RION

Waveform Recording Program

NX-43WR

Instruction Manual

Organization of This Manual

This manual describes the recording and playing functions and other operation principles of Waveform Recording Program NX-43WR.
The manual consists of the chapters listed below. You should also consult the documentation for the Class 2 Sound Level Meter NL-43, Class 1 Sound Level Meter NL-53, and Class 1 Sound Level Meter (with low-frequency sound measurement function) NL-63.

- Overview of This Product
  This section explains the functions of the NX-43WR.
- Preparation Before Use
  This section explains how to install the NX-43WR and the settings before using it.
- Reading the Display
  This section provides a basic explanation about the text displayed on the measurement screen when recording.
- Waveform Recording Settings Menu
  This section explains the waveform recording settings menu screen.
- Recording Modes
  This section explains the recording of sounds.
- Specifications
  This section lists the technical specifications of the NX-43WR.

Display	Meaning
Important	Failure to observe the precautions indicated by this may result in damage to the device.
Note	Denotes special information that is helpful in utilizing the capabilities of the device but that is not directly related to safety.

You can download the Instruction Manuals from our website:

https://rion-sv.com/nl-43_53_63/manual/

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Contents

1 Overview of This Product 8

2 Preparation Before Use 9

2.1 Installing 9

2.2 Uninstalling 12

2.3 If you cannot install 14

2.4 SD card 15

3 Reading the Display 16

4 Waveform Recording Settings Menu 18

4.1 Display method 18

4.2 Wave Rec. Mode 20

4.3 Sampling Frequency 20

4.4 Bit Length 21

4.5 Rec. Lev. Range 21

4.6 Frequency Weighting 22

4.7 File Splitting Interval (Total Recording) 22

4.8 Manual Rec. (Event Recording) 23

4.9 Level Rec. (Event Recording) 24

4.9.1 Channel 24

4.9.2 Trigger Level 25

4.9.3 Pre-time 25

4.9.4 Maximum Recording Time 25

4.9.5 Threshold Per Time Zone 26

4.10 Interval Rec. (Event Recording) 27

4.10.1 Rec. Interval 27

4.10.2 Rec. Time 27

5 Recording Modes 28

5.1 Total recording 29

5.1.1 Recording function settings 31

5.2 Event recording 34

5.2.1 Manual recording 34

5.2.2 Level recording 38
5.2.3 Interval recording 45
5.2.4 Priority order of recording modes 47
5.3 Store data format and file structure 48
5.4 Playing/analyzing recorded files 49
6 Communication Commands 50
7 Specifications 51

1

Overview of This Product

This program is a program card to add a sound pressure waveform recording function to the Class 2 Sound Level Meter NL-43, Class 1 Sound Level Meter NL-53, or Class 1 Sound Level Meter (with low-frequency sound measurement function) NL-63.
Sound pressure waveforms are recorded on the SD card along with the store data as a WAVE file in PCM format. It is therefore possible to play, check, and re-analyze the stored sound pressure waveforms on your computer.

Overview of recording function

The sound pressure waveforms are recorded together with the store data. Recording of just sound pressure waveforms is not possible.
There are two recording modes: Total recording and Event recording (Manual recording, Level recording, and Interval recording).

- Total recording (Total)
  Records the sound pressure waveforms for the whole time while storing in Auto store.
  By performing a store operation after measuring, manual store records the sound pressure waveforms for the whole time while measuring.
  It is not possible to play and re-analyze on the sound level meter itself.

- Event recording (Event)
  You can record sound pressure waveforms in Auto store or Timer Auto store. There are three methods for Event recording: Manual recording, Level recording, and Interval recording.
  - Manual recording
    Records the sound pressure waveforms for a chosen time during Auto store. Manual is used when the person taking the measurements records waveforms as necessary.
  - Level recording
    Records the sound pressure waveforms while the sound pressure exceeds the set level. This is used to record the sounds of high levels.
  - Interval recording
    Records sound pressure waveforms for 15 seconds, 1 minute, or 2 minutes after set fixed intervals of 10 minutes or 1 hour. This is done to grasp the environmental noise at predetermined times.

2 Preparation Before Use

2.1 Installing

Important

- Check that the power supply of the sound level meter is turned off before installing the program card.
- To install, ensure that either the battery is fully charged, or is charging via the USB cable or AC adapter.
- Never remove the program card while installing the optional program. Doing so may result in a malfunction.
- Never format the program card with SD card formatting software (such as SD Formatter etc.). Otherwise, the program data on the card will be erased and the respective functions no longer used. Restoration of the erased program is not guaranteed.
- Upgrade the firmware of the sound level meter to the latest version before installing the optional program. For the latest firmware version, check the download software section of the Support Room on the RION website (https://www.rion.co.jp/english/).

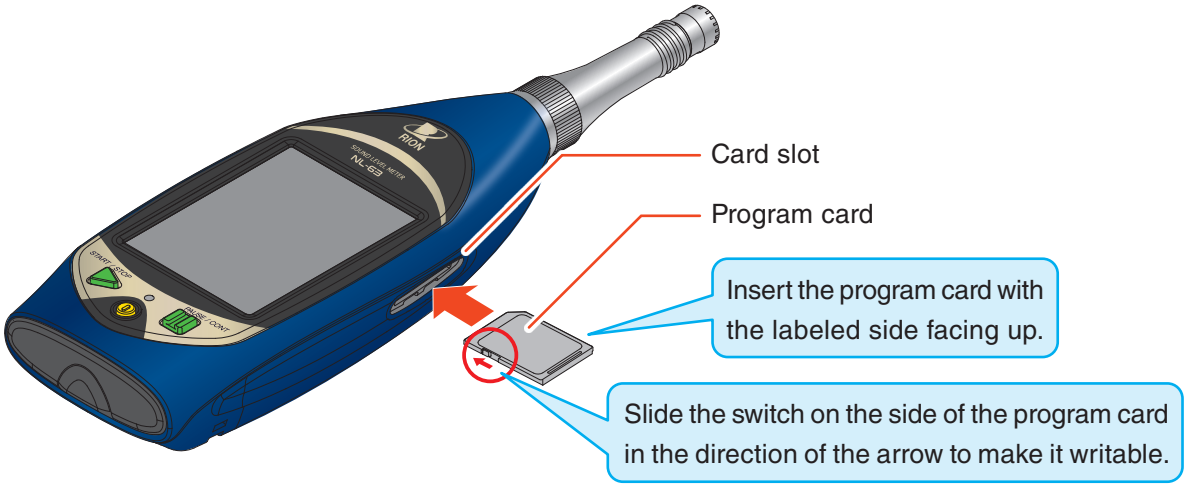
Note

- Before installing NX-43WR for NL-43/53, you must first install the function extension program NX-43EX.
- NX-43EX does not need to be installed for NL-63.
- If you install the optional program on one sound level meter, you will not be able to install it on other sound level meters. To install the optional program on other sound level meters, you will need to uninstall the optional program from the sound level meter on which it is installed.
- After installation is complete, the program card from which the program was installed can be used as an SD card for storing data.

1 Open the card slot cover on the right side of the sound level meter.

2 Insert the program card into the card slot.

With the labeled side of the program card facing up, insert it into the card slot until a clicking sound is made.

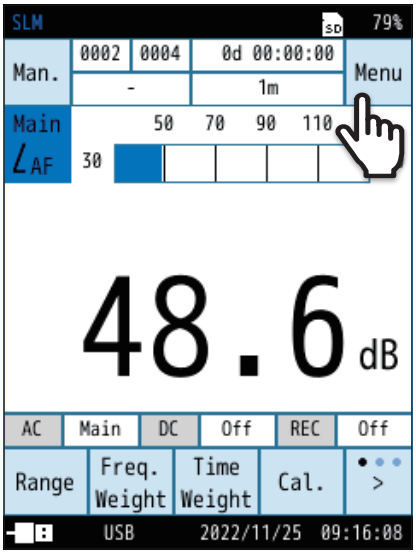


Note

- You will not be able to install the optional program if the write protection (read-only) of the program card is enabled. Make the program card writable.

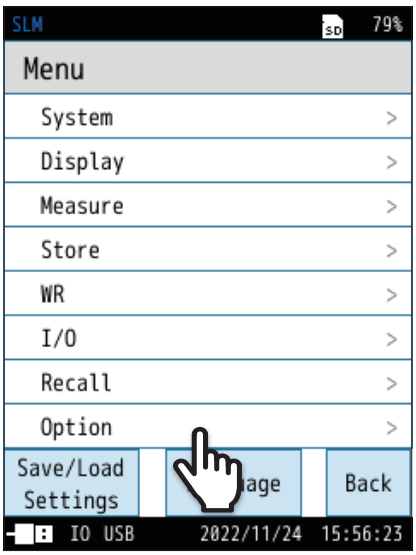
3 Touch [Menu] on the measurement screen.

The [Menu] screen appears.

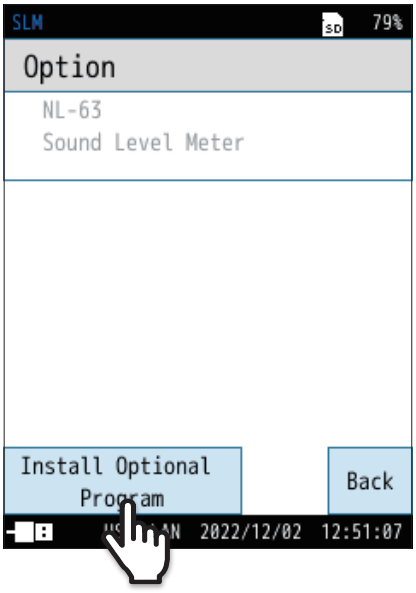


4 Touch [Option] on the [Menu] screen.

The [Option] screen appears.



5 Touch [Install Optional Program] on the [Option] screen.

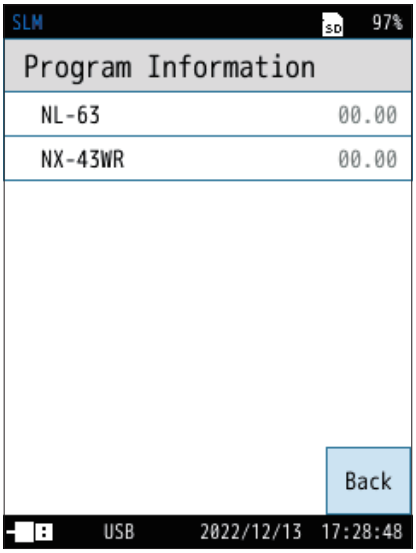


6 Touch [Install].

The waveform recording program will now be installed.



- You can check the installed programs from [Menu] - [System] - [System Information] - [Program Information].



2.2 Uninstalling

Important

- Check that the power supply of the sound level meter is turned off before installing the program card.
- To uninstall, ensure that either the battery is fully charged, or is charging via the USB cable or AC adapter.
- Never remove the program card while uninstalling. Doing so may result in a malfunction.

1 Open the card slot cover on the right side of the sound level meter.

2 Insert the program card used for installation into the card slot.

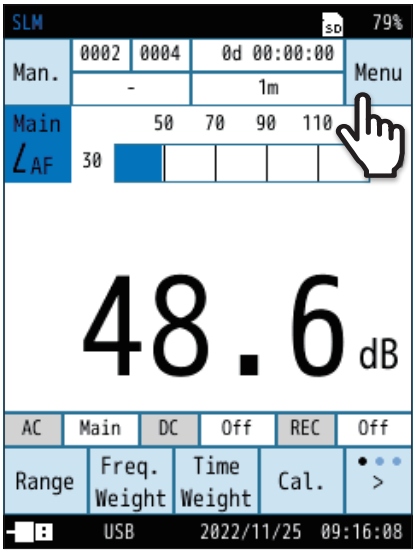
With the labeled side of the program card facing up, insert it into the card slot until a clicking sound is made (refer to Page 9).

Note

- You will not be able to uninstall the optional program if the write protection (read-only) of the program card is enabled. Make the program card writable.

3 Touch [Menu] on the measurement screen.

The [Menu] screen appears.

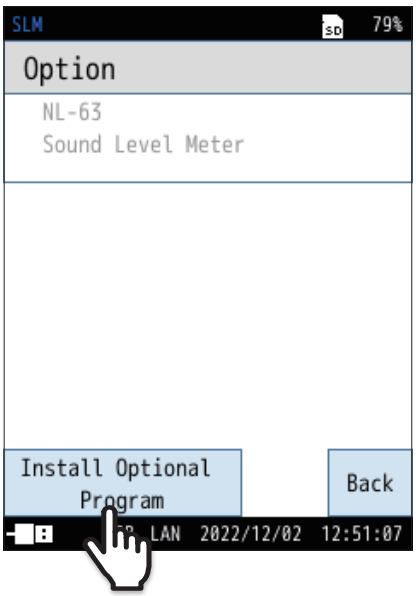


4 Touch [Option] on the [Menu] screen.

The [Option] screen appears.

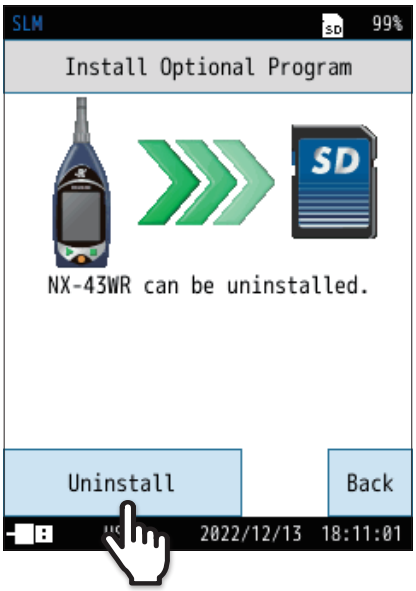


5 Touch [Install Optional Program] on the [Option] screen.



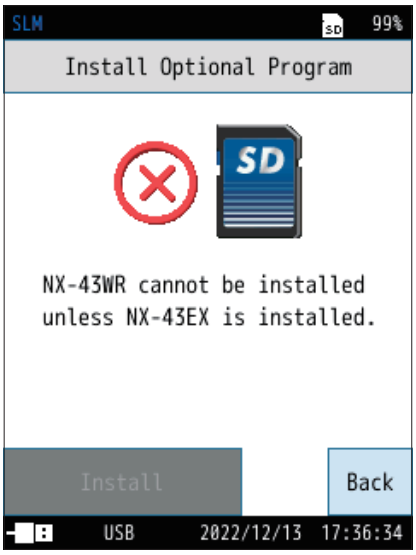
6 Touch [Uninstall].

The program will now be uninstalled.



2.3 If you cannot install

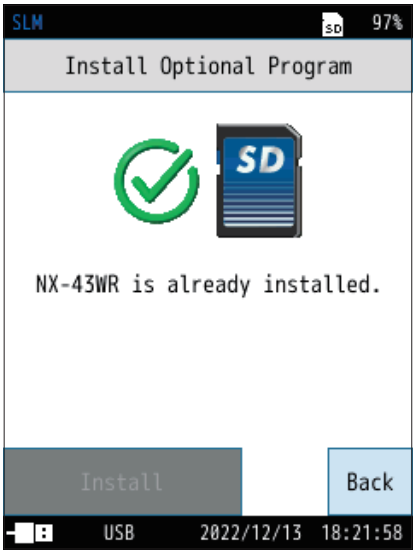
- If the function extension program NX-43EX is not installed on NL-43/NL-53, you will not be able to install NX-43WR.
  Touch [Back] or press the START/STOP key to return to the measurement screen.



Note

- NX-43EX does not need to be installed for NL-63.

- If NX-43WR is already installed, it cannot be installed again.



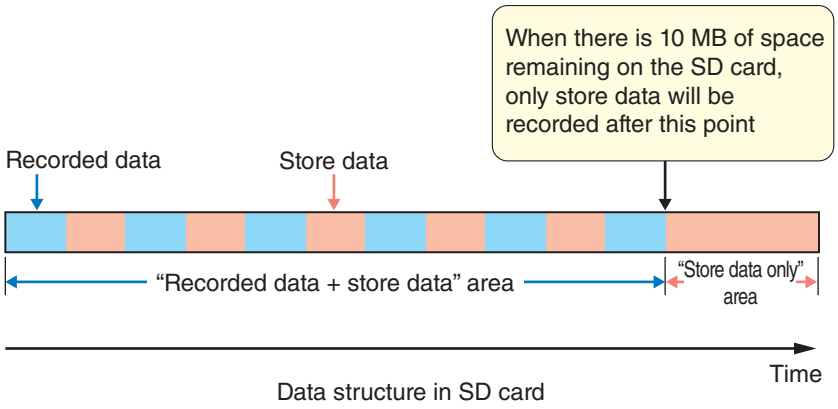
2.4 SD card

Note

- Make sure there is an SD card with sufficient space inserted into the card slot of the sound level meter. If there is not at least 10 MB of space, you will not be able to start measuring. Temporarily transfer the data or format the SD card for storing data with this device (refer to the Operation Guide).
- Use the SD cards sold by RION, as they are guaranteed to work. The performance of other cards is not guaranteed.

SD card capacity and recording time

Saving to the SD card is done in the “recorded data (WAVE file) + store data” area and the “store data only” area. When there is 10 MB of space remaining on the SD card, recording of the “recorded data (WAVE file) + store data” area will stop and only store data will be recorded.



Data structure in SD card

* The amount of data for both store data and recorded data varies depending on settings such as the store mode and sampling frequency. If there is a lot of short recorded data, the available recording time will be shortened by up to 20% due to the extra space created for memory management purposes.

The approximate SD card recording times are as follows.

Sampling frequency	SD card capacity		
	512 MB	2 GB	32 GB
48 kHz	1 h 10 min.	4 h 50 min.	74 hours
24 kHz	2 h 20 min.	9 h 30 min.	146 hours
12 kHz	4 h 30 min.	18 h 10 min.	278 hours
1.2 kHz	24 hours	100 hours	1520 hours
240 Hz	41 hours	165 hours	2520 hours

* Based on the conditions of Auto store, a bit length of 16 bit, and an L_p store cycle of 100 ms

Note

- [240 Hz] and [1.2 kHz] are features available only with the NL-63.
- The duration of recording in 24 bit becomes shorter than that of recording in 16 bit because the data volume of 24 bit is about 1.5 times larger.

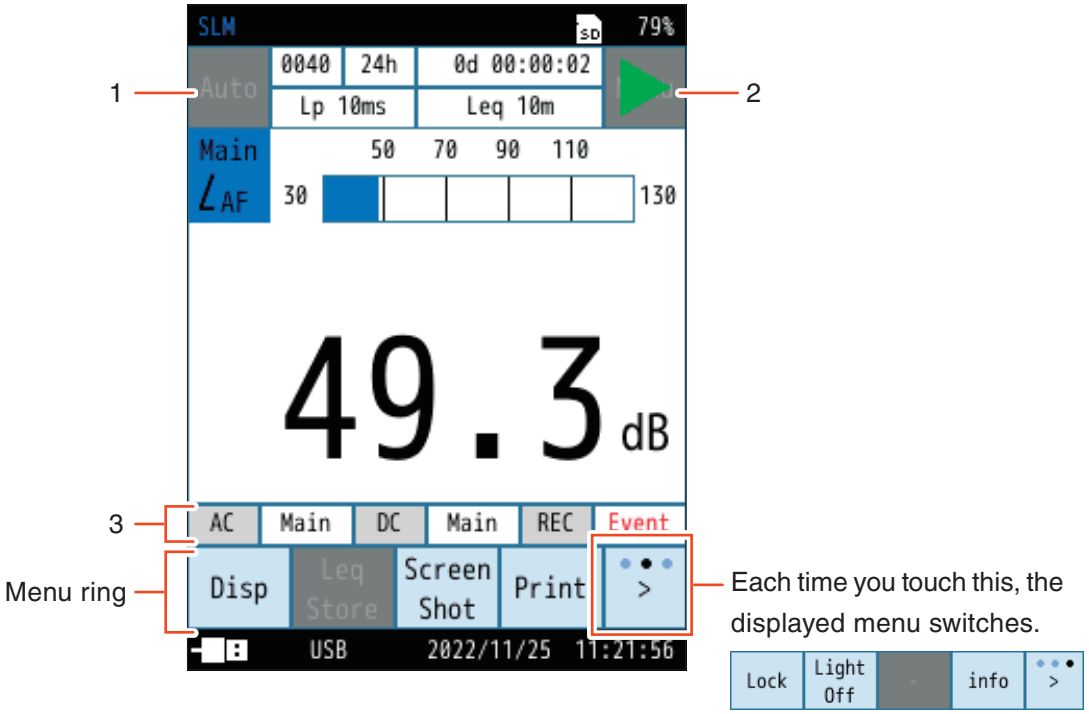
3

Reading the Display

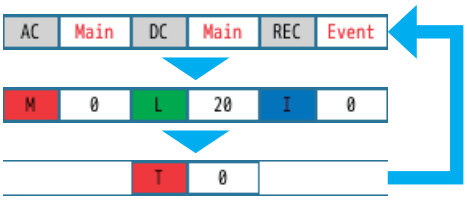
The measurement screen when recording is as shown in the figure below.

Note

- The screens shown in this instruction manual are only examples. They may differ from the actual screens.



No.	Name	Description
1	Store mode	Displays the store mode when saving to memory. There are three store modes: Manual, Auto, and Timer Auto.
2	Menu / measurement status	Touch to display the [Menu] screen. The following icons appear when measuring. ▶ : ▶ and Rec. appear alternately while recording in a measurement state. In addition, the indicator LED flashes red. ■ : Flashes during measurement standby in Timer Auto mode. In addition, the indicator LED flashes blue. Lock : Flashes when the operation is locked. Touching the key lock on the menu ring locks all setting values. Operations other than turning off the screen and unlocking the key lock will not provoke a response. To turn off the power, disable the operation lock and then press the POWER key. * The Pause function cannot be used when the waveform recording function is set to anything other than Off.

<table>
<tr><th>No.</th><th>Name</th><th>Description</th></tr>
<tr><td>3</td><td>Information display bar
(Recording mode /
Number of files)</td><td>
Each time you touch the [info]* on the menu ring, the displayed information will switch.
* [info] is displayed by touching [>] on the far right of the menu ring.


This displays the recording mode of waveform recording and the number of files recorded in each mode.
<table>
<tr><td>REC Event</td><td>The recording mode of the recording function is displayed.
Select from [Off] (no sound), [Total], or [Event].
The character color changes depending on the setting of [Output Level Range] (refer to the Operation Guide).
• The output level range is linked to the graph upper limit or set to [Off]: Black text Event
• The output level range is set to 70 dB to 130 dB: Red text Event
If the volume exceeds the value set in [Menu] - [WR] - [Total/Event] - [Rec. Lev. Range] (Page 21), the background color of the letters REC turns red REC and is shown for at least 1 second. In this case, set [Rec. Lev. Range] to a larger value.</td></tr>
<tr><td>M 0</td><td>The number of files recorded in Manual recording mode is displayed.</td></tr>
<tr><td>L 20</td><td>The number of files recorded in Level recording mode is displayed.</td></tr>
<tr><td>I 0</td><td>The number of files recorded in Interval recording mode is displayed.</td></tr>
<tr><td>T 0</td><td>The number of files recorded in Total recording mode is displayed.</td></tr>
</table>
</td></tr>
</table>

Created recording files start from 0001 and go up to 9999.

- Manual recording SM0001.WAV to SM9999.WAV
- Level recording SL0001.WAV to SL9999.WAV
- Interval recording SI0001.WAV to SI9999.WAV
- Total recording ST0001.WAV to ST9999.WAV

* The numbers of “SM0001” and so on represent the file’s serial number. No file labeled “0000” will be created.

Note

- When a file reaches 9999, recording will stop.

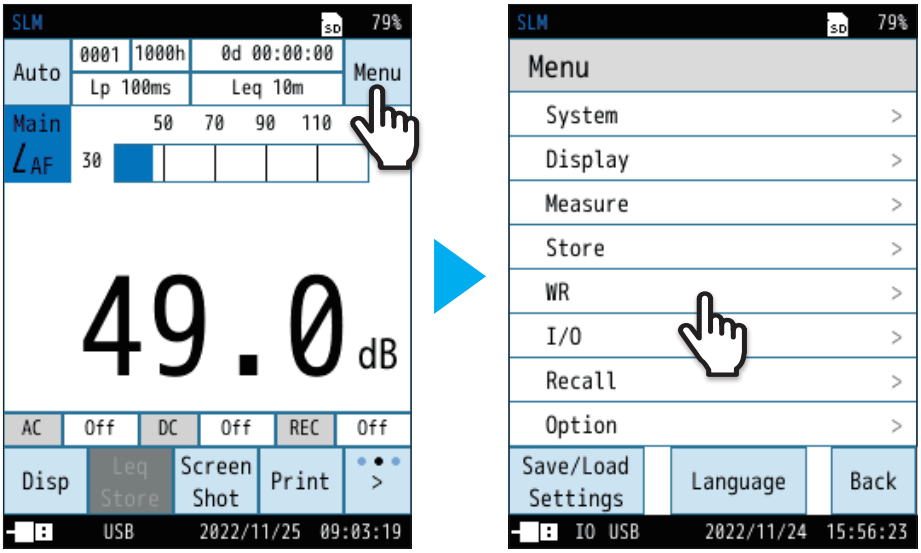
4

Waveform Recording Settings Menu

4.1 Display method

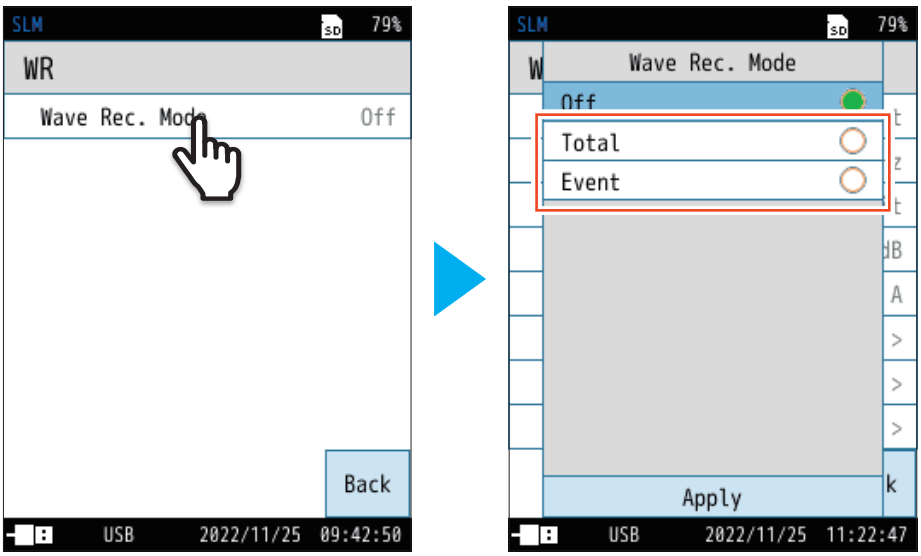
1 **From the measurement screen, touch [Menu] - [WR].**

The waveform recording screen appears.

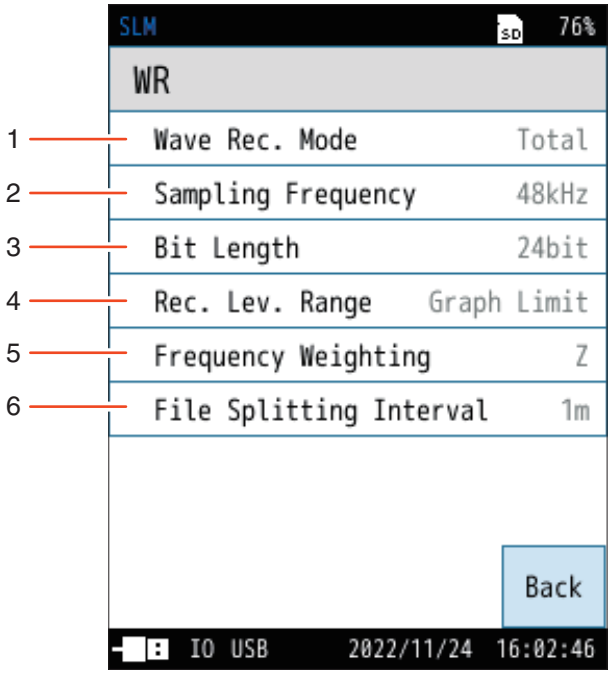


2 **Touch [Wave Rec. Mode], and then select [Total] or [Event].**

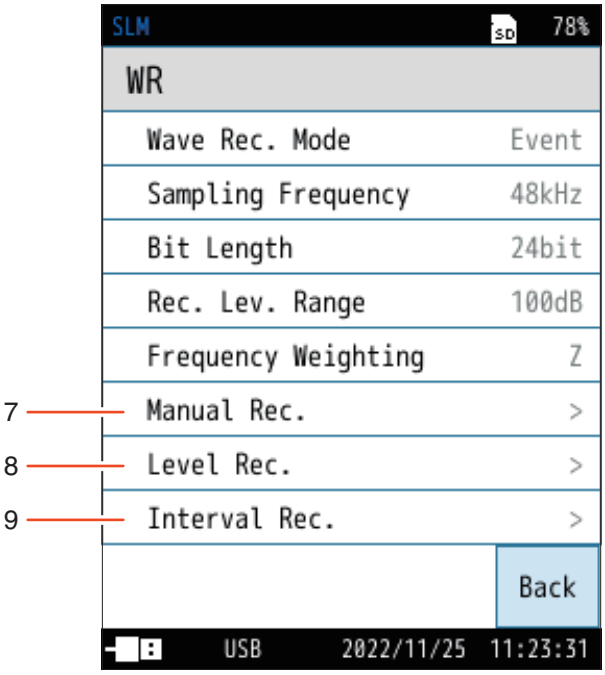
The appearance of the waveform recording screen differs according to the [Wave Rec. Mode] settings.



When [Total] is selected for [Wave Rec. Mode]



When [Event] is selected for [Wave Rec. Mode]



No.	Name	Description
1	Wave Rec. Mode	Sets the waveform recording function (Page 20).
2	Sampling Frequency	Sets the sampling frequency to be recorded (Page 20).
3	Bit Length	Sets the bit length of the data to be recorded (Page 21).
4	Rec. Lev. Range	Sets the recording level range (Page 21).
5	Frequency Weighting	Sets the frequency weighting (Page 22).
6	File Splitting Interval (Total recording)	Sets the size of one file when recording waveforms (Page 22).
7	Manual Rec. (Event recording)	Turns on/off Manual recording (Page 23).
8	Level Rec. (Event recording)	Turns on/off Level recording (Page 24).
9	Interval Rec. (Event recording)	Turns on/off Interval recording (Page 27).

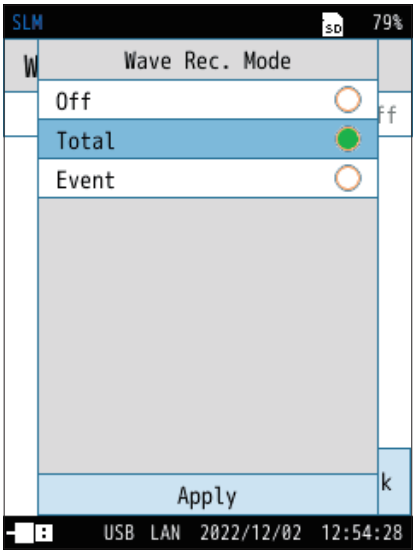
4.2 Wave Rec. Mode

Sets the waveform recording function.

Item	Description
Off	Waveform recording will not be performed.
Total	Records waveforms for the whole time from the start to the end of measuring.
Event	You can perform Manual recording, Level recording, or Interval recording.

Note

- [Event] is displayed only in Auto mode or Timer Auto mode.

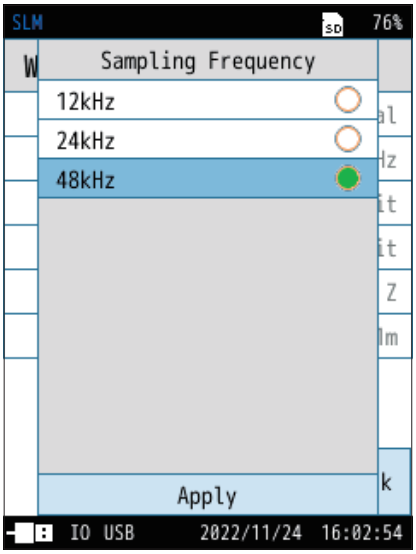


4.3 Sampling Frequency

Used to select the sampling frequency to be recorded.
The higher the setting value, the higher the sound frequencies that can be analyzed and played.

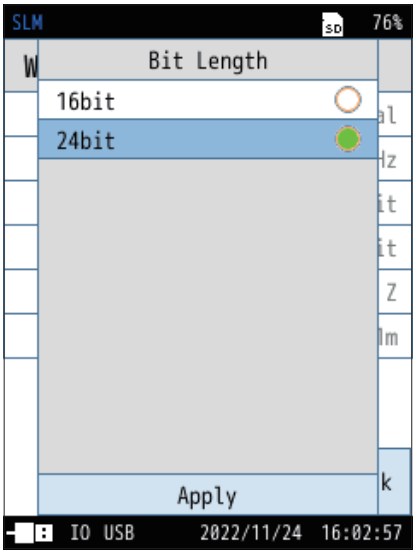
Note

- [240Hz] and [1.2kHz] are features available only with the NL-63.



4.4 Bit Length

Sets the bit length of the data to be recorded.
The higher the setting value, the more accurate the analysis and the higher the play quality will be.

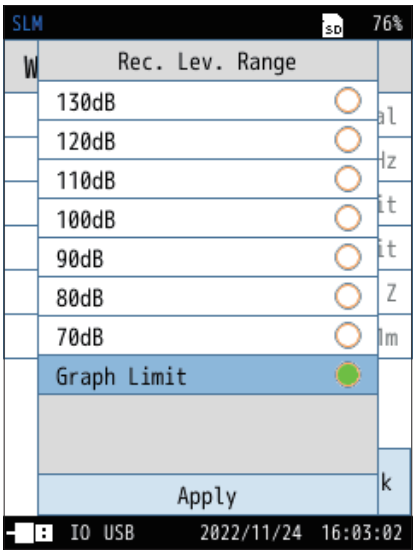


Note

- For high-precision analysis, set the bit length to [24bit]. However, as this increases the amount of data, the recording time will become shorter.
- You can analyze at an even greater precision by lowering the [Rec. Lev. Range]. However, set the [Rec. Lev. Range] so that it is not an excessive input (overload) and does not become REC (Page 17).
- When set to [16bit], you can obtain a dynamic range of approximately 80 dB from the [Rec. Lev. Range] (upper limit range for recording).
- When set to [24bit], you can obtain a dynamic range of approximately 130 dB from the [Rec. Lev. Range] (upper limit range for recording).

4.5 Rec. Lev. Range

Sets the upper range of the waveform data recording. If the range is large in relation to the measured values, the playback sound will be quiet.



Item	Description
130dB	Sets the upper range of the recorded sounds. Used to select the upper limit from 70 dB to 130 dB in 10 dB increments.
120dB	
110dB	
100dB	
90dB	
80dB	
70dB	
Graph Limit	Sets it to the same upper limit as the bar graph.

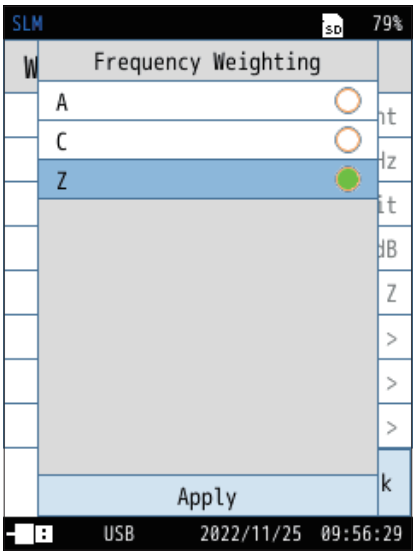
Note

- For high-precision analysis, set the bit length to [24bit]. However, as this increases the amount of data, the recording time will become shorter.
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- When set to [24bit], you can obtain a dynamic range of approximately 130 dB from the [Rec. Lev. Range] (upper limit range for recording).

4.6 Frequency Weighting

Sets the frequency weighting for the waveform to be recorded.

Item	Description
A	Sets A-weighting.
C	Sets C-weighting.
Z	Sets Z-weighting.
G	Sets G-weighting.
Z (HPF)	Sets Z-weighting and high-pass filter.
Z (LPF,100Hz)	Sets Z-weighting and low-pass filter (cutoff frequency 100 Hz).
Z (LPF,500Hz)	Sets Z-weighting and low-pass filter (cutoff frequency 500 Hz).

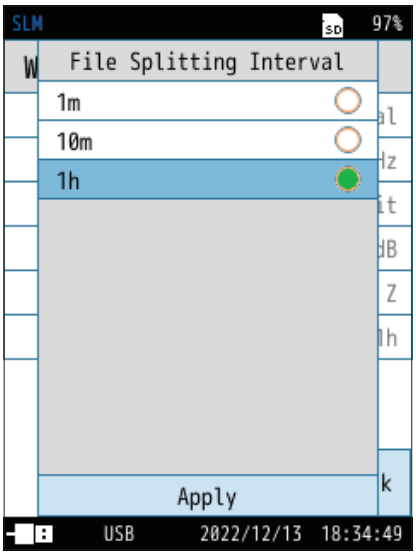


Note

- Sets the frequency weighting for the waveform to be recorded. Note that this is different from the frequency weighting set on the sound level meter itself.
- G, Z (HPF), Z (LPF,100Hz), and Z (LPF,500Hz) weighting are features of the NL-63 only.

4.7 File Splitting Interval (Total Recording)

Used to select the size of one file when recording waveforms.



(m = minutes, h = hours)

Note

- If the File Splitting Interval is short, the splitting number upper limit of 9999 files will be reached quickly. This also consumes extra space for memory management, reducing space that can be used for measurements by up to about 20%.

4.8 Manual Rec. (Event Recording)

Used to configure the manual recording settings (Page 34).

Item	Description
Rec.	Turns on/off manual recording.
Pre-time	You can configure this setting so that the data just before the recording start operation is also recorded (the selected time will be recorded retroactively). You can select from [Off], [1s], [5s], [10s], [30s], and [1m].

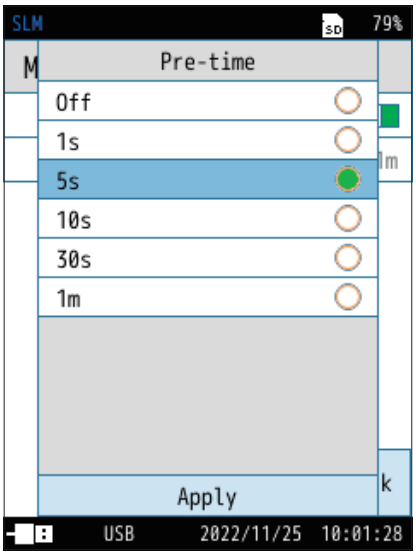
* In manual recording, the maximum recording time for one recording is the pre-time + 1 hour. Recording will automatically stop after recording for one hour, excluding the pre-time.



(s = seconds, m = minutes)

Pre-time

You can configure this setting so that the data just before the recording start operation is also recorded (the selected time will be recorded retroactively).

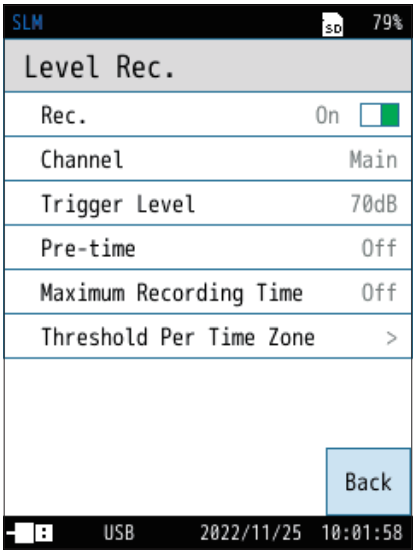


(s = seconds, m = minutes)

4.9 Level Rec. (Event Recording)

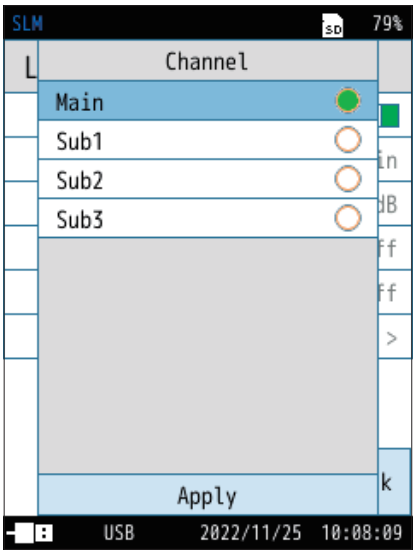
Used to configure the level recording settings (Page 38).

Item	Description
Rec.	Turns on/off Level recording.
Channel	Sets the channel to be subject to the Level Rec. judgment.
Trigger Level	Sets the trigger level for waveform recording.
Pre-time	You can configure this setting so that the data just before the recording start operation is also recorded (the selected time will be recorded retroactively).
Maximum Recording Time	Sets the [Maximum Recording Time] of Level Rec.
Threshold Per Time Zone	You can set a measurement time zone. You can set different waveform recording trigger levels for up to 4 categories from [Time1] to [Time4].



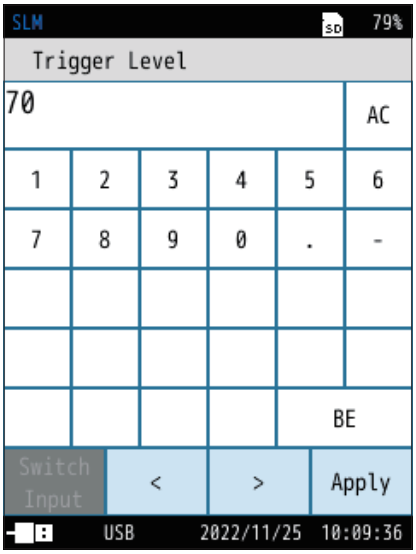
4.9.1 Channel

Used to select the channel to be subject to the Level Rec. judgment.



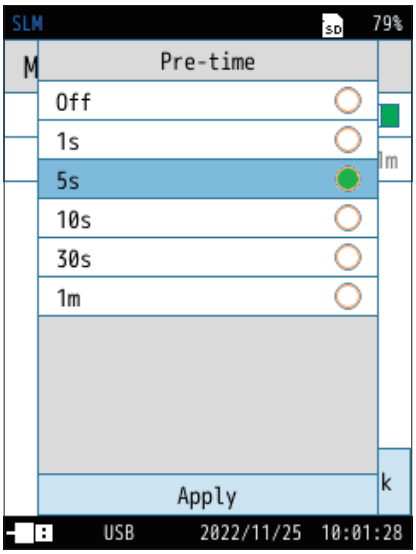
4.9.2 Trigger Level

Sets the trigger level for waveform recording.
The value that can be set is 30 dB to 130 dB in 1 dB increments.
This can be set when all [Threshold Per Time Zone] items are set to [Off].



4.9.3 Pre-time

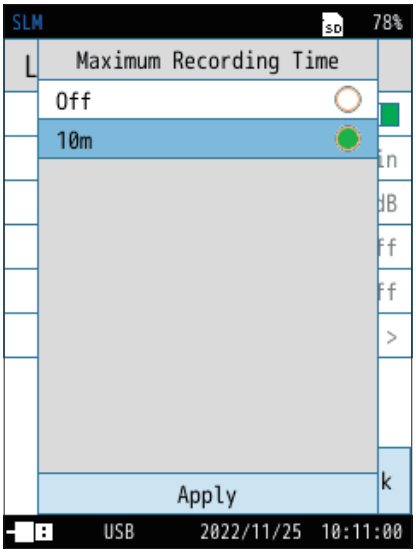
You can configure this setting so that the data just before the recording start operation is also recorded (the selected time will be recorded retroactively).



(s = seconds, m = minutes)

4.9.4 Maximum Recording Time

Sets the [Maximum Recording Time] of Level Rec.
If set to [10m], recording will automatically stop if the sound exceeds the [Trigger Level] for 10 minutes.
This reduces memory consumption due to long recordings in cases where the trigger level is not set properly.

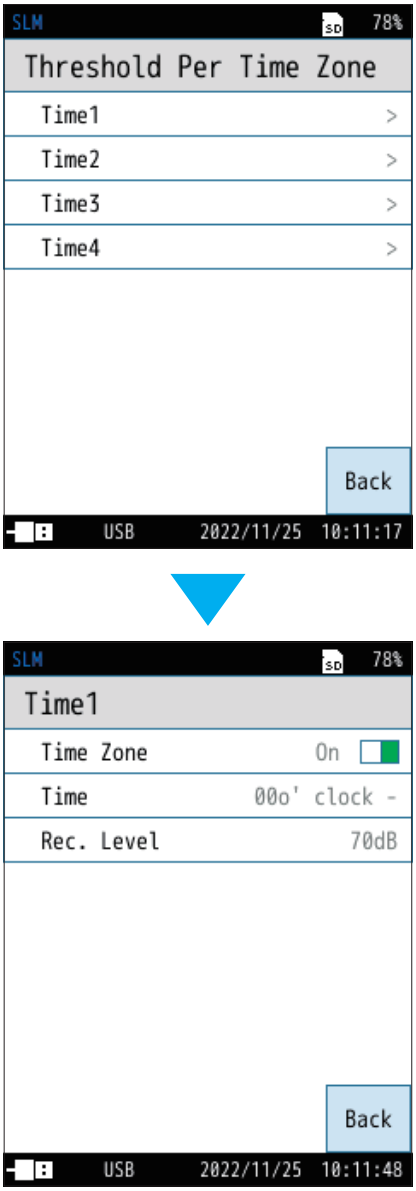


(m = minutes)

4.9.5 Threshold Per Time Zone

You can set a measurement time zone. You can set different waveform recording trigger levels for up to 4 categories from [Time1] to [Time4].

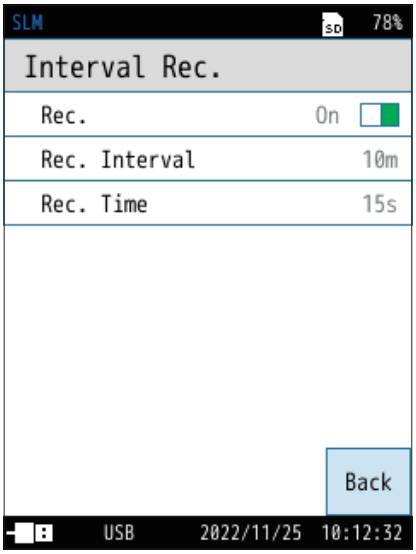
Item	Description
Time Zone	Turns on/off the selected time zone settings.
Time	Sets the measurement start time. You can select from 00 o'clock to 23 o'clock.
Rec. Level	Sets the measuring trigger level. The value that can be set is 30 dB to 130 dB in 1 dB increments.



4.10 Interval Rec. (Event Recording)

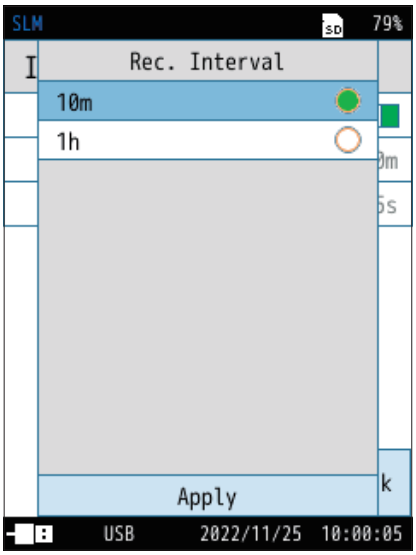
Used to configure the interval recording settings (Page 45).

Item	Description
Rec.	Turns on/off interval recording.
Rec. Interval	You can set the interval for starting recording.
Rec. Time	You can set the recording time for each set recording interval.



4.10.1 Rec. Interval

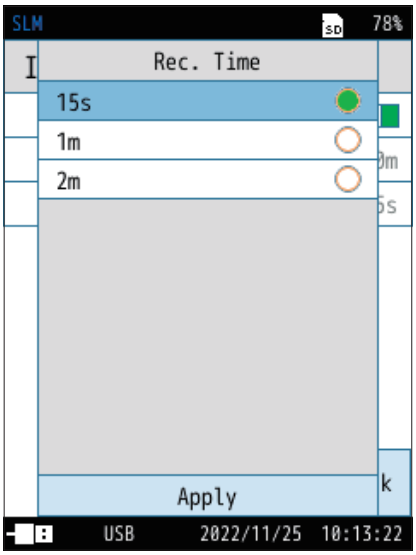
Sets the interval for starting recording.



(m = minutes, h = hours)

4.10.2 Rec. Time

You can set the recording time for each set recording interval.



(s = seconds, m = minutes)

5 Recording Modes

The NX-43WR program has two recording modes: Total recording and Event recording (Manual recording, Level recording, and Interval recording).

Recording mode	Store mode		
	Manual	Auto	Timer Auto
Total recording	✓	✓	✓
Event recording	×	✓	✓

Note

- The recorded data will reflect the frequency weighting set in [Frequency Weighting] (Page 22).
- If the measurement time is shorter than the recording time set in this program, the actual recording time will be the measurement time.
- When recording, be aware of the [Rec. Lev. Range] setting of the sound level meter.
  If [Rec. Lev. Range] is set too high compared to the noise level to be measured, the recorded sounds will be too quiet and difficult to hear when played on a computer.
- If you set [Bit Length] to [24bit] and record, you may not be able to play the recorded data depending on the Windows version or soundboard type installed on your computer.
  After installation is complete, the program card for this program can be used as a memory card for storing data.
- Prior to measurement, it is recommended to first format with the sound level meter the memory card for storing data.
- Make sure there is an SD card with sufficient space inserted into the card slot of the sound level meter. An SD card must be inserted to be able to record.
- It is not possible to play and re-analyze on the sound level meter itself.

5.1 Total recording

In Auto mode or Timer Auto mode, all sound pressure waveforms during storing are recorded.
By performing a store operation after measuring, the Manual mode records the sound pressure waveforms for all time while measuring.

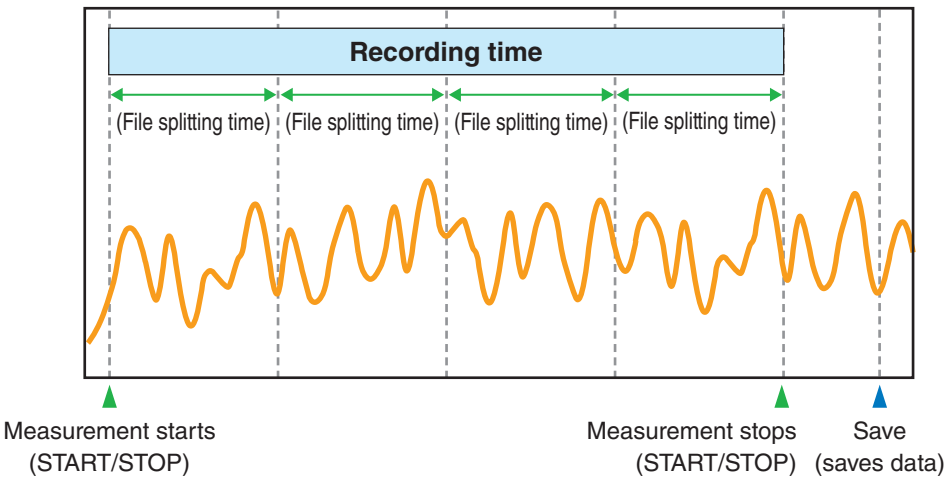
Total recording concept diagram

• In Manual mode

Press the START/STOP key to start measuring/recording, and press the START/STOP key again to end measuring/recording. Measuring/recording stops automatically when the specified measurement time has elapsed.
If you select [Save data] on the confirmation screen at the end of measuring, the measured data and recorded data will be saved.

* The PAUSE/CONT key (PAUSE function) and back erase function cannot be used while recording.

In the case of Manual store

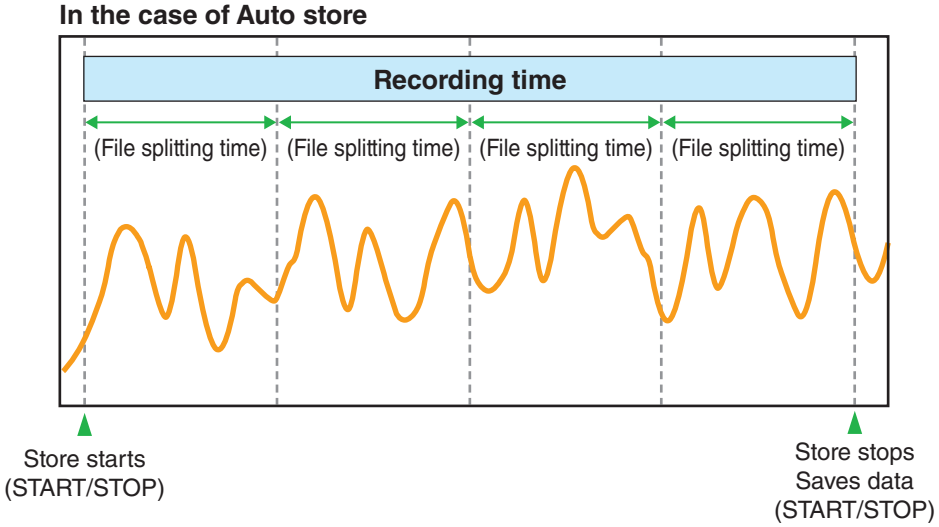


• In Auto mode

Press the START/STOP key to start Auto store/recording. The data is automatically saved each time the set L_p store interval and L_{eq} calculation interval elapse.
To finish Auto store/recording, press the START/STOP key. Auto store/recording stops automatically when the specified total measurement time has elapsed.

* Data is divided up and saved for each recording period.
* The PAUSE/CONT key (PAUSE function) cannot be used while recording.

In the case of Auto store



• In Timer Auto mode

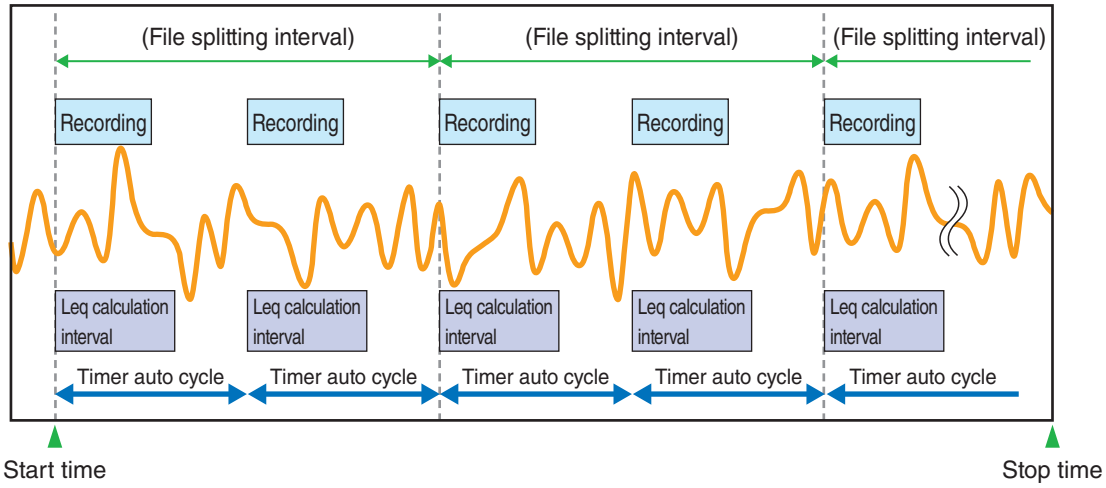
Auto store/recording starts at the set start time. The data is automatically saved each time the set L_p store interval and *L*eq calculation interval elapse.

To finish Auto store/recording, press the START/STOP key. Auto store/recording stops automatically when the specified stop time has elapsed.

* Data is divided up and saved for each recording period.
* The PAUSE/CONT key (PAUSE function) cannot be used while recording.

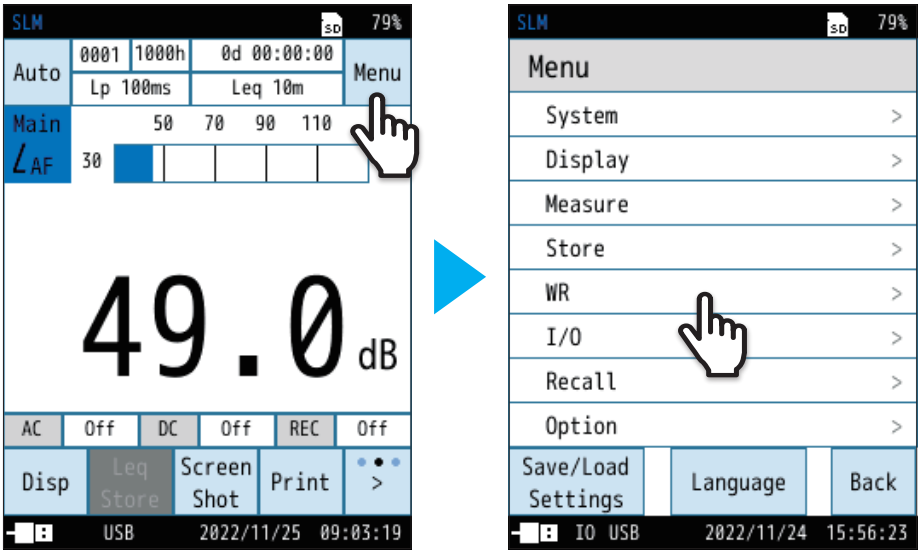
In the case of Timer Auto

Timer Auto store	Leq calculation interval	15m (Off, 10s, 1m, 5m, 10m, 15m, 30m, 1h, 8h, 24h)
	Timer auto cycle	30m (Off, 5m, 10m, 15m, 30m, 1h, 8h, 24h)
Total recording	File splitting interval	1h (1m, 10m, 1h) (s = seconds, m = minutes, h = hours)

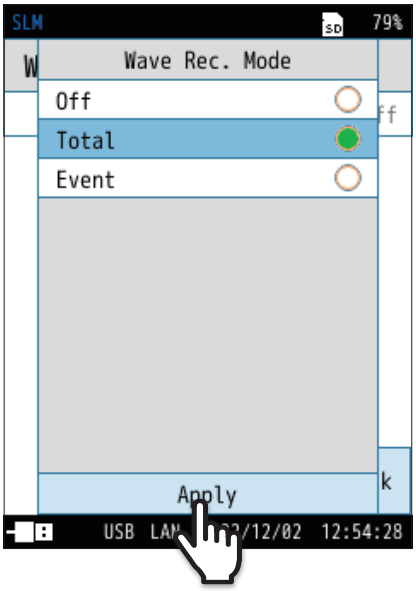


5.1.1 Recording function settings

1 **From the measurement screen, touch [Menu] - [WR].**



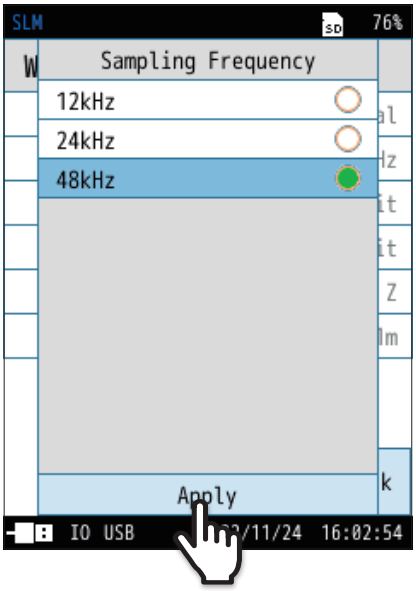
2 **Select [Total], and then touch [Apply].**



3 Set [Sampling Frequency].

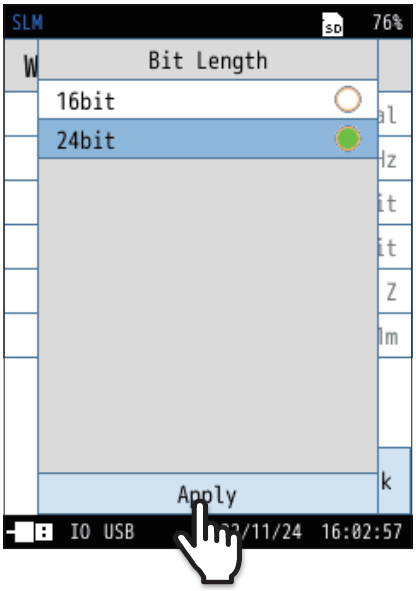
1. **Touch [Sampling Frequency] on the [WR] screen.**
   The [Sampling Frequency] screen appears.
2. **Select the sampling frequency to be recorded, and then touch [Apply].**

Note
- [240Hz] and [1.2kHz] are features available only with the NL-63.



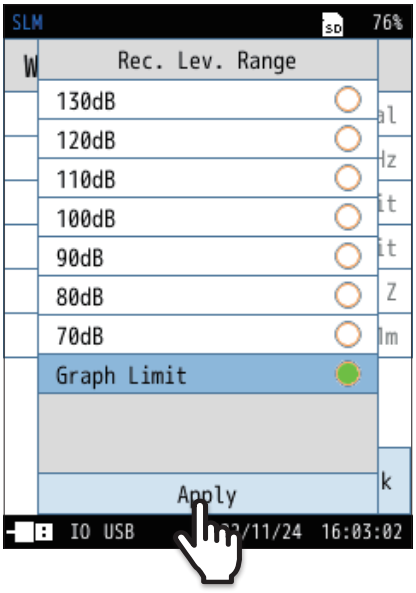
4 Set [Bit Length].

1. **Touch [Bit Length] on the [WR] screen.**
   The [Bit Length] screen appears.
2. **Select the bit length of the data to be recorded, and then touch [Apply].**



5 Set [Rec. Lev. Range].

1. **Touch [Rec. Lev. Range] on the [WR] screen.**
   The [Rec. Lev. Range] screen appears.
2. **Select a record level range, and then touch [Apply].**

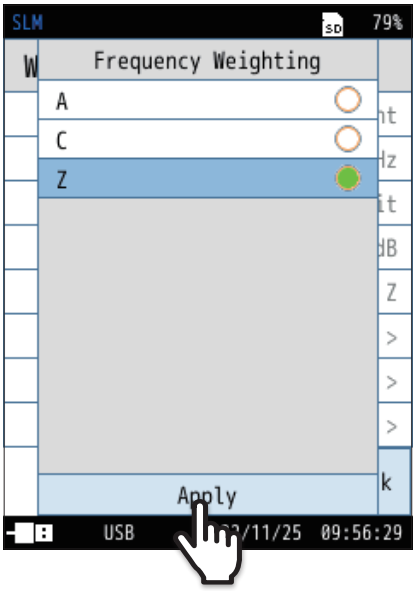


6 Set [Frequency Weighting].

1. **Touch [Frequency Weighting] on the [WR] screen.**
   The [Frequency Weighting] screen appears.
2. **Select a frequency weighting, and then touch [Apply].**

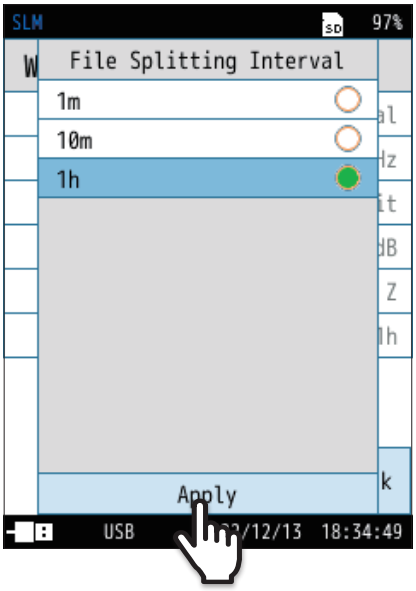
Note

- G, Z (HPF), Z (LPF,100Hz), and Z (LPF,500Hz) weighting are features of the NL-63 only.



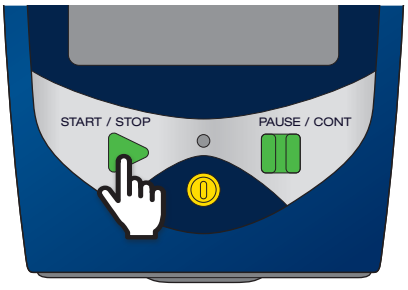
7 Set [File Splitting Interval].

1. **Touch [File Splitting Interval] on the [WR] screen.**
   The [File Splitting Interval] screen appears.
2. **Select a file splitting interval for when recording waveforms, and then touch [Apply].**



(m = minutes, h = hours)

8 Touch [Back] or press the START/STOP key to return to the measurement screen.



9 Press the START/STOP key to start measuring or Auto store.

If you start measuring or Auto store, recording will start at the same time.

5.2 Event recording

Sound pressure waveforms can be recorded only in Auto mode or Timer Auto mode.
Event mode has three methods: Manual recording, Level recording, and Interval recording.

Note

- It is not possible to play and re-analyze on the sound level meter itself.

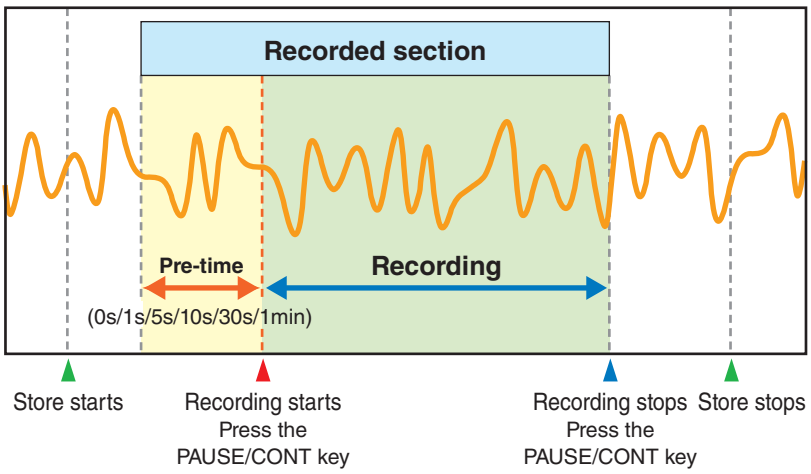
5.2.1 Manual recording

Records the sound pressure waveforms for a chosen time during Auto store. Manual is used when the person taking the measurements records waveforms as they see fit.

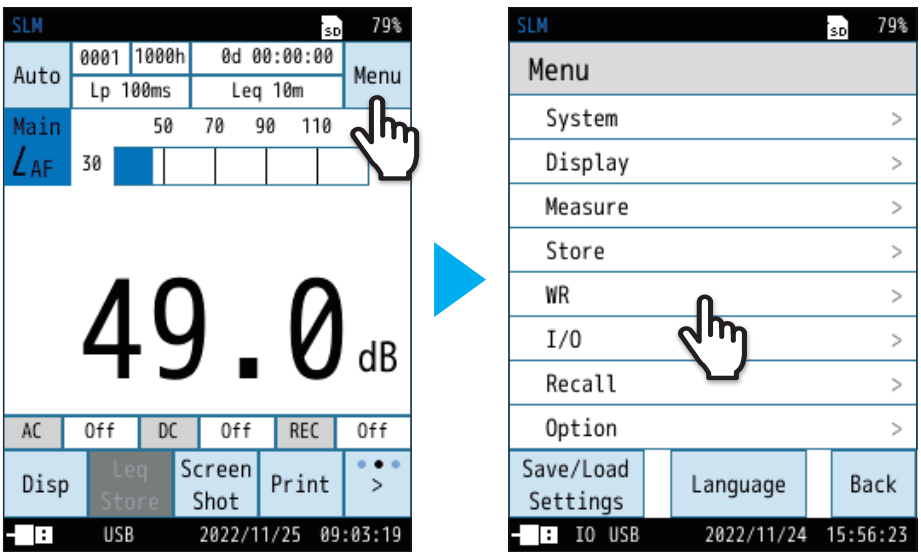
Note

- The maximum recording time for one recording in Manual recording is 1 hour.
- If events occur at the same time, priority is given in the following order: Manual > Level > Interval (Page 47).

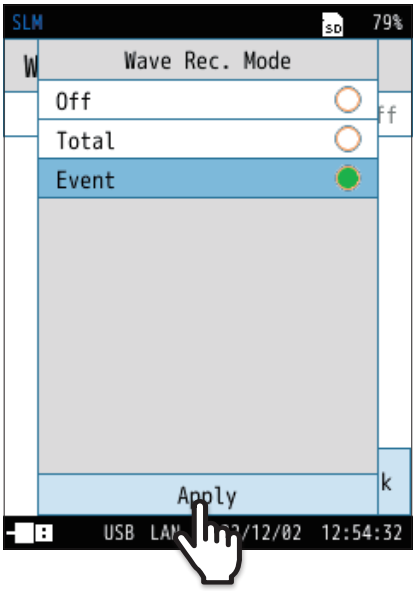
Manual recording concept diagram



1 From the measurement screen, touch [Menu] - [WR].

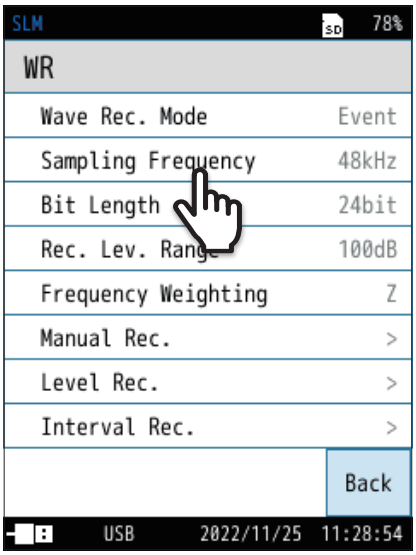


2 Select [Event], and then touch [Apply].



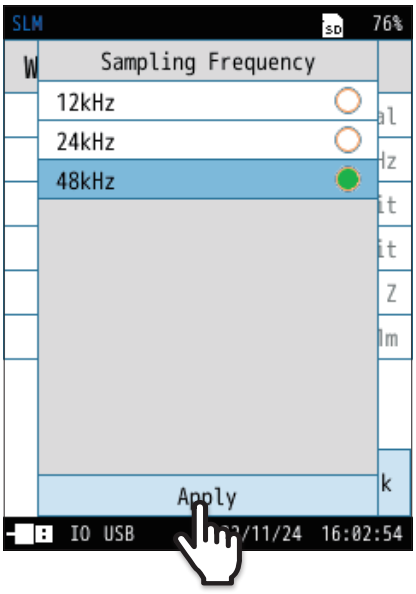
3 Set [Sampling Frequency].

1. **Touch [Sampling Frequency] on the [WR] screen.**
   The [Sampling Frequency] screen appears.



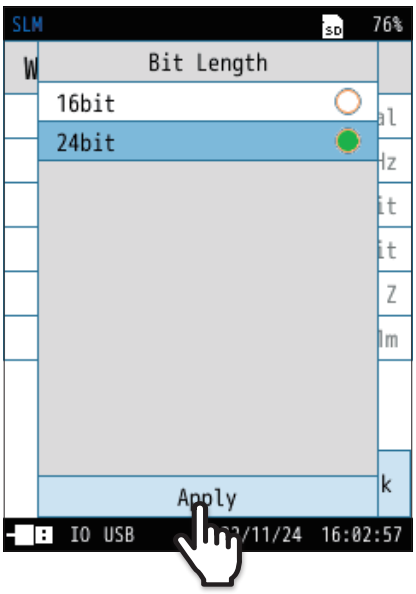
> **Note**
> • [240Hz] and [1.2kHz] are features available only with the NL-63.

2. **Select the sampling frequency to be recorded, and then touch [Apply].**



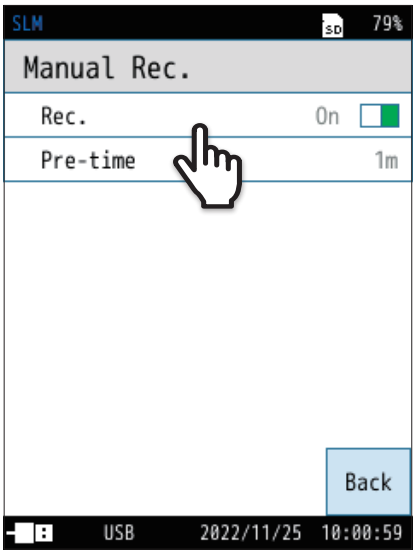
4 Set [Bit Length].

1. **Touch [Bit Length] on the [WR] screen.**
   The [Bit Length] screen appears.
2. **Select the bit length of the data to be recorded, and then touch [Apply].**



5 Set [Manual Rec.] to [On].

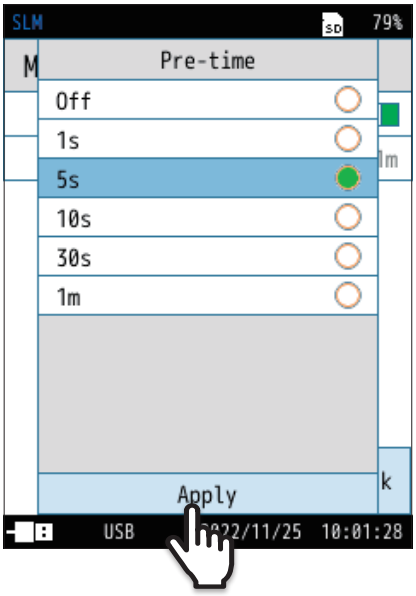
On the [WR] screen, touch [Manual Rec] - [Rec.] to set it to [On].



6 Set [Pre-time].

1. **Touch [Pre-time] on the [Manual Rec.] screen.**
   The [Pre-time] screen appears.
2. **Select a pre-time, and then touch [Apply].**

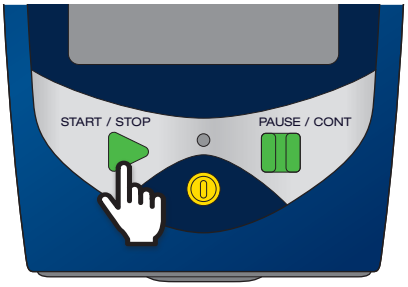
* In manual recording the maximum recording time for one recording is the pre-time + 1 hour. Recording will automatically stop after recording for one hour, excluding the pre-time.



(s = seconds, m = minutes)

7 **Touch [Back] or press the START/STOP key to return to the measurement screen.**

8 **Press the START/STOP key to start Auto store.**



9 **Pressing the PAUSE/CONT key starts recording retroactively for the amount of time set in [Pre-time].**

To finish recording, press the PAUSE/CONT key.

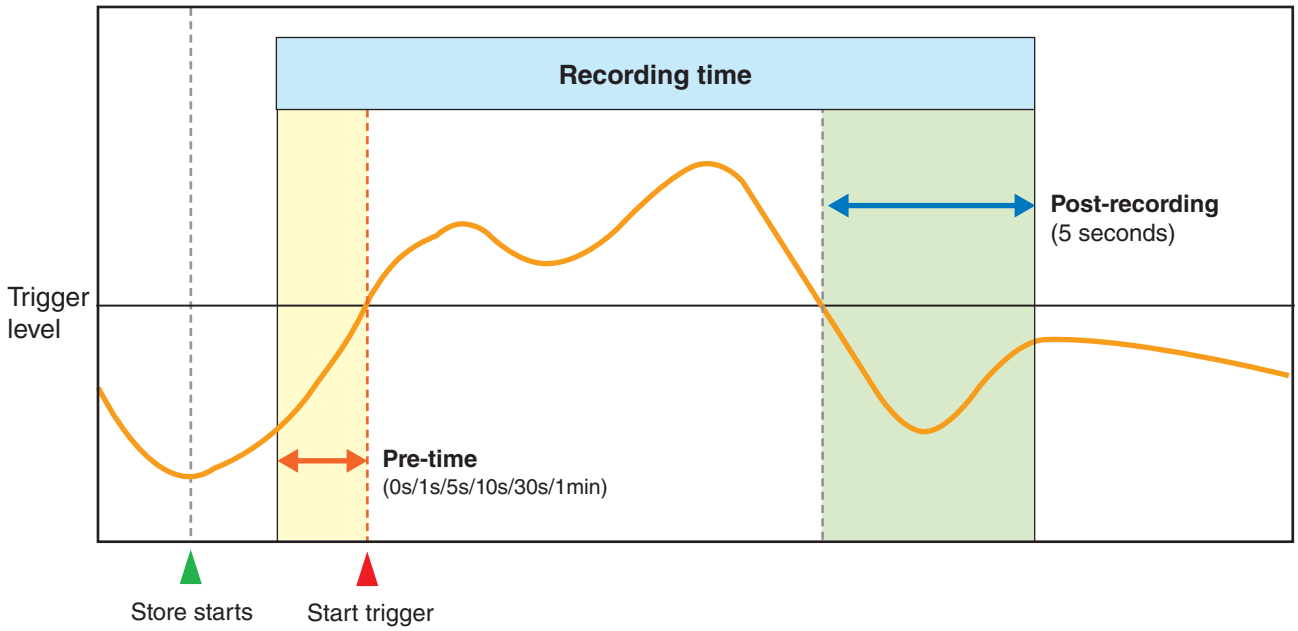
5.2.2 Level recording

Automatically records the sound pressure waveforms while the sound pressure exceeds the set level. Level is used to record the sounds of a large level.

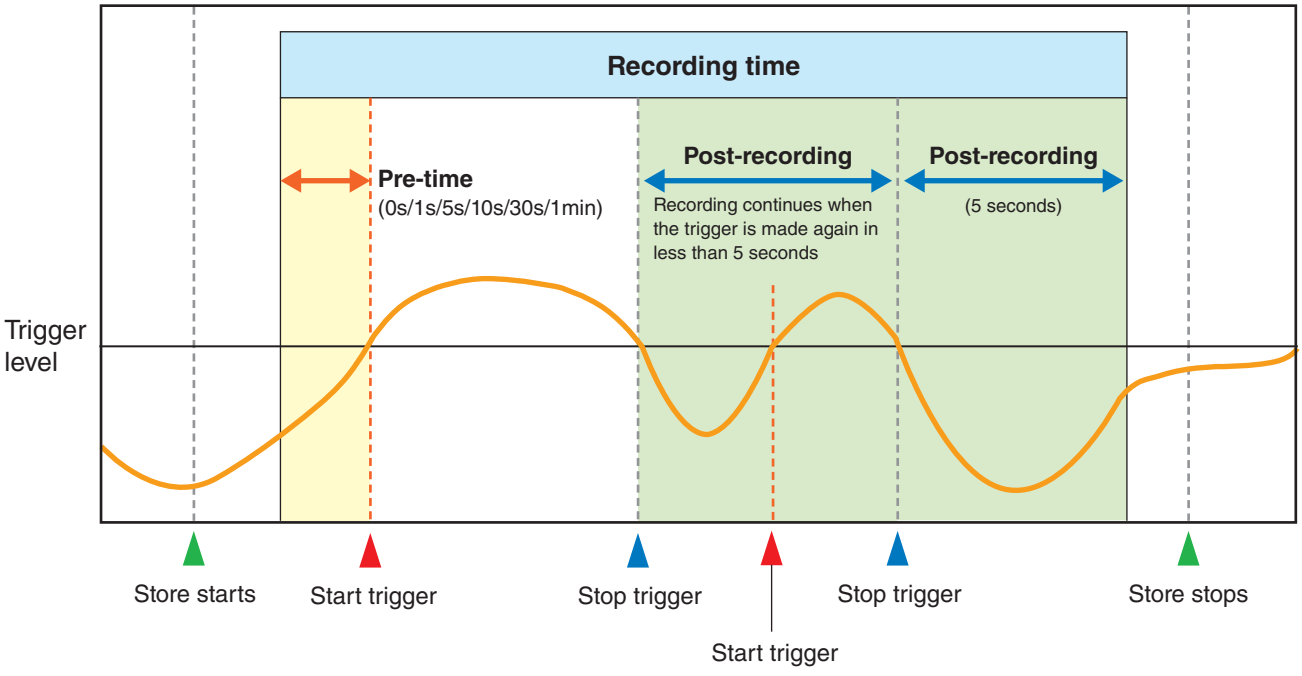
Note

- If events occur at the same time, priority is given in the following order: Manual > Level > Interval (Page 47).

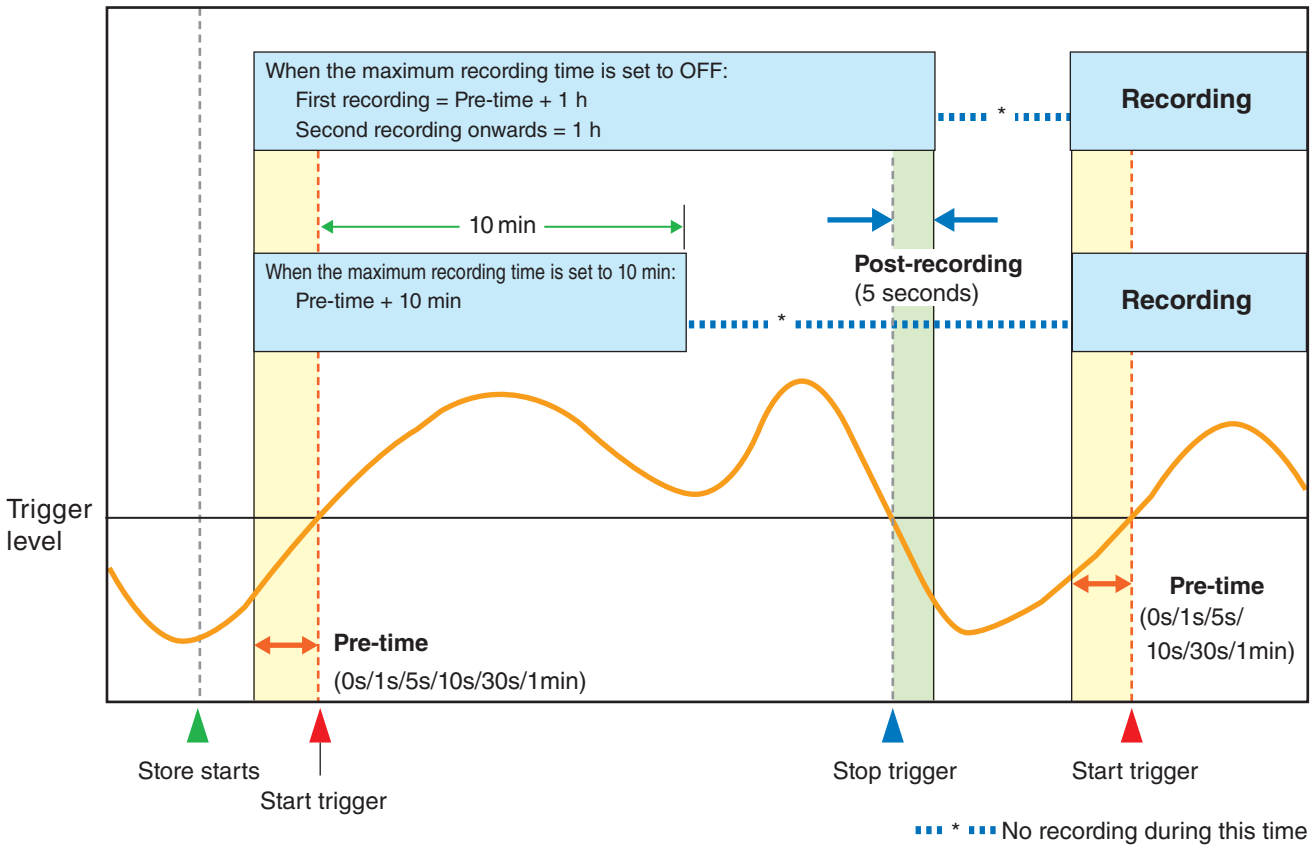
Level recording concept diagram



- **Operation when the stop trigger is triggered within the maximum recording time and the start trigger is triggered again within the post-recording time**



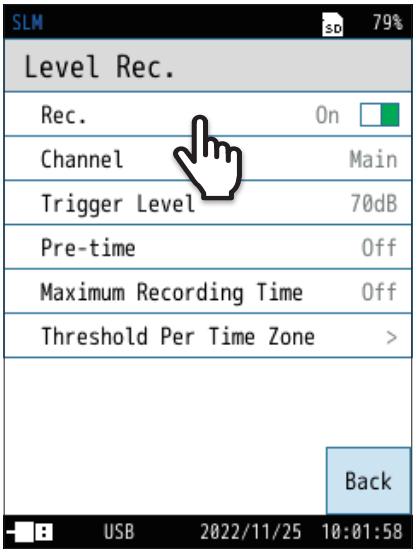
- **The example below explains the operation when recording time is OFF and the maximum recording time is set to 10 min**



1 Perform 1 to 4 of “5.2.1 Manual Rec.” (Page 34).

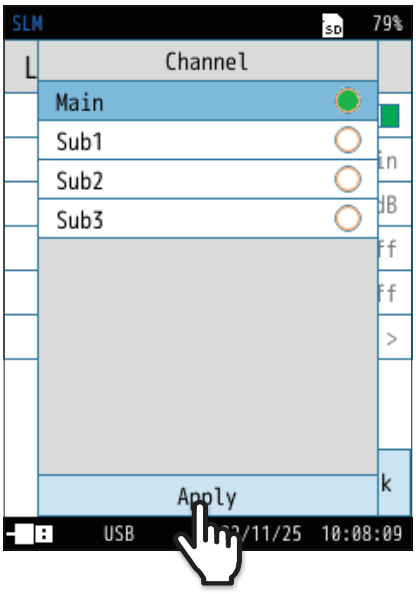
2 Set [Level Rec.] to [On].

On the [WR] screen, touch [Level Rec.] - [Rec.] to set it to [On].



3 Set [Channel].

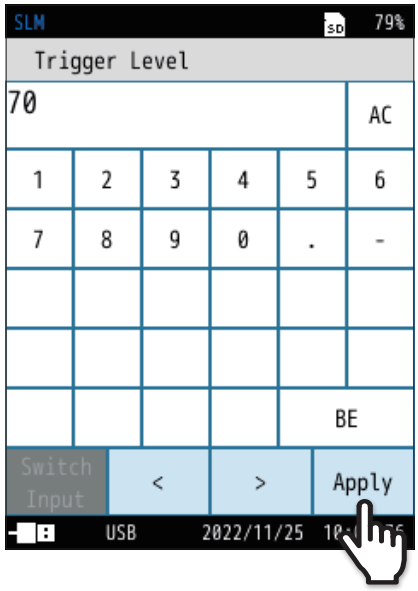
1. **Touch [Channel] on the [Level Rec.] screen.**
   The [Channel] screen appears.
2. **Select a channel to be recorded, and then touch [Apply].**



4 Set [Trigger Level].

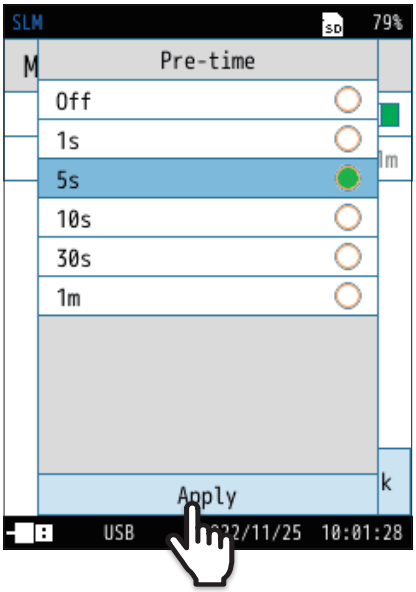
1. **Touch [Trigger Level] on the [Level Rec.] screen.**
   The [Trigger Level] screen appears.

2. **Enter the trigger level for waveform recording, and then touch [Apply].**



5 Set [Pre-time].

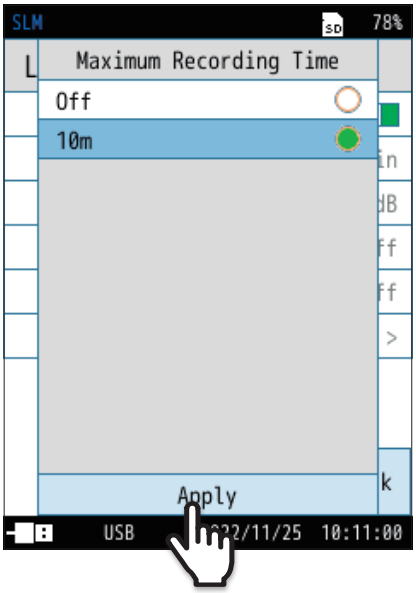
1. **Touch [Pre-time] on the [Level Rec.] screen.**
   The [Pre-time] screen appears.
2. **Select a pre-time, and then touch [Apply].**



(s = seconds, m = minutes)

6 Set [Maximum Recording Time].

1. **Touch [Maximum Recording Time] on the [Level Rec.] screen.**
   The [Maximum Recording Time] screen appears.
2. **Select a maximum recording time, and then touch [Apply].**



Note

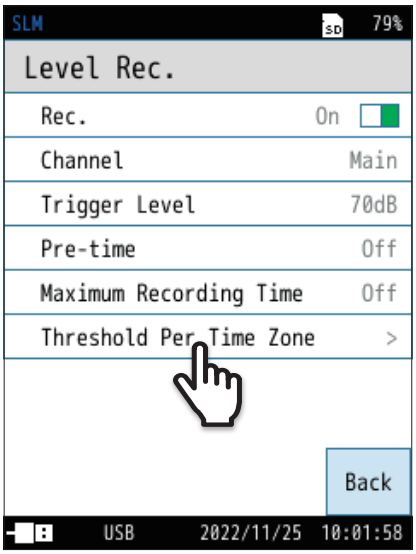
- When [Maximum Recording Time] is set to [Off], [File Splitting Interval] is 1 hour.
- If [Maximum Recording Time] is set to [10m], recording will stop after 10 minutes even if sounds exceeding [Trigger Level] continue for a long time (such as when a car is idling). You can reduce the amount of space that is taken up on the SD card.

7 Set [Threshold Per Time Zone].

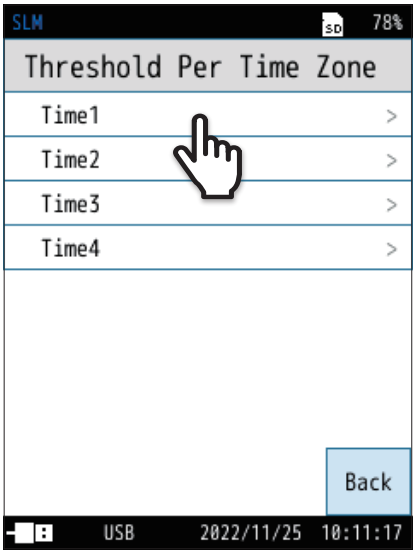
Note

- When [Threshold Per Time Zone] is set to [On], 4 will not be displayed.

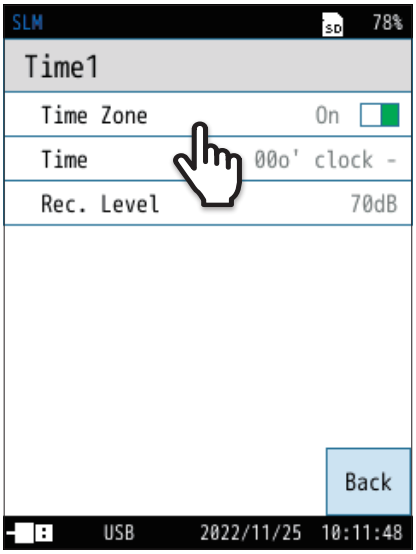
1. **Touch [Threshold Per Time Zone] on the [Level Rec.] screen.**



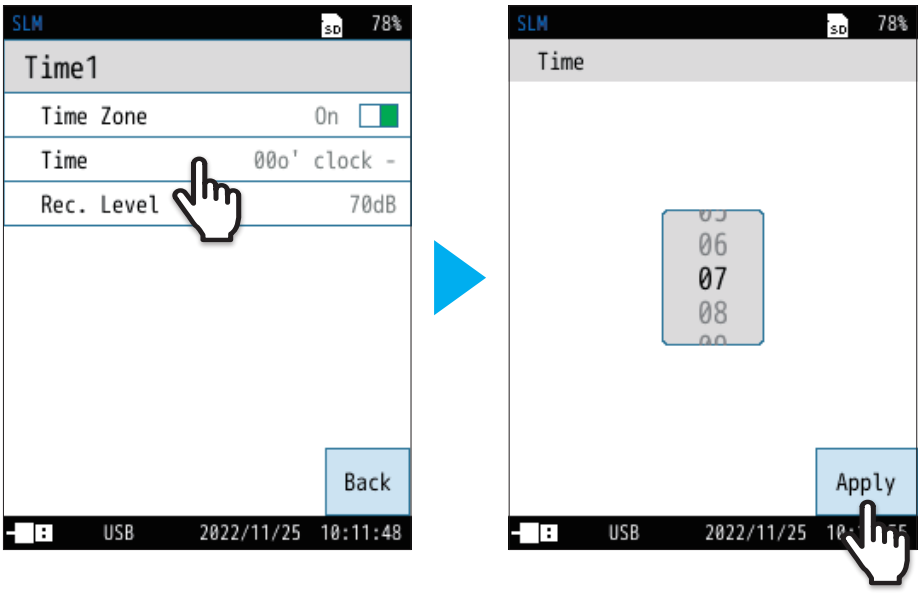
2. **Touch the threshold per time zone to be used from [Time1] to [Time4].**



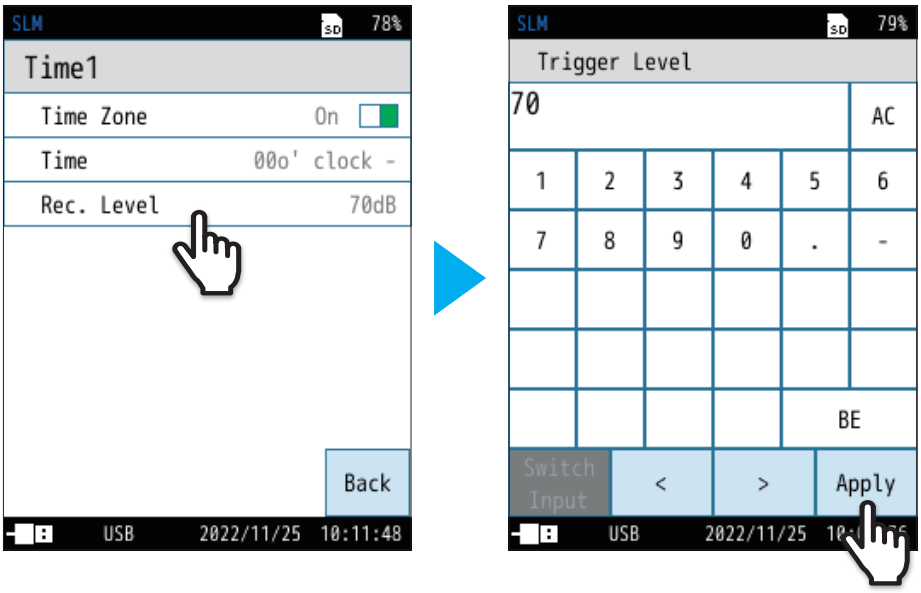
3. **Touch [Time Zone] to set it to [On].**



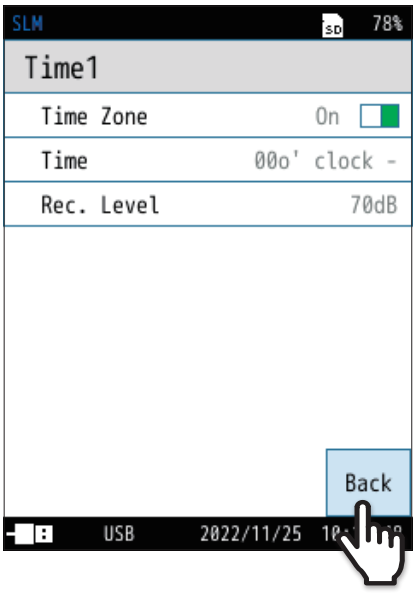
4. **Touch [Time], set a measurement start time, and then touch [Apply].**



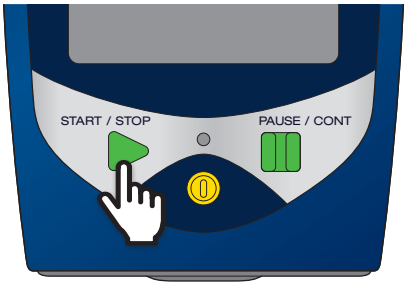
5. **Touch [Trigger Level], set the measurement trigger level, and then touch [Apply].**



6. **Touch [Back].**
7. **To use other [Threshold Per Time Zone], set by following the same procedure.**



8 Touch [Back] or press the START/STOP key to return to the measurement screen.



9 Press the START/STOP key to start Auto store.

If a signal exceeding the set trigger level is received, the pre-time setting time will be recorded retroactively.

If the signal falls below the set trigger level, the recording will end after the post-recording (5 seconds) time has passed. The device will continue recording if the signal exceeds the set trigger level within 5 seconds of post-recording.

The device finishes recording when the set recording time has passed.

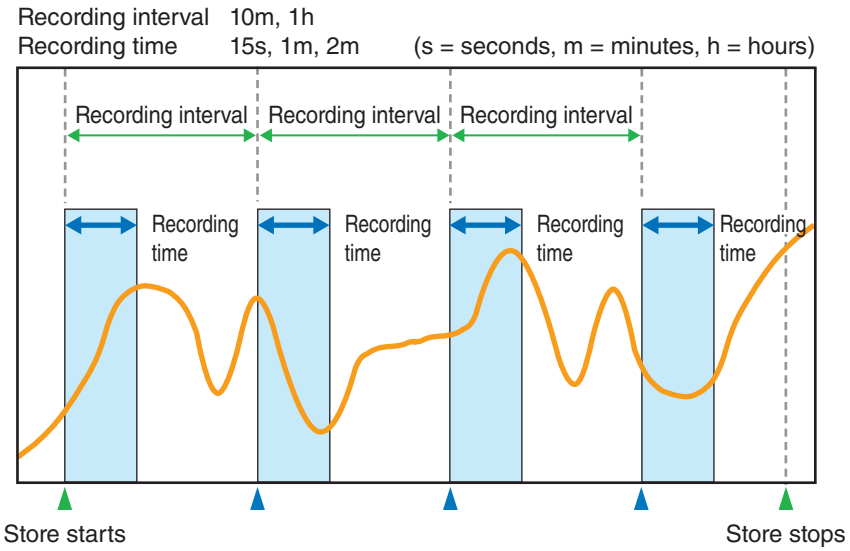
5.2.3 Interval recording

This records sound pressure waveforms for 15 seconds, 1 minute, or 2 minutes for a set fixed interval (10 minutes, 1 hour). Interval is used to grasp the environmental noise of each predetermined time.

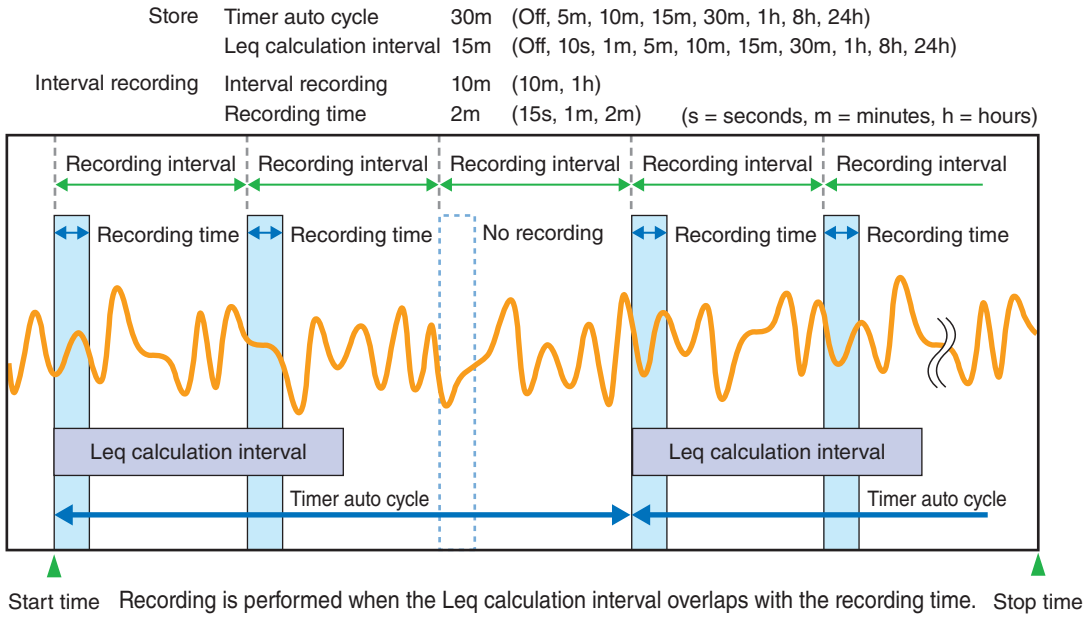
Note

- If events occur at the same time, priority is given in the following order: Manual > Level > Interval (Page 47).

Interval recording concept diagram



- **In Timer Auto**



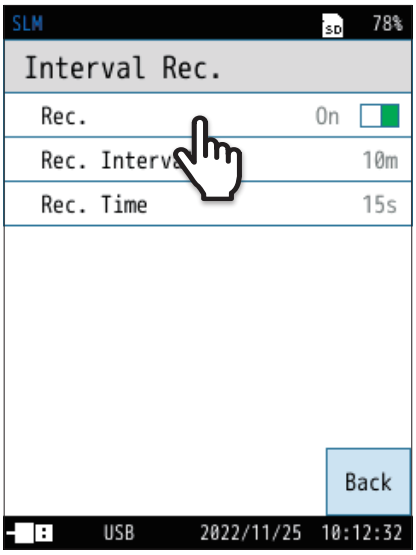
Note

- When Timer Auto is used, the actual recording interval becomes the Timer Auto measurement interval, and Interval Recording begins each time the Timer Auto measurement interval passes.

1 Perform 1 to 3 of “5.2.1 Manual Rec.” (Page 34).

2 Set [Interval Rec.] to [On].

On the [WR] screen, touch [Interval Rec.] - [Rec.] to set it to [On].

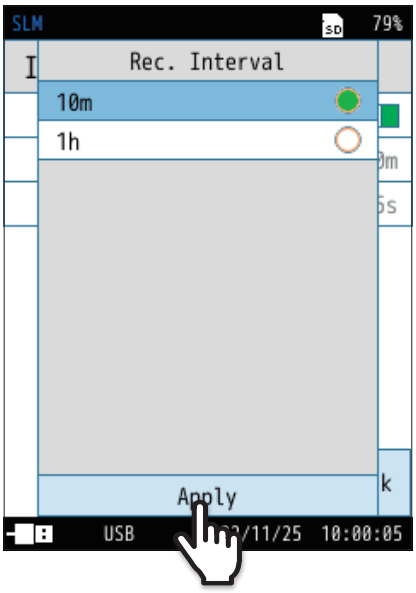


3 Set [Rec. Interval].

1. **Touch [Rec. Interval] on the [Interval Rec.] screen.**
   The [Rec. Interval] screen appears.
2. **Select a recording interval, and then touch [Apply].**

Note

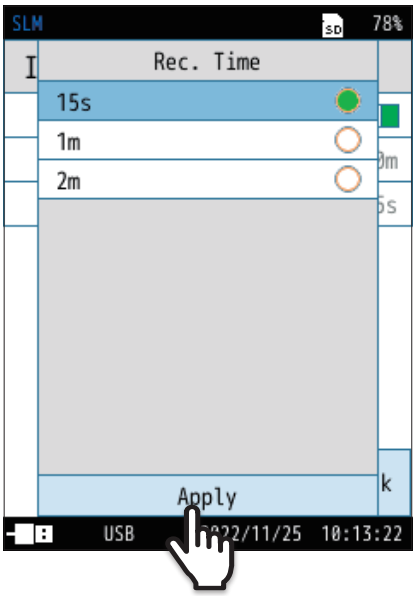
- When the store mode is Timer Auto mode, the actual recording interval will be the value set for the measurement interval. Interval Recording begins each time the Timer Auto measurement interval passes.



(m = minutes, h = hours)

4 Set [Rec. Time].

1. **Touch [Rec. Time] on the [Interval Rec.] screen.**
   The [Rec. Time] screen appears.
2. **Select a recording time, and then touch [Apply].**

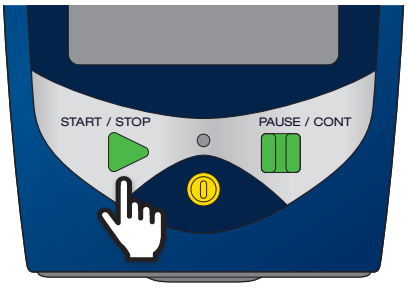


(s = seconds, m = minutes)

5 **Touch [Back] or press the START/STOP key to return to the measurement screen.**

6 **Press the START/STOP key to start Auto store.**

If you start Auto store, recording will start after each specified recording interval for the specified time.



5.2.4 Priority order of recording modes

If more than one of [Manual Rec.], [Interval Rec.], or [Level Rec.] is set to [On], the operation will change according to the recording mode priority order.

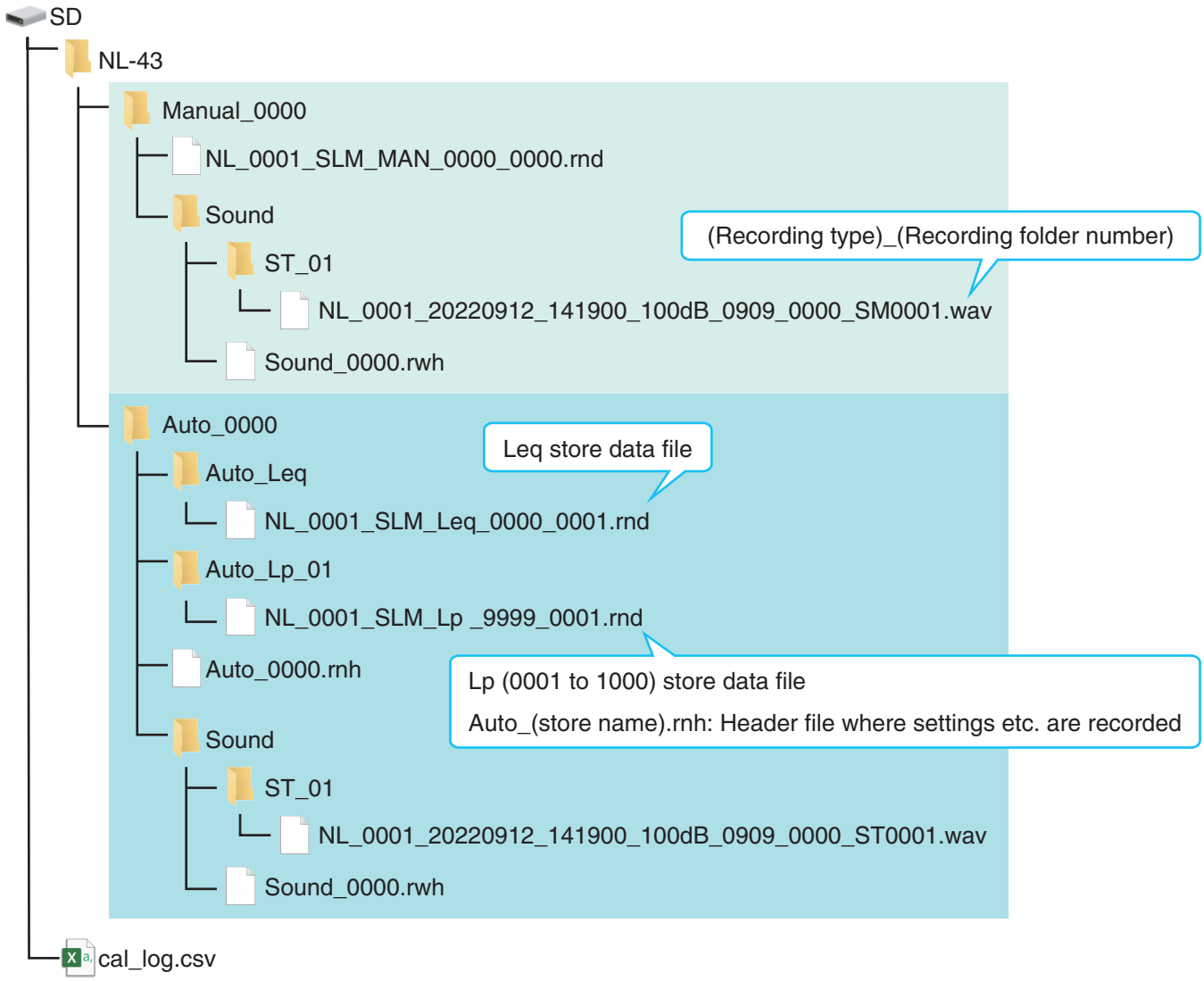
1. Manual Rec.
2. Level Rec.
3. Interval Rec.

- If Manual Rec. is started during Level Rec., the device immediately stops Level Rec. (one file will be created at this point) and starts Manual Rec.
  All event conditions (Trigger Level, etc.) that occur during Manual Rec. will be ignored.
- If Level Rec. or Manual Rec. is started during Interval Rec., the device immediately stops Interval Rec. (one file will be created at this point) and starts the other type of recording.
  At this time, Interval Rec. is not performed, and only the Rec. Interval is updated.

5.3 Store data format and file structure

Folder and file names to be saved differ depending on the selected store mode.

File organization



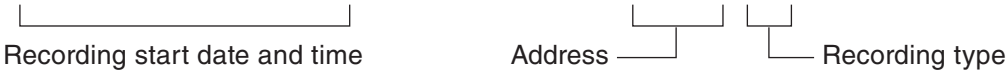
Note

- The store name at the time of recording and the store name in the recording file name may not match.

File name of recorded data

Recorded files are named as shown below.

NL_0255_20230304_155430_130dB_0518_0999_ST0001.wav



(model)_(index number)_(recording start date and time)_(waveform full scale range)_(store name)_(address)_(recording type)(recording file number).wav

- Recording start date and time
  yyyyMMdd_hhmmss
- Address
  The address goes up in increments only during Manual store (Total recording).
  In Auto store, the address is “0000”.
- Recording type
  - ST : Total Rec.
  - SI : Interval Rec.
  - SM : Manual Rec.
  - SL : Level Rec.

Note

- When a file reaches 9999, recording will stop (storing will continue).
- When a data file with the same name exists in the same directory, it will always be overwritten.
- This device has a calculation error of up to about 1 minute per month. Make sure to set the time before measuring.

5.4 Playing/analyzing recorded files

- Recorded files can be played with a commercially available WAVE player software or with Data Management Software for Environmental Measurement AS-60 or Waveform Analysis Software AS-70.
  Recorded files cannot be played on NL-43/NL-53/NL-63.
- Recorded files can be analyzed with Waveform Analysis Software AS-70.
- WAVE data is stored according to the normal WAVE file rules (16 bit/24 bit, little endian, 25400 at a full scale range at 16 bit, 6502400 at a full scale range at 24 bit).

6

Communication Commands

For a list of additional commands, refer to the respective Communication Guide for the following meters:

- Class 2 Sound Level Meter NL-43
- Class 1 Sound Level Meter NL-53
- Class 1 Sound Level Meter (with low-frequency sound measurement function) NL-63

7

Specifications

<table>
<tr><td>Corresponding models</td><td>Class 2 Sound Level Meter NL-43
Class 1 Sound Level Meter NL-53
Class 1 Sound Level Meter (with low-frequency sound measurement function) NL-63</td></tr>
<tr><td>Media</td><td>SD card: 2 GB</td></tr>
<tr><td>Sampling frequency</td><td><table><tr><td>NL-43/NL-53</td><td>48 kHz, 24 kHz, 12 kHz</td></tr><tr><td>NL-63</td><td>48 kHz, 24 kHz, 12 kHz, 1.2 kHz, 240 Hz</td></tr></table></td></tr>
<tr><td>Bit length</td><td>24 bit, 16 bit</td></tr>
<tr><td>Data format</td><td>Linear PCM format</td></tr>
<tr><td>Frequency weighting</td><td><table><tr><td>NL-43/NL-53</td><td>A, C, Z</td></tr><tr><td>NL-63</td><td>A, C, Z, G, Z (HPF), Z (LPF,100Hz), Z (LPF,500 Hz)</td></tr></table></td></tr>
<tr><td>Recording mode</td><td>Total recording
<table><tr><td>Total Rec.</td><td>• Records all sounds during Auto store.
• Recording is also possible when measuring in Manual store.
Condition settings
File splitting for each fixed time: 1 minute, 10 minutes, 1 hour
Maximum number of recordable data items: 9,999 items for 1 store name with Auto store
: 1,440 items for 1 address with Manual store</td></tr></table>
Event recording
<table><tr><td>Manual Rec.</td><td>• Starts/stops recording at any time during Auto store.
Pre-time : Off, 1s, 5s, 10s, 30s, 1min
Number of recordable data items : 9,999 items for 1 store name</td></tr><tr><td>Level Rec.</td><td>• Recording starts when a signal exceeds [Trigger Level] in Auto store.
• When [Pre-time] is set, recording starts retroactively for the set time when a signal exceeds [Trigger Level].
• After falling below [Trigger Level], recording continues for 5 seconds as post-recording.
• Different trigger levels can be set for each time zone such as daytime, evening, and night (up to 4).
Condition settings
Trigger level : 30 dB to 130 dB (1 dB increments)
Pre-time (level recording) : Off, 1s, 5s, 10s, 30s, 1min
Maximum recording time : Off, 10min
Number of recordable data items : 9,999 items for 1 store name</td></tr><tr><td>Interval Rec.</td><td>During Auto store, the device records for 15 seconds, 1 minute, or 2 minutes at fixed intervals
Condition settings
Recording interval : 10 minutes, 1 hour
Recording time : 15 seconds, 1 minute, 2 minutes
Number of recordable data items : 9,999 items for 1 store name</td></tr></table></td></tr>
<tr><td>Dimensions</td><td>32 mm (H) × 24 mm (W) × 2.1 mm (D)</td></tr>
<tr><td>Weight</td><td>Approx. 5 g</td></tr>
<tr><td>Accessories</td><td>Supplied Accessories & Inspection Certificate</td></tr>
<tr><td>Optional accessories</td><td>512MB SD Card
2GB SD Card
32GB SD Card
Waveform Analysis Software AS-70
Data Management Software for Environmental Measurement AS-60</td></tr>
</table>

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