995, ANSI/ASA S1.4-2014/Part1 class 1, JIS C 1509-1:2017 class 1, JIS C 1516: 2020 class 1<br>ISO 7196: 1995 | IEC 61672-1: 2013 class 1, ANSI/ASA S1.4-2014/Part1 class 1,<br>JIS C 1509-1: 2017 class 1, JIS C 1516: 2020 class 1 | IEC 61672-1: 2013 class 2, ANSI/ASA S1.4-2014/Part1 class 2,<br>JIS C 1509-1: 2017 class 2, JIS C 1516: 2020 class 2 |
| | | | CE Marking<br>• EMC Directive Directive 2014/30/EU EN 61326-1:2013<br>• RoHS Directive Directive 2011/65/EU EN IEC 63000:2018<br>• Low Voltage Directive Directive 2014/35/EU EN 61010-1:2010/A1:2019<br>UKCA Marking, China RoHS, KC mark, VCCI Class B | ● | ● |
| Measurement function | | | Simultaneous measurement of up to four conditions (Main channel, Sub1 to Sub3 channels) with selected time weighting and frequency weighting | ● | ● |
| | Instantaneous value | | Time-weighted sound pressure level $L_p$ | ● | ● |
| | Calculated value | | Equivalent continuous sound level: $L_{eq}$, I-time-weighted equivalent continuous sound level: $L_{Ieq}$, Moving $L_{eq}$: $L_{eq,\ mov}$<br>Sound exposure level: $L_E$, Maximum sound level: $L_{max}$, Minimum sound level: $L_{min}$, Percentile sound level: $L_N$,<br>Peak sound leve: $L_{peak}$, Takt-max sound level: $L_{tm5}$ | Equivalent continuous sound level: $L_{eq}$, I-time-weighted equivalent continuous sound level: $L_{Ieq}$*2,<br>Moving $L_{eq}$: $L_{eq,\ mov}$*2, Sound exposure level: $L_E$, Maximum sound level: $L_{max}$, Minimum sound level: $L_{min}$,<br>Percentile sound level: $L_N$, Peak sound level: $L_{peak}$, Takt-max sound level: $L_{tm5}$ | |
| Microphone | Type | | UC-59L | UC-59 | UC-52 |
| | Sensitivity level (representative value) | | −27 dB | −27 dB | −33 dB |
| Measurement level range | | | A-weighting: 25 dB to 138 dB, C-weighting: 33 dB to 138 dB, G-weighting: 43 dB to 138 dB, Z-weighting: 50 dB to 138 dB,<br>C-weighted peak sound level: 60 dB to 141 dB, Z-weighted peak sound level: 65 dB to 141 dB | A-weighting: 25 dB to 138 dB, C-weighting: 33 dB to 138 dB, Z-weighting: 38 dB to 138 dB,<br>C-weighted peak sound level: 55 dB to 141 dB, Z-weighted peak sound level: 60 dB to 141 dB | |
| Self-generated noise | A-weighting | | 17 dB or less | 17 dB or less | 19 dB or less |
| | C-weighting | | 25 dB or less | 25 dB or less | 27 dB or less |
| | Z-weighting | | 42 dB or less | 30 dB or less | 32 dB or less |
| | G-weighting | | 35 dB or less | — | |
| Measurement frequency range | | | 1 Hz to 20 kHz | 10 Hz to 20 kHz | 20 Hz to 8 kHz |
| Frequency weighting | | | A, C, G, Z | A, C, Z | |
| Filter | Digital processing | | High-pass filter<br>Low-pass filter Cutoff frequency: 100 Hz, 500 Hz | — | |
| Time weighting | | | F (Fast), S (Slow), I (Impulse), 10 s | F (Fast), S (Slow), I (Impulse)*2 | |
| 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 | | | $L_p$, $L_{eq}$, $L_E$, $L_{max}$, $L_{min}$, $L_{peak}$, $L_{Ieq}$: 20.8 µs (Sampling frequency: 48 kHz), $L_N$: 100 ms ($L_p$), 1 s ($L_{eq}$), $L_{eq,\ mov}$: 1 s ($L_{eq}$), $L_{tm5}$: 5 s ($L_{max}$) | ● | ● |
| 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.<br>Up to 30 calibrations can be managed in the calibration history, and saved to an SD card | ● | ● |
| Reference signal output to external devices | Frequency | | 1 kHz | ● | ● |
| | Output level | | Bar graph upper limit −6 dB | ● | ● |
| Correction function | Windscreen correction function | | 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 (OFF, 1, 3, 5, 10 s) | ● | ● |
| Back erase function | | | Excludes, from the calculation, data from the specified time before using this function<br>(OFF, 1, 3, 5 s, May not be used together with auto store mode and waveform recording) | ● | ● |
| Display | | | Backlit 3.5-inch TFT-LCD QVGA ＊With touch panel function (resistive membrane type)<br>Numerical display update frequency: 1 s, Graph showing time and sound level / bar graph refresh interval : 100 ms | ● | ● |
| Store | Manual store | | Data for measurement results are stored manually in single address increments. | ● | ● |
| | | Number of data | Internal memory: max. 1000 sets<br>SD Card: depends on the capacity of the SD Card*1 | ● | ● |
| | | Measurement time | 10 s, 1 , 5 , 10 , 15 , 30 m, 1 , 8 , 24 h, User Setting (1 s to 24 h) | ● | ● |
| | Auto store*2 | | Instantaneous values ($L_p$ store) and processed values ($L_{eq}$ store) are stored continuously on the SD card and automatically at preset intervals. | ● | ● |
| | | $L_p$ store interval | Off, 10 ms, 25 ms, 100 ms, 200 ms, 1 s | ● | ● |
| | | $L_{eq}$ calculation interval | Off, 10 s, 1, 5, 10, 15, 30, 1, 8, 24 h, or User Setting (Min. 1 s to max. 24 h) | ● | ● |
| | | Number of data | SD card: Data can be saved with store names from 0000 to 9999 | ● | ● |
| | | Measurement time | 10 s, 1, 5, 10, 15, 30, 1, 8, 24 h, User Setting (Min. 1 s to max 1000 h), Continue (Perform measurements until the SD card runs out of space*1) | ● | ● |

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| | | | | | | |
|---|---|---|---|---|---|---|
| Data format | | | CSV file | | ● | ● |
| Data recall | | | Browses stored data and screenshot images | | ● | ● |
| Memorizing Settings | | | Setting information can be saved to the internal memory or SD card and recalled at startup or at a specified time | | ● | ● |
| Waveform recording ✻2✻3 | File format | | Uncompressed waveform WAVE file | | ● | ● |
| | Sampling frequency | | Select 48 kHz, 24 kHz, 12 kHz, 1200 Hz or 240 kHz | | Select 48 kHz, 24 kHz or 12 kHz | |
| | Data length | | Select 24 bit or 16 bit | | ● | ● |
| Outputs | AC output | | Output voltage: 1 V rms at the output level range | Enables simultaneous output of DC output and AC output | ● | ● |
| | DC output | | Output voltage: 2.5 V, 25 mV/dB at the output level range | | ● | ● |
| | Output range | | Can be linked to the bar graph upper limit, or set from 70 dB to 130 dB in 10 dB increments | | ● | ● |
| | Comparator ✻2 | | The comparator output turns on when the specified channel exceeds the set level<br>(Maximum input voltage 24 V, internal resistance approx. 480 Ω, Allowable power dissipation 300 mW) | | ● | ● |
| RS-232C Communication | | | Measurement values can be acquired and settings can be changed by using communication commands | | ● | ● |
| 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 | | ● | ● |
| LAN ✻2 | Communication | | Measurement values can be acquired and settings can be changed by using communication commands | | ● | ● |
| | Data transfer | | Data on an SD card can be transfered to a computer | | ● | ● |
| | Web browser display | | Via a web browser, settings can be changed and measured values displayed. Via Google Chrome on PC, audio can be played.✻3 | | ● | ● |
| 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 (0.1 s) | | ● | ● |
| 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<br>Ni-MH rechargeable battery HR6: Approx. 12 hours<br>Portable charger: Approx. 20 hours of power at 5000 mAh<br>✻When making Auto store mode and ECO settings<br>The operating time varies depending on the device settings and the battery manufacturer | | Alkaline battery LR6: Approx. 16 hours<br>Ni-MH rechargeable battery HR6: Approx. 16 hours<br>Portable charger: Approx. 24 hours of power at 5000 mAh<br>✻When making Auto store mode ✻2 and ECO settings<br>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)<br>USB port: 5 V (See precautions on mobile battery usage) | | ● | ● |
| | Primary side (100 V side) power consumption | | Approx. 3 W (With NE-21P usage) | | ● | ● |
| Operating temperature and humidity range | Temperature | | –10 °C to 50 °C | | ● | ● |
| | Humidity | | 10 % to 90 % RH (no condensation) | | ● | ● |
| Dustproof and waterproof performance ✻4 | | | IP rating: IP54 (excluding microphone) | | ● | ● |
| Dimensions, weight | | | Approx. 265 mm (H) × 83.5 mm (W) × 34.5 mm (D), approx. 400 g (including batteries) | | Approx. 258 mm (H) × 83.5 mm (W) × 34.5 mm (D), approx. 400 g (including batteries) | |
| Accessories | | | Carrying case ×1, Windscreen WS-10 ×1, Windscreen fall prevention rubber ×1, Hand strap ×1,<br>Size AA alkaline batteries ×4, SD card 512 MB | | Carrying case ×1, Windscreen WS-10 ×1, Windscreen fall prevention rubber ×1, Hand strap ×1,<br>Size AA alkaline batteries ×4, SD card 512 MB (NX-43EX preinstalled model only) | |

## Options

| Product name | Product number | Compatible models |
|---|---|---|
| Extended Function Program (Inst.on 512 MB SD card) | NX-43EX | NL-43/53 |
| Waveform Recording Program (Inst.on 2 GB SD card) | NX-43WR | NL-43/53/63 |
| Octave-1/3 Octave Real-time Analysis Program (Inst.on 512 MB SD card) | NX-43RT | NL-43/53 |
| Octave-1/3 Octave Real-time Analysis Program (Inst.on 512 MB SD card) | NX-63RT | NL-63 |
| FFT Analysis Program (Inst.on 512 MB SD card) | NX-43FT | |
| 512 MB SD Card | MC-51SD1 | |
| 2 GB SD Card | MC-20SD2 | |
| 32 GB 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 | |
| BNC pin output cable | CC-24/CC-24S | NL-43/53/63 |
| 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 | |
| USB cable (Type-C) | – | |
| Sound calibrator | NC-75 | |

| Product name | Product number | Compatible models |
|---|---|---|
| Pistonphone | NC-72B | |
| Dedicated soft case | – | |
| Rubber cover for external power use | – | |
| All-Weather Windscreen | WS-15 | |
| Windscreen mounting adapter | WS15006 | NL-43/53/63 |
| Rain-protection Windscreen | WS-16 | |
| Tripod for sound level meter | ST-80 | |
| Tripod extension rod (For ST-80) | ST-80-100 | |
| Tripod for All-Weather Windscreen | ST-91 | |
| 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 | See.p.8 |
| Waveform Analysis Software | AS-70 | |

✻1 Use Rion fully guaranteed products. ✻2 NX-43EX required for NL-43/NL-53 (sold separately) ✻3 NX-43WR required (sold separately).
✻4 Protection against harmful dust and water splashing from any direction.

**Precautions on portable charger usage**

Avoid portable charger with functions that monitor device power consumption and are capable of interrupting the power supply.
The power consumption of NL-43/53/63 is relatively low compared to smartphones; portable charger equipped with such features may erroneously terminate power supply to the unit.