ONO SOKKI

VW-3100

Portable Vibration Meter

Instruction Manual

ONO SOKKI

WEBSITE https://www.onosokki.co.jp/English/english.htm

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■ WARRANTY ■

1. This product is covered by a warranty for a period of one year from the date of purchase.
2. This warranty covers free-of-charge repair for defects judged to be the responsibility of the manufacturer, i.e., defects occurred while the product is used under normal operating conditions according to descriptions in this manual and notices on the unit label.
3. For free-of-charge repair, contact either your sales representative or our sales office nearby.
4. The following failures will be handled on a fee basis even during the warranty period.
   (a) Failures occurring through misuse, mis-operation, or modification
   (b) Failures occurring through mishandling (dropping) or transportation
   (c) Failures occurring through natural calamities (fires, earthquakes, flooding, and lightening), environmental disruption, or abnormal voltage.

* For repairs after the warranty period expired, contact your nearest Ono Sokki sales office or the distributor where you purchased the product.
* Outer appearance and specifications are subject to change without prior notice.

Introduction

This manual describes the functions, specifications, connection method, precautions for use, etc. for VW-3100 Portable Vibration Meter. Before using this product, be sure to read this manual for proper use.
Note that this manual contains some precautions which, if ignored, could cause property damage. Be sure to handle the product according to the procedure provided in this manual.

- This manual describes the latest software as of the writing of this manual. If you use the firmware of an older version, some functions may be unavailable or some specifications may be different. We recommend you to use the firmware of the latest version with reference to “7.3 Updating Firmware” on page 130.

● Notations used in instruction manual

This manual uses the following symbols as well as safety symbols. Check these before reading this manual.

CAUTION	Indicates supplementary explanations and restrictions. It is recommended to read the contents.
IMPORTANT	Indicates important things which should be observed. Be sure to read the contents.

CAUTION

- The content of this manual is subject to change without notice in the future.
- Reprinting or altering this manual, in whole or in part, without permission is prohibited.
- Some illustrations or screen images used in this manual are processed for explanation. Therefore, they may be different from the actual screens.
- Every effort has been made to ensure that the content of this manual is correct. Should any unclear points or errors be found, inform us.
- Note that Ono Sokki Co., Ltd. (hereinafter referred to as “Ono Sokki”) shall not be responsible for results of using this product regardless of the previous paragraph.
- The company names and product names that appear in this manual are trademarks or registered trademarks of their respective companies.

For Your Safety

- Be sure to read this manual before using this product.
- Use this product by following the instructions described in this manual.
- The precautions specific to this product may be noted on the main unit or in other instruction manuals accompanying it. These precautions must also be observed when you use the product.
- Keep this manual in a safe place where it is readily available for future reference.
- The contents in this manual provide the information as of the writing of the manual. Note that the contact information (e.g., company address, phone number, website URL, and e-mail address) may have changed without prior notice.

■ Safety indications

● Meaning of notations

This manual uses the following symbols for safe use of the product.
These notations indicate the severity of effects if the instructions are not followed.

WARNING	Indicates a hazardous situation that, if not avoided, will result in death or serious injury.
CAUTION	Indicates a hazardous situation that, if not avoided, may result in minor injury or property damage.
NOTICE	Indicates a hazardous situation that, if not avoided, may result in property damage including failure of the equipment, system, or facility, but will not result in personal injury.

● Meaning of symbols

Cautions/indications for hazards are given by 3 different symbols: Attention, Prohibition, and Mandatory. Each symbol has the following meaning.

Symbol	Definition	Meaning	Example
	Attention	Indicates that failure to observe the instructions may cause hazardous situation. The pictogram in the symbol indicates the type of hazard involved.	
	Prohibition	Indicates a prohibited action. The pictogram in or beside the symbol specifically indicates a prohibited action.	
	Mandatory	Indicates a mandatory action. The pictogram in the symbol specifically indicates a mandatory action that must be carried out. This action is necessary to avoid hazards.	

■ Precautions for use

CAUTION

Never uncover or disassemble the instrument.
- Using the instrument in the uncovered or disassembled state may cause trouble, such as failure.
  For internal adjustment, inspection or repair, contact your nearest Ono Sokki sales office or the distributor where you purchased the instrument.

Do not use this product for the operations involving human lives or requiring a high level of reliability.
- This product is not intended to be incorporated in the following for the purpose of control: facility or equipment involving human lives or requiring a high level of reliability, such as medical equipment, nuclear facility and equipment, and aerospace equipment.
  Ono Sokki shall assume no responsibility and shall give no compensation of any physical injury, property loss, etc. resulting from using this product with such facility, equipment or control system.

Do not use or store this product in direct sunlight or in hot and humid environments.

■ Precautions for using signal input/output connectors

CAUTION

Do not apply an input voltage exceeding the rating to the signal input connector and EXT IN connector.
- Applying an input voltage exceeding the rating may cause failure or damage.

Do not input an external signal to the AC/THR, DC, and PHONE connectors.
- Inputting an external signal to the output connector may cause failure or damage.

■ Notes on water-proof performance

CAUTION

Avoid using this product in a location exposed to dropping or splash of water without taking a water-proof measure.
- The water-proof performance of this product is effective only when all the following conditions are met.
  – A sensor is connected properly to the signal input connector.
  – Dedicated caps are attached surely to the PHONE and EXT IN connectors.
  – The bottom cover is closed securely without leaving a gap.
  – The battery cover on the rear panel is closed securely and locked.
  If water gets inside the instrument, stop using it immediately and contact your nearest Ono Sokki sales office or the distributor where you purchased the instrument as soon as possible.

Do not use this product with deteriorated water-proof packing or cap.
- The water-proof packing and cap may deteriorate depending on the operation environment, resulting in impaired water-proof performance. For a request for replacement, contact your nearest Ono Sokki sales office or the distributor where you purchased the instrument.

Although a water-proof measure has been taken, immediately wipe off water when this product gets wet.
- If water gets inside the instrument, it may cause failure due to short-circuit or heat generation.

■ Precautions for carrying this product

CAUTION

When carrying this product, do not hit or rub the protruded parts of the main unit, such as signal input connector, with a hard object.
- Giving a shock to the connector or other parts of this product may damage the product.

Before touching the connector of this product directly, we recommend that you ground your body.
- Static electricity may cause the internal devices to fail or be damaged.

■ Precautions for battery

CAUTION

Do not throw a battery into fire. Also, do not heat or disassemble a battery.
- It may cause leakage, heat generation, or burst of the battery.

Insert a battery observing the correct direction of the polarity (+/−).
- If a battery is inserted incorrectly, it may cause abnormal reaction in charging or short-circuit. It may also pose a risk of leakage, heat generation, or burst.

Do not use batteries combining a new battery with a used or old battery, or mixing batteries of different brands or types.
- It may cause leakage, heat generation, or burst due to difference in battery characteristics.

Remove an exhausted battery immediately.
- Leaving the product with an exhausted battery inserted for a long time may cause leakage, heat generation, or burst, resulting in damage to the product.

If the alkaline liquid leaked from an alkaline battery enters your eye, there is a risk of disorder such as sight loss.
- In this case, do not rub the eye, and rinse with plenty of clean water such as tap water immediately and then receive medical attention by a doctor.

If the liquid leaked from a battery attaches to your skin or clothing, rinse it with clean water such as tap water immediately.

If this product is not used for a long time, remove batteries from it.
- If the product is not used for a long time with batteries inserted, the gas generated from the batteries may cause leakage, resulting in damage to the product.

Do not use, store, or leave batteries in a location exposed to strong direct sunlight or in a hot place such as inside of a car under the blazing sun.
- It may cause leakage, heat generation, or burst of the battery. It may also result in impaired battery performance or shortened service life.

When storing or disposing of a battery, insulate the terminal part with tape or the like.
- Making a contact with another battery or metallic object may cause leakage, heat generation, or burst.

Use batteries that do not pass the recommended use-by date.
- If you use a battery that has passed the recommended use-by date, expected battery performance may not be obtained. Furthermore, leakage of the battery may occur.

When disposing of batteries, do it appropriately in accordance with the instructions of the local government.

■ Precautions for lithium coin secondary battery

This product has a built-in lithium coin secondary battery.
Use, handle, and dispose of the lithium coin secondary battery appropriately. Otherwise, it may explode, resulting in a very dangerous situation.

⚠ WARNING

Do not throw the lithium coin secondary battery into fire. Also, do not heat or disassemble the battery.
- It may cause leakage, heat generation, burst, or fire.

When replacing the lithium coin secondary battery, be sure to contact your nearest Ono Sokki sales office or the distributor where you purchased the instrument.

When disposing of the lithium coin secondary battery, do it appropriately in accordance with the instructions of the local government.

■ Precautions for disposal

⚠ NOTICE

Dispose of this product and the provided optional parts in accordance with the local disposal rules.
- For details about disposal, contact the local government.

■ Precautions for electromagnetic environment

⚠ NOTICE

This product is intended to be used in an industrial electromagnetic environment.
- Using the product in a home environment may cause electromagnetic interference. In this case, the user may be required to take an appropriate measure.

■ Precautions for storage

⚠ CAUTION

This product is a precision electronic device. Do not leave the product in a hot or cold place.

■ Precautions for maintenance

⚠ CAUTION

Always keep the instrument clean.
- Especially, dusty or oil-contaminated connectors may cause malfunction. When cleaning the panel surface, do not use volatile materials such as thinner.

Checking Supplied Items

When unpacking the product, check that all the supplied items are included and that the unit has no visible damage.

Item	Quantity	Remarks
Signal cable (AX-501)	1	Used for analog output
SD card	1	
BNC cap	1	Attached to the main unit
Quick Start Guide	1 set	

CAUTION

- If any of the supplied items are missing or damaged, stop using the instrument immediately and contact your nearest Ono Sokki sales office or the distributor where you purchased the instrument.
- The supplied items listed above are delivered with the system having standard specifications. Optional items are not included. When you purchased an optional item, check that it is included.

Request for User Registration

We recommend you to register as a user.
With user registration performed, you are notified of the version upgrade information, defect information, and technical information on support for the registered product.
With user registration for VW-3100 Portable Vibration Meter performed, the following becomes available.

- Downloading the latest instruction manual (PDF)
- Downloading the firmware for update

To register as a user, access the user registration site (https://www.onosokki.co.jp/English/hp_e/c_support/registration/newregistration.htm).
Alternatively, you can access our user registration site directly by reading the following QR code.

- QR code is a registered trademark of DENSO WAVE INCORPORATED.

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Chapter 1

Overview of VW-3100

1.1 Overview and Features

1.1.1 Features of VW-3100

VW-3100 Portable Vibration Meter enables simultaneous measurement of different vibration values from 3 bands. It contributes significantly to quantification of sensory testing, which has been thought to be difficult, using the 3-band simultaneous measurement function and also various modes and processing functions.

- **V3 band function (Variable 3 bands)**

This function enables simultaneous measurement of vibration in 3 different bands (frequency bands).
Each band is equipped with a variable filter. You can select acceleration, velocity, or displacement, and measure an effective value, peak value, crest factor, etc. This helps you to grasp various vibration characteristics from multiple perspectives and detect/evaluate abnormalities adequately. (Refer to “3.1 Overview of Vibrometer Mode” on page 46.)

- **ISO evaluation and judgment function**

The incorporated vibration severity filter complying with ISO 2954:2012 enables vibration severity evaluation in compliance with ISO 20816-1:2016/ISO 20816-3:2022 and JIS B 0906:1998.
You can also create evaluation standards and perform evaluation/judgment with the customized standards.

- **Comparison function**

This instrument allows you to output the vibration sound in the band set with the V3 band function to earphones/ headphones. Since applying/canceling the band-pass filter can be done in a single operation, you can narrow a band generating an abnormality while listening to the sound.
Using the comparison function, you can compare the 3 vibration sounds recorded by this instrument with the vibration sound currently measured at the site while switching between them. Combining with the V3 band facilitates a judgment as to whether an abnormality occurs.

- **Recording function**

You can record the input signal from a sensor simultaneously while performing measurement. Performing recording directly when an abnormality is found in a usual periodic inspection or the like enables smooth transition to the secondary analysis.

- **TEDS**

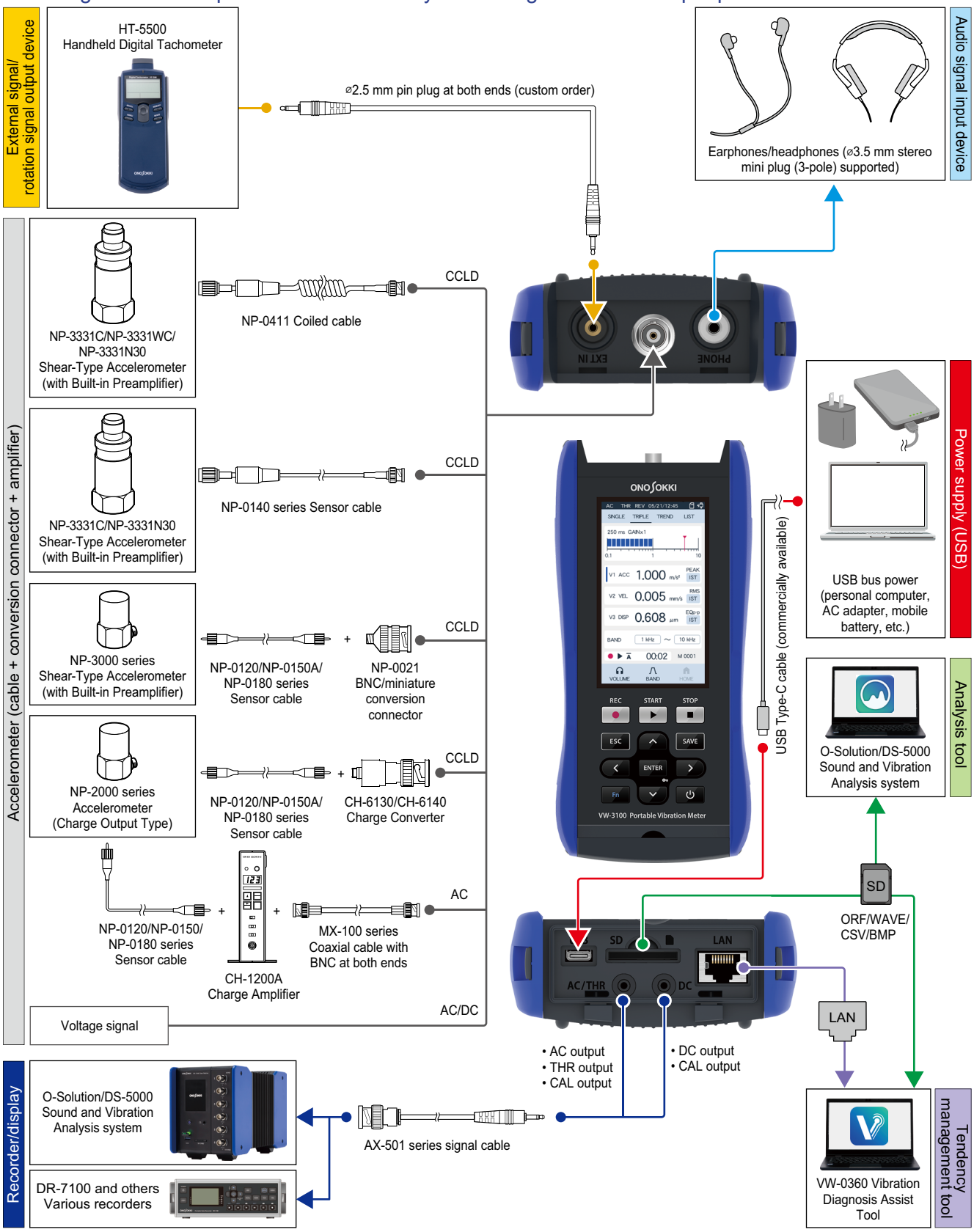
TEDS (Transducer Electronic Data Sheet) is a collective term for the formats used to describe the sensor-specific information incorporated in a measurement sensor, which is specified in the IEEE1451 series.
Sensor sensitivity can be set automatically by connecting an accelerometer supporting IEEE 1451.4 Ver.0.9/1.0.

- **Communication with assist tool**

Using “VW-0360 Vibration Diagnosis Assist Tool” (option) helps to improve the efficiency of inspection work. You can perform multiple equipment diagnoses efficiently by configuring vibration measurement settings or creating evaluation standards for each piece of equipment and importing them to this instrument. You can also export the data obtained by this instrument to a personal computer to use it for tendency management.

1.1.2 System Configuration

■ Configuration example of measurement system using VW-3100 and peripheral devices



■ List of optional functions and items

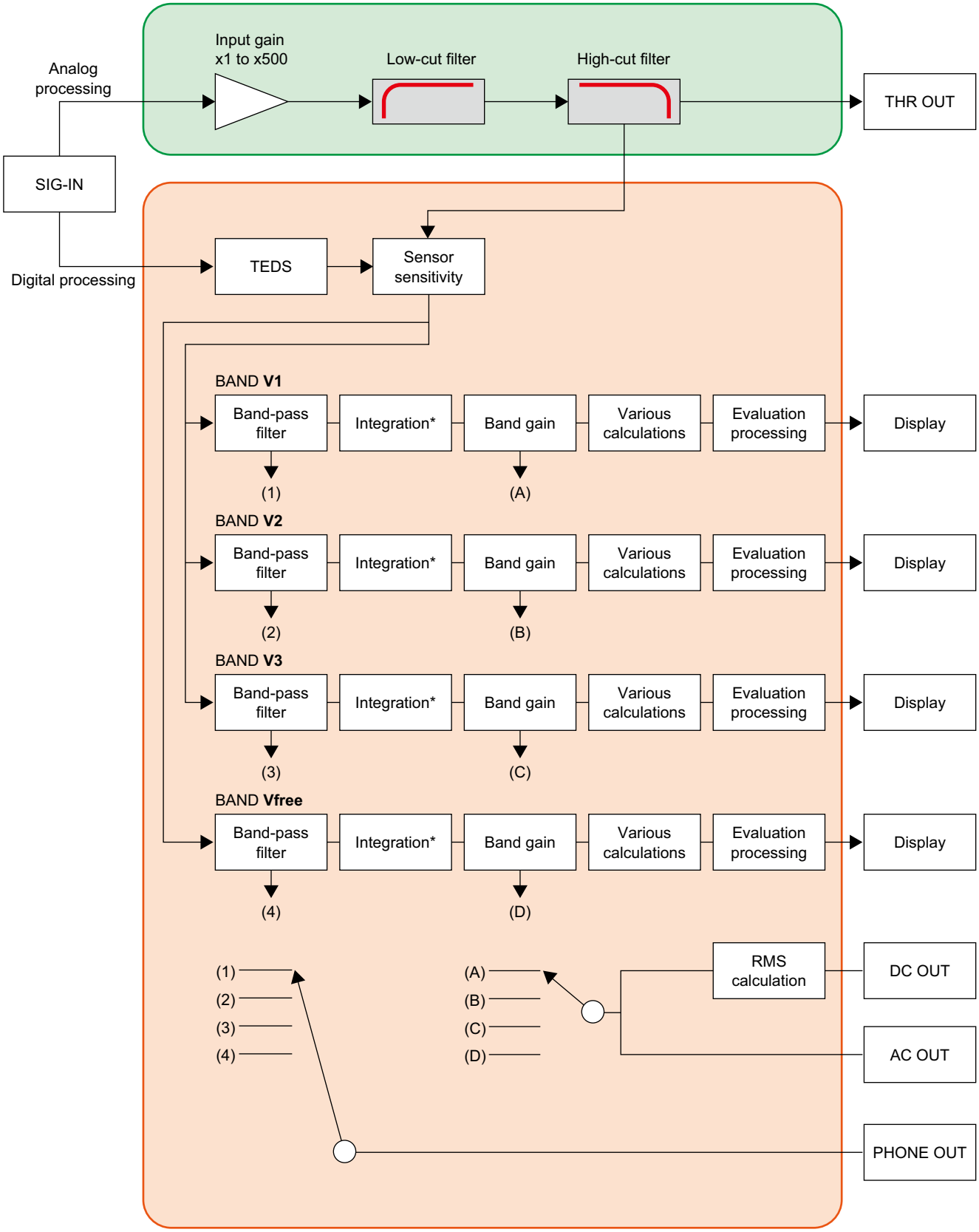
CAUTION

- For the optional functions and items, contact your nearest Ono Sokki sales office or the distributor where you purchased the instrument.

Model	Function/item name	Description
VW-0310	Equalizing Function	Allows you to listen to an input vibration sound while adjusting the level by 1/1 octave. Emphasizing a vibration sound you are concerned about or reducing an unwanted sound helps to share the point of listening.
VW-0320	Recording and Comparison Function	The recording function allows you to record the input signal from a sensor simultaneously while performing measurement. The comparison function allows you to compare the sound data recorded by this instrument with the currently input sound while switching between them. Using the V3 band helps to detect an abnormality.
VW-0330	Filter Expansion Function	This software adds a filter, allowing you to set bands in detail.
VW-0340	ISO Evaluation and Judgment Function	Allows you to perform ISO/JIS compliant vibration severity evaluations. You can also perform an evaluation with optional standards.
VW-0350	Assist Tool Communication Function	Allows you to perform vibration measurement using the settings tailored for each piece of equipment through communication with “VW-0360 Vibration Diagnosis Assist Tool”.
VW-0360	Vibration Diagnosis Assist Tool	This is an application for personal computer which assists you in setting an inspection plan or performing measurement using this instrument. You can export the data obtained by this instrument to a personal computer to use it for tendency management. You can also perform multiple equipment diagnoses efficiently by configuring vibration measurement settings or creating evaluation standards for each piece of equipment and importing them to this instrument.
VW-0010	Accessories for VW-3100	A hand belt and neck strap dedicated for this instrument. Attach these items according to the intended use.
CC-0024	Soft carrying case for VW-3100	A dedicated carrying case which can be used to store this instrument, sensor, A4 documents, etc. together and carry them.

- For the functions that are available only when the above options are enabled, the respective model icons are displayed in this manual.

1.1.3 Internal Block Diagram

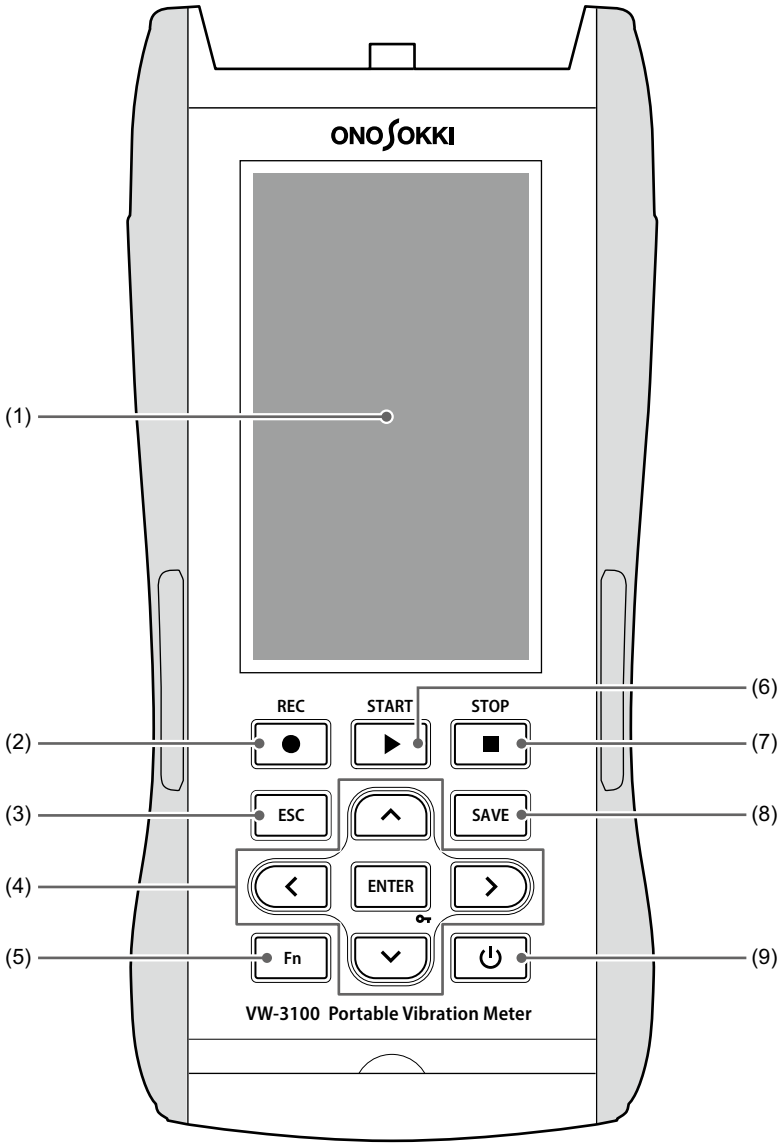


* Only when velocity (VEL)/displacement (DISP) calculation is performed

1.2 Parts Names and Functions

1.2.1 Front Panel

The front panel provides a display and buttons for measurement operation and setting change.



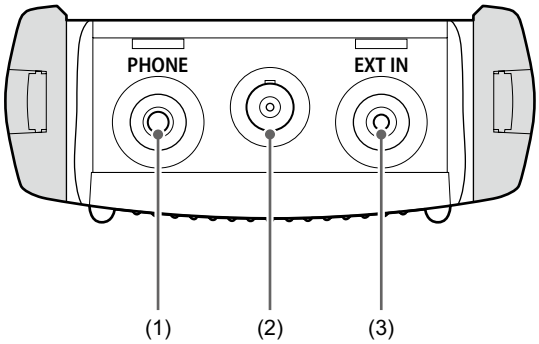
No.	Name	Description
(1)	LCD	Shows measured values, settings/status of the instrument, etc. Switching screens, changing settings, etc. are available via the touch panel. • You may see a rainbow colored pattern (Newton's ring) on the LCD, but it does not affect the safety/durability/touch operation of the product.
(2)	REC button	Enters a recording standby state. Pressing the START button starts recording simultaneously with measurement.
(3)	ESC button*	Cancels a setting or input value, and displays the screen 1 layer above the current screen. If there is no layer, the measurement screen will be displayed. Pressing this button during live measurement (instant display) resets the maximum value (HLD).

No.	Name	Description
(4)	∧/∨/ < / > button*	Used to select a setting item, move the digit in inputting a value, or change a value.
	ENTER*/ (screen protection) button	Confirms settings or input value.
		Holding down this button (approximately 1 second) enables/disables screen protection.
(5)	Fn (function) button	Returns to the [HOME] screen when this button is pressed with the setting screen displayed or in the assist tool communication mode. Pressing this button with the data save dialog displayed displays the [File Name] screen.
(6)	START button	Starts measurement.
(7)	STOP button	Stops measurement.
(8)	SAVE button*	Saves measured/recorded data.
(9)	(standby) button	Turns on/off the power.

* The action is the same as that of the button on the touch panel. This manual mainly describes the operations of the touch panel buttons. When a button is displayed on the touch panel, the corresponding button on the front panel can be used to perform the same operation.

1.2.2 Top Panel

The top panel provides connectors for the following devices: a sensor and a tachometer (used for vibration measurement), and earphones/headphones (used for sound output).



No.	Name	Description
(1)	PHONE connector	A connector for earphones/headphones. This is used when monitoring vibration sound.
(2)	Signal input connector	A BNC connector for a sensor.
(3)	EXT IN connector	An external input connector for a tachometer or device outputting an external trigger signal.

■ Handling of connectors

When you do not use the connectors on the top panel, attach the cap to prevent dust, foreign object, etc. from entering the inside.

- Signal input connector: BNC cap (supplied)
- PHONE/EXT IN connector: Dedicated cap attached to the main unit

● Water-proof performance

The water-proof performance of the top panel of this instrument is effective only when all the following conditions are met.

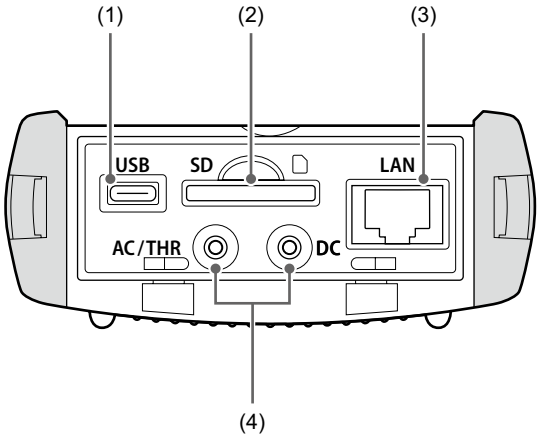
- A sensor is connected properly to the signal input connector.
- Dedicated caps are attached surely to the PHONE and EXT IN connectors.

CAUTION

- In order to secure the water-proof performance, a water-proof measure needs to be implemented for the bottom and rear panels. For details, refer to “Bottom cover” on page 21/“Battery cover” on page 22.

1.2.3 Bottom Panel

The bottom panel provides the connectors for power supply and communication, SD card slot for data save, etc.



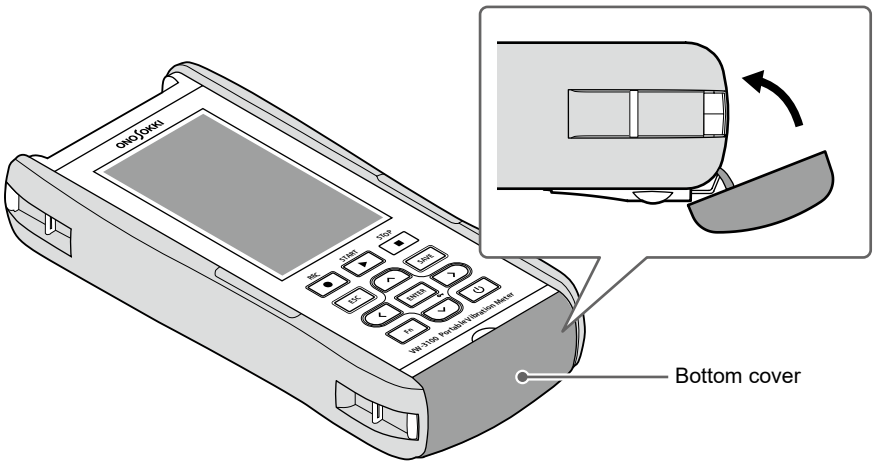
No.	Name	Description	
(1)	USB connector	A connector for power supply (driven by USB bus power) for connecting with a personal computer, AC adapter, mobile battery, etc. through USB Type-C cable.	
(2)	SD card slot	A slot through which an SD card is inserted.	
(3)	LAN connector	A connector for a personal computer. Connect with a personal computer through LAN cable and communicate with “VW-0360 Vibration Diagnosis Assist Tool” (application for personal computer) to manage the instrument data.	
(4)	Analog output connector	An analog output connector used to connect an analog signal input device such as recorder. • For details about the signals output from the analog output connector, refer to “Types of analog output signals” on page 39.	
		AC/THR connector	Outputs an AC signal on which the V3 band processing was performed or a through signal that is an input signal on which only the analog processing was performed.
		DC connector	Outputs a measured RMS value (effective value) as a direct current (DC) voltage within the range of 0 to 5 V. For the output voltage, the maximum value (full scale) in the current measurement range is converted to 5 V. The frequency band to be output follows the AC output settings.

CAUTION

- When connecting a peripheral device to the bottom panel, make sure to sufficiently open the bottom cover to prevent the connector from coming into contact with the bottom cover.

■ Bottom cover

When you do not use the connectors/slot on the bottom panel, close the bottom cover to prevent dust, foreign object, etc. from entering the inside of the connectors.



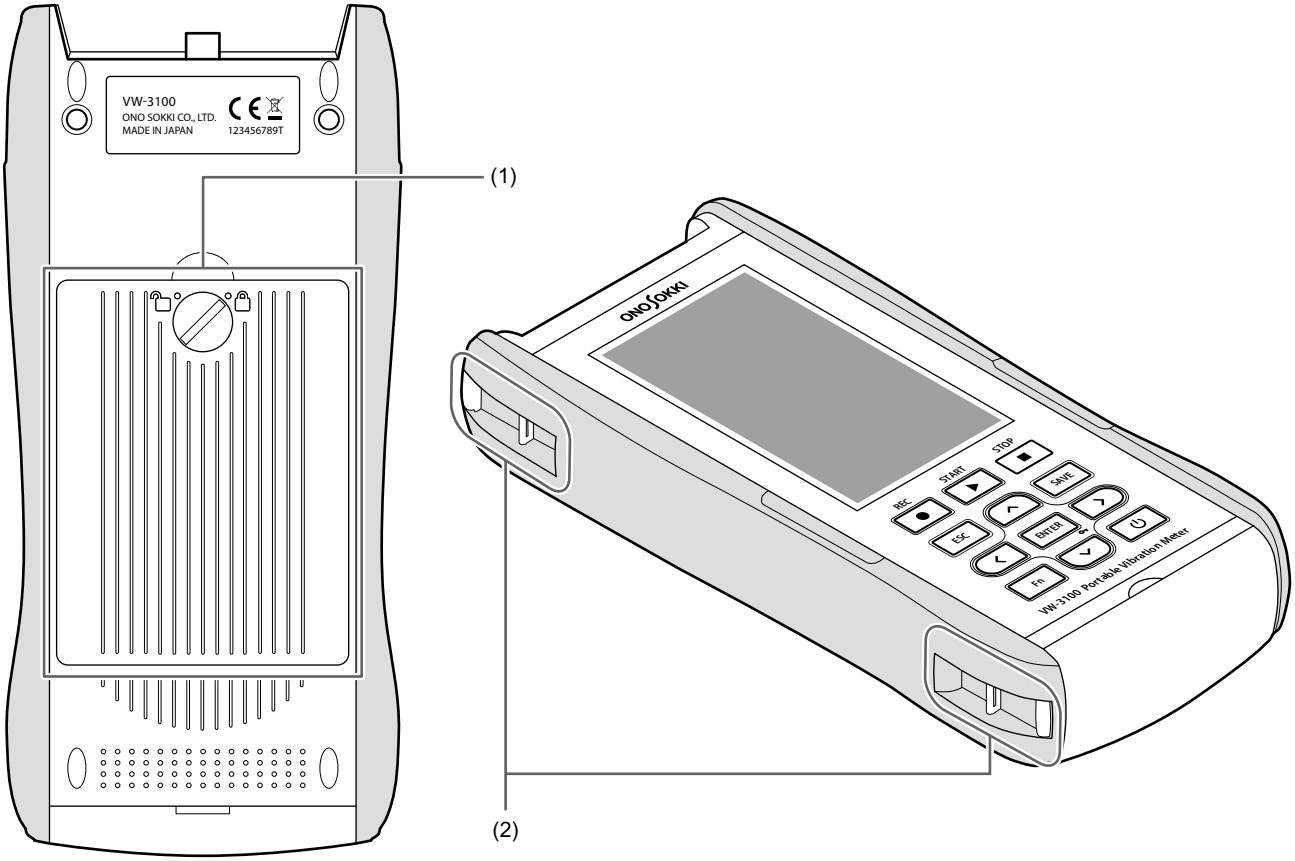
● Water-proof performance

The water-proof performance of the bottom panel connectors/slot of this instrument is effective only when the bottom cover is closed.
If the instrument is used in an environment with a risk of getting wet, be sure to close the bottom cover securely without leaving a gap.

CAUTION

- In order to secure the water-proof performance, a water-proof measure needs to be implemented for the signal input/ PHONE/EXT IN connectors on the top panel and the rear panel. For details, refer to “Handling of connectors” on page 19/“Battery cover” on page 22.

1.2.4 Rear/Side Panels



No.	Name	Description
(1)	Battery cover	A cover for the battery box. For inserting batteries, refer to “Inserting/removing batteries” on page 32.
(2)	Belt holder	Holders for attaching optional hand belt or neck strap.

■ Battery cover

Even when you do not use batteries, close the battery cover to prevent dust, foreign object, etc. from entering the inside while using the instrument.

● Water-proof performance

The water-proof performance of the rear panel of this instrument is effective only when the battery cover is closed.
If the instrument is used in an environment with a risk of getting wet, be sure to close and lock the battery cover.

CAUTION

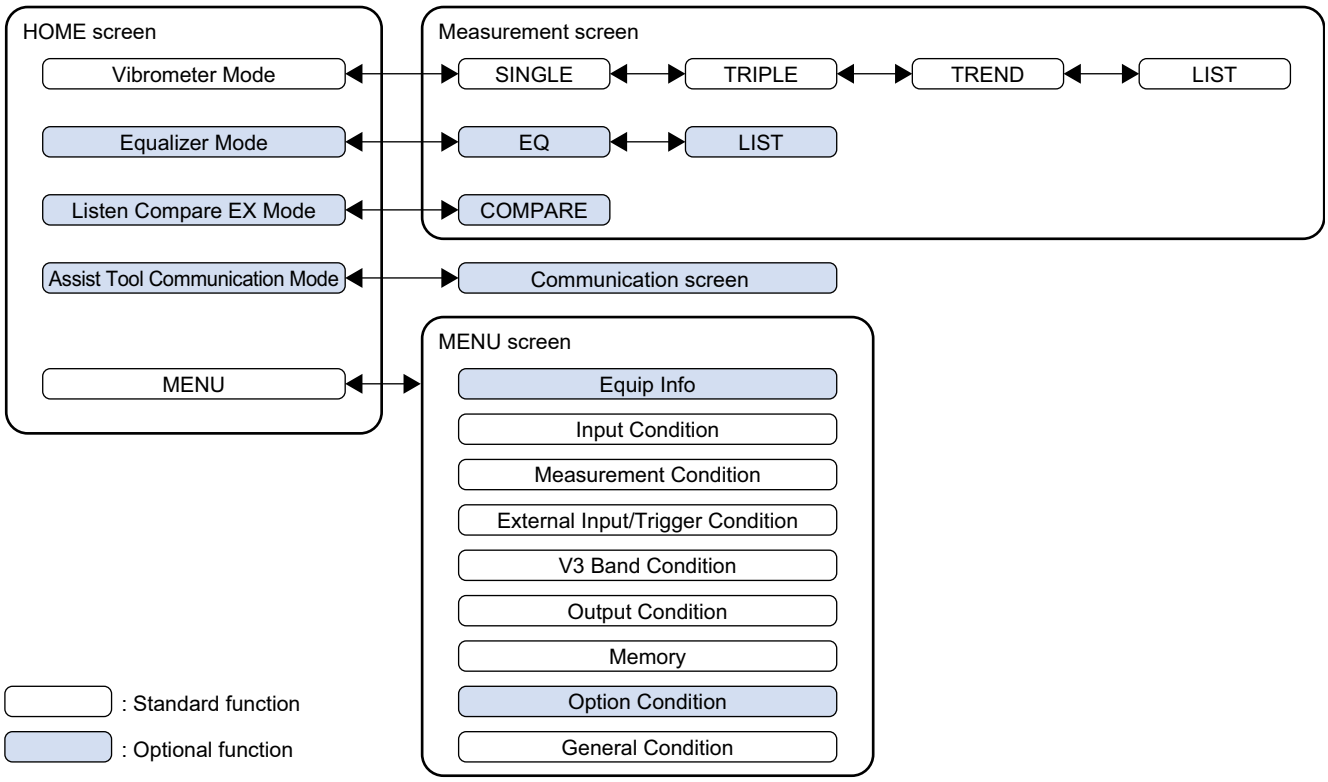
- In order to secure the water-proof performance, a water-proof measure needs to be implemented for the signal input/ PHONE/EXT IN connectors on the top panel and the bottom panel. For details, refer to “Handling of connectors” on page 19/“Bottom cover” on page 21.

1.3 Operation Screen

1.3.1 Types of Operation Screens and Modes

This instrument is operated via the following 3 types of operation screens.

Operation screen	Description
HOME screen	Allows you to select an operation mode.
Measurement screen	Allows you to execute measurement in each mode.
MENU screen	Allows you to change settings or check information.



■ Switching of operation modes

When you turn on the instrument power, the ONOSOKKI logo will be displayed for a few seconds, and then the screen of the previously used operation mode will be displayed. Select an operation mode on the [HOME] screen.

HOME screen

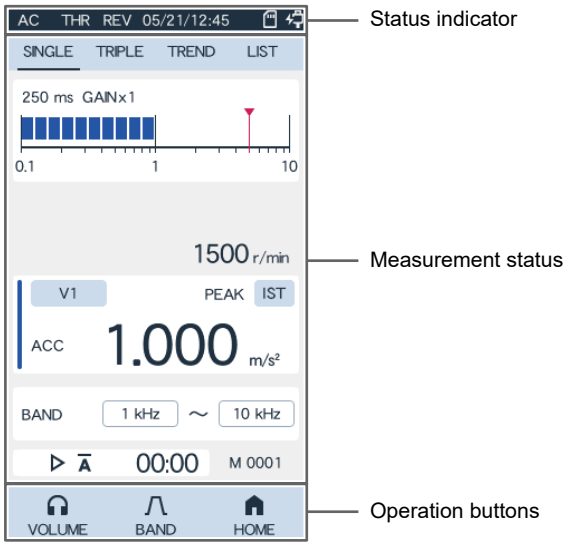
Vibrometer Mode | Equalizer Mode | Listen Compare EX Mode | Assist Tool Communication Mode | MENU

Operation mode	Description	Reference
Vibrometer Mode	Allows you to measure acceleration, velocity, and displacement simultaneously from a single input signal and display each result. You can also apply a band-pass filter to each signal. With the optional functions (VW-0320 Recording and Comparison Function/VW-0340 ISO Evaluation and Judgment Function) added, recording or evaluation/judgment can be performed simultaneously with measurement.	Page 45
Equalizer Mode VW-0310	Allows you to adjust gain (equalizing) by 1/1 octave band. You can listen to the result of equalizing through earphones/headphones.	Page 90
Listen Compare EX Mode VW-0320	Allows you to compare the sound recorded by this instrument with the currently input sound. With the sound in the initial state, the sound in a normal state, and the sound in an abnormal state registered, this function helps you to detect an abnormality in the current sound.	Page 94
Assist Tool Communication Mode VW-0350	Allows you to perform vibration measurement for each piece of equipment and manage the data through communication with “VW-0360 Vibration Diagnosis Assist Tool” (option).	Page 97
MENU	Allows you to input/output a signal, change settings, or save/call settings and data. Some settings can be changed directly on the measurement screen.	Page 103

- Pressing the Fn button on the front panel returns to the [HOME] screen from the setting screen or assist tool communication mode.

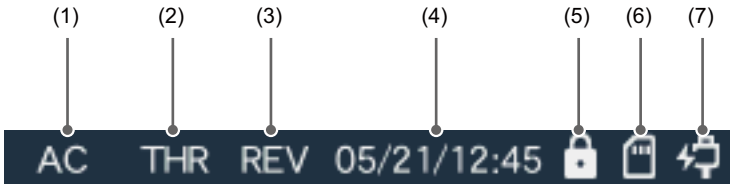
1.3.2 Measurement Screen

On the measurement screen, you can check a measurement value or change the settings. You can also check the settings and input signal status with indicators.



■ Status indicator

The instrument information, such as settings and status, is displayed using indicators and values in the status indication area on the measurement screen.

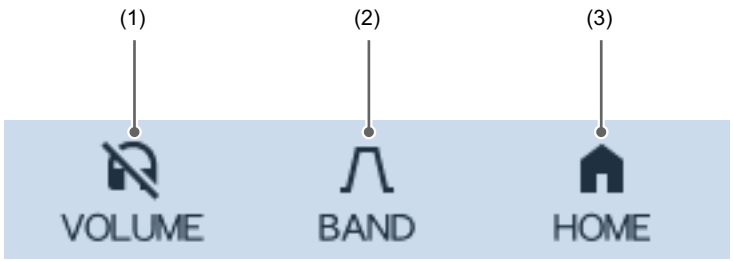


No.	Status/information	Indicator	Description
(1)	Input signal	CCLD	Types of input signals. The setting of [Input Type] in [Input Condition] is displayed.
		AC	
		DC	

No.	Status/information	Indicator	Description
(2)	AC output	V1	When [Output Type] in [Output Condition] is set to [Fix Mode], the band of a signal output from the AC/THR connector (the band specified with [Target Band]) is displayed.
		V2	
		V3	
		V1	When [Output Type] in [Output Condition] is set to [Follow Mode], the band of a signal output from the AC/THR connector (the band selected on the measurement screen) is displayed.
		V2	
		V3	
		VF	
		THR	This is displayed when [Output Type] in [Output Conditions] is set to [Fixed Mode] and an input signal is output directly from the AC/THR connector. • At this point, the signal of the band according to the setting of [Target Band] in [Output Condition] is output from the PHONE connector.
		THR	This is displayed when [Output Type] in [Output Conditions] is set to [Follow Mode] and an input signal is output directly from the AC/THR connector. • At this point, the signal of the band selected on the measurement screen is output from the PHONE connector.
(3)	External input	TRIG	A mode to input a trigger signal.
		REV	A mode to input a rotation signal.
(4)	Date and time	Month/Day/Hour/ Minute	The date and time set for [Date and Time] in [General Condition] is displayed.
(5)	Screen protection		Screen protection is imposed. • With screen protection imposed, only the operations by the [VOLUME], [BAND], and [HOME] buttons are available.
(6)	SD card		An SD card is inserted.
			Write protection is imposed on the SD card inserted.
			An SD card is being accessed.
(7)	Power supply/battery level		The instrument is driven by USB bus power.
			Battery level is displayed. For details about each indicator, refer to “Checking battery level” on page 33.

■ Operation buttons

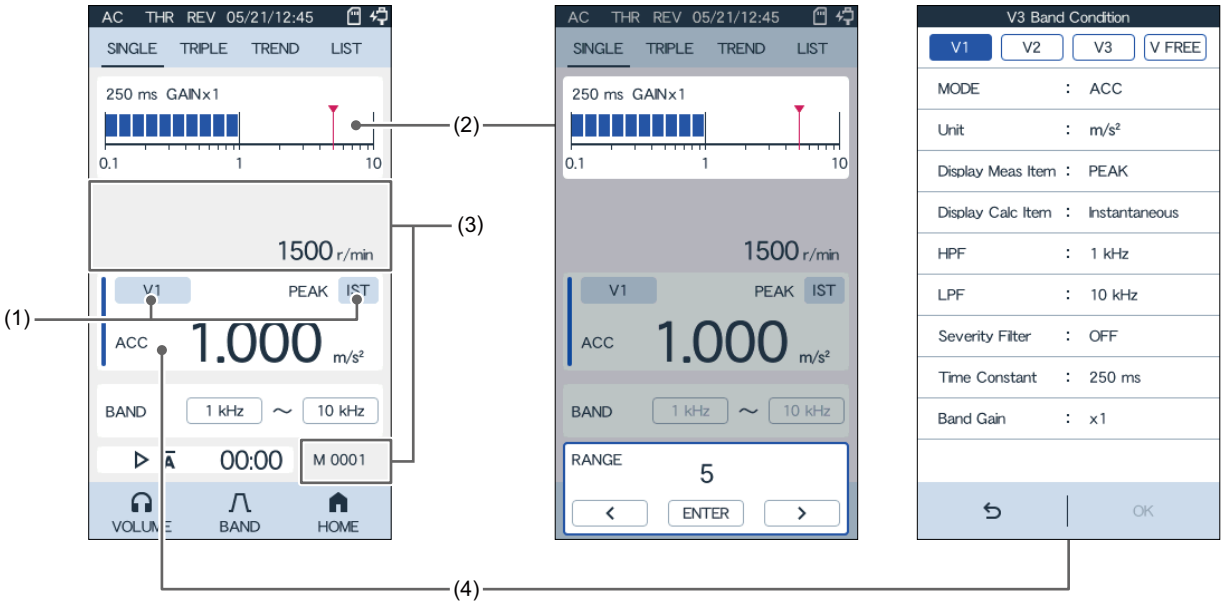
The [VOLUME], [BAND], and [HOME] buttons are always displayed on the measurement screen. You can adjust volume during measurement, apply/cancel a band-pass filter, and display the [HOME] screen easily.



No.	Status/information	Function
(1)	[VOLUME] button	Used to adjust volume or enable/disable muting.
		Muted
		Unmuted
(2)	[BAND] button	Used to apply/cancel the band-pass filter (BPF) processing on the sound output from the PHONE connector. This operation is performed for the PHONE output, and thus a measured value is not affected.
		Band-pass filter applied
		Band-pass filter canceled
(3)	[HOME] button	Used to display the [HOME] screen. The button turns gray during measurement and enters an inoperable state.

■ Operation of measurement screen

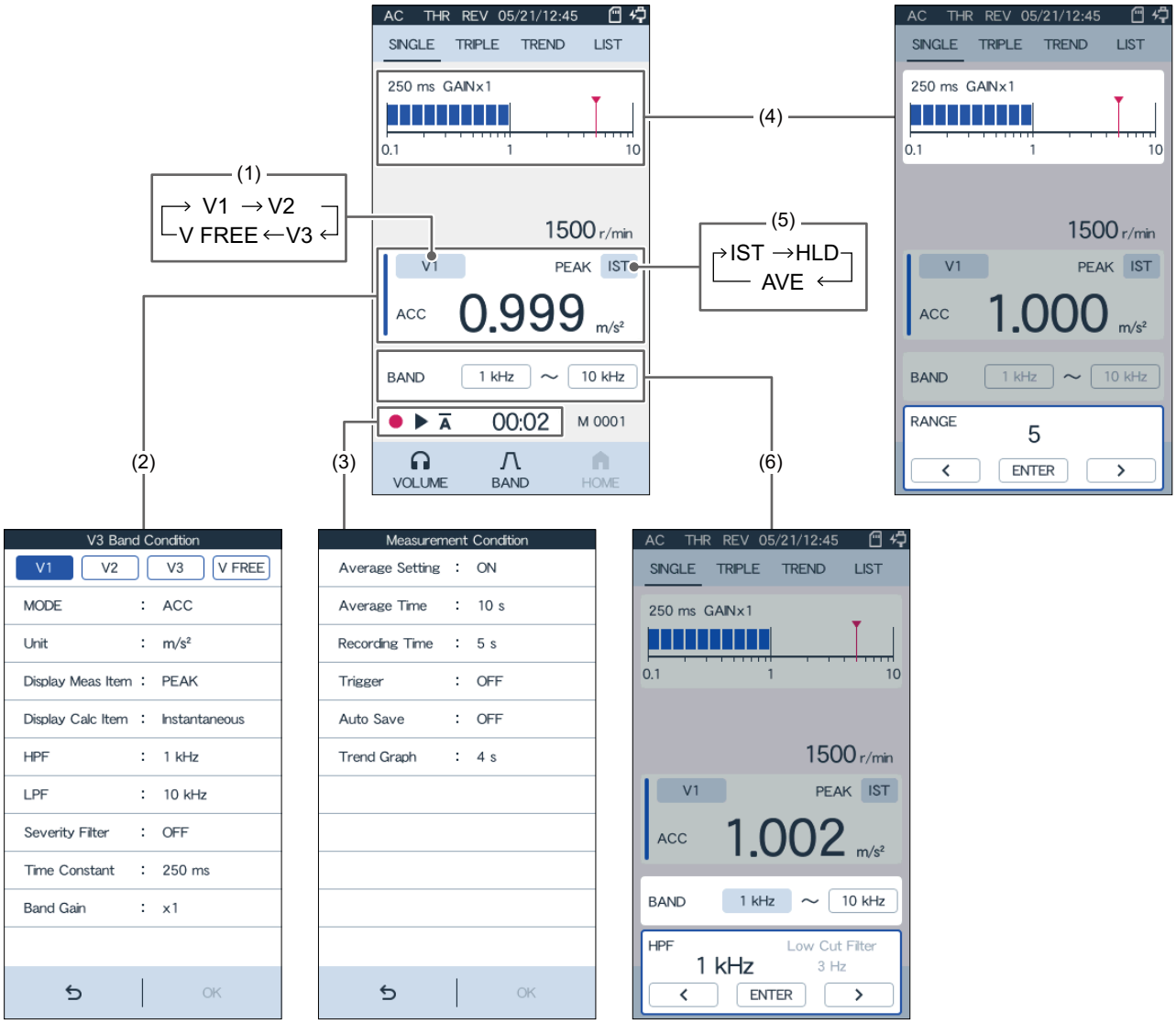
On the measurement screen of each mode, you can view the information such as measured value and status, and change a setting or mode by tapping the corresponding button on the touch panel. For the parts colored differently from the background, you can change settings by tapping or display the setting change screen.
The measurement screen consists of 4 types of UI components: display components, direct selection buttons, pop-up launchers, and screen transition components.



No.	Name	Description
(1)	Direct selection buttons	Tapping this button switches the setting.
(2)	Pop-up launchers	Tapping this part causes the dialog for setting change to pop up. Change a setting by operating the button in the dialog or the button on the main unit.
(3)	Display components	Measured value, status, and other information are displayed.
(4)	Screen transition components	Tapping this part displays the setting screen of relevant item.

● **Vibrometer mode ([SINGLE] screen) operation example**

For frequently used setting items, you can change a setting directly by tapping the corresponding button or area on the measurement screen or jump to the corresponding setting screen.



No.	Function	Description
(1)	Switching band	Tap the band switching button to switch the band (V1/V2/V3/V FREE).
(2)	Jumping to [V3 Band Condition] screen	Tap the measurement information display area to display the [V3 Band Condition] screen. The settings of the band currently displayed on the measurement screen are displayed. You can change the measurement mode, measured value display, etc. for each band here. Tap the [⮌] button to return to the measurement screen. • You can also change settings via [V3 Band Condition] on the [MENU] screen.
(3)	Jumping to [Measurement Condition] screen	Tap the measurement status indication area to display the [Measurement Condition] screen. You can change the settings related to measurement processing here. Tap the [⮌] button to return to the measurement screen. • You can also change settings via [Measurement Condition] on the [MENU] screen.
(4)	Changing measurement range	Tap the bar graph display area to show the [RANGE] dialog and then change the measurement range. • You can also change the setting via [Input Condition] → [Measure Range] on the [MENU] screen.

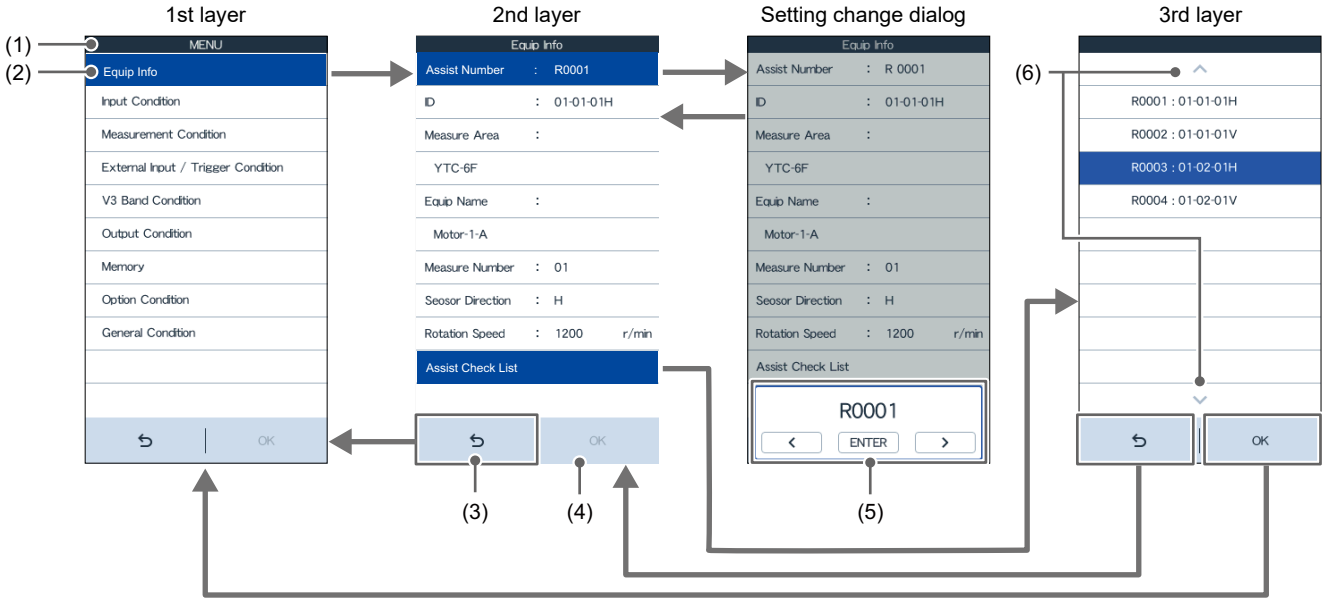
No.	Function	Description
(5)	Switching calculation item	Tap the calculation item switching button to switch the calculation item (IST: instantaneous value/HLD: maximum value/AVE: average value) to be displayed. • You can also change the setting via [V3 Band Condition] → [Display Calc Item] on the [MENU] screen.
(6)	Setting band-pass filter	Tap the band-pass filter display area to show the band-pass filter setting dialog and then change the cutoff frequency of the band-pass filter. The setting buttons for high-pass filter (HPF) and low-pass filter (LPF) are located on the left side and right side, respectively. When you confirm the [HPF] setting, you will be prompted to set [LPF]. • You can also change the setting via [V3 Band Condition] → [HPF]/[LPF] on the [MENU] screen.

1.3.3 MENU Screen

On the [MENU] screen, you can change the settings for signal input/output and vibration measurement, or save/call settings and data.
Tap [MENU] on the [HOME] screen to display the [MENU] screen.

■ Transition from MENU screen

When you select an item on the [MENU] screen, the following setting screen or setting change dialog will be displayed.

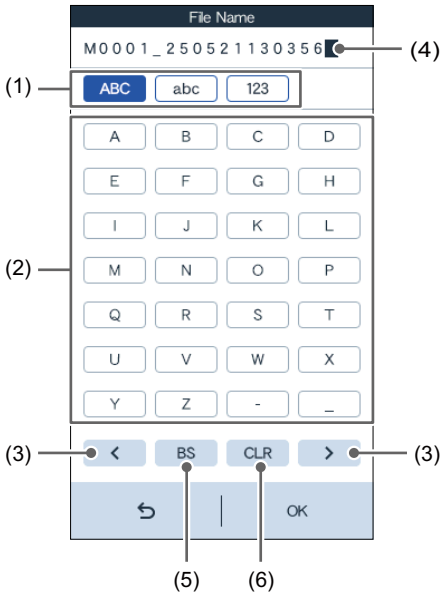


No.	Name	Description
(1)	Currently selected menu item	The currently selected menu item is displayed.
(2)	Currently selected item	The currently selected item is highlighted in blue.
(3)	[⮌] (return) button	Tapping this button cancels the setting and returns to the screen 1 layer above the current screen.
(4)	[OK] button	Tapping this button confirms the setting and returns to the screen 1 layer above the current screen.
(5)	Pop-up dialog	A dialog for changing a setting. Change a setting according to the dialog. Tap the [ENTER] button to confirm a setting. If you want to cancel setting and return to the screen 1 layer above the current screen, tap the area outside the dialog.

No.	Name	Description
(6)	[^]/[v] button	These buttons appear when setting items exist on the next page. Tapping the [^] button moves to the previous page, and tapping the [v] button moves to the next page.

● **Value and text input**

When a text/value needs to be input, the text input screen will be displayed.
Move the cursor, tap letters/numbers on the keyboard to input, and tap the [OK] button to confirm the input.



No.	Name	Description
(1)	Keyboard selection button	Used to select a keyboard. • [ABC]: Displays a keyboard containing uppercase alphabet characters. • [abc]: Displays a keyboard containing lowercase alphabet characters. • [123]: Displays a keyboard containing numbers.
(2)	Keyboard	Used to input letters/numbers by tapping.
(3)	[<]/[>] button	Used to move the cursor position to the left/right and decide the input position.
(4)	Cursor	A cursor indicating the character input position.
(5)	[BS] button	Used to delete a character before the cursor.
(6)	[CLR] button	Used to delete all the input content.

Chapter 2

Preparation

2.1 Preparing Power Supply

Power can be supplied to this instrument by the following 2 means.

- AA-size alkaline dry battery (LR6) or nickel hydrogen secondary battery (HR6) (4 pieces)
  Recommended battery: EVOLTA NEO manufactured by Panasonic
- USB Type-C bus power (used by connecting with a personal computer, AC adapter, or mobile battery)

CAUTION

- Supplying power through USB bus power is given priority. Therefore, even when batteries are inserted while the instrument is used with USB bus power connected, power is supplied preferentially through USB bus power. If the power supplied through USB bus power is stopped, the power supply source will be changed automatically to batteries.
- This instrument operates with USB bus power. However, note that it does not guarantee operations with the combinations of all types of USB power supply apparatuses and cables.

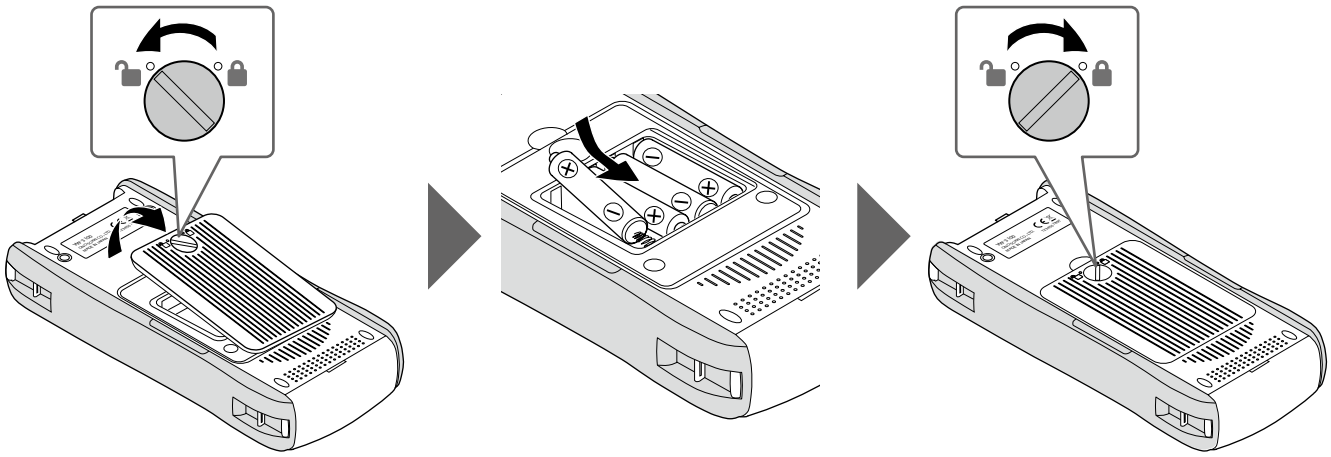
2.1.1 Supplying Power from Batteries

■ Inserting/removing batteries

● Inserting batteries

CAUTION

- Be sure to turn off the instrument before inserting batteries. Remove a USB cable if it is used to connect with a personal computer, AC adapter, or mobile battery.
- Lock the battery cover using a coin or the like. Locking the cover with your nail may cause injury.
- Insert batteries in the correct direction following the polarity sign (+/−) in the battery box.
- Be sure to replace with 4 new batteries of the same type (model). If a battery of different type or a used battery is included, it may cause failure or leakage from a battery.
- The internal standby power supply is always operated even when the power is off. While batteries are inserted, a slight amount of power is consumed at all times.
- Leaving the instrument with batteries inserted for a long time keeps consuming the batteries. It may also cause leakage from the batteries, resulting in failure of the instrument. Remove batteries before storing the instrument for a long time.

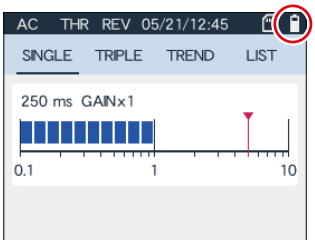


● Removing batteries

Remove the battery cover and then take the batteries out of the battery box by pushing the positive terminal side against the negative terminal side and lifting the positive terminal side.

■ Checking battery level

You can check the battery level with the indicator in the status indication area on the measurement screen.
The instrument detects the voltage of battery and shows the battery level using the following icons indicating 5 different stages.



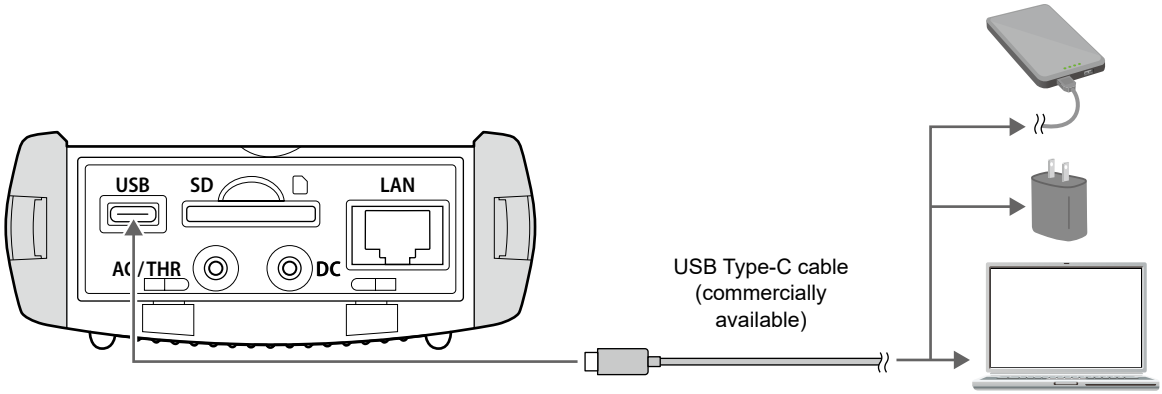
	Battery level is full. (Remaining capacity level: 4)
	Battery level is sufficient. (Remaining capacity level: 3)
	Battery level drops to approximately half. (Remaining capacity level: 2)
	Battery level is low. (Remaining capacity level: 1)
	Battery level is critical. Replace the batteries. (Low battery)

CAUTION

- Continuing to use this instrument with the low battery indicator ( ) displayed leads to exhaustion of batteries, which may cause sudden power failure of the main unit. In that case, the data of an SD card may be lost or corrupted. When the low battery indicator is displayed, replace with new batteries immediately or supply power through USB connection.
- In order to display correct battery level, select the type of the batteries inserted with [Battery Type] in [General Condition]. (Refer to “6.10 General Condition” on page 121.)
- If batteries other than recommended one (EVOLTA NEO manufactured by Panasonic) are used, the battery level may not be displayed correctly.

2.1.2 Supplying Power through USB Connection

Power can be supplied to this instrument (driven by USB bus power) by connecting the USB connector on the bottom panel with a personal computer, AC adapter, mobile battery, etc. using a commercially available USB Type-C cable.



CAUTION

- When supplying power from the USB port of a personal computer, power may be cut off suddenly due to the power saving setting of the personal computer. We recommend you to insert batteries to the instrument even when power is supplied through USB connection.
- This instrument does not support USB PD (USB Power Delivery).
- If you use a USB hub, the instrument may not operate normally. Connect a USB cable directly to the USB connector without using a USB hub.

2.1.3 Backup Battery

This instrument incorporates a rechargeable, lithium coin secondary battery (backup battery) for clock operation.
The backup battery allows the clock to operate for approximately 1 year from the state of full charge.

■ Charging backup battery

The backup battery is charged automatically regardless of the power supply state (on/off), provided that power is supplied to the instrument (batteries inserted/USB bus power supplied).

■ Request for charging backup battery (immediately after purchase)

The backup battery may not be charged sufficiently immediately after the purchase of this instrument. In order to charge the backup battery, leave the instrument with power supplied.

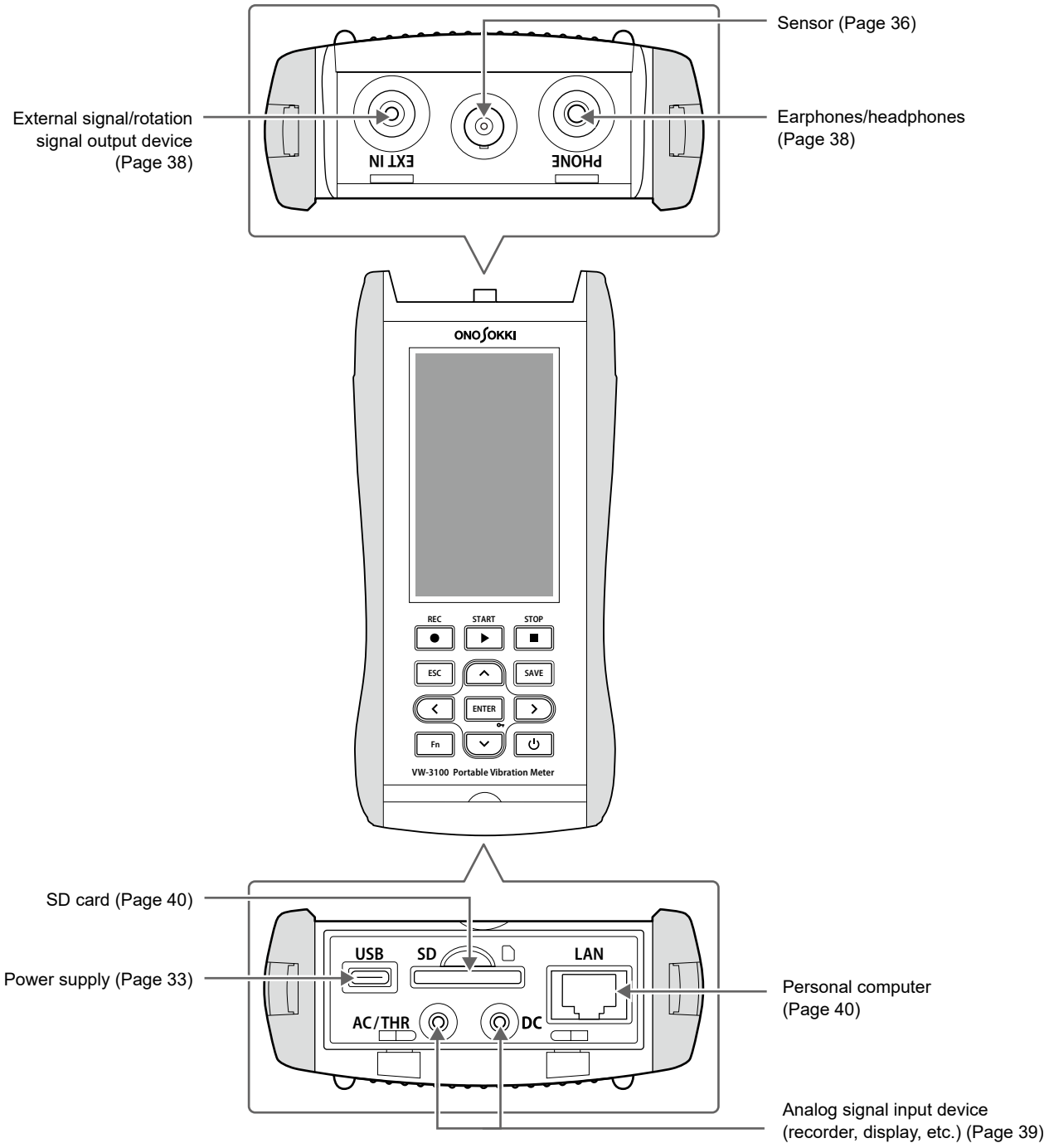
CAUTION

- The time required to fully charge the backup battery is approximately 24 hours at maximum. Therefore, we recommend that power be supplied through USB connection when long-time clock operation is necessary.
- If frequency of use is significantly low, we recommend that power be supplied regularly for charging purpose.
- The backup battery is designed so that it can withstand repeated discharges from full charge to 90 % (equivalent to approximately 1 month) for approximately 1000 times. However, note that the service life of the backup battery varies greatly depending on the operation environment.
- When the instrument is not used for a long time, reset date and time with [Date and Time] in [General Condition] before using the instrument again.
- If you want to check the service life of the backup battery or replace the backup battery, contact your nearest Ono Sokki sales office or the distributor where you purchased the instrument.

2.2 Connection

2.2.1 Overview of Sensor/Peripheral Device Connection

Be sure to turn off the power before connecting a sensor or peripheral device to the instrument. (Refer to “2.3.2 Turning Power Off” on page 41.)



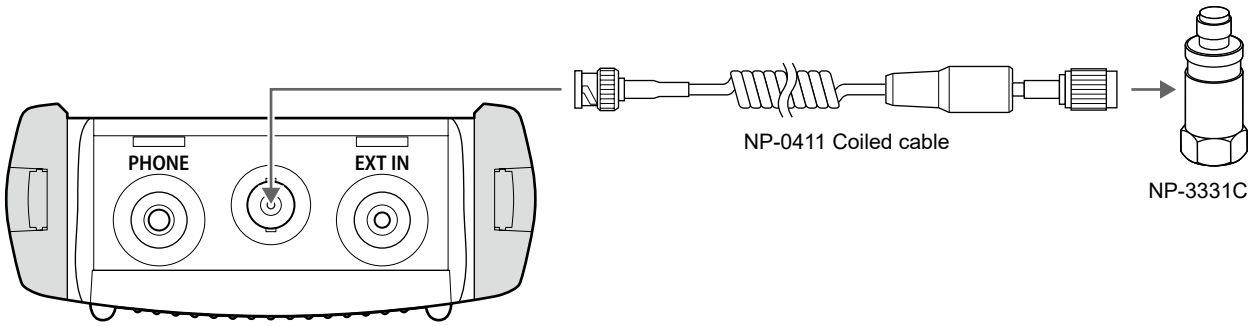
2.2.2 Connecting/Attaching Sensor

■ Connecting sensor

1 **Connect a sensor cable to a sensor.**
- For connecting a sensor cable to a sensor, refer to the instruction manual of a connection target sensor.

2 **Connect the BNC connector of the sensor cable to the signal input connector on the top panel of the instrument.**

Example: When connecting NP-3331C Shear-Type Accelerometer (with Built-in Preamplifier)

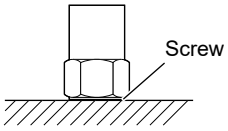
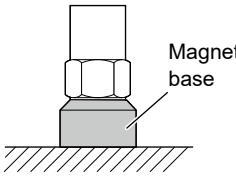
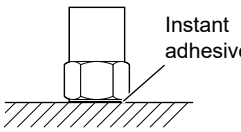
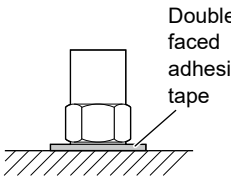
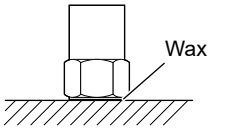


CAUTION

- For the latest information about the sensors that can be connected to the instrument, contact your nearest Ono Sokki sales office or the distributor where you purchased the instrument, or visit our website below: https://www.onosokki.co.jp/English/english.htm
- A BNC cap has been attached to the signal input connector of the instrument prior to shipment. When you connect a sensor, remove the BNC cap and store it with care not to lose it. Attach the BNC cap while a sensor is not connected.
- Set sensor sensitivity before starting measurement. (Refer to “3.3.2 Setting Sensor Sensitivity” on page 55.)
- Be sure to perform pre-operation inspection and periodic calibration. Check the operations of all devices to be used, including sensors, in a pre-operation inspection. When connecting our accelerometer, you can perform calibration and operation check with simple operations using our VX-1100A Sensitivity Calibrator for Piezoelectric Accelerometers (sold separately).

■ Attaching sensor

Before starting measurement, fix a sensor to a measurement target.
Fix a sensor by a method appropriate for the attachment location. The following table shows typical examples of sensor attachment.

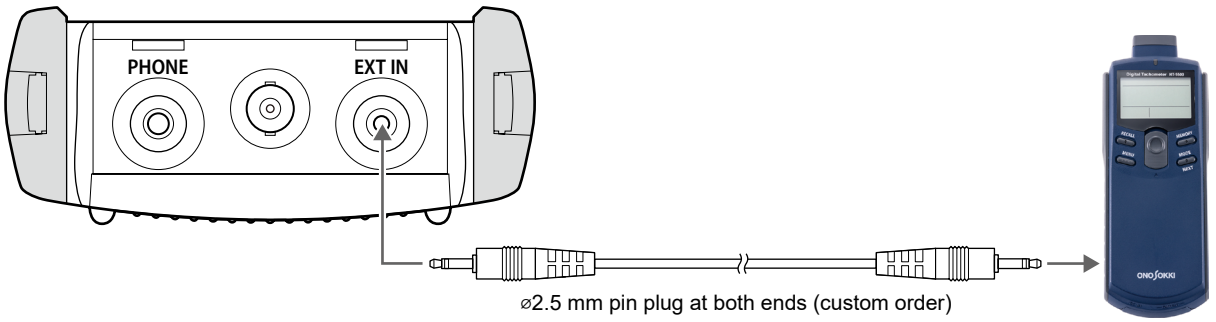
Attachment method	Details
	A sensor can be fixed firmly to a measurement target. Applying silicon oil to an attachment surface helps to suppress the influence of contact resonance on a measured value. • Fixing a sensor with a screw enables detection of up to the highest frequency in the measurement range of the sensor.
	If a measurement target is magnetic (ferromagnetic or paramagnetic body), such as iron, a sensor can be attached on a magnet base. When attaching a sensor equipped with a magnet base, bring the attachment surface of the magnet base slowly into contact with a measurement target from the edge to the entire surface. If it is attracted suddenly by means of attractive force of the magnet, an excessive impact will be applied to the sensor, which may result in failure. • Be sure to use a magnet base having a surface wider than the attachment are of a sensor. • Generally, the attractive force of a magnet increases as a magnet base becomes larger and the weight increases. However, influence on the vibration state of a measurement target increases as the weight of magnet base increases (reduction of resonance frequency due to addition of weight).
	When attaching a sensor using an instant adhesive, wipe off dirt and oil on the bonding part beforehand. • Use of mount base is recommended to prevent instant adhesive from entering through the screw hole. Bonding strength may vary depending on the bonding surface state (contamination and roughness) of a measurement target. After attaching a sensor, check that it is bonded surely.
	A sensor can be bonded to a measurement target by attaching a double-faced adhesive tape to the entire sensor attachment surface. • The upper limit of detectable frequency varies with the thickness of a double-faced adhesive tape. Generally, the upper limit of detectable frequency decreases as a tape becomes more flexible. Check that a sensor is detected correctly at a target vibration frequency.
	A sensor can be bonded temporarily to a measurement target using NP-0010 Wax (sold separately). Create a ball with a diameter of 2 mm and bond a sensor by sandwiching the ball between the sensor attachment surface and measurement target. Increase/decrease the number of balls according to the size of sensor attachment surface. • Use of mount base is recommended to prevent wax from entering through the screw hole. • Generally, the upper limit of detectable frequency decreases as the amount of wax increases. If it is insufficient, reduced bonding strength may cause coming off. • When the ambient temperature increases (for example, reaches or exceeds a human body temperature), wax will be softened, resulting in reduced bonding strength.

• For details about handling of a sensor, refer to the instruction manual that comes with the sensor.

2.2.3 Connecting External Signal Output Device

Connect a device such as tachometer and external trigger signal output device to the EXT IN connector on the top panel using a commercially available cable (instrument side: ⌀2.5 mm pin plug).

Example: When connecting HT-5500 Handheld Digital Tachometer



- Refer to the instruction manual of the device you use.

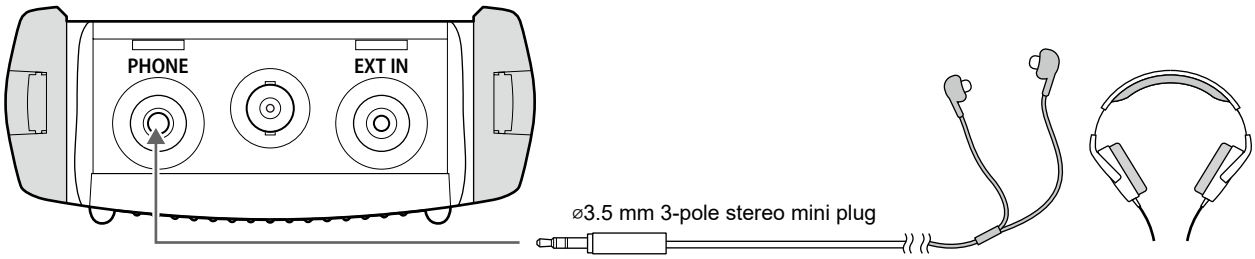
CAUTION

- When connecting an external signal output device to the EXT IN connector, detach the dedicated cap. Be sure to attach the dedicated cap while the EXT IN connector is not used.

2.2.4 Connecting Earphones/Headphones

Connect 3-pole earphones or headphones to the PHONE connector on the top panel.

- Recommended earphones: IE-100-Pro manufactured by Sennheiser



- For the volume adjustment procedure for earphones/headphones, refer to “3.5.2 Adjusting Volume” on page 73.

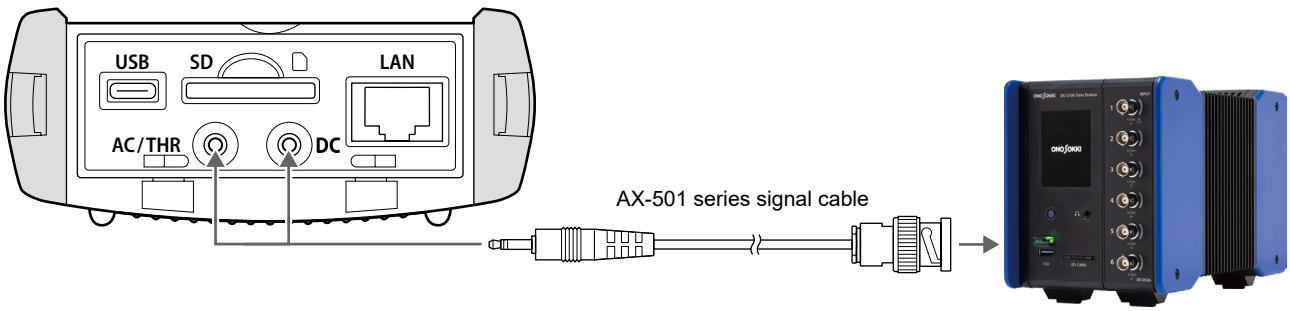
CAUTION

- If earphones/headphones are disconnected from the PHONE connector in an unmuted state, muting will be enabled automatically for hearing protection. Before connecting earphones/headphones again, disable muting.
- Be sure to connect 3-pole earphones/headphones (without microphone) to the PHONE connector. Connecting earphones/headphones other than those of 3 poles may cause unstable operation, for example, the sound volume becomes low or muting is enabled unintentionally.
- When connecting earphones/headphones to the PHONE connector, detach the dedicated cap. Be sure to attach the dedicated cap while the PHONE connector is not used.

2.2.5 Connecting Analog Signal Input Device

In order to output the analog output signal of this instrument to an analog signal input device such as recorder and display, connect an analog signal input device to the AC/THR or DC connector on the bottom panel using the AX-501 series signal cable (supplied).

Example: When connecting O-Solution/DS-5000 Sound and Vibration Analysis system



■ Types of analog output signals

Output signal	Description	Output connector
AC	Outputs an AC signal on which the output target band processing (BPF/ integration/band gain) is performed.	AC/THR
THR	Outputs a signal without performing digital processing.	AC/THR
DC	Outputs a measured RMS value (effective value) as a direct current (DC) voltage within the range of 0 to 5 V. For the output voltage, the maximum value (full scale) in the current measurement range is converted to 5 V. The frequency band to be output follows the AC output settings.	DC
CAL	Outputs a reference signal. (Refer to “CAL output signal (reference signal)” on page 39.)	• AC/THR • DC

- Using a THR output signal enables transfer function measurement with a high level of accuracy using an external device such as FFT analyzer, without being affected by signal delay by the internal digital signal processing circuit.

■ Analog output target band

This instrument performs measurements of 3 bands simultaneously. You need to specify an output target band for analog output.
Select an output target band from the following 2 modes with [Output Type] in [Output Condition].

- For details about the setting items, refer to “6.7 Output Condition” on page 115.

Output Type	Description
Fix Mode	Produces output based on the calculation result of the band specified as an analog output target. For example, when [Target Band] is set to [V1], output is produced based on the calculation result of [V1] even when [V2] is displayed or selected on the measurement screen.
Follow Mode	Produces output based on the calculation result of the band displayed or selected on the measurement screen in the vibrometer mode.

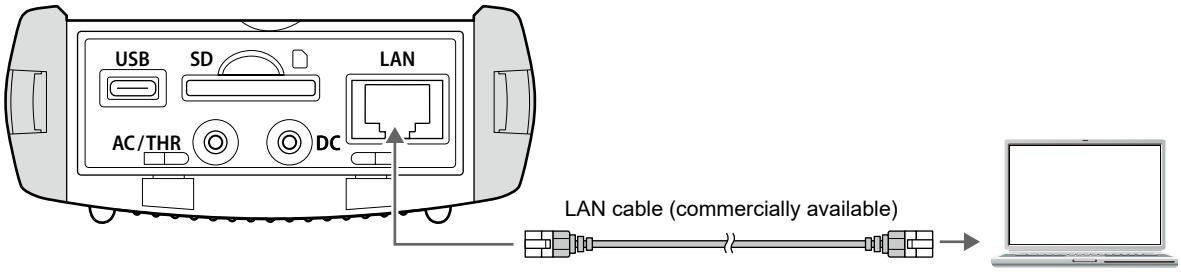
■ CAL output signal (reference signal)

You can calibrate the external device connected to this instrument using the CAL output (reference signal) of the instrument. The following table shows the specifications of the reference signal to be output.

Connector	Specification
AC/THR	Sine wave: 160 Hz Amplitude: 1.0 V (Peak) ±3 %
DC	707 mV ±3 % • DC offset voltage excluded

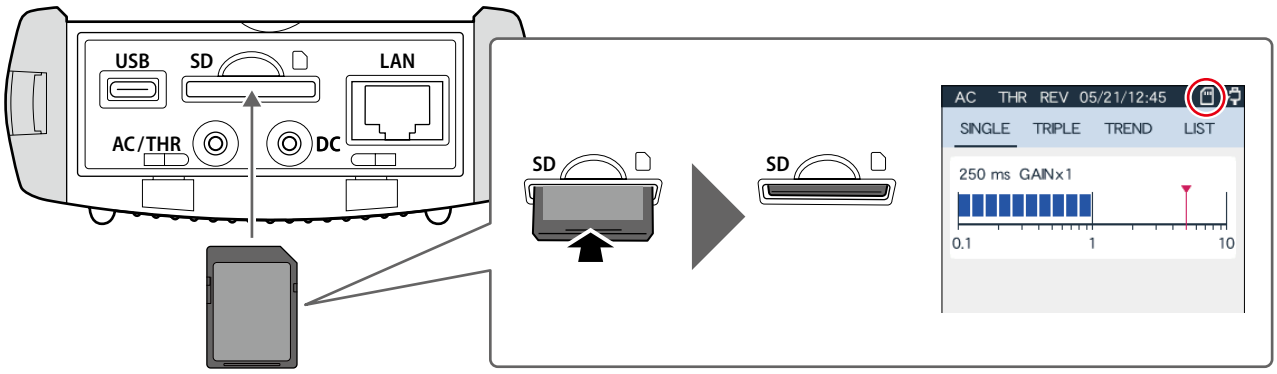
2.2.6 Connecting Personal Computer

When using “VW-0360 Vibration Diagnosis Assist Tool” (option), connect a personal computer to the LAN connector on the bottom panel with a LAN cable.



2.2.7 Inserting SD Card

When saving data such as measurement data, recorded data, setting conditions, and captions on screens in an SD card, insert an SD card into the SD card slot.
Insert an SD card all the way seated until a clicking sound is heard.
For handling of SD card, refer to “4.1.1 Precautions for Handling SD Card” on page 78.



■ Removing SD card

When removing an SD card, lightly push the SD card deep in the slot to unlock and then pull it out slowly with your fingers.

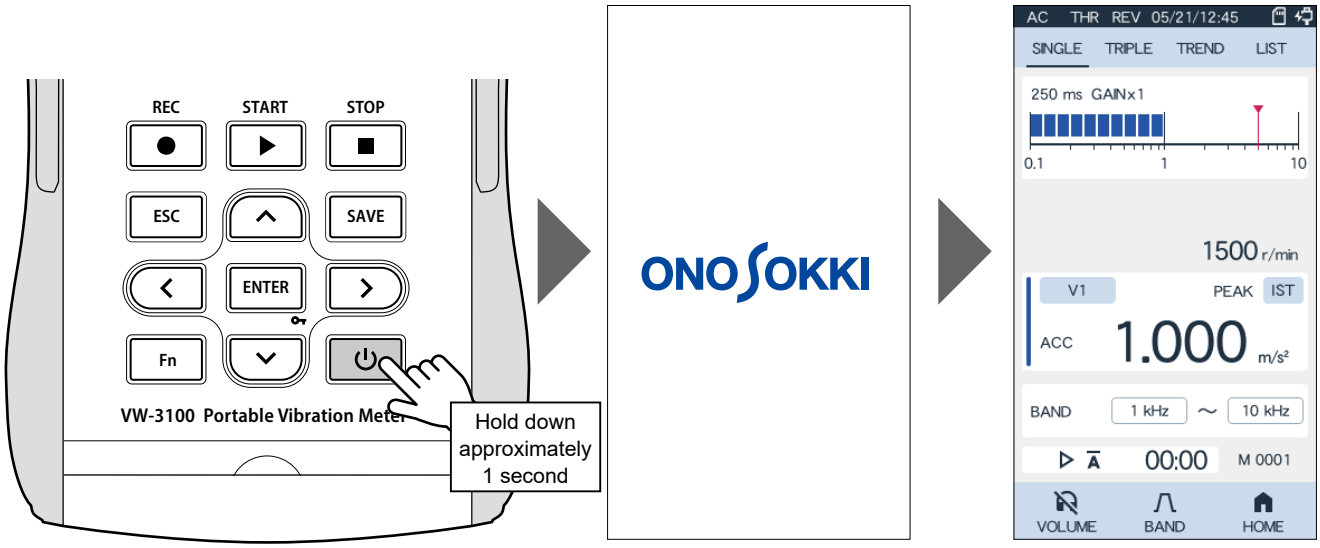
CAUTION

- Do not insert any objects other than SD card into the SD card slot. Ignoring this may cause failure of the instrument.
- If a foreign object or water enters the SD card slot, immediately turn off the instrument power, remove batteries and power cable, and then contact your nearest Ono Sokki sales office or the distributor where you purchased the instrument.
- For an SD card with write protection switch, be sure to cancel protection before inserting the SD card. If the SD card is inserted with protection enabled, the write protection indicator ( ) will be displayed, indicating that data cannot be written.
- Never remove an SD card while the data access indicator ( ) is displayed during data write to the SD card. Ignoring this may cause failure or damage to the instrument or SD card.

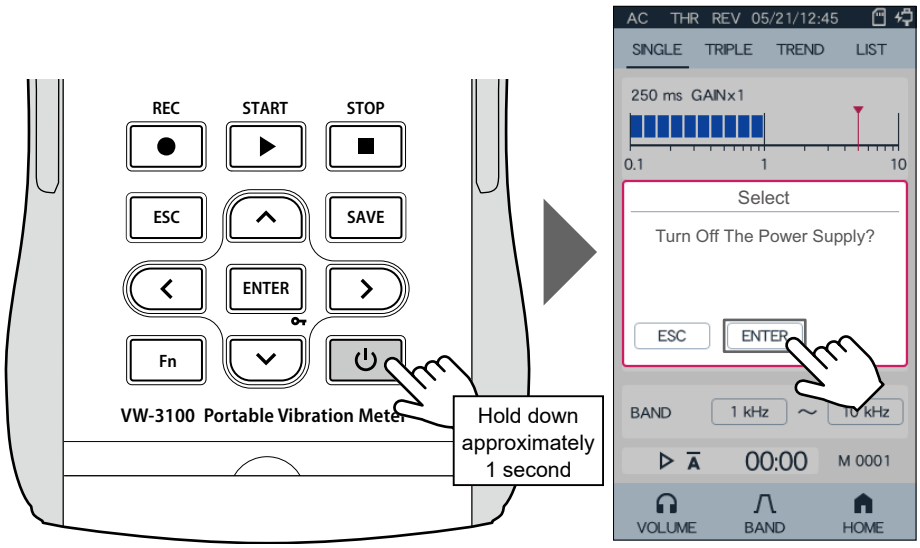
2.3 Startup and Shutdown

2.3.1 Turning Power On

When you turn on the instrument power, the ONOSOKKI logo will be displayed for a few seconds, and then the screen of the previously used operation mode will be displayed.



2.3.2 Turning Power Off



When you tap the [ESC] button, the power off process will be canceled and the dialog will be closed.

CAUTION

- In order to prevent erroneous operation, the ⏻ button makes a switch between on and off when it is held down for a certain period of time.
- It takes a maximum of approximately 10 seconds for the instrument to stabilize after startup. For more accurate measurement/output, wait for approximately 10 seconds after startup of the instrument before starting measurement.

■ Forced shutdown

If the instrument is affected by an external noise beyond an expected level, holding down the ⏻ button on the front panel for approximately 1 second may not display a confirmation dialog, preventing the instrument from shutting down.
In this case, hold down the ⏻ button on the front panel for approximately 10 seconds to force the instrument to shut down.

IMPORTANT

- Note that if forced shutdown is executed, the data such as previous measurement data and vibration measurement settings (condition memory) may be lost. Also, forced shutdown executed during recording or data save may damage an SD card.

2.4 Environment Settings for Vibration Meter

When you turn on the instrument power, configure the environment settings such as date and time, and display language.

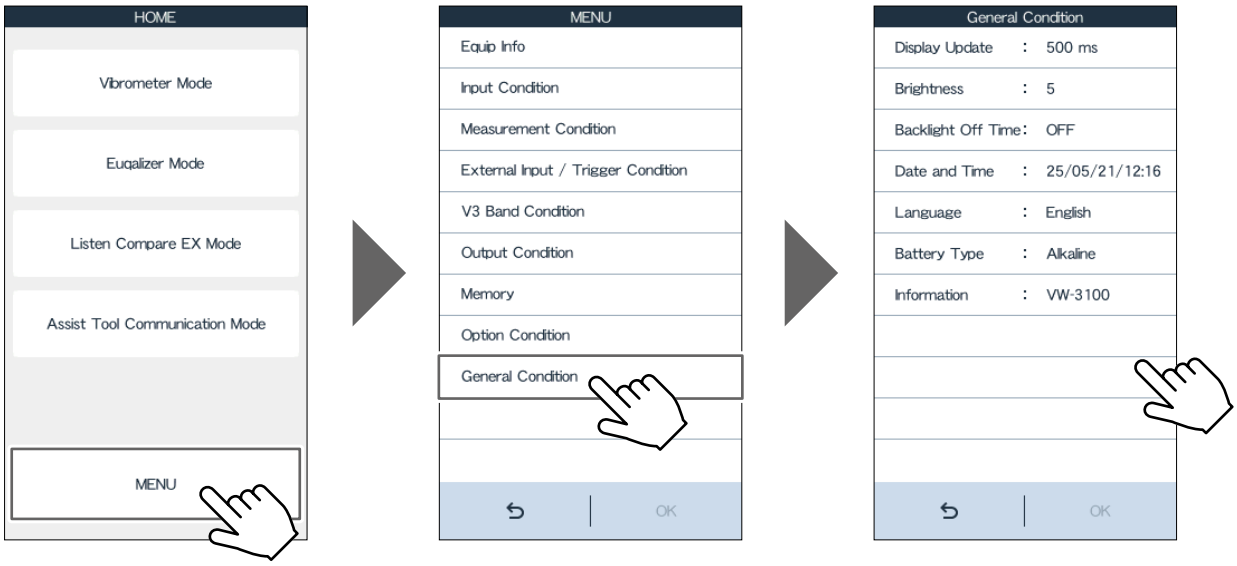
1 **Display the [General Condition] screen.**
Tap [MENU] → [General Condition] from the [HOME] screen.

2 **Change the settings as needed.**
For details about the setting items, refer to “6.10 General Condition” on page 121.

Setting item	Description
Display Update	Set the display update interval for measured value.
Brightness	Set the brightness of the screen.
Backlight Off Time	Set the time to put out the backlight when the instrument is not operated for a certain period of time.
Date and Time	Set the date and time displayed on the main unit.
Language	Select a language to be displayed on the screen of the instrument.
Battery Type	Select the type of the batteries used in order to display correct battery level.

- Tapping the [OK] button on each setting screen returns to the [General Condition] screen.

3 **Complete setting.**
Tap the [⮌] button to return to the [MENU] screen.



Chapter 3

Measurement in Vibrometer Mode

3.1 Overview of Vibrometer Mode

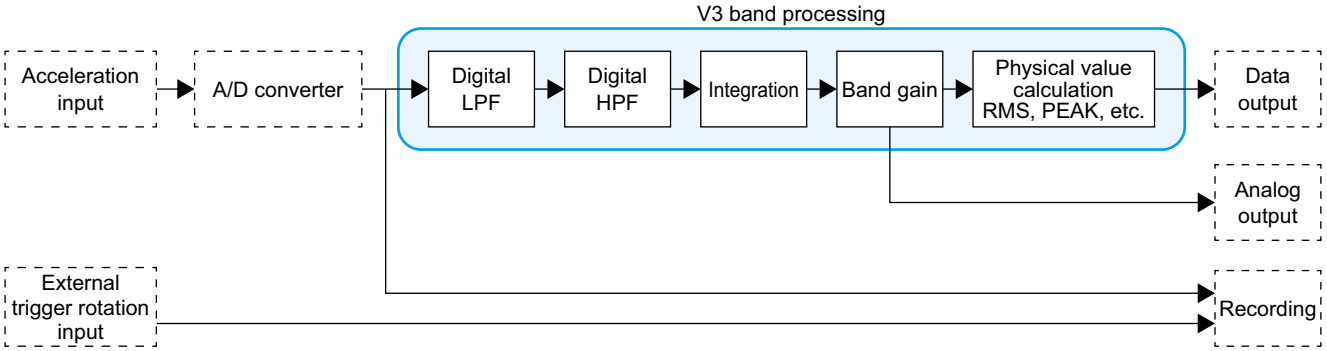
The vibrometer mode allows you to measure different vibration values of multiple bands (V3 band) simultaneously from a single input signal.
Also, by installing “VW-0320 Recording and Comparison Function” (option) or “VW-0340 ISO Evaluation and Judgment Function” (option), recording or evaluation/judgment can be performed.
Tap [Vibrometer Mode] on the [HOME] screen to enter the vibrometer mode.

3.1.1 Measurement Target Frequency Band (V3 Band)

■ V3 band

This instrument measures different vibration values of 3 bands simultaneously. These bands are called V1, V2, and V3. You can set different frequency bands (band-pass filters) and integration conditions for these bands.

● V3 band processing range



■ V FREE band

This instrument enables the display of measured value with the V FREE band, differently from the V3 band.
Use this feature when you want to perform vibration measurement with some changes made in set conditions, without changing the V1/V2/V3 settings used for usual equipment inspection or quality judgment.
The following restrictions are imposed on the use of V FREE band in order to prevent data from being saved with settings that are different from the vibration measurement settings normally used for data acquisition.

- Cannot be used simultaneously with other bands (V1/V2/V3).
- V FREE band cannot be used on the TRIPLE screen.
- Data cannot be saved.
- Recording function is unavailable.
- Evaluation function is unavailable.
- Cannot be used while the assist inspection function is used.

3.1.2 Measured Value

■ Measurement item

This instrument enables measurement of the following 6 items.

Measurement item	Description
RMS (Root Mean Square)	Effective value with time constant
PEAK (0-Peak)	Maximum absolute value of time axis waveform
P-P	2 times the PEAK value
CF (Crest Factor)	Ratio between maximum RMS value and maximum PEAK value at 500 ms intervals (PEAK/RMS)
EQpeak (equivalent peak)	$\sqrt{2}$ times the RMS value
EQp-p*	2 times the EQpeak value

* [EQp-p] can be measured only when [MODE] in [V3 Band Condition] is set to [DISP].

■ Calculation item

Simultaneous calculation of instantaneous value (IST), maximum value (HLD), and average value (AVE) can be performed for each measurement item. The following table shows the detail of each calculation item.

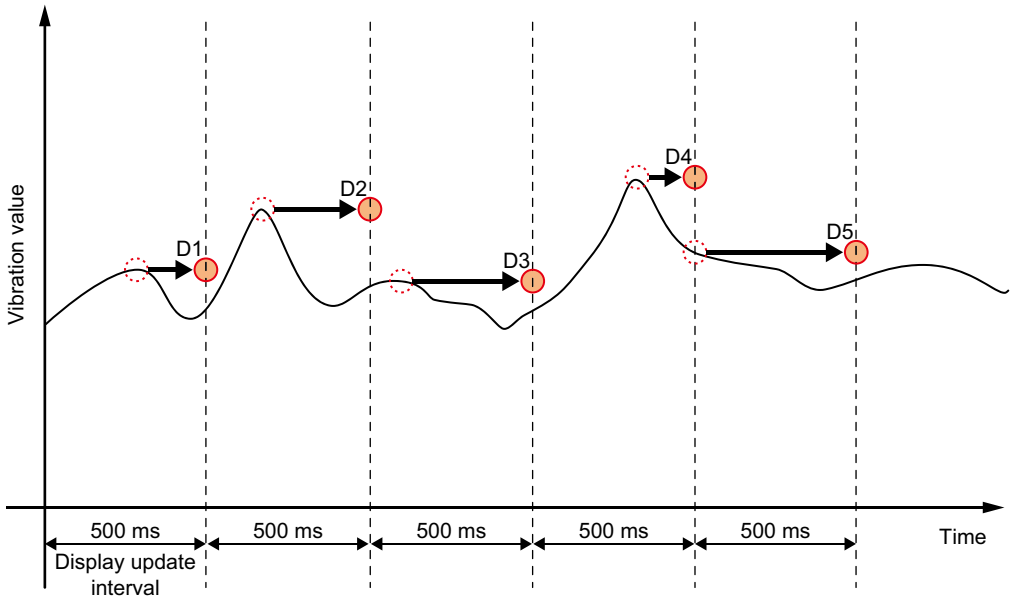
Calculation item	Description
Instantaneous value (IST)	Maximum value by the display update interval (tact max)
Maximum value (HLD)	Maximum instantaneous value
Average value (AVE)	Summation average value from the start to end of measurement

CAUTION

- If an input signal exceeds the measurement range during calculation/measurement even for a moment, the OVER indicator does not disappear unless new measurement is started.
- A calculated/measured value with the OVER indicator displayed is unreliable. Change the setting of [Measure Range] in [Input Condition] or [Band Gain] in [V3 Band Condition] and perform measurement again.
- When calculating average value (AVE), set [Average Setting] in [Measurement Condition] to [ON]. Instantaneous and maximum values are always calculated regardless of the setting.

● **Instantaneous value (IST)**

A maximum value by the display update interval (tact max) is calculated.
The following figure shows an example of the case where [Display Update] in [General Condition] is set to [500 ms]. The display is updated every 500 ms (D1, D2, D3...).

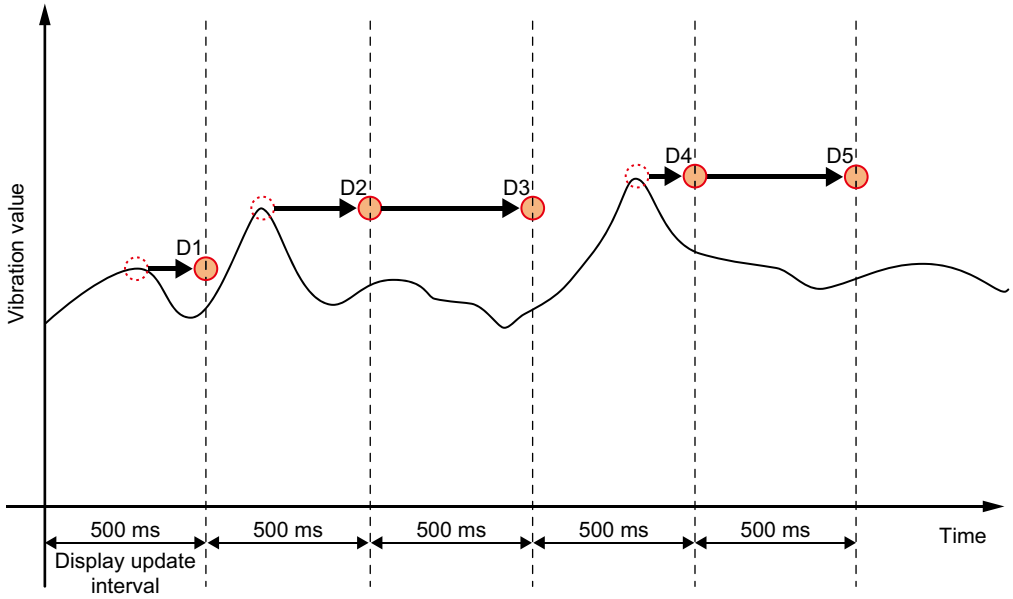


● **Maximum value (HLD)**

A maximum instantaneous value is calculated.
The maximum value (HLD) is reset with the following timing.

- When measurement is started
- When a switch to live measurement (instant display) is made after stop of measurement
- When the ESC button on the front panel is pressed during live measurement

The following figure shows an example of the case where [Display Update] in [General Condition] is set to [500 ms]. The display is updated every 500 ms (D1, D2, D3...).

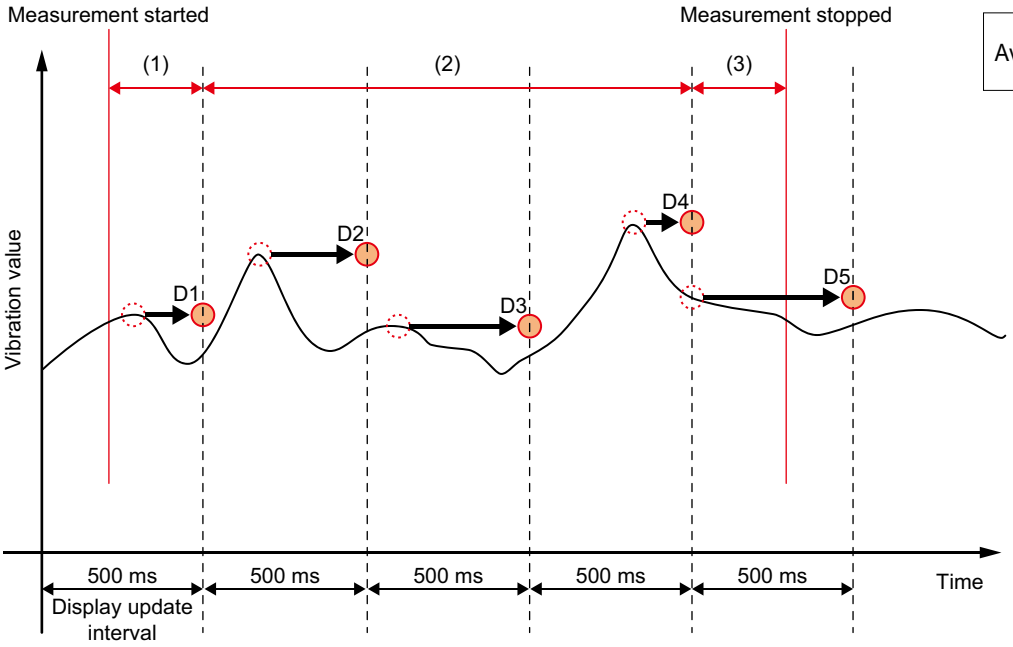


● **Average value (AVE)**

A summation average value from the start to end of measurement is calculated. During measurement, a summation average value of the data up to the latest display update timing is displayed.
However, for PEAK and CF calculations, an average value is calculated by dividing the interval into 3 sections.

- Section from the start of measurement to the first display update (1)
- Section consisting of normal update intervals (500 ms) (2)
- Section from the display update to the end of measurement (3)

For PEAK and CF, an average value is calculated using only the data of normal update intervals (2), and the data of sections (1) and (3) are not included.
The following figure shows an example of the case where [Display Update] in [General Condition] is set to [500 ms]. The display is updated every 500 ms (D1, D2, D3...).



$$\text{Average value} = \frac{D2 + D3 + D4}{3}$$

3.1.3 Screen in Vibrometer Mode

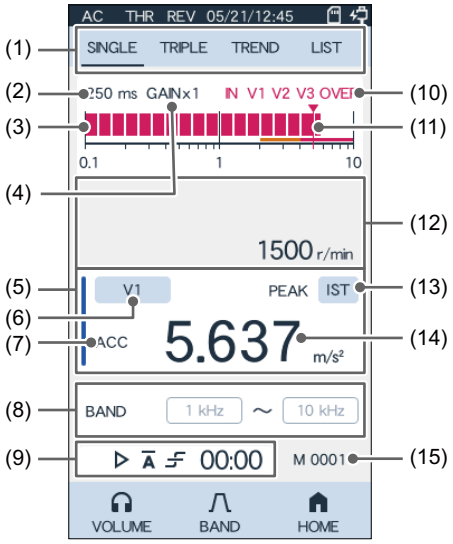
■ 4 types of screens displayed in vibrometer mode

The vibrometer mode is a basic operation mode of this instrument, which enables measurement of 3 different bands (frequency bands), by measuring acceleration, velocity, and displacement simultaneously from a single input signal.
In the vibrometer mode, you can switch the display among 4 types of screens: [SINGLE], [TRIPLE], [TREND], and [LIST].

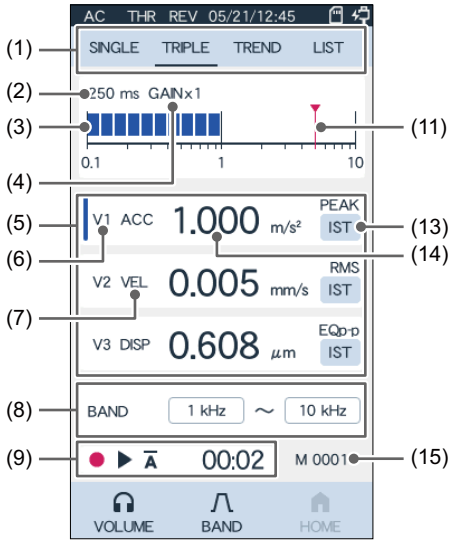
Screen	Description
[SINGLE] screen	Shows the enlarged display for 1 of the 3 types of bands. Tap the band switching button to change the display target band. You can also check the value of the vibration level with the bar graph.
[TRIPLE] screen	Shows the measured values of 3 types of bands simultaneously. You can view the measured values of acceleration, velocity, and displacement at a glance. You can also check the value of the vibration level with the bar graph as with the [SINGLE] screen.
[TREND] screen	Shows temporal fluctuations of RMS value in a trend graph. The trend graph shows measured values of 1 band. Tap the band switching button to change the display target band. • Temporal fluctuations of RMS is always plotted on the graph regardless of the setting of [Display Meas Item] in [V3 Band Condition].
[LIST] screen	Shows all measured values in a list. • The measured value of [EQp-p] is displayed only when [MODE] in [V3 Band Condition] is set to [DISP].

- To switch the display, tap the screen switching tab or press the ‹ / › button on the front panel.

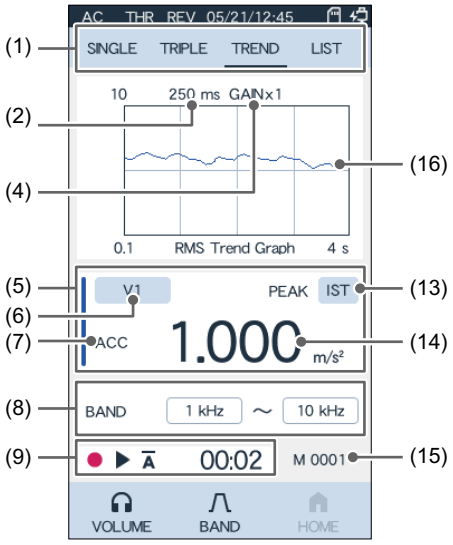
■ SINGLE/TRIPLE/TREND/LIST screen



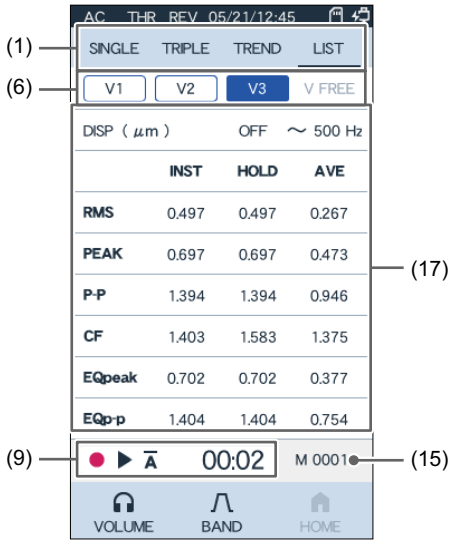
SINGLE



TRIPLE



TREND



LIST

No.	Name	Description
(1)	Screen switching tab	Switches the display of vibration meter ([SINGLE]/[TRIPLE]/[TREND]/[LIST]).
(2)	Time constant	Shows the value of [Time Constant] set in [V3 Band Condition].
(3)	Bar graph	Shows the value of the vibration level with bar graph while the [SINGLE]/[TRIPLE] screen is displayed. Tapping the graph area displays the [RANGE] dialog for changing the measurement range. • The displayed value of the measurement range is a peak value.
(4)	Band gain	Shows the multiplying factor of [Band Gain] set in [V3 Band Condition].
(5)	Measurement information display area	Shows the measurement information such as measured value, measurement item, and calculation item. Tapping this area displays the [V3 Band Condition] screen. • While the [TRIPLE] screen is displayed, tapping the target band for displaying a bar graph displays the measured value of the band in a bar graph. For a currently selected band, a blue indicator is displayed on the left side of the area.
(6)	Band indicator/band switching button	Shows a currently displayed band. While the [SINGLE]/[TREND]/[LIST] screen is displayed, tapping this button switches the band (V1/V2/V3/V FREE*).

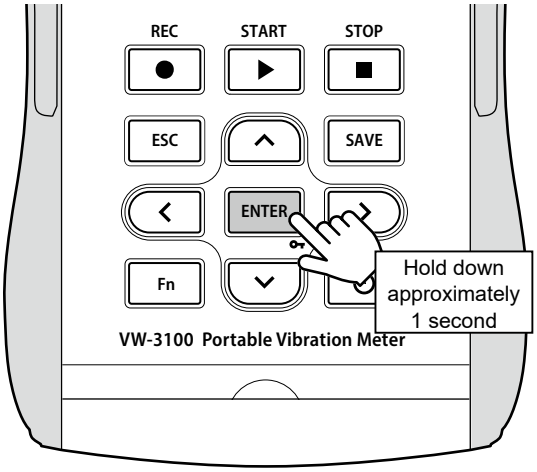
No.	Name	Description
(7)	Mode	Shows a measurement mode. You can change the measurement mode with [MODE] in [V3 Band Condition]. • ACC: Acceleration • VEL: Velocity • DISP: Displacement
(8)	Band-pass filter	Shows the frequency band of measurement target of each band (V1/V2/V3/V FREE*). Tapping this area displays the dialog for changing the band-pass filter range.
(9)	Measurement status	Shows a measurement time and measurement/trigger/recording status (refer to “3.4.1 Measurement Status” on page 65). Tapping this area displays the [Measurement Condition] screen.
(10)	OVER indicator (IN/V1/V2/V3)	Appears when a signal exceeds the reference value. The following indicators also appear according to the type of the signal exceeding the reference value. • IN: The input voltage exceeds the setting value of [Measure Range] in [Input Condition]. Review the settings of [Measure Range]. • V1/V2/V3: The AC output voltage exceeds the specification of this instrument, 5 V (Peak), in each band (V1/V2/V3). Review the settings of [Band Gain].
(11)	Measurement range	Shows the position of [Measure Range] set in [Input Condition] with red line on a bar graph.
(12)	Information display area	Shows a rotation speed when [Signal Type] in [External Input/Trigger Condition] is set to [Rotation]. When “VW-0350 Assist Tool Communication Function” (option) is installed, and [Assist Mode] in [Assist Tool Communication Function] is set to [ON], the equipment information is displayed.
(13)	Calculation item indicator/ calculation item switching button	Shows a currently displayed calculation item. You can switch the display target calculation item by tapping this button. • IST: Instantaneous value • HLD: Maximum value • AVE: Average value
(14)	Measured value	Shows a currently measured value.
(15)	Memory number	Shows a memory number. When you save measured data, it will be registered with the currently displayed memory number.
(16)	Trend graph	Shows a trend graph when the [TREND] screen is displayed. The horizontal axis in the graph area represents time. You can change the range of display time in the [TIME] dialog displayed by tapping the graph area. • The vertical axis in the graph area represents RMS value. The graph is plotted with the log scale using the measurement range as a maximum value.
(17)	List	Shows all measured values in a list while the [LIST] screen is displayed. • The measured value of [EQp-p] is displayed only when [MODE] in [V3 Band Condition] is set to [DISP].

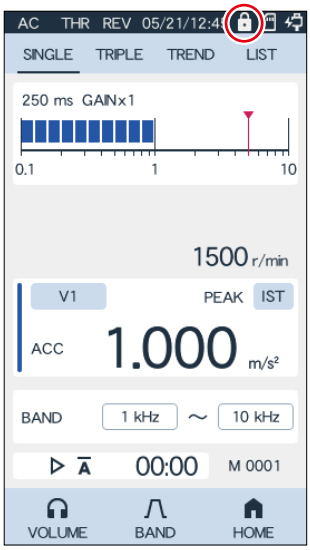
* You can switch to V FREE only during live measurement (instant display).

3.1.4 Preventing Erroneous Operation during Measurement (Screen Protection)

You can restrict operations using screen protection in order to prevent erroneous operation of the touch panel during use of the vibrometer mode.

■ Enabling screen protection





While screen protection is enabled, the indicator appears on the measurement screen, and only the operations by the [VOLUME], [BAND], and [HOME] buttons are available.

■ Canceling screen protection

Hold down the ENTER/ button on the front panel for approximately 1 second. The indicator on the measurement screen is turned off.

3.2 Basic Measurement Procedure

- Connect peripheral devices or insert an SD card before starting measurement. (Refer to “2.2 Connection” on page 35.)
- When saving a measurement result, the measurement date and time are used as a file name by default. Set the date and time with [Date and Time] in [General Condition] beforehand. (Refer to “6.10 General Condition” on page 121.)

(1) Connecting and attaching sensor

- Connect a sensor with this instrument and attach it to a measurement target by the method appropriate for the measurement target (Page 36).

(2) Setting vibration measurement

- When initializing settings (current condition) to the default state before changing settings, execute initialization with reference to “Initializing current settings” on page 83.

- Load saved settings (panel condition) or template for settings to configure settings (Page 54).
- Set each item manually.
  - Sensor sensitivity (Page 55)
  - Measurement range (Page 56)
  - Band-pass filter (Page 57)
  - V3 band condition (Page 60)
  - Measurement processing condition (Page 61)
  - Evaluation condition (only when “VW-0340 ISO Evaluation and Judgment Function” (option) is installed) (Page 62)

(3) Performing measurement/ recording

- Start/end measurement (Page 67).
  - Recording (only when “VW-0320 Recording and Comparison Function” (option) is installed) (Page 68)
  - Monitoring vibration sound (Page 73)
- Measurement using the trigger function (Page 68)

(4) Saving measured/recorded data

- Select whether to save or discard data each time measurement/recording is performed (Page 71).
- Save measurement/recorded data automatically (Page 72).

(5) Checking measurement data

- Check saved data (Page 81).

3.3 Vibration Measurement Settings

Configure the vibration measurement settings before starting measurement.
For the vibration measurement settings, you can load a template or saved settings, or you can configure them manually.
- For details about the setting items, refer to Chapter 6 “Menu References”.
- When initializing the current settings (current condition) to the default state before changing settings, execute initialization with reference to “Initializing current settings” on page 83.

3.3.1 Loading Saved Settings or Template Settings

With the frequently used settings saved as a panel condition, you can switch to the target measurement settings easily by loading the settings at the time of measurement.
You can also load and use the 3 types of template conditions that have been registered in this instrument.
After loading settings, you can change some settings manually according to the situation.
- For saving a panel condition, refer to “Saving current settings” on page 84.
- For details about the template settings, refer to “4.3.3 Using Template Condition Settings” on page 86.

1 **Display the [Panel/Template Condition] screen.**
Tap [MENU] → [Memory] → [Panel/Template Condition] from the [HOME] screen.

2 **Select panel condition or template condition.**
Tap the [LOAD] button, select a loading target condition, and then tap the [OK] button.
- [P.Cond 1]/[P.Cond 2]/[P.Cond 3]/[P.Cond 4]/[P.Cond 5]: Saved settings (panel conditions)
- [Template 1 : Small Machine Condition]/[Template 2 : Vibration Severity Condition]/[Template 3 : RM Condition]: Load-only template settings registered in the instrument (template conditions)

3 **Apply the selected panel condition or template condition.**
A confirmation message will be displayed in the [Select] dialog. Tap the [ENTER] button to apply the selected settings.
Tap the [ESC] button to cancel application of the settings.

3.3.2 Setting Sensor Sensitivity

■ Manual setting

1 **Display the [Input Condition] screen.**
Tap [MENU] → [Input Condition] from the [HOME] screen.

2 **Set the input condition appropriate for the sensor connected.**

Setting item	Description
EU Name	Select an EU name.
EU Type	Select an EU type.
Calibration Value	Enter the sensitivity value of the sensor.

- Tapping the [OK] button on each setting screen returns to the [Input Condition] screen.

3 **Complete setting.**
Tap the [⮌] button to return to the [MENU] screen.

CAUTION

- When you change the setting of [EU Name] or [EU Type], the setting of [Calibration Value] will be changed automatically to [1.0000]. We recommend you to set [EU Name] and [EU Type] first.
- Normally, a measured value of this instrument is read as a voltage value. However, if the reference value of a measurement target acceleration/sound signal is already determined, a measured value can be read as a physical value by correcting the voltage value to the reference value. For example, if an output value is 5.0 mV while the input from an accelerometer is 1.0 m/s^2, the unit can be converted to m/s^2 by converting the obtained voltage value to 1/5 using “5.0 mV/EU” as reference.

■ Automatic setting (with TEDS supported sensor connected)

When a TEDS supported sensor is connected, automatic setting can be performed by reading the sensitivity information from the sensor.

1 **Display the [TEDS] screen.**
Tap [MENU] → [Input Condition] → [TEDS] from the [HOME] screen.

2 **Read the TEDS information to update the sensor setting items.**
Tap the [TEDS Info Load Start] button.
When reading of the TEDS information is completed, the read sensor information will be displayed, and the sensor setting items will be updated automatically.

3 **Complete setting.**
Tap the [⮌] button to return to the [Input Condition] screen.

CAUTION

- Before reading the TEDS information, set [Input Type] on the [Input Condition] screen to [CCLD].
- If reading of the TEDS information and automatic setting fail, the message [TEDS Information Read to Failed.] will be displayed. Check that the connected sensor supports TEDS and that the sensor is connected properly.

3.3.3 Setting Measurement Range

Set the appropriate measurement range to measure vibration more accurately.
Be sure to change the measurement range if the OVER indicator is displayed on the measurement screen, or if a measured value remains zero.

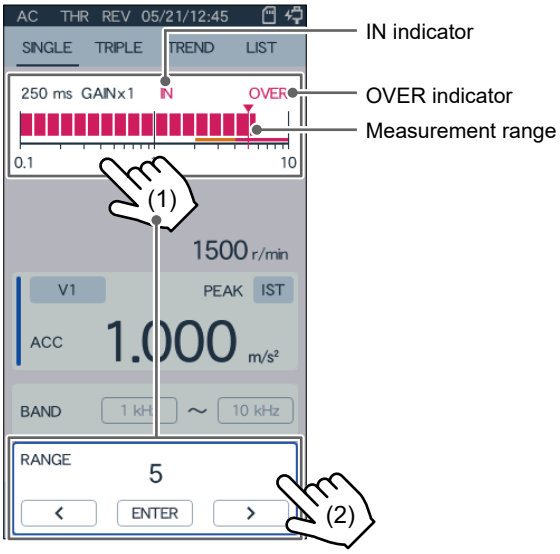
CAUTION

- In order to measure a vibration value accurately, we recommend you to set both band-pass filter settings ([HPF] and [LPF]) in [V3 Band Condition] to [OFF] before setting the measurement range.
- Selectable measurement range values vary by the sensor sensitivity value. For details, refer to “Selectable measurement range by sensor sensitivity setting” on page 107.

1 **Switch to the vibrometer mode.**
Tap [Vibrometer Mode] on the [HOME] screen to display the measurement screen.

2 **Change the measurement range.**
Tap the graph area on the [SINGLE] or [TRIPLE] screen (1) and set the upper limit of measurement range using the [❮]/[❯] button in the [RANGE] dialog (2).

- Set the measurement range so that the OVER/IN indicator is not displayed. Use the range with which the bar reaches a maximum of 50 to 60 % in the bar graph.



3 **Complete setting.**
Tap the [ENTER] button to confirm the setting of measurement range.

- You can also change the setting of measurement range via [Input Condition] → [Measure Range] on the [MENU] screen.

CAUTION

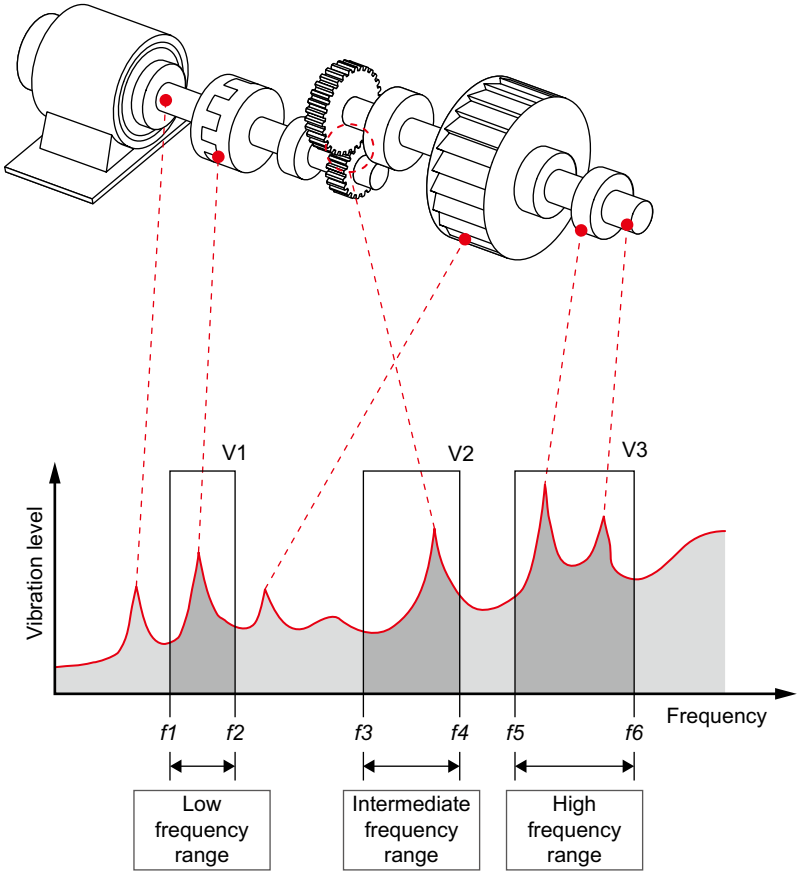
- If you use a sensor having sensitivity higher than that of the currently used sensor, the maximum/minimum measurable acceleration will become smaller. On the other hand, if you use a sensor having lower sensitivity, the maximum/minimum measurable acceleration will become larger.

3.3.4 Specifying Measurement Target Frequency Band (Band-pass Filter) for Each Band

This instrument enables measurement of a single input signal with 3 different frequency bands simultaneously. The band can be switched with V1, V2, and V3. You can obtain necessary information accurately by applying the band-pass filter appropriate for each of them.

■ Monitoring of abnormal vibration

The frequency band of abnormal vibration of rotating equipment varies by the type of abnormality. This instrument enables monitoring and detection of abnormal vibration by setting 3 different bands and applying the band-pass filter (frequency band) appropriate for each of them.
The following figure shows an example of the case where measurement is performed by setting the band-pass filter for each band.



Frequency range by band

The band can be switched to V1, V2, or V3, and each band monitors the following frequency range.

- V1 (low frequency range): *f1* to *f2*
- V2 (intermediate frequency range): *f3* to *f4*
- V3 (high frequency range): *f5* to *f6*

f1/*f3*/*f5* indicate the cutoff frequency of high-pass filter (HPF), whereas *f2*/*f4*/*f6* indicate the cutoff frequency of low-pass filter (LPF). These bands allow you to monitor the frequency band appropriate for the type of abnormality and perform flexible detection and measurement.
Various combinations other than the above example are also available, which helps to perform detection and measurement flexibly according to a phenomenon.

Frequency bands and major types of abnormal vibration

- Low frequency range: Imbalance, misalignment, etc.
- Intermediate frequency range: Vibration from gear meshing part, resonance related trouble, etc.
- High frequency range: Vibration from rolling bearing, fluid vibration, etc.

■ Configurable band-pass filter settings

In setting a frequency band, you cannot set filter values that cannot constitute a band-pass filter. For example, you cannot set HPF (high-pass filter) to a frequency higher than that of LPF (low-pass filter).
Set filter values that can configure a band-pass filter with reference to the following table.

- With “VW-0330 Filter Expansion Function” (option) installed, more detailed filter values can be selected.

		HPF											
		OFF	10 Hz	30 Hz	50 Hz	100 Hz	300 Hz	500 Hz	1 kHz	3 kHz	5 kHz	10 kHz	20 kHz
LPF	OFF	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available
	10 Hz	Available	Available	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable
	30 Hz	Available	Available	Available	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable
	50 Hz	Available	Available	Available	Available	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable
	100 Hz	Available	Available	Available	Available	Available	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable
	300 Hz	Available	Available	Available	Available	Available	Available	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable
	500 Hz	Available	Available	Available	Available	Available	Available	Available	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable
	1 kHz	Available	Available	Available	Available	Available	Available	Available	Available	Unavailable	Unavailable	Unavailable	Unavailable
	3 kHz	Available	Available	Available	Available	Available	Available	Available	Available	Available	Unavailable	Unavailable	Unavailable
	5 kHz	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Unavailable	Unavailable
	10 kHz	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Unavailable
	20 kHz	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available	Available

■ Setting band-pass filter

1 **Select a target band for applying a band-pass filter in the vibrometer mode.**

- [SINGLE] screen: The band (V1/V2/V3/V FREE) is switched each time you tap the band switching button (1).
- [TRIPLE] screen: The band (V1/V2/V3) is switched when you tap the measurement item area (1) of the switching target band. A blue indicator is displayed on the left side of the currently selected band area.

2 **Display the band-pass filter setting dialog.**

Tap the band-pass filter area (2). The value of the setting target cutoff filter will turn blue.

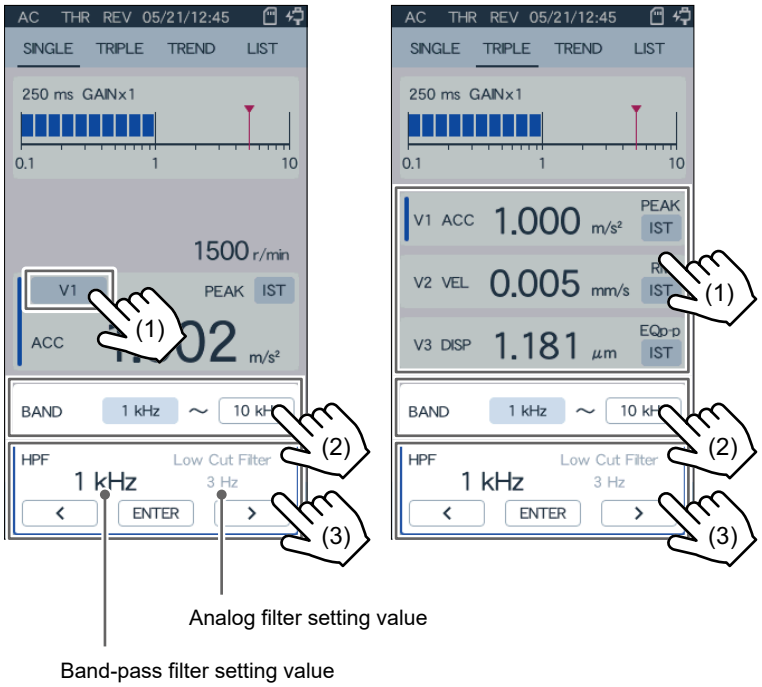
3 **Set band-pass filters (HPF/LPF).**

Set the value of cutoff filter using the [❮]/[❯] button and then tap the [ENTER] button (3).

- When you confirm the value of high-pass filter (HPF), you will be prompted to set a low-pass filter (LPF).
- You can also change the setting target by tapping the value of the target cutoff filter (left: HPF/right: LPF).
- Analog filter ([Low Cut Filter]/[High Cut Filter] in [Input Condition]) settings are also displayed in the band-pass filter settings dialog. However, only the band-pass filter (HPF/LPF) settings for the currently selected band can be changed here.

4 Complete setting.

After changing the setting of low-pass filter (LPF), tap the [ENTER] button to confirm the band-pass filter settings.



- You can also change the band-pass filter settings via [V3 Band Condition] → [HPF]/[LPF] on the [MENU] screen.

● Setting band-pass filter using earphones/headphones

In order to set a band-pass filter more accurately, we recommend you to set it while checking vibration sound through earphones/headphones.

Example: When detecting breakage of blade on machine tool

Set the frequency band so that the best reception of machining noise is achieved. (Reference: 500 Hz to 10 kHz)
Pay attention to the following bands while checking the sound from earphones/headphones.

- High-pitched sound (clinking sound): A band of 1 kHz or higher
- Low-pitched sound (rattling sound): A band lower than 1 kHz

Note that the vibration value may become small due to cutting of unwanted vibrations depending on the set measurement band. In this case, reset the band gain so that the bar reaches a maximum of 50 to 60 % in the bar graph.

- For the connection of earphones/headphones, refer to “2.2.4 Connecting Earphones/Headphones” on page 38.
- For the volume adjustment of earphones/headphones, refer to “3.5.2 Adjusting Volume” on page 73.

3.3.5 Setting Measurement Target by Band

This instrument allows you to perform measurement using measurement modes (acceleration/velocity/displacement) which are different for each band (V1/V2/V3). Set each band with [V3 Band Condition].

1 **Select a target band for applying a band-pass filter in the vibrometer mode.**

- [SINGLE] screen: The band (V1/V2/V3/V FREE) is switched each time you tap the band switching button (1).
- [TRIPLE] screen: The band (V1/V2/V3) is switched when you tap the measurement item area (1) of the switching target band. A blue indicator is displayed on the left side of the currently selected band area.

2 **Display the [V3 Band Condition] screen.**

Tap the measurement information display area (2).

- While the [TRIPLE] screen is displayed, tap the band area where a blue indicator is displayed on the left side.

3 **Change necessary conditions.**

Set the measurement target of the selected band (3). For details about the setting items, refer to “6.6 V3 Band Condition” on page 113.

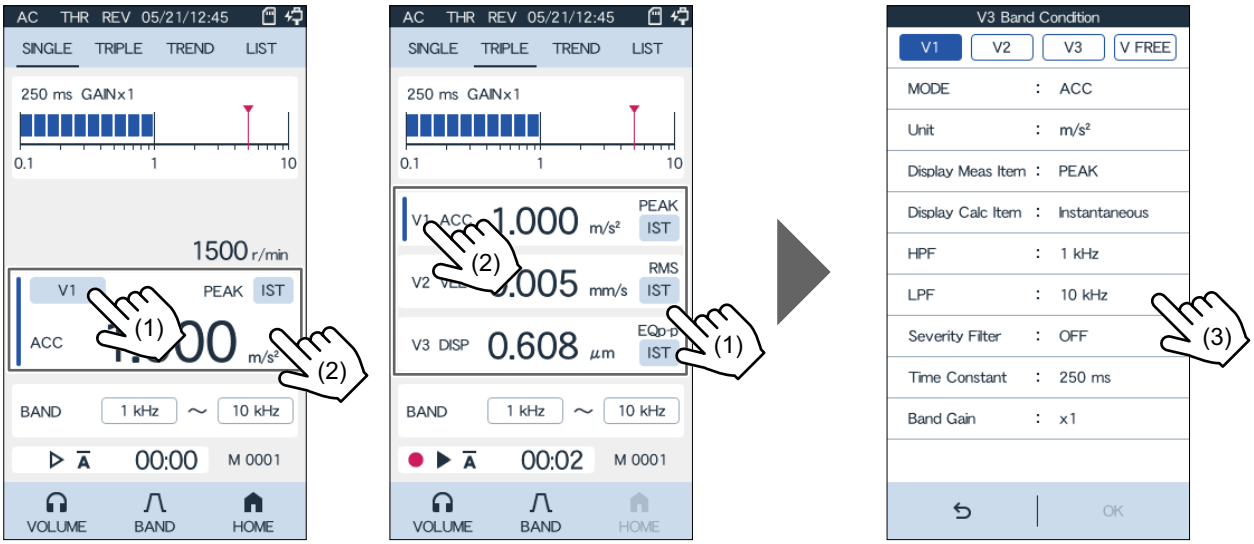
Setting item	Description
MODE	Select a measurement mode ([ACC]: acceleration/[VEL]: velocity/[DISP]: displacement).
Unit	Select a unit to be displayed in the measurement information display area.
Display Meas Item	Select a measurement item ([RMS]/[PEAK]/[P-P]/[CF]/[EQpeak]/[EQp-p]).
Display Calc Item	Select a calculation item ([Instantaneous]/[HOLD]/[Average]).
Time Constant	Select a time constant.
Band Gain	Adjust the band gain so that the OVER/V1/V2/V3 indicator is not displayed.

- Tapping the [OK] button on each setting screen returns to the [V3 Band Condition] screen.

4 **Complete setting.**

Tap the [⮌] button to return to the measurement screen.

Repeat the steps **1** to **4** to set another band as needed.



SINGLE TRIPLE

- You can also change the settings of measurement target via [V3 Band Condition] on the [MENU] screen.

3.3.6 Configuring Settings Related to Measurement Processing

Configure the settings related to measurement processing, such as average calculation and recording time, on the [Measurement Condition] screen.

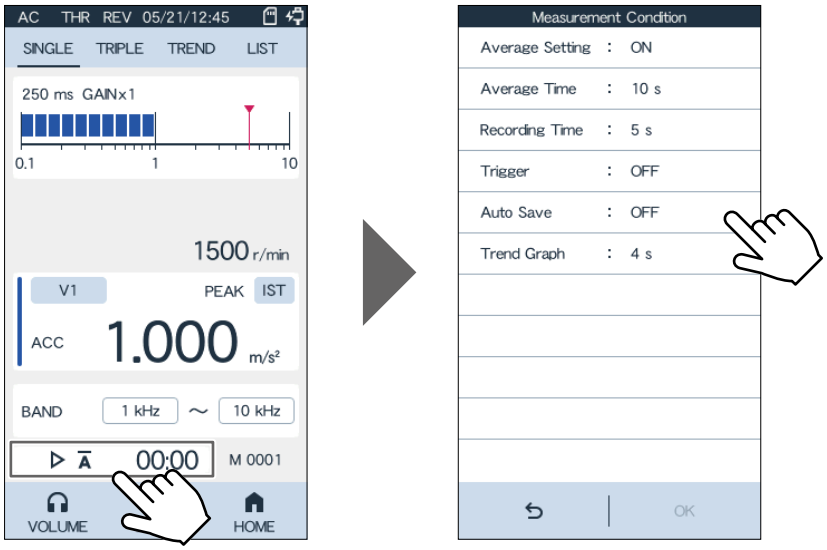
1 **Display the [Measurement Condition] screen in the vibrometer mode.**
Tap the measurement status indication area.

2 **Change necessary conditions.**
For details about the setting items, refer to “6.4 Measurement Condition” on page 111.

Setting item	Description
Average Setting	Select [ON] to execute average calculation.
Average Time	Select an average calculation time when you set [Average Setting] to [ON].
Recording Time	Select a recording time of measurement data. (Only when “VW-0320 Recording and Comparison Function” (option) is installed)
Auto Save	Select [ON] to save data automatically after measurement.

- Tapping the [OK] button on each setting screen returns to the [Measurement Condition] screen.

3 **Complete setting.**
Tap the [⮌] button to return to the measurement screen.



- You can also change the settings related to measurement processing via [Measurement Condition] on the [MENU] screen.

3.3.7 Creating Evaluation Standard

VW-0340

With “VW-0340 ISO Evaluation and Judgment Function” (option) installed, this instrument allows you to create evaluation standards.
You can perform both ISO/JIS compliant vibration severity evaluation and evaluation using optional standards.

■ Evaluation methods available on this instrument

- Evaluation complying with ISO/JIS standard: You can perform vibration severity evaluation using a filter complying with ISO 2954:2012.
  For the evaluation standards, refer to “7.5.1 ISO/JIS Compliant Vibration Severity Evaluation Standards” on page 132.
  When performing ISO/JIS evaluation, [Severity Filter] in [V3 Band Condition] will be set to [ISO_2954_2012] automatically, and the band-pass filter settings ([HPF]/[LPF]) will be disabled.
- Evaluation using optional standards: You can create optional evaluation standards and perform evaluation using them.

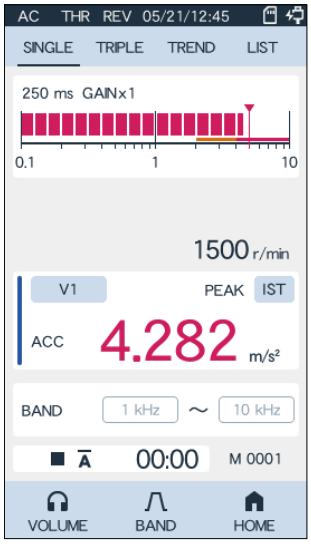
Evaluation method		Overview
ISO/JIS standard	ISO	Vibration severity evaluation complying with the following ISO standards can be performed. • ISO 20816-1:2016 • ISO 20816-3:2022
	JIS	Vibration severity evaluation complying with “JIS B 0906:1998” can be performed.
Optional standard	Multiplying factor	Evaluation is performed by specifying a reference vibration value and a multiplying factor to it.
	Absolute value	Evaluation is performed by directly specifying vibration values which are evaluated as “caution (ALARMS)” and “danger (TRIPS)”.
	CF & RMS	Abnormal vibration can be detected easily by evaluating both CF (crest factor) and RMS (effective value).

- You can set the evaluation method and evaluation standard for each band. For setting evaluation standards, refer to “Setting evaluation standard” on page 63.

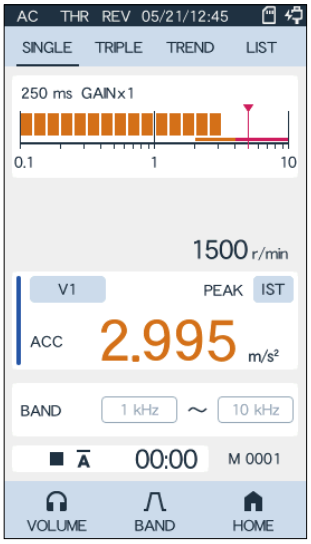
■ Evaluation result

When measurement is completed, you can check the evaluation result with the color used to display the measured value on the measurement screen.

Danger: Red



Caution: Orange



The evaluation result is reset when data is saved or discarded.

■ Setting evaluation standard

Follow the procedure below to create evaluation standards.
This section describes each step using a case where evaluation is performed for a machine under the following conditions as an example.

- Machine output: 200 kW
- Shaft height: 180 mm
- Foundation: Rigid (refer to “Machine classification according to foundation flexibility” on page 132)

1 **Determine evaluation method.**

Determine evaluation method with reference to “Evaluation methods available on this instrument” on page 62.
This section assumes that evaluation is performed by the following method and items.

- Evaluation method: ISO standard (ISO 20816-3:2022)
- Vibration value used for evaluation: Velocity
- Evaluation band: V3

2 **Set [V3 Band Condition].**

Set [V3 Band Condition] suitable for the selected evaluation method.
Tap [MENU] → [V3 Band Condition] from the [HOME] screen to display the [V3 Band Condition] screen.
Since the evaluation target band is V3 in this example, tap the [V3] button to switch the setting screen. Set condition items as shown below to perform velocity evaluation.

Item	Setting	Remarks
MODE	VEL	
Unit	mm/s	“mm/s” is specified by ISO.
Display Meas Item	RMS	“RMS” is specified by ISO.
HPF	Optional	You do not need to set these items because they will be changed automatically when the evaluation condition is set in the step **3**.
LPF	Optional	
Severity Filter	ISO_2954_2012	
Time Constant	Optional	

- Tapping the [OK] button on each setting screen returns to the [V3 Band Condition] screen.

When you complete setting of [V3 Band Condition], tap the [⮌] button to return to the [MENU] screen.

3 **Set evaluation condition.**

Tap [Option Condition] → [Evaluation Condition] from the [MENU] screen to display the [Evaluation Condition] screen. Since the evaluation target band is V3 in this example, tap the [V3] button to switch the setting screen and set the evaluation condition as shown below.

Item	Setting	Remarks
Method	ISO/JIS	
Meas Item	RMS	This item cannot be changed when [Method] is set to [ISO/JIS].
Standard	ISO_20816	
Group	Medium (Rigid)	Determined by machine specification. For details, refer to “Machine classification according to foundation flexibility” on page 132.

- Tapping the [OK] button on each setting screen returns to the [Evaluation Condition] screen.

4 **Enable the evaluation function.**

Set [Enable] to [ON] on the [Evaluation Condition] screen.

CAUTION

- For the setting items of [Evaluation Condition], only the items that can be set based on the settings of [V3 Band Condition] can be selected/changed. For example, only velocity evaluation is available for JIS evaluation. When the mode of evaluation target band is [ACC], you cannot select [ISO/JIS] on the [Evaluation Condition] screen.
- For a band selecting [ON] for [Enable], you cannot change the settings of [V3 Band Condition].

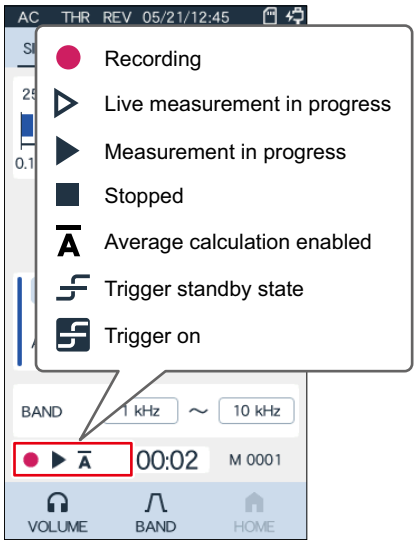
3.4 Measurement Method

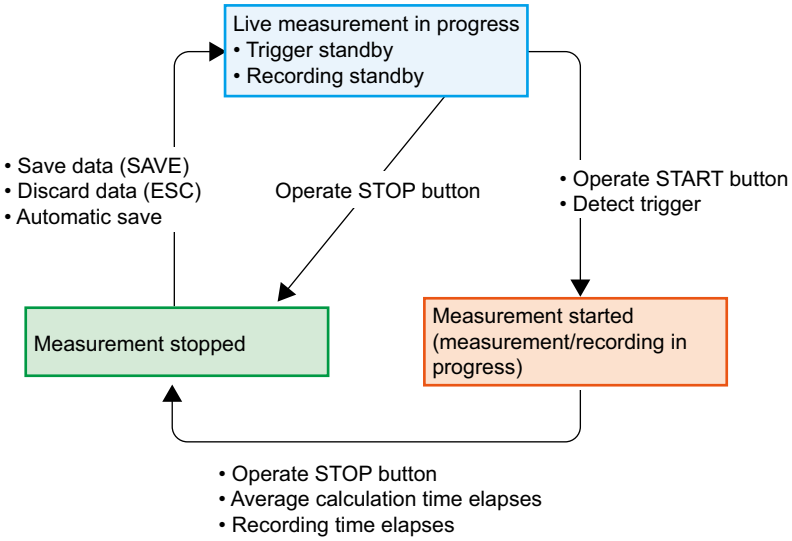
CAUTION

- Before starting measurement, check that connection and preparation of peripheral devices (refer to “2.2 Connection” on page 35) and configuration of necessary vibration measurement settings (refer to “3.3 Vibration Measurement Settings” on page 54) are completed.

3.4.1 Measurement Status

On the measurement screen, you can check measurement, average calculation setting, trigger, and recording statuses.





Status	Icon	Description
Live measurement in progress (instant display)	▷	Indicates that live measurement is in progress. Instantaneous value (IST) and maximum value (HLD) are measured/updated. You can check the current vibration value simply with the instant display.
	▷ ⎍	Indicates the state where live measurement is in progress (instant display) with [Trigger] in [Measurement Condition] set to [ON].
Measurement in progress (start)	▶	Indicates that measurement is in progress. When measurement is started, the measurement time will be updated. Average calculation (AVE) and recording are available only in this state. • Maximum value (HLD) measured during standby is reset when measurement is started.
Stopped	■	Shows a measured value at the stop of measurement/recording. • When measurement/recording ends, the data save dialog will be displayed.
Average calculation enabled	$\overline{A}$	Indicates that [Average Setting] in [Measurement Condition] is set to [ON].
Trigger standby state	▶ ⎍	Indicates the trigger standby state where [Trigger] in [Measurement Condition] is set to [ON].
Measurement in progress (trigger detected)	▶ ⎍	Indicates the state where [Trigger] in [Measurement Condition] is set to [ON], and measurement is started automatically after detection of the trigger.
Recording standby state*	● ▷	Indicates that recording is in a standby state.
Recording in progress*	● ▶	Indicates the state where recording is performed simultaneously with measurement.
Trigger recording standby state*	● ▶ ⎍	Indicates the trigger recording standby state where [Trigger] in [Measurement Condition] is set to [ON].

Status	Icon	Description
Recording in progress (trigger detected)*		Indicates the state where [Trigger] in [Measurement Condition] is set to [ON], and measurement/recording is started automatically after detection of the trigger.

* Recording is available only when “VW-0320 Recording and Comparison Function” (option) is installed.

3.4.2 Instant Display during Live Measurement

When you turn on the instrument power and display the measurement screen, the instant display during live measurement appears, and the measured values of instantaneous value (IST) and maximum value (HLD) are displayed.
This is useful for checking the current vibration value simply.
Neither calculation of average value (AVE) nor recording is available during live measurement. In order for measurement including calculation of average value (AVE) and recording, perform measurement with reference to “3.4.3 Starting/Ending Measurement” on page 67.
The following measurement and operations are available during live measurement.

- Measurement of instantaneous value (IST) and maximum value (HLD)
- Switching of V FREE band
- Data save

● Saving live measurement data

Press the STOP button on the front panel. Measurement will stop, and the data save dialog and measurement result will be displayed.
Tap the [SAVE] button in the data save dialog to save the data.

- While [Auto Save] in [Measurement Condition] is set to [ON], data is saved automatically at the end of measurement. There is no need to operate the data save dialog.

● Resetting maximum value (HLD)

It is reset when a switch to live measurement (instant display) is made after the stop of measurement.
The maximum value (HLD) is reset also when the ESC button on the front panel is pressed during live measurement.

3.4.3 Starting/Ending Measurement

1 **Switch to the vibrometer mode.**
Tap [Vibrometer Mode] on the [HOME] screen to display the measurement screen.

2 **Check the measurement range setting.**
When the OVER indicator is not displayed on the measurement screen, it indicates that the setting is appropriate. Proceed to the next step.
- If the OVER/IN indicator is displayed, select an appropriate measurement range with [Measure Range] in [Input Condition]. (Refer to “3.3.3 Setting Measurement Range” on page 56.)
- If the OVER/V1/V2/V3 indicator is displayed, select an appropriate setting with [Band Gain] in [V3 Band Condition]. (Refer to “3.3.5 Setting Measurement Target by Band” on page 60.)

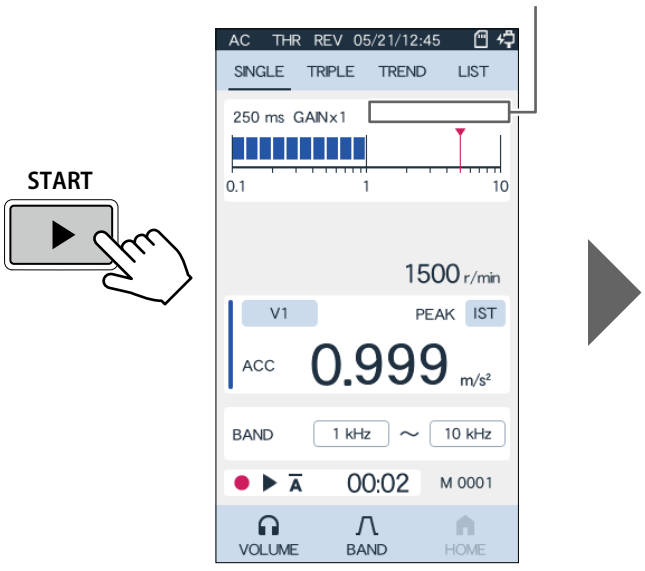
3 **Start measurement.**
Press the START button on the front panel.
Measurement will be started, and measured values/graph/measurement time will be updated in real time.

4 **End measurement.**
Measurement ends automatically when the time set with [Average Time] or [Recording Time] in [Measurement Condition] elapses.
You can also end measurement by pressing the STOP button on the front panel.
When measurement ends, the data save dialog and measurement result will be displayed. You can change the display by switching the measurement screen or band (V1/V2/V3).
- While [Auto Save] in [Measurement Condition] is set to [ON], data is saved automatically at the end of measurement. In this case, the operation of the next step **5** is not necessary.

5 **Save or discard measured data.**
- When saving measured data, tap the [SAVE] button in the data save dialog. The data will be saved, and the displayed memory number will be incremented by 1 automatically.
- If you do not want to save measured data, tap the [ESC] button in the data save dialog to discard the data.
- Refer to “Changing file name for save” on page 71 for changing a file name for save.

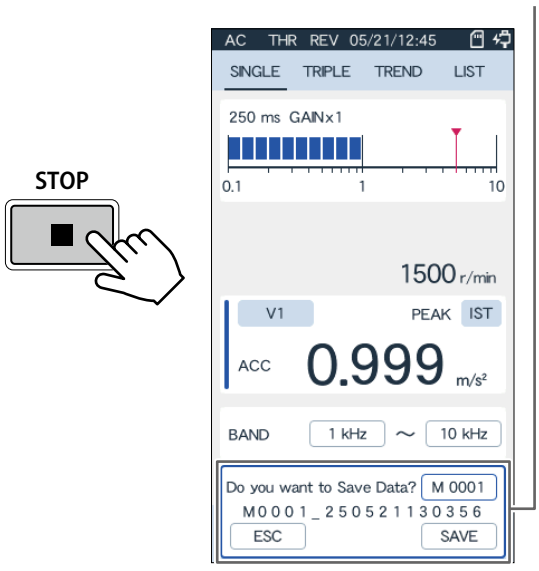
Start measurement

Adjust the settings of [Measure Range]/[Band Gain] so that the OVER/IN/V1/V2/V3 indicator is not displayed.



End measurement

[SAVE]: Save data
[ESC]: Discard data



● **Memory number**

A memory number is assigned in the order of data save within the range of [M0001] to [M0999]. It is used as a default file name. When the maximum memory number [M0999] is reached, the next number will return to [M0001].
Since a memory number is assigned automatically, you cannot set it to a desired number.

● **Resetting memory number**

When resetting the memory number to [M0001], tap [Memory] → [Memory Number Initialize] on the [MENU] screen.
Formatting an SD card (refer to “4.1.4 Formatting SD Card” on page 80) also resets the memory number to [M0001].

■ Recording vibration sound

VW-0320

When “VW-0320 Recording and Comparison Function” (option) is installed, you can perform recording of vibration sound simultaneously with measurement. Press the REC button on the front panel in the step **2** in “3.4.3 Starting/Ending Measurement” on page 67 to enter the recording standby state and then press the START button to start measurement and recording.

3.4.4 Starting Measurement under Specific Conditions

■ Trigger

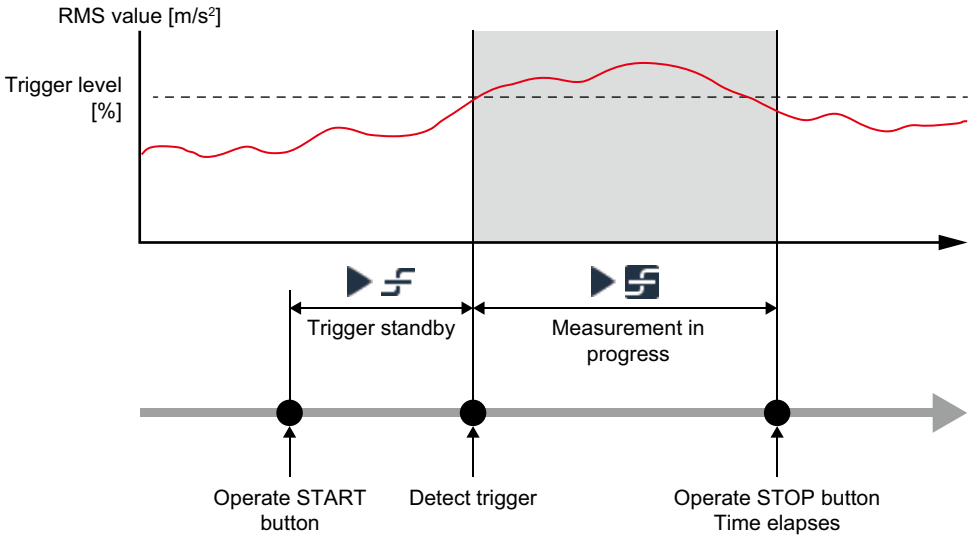
This instrument enables automatic start of measurement when set conditions are met using a trigger.
The following 3 types of triggers can be used.

- Internal trigger (RMS)
- Internal trigger (input level)
- External trigger

● **Internal trigger (RMS)**

Measurement starts when the RMS value measured by this instrument exceeds a set level.
The internal trigger (RMS) determines whether or not a set RMS value is exceeded only for the RMS of [V1] band.
Therefore, detection of the trigger is affected by the [HPF]/[LPF] setting of [V1] band.

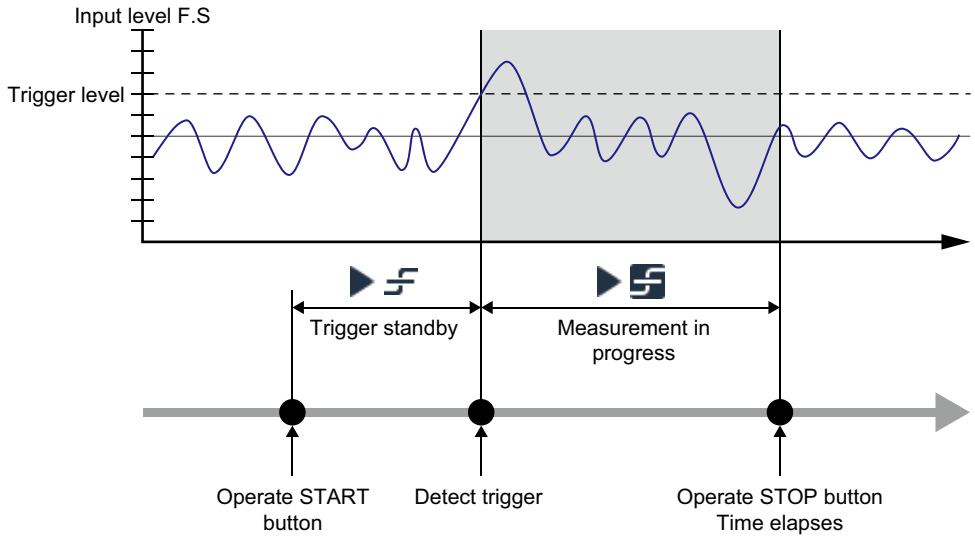
Example: When [Trigger Slope (Int)] is set to [Plus]



● **Internal trigger (input level)**

Measurement starts when the signal input to this instrument (SIG-IN) exceeds a set level.
Detection of the trigger is affected by [Measure Range]/[Low Cut Filter]/[High Cut Filter] in [Input Condition].

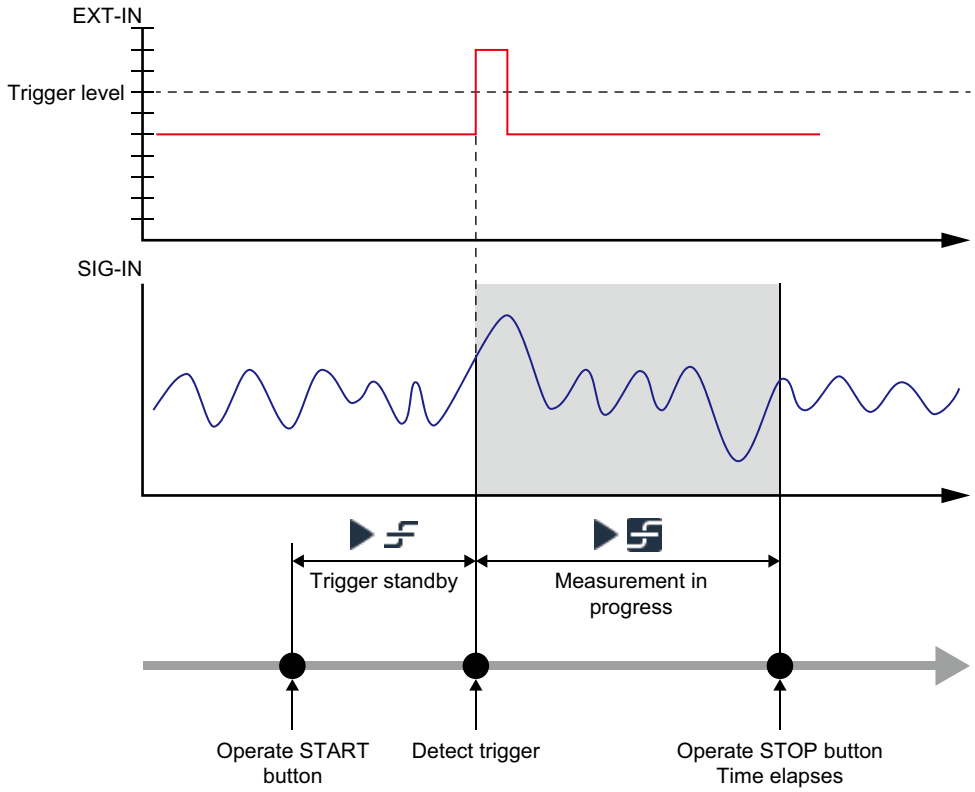
Example: When [Trigger Slope (Int)] is set to [Plus]



● **External trigger**

Measurement starts when the signal input to the EXT IN connector exceeds a set level.

Example: When [Trigger Slope (Ext)] is set to [Plus]



■ Measurement using trigger

1 **Configure vibration measurement settings.**
Refer to “3.3 Vibration Measurement Settings” on page 54.

2 **Set the condition (trigger) for starting measurement.**
Tap [MENU] → [External Input/Trigger Condition] from the [HOME] screen.
Change necessary settings on the [External Input/Trigger Condition] screen. For details about setting items, refer to “6.5 External Input/Trigger Condition” on page 112.

Setting item	Description
Signal Type	Select a signal ([Trigger]/[Rotation]) used as a trigger for starting measurement. • With [Rotation] selected, only the internal trigger is available. You cannot use the external trigger.
Trigger Type	Select a trigger type to use ([Internal (RMS)]/[Internal (Input Lv.)]/[External]).
Trigger Slope (Int)	Select a direction in which a signal used as trigger changes ([Plus]/[Minus]) when starting measurement using the internal trigger.
Trigger Level (Int)	Enter a level at which the internal trigger is detected (percentage of vibration value to measurement range).
Trigger Slope (Ext)	Select a direction in which a signal used as trigger changes ([Plus]/[Minus]) when starting measurement using the external trigger.
Trigger Level (Ext)	With [Trigger Type] set to [External]: Select a signal level at which the external trigger is detected. With [Signal Type] set to [Rotation]: Select a signal level at which the rotation signal is detected.
P/R	Enter the number of pulses output per rotation when [Signal Type] is set to [Rotation].

• Tapping the [OK] button on each setting screen returns to the [External Input/Trigger Condition] screen.
When you complete setting of [External Input/Trigger Condition], tap the [⮌] button to return to the [MENU] screen.

3 **Enable trigger.**
Tap [Measurement Condition] on the [MENU] screen to display the [Measurement Condition] screen, and set [Trigger] to [ON].
Tap [OK] to return to the [Measurement Condition] screen.

4 **Start measurement.**
Press the Fn button on the front panel to display [HOME] and then tap [Vibrometer Mode] to enter the vibrometer mode.
Press the START button on the front panel. The trigger remains in the standby state until set conditions are met, and the ▶ ⮓ indicator is displayed in the measurement status indication area.
When the conditions set in the step **2** are met, the ▶ ⮓ indicator will be displayed in the measurement status indication area, and measurement will be started.

5 **End measurement.**
Measurement ends automatically when the time set with [Average Time] or [Recording Time] in [Measurement Condition] elapses.
You can also stop measurement by pressing the STOP button on the front panel.
• While [Auto Save] in [Measurement Condition] is set to [ON], data is saved automatically at the end of measurement. In this case, the operation of the next step **6** is not necessary.

6 **Save or discard measured data.**
• When saving measured data, tap the [SAVE] button in the data save dialog. The data will be saved, and the displayed memory number will be incremented by 1 automatically.
• If you do not want to save measured data, tap the [ESC] button in the data save dialog to discard the data.
• Refer to “Changing file name for save” on page 71 for changing a file name for save.

● Canceling trigger standby

Pressing the ESC button on the front panel in a trigger standby state cancels the standby state of measurement using a trigger. The indicator displayed in the measurement status indication area will be changed to ▷ ⮓, and the measurement status will return to the live measurement (instant display).

■ Starting recording using trigger

VW-0320

When you start measurement using a trigger with “VW-0320 Recording and Comparison Function” (option) installed, you can perform recording of vibration sound simultaneously. Press the REC button on the front panel in the step **4** in “3.4.4 Starting Measurement under Specific Conditions” on page 68 to enter the recording standby state and then press the START button.

The trigger remains in the standby state until set conditions are met, and the ● ▶ indicator is displayed in the measurement status indication area. When the set conditions are met, the ● ▶ indicator will be displayed in the measurement status indication area, and measurement/recording will be started.

3.4.5 Saving Measurement Data

When measurement ends, the data save dialog will be displayed. Select whether to save or discard data here.

When vibration sound is recorded with “VW-0320 Recording and Comparison Function” (option) installed, the recorded data is saved simultaneously with measurement data. You can change a file name only when the data save dialog is displayed.

■ Changing file name for save

A file is named as “Memory number_Measurement start date and time” by default for save. You can change a file name only when saving measured data.

1 **Display the [File Name] screen.**

Tap the memory number (1) in the data save dialog displayed at the end of measurement.

- You can also display the [File Name] screen by pressing the Fn button on the front panel.

2 **Change file name.**

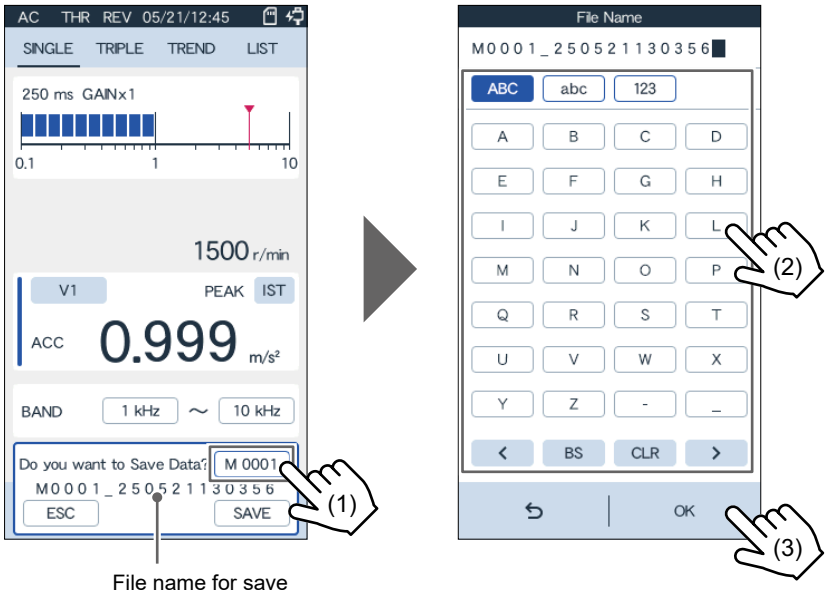
Enter a file name after change on the [File Name] screen (2).

- For entering characters, refer to “Value and text input” on page 30.
- If you want to cancel changing a file name, tap the [⮌] button to return to the measurement screen.

3 **Confirm the change.**

Tap the [OK] button (3) to return to the measurement screen.

Tap the [SAVE] button in the data save dialog to save the data with the changed file name.



● File name with assist function enabled VW-0350

When [Assist Mode] in [Assist Tool Communication Function] is set to [ON], you cannot change a file name.
A file is named as “ID_Measurement date and time” for save.

Example:File name for the case of performing measurement at 9:00:00 on May 21, 2025.

01-01-01H_250521090000
ID　Measurement date and time

■ Saving measurement data automatically

In order to save measurement data automatically, set [Auto Save] in [Measurement Condition] to [ON].
While [Auto Save] is set to [ON], data is saved automatically at the end of measurement without displaying the data save dialog.

- You cannot change a file name while [Auto Save] is set to [ON].

■ Saving captured image of measurement screen

When you save measurement data, the captured image (BMP format) of measurement screen is also saved automatically.

- The captured image shows the screen of the moment that measurement is completed.
- This function operates automatically, and thus particular operations and settings are not necessary.
- The captured image is saved with a file name that is the same as measurement data.

● Checking captured image

When checking a captured image on a personal computer, check a file with an extension of “.bmp”.
Refer to “4.2 Checking Saved Data (Recall)” on page 81 for checking a captured image on this instrument.

3.5 Monitoring Vibration Sound

3.5.1 Use of Earphones/Headphones

You can monitor the vibration sound measured by this instrument using earphones/headphones. This allows you to use the portable vibration meter as a substitute system for auscultation rod.
Also, if you add “VW-0320 Recording and Comparison Function” (option), you can listen to the sound recorded in an SD card with earphones/headphones.

- For the connection of earphones/headphones, refer to “2.4 Environment Settings for Vibration Meter” on page 43.

■ Automatic muting function

This instrument is equipped with the automatic muting function for hearing protection. When earphones/headphones are disconnected, muting will be enabled automatically. Before connecting earphones/headphones again, disable muting.

■ Precautions for using earphones/headphones

Be sure to follow the precautions listed below when monitoring vibration sound with earphones/headphones.

IMPORTANT

- Performing monitoring at a large volume may cause auditory disorder. Be sure to lower the volume and perform monitoring while adjusting the volume.
- If you feel tired, stop monitoring immediately.
- Be careful of using the volume levels of 15 to 20 which may increase the volume largely.
- When earphones/headphones are changed, the volume may change largely even with the same volume setting.

3.5.2 Adjusting Volume

1 **Connect and wear earphones/headphones.**
For the connection method, refer to “2.2.4 Connecting Earphones/Headphones” on page 38.

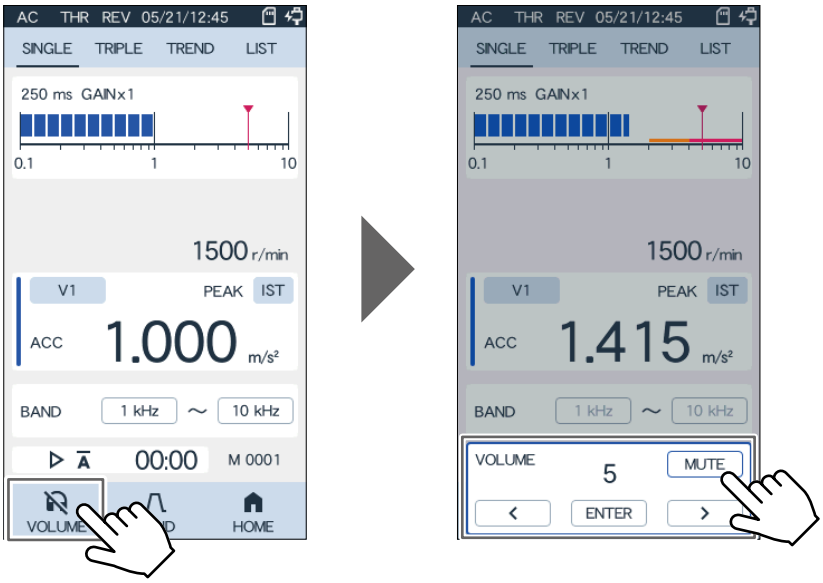
2 **Display the volume adjustment dialog.**
Tap the [VOLUME] button.

3 **Cancel muting.**
Tap the [MUTE] button to make it turn white.
- Blue: Muted
- White: Unmuted

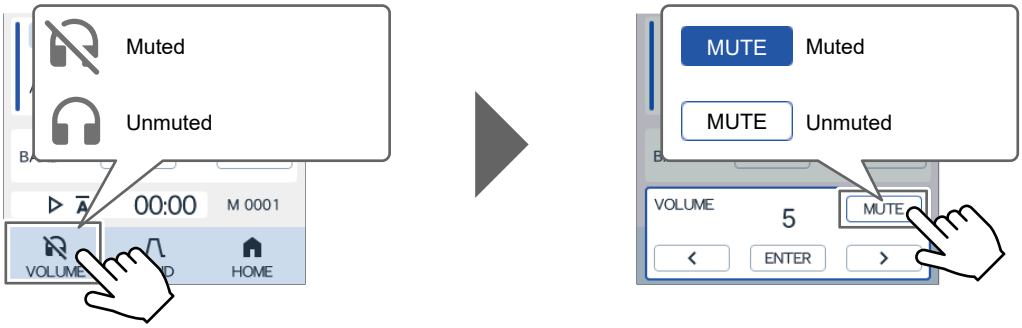
4 **Adjust the volume.**

Adjust the volume in small steps using the [❮]/[❯] button and confirm the volume by tapping the [ENTER] button.

- The volume level can be adjusted within the range of 0 to 20.

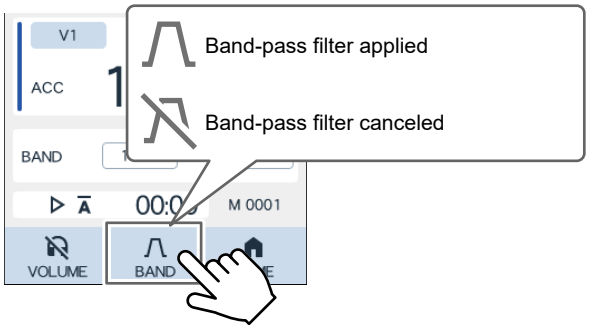


■ Enabling/disabling muting temporarily



3.5.3 Applying/Canceling Band-pass Filter

Even when a band-pass filter is applied for measurement, you can apply/cancel the band-pass filter without changing the setting. This is useful for comparing a filtered sound with a non-filtered sound using earphones/headphones.



3.6 Using Assist Function

VW-0350

With “VW-0360 Vibration Diagnosis Assist Tool” (option) used, you can manage a plurality of equipment and vibration measurement settings collectively. A unique ID can be assigned to each set of equipment and vibration measurement settings. With the ID data imported to this instrument, you can acquire the data smoothly under the optimum condition without changing settings for each piece of equipment. Also, you can export measured data, which are saved in folders created by ID, to “VW-0360 Vibration Diagnosis Assist Tool” to create a tendency management graph for each piece of equipment.
For details, refer to “5.3 Assist Tool Communication Function” on page 97.

Chapter 4

Management of Measurement Data/ Settings

4.1 Handling of SD Card

You can save the instrument data, such as measurement data, measurement condition, and screen capture, in an SD card. For inserting an SD card, refer to “2.2.7 Inserting SD Card” on page 40.

4.1.1 Precautions for Handling SD Card

Be sure to check the following precautions before using an SD card.

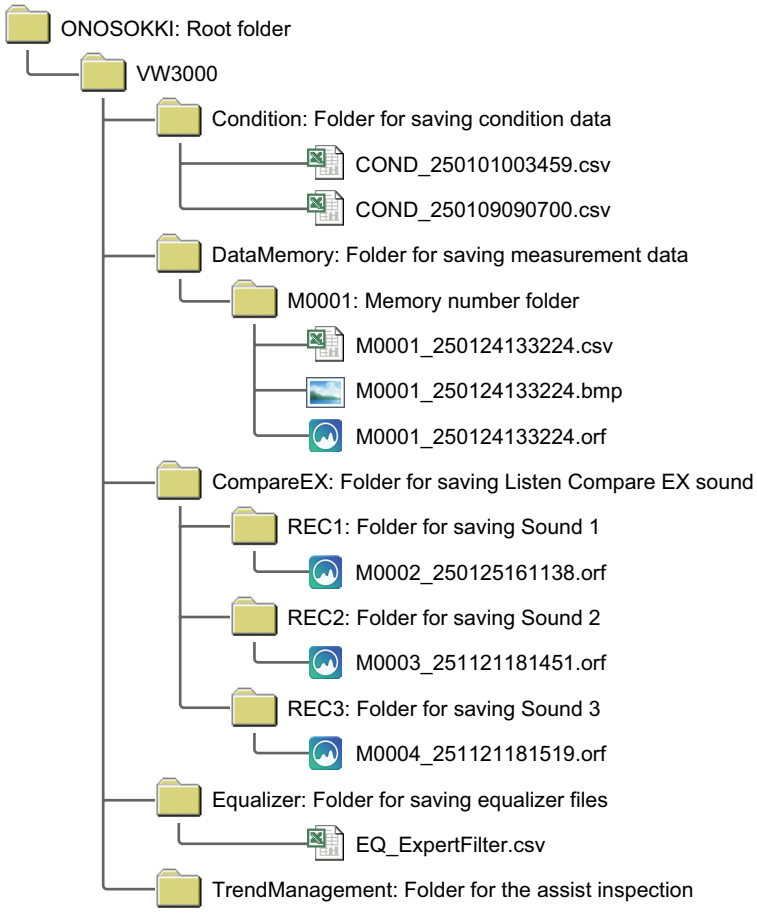
- Do not insert any objects other than SD card into the SD card slot. Ignoring this may cause failure of the instrument.
- If a foreign object or water enters the SD card slot, immediately turn off the instrument power, remove batteries and power cable, and then contact your nearest Ono Sokki sales office or the distributor where you purchased the instrument.
- Never remove an SD card while the data access indicator ( ) is displayed during data write to the SD card. Ignoring this may cause failure or damage to the instrument or SD card.
- Once a saved data file is edited, you will not be able to read it by this instrument.
- Usable SD card types are SD, SDHC, and SDXC.
- For an SD card with write protection switch, be sure to cancel protection before inserting the SD card. If the SD card is inserted with protection enabled, the write protection indicator ( ) will be displayed, indicating that data cannot be written.
- Format an SD card, which is used on this instrument for the first time, by this instrument before use.
- Do not turn off the power during the writing/reading process of SD card.
- Do not remove an SD card while the power is supplied. Remove an SD card while the power is off.
- Never remove an SD card when [Assist Mode] in [Assist Tool Communication Function] is set to [ON]. Ignoring this may damage the SD card.

4.1.2 Folder/File Configuration of SD Card

SD card stores files using the folder configuration shown in the following figure.

CAUTION

- Never change a folder name and file name. You will not be able to use the files on this instrument.
- You can change a file name only when saving measurement data. (Refer to “Changing file name for save” on page 71.)



4.1.3 Checking SD Card Information

Before saving data, check the free space and the number of files that can be saved in an SD card.

1 **Insert an SD card.**
Refer to “2.2.7 Inserting SD Card” on page 40.

2 **Display the [SD Card Information] screen.**
Tap [MENU] → [Memory] → [SD Card Information] from the [HOME] screen.

3 **Check the information of the SD card inserted.**
You can check the following items on the [SD Card Information] screen.

Item	Description
Free Space	Shows the free space for save.
Available	Shows the number of files that can save measurement data.
Available (REC)	Shows the number of files that can save data including recorded sound data. (Only when “VW-0320 Recording and Comparison Function” (option) is installed)

4.1.4 Formatting SD Card

Be sure to format an SD card, which is used on this instrument for the first time, by this instrument before use.

CAUTION

- When an SD card is formatted, all the data saved in it will be deleted. Save necessary data to another medium before formatting an SD card.
- Never remove an SD card while it is being formatted. Ignoring this may damage the SD card.
- Formatting an SD card also resets the memory number to [M0001].

1 **Insert an SD card.**
Refer to “2.2.7 Inserting SD Card” on page 40.

2 **Display the [SD Card Information] screen.**
Tap [MENU] → [Memory] → [SD Card Information] from the [HOME] screen.

3 **Format the SD card.**
Tap [SD Card Format]. A confirmation message will be displayed in the [Select] dialog. Tap the [ENTER] button to format the SD card.
Tap the [ESC] button to cancel formatting the SD card.
When formatting is completed, a confirmation message will be displayed in the [Confirm] dialog. Tap the [ENTER] button to close the dialog.

4.2 Checking Saved Data (Recall)

You can display and check the data contents saved in an SD card in the vibrometer mode. The recall function is useful for checking whether data is acquired successfully, or for checking past data.

- You can also check evaluation results obtained by “VW-0340 ISO Evaluation and Judgment Function” (option).

CAUTION

- The analog output connectors (AC/THR connector and DC connector) do not produce output during use of the recall function.

1 Insert an SD card.

Insert an SD card storing data with reference to “2.2.7 Inserting SD Card” on page 40.

2 Display the [Data Recall] screen.

Tap [MENU] → [Memory] → [Data Recall] from the [HOME] screen.

3 Select the target data type for checking and display a list of saved data.

This instrument can recall the following data. Tap the target data type for recalling.

- [Measurement Data]: Recalls the data measured/saved in the vibrometer mode.
- [Capture Data]: Recalls the captured image of the measurement result measured/saved in the vibrometer mode.
- [Recording Data]*1: Recalls recorded sound source data.
- [Assist Check Measurement Data]*2: Recalls the data measured/saved in assist inspection.
- [Assist Check Capture Data]*2: Recalls the captured image of the measurement result measured/saved in assist inspection.
- [Assist Check Recording Data]*2: Recalls the sound source data recorded in assist inspection.

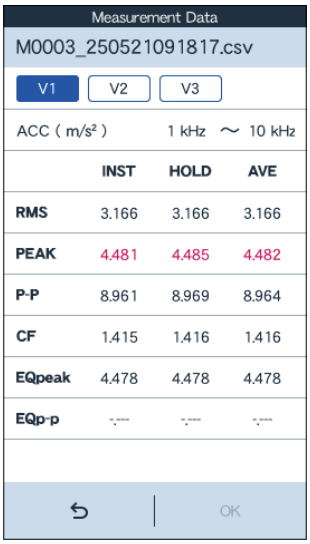
4 Select the target file for checking and display saved data.

Tap the target data memory number/route number (measurement ID) for recalling. A list of file names of the selected data is displayed. Tap the recall target file and then tap the [OK] button. The data of the selected file will be displayed.

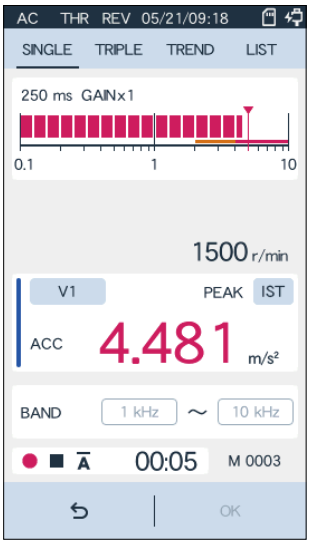
Data	Description
Measurement Data	Shows measured values for each band. Tap the [V1]/[V2]/[V3] button to switch to the display target measurement data. • With “VW-0340 ISO Evaluation and Judgment Function” (option) installed, you can check evaluation result with the color of measured value. (Refer to “Evaluation result” on page 63.)
Capture Data	Shows the captured image of measurement result. Tapping operation on each part of the screen is unavailable.
Recording Data*1	Tapping the [OK] button with the selected file highlighted in blue causes loop playback of sound source. If you select a memory number without recorded data, the message [File Does Not Exist.] will be displayed. Tap the [ENTER] button to return to the [Recording Data] screen and select a memory number with recorded data. • Muting is enabled by default. Disable muting and adjust the volume. (Refer to “3.5.2 Adjusting Volume” on page 73.)
Assist Check Measurement Data*2	Shows measured values for each band. Tap the [V1]/[V2]/[V3] button to switch to the display target measurement data. • With “VW-0340 ISO Evaluation and Judgment Function” (option) installed, you can check evaluation result with the color of measured value. (Refer to “Evaluation result” on page 63.)
Assist Check Capture Data*2	Shows the captured image of measurement result. Tapping operation on each part of the screen is unavailable.

Data	Description
Assist Check Recording Data*2	Tapping the [OK] button with the selected file highlighted in blue causes loop playback of sound source. If you select a memory number without recorded data, the message [File Does Not Exist.] will be displayed. Tap the [ENTER] button to return to the [Assist Check Recording Data] screen and select a memory number with recorded data. • Muting is enabled by default. Disable muting and adjust the volume. (Refer to “3.5.2 Adjusting Volume” on page 73.)

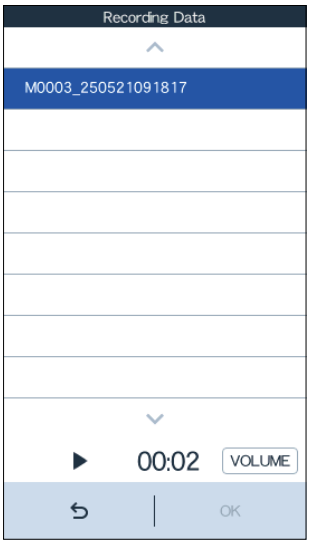
Measurement Data



Capture Data



Recording Data



When you finish checking the data, tap the [⮌] button to return to the previous screen.

*1 Enabled only when “VW-0320 Recording and Comparison Function” (option) is installed.
*2 Enabled only when “VW-0350 Assist Tool Communication Function” (option) is installed.

4.3 Saving/Managing Frequently Used Settings (Condition Memory)

This instrument allows you to save frequently used vibration measurement settings (condition) and use them by loading at the time of measurement. You can also use the templates that have been registered in this instrument. The following 3 types of condition memories are available on this instrument.

Condition memory	Description
Current condition	Vibration measurement settings currently configured on this instrument. When a change is made in the settings, the current condition will be updated automatically. When the power is turned on, the instrument is started with the last configured settings.
Panel condition	You can save the current settings (current condition) to load them whenever necessary.
Template condition	Load-only templates for settings recommended by Ono Sokki.

4.3.1 Current Condition

Current condition indicates the vibration measurement settings currently configured on this instrument. When you change a setting or load a panel/template condition, the current condition will be overwritten.

■ Initializing current settings

Before starting new measurement or changing settings significantly, initialize the current settings (restore the default condition settings) as needed.

1 **Display the [Memory] screen.**
Tap [MENU] → [Memory] from the [HOME] screen.

2 **Initialize the current settings.**
Tap [Current Condition Initialize]. A confirmation message will be displayed in the [Select] dialog. Tap the [ENTER] button to initialize the current settings.
Tap the [ESC] button to cancel initialization of the settings.
When initialization of the settings is completed, a confirmation message will be displayed in the [Confirm] dialog. Tap the [ENTER] button to close the dialog.

CAUTION

- With the above operations, saved settings (panel condition) are not initialized. If you want to initialize the content saved as a panel condition, refer to “Initializing panel condition” on page 85.

4.3.2 Using Panel Condition Settings

You can save the current settings (current condition) as a panel condition or load saved settings to use them as a current condition.
With frequently used settings saved as panel conditions, you can change settings by the equipment/condition.

■ Saving current settings

1 **Display the [Panel/Template Condition] screen.**
Tap [MENU] → [Memory] → [Panel/Template Condition] from the [HOME] screen.

2 **Select a save destination.**
Tap the [SAVE] button, select a save destination ([P.Cond 1]/[P.Cond 2]/[P.Cond 3]/[P.Cond 4]/[P.Cond 5]), and then tap the [OK] button.

3 **Save the current settings in the selected panel condition.**
A confirmation message will be displayed in the [Select] dialog. Tap the [ENTER] button.
If the selected panel condition already stores settings, a confirmation message asking whether to overwrite the settings will be displayed in the [Warning] dialog. Tap the [ENTER] button.
Tap the [ESC] button to cancel saving.

4 **Enter a panel condition name and complete saving.**
Enter a name of the panel condition to be saved on the text input screen (maximum 13 characters).
- It is set as “Year/Month/Day” by default.
- For entering characters, refer to “Value and text input” on page 30.

Enter a panel condition name and tap the [OK] button to save the panel condition.

CAUTION

- If you attempt saving in a panel condition that already stores other settings, the existing settings will be overwritten.
- When protection is enabled for a selected panel condition, overwrite save cannot be performed.
- Overwrite save cannot be performed on template conditions ([Template 1 : Small Machine Condition]/[Template 2 : Vibration Severity Condition]/[Template 3 : RM Condition]).

■ Loading saved settings

1 **Display the [Panel/Template Condition] screen.**
Tap [MENU] → [Memory] → [Panel/Template Condition] from the [HOME] screen.

2 **Select a panel condition.**
Tap the [LOAD] button, select a loading target condition ([P.Cond 1]/[P.Cond 2]/[P.Cond 3]/[P.Cond 4]/[P.Cond 5]), and then tap the [OK] button.
- A panel condition without settings is grayed out and cannot be selected.

3 **Apply the selected panel condition to the current settings.**
A confirmation message will be displayed in the [Select] dialog. Tap the [ENTER] button to apply the selected condition.
Tap the [ESC] button to cancel application of the settings.

■ Initializing panel condition

If you want to delete the settings saved in a panel condition, initialize the panel condition.

1 **Display the [Panel/Template Condition] screen.**
Tap [MENU] → [Memory] → [Panel/Template Condition] from the [HOME] screen.

2 **Select a panel condition.**
Tap the [INIT] button, select a target panel condition to initialize ([P.Cond 1]/[P.Cond 2]/[P.Cond 3]/[P.Cond 4]/[P.Cond 5]), and then tap the [OK] button.
- A panel condition without settings is grayed out and cannot be selected.

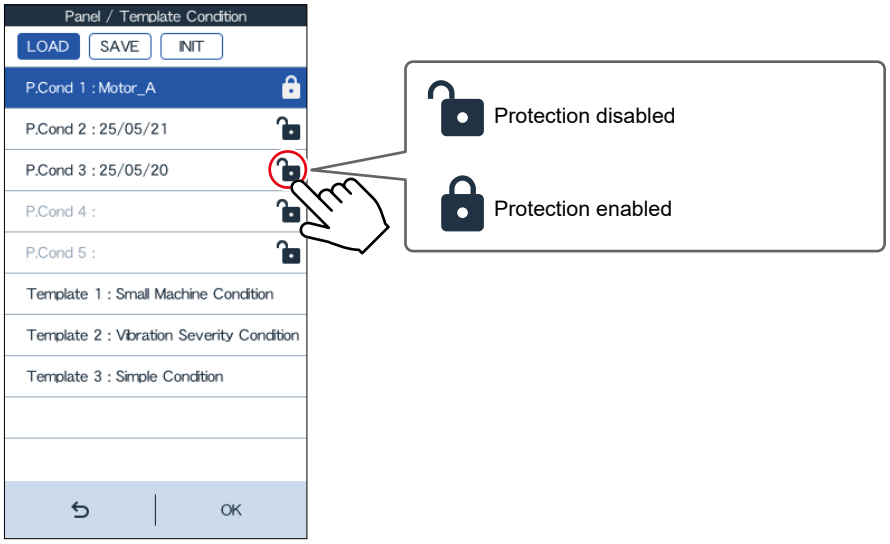
3 **Initialize the settings of the selected panel condition.**
A confirmation message will be displayed in the [Select] dialog. Tap the [ENTER] button to initialize the selected condition.
Tap the [ESC] button to cancel initialization.

CAUTION

- You cannot load an initialized panel condition.
- With the initialization of panel condition, the current settings (current condition) are not initialized. When initializing the current condition, perform [Current Condition Initialize]. (Refer to “Initializing current settings” on page 83.)
- You cannot initialize template conditions ([Template 1 : Small Machine Condition]/[Template 2 : Vibration Severity Condition]/[Template 3 : RM Condition]).

■ Protecting panel condition

Using the protection function, overwrite save and initialization of saved panel conditions can be prevented. This helps to prevent loss of panel condition by erroneous operation in a situation such that this instrument is shared among several people.



4.3.3 Using Template Condition Settings

Templates for settings have been registered in this instrument. You can read the versatile conditions recommended by Ono Sokki. Measurement can be started easily without configuring detailed condition settings.
You can select a template condition from the following 3 types according to the measurement environment on the [Panel/Template Condition] screen displayed by tapping [MENU] → [Memory] → [Panel/Template Condition] from the [HOME] screen.

Template type	Description
Template 1: Small Machine Condition	Suitable for the vibration measurement for small size machines (rated output less than 15 kW).
Template 2:Vibration Severity Condition	Suitable in the case of performing severity evaluations complying with ISO 20816-1:2016 and ISO 20816-3:2022.
Template 3: RM Condition	Suitable in the case of performing simple vibration measurement.

4.3.4 Outputting/Reading Condition File

You can output the condition data saved in this instrument collectively to an SD card in the csv format, or read the condition files saved in an SD card. Current and panel conditions can be managed collectively. This enables sharing of conditions among multiple portable vibration meters.

■ Condition file name

A file is named as “COND_Condition file saved date and time” for save.

Example:File name for the case of saving a condition file at 9:00:00 on May 21, 2025.

COND_250521090000

Date and time on which condition file was saved

■ Outputting condition file

1 **Insert an SD card.**
Refer to “2.2.7 Inserting SD Card” on page 40.

2 **Display the [Memory] screen.**
Tap [MENU] → [Memory] from the [HOME] screen.

3 **Output the condition files saved in this instrument to an SD card.**
Tap [Condition File Output (SD)].
A confirmation message will be displayed in the [Select] dialog. Tap the [ENTER] button to output the condition files.
Tap the [ESC] button to cancel outputting the condition files.

IMPORTANT

- Never change the contents of output files. You will not be able to use the files on this instrument.

■ Reading condition file

IMPORTANT

- Reading a condition file from an SD card causes loss of the current condition. We strongly recommend you to output the current condition file to make backup.

1 **Insert an SD card.**
Insert an SD card storing the target condition file for reading with reference to “2.2.7 Inserting SD Card” on page 40.

2 **Display the [Condition File] screen.**
Tap [MENU] → [Memory] → [Data Recall] → [Condition File] from the [HOME] screen.

3 **Select and read a condition file.**
Select the target condition file for reading and tap the [OK] button.
A confirmation message will be displayed in the [Select] dialog. Tap the [ENTER] button to read the condition file.
Tap the [ESC] button to cancel reading the condition file.
When reading of the condition file is completed, a confirmation message will be displayed in the [Confirm] dialog. Tap the [ENTER] button to close the dialog.

Chapter 5

Optional Function

5.1 Equalizing Function

VW-0310

The equalizer mode is available when “VW-0310 Equalizing Function” (option) is installed.
Using the equalizer mode, you can emphasize a sound you are concerned about or reduce an unwanted sound by adjusting the level in steps of 1 dB by 1/1 octave. This allows the sharing of expert insights into effective listening.
Also, multiple level settings can be saved, which enables management/sharing of level settings for each emphasis target abnormal sound or each piece of equipment.

CAUTION

- The AC/THR connector and DC connector do not produce analog output in the equalizer mode.

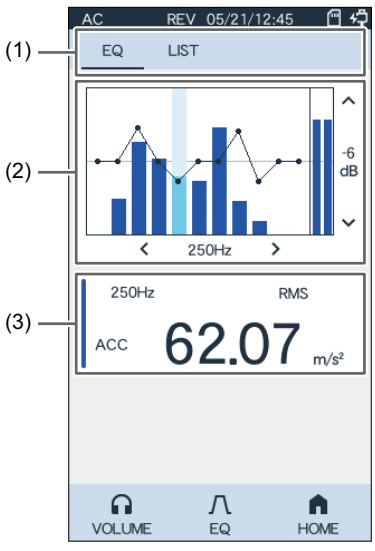
5.1.1 Adjusting Sound in Equalizer Mode

■ Equalizer mode screen (EQ/LIST)

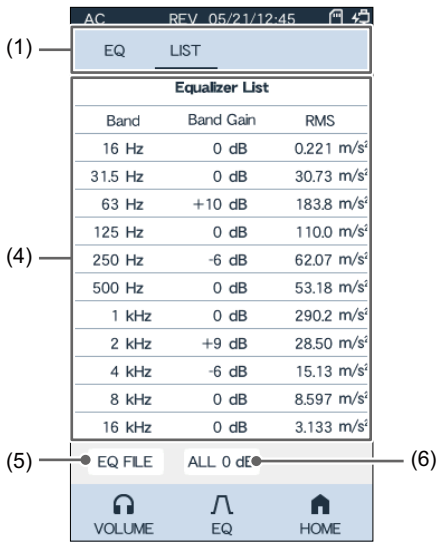
Tap [Equalizer Mode] on the [HOME] screen to enter the equalizer mode.
In the equalizer mode, you can check measured values while switching the display between 2 types of screens: [EQ] and [LIST] screens.

Screen	Description
[EQ] screen	Main screen in the equalizer mode. Shows the gain setting and RMS value of each band (1/1 octave) in a bar graph.
[LIST] screen	Shows the level setting and RMS value of each band (1/1 octave) in a list.

- To switch the display between [EQ] and [LIST] on the equalizer mode screen, tap the screen switching tab or press the ‹ / › button on the front panel.



EQ



LIST

No.	Name	Description
(1)	Screen switching tab	Switches the display of equalizer mode (EQ/LIST).
(2)	Octave graph	Shows the gain setting (line graph) and vibration value (bar graph) by the band. You can change the gain setting by the band by tapping the graph.
(3)	Measured value	Shows the effective value of the currently selected band.
(4)	List of equalizer settings	Shows the level setting and RMS value of each band (1/1 octave) in a list.

No.	Name	Description
(5)	[EQ FILE] button	Displays the [Equalizer List] screen. You can save gain settings in an SD card or read gain settings from an SD card. • The [Equalizer List] screen can also be displayed by tapping [Option Condition] → [Equalizer Function] from the [MENU] screen.
(6)	[ALL 0 dB] button	Resets the gain settings of all bands to 0 dB.

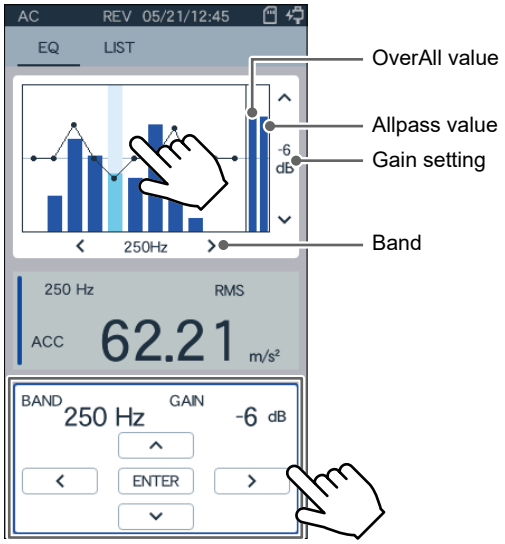
■ Adjusting gain setting

1 **Connect and wear earphones/headphones.**
For the connection method, refer to “2.2.4 Connecting Earphones/Headphones” on page 38.

2 **Adjust the volume.**
Refer to “3.5 Monitoring Vibration Sound” on page 73.

3 **Display the [EQ] screen.**
Tap [Equalizer Mode] on the [HOME] screen.

4 **Select a band and adjust the gain.**
Tap the octave graph to display the gain adjustment dialog.
Select a band using the [❮]/[❯] button and adjust the gain setting of the selected band using the [^]/[v] button.



- OverAll value indicates the sum of frequency band powers of analyzed power spectrum. That is the power value (mean square value) of time signal before analysis.
- Allpass value indicates the directly calculated average total power (effective value) without frequency analysis.

5 **Complete gain adjustment.**
Tap the [ENTER] button to confirm the gain setting of the selected band.
Repeat the steps **4** and **5** to adjust the gain setting of another band as needed.

● Displaying adjustment result in a list

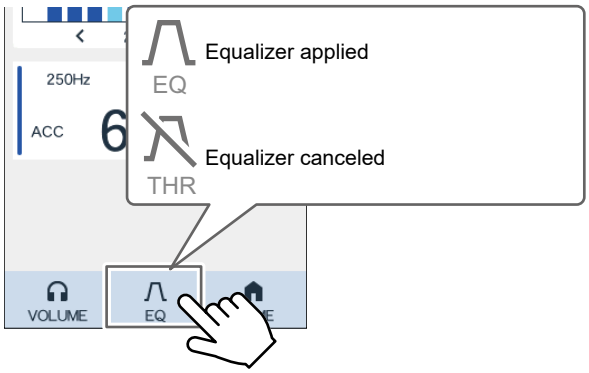
Tap the [LIST] tab to display the [LIST] screen.

● Resetting gain setting

In order to reset all gain settings to 0 dB, tap the [ALL 0 dB] button on the [LIST] screen.

5.1.2 Applying/Canceling Equalizer

You can apply/cancel equalizer after adjusting the gain setting in a single operation. This is useful for comparing sounds before and after adjustment with equalizer using earphones/headphones.



5.1.3 Saving/Reading Equalizer Level Settings

On the [Equalizer List] screen, you can save up to 10 level settings after adjustment in the equalizer mode in an SD card or read level settings from an SD card.

■ Saving adjusted level setting

1 **Insert an SD card.**
Insert an SD card for saving level setting with reference to “2.2.7 Inserting SD Card” on page 40.

2 **Display the [Equalizer List] screen.**
Tap the [EQ FILE] button on the [LIST] screen.

3 **Select a save destination.**
Tap the [SAVE] button (1), select a save destination ([EQ1] to [EQ10]) (2), and then tap the [OK] button.
Tap the [⮌] button to return to the [LIST] screen.

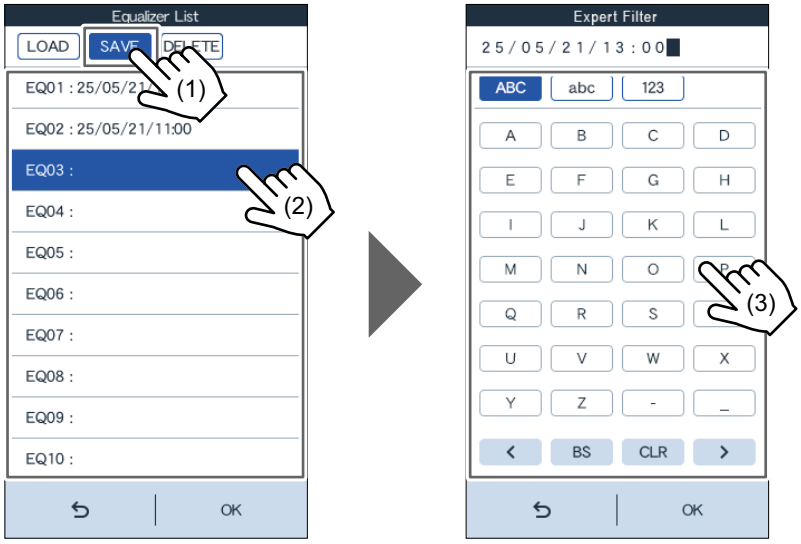
4 **Save the current level setting.**
A confirmation message will be displayed in the [Select] dialog. Tap the [ENTER] button.
If the selected save destination already stores setting, a confirmation message asking whether to overwrite the setting will be displayed in the [Warning] dialog. Tap the [ENTER] button.
Tap the [ESC] button to cancel saving.

5 **Enter a name of the level setting and complete saving.**

Enter a name of the level setting to be saved on the text input screen (maximum 13 characters) (3).

- It is set as “Year/Month/Day/Hour:Minute” by default.
- For entering characters, refer to “Value and text input” on page 30.

After entering a name of the level setting, tap the [OK] button to save the level setting.



■ Reading saved level setting

Tap [LOAD] in the step **3** in “Saving adjusted level setting” on page 92.

Select the target setting ([EQ1] to [EQ10]) for reading and tap the [OK] button. A confirmation message will be displayed in the [Select] dialog. Tap the [ENTER] button to read the level setting.

■ Deleting saved level setting

Tap [DELETE] in the step **3** in “Saving adjusted level setting” on page 92.

Select the deletion target setting and tap the [OK] button. A confirmation message will be displayed in the [Select] dialog. Tap the [ENTER] button to delete the setting.

5.2 Recording and Comparison Function

VW-0320

The listen compare EX mode can be used when “VW-0320 Recording and Comparison Function” (option) is installed.
The listen compare EX mode allows you to compare a recorded data sound saved in an SD card with an input sound from a sensor.
Use this mode to compare with a previously recorded abnormal sound, or to check for changes from the normal sound.
You can register up to 3 files containing the data recorded in an SD card in this instrument as target sounds for comparison in advance.
Since a vibration value can be measured for both comparison targets (input and recorded sounds), you can also check the numerical values.

CAUTION

- When using the comparison function, the AC/THR connector and DC connector do not produce analog output.

5.2.1 Registering Comparison Target Sound Source

CAUTION

- Select [Option Condition] → [Record/Listen Compare EX Function] → [Data Format] from the [MENU] screen and specify the data save format in advance.
- Only the ORF data recorded by this instrument can be registered as sound source for comparison.

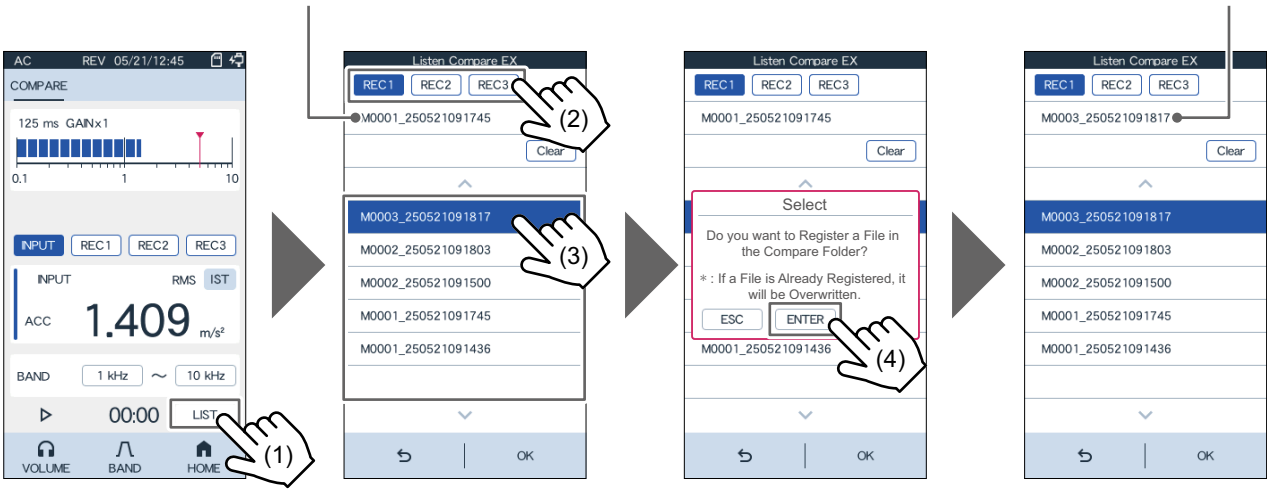
1 **Record a vibration sound and save the recorded data.**
Save the recorded data with reference to “3.4.3 Starting/Ending Measurement” on page 67.

2 **Display the [Listen Compare EX] screen.**
Tap [Listen Compare EX Mode] on the [HOME] screen to enter the listen compare EX mode. Tap the [LIST] button (1) on the [COMPARE] screen.

3 **Register the recorded data.**
Tap the data registration number ([REC1]/[REC2]/[REC3]) (2) and select the registration target recorded data from the recorded data list (3).
A confirmation message will be displayed in the [Select] dialog. Tap the [ENTER] button (4).
Registration of the data will be started. When registration is completed, the dialog will be closed automatically, and the registered file name will be displayed.
Tap the [⮌] button to return to the [COMPARE] screen.
Tap the [ESC] button to cancel registration.

If a registered file already exists, the file name will be displayed.

Newly registered file name is displayed.



- You can also display the [Listen Compare EX] screen by selecting [Option Condition] → [Record/Listen Compare EX Function] → [Sound Regist] from the [MENU] screen.

■ Deleting data registered in listen compare EX folder

Tap the registration number ([REC1]/[REC2]/[REC3]) with which the deletion target recorded data is registered in the step **4** in “5.2.1 Registering Comparison Target Sound Source” on page 94 and then tap the [Clear] button.
A confirmation message will be displayed in the [Confirm] dialog. Tap the [ENTER] button to delete the recorded data from the selected registration number.

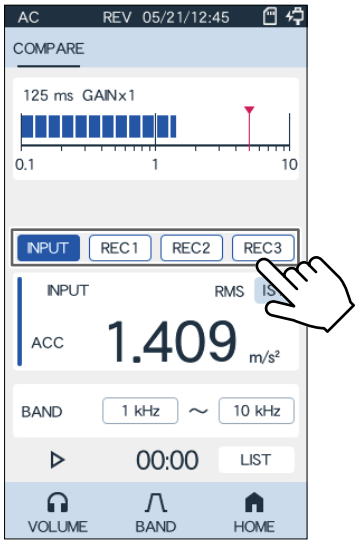
5.2.2 Comparing Sensor Input Sound with Recorded Data Sound

1 **Connect and wear earphones/headphones.**
For the connection method, refer to “2.2.4 Connecting Earphones/Headphones” on page 38.

2 **Adjust the volume.**
Refer to “3.5 Monitoring Vibration Sound” on page 73.

3 **Display the [COMPARE] screen.**
Tap [Listen Compare EX Mode] on the [HOME] screen.

4 **Compare the sensor input sound with the recorded sound while switching the sound source to be output.**
Switch the sound source to be output using the sound source check buttons ([INPUT]/[REC1]/[REC2]/[REC3]).
- [INPUT] button: Outputs the sound input from the sensor.
- [REC1]/[REC2]/[REC3] button: Outputs the recorded data sound registered in advance. Select recorded data ([REC1]/[REC2]/[REC3]) and then press the START button on the front panel to play back the recorded data. Press the STOP button on the front panel to stop playing back the recorded data.



■ Specifying and applying frequency band (band filter)

You can set the frequency band (band-pass filter) for the sound source being output. (Refer to “3.3.4 Specifying Measurement Target Frequency Band (Band-pass Filter) for Each Band” on page 57.)
- For applying/canceling band-pass filter, refer to “3.5.3 Applying/Canceling Band-pass Filter” on page 74.

5.2.3 Using Assist Function

VW-0350

With “VW-0360 Vibration Diagnosis Assist Tool” (option), you can manage multiple pieces of equipment and sound data for comparison collectively. A unique ID can be assigned to each set of equipment and sound data. With the ID data imported to this instrument, you can smoothly perform sound comparison supporting the characteristic sound which varies by the equipment. Also, you can register up to 3 pieces of recorded sound data for comparison for each ID. This operation can only be performed with “VW-0360 Vibration Diagnosis Assist Tool”.

5.3 Assist Tool Communication Function

VW-0350

5.3.1 What Is Assist Function?

Using the assist function, you can import the vibration measurement settings and evaluation standards created with “VW-0360 Vibration Diagnosis Assist Tool” (option) to this instrument and acquire the data without the need of changing settings for each piece of equipment or machine. This function is available when “VW-0350 Assist Tool Communication Function” (option) is installed.
You can also export the data measured by this instrument to “VW-0360 Vibration Diagnosis Assist Tool” to manage the data or create a tendency management graph for each piece of equipment.

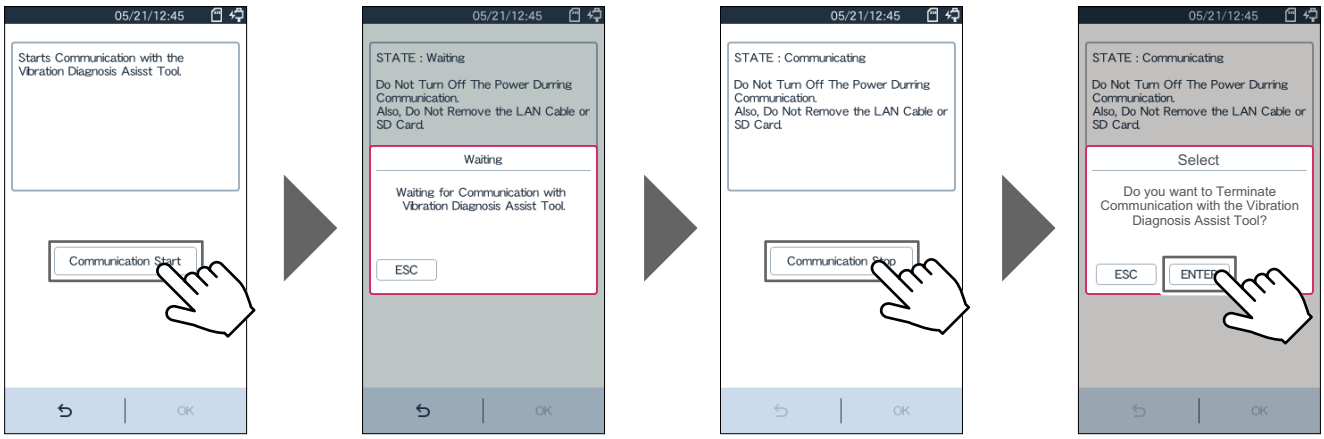
- The “equipment information file” mentioned in this section indicates a data file storing a set of necessary information, such as vibration measurement settings and evaluation standards created for each piece of equipment.
- The assist function can be used in the vibrometer mode and listen compare EX mode.
- The assist function manages IDs using route numbers (R0001...) instead of memory numbers (M0001...). A route number is paired with an ID. This combination of route number and ID is created with “VW-0360 Vibration Diagnosis Assist Tool”.

CAUTION

- Never remove an SD card when [Assist Mode] in [Assist Tool Communication Function] is set to [ON]. Ignoring this may damage the SD card.
- Before removing an SD card, be sure to set [Assist Mode] in [Assist Tool Communication Function] to [OFF].
- For handling of SD card, refer to “4.1.1 Precautions for Handling SD Card” on page 78.

■ Assist tool communication mode screen

Communication with “VW-0360 Vibration Diagnosis Assist Tool” (application for personal computer) is performed via the assist tool communication mode screen.
For details about “VW-0360 Vibration Diagnosis Assist Tool” and its function, refer to the instruction manual of VW-0360.



- Set the IP address of this instrument according to the connection environment.
  You can change the IP address via [IP Address] in [Assist Tool Communication Function]. (Refer to “Assist Tool Communication Function” on page 120.)
- In order to communicate with “VW-0360 Vibration Diagnosis Assist Tool”, the IP address of this instrument needs to be registered in the tool.
- This communication is enabled with the connection using a LAN cable.
  Note that when files are exported to an SD card with “VW-0360 Vibration Diagnosis Assist Tool”, you do not need to communicate with the instrument via the assist tool communication mode screen.

■ Enabling assist function

1 **Insert an SD card.**
Insert an SD card with reference to “2.2.7 Inserting SD Card” on page 40.

2 **Display the [Assist Tool Communication Function] screen.**
Tap [MENU] → [Option Condition] → [Assist Tool Communication Function] from the [HOME] screen.

3 **Enable the assist function.**
Set [Assist Mode] to [ON].

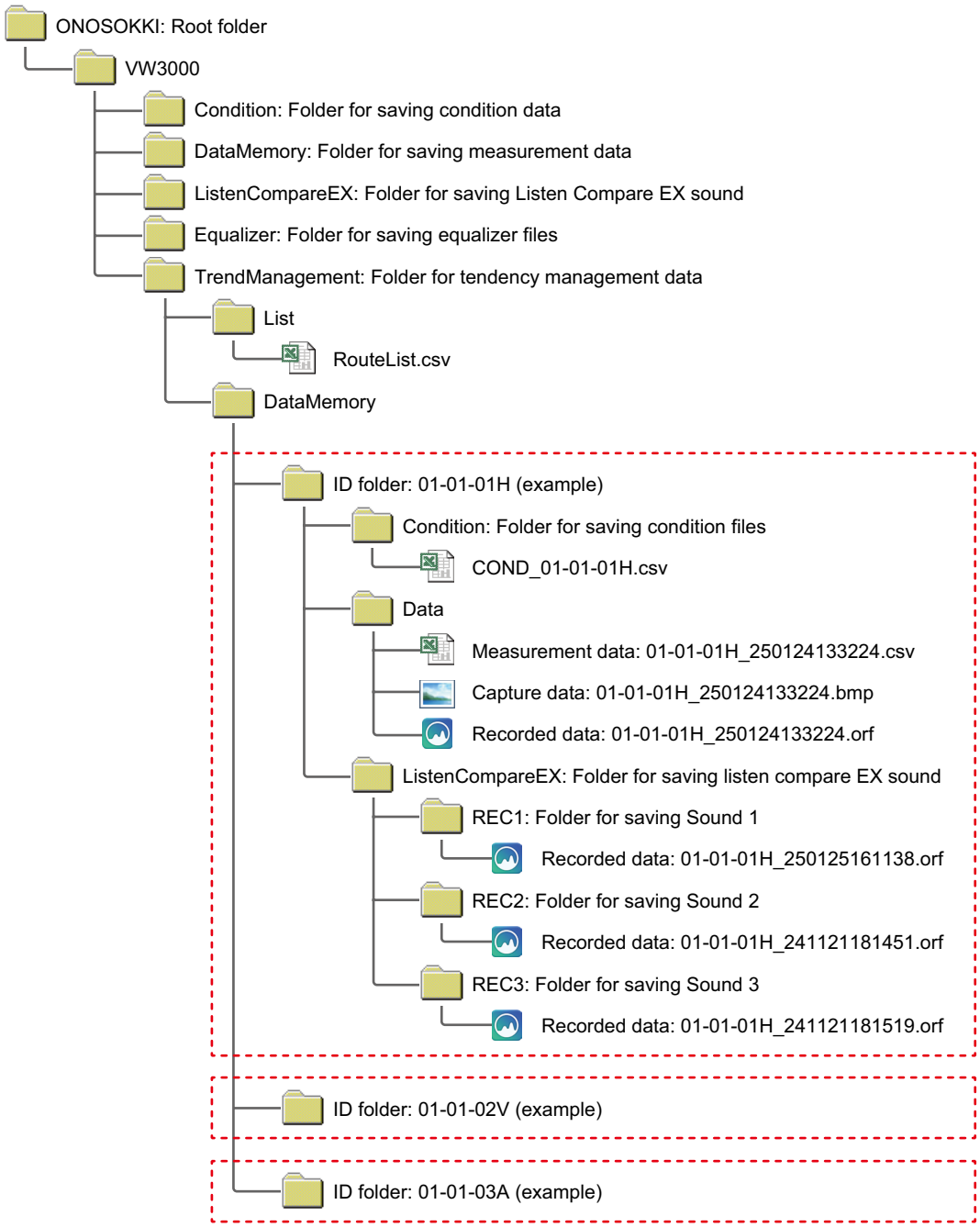
4 **Confirm the setting.**
Tap the [OK] button to return to the [Assist Tool Communication Function] screen.

5.3.2 Folder/File Configuration When Using Assist Function

When performing tendency management using the assist function, folders/files are configured as shown below.
The contents of “TrendManagement” folder are updated.

IMPORTANT

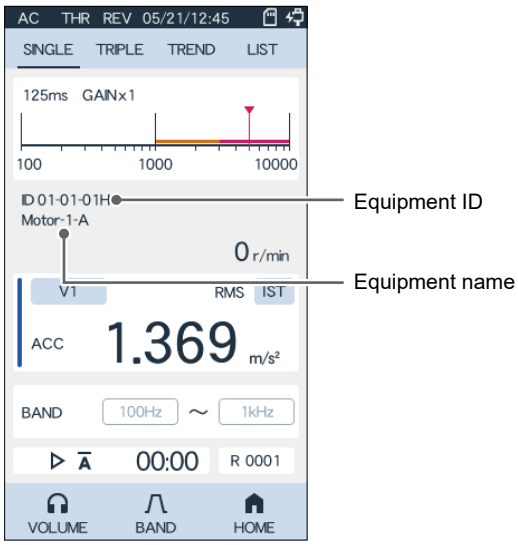
- Never change a folder name and file name. You will not be able to use the files on this instrument.



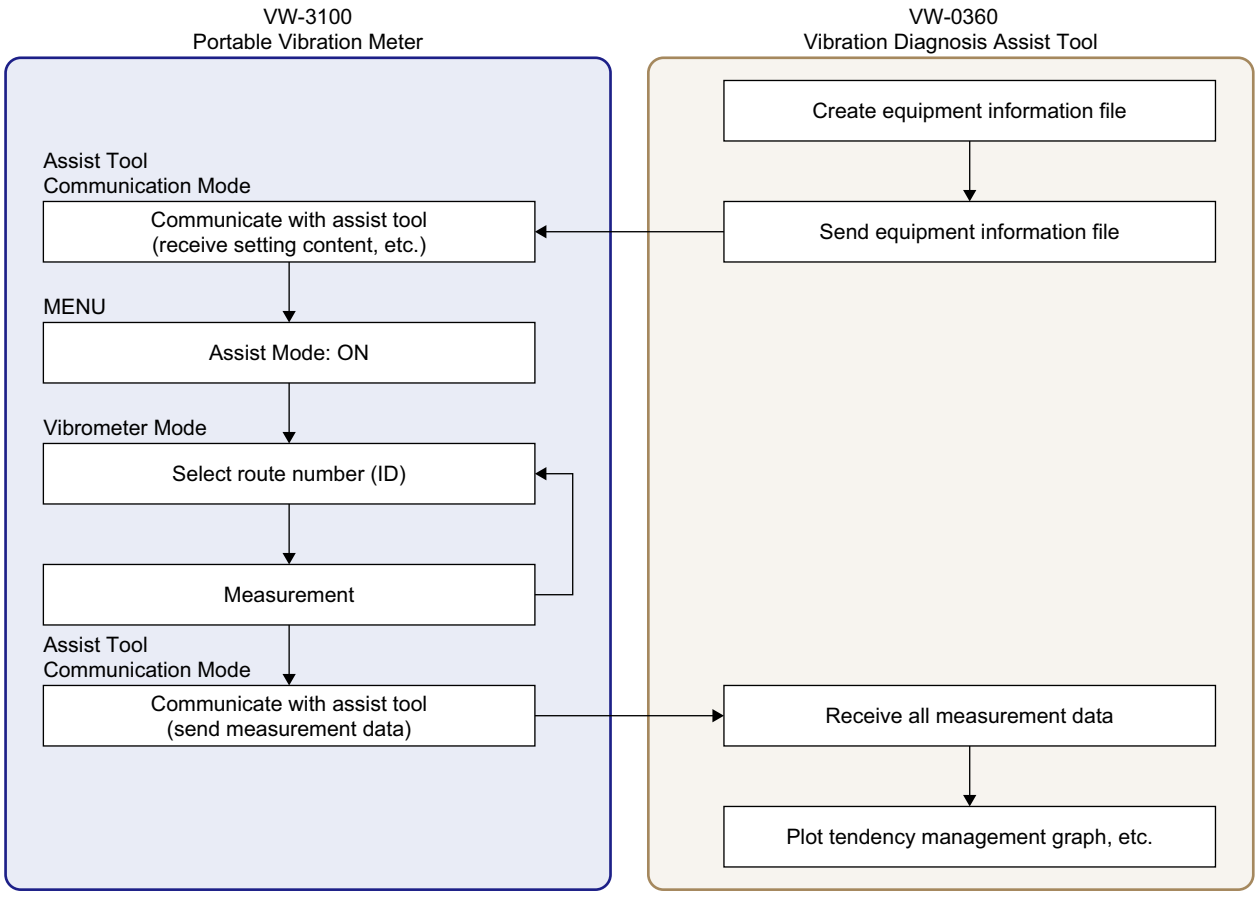
- For the folder configuration in the case of not using the assist function, refer to “4.1.2 Folder/File Configuration of SD Card” on page 79.

5.3.3 Using Assist Function in Vibrometer Mode

You can save measurement data for each piece of equipment (ID) according to the settings by the equipment (ID) created with “VW-0360 Vibration Diagnosis Assist Tool”. While the assist function is used, ID and equipment name are displayed on the [SINGLE] screen in the vibrometer mode.



■ Measurement using assist function in vibrometer mode



1 **Register the equipment with “VW-0360 Vibration Diagnosis Assist Tool”.**
Create vibration measurement settings and evaluation standards for each piece of equipment.

2 **Import the equipment information file to this instrument.**
- When importing from SD card: Insert the SD card that contains the equipment information file exported using the “VW-0360 Vibration Diagnosis Assist Tool” into this instrument. (Refer to “2.2.7 Inserting SD Card” on page 40.)
- When importing through communication by connection using LAN cable: Tap [Assist Tool Communication Mode] on the [HOME] screen to display the communication screen. Tap [Communication Start] to communicate with the personal computer connected and import the equipment information file created with “VW-0360 Vibration Diagnosis Assist Tool” to this instrument.

3 **Enable the assist function.**
Set [Assist Mode] to [ON] with reference to “Enabling assist function” on page 98.

4 **Start the vibrometer mode.**
Tap [Vibrometer Mode] on the [HOME] screen.

5 **Select an equipment ID and perform measurement.**
Select a route number (equipment ID) on the measurement screen and press the START button on the front panel. When measurement ends, save the data.
- Repeat the step **5** until acquisition of necessary data is completed.

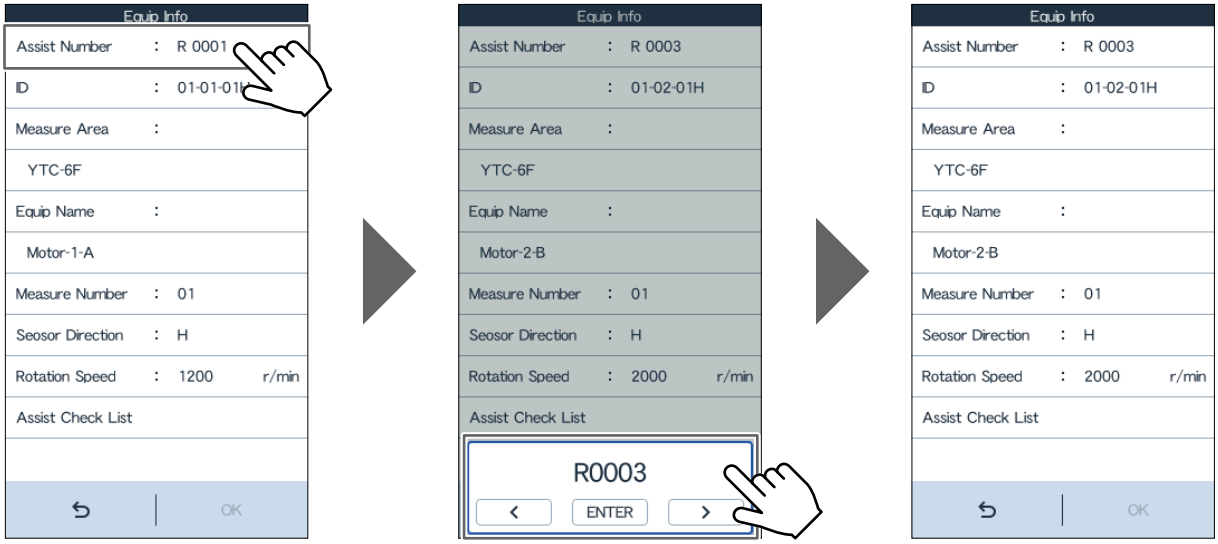
6 **Export the data acquired by this instrument to “VW-0360 Vibration Diagnosis Assist Tool”.**
Tap [Assist Tool Communication Mode] on the [HOME] screen to display the communication screen. Tap [Communication Start] to communicate with the personal computer connected and export the data acquired by this instrument to “VW-0360 Vibration Diagnosis Assist Tool”.

■ Checking equipment information

You can display and check the registered equipment information for each route number (equipment ID).

1 **Display the [Equip Info] screen.**
Tap [MENU] → [Equip Info] from the [HOME] screen. The equipment information associated with the selected route number (equipment ID) will be displayed.

2 **Display the equipment information of check target route number (equipment ID).**
Tap [Assist Number] to display the pop-up dialog. Select a route number (equipment ID) using the [❮]/[❯] button and tap the [ENTER] button to display the equipment information of the selected route number (equipment ID).



CAUTION

- You can view the equipment information screen only when [Assist Mode] is set to [ON].

■ Assist check list

You can check the data acquisition status for each registered equipment ID with the assist check list.
Tap [MENU] → [Option Condition] → [Assist Tool Communication Function] → [Assist Check List] from the [HOME] screen to display the check list.
For the acquired data having the same date as the set date of this instrument, [✔] is displayed. It is useful for checking the data acquired on the day. You can perform measurement multiple times on the same day with the same ID.
Also, when you select any route number (equipment ID) and tap the [OK] button, the selected ID can be used for measurement.

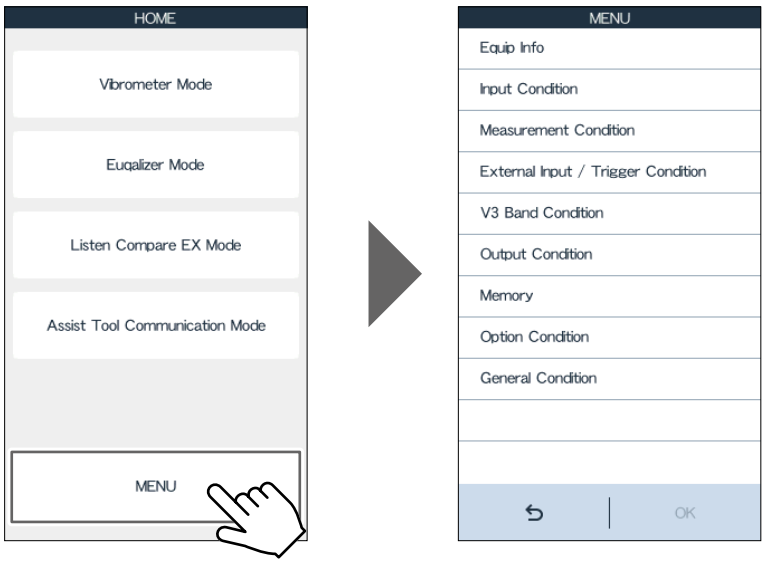
Chapter 6

Menu References

6.1 Menu Item List

The [MENU] screen allows you to perform various operations such as configuration of various settings, information check, and memory operation.
Tap [MENU] on the [HOME] screen to display the [MENU] screen.

- Some setting items can also be displayed by tapping the screen transition components on the measurement screen.
- For operations on the [MENU] screen, refer to “1.3.3 MENU Screen” on page 29.



Item	Description		Reference
Equip Info	Used to display the equipment information created with “VW-0360 Vibration Diagnosis Assist Tool” (option).		Page 105
Input Condition	Used to set the input conditions of sensor signal.		Page 106
Measurement Condition	Used to set the conditions related to measurement processing.		Page 111
External Input/Trigger Condition	Used to set the conditions related to trigger.		Page 112
V3 Band Condition	Used to set the conditions for V1, V2, V3, and V FREE bands.		Page 113
Output Condition	Used to set the conditions for signal output to a device connected to the AC/THR or DC connector.		Page 115
Memory	Used to operate the condition memory or data recall.		Page 116
Option Condition	Equalizer Function	Used to set the conditions for “VW-0310 Equalizing Function” (option).	Page 117
	Record/Listen Compare EX Function	Used to set the conditions for “VW-0320 Recording and Comparison Function” (option).	Page 117
	Evaluation Condition	Used to set the conditions for “VW-0340 ISO Evaluation and Judgment Function” (option).	Page 117
	Assist Tool Communication Function	Used to set the conditions for “VW-0350 Assist Tool Communication Function” (option).	Page 120
General Condition	Used to change the environment settings such as screen brightness and date on the vibration meter.		Page 121

6.2 Equip Info

VW-0350

CAUTION

- The [Equip Info] screen is displayed only when [Assist Mode] is set to [ON].

Item	Description
Assist Number	A number assigned to each measurement point.
ID	An ID assigned to each measurement point.
Measure Area	The name of the measurement target area.
Equip Name	The name of the measurement target equipment.
Measure Number	A measurement point number. Up to 10 points are registered for each piece of equipment.
Sensor Direction	Sensor direction at a measurement point. Any of H, A, and V is registered.
Rotation Speed	Steady rotation speed registered with the measurement target equipment. This is not a measured rotation speed.
Assist Check List	Displays the assist check list.

6.3 Input Condition

Item	Description	
Input Type	Select an input type according to the specifications of the sensor connected to this instrument.	
	CCLD	Select this when the connected sensor incorporates a constant current drive type preamplifier.
	AC	Select this when DC component needs to be removed from the signal (AC coupling).
	DC	Select this when measuring both a change in the signal and DC component (DC coupling).
Disconnection	Select whether to enable the function that provides error notification by displaying a message on the screen when disconnection of sensor cable is detected. • The disconnection notification function is available only when [Input Type] is set to [CCLD]. • When disconnection is detected, the setting of [Input Type] will be changed to [AC] for safety reasons. When reconnecting the sensor incorporating a constant current drive type preamplifier, change the setting of [Input Type] to [CCLD].	
	OFF	The disconnection notification function is disabled.
	ON	The disconnection notification function is enabled. • Before selecting [ON], be sure to check that the sensor incorporating a constant current drive type preamplifier is connected correctly.
Calibration Setting	With sensitivity set, a measured value can be read directly as a physical value. Select whether to apply the set sensitivity information ([EU Name]/[EU Type]/[Calibration Value]) to the measurement/calculation of this instrument.	
	OFF	The sensitivity information is not applied. Voltage [V] is displayed as measured value.
	ON	The sensitivity information is applied.
EU Name	Set the EU (Engineering Unit) name. Set this item according to the sensor type. Integration calculation in the vibrometer mode of this instrument is available only when [EU Name] is set to [m/s^2].	
	m/s^2	Accelerometer (integration calculation in the vibrometer mode of this instrument is available)
	m/s	Velocity sensor
	N	Power sensor
	User Setting	A desired character string can be registered. Enter a character string to register on the [User Setting] screen. • The unit display of the instrument is unavailable.
User Setting	Enter a desired character string to display at [EU Name]. (Refer to “Value and text input” on page 30.) • This item can be set only when [User Setting] is selected for [EU Name].	
EU Type	Select an EU (Engineering Unit) type. When [EU Name] is set to [m/s^2], only [mV/EU] and [V/EU] can be selected. • mV/EU • V/EU • EU/V • EU/mV	
Calibration Value	Enter a sensor sensitivity value. (Refer to “Value and text input” on page 30.) • 000.0100 to 999.9999	
Measure Range	Select a measurement range. • The displayed value of the measurement range is a peak value. • Selectable values vary by the settings of [Calibration Value], [EU Name], and [EU Type]. For details, refer to “Selectable measurement range by sensor sensitivity setting” on page 107.	

Item	Description
Low Cut Filter	An analog filter used to cut off unnecessary signals. The frequencies equal to or lower than the setting will be blocked. • OFF/1 Hz/3 Hz/10 Hz With this setting used, an analog filter is applied to the input signal before entering the A/D converter. Therefore, note that it affects all bands (V1/V2/V3/V FREE). For details, refer to “1.1.3 Internal Block Diagram” on page 17.
High Cut Filter	An analog filter used to cut off unnecessary signals. The frequencies equal to or higher than the setting will be blocked. • OFF/1 kHz/10 kHz With this setting used, an analog filter is applied to the input signal before entering the A/D converter. Therefore, note that it affects all bands (V1/V2/V3/V FREE). For details, refer to “1.1.3 Internal Block Diagram” on page 17.
TEDS	The sensor sensitivity information is read from a TEDS supported sensor. For details, refer to “Automatic setting (with TEDS supported sensor connected)” on page 55.

■ Selectable measurement range by sensor sensitivity setting

● When using an accelerometer

[EU Name]: [m/s^2]
[EU Type]: [mV/EU]

Sensor sensitivity		Measurement range [m/s^2]								
Lower limit	Upper limit									
0.0100	0.0120	-	-	-	50000	25000	10000	5000	2500	1000
0.0121	0.0240	-	-	50000	25000	12500	5000	2500	1250	500
0.0241	0.0600	-	50000	20000	10000	5000	2000	1000	500	200
0.0601	0.0999	50000	25000	10000	5000	2500	1000	500	250	100
0.1000	0.1200	50000	25000	10000	5000	2500	1000	500	250	100
0.1201	0.2400	25000	12500	5000	2500	1250	500	250	125	50
0.2401	0.6000	10000	5000	2000	1000	500	200	100	50	20
0.6001	0.9999	5000	2500	1000	500	250	100	50	25	10
1.0000	1.2000	5000	2500	1000	500	250	100	50	25	10
1.2001	2.4000	2500	1250	500	250	125	50	25	12.5	5
2.4001	6.0000	1000	500	200	100	50	20	10	5	2
6.0001	9.9999	500	250	100	50	25	10	5	2.5	1
10.0000	12.0000	500	250	100	50	25	10	5	2.5	1
12.0001	24.0000	250	125	50	25	12.5	5	2.5	1.25	0.5
24.0001	60.0000	100	50	20	10	5	2	1	0.5	0.2
60.0001	99.9999	50	25	10	5	2.5	1	0.5	0.25	0.1
100.0000	120.0000	50	25	10	5	2.5	1	0.5	0.25	0.1
120.0001	240.0000	25	12.5	5	2.5	1.25	0.5	0.25	0.125	-
240.0001	600.0000	10	5	2	1	0.5	0.2	0.1	-	-
600.0001	999.9999	5	2.5	1	0.5	0.25	0.1	-	-	-

[EU Name]: [m/s²]
[EU Type]: [V/EU]

Sensor sensitivity		Measurement range [m/s²]								
Lower limit	Upper limit									
0.0100	0.0120	500	250	100	50	25	10	5	2.5	1
0.0121	0.0240	250	125	50	25	12.5	5	2.5	1.25	0.5
0.0241	0.0600	100	50	20	10	5	2	1	0.5	0.2
0.0601	0.0999	50	25	10	5	2.5	1	0.5	0.25	0.1
0.1000	0.1200	50	25	10	5	2.5	1	0.5	0.25	0.1
0.1201	0.2400	25	12.5	5	2.5	1.25	0.5	0.25	0.125	-
0.2401	0.6000	10	5	2	1	0.5	0.2	0.1	-	-
0.6001	0.9999	5	2.5	1	0.5	0.25	0.1	-	-	-
1.0000	1.2000	5	2.5	1	0.5	0.25	0.1	-	-	-

CAUTION

- With [EU Name] set to [m/s²], [EU/mV] and [EU/V] cannot be selected for [EU Type].

● When using a sensor other than accelerometer

[EU Name]: Other than [m/s²]
[EU Type]: [mV/EU]

Sensor sensitivity		Measurement range [m/s]/[N]/[User Setting]								
Lower limit	Upper limit									
0.0100	0.0120	500000	250000	100000	50000	25000	10000	5000	2500	1000
0.0121	0.0240	250000	125000	50000	25000	12500	5000	2500	1250	500
0.0241	0.0600	100000	50000	20000	10000	5000	2000	1000	500	200
0.0601	0.0999	50000	25000	10000	5000	2500	1000	500	250	100
0.1000	0.1200	50000	25000	10000	5000	2500	1000	500	250	100
0.1201	0.2400	25000	12500	5000	2500	1250	500	250	125	50
0.2401	0.6000	10000	5000	2000	1000	500	200	100	50	20
0.6001	0.9999	5000	2500	1000	500	250	100	50	25	10
1.0000	1.2000	5000	2500	1000	500	250	100	50	25	10
1.2001	2.4000	2500	1250	500	250	125	50	25	12.5	5
2.4001	6.0000	1000	500	200	100	50	20	10	5	2
6.0001	9.9999	500	250	100	50	25	10	5	2.5	1
10.0000	12.0000	500	250	100	50	25	10	5	2.5	1
12.0001	24.0000	250	125	50	25	15.5	5	2.5	1.25	0.5
24.0001	60.0000	100	50	20	10	5	2	1	0.5	0.2
60.0001	99.9999	50	25	10	5	2.5	1	0.5	0.25	0.1
100.0000	120.0000	50	25	10	5	2.5	1	0.5	0.25	0.1
120.0001	240.0000	25	12.5	5	2.5	1.25	0.5	0.25	0.125	0.05
240.0001	600.0000	10	5	2	1	0.5	0.2	0.1	0.05	0.02
600.0001	999.9999	5	2.5	1	0.5	0.25	0.1	0.05	0.025	0.01

[EU Name]: Other than [m/s^2]
[EU Type]: [V/EU]

Sensor sensitivity		Measurement range [m/s]/[N]/[User Setting]								
Lower limit	Upper limit									
0.0100	0.0120	500	250	100	50	25	10	5	2.5	1
0.0121	0.0240	250	125	50	25	12.5	5	2.5	1.25	0.5
0.0241	0.0600	100	50	20	10	5	2	1	0.5	0.2
0.0601	0.0999	50	25	10	5	2.5	1	0.5	0.25	0.1
0.1000	0.1200	50	25	10	5	2.5	1	0.5	0.25	0.1
0.1201	0.2400	25	12.5	5	2.5	1.25	0.5	0.25	0.125	0.05
0.2401	0.6000	10	5	2	1	0.5	0.2	0.1	0.05	0.02
0.6001	0.9999	5	2.5	1	0.5	0.25	0.1	0.05	0.025	0.01
1.0000	1.2000	5	2.5	1	0.5	0.25	0.1	0.05	0.025	0.01

[EU Name]: Other than [m/s^2]
[EU Type]: [EU/mV]

Sensor sensitivity		Measurement range [m/s]/[N]/[User Setting]								
Lower limit	Upper limit									
0.0100	0.0120	50	25	10	5	2.5	1	0.5	0.25	0.1
0.0121	0.0240	100	50	20	10	5	2	1	0.5	0.2
0.0241	0.0600	250	125	50	25	12.5	5	2.5	1.25	0.5
0.0601	0.0999	500	250	100	50	25	10	5	2.5	1
0.1000	0.1200	500	250	100	50	25	10	5	2.5	1
0.1201	0.2400	1000	500	200	100	50	20	10	5	2
0.2401	0.6000	2500	1250	500	250	125	50	25	12.5	5
0.6001	0.9999	5000	2500	1000	500	250	100	50	25	10
1.0000	1.2000	5000	2500	1000	500	250	100	50	25	10
1.2001	2.4000	10000	5000	2000	1000	500	200	100	50	20
2.4001	6.0000	25000	12500	5000	2500	1250	500	250	125	50
6.0001	9.9999	50000	25000	10000	5000	2500	1000	500	250	100
10.0000	12.0000	50000	25000	10000	5000	2500	1000	500	250	100
12.0001	24.0000	100000	50000	20000	10000	5000	2000	1000	500	200
24.0001	60.0000	250000	125000	50000	25000	12500	5000	2500	1250	500
60.0001	99.9999	500000	250000	100000	50000	25000	10000	5000	2500	1000
100.0000	120.0000	500000	250000	100000	50000	25000	10000	5000	2500	1000
120.0001	240.0000	1000000	500000	200000	100000	50000	20000	10000	5000	2000
240.0001	600.0000	2500000	1250000	500000	250000	125000	50000	25000	12500	5000
600.0001	999.9999	5000000	2500000	1000000	500000	250000	100000	50000	25000	10000

[EU Name]: Other than [m/s^2]
[EU Type]: [EU/V]

Sensor sensitivity		Measurement range [m/s]/[N]/[User Setting]								
Lower limit	Upper limit									
0.6001	0.9999	5	2.5	1	0.5	0.25	0.1	0.05	0.025	0.01
1.0000	1.2000	5	2.5	1	0.5	0.25	0.1	0.05	0.025	0.01
1.2001	2.4000	10	5	2	1	0.5	0.5	0.1	0.05	0.02
2.4001	6.0000	25	12.5	5	2.5	1.25	0.5	0.25	0.125	0.05
6.0001	9.9999	50	25	10	5	2.5	1	0.5	0.25	0.1
10.0000	12.0000	50	25	10	5	2.5	1	0.5	0.25	0.1
12.0001	24.0000	100	50	20	10	5	2	1	0.5	0.2
24.0001	60.0000	250	125	50	25	12.5	5	2.5	1.25	0.5
60.0001	99.9999	500	250	100	50	25	10	5	2.5	1
100.0000	120.0000	500	250	100	50	25	10	5	2.5	1
120.0001	240.0000	1000	500	200	100	50	20	10	5	2
240.0001	600.0000	2500	1250	500	250	125	50	25	12.5	5
600.0001	999.9999	5000	2500	1000	500	250	100	50	25	10

● **When [Calibration Setting] is set to [OFF]**

[EU Name]: -
[EU Type]: -

Sensor sensitivity	Measurement range [V]								
(1.0000)	5	2.5	1	0.5	0.25	0.1	0.05	0.025	0.01

6.4 Measurement Condition

Item	Description	
Average Setting	Select whether to execute average calculation.	
	OFF	Average calculation is not executed.
	ON	Average calculation is executed.
Average Time	Select an average calculation time. • 2 s/5 s/10 s/20 s/30 s/1 min/2 min/5 min When Average Time and Recording Time are set differently, the shorter one is applied. When performing recording for a long time (15 min/30 min), set [Average Setting] to [OFF].	
Recording Time VW-0320	Select a recording time. • 2 s/5 s/10 s/20 s/30 s/1 min/2 min/5 min/15 min/30 min When Average Time and Recording Time are set differently, the shorter one is applied. When performing recording for a long time (15 min/30 min), set [Average Setting] to [OFF].	
Trigger	Select whether to start measurement using a trigger.	
	OFF	A trigger is not used to start measurement.
	ON	A trigger is detected when specific conditions are met, and measurement starts.
Auto Save	Select whether to save data automatically when measurement/recording ends. For details, refer to “3.4.5 Saving Measurement Data” on page 71.	
	OFF	The [Select] dialog is displayed each time measurement/recording ends, prompting the operator to decide whether to save data.
	ON	Data is saved automatically when measurement/recording ends.
Trend Graph	Set the plotting range of the trend graph displayed on the [TREND] screen in the vibrometer mode. • 2 s/4 s/10 s/20 s	

6.5 External Input/Trigger Condition

Item	Description	
Signal Type	Select a signal to be input to the EXT IN connector. • With [Rotation] selected, only the internal trigger is available. You cannot use the external trigger.	
	Trigger	Select this to input a trigger signal to the EXT IN connector.
	Rotation	Select this to input a rotation signal to the EXT IN connector.
Trigger Type	Select a trigger type to use. For details about starting measurement using a trigger, refer to “3.4.4 Starting Measurement under Specific Conditions” on page 68.	
	Internal (RMS)	Measurement starts when the RMS value crosses a set level.
	Internal (Input Lv.)	Measurement starts when the input signal (SIG-IN) crosses a set level.
	External	Measurement starts when the signal input to the EXT IN connector crosses a set level. • This can be selected only when [Signal Type] is set to [Trigger].
Trigger Slope (Int)	Select a polarity of internal trigger (rise/fall) when [Trigger Type] is set to [Internal (RMS)] or [Internal (Input Lv.)].	
	Plus	Measurement starts when the RMS value/input signal exceeds a set trigger level.
	Minus	Measurement starts when the RMS value/input signal falls below a set trigger level.
Trigger Level (Int)	Enter a level at which the internal trigger is detected (percentage of vibration value to measurement range) when [Trigger Type] is set to [Internal (RMS)] or [Internal (Input Lv.)]. • [Internal (RMS)]: 1 to 99 [%] • [Internal (Input Lv.)]: −99 to 99 [%]	
Trigger Slope (Ext)	Select a polarity of external trigger (rise/fall) when [Trigger Type] is set to [External], or [Signal Type] is set to [Rotation].	
	Plus	Measurement starts when the input signal exceeds a set trigger level.
	Minus	Measurement starts when the input signal falls below a set trigger level.
Trigger Level (Ext)	Select a signal level at which the external trigger is detected when [Trigger Type] is set to [External], or [Signal Type] is set to [Rotation]. • +5/+4/+3/+2/+1/0/−1/−2/−3/−4/−5 Input a trigger signal to this instrument and adjust the external trigger level while checking if the trigger is detected.	
P/R	Enter P/R (number of pulses output per rotation) for calculating rotation speed when [Signal Type] is set to [Rotation]. • 0.5 to 360 [P/R]	

6.6 V3 Band Condition

CAUTION

- For a band selecting [ON] for [Enable] in [Evaluation Condition], you cannot change the settings of [V3 Band Condition].

Item	Description	
MODE	Select a measurement mode (integration condition). • This can be set only when [EU Name] in [Input Condition] is set to [m/s^2]. • When you change the setting of [MODE], [Reference Value], [ALARMS (Abs)], and [TRIPS (Abs)] of [Evaluation Condition] in [Option Condition] will be reset to the default values.	
	ACC	Acceleration is measured based on the acceleration signal.
	VEL	Velocity is measured by performing integration on the acceleration signal.
	DISP	Displacement is measured by performing double integration on the acceleration signal.
Unit	Select a unit to be displayed. The setting can be changed only when [EU Name] in [Input Condition] is set to [m/s^2]. Selectable units vary by the setting of [MODE]. • [ACC]: km/s^2 / m/s^2 • [VEL]: m/s / mm/s • [DISP]: mm / µm	
Display Meas Item	Select a display target measurement item.	
	RMS	Effective value with time constant
	PEAK	Maximum absolute value of time axis waveform
	P-P	2 times the PEAK value
	CF	Ratio between maximum RMS value and maximum PEAK value at 500 ms intervals (PEAK/RMS)
	EQpeak	$\sqrt{2}$ times the RMS value
	EQp-p	2 times the EQpeak value • This can be selected only when [MODE] is set to [DISP].
Display Calc Item	Select a display target calculation item. For details about calculation items, refer to “3.1.2 Measured Value” on page 47.	
	Instantaneous	Maximum value in each display update interval (tact max) is displayed.
	HOLD	Maximum instantaneous value is displayed.
	Average	Summation average value from the start to end of measurement is displayed.
HPF LPF	Select a cutoff frequency of digital filter. You cannot set the values that cannot constitute a band-pass filter. Only the values that satisfy the condition of HPF ≦ LPF can be set. • OFF/10 Hz/30 Hz/50 Hz/100 Hz/300 Hz/500 Hz/1 kHz/3 kHz/5 kHz/10 kHz/20 kHz With “VW-0330 Filter Expansion Function” (option) installed, you can select a cutoff frequency within the following ranges. • Low cutoff frequency [Hz]: 10 to 90 (in increments of 10 Hz) • Intermediate cutoff frequency [Hz]: 100 to 900 (in increments of 100 Hz) • High cutoff frequency [Hz]: 1k to 10k (in increments of 1 kHz)	

Item	Description	
Severity Filter	Select whether to enable the vibration severity filter complying with ISO 2954:2012. • This can be set only when [MODE] is set to [VEL]. • When the setting of [MODE] is changed to other than [VEL] while this item is set to [ISO_2954_2012], this item is set to [OFF] automatically.	
	OFF	Vibration severity filter is disabled.
	ISO_2954_2012	Vibration severity filter is enabled. With the vibration severity filter enabled, the settings of [HPF] and [LPF] in [V3 Band Condition] are fixed to the following values. • [HPF]: Fixed to [10 Hz] (3rd order Butterworth filter) • [LPF]: Fixed to [1 kHz] (3rd order Butterworth filter)
Time Constant	Select a time constant used for the effective value (RMS) calculation. A shorter time constant makes a quicker response to fluctuation. • 8 ms/16 ms/32 ms/63 ms/125 ms/250 ms/500 ms/630 ms/1 s	
Band Gain	When the frequency band is limited using a band-pass filter ([HPF]/[LPF]) in [V3 Band Condition], signal amplitude may become smaller. AC output with better S/N ratio can be achieved by increasing signal amplitude through a change of band gain. Changing the setting of [Band Gain] makes the measurement range smaller. (Setting [Band Gain] to [x2] reduces the measurement range to half of its current value.) If the setting of [Band Gain] is large, signal amplitude may increase internally, causing the measurement range to be exceeded and the OVER indicator is displayed. In that case, set [Band Gain] to a smaller value. • x1/x2/x5/x10/x20/x50/x100	

6.7 Output Condition

Item	Description	
Output Type	Select an output target to the analog signal input device connected.	
	Fix Mode	Produces output based on the calculation result of the band selected with [Target Band].
	Follow Mode	Produces output based on the calculation result of the band selected on the measurement screen.
Target Band	When [Output Type] is set to [Fix Mode], select an output target band. • V1/V2/V3 V FREE cannot be selected. In order to produce output based on the calculation result of V FREE band, select V FREE on the measurement screen.	
AC-Output Mode	Select an output mode from the AC/THR connector. • For the processing route for each output, refer to “1.1.3 Internal Block Diagram” on page 17.	
	AC-OUT	Outputs an AC signal after performing the V3 band processing (digital processing) on the input signal.
	THR-OUT	Outputs a signal before performing the digital processing.
CAL Signal Output	The [CAL Signal Output] screen is displayed, and a reference signal is output. Use this when calibrating the external device connected to this instrument. (Refer to “CAL output signal (reference signal)” on page 39.)	
	OFF	A reference signal is not output.
	ON	A reference signal is output to the AC/THR or DC connector.

6.8 Memory

Item	Description	
Current Condition Initialize	Used to initialize the current settings (current condition). (Refer to “Initializing current settings” on page 83.)	
Memory Number Initialize	Used to reset the memory number displayed on the measurement screen to [M0001]. • Even if the same memory number has already been saved, you can newly save data with the same number after resetting. • Since a memory number is assigned automatically, you cannot set it to a desired number.	
Panel/Template Condition	Used to save settings or load/initialize saved panel conditions. You can also load settings from templates. (Refer to “4.3 Saving/Managing Frequently Used Settings (Condition Memory)” on page 83.)	
Condition File Output (SD)	Used to save the settings of this instrument (current condition) and saved settings (panel condition) collectively in an SD card. (Refer to “Outputting condition file” on page 86.)	
Data Recall	Used to display and check the data saved in an SD card or read a condition file from an SD card. (Refer to “4.2 Checking Saved Data (Recall)” on page 81/“Reading condition file” on page 87.)	
	Measurement Data	Recalls the data measured/saved in the vibrometer mode.
	Capture Data	Recalls the captured image of the measurement result measured/saved in the vibrometer mode.
	Recording Data	Recalls recorded sound source data.
	Condition File	Reads a condition file saved in an SD card into the instrument.
	Assist Check Measurement Data*	Recalls the data measured/saved in assist inspection.
	Assist Check Capture Data*	Recalls the captured image of the measurement result measured/saved in assist inspection.
	Assist Check Recording Data*	Recalls the sound source data recorded in assist inspection.
SD Card Information	Used to check the information such as free space of the SD card inserted, or format the SD card. (Refer to “4.1.3 Checking SD Card Information” on page 80/“4.1.4 Formatting SD Card” on page 80.)	

* Enabled only when “VW-0350 Assist Tool Communication Function” (option) is installed.

6.9 Option Condition

On the [Option Condition] screen, you can configure settings only for the installed optional functions. The optional functions which are not installed on the instrument are grayed out and cannot be selected.

■ Equalizer Function

VW-0310

The [Equalizer List] screen is displayed.
You can save up to 10 gain settings configured in the equalizer mode, read data from an SD card, or delete saved gain settings. (Refer to “5.1.3 Saving/Reading Equalizer Level Settings” on page 92.)

■ Record/Listen Compare EX Function

VW-0320

Item	Description	
Data Format	Specify the file format used in saving recorded data in an SD card.	
	ORF	A file is saved in the ORF format, which is an original file format of Ono Sokki. The data such as input signal/trigger/rotation speed/over-range/ sensitivity information is recorded in 1 file. It is useful for analyzing data with O-Solution which is an Ono Sokki product.
	WAV	A file is saved in the WAV format.
Compare Setting	Display the [V3 Band Condition] screen and change band settings in the listen compare EX mode.	
	Unit	The setting items and setting method are the same as those of [V3 Band Condition] in the vibrometer mode. For details, refer to “6.6 V3 Band Condition” on page 113.
	HPF	
	LPF	
	Severity Filter	
	Band Gain	
Sound Regist	Display the [Listen Compare EX] screen and register/delete a comparison target sound source. (Refer to “5.2.1 Registering Comparison Target Sound Source” on page 94.)	

■ Evaluation Condition

VW-0350

For evaluation standards, the [V3 Band Condition] settings are referenced for each band, and only the settable items can be changed. Before setting evaluation standards, configure the [V3 Band Condition] settings for the target band.

- For creating evaluation standards, refer to “3.3.7 Creating Evaluation Standard” on page 62.

Item	Description	
Enable	Select whether to perform evaluation for the currently selected band (V1/V2/V3). You cannot select [ON] if the settings are inadequate for performing evaluation. • When [Method] is set to [Multiplier] or [CF&RMS], enter a value to [Reference Value]. While [Reference Value] is left in the default state (0.000), you cannot set [Enable] to [ON]. • When [Method] is set to [Absolute], enter a value to [ALARMS (Abs)]/[TRIPS (Abs)]. While [ALARMS (Abs)]/[TRIPS (Abs)] is left in the default state (0.000), you cannot set [Enable] to [ON].	
	OFF	Evaluation is not performed.
	ON	Evaluation is performed with created standards.

Item	Description	
Method	Select an evaluation method. For details about each evaluation method, refer to “3.3.7 Creating Evaluation Standard” on page 62.	
	ISO/JIS	Vibration severity evaluation specified by ISO/JIS is performed. Specify the standard used for evaluation with [Standard]. • When [Method] is set to [ISO/JIS], [Severity Filter] in [V3 Band Condition] will be enabled automatically. For details about [Severity Filter] and restrictions imposed when it is enabled, refer to “6.6 V3 Band Condition” on page 113.
	Multiplier	Evaluation is performed by specifying a reference vibration value (reference value) and a multiplying factor to it.
	Absolute	Evaluation is performed by specifying vibration values which are evaluated as “caution (ALARMS)” and “danger (TRIPS)”.
	CF&RMS	Abnormal vibration can be detected easily by evaluating both CF and RMS.
Meas Item	Select an evaluation target measurement item.	
	RMS	Effective value with time constant
	PEAK	Maximum absolute value
	P-P	2 times the PEAK value
	CF	Ratio between maximum RMS value and maximum PEAK value at 500 ms intervals (PEAK/RMS)
	EQpeak	$\sqrt{2}$ times the RMS value
	EQp-p	2 times the EQpeak value • This can be selected only when [MODE] is set to [DISP].
Standard	Select a standard used for evaluation when [Method] is set to [ISO/JIS].	
	ISO_20816	Vibration severity evaluation complying with ISO 20816-1:2016/ISO 20816-3:2022 is performed.
	JIS_B_0906	Vibration severity evaluation complying with JIS B 0906:1998 is performed.
Group/Class	Select an evaluation target machine group when [Method] is set to [ISO/JIS].	
	When selecting [ISO_20186] for [Standard]: • Small/Medium (Rigid)/Medium (Flex)/Large (Rigid)/Large (Flex) Specify a group with reference to the requirements displayed when a group is selected. For details about the groups, refer to “ISO compliant vibration severity evaluation” on page 132. When selecting [JIS_B_0906] for [Standard]: • Class I/Class II/Class III/Class IV For details about the classes, refer to “Zone boundary value when performing JIS evaluation” on page 133.	
Reference Value ALARMS (Multi) TRIPS (Multi)	Enter evaluation standards when [Method] is set to [Multiplier]. • [Reference Value]: Enter a reference value for evaluation. When [Unit] in [V3 Band Condition] is set to [m/s^2]/[mm/s]/[µm]: 0000000.001 to 9999999.999 When [Unit] in [V3 Band Condition] is set to [km/s^2]/[m/s]/[mm]: 0000.001 to 9999.999 When [Meas Item] is set to [CF]: 0.100 to 100.000 • [ALARMS (Multi)]/[TRIPS (Multi)]: Enter a multiplying factor to the reference value evaluated as “caution (ALARMS)" and “danger (TRIPS)”. 1.00 to 100.00 While [Reference Value] is left in the default state (0.000), you cannot set [Enable] to [ON]. Changing [MODE] in [V3 Band Condition] will reset [Reference Value] of the relevant band to the default value (0.000). Set the item again and then set [Enable] to [ON].	

Item	Description
ALARMS (Abs) TRIPS (Abs)	Enter the values evaluated as “caution (ALARMS)” and “danger (TRIPS)” when [Method] is set to [Absolute]. • When [Unit] in [V3 Band Condition] is set to [m/s^2]/[mm/s]/[µm]: 0000000.001 to 9999999.999 • When [Unit] in [V3 Band Condition] is set to [km/s^2]/[m/s]/[mm]: 0000.001 to 9999.999 • When [Meas Item] is set to [CF]: 0.100 to 100.000 While [ALARMS (Abs)]/[TRIPS (Abs)] is left in the default state (0.000), you cannot set [Enable] to [ON]. Changing [MODE] in [V3 Band Condition] will reset [ALARMS (Abs)]/[TRIPS (Abs)] of the relevant band to the default value (0.000). Set the item again and then set [Enable] to [ON].
Reference Value ALARMS (Multi) TRIPS (Multi) ALARMS (CF) TRIPS (CF)	Enter evaluation standards when [Method] is set to [CF&RMS]. • [Reference Value]: Enter a reference value for evaluation. When [Unit] in [V3 Band Condition] is set to [m/s^2]/[mm/s]/[µm]: 0000000.001 to 9999999.999 When [Unit] in [V3 Band Condition] is set to [km/s^2]/[m/s]/[mm]: 0000.001 to 9999.999 • [ALARMS (Multi)]/[TRIPS (Multi)]: Enter multiplying factors to the reference values evaluated as “caution (ALARMS)” and “danger (TRIPS)”. 1.00 to 100.00 • [ALARMS (CF)]/[TRIPS (CF)]: Enter the values evaluated as “caution (ALARMS)” and “danger (TRIPS)”. 0.100 to 100.000 While [Reference Value]/[ALARMS (CF)]/[TRIPS (CF)] is left in the default state (0.000), you cannot set [Enable] to [ON]. Changing [MODE] in [V3 Band Condition] will reset [Reference Value]/[ALARMS (CF)]/[TRIPS (CF)] of the relevant band to the default value (0.000). Set the item again and then set [Enable] to [ON].

■ Assist Tool Communication Function

VW-0350

Item	Description	
Assist Mode	Select whether to enable the assist function. • For details about the assist function, refer to “5.3.1 What Is Assist Function?” on page 97.	
	OFF	The assist function is not used.
	ON	The assist function is enabled to achieve a communication with “VW-0360 Vibration Diagnosis Assist Tool” (option).
Assist No Auto Incr.	Select whether to update a route number automatically to the next number when saving data.	
	OFF	Route number is not updated.
	ON	Route number is updated.
Assist Check List	The [Assist Check List] screen is displayed.	
IP Address	Set the IP address of this instrument in order to communicate with “VW-0360 Vibration Diagnosis Assist Tool” (option).	
Subnet Mask	Set the subnet mask of this instrument in order to communicate with “VW-0360 Vibration Diagnosis Assist Tool” (option).	
Default Gateway	Set the default gateway of this instrument in order to communicate with “VW-0360 Vibration Diagnosis Assist Tool” (option).	

6.10 General Condition

Item	Description	
Display Update	Select a display update interval for measured value. • 500 ms/1000 ms	
Brightness	Select brightness of the screen. • 1 (Dark)/2/3/4/5 (Bright)	
Backlight Off Time	Set the time to put out the backlight when the instrument is not operated for a certain period of time. When the backlight is turned off, tap the screen or press a button on the front panel to turn it on. • OFF/10 s/30 s/1 min/3 min/5 min	
Date and Time	Enter a date and time of the main unit. (Year/Month/Day/Hour:Minute) • Date: 00/00/00 (Year/Month/Day) • Time: 00:00 (Hour:Minute)	
Language	Set the display language. • Japanese • English	
Battery Type	Select a battery type used. If the setting is incorrect, the battery level cannot be detected correctly, which may cause sudden power failure. Be sure to set the battery type you use correctly in order to display correct battery level. • Alkaline/Nickel Hydride	
Information	The information of VW-3100 Portable Vibration Meter you use is displayed.	
	Firmware Info	The firmware information of this instrument is displayed. Firmware update can also be performed from here. (Refer to “7.3 Updating Firmware” on page 130.)
	Option Info	Installed optional functions are displayed. When adding an option, it can be installed from here. (Refer to “7.4 Installing Options” on page 131.)

Chapter 7

Appendix

7.1 Specifications

■ Sensor input

Number of channels	1 channel	
Input terminal	BNC (C02 type), water-proof (with sensor connected)	
Input coupling	AC/DC switching	
Input voltage range	±5 V	
Input impedance	1 MΩ ±0.5 %	
Constant current drive for sensor (CCLD)	+23 to 26 V/4 mA ±25 % (25 °C)	
Absolute maximum input voltage	±30 V (Peak)	
TEDS	IEEE 1451.4 Ver.0.9/1.0 Accelerometer	
Measurement range setting	0.100 to 50000 m/s^2 • Settable measurement range varies by the sensor sensitivity setting. (Refer to “Selectable measurement range by sensor sensitivity setting” on page 107.)	
Unit calibration function	Either m/s^2 or EU is selected.	
Sensor sensitivity setting	0.0100 to 999.9999	
Analog filter	Low-cut filter	OFF/1 Hz/3 Hz/10 Hz • Cutoff frequency: −3 dB (±1 dB), −18 dB/oct
	High-cut filter	OFF/1 kHz/10 kHz • Cutoff frequency: −3 dB (±1 dB), −18 dB/oct
Input frequency characteristic	3 Hz to 15 kHz ±0.5 dB 1.5 Hz to 20 kHz ±3.0 dB • 80 Hz as reference	

■ External signal input

Function	Rotation input/trigger input (switching)	
Number of channels	1 channel	
Input terminal	⌀2.5 mm mini jack	
Input coupling	DC	
Input signal	Rectangular wave with a pulse width of 5 µs or greater	
	Signal voltage range	±5 V
	Minimum input amplitude	0.5 V (Peak)
Input impedance	1 MΩ ±0.5 %	
Number of rotation pulses	0.5 to 360 P/R (set in increments of 0.5)	
Absolute maximum input voltage	±30 V (Peak)	

■ Analysis section

A/D conversion method	△Σ method	
A/D conversion resolution	24 bit	
Sampling frequency	64 kHz	
Number of setting bands	3 bands	
Digital filter	Cutoff frequency: −3 dB (±1 dB), −48 dB/oct	
	High-pass filter	OFF/10 Hz/30 Hz/50 Hz/100 Hz/300 Hz/500 Hz/1 kHz/3 kHz/ 5 kHz/10 kHz/20 kHz
	Low-pass filter	
Vibration severity filter	ISO 2954:2012 compliant filter (HPF: 10 Hz, LPF: 1 kHz)	
Measurement frequency range	Acceleration	1.5 Hz to 20 kHz
	Velocity	3 Hz to 3 kHz
	Displacement	3 to 500 Hz

■ Calculation section

Measurement item	RMS	Effective value with time constant	
		Time constant	8 ms/16 ms/32 ms/63 ms/125 ms/250 ms/500 ms/ 630 ms/1 s
	PEAK	Maximum absolute value of time axis waveform	
	P-P	2 times the PEAK value	
	CF	Ratio between maximum RMS value and maximum PEAK value at 500 ms intervals (PEAK/RMS)	
	EQpeak	$\sqrt{2}$ times the RMS value	
	EQp-p	2 times the EQpeak value • EQp-p can be measured only when [MODE] in [V3 Band Condition] is set to [DISP].	
Calculation item	Instantaneous value/maximum value/average value • These items are calculated simultaneously for a measurement item.		

■ Output section

Analog output	AC/THR connector	AC/THR output (switching)
	DC connector	DC output
Output impedance	50 Ω ±2 %	
AC/THR output	Output target	AC: Signal after performing calculation for the selected 1 band THR: Signal immediately before performing the digital processing
	Applicable cable	AX-501
	Output voltage range	±5 V
	Offset voltage	Within ±20 mV
	Amplitude linearity	±0.4 % FS (with 160 Hz output) • DC offset voltage excluded
	Output accuracy	±3 % FS (with 160 Hz output)

DC output	Output target	Effective value calculation data for the selected 1 band	
	Applicable cable	AX-501	
	Output voltage range	0 to +5 V	
	Offset voltage	Within ±20 mV	
	Linearity	±0.4 % FS	
	Output accuracy	±3 % FS (with 160 Hz output)	
PHONE output	Output target	Signal before/after passing the band-pass filter for any 1 band	
	Output terminal	⌀3.5 mm mini jack x 1 • Connected to earphones/headphones with a ⌀3.5 mm stereo mini plug (3-pole)	
	Maximum output	18 mW (representative value: with a load of 20 Ω/1 kHz)	
CAL output	Applicable cable	AX-501	
	Output signal (AC)	Sine wave	160 Hz
		Amplitude	1.0 V (Peak) ±3 %
	Output signal (DC)	0.707 V ±3 % • DC offset voltage excluded	

■ Display section

Display	4.3-inch transmissive LCD (equipped with electrostatic capacitance-type touch panel)
Resolution	272 x 480
Backlight	White LED

■ External interface section

LAN	RJ45 connector	1 port (AUTO-MIDIX not supported)
	Transmission system	10 Base-T/100 Base-TX
	Communication standard	IEEE802.3
	Communication protocol	TCP/IP IPv4
	Function	Transmission/receipt of measurement condition/measurement data • Available only when “VW-0350 Assist Tool Communication Function” (option) is installed.
USB	USB Type-C	1 port
	Function	Power input only (USB PD not supported)
SD	SD card	SD/SDHC/SDXC (maximum 64 GB)

■ General specifications

Battery	Type	AA-size alkaline dry battery (LR6) or nickel hydrogen secondary battery (HR6), 4 pieces
	Continuous operation time	Alkaline dry battery LR6: 4 hours or longer • Measured with EVOLTA NEO manufactured by Panasonic. • Main unit setting: Current condition initialized (vibrometer mode). • Sensor: NP-3331C • Analog output and output to earphones/headphones are off.

USB bus power	Operation input voltage range	4.75 to 5.25 VDC
	Absolute maximum input voltage	6.5 VDC
	Consumption current	900 mA or less with 5 V power supply
	Mobile battery	Operated only when the above power supply specifications are satisfied.
	USB PD	Not supported
Clock backup battery	Lithium secondary battery	
Operating temperature range	−10 to +50 °C (without battery)	
Operating humidity range	20 to 90 %RH (no condensation)	
Storage temperature range	−20 to +60 °C (without battery)	
Storage humidity range	10 to 90 %RH (no condensation)	
Outside dimensions	104 mm (W) x 223 mm (H) x 42 mm (D)	
Weight	Approximately 625 g (main unit only, batteries included)	

■ Applicable standards

Water-proof/dust-proof	IP54 • Only when all the following conditions are met: – NP-3331WC is connected. – Dedicated caps are attached to the PHONE and EXT IN connectors. – Bottom cover of the main unit is attached. – Battery cover is attached.		
Applicable standards	CE marking	EMC Directive	2014/30/EU Standard EN 61326-1:2021
		RoHS Directive	2011/65/EU Standard EN IEC 63000
		Battery Regulation	(EU)2023/1542
	FCC	CFR47 Part15 Subpart B Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.	
	ICES	CAN ICES-003 (A)/NMB-003 (A)	

■ VW-0310 Equalizing Function (software option)

Time weighting characteristic	Fast (125 ms)
Band frequency	1/1 octave 11 bands
Band gain adjustment	−10 to +10 dB (in steps of 1 dB)
Sampling frequency	64 kHz
Center frequency	16 Hz to 16 kHz (11 bands) • Overall • Allpass

■ VW-0320 Recording and Comparison Function (software option)

Recording function	Recorded data	Sensor input/rotation information/trigger information
	Sampling frequency	64 kHz
	Continuous recording time	Maximum 30 minutes
	File format	ORF/WAV • Only ORF is supported when recording rotation/external trigger information.
Comparison function	Number of registered files	3 files • Files saved in an SD card
	Files that can be registered	ORF • Only the files recorded by this instrument
	Number of setting bands	1 band
	Integration/digital filter	Refer to “Analysis section” on page 125.

■ VW-0330 Filter Expansion Function (software option)

Additional cutoff frequency	High-pass filter	Low cutoff frequency [Hz]: 10 to 90 (in increments of 10 Hz) Intermediate cutoff frequency [Hz]: 100 to 900 (in increments of 100 Hz) High cutoff frequency [Hz]: 1 to 10 k (in increments of 1 kHz)
	Low-pass filter	
Filter characteristic	Cutoff frequency: −3 dB (±1 dB), −48 dB/oct	

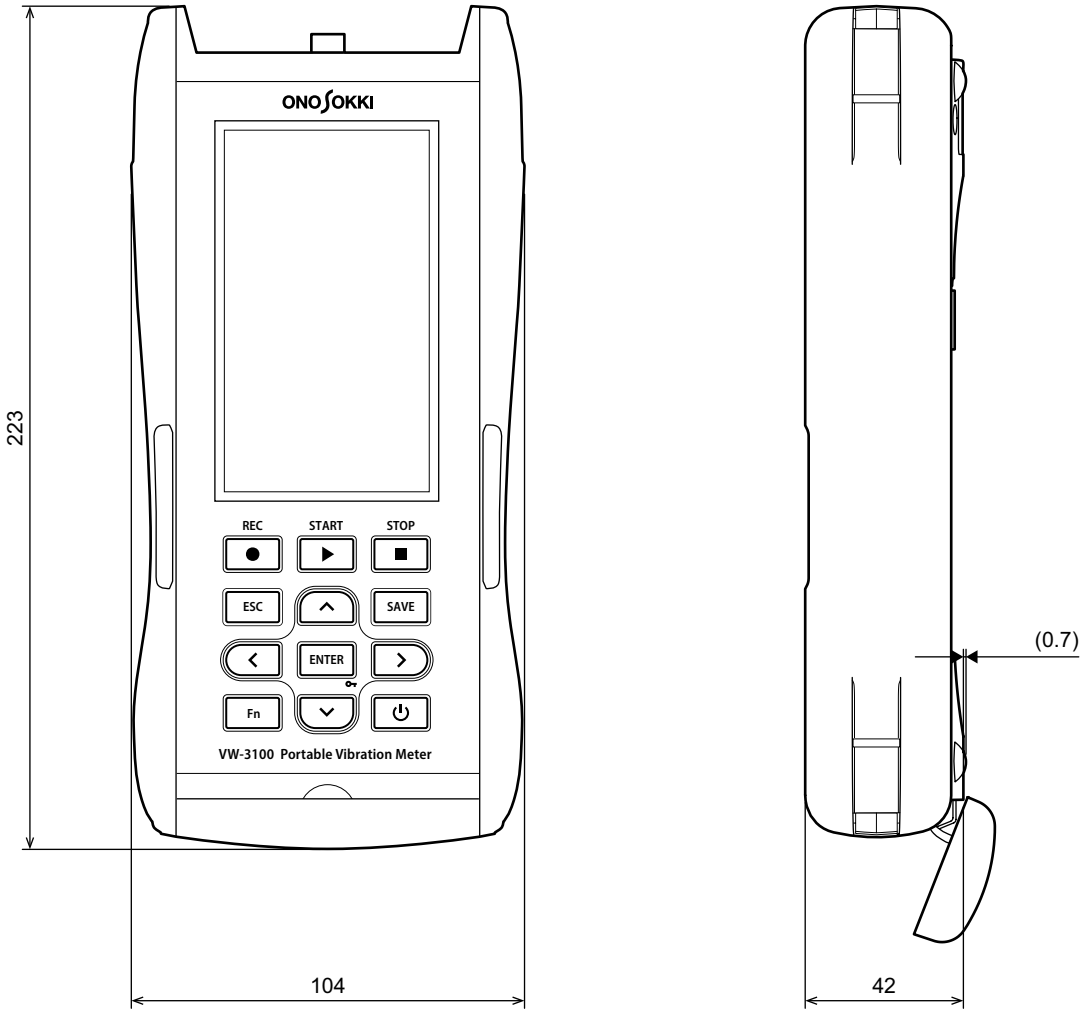
■ VW-0340 ISO Evaluation and Judgment Function (software option)

Result display	3 stages of “normal”, “caution (ALARMS),” and “danger (TRIPS)” • Output to a measurement data file (.csv) • Displayed on the screen	
ISO/JIS evaluation	ISO standard	The groups specified by ISO 20816-1:2016 and ISO 20816-3:2022 are set, and evaluation results are output with reference to the appropriate evaluation standards for the groups.
	JIS standard	The classes specified by JIS B 0906:1998 are set, and evaluation results are output with reference to the appropriate evaluation standards for the classes.
Optional evaluation	Evaluation method	Multiplying factor/absolute value
	Evaluation target	1 type selected from calculation items.
	Evaluation standard	A reference value is registered, and multiplying factors for evaluating the state of “caution (ALARMS)” and “danger (TRIPS)” are set for it.
	Multiplier evaluation	Reference value setting range: • 0000000.001 to 9999999.999 (for units of m/s^2, mm/s, and µm) • 0000.001 to 9999.999 (other than above)
		• Multiplying factor setting range: 1.00 to 100.00
	Absolute evaluation	Judgment value: Measured values judged to be “caution (ALARMS)” and “danger (TRIPS)” are set.
		Setting range: • 0000000.001 to 9999999.999 (for units of m/s^2, mm/s, and µm) • 0000.001 to 9999.999 (other than above)

■ VW-0350 Assist Tool Communication Function (software option)

Data storage medium	SD card

7.2 Outside Dimensions



Unit: mm

7.3 Updating Firmware

IMPORTANT

- The firmware for update is provided to the customers who have registered as users via Ono Sokki website below. We recommend you to register as a user.
  https://www.onosokki.co.jp/English/english.htm
- Update the firmware according to the procedure provided in this manual. Updating the firmware using an incorrect procedure may cause failure or malfunction of the instrument.
- Be sure to supply power through USB connection when executing update.
- Do not remove the SD card, shut off the power of supply source, or turn off the instrument power during update. Ignoring this may cause failure or malfunction of the instrument.
- Ono Sokki assume no responsibility and liability associated with the update performed by any operation other than those specified.
- Note that updating the firmware may initialize a condition memory (saved settings of the vibration meter). Back up a necessary condition memory before performing update.

1 **Download the firmware for update and save it in an SD card.**

Download the firmware from our website. (https://www.onosokki.co.jp/English/hp_e/c_support/registration/newregistration.htm)

Change the file name of the downloaded firmware to “VW3100Firmware.dat” and save it in the root folder of an SD card.

- Use an SD card that has been formatted by this instrument. (Refer to “4.1.4 Formatting SD Card” on page 80.)

2 **Insert the SD card to this instrument and turn on the power.**

Insert the SD card storing the firmware to this instrument. (Refer to “2.2.7 Inserting SD Card” on page 40.)

Supply power through USB connection and turn on the instrument power. (Refer to “2.1.2 Supplying Power through USB Connection” on page 33.)

3 **Display the firmware update screen.**

Tap [MENU] → [General Condition] → [Information] → [Firmware Info] from the [HOME] screen.

When the device information is displayed on the screen, tap the [FIRMWARE UPDATE] button to open the firmware update screen.

4 **Start update.**

Check that the target version is displayed at [New Firmware Ver] and then tap [OFF] of [Enable] to change it to [ON].

Tap the [START UPDATE] button to start update. The screen showing the progress of firmware update will be displayed. Wait until each item of [File Check], [Erase], [Write], and [Verify] reaches 100 %.

- Do not remove the SD card, shut off the power of supply source, or turn off the instrument power during firmware update.

5 **Complete firmware update.**

When the firmware update is completed, the message [SUCCESS] will be displayed on the screen.

Tap the [BACK] button to return to the firmware update screen.

Check that the firmware has been updated normally to the version of [Firmware Version] and then tap the [REBOOT] button. The instrument will be restarted, and the measurement screen will be displayed.

6 **Check the version.**

Tap [MENU] → [General Condition] → [Information] → [Firmware Info] from the [HOME] screen.

Check that the firmware has been updated normally on the [Firmware Info] screen.

7.4 Installing Options

7.4.1 Checking Installed Options

In order to check the options that are enabled on this instrument, tap [MENU] → [General Condition] → [Information] → [Option Info] from the [HOME] screen and display the [Option Info] screen.
You can check the currently enabled options with the [Option Info] screen. Enabled options are displayed in black, whereas disabled options are displayed in gray.

7.4.2 Adding (Installing) Options

IMPORTANT

- Be sure to execute firmware update before adding an option.
- Install an option according to the procedure provided in this manual. Installing an option using an incorrect procedure may cause failure or malfunction of the instrument.
- Be sure to supply power through USB connection when executing installation.
- Do not remove the SD card, shut off the power of supply source, or turn off the instrument power during installation of options. Ignoring this may cause failure or malfunction of the instrument.
- Ono Sokki assume no responsibility and liability associated with the installation of options performed by any operation other than those specified.

1 **Prepare the SD card storing the license information (license file) for option.**
The root directory of the SD card used on this instrument stores the latest firmware update file (VW3100Firmware.dat) and license file (VW3000OptionInf.dat).

2 **Insert the SD card to this instrument and turn on the power.**
Insert the SD card prepared in the step **1** to this instrument. (Refer to “2.2.7 Inserting SD Card” on page 40.)
Supply power through USB connection and turn on the instrument power. (Refer to “2.1.2 Supplying Power through USB Connection” on page 33.)

3 **Execute firmware update.**
Complete firmware update according to the procedure provided in “7.3 Updating Firmware” on page 130. The license file stored in the SD card will be updated to the latest state.

4 **Display the [Option Info] screen.**
Tap [MENU] → [General Condition] → [Information] → [Option Info] from the [HOME] screen.

5 **Install an option.**
Tap the [INSTALL] button on the [Option Info] screen. A confirmation dialog for option installation will be displayed.
Tap the [ENTER] button to start installation of the option.

6 **Check that the option has been installed normally.**
When the installation is completed, a message dialog will be displayed. Tap the [ENTER] button to return to the [Option Info] screen. Check that the option you have enabled is displayed in black.

7.5 Technical Information

7.5.1 ISO/JIS Compliant Vibration Severity Evaluation Standards VW-0340

■ ISO compliant vibration severity evaluation

● Definition of zone boundary value

The zone boundary value indicates a vibration value used as a boundary when the operating state of a machine is defined as zone A to zone D, which is classified by ISO 20816 as shown below.

- Zone A: The vibration of a newly commissioned machine normally falls within this zone.
- Zone B: Considered acceptable for unrestricted long-time operation.
- Zone C: Considered inadequate for long-time continuous operation.
- Zone D: Considered a severity level that is enough to cause damage to a machine.

This instrument outputs evaluation results handling the zone C and zone D as “caution (ALARMS)” and “danger (TRIPS)”, respectively.

● Zone boundary value when performing ISO evaluation

This instrument performs evaluations using the zone boundary values specified by ISO 20816-1:2016 and ISO 20816-3:2022.

- For small size machines, ISO 20816-1:2016 does not specify a unique zone boundary value. It specifies a range of possible values. This instrument employs the strictest boundary values only for small size machines and performs ISO evaluation. Only velocity can be evaluated with the ISO evaluation for small size machines.
- For large size machines (group 1) and medium size machines (group 2), the zone boundary values specified by ISO 20816-3:2022 are used. Evaluation can be performed for displacement as well as for velocity.

Group	Zone boundary value	Velocity effective value [mm/s]	Displacement effective value [µm]
Small • Output: Up to 15 kW	A/B	0.71	-
	B/C	1.8	-
	C/D	4.5	-
Medium (Rigid) • Output: 15 to 300 kW • Shaft height: 160 mm ≦ H < 315 mm	A/B	1.4	22
	B/C	2.8	45
	C/D	4.5	71
Medium (Flex) • Output: 15 to 300 kW • Shaft height: 160 mm ≦ H < 315 mm	A/B	2.3	37
	B/C	4.5	71
	C/D	7.1	113
Large (Rigid) • Output: 300 kW or more • Shaft height: H ≧ 315 mm	A/B	2.3	29
	B/C	4.5	57
	C/D	7.1	90
Large (Flex) • Output: 300 kW or more • Shaft height: H ≧ 315 mm	A/B	3.5	45
	B/C	7.1	90
	C/D	11	140

● Machine classification according to foundation flexibility

ISO 20816-3:2022 classifies the support condition of rotating machines into 2 types: fixed support (rigid) and elastic support (flexible). These are determined by the combination of machine and foundation.

If the lowest natural frequency of the combined machine and support system in the direction of measurement is higher than its main excitation frequency (this is in most cases the rotational frequency) by at least 25 %, then the support system may be considered rigid in that direction.

■ JIS compliant vibration severity evaluation

● Definition of zone boundary value

The zones classified for JIS compliant vibration severity evaluations are the same as those for ISO compliant vibration severity evaluations. (Refer to “Definition of zone boundary value” in “ISO compliant vibration severity evaluation” on page 132.)

● Zone boundary value when performing JIS evaluation

This instrument performs evaluations using the zone boundary values specified by JIS B 0906:1998.

Class	Zone boundary value	Velocity effective value [mm/s]
Class I: An engine and machine (such as a general-purpose electric motor with output of 15 kW) incorporated as a component of a complete machine under the normal operation condition.	A/B	0.71
	B/C	1.8
	C/D	4.5
Class II: A medium size machine without special foundation (such as an electric motor with output of 15 to 75 kW) and an engine or machine fixed firmly on a special foundation (300 kW or less).	A/B	1.12
	B/C	2.8
	C/D	7.1
Class III: A large size prime mover and large size rotating machine fixed on a rigid foundation or on a heavy foundation having relatively high rigidity in the vibration measurement direction.	A/B	1.8
	B/C	4.5
	C/D	11.2
Class IV: A large size prime mover and large size rotating machine (such as a turbo generator set and gas turbine with output of 10 MW or more) fixed on a foundation having relatively soft rigidity in the vibration measurement direction.	A/B	2.8
	B/C	7.1
	C/D	18

■ Optional evaluation

Optional evaluation allows you to set standards according to the purpose and use them for evaluation. The 3 types of evaluations: relative, absolute, and CF & RMS evaluations are available.

● Relative evaluation

Evaluation is performed by specifying a reference vibration value (reference value) and a multiplying factor to it.
For the reference value, we recommend you to specify a measurement result in the initial or normal state of equipment.

- The default settings of ALARMS (Multi) and TRIPS (Multi) are 2.56 times and 6.40 times, respectively. These values are specified by ISO 20816-1 as a guide.

● Absolute evaluation

Evaluation is performed by specifying vibration values which are evaluated as “caution (ALARMS)” and “danger (TRIPS)”.

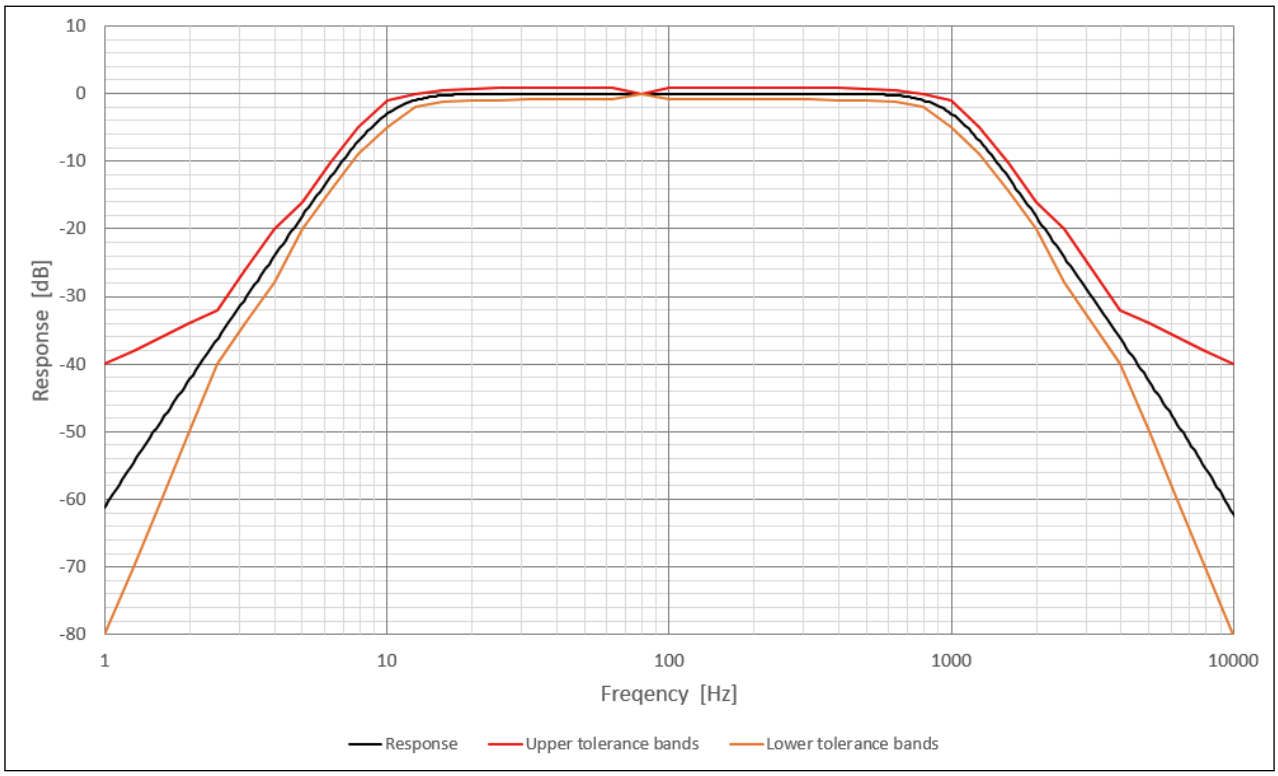
● CF & RMS evaluation

Using both CF and RMS values for evaluation helps to facilitate detection of abnormal vibration (especially poor lubrication) and prevent overlooking.

- For the CF value, specify the vibration values that are evaluated as “caution (ALARMS)” and “danger (TRIPS)”.
- For the RMS value, specify a reference value and a multiplying factor to it.

■ Vibration severity filter characteristics

The following graph shows the characteristics of the vibration severity filter and their relation to the permissible tolerance range specified in ISO 2954:2012.



7.6 Error Message List

Message	Cause/Remedy
The Device Specific Information is Broken.	There is a problem with the hardware being used. Contact your nearest Ono Sokki sales office or the distributor where you purchased the instrument.
Condition is Broken.	There is a problem with the backup memory. If this error occurs frequently, contact your nearest Ono Sokki sales office or the distributor where you purchased the instrument.
Booted From Factory Conditions.	
SD Card Status is Abnormal.	If this error occurs frequently, turn off the instrument power, insert the SD card, and then turn on the instrument power again.
The Equipment Information File is Abnormal.	The file output from “VW-0360 Vibration Diagnosis Assist Tool” (option) cannot be read normally. Try output again from “VW-0360 Vibration Diagnosis Assist Tool”. Do not change the content of output file.
Assist Inspection Mode It's Finished.	

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■ Revision history

Revision date	Version	Revision details
August 30, 2025	1.0	Initial edition of the VW-3100 Instruction Manual issued

ONO SOKKI CO., LTD.

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