IoT Vibration Diagostic Unit

Λ-Vibro（Lambda Vibro）

Model VM-8018-LN

VM-8018-UT

Instruction Manual

Preface

Thank you for purchasing the equipment of IMV Corporation (hereinafter referred to as "our company").

The IoT vibration diagnostic unit Λ-Vibro (hereinafter referred to as "this unit") is a device that performs various vibration diagnoses for industrial equipment such as electric motors and motors and consumer equipment.

Do not use it for any other purpose. If used for any other purpose, it may lead to death or serious injury in some cases. Please do not use it for any other purpose.

About this book

This instruction manual (hereinafter referred to as "this document") contains instructions for the safe and correct use of this equipment. Incorrect handling of this equipment may cause a malfunction or accident, so please read this manual carefully and fully understand it before using this device. Also, please keep this book carefully so that you can read it whenever you need it.

This document does not include content on sensors such as vibration pickups. For information on the handling of sensors, please check the instruction manual that came with each sensor or contact our company or dealer.

You may not use or reproduce all or part of this document without our prior permission. You may also not translate or rewrite this document, in whole or in part, into any other language.

If you wish to request translation, or if you have any questions or errors in the contents described in this book, please contact our company or dealer.

About the safey of the equipment

One of the subtypes of this equipment, the VM-8018-UT, is a CE marking-enabled device designed according to standards developed by the European Committee for Standardization. The VM-8018-UT is marked with the following symbols:。

$$C\,\epsilon$$

Standards to which VM-8018-UT meets
- EN 61326-1:2013   Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements
- EN 55011:2009/A1:2010 (CISPR 11)   Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement
- EN 61000-3-2:2006 +A1:2009+A2:2009   Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)
- EN 61000-3-3:2008   Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection
- EN 61000-4-2:2009   Electromagnetic compatibility (EMC) - Part 4-2: Testing and measuring techniques - Electrostatic discharge immunity test
- EN 61000-4-3:2006 +A1:2008+A2:2010   Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radiofrequency, electromagnetic field immunity test
- EN 61000-4-4:2004 +A1:2010   Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test
- EN 61000-4-5:2006   Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity tests
- EN 61000-4-6:2009   Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency field
- EN 61000-4-8:2010   Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test
- EN 61000-4-11:2004   Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests

Table of contents

1   Introduction

This document describes the minimum observance of this equipment in order to carry out the work safely when transporting, installing, operating, and disposing of the equipment (hereinafter referred to as "the work").

The information in this document is structured based on standard specifications. Therefore, please note that depending on the specifications of the equipment introduced, the usage method and work procedure may differ.

This document was prepared for the purpose of voluntarily disclosing information on the basic safety requirements that the Company complies with when carrying out such work. Please note that it is not created to guarantee that the work can be performed safely.

In addition, you may not disclose the information in this document to third parties without our permission.

If you have any questions or concerns about specifications, please contact:

IMV Corporation
〒555-0011 Osaka City Nishiyodogawa-ku Takeshima 2-6-10

MES Sales	Tel : 050-1745-6779
	FAX : 06-6471-3158

1.1   System Warranty and Scope of Liability

Please note the following points regarding warranty and responsibility for the use of this device.

Warranty period

The warranty period is described in the attached warranty certificate.

Warranty Coverage

Even within the warranty period, if the following applies, it will be excluded from the scope of the warranty.

• Accidents, breakdowns, damages, or measurement failures caused by retrofitting, relocation, or repurposed operation after delivery

• In the event of a malfunction, damage, or measurement failure caused by natural disasters or transportation accidents after delivery

• Secondary damages arising from the failure of this equipment

(Compensation for personal injury, damage associated with production, damage to goods other than those delivered by the Company, damage to social impact, etc.)

• Accidents, breakdowns, damages, or measurement failures beyond the warranty period

- Delayed delivery in the event of a significant specification change from your company
- Accidents, breakdowns, damages, and measurement failures due to poor operation
- Accidents, breakdowns, damages, and measurement failures resulting from your company's maintenance after delivery
- Accidents, breakdowns, damages, or measurement malfunctions caused by machines other than those supplied by the Company
- When the cause of the failure cannot be determined due to loss of damaged parts
- Malfunction or measurement failure due to inadequacies in materials, data, or information submitted by your company
- Damage and rust due to inadequate handling and storage of your company after delivery
- Accidents caused by items supplied by your company
- When caused by corrosion of the material
- For handling, storage and use in harsh environments that exceed design specification requirements
- Operational malfunctions or measurement malfunctions caused by defects in the enforcement work arranged by your company

In addition to the items defined in the scope of coverage, if any items to be excluded from the scope of the warranty are described in the contract/specification submitted by the Company, this shall take precedence.

Damages and Liability

The installation method, method of use, disposal method of components, etc. of this equipment must comply with administrative laws and regulations prescribed by the national or local government.

Before using this device, please read this manual carefully and strictly observe the contents of danger, warnings, and cautions.

Damage caused by incorrect operation, operation or maintenance of this equipment is considered to be outside the responsibility of the Company and is not responsible.
In addition, if the materials related to this device are modified or changed by a person other than the Company, the Company shall not be liable for any damage caused by the act.

Even if the equipment or parts are procured from a person designated by the Company, the Company shall not be liable for any damage caused by defects in the equipment or parts.

1.2   Definition of Persons Working

This book has been prepared for all persons involved in this equipment, but for safety reasons, the definition of the target operator according to the ability and experience is divided according to the description contents.

We define workers in the following two levels. In this document, the distinction between the subjects is clearly stated and only the applicable persons of work are permitted to do what is described.

Operator

The operator can perform all tasks except those that the service staff should be performing. Operators should carefully read the information described in this document and perform their work after fully understanding the characteristics of this equipment and all work contents.

Service Staff

Service staff are workers who perform tasks that require special knowledge and skills, such as installation of this equipment, investigation of the cause of failure, and repair.
Basically, the service staff is the person from the Company or the dealer.

Memo This document primarily describes the procedures that the operator operates.

2   Safety

2.1   Before using this device

This chapter, "Safety Instructions," describes the safety details that operators must pay particular attention to when handling equipment.

This unit uses a power supply of AC100V ~ AC240V. Incorrect operation or work can cause great harm to the human body. In addition, sensors used for vibration detection may be installed on machinery with a large operating area or in high places.

Operators using this equipment should read and understand the safety statements in this document carefully before performing any work.

2.2   Warnings and Cautions Mentioned in This Document

2.2.1   Danger Level

This equipment is designed with the safety of the operator in mind. However, there are risks that cannot be eliminated by any means. This document divides the severity and level of risk of these risks into three stages: Warning, Caution, and Note. Read and fully understand the display items before operating and maintaining this equipment.

The Warnings, Cautions, and Notes are displayed in order of severity of the hazard (warnings> cautions> notes, and are as follows:

⚠ Warnings
The "Warning" section describes the case where a worker may be killed or seriously injured during the operation of this equipment.

⚠ Notes
The "Notes" section describes cases in which a worker may suffer minor injury during the operation of this equipment.

Notes
The "Notes" section describes cases where there is no risk of injury to the operator, but it is expected to cause damage or failure to this equipment or other equipment, equipment, etc.

In addition to the hazard level classification, this document also uses the following notations:

Memo   "Notes" describe supplementary explanations that could not be explained in the text and information that is useful to know.

Reference   References describe where you are referring to related content and common procedures.

2.2.2 Definition of "Serious Injury" and "Minor Injury"

"Seriously injured."

Those that have sequelae such as blindness, injury, burns, electric shock, fractures, poisoning, etc., and those that require hospitalization or long-term hospital visits for treatment.

"Minor injuries"

Treatment does not require hospitalization or long-term hospital visits. (Other than the "serious injury" above)

2.3 Security Measures

2.3.1 Precautions for Installation

When installing this device or peripherals, pay close attention to the following points.

⚠ **Warnings**

- **When installing near moving parts of a machine, make sure the machine is stopped before proceeding with the installation process. Do not perform installation tasks while the machine is running.**
- **Always use a workbench (stepped tool or stepladder) when attaching peripherals to high altitudes.**
- **When installing this unit, be sure to ground the ground (FG) of the AC adapter before using. If the ground (FG) is not installed, there is a risk of electric shock due to charging.**
- **When connecting the sensor cable to the HD-BNC terminal on the front of this unit, confirm that there is no potential difference between the operator and the device before connecting. If there is a potential difference, there is a risk of electric shock.**
- **To prevent accidents caused by unexpected or indirect contact, do not install with metal objects such as watches and rings attached.**

⚠ **Notes**

- **Always wear a helmet when working at heights.**
- **When using a workbench, make sure that the workbench is level, unobstructed, and secure.**
- **When installing this device or peripheral equipment at a high place, secure it firmly. If this device or peripheral equipment falls, there is a possibility that an accident will occur.**

Notes

- **When connecting vibration sensors, vibration pickups, and other sensors used for measurement to this device, please confirm the method that matches the specifications of the device to be connected before connecting. If connected in an inappropriate manner, this device or the connected device may fail or be damaged**
- **Do not use the ground (FG) terminal on the back of the unit when the ground (FG) of the AC adapter is grounded. When used, it results in a two-point ground, which may increase noise.**

2.3.1 Precautions for Use

When using this device, please pay attention to the following points.

⚠ Warnings

- **If there is a possibility that this device is charged for any reason, do not touch the main unit carelessly as there is a risk of electric shock. Check the ground (FG) connection of the AC adapter first.**
- **Do not use this device as a life-threatening alarm device.**
- **If a problem occurs in this unit, do not disassemble it at all. Please contact us or your dealer.**

⚠ Notes

Do not carelessly touch the terminals, etc., when the device is energized.

Notes

- **Use this equipment in the environment described in this document. If used in an environment not described in this document, unexpected problems may occur. In addition, if this causes damage to the main unit or damage to peripheral equipment, all items are not covered under warranty.**
- **Do not attach this device to the interference point or operation point of the measurement object. The object being measured may be damaged.**

Memo
- This instrument is a precision measuring instrument. It is recommended that calibration be performed every year to maintain measurement accuracy.
- When automatic measurement operation is performed using this device, measurement data may not be recorded as expected if the setting is incorrect. To avoid this, after you have set up automatic measurements, verify in a real-world environment whether you can obtain the measurement data as expected. As a result of the verification, please confirm that there are no problems before starting full-scale operation.

3 Outline of this device

The accessories of this device and the names of each part are explained.

3.1 Contents of accessories

The accessories included at the time of purchase are as follows: Make sure you have everything.

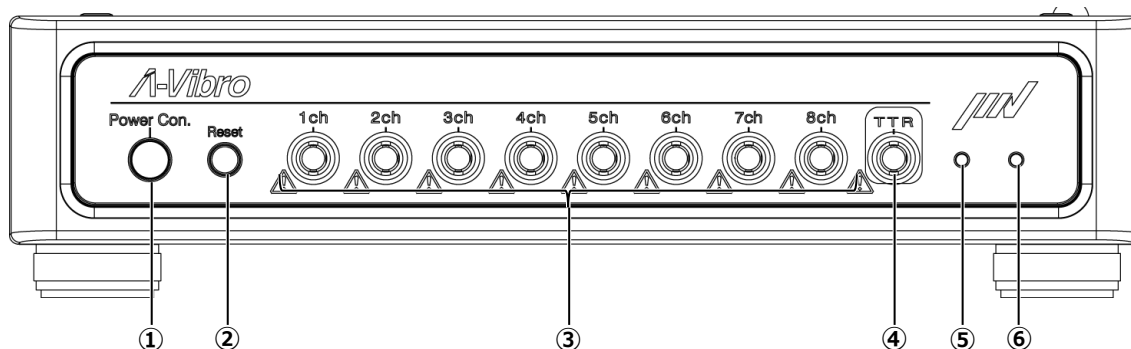If an accessory is missing or damaged, please contact us or your dealer.

Name	Exterior photo	Number	Remarks
This device VM-8018-LN (Λ-Vibro body)		1	—
Inspection report		1	—
VM8018LN Utility (Utility software)		1	—
Wi-Fi (wireless LAN) antenna		1	It is not included with the VM-8018-UT.
AC adapter (main unit side)		1	—
AC cord (power side)		1	The shape of the plug is "Plug with 2-pole ground".

> **Memo**   The VM-8018-UT is a lambda vibro with overseas specifications.

3.2   Name and function of each part

The name and functions of this device are explained.

3.2.1   Front of this unit

Number	Name	Function
①	《Power Con.》 button	This button starts and ends various devices connected to this device. Press this button to start the device. When this device is activated, pressing this button shuts down this device.
②	《Reset》 button	Normally not used. Press this button to erase the set measurement conditions. Be careful not to press it by mistake.
③	《1ch〜8ch》 External trigger input terminal	Vibration pickups and various sensors are connected to this terminal. One terminal is used for each sensor.
④	《TTR》 External trigger input terminal	When using an external trigger, connect the device to be the external trigger to this terminal. When performing an operation that triggers the target device, this device captures a signal indicating that the operation will be performed, and performs vibration measurement according to the set conditions.
⑤	左LED	An LED that indicates the status of the device.
⑥	右LED	An LED that indicates the status of the device.

### 3.2.2 Back o this unit
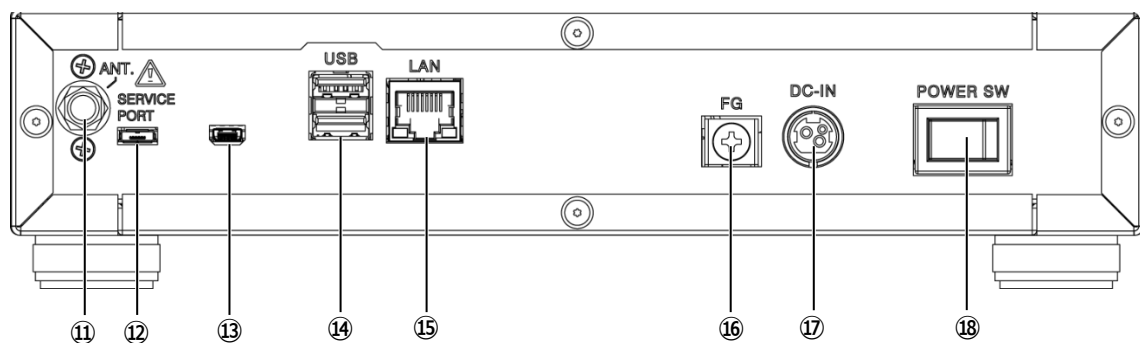
番号	名称	機能
⑪	《ANT. 》 For Wi-Fi (wireless LAN) Antenna terminal	When using wireless LAN, connect the included Wi-Fi antenna to this terminal. It supports IEEE802.11 b/g/n 2.4GHz band. **Memo** It is not included with the VM-8018-UT.
⑫ ⑬	《SERVICE PORT》	Normally not used. This port is used by service staff during service work of this equipment.
⑭	《USB》 USB ports(2 locations)	Not for now
⑮	《LAN》 LAN Port	If you want to use a wired LAN, connect the LAN cable connected to the target device to this port. **Memo** If you want to connect directly to a PC, use a LAN crossover cable.
⑯	《FG》 Ground terminal	When the AC adapter is not grounded to ground (FG), use this terminal to ground it.
⑰	《DC-IN》 AC adapter connector	Connect the power DIN connector on the AC adapter. Since it has a locking mechanism, insert the AC adapter firmly until you hear a "click" sound.
⑱	《POWER SW》 Power switch	When the side marked with the white circle is pushed in, the power of this unit is turned on.

3.3　Configuration of this equipment

An example of a system configuration using this device is introduced.

3.3.1　Basic Connection Configuration Image

Vibration pickups and various sensors are connected to this device, and measurement conditions are set for each individual sensor. With this system, measurements can be taken according to the set conditions, and measurement contents can be shared and utilized via wired LAN or wireless LAN using dedicated software.
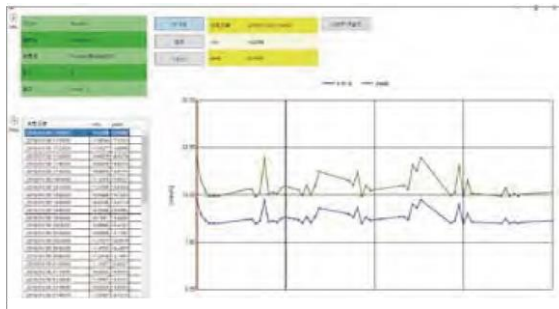

Various vibration pickup
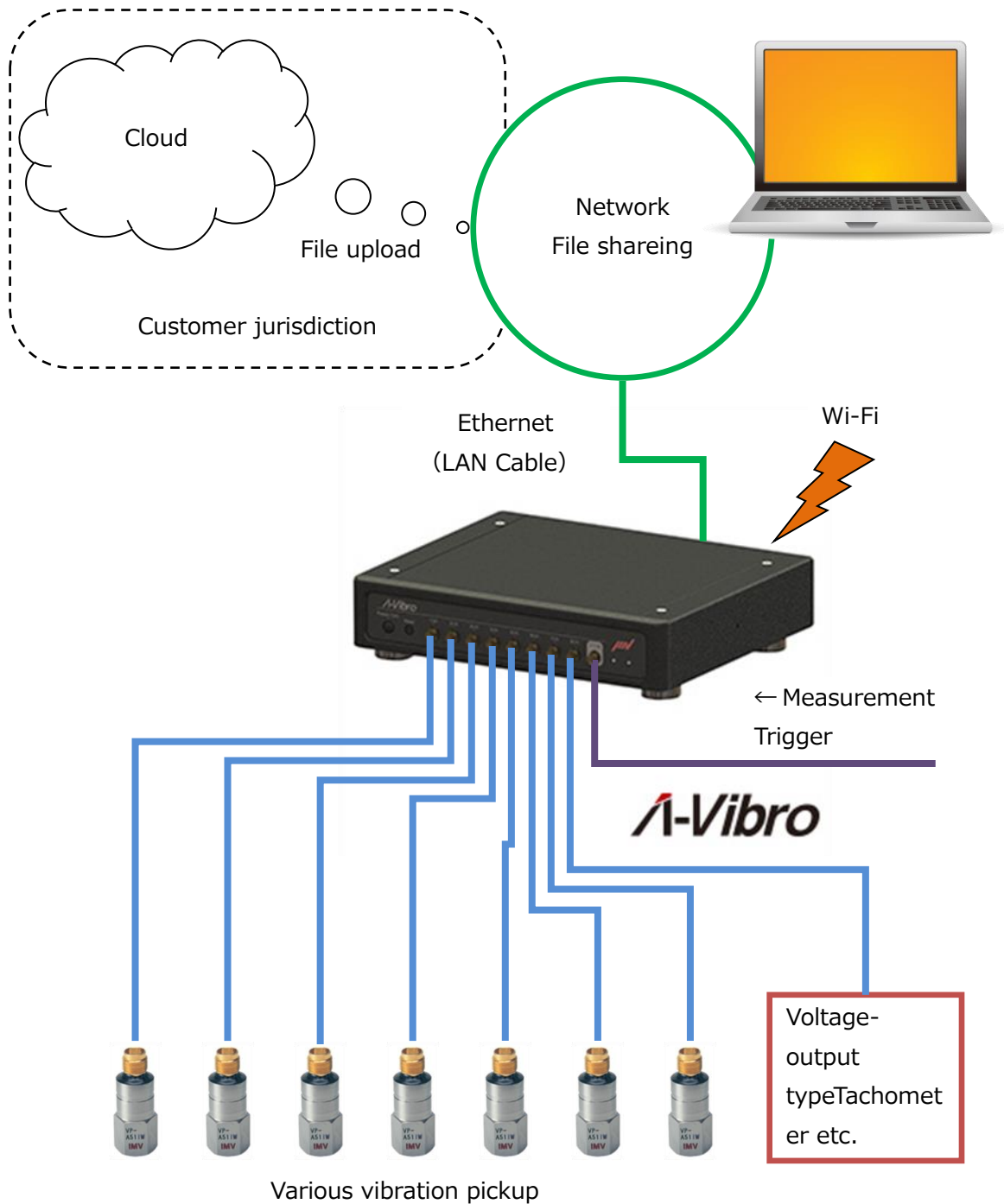
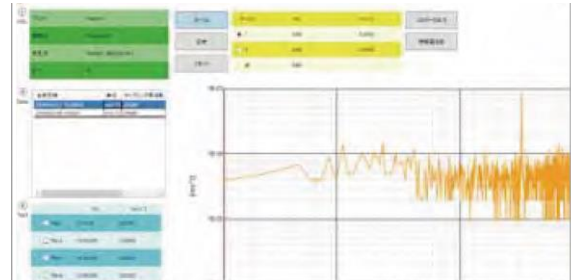### 3.3.2 Example of a PC-based management system

Data is manually imported from multiple devices and stored in an organized manner using the optional database software "DS-8018" to support trend management and precise diagnosis. Data can be analyzed in a variety of ways (see P.26).
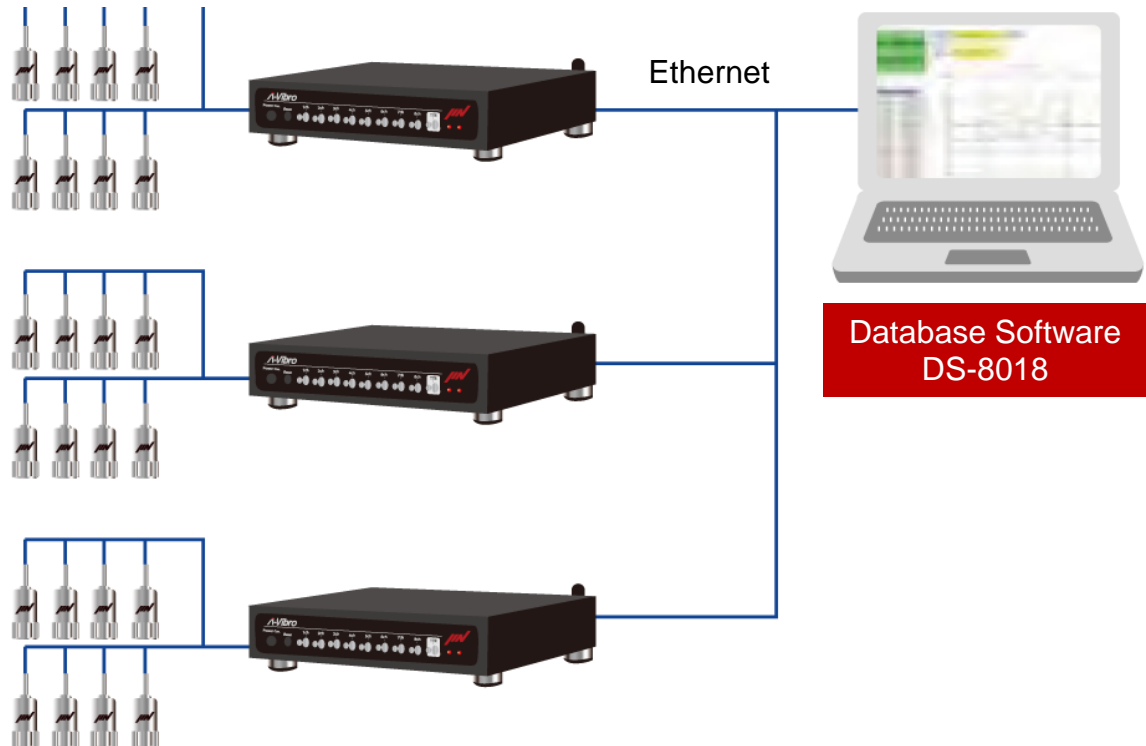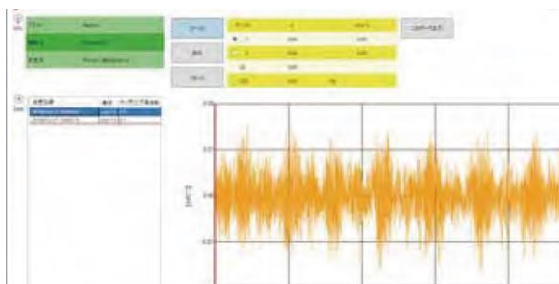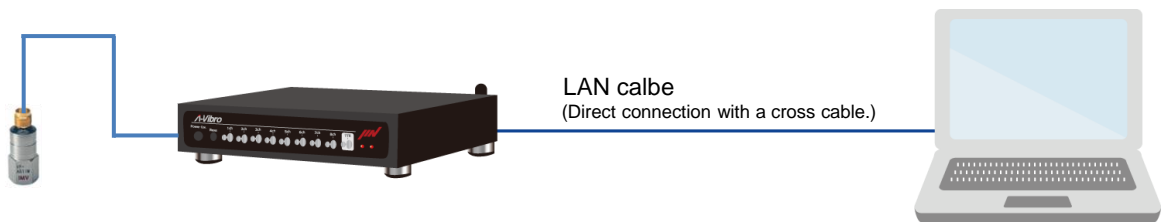

OA

FFT

Wave form

3.3.3   Example of Minimum System Configuration Using a PC

This device and the PC can be directly connected (or connected via HUB) with a LAN crossover cable to share data with the PC.

LAN calbe
(Direct connection with a cross cable.)

3.4 Related Equipment and Software

This section describes the various related devices that can be connected to this device and the software for analyzing the data collected using this device.
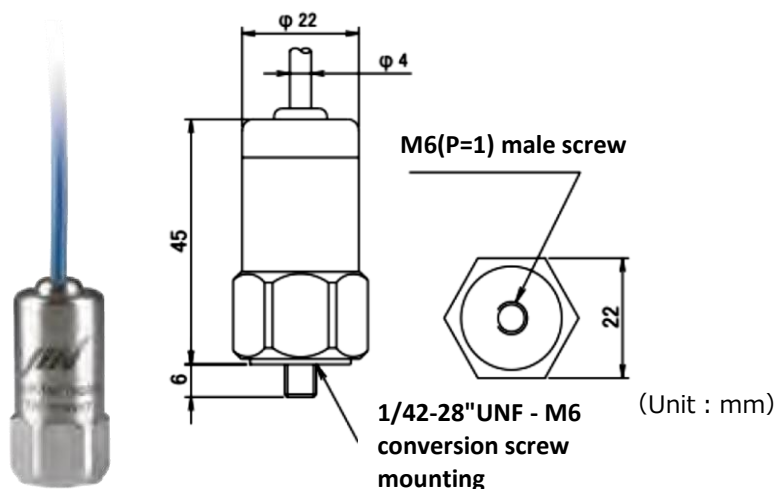
The equipment and software described here are not included with this device. It is necessary to purchase various related products separately that match the purpose (data you want to collect). If you are unsure of the required equipment, please contact our company or dealer.

3.4.1 Related Equipment

The vibration pickups and sensors that can be connected to this device are as follows.

3.4.1.1 VP-100M

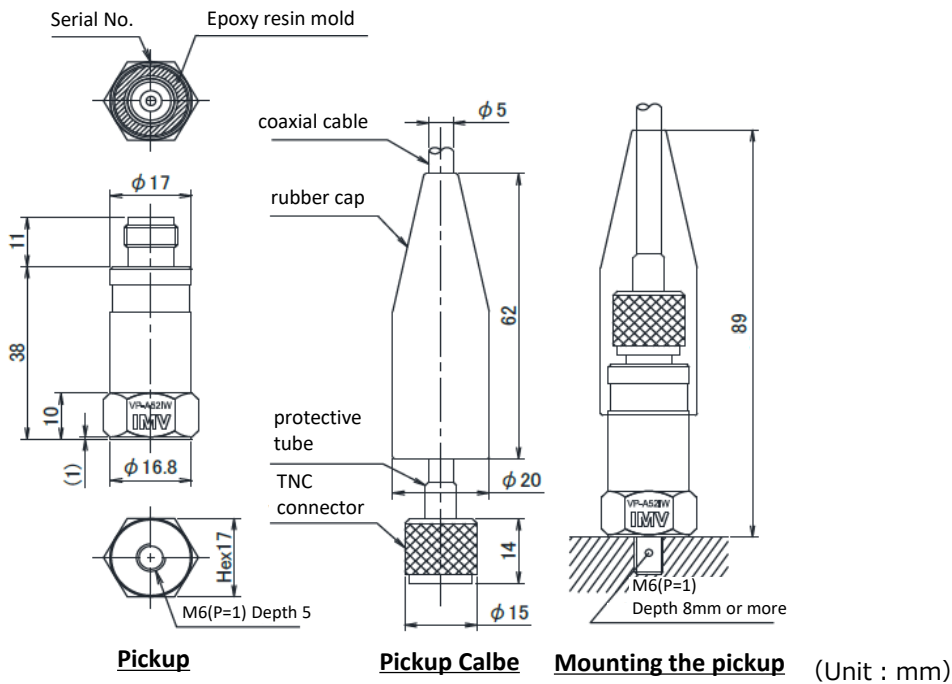This is an accelerometer with built-in preamplifier for general rotating machinery.

M6(P=1) male screw

1/42-28"UNF - M6 conversion screw mounting

（Unit : mm）

Item	Substance
Detection method	Piezoelectric compression type (built-in preamplifier)
Resonant frequency	22 kHz or higher
Frequency range	2 Hz～10 kHz
Voltage sensitivity	100 mV/g
Shockproof	5,000g
Maximum measurement acceleration	±80g
Pickup drive current	0.5mA～8mA（DC:18V～30V）
Output impedance	Up to 200Ω
Operating temperature range	-55°C～+140°C
Protection class	IP65
mass	Approx. 125g (not including cable)
material	SUS303
Mounting method	M6 screw retention
Standard cable length	5 m
Maximum cable length	200 m

Reference For more information about the VP-100M, please refer to the included

instruction manual or contact us or your dealer.

3.4.1.2 VP-A52IW

This is a compression type pickup with a built-in preamplifier.

Pickup   **Pickup Calbe**   **Mounting the pickup**   (Unit : mm)

Item	Substance
Detection method	Piezoelectric compression type (built-in preamplifier)
Resonant frequency	22 kHz or higher
Frequency range	2 Hz～10 kHz
Voltage sensitivity	100 mV/g
Shockproof	5,000g
Maximum measurement acceleration	±80g
Pickup drive current	0.5mA～8mA（DC:18V～30V）
Output impedance	Up to 200Ω
Operating temperature range	-55°C～+140°C
Protection class	IP65

Reference For more information on the VP-A52IW, please refer to the included instruction manual or contact us or your dealer.

3.4.1.3 VP-8013

This sensor is for low-speed rotating machines. It supports a wide range of vibrations, from low-frequency vibrations to mechanical vibrations.
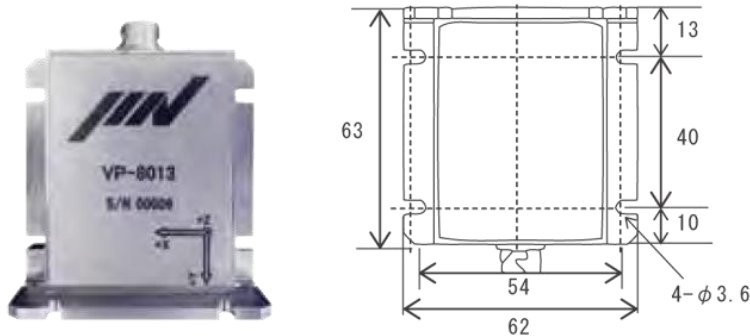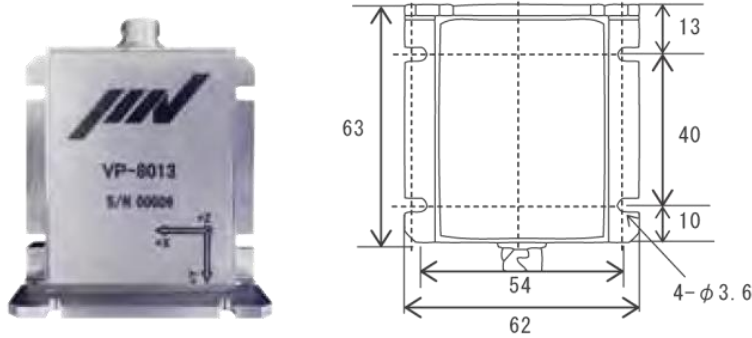

(Unit : mm)

Item	Substance
Detection Direction	3-axis
Frequency range	0.04 Hz～1,000 Hz
Measurement maximum acceleration	±58.8 m/s^2
sensitivity	44.9 mV/(m/s^2)
Sensitivity error	$\pm10\%$
Lateral sensitivity	$\pm2\%$ or less
Output noise density	XY: 0.00294 (m/s^2)/√Hz Z : 0.0049 (m/s^2)/√Hz
Shock resistance	10,000 m/s^2
Protection class	IP67
Operating temperature range	-10°C～+60°C (non-condensing)
mass	Approx. 230g

Reference For more information about VP-8013, please refer to the included instruction manual or contact us or your dealer.

Memo To connect the VP-8013, use the VM-8013 supplied with the VP-8013.

3.4.1.4 VP-8013S

Compared to the VP-8013, it is a model that is more suitable for measuring fine vibrations.

(Unit : mm)

Item	Substance
Detection Direction	3-axis
Frequency range	0.04 Hz〜1,000 Hz
Measurement maximum acceleration	±19.6 m/s^2
Inclination resolution	0.05 degrees
sensitivity	134.7 mV/(m/s^2)
Sensitivity error	±10%
Lateral sensitivity	±2% or less
Output noise density	XY: 0.00098 (m/s^2)/√Hz Z : 0.00196 (m/s^2)/√Hz
Shock resistance	10,000 m/s^2
Protection class	IP67
Operating temperature range	-10°C〜+60°C (non-condensing)
mass	Approx. 230g

Reference For more information about the VP-8013S, please refer to the included instruction manual or contact us or your dealer.

3.4.1.5 CA-3021

The output of a charge-type piezoelectric pick is connected to a logger or oscilloscope at low cost.

(Unit : mm)
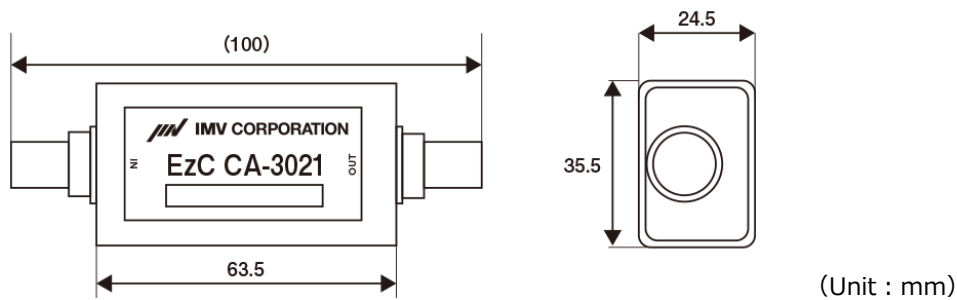
Item	Substance
channel	1Ch
sensitivity	1 mV/pC
Sensitivity error	±3% (160Hz standard)
Frequency range	5 Hz～10,000 Hz ±0.5dB
Maximum output voltage	-4.8V～+4.8V
Power supply voltage	+5V DC
Operating temperature range	0°C~+60°C (non-condensing)
Body Dimensions	63.5(W)x24.5(H) x35.5(D)mm (not including protrusions)
mass	About 100g

Reference For more information about the CA-3021, please refer to the included instruction manual or contact us or your dealer.
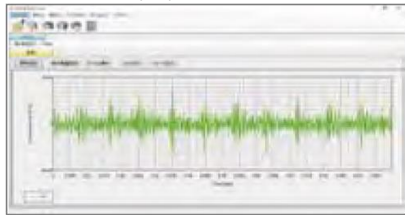
3.4.2 Related Software

The following software is available as dedicated software for this device.
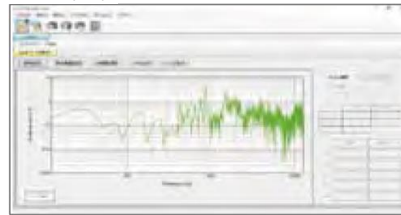
3.4.2.1 Waveform Display Software MD-8018

The data collected by this device is displayed in a graph type.

Waveform display

FFT display

Acceleration waveform data can be converted into velocity/displacement waveforms, and settings such as BPF are possible.

Graph the FFT data of the lambda vibro. Predominant frequency components for each failure cause can be checked.

▶ Analysis option function : In addition to the basic functions, you can add functions useful for equipment diagnosis.

Tripartite: Displays the correlation of acceleration, velocity, displacement, and frequency based on the FFT results.
FFT : Perform flexible FFT analysis based on acceleration waveform data.
Lissajous : Draws a trace graph displaying 2 axes vibration data.
Vibration evaluation for pipes :
Equipped with the SwRI standard for evaluating deterioration of pipe clamps.

System Requirements
OS : Windows10
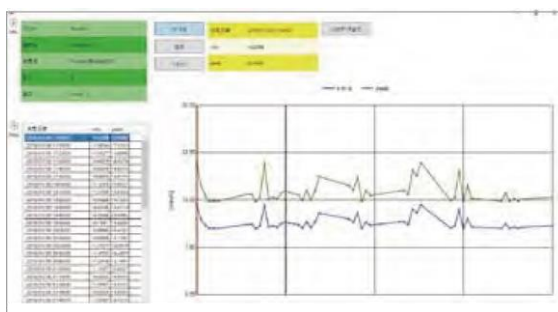CPU :Intel Core i5 equivalent or higher
RAM : 8GB or more
HDD: 128GB or more

Reference For more information about the MD-8018, see the supplied owner's manual.

3.4.2.2 Database Software DS-8018

Data collected by this device is organized and stored, and supports trend management and precise diagnosis. It is possible to analyze the data by various methods.
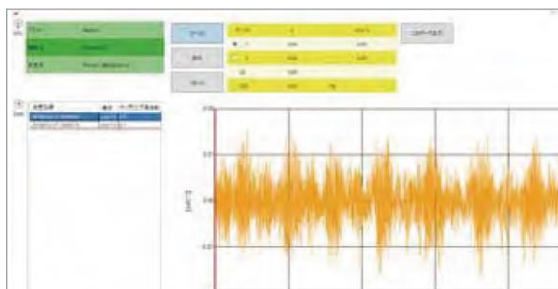
OA
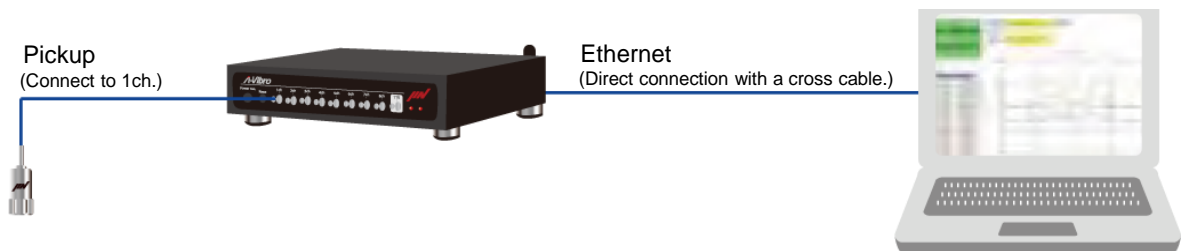
FFT

Wave form

Reference For more information about the DS-8018, see the included operating instructions.
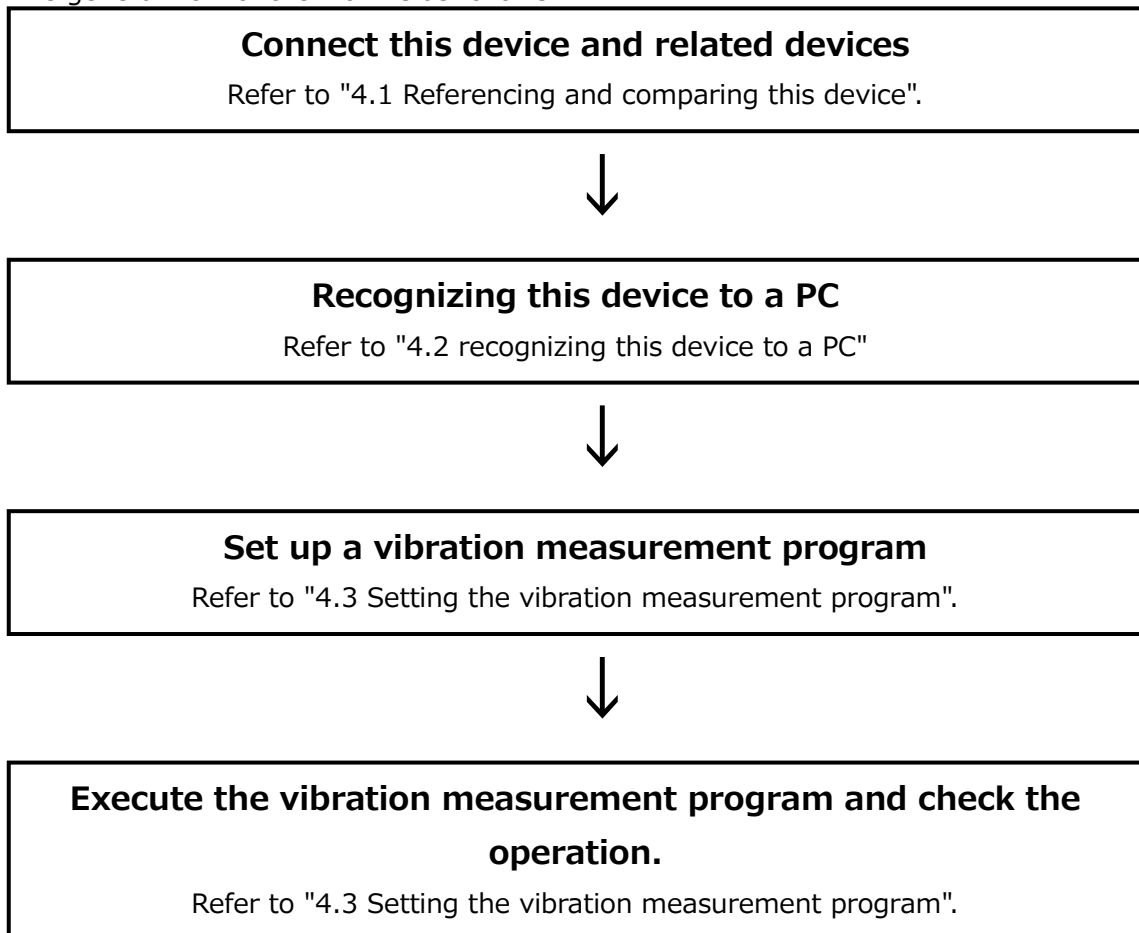
4 Basic Operation

Using this device, we will build a simple system and explain the basic operation until data is collected.

Here, for the purpose of understanding the sequence of using this device, "3.3.5 Configuration Example of Minimum System Using a PC" is explained as an example.

Pickup
(Connect to 1ch.)

Ethernet
(Direct connection with a cross cable.)

The general flow of the work is as follows.

Connect this device and related devices

Refer to "4.1 Referencing and comparing this device".

↓

Recognizing this device to a PC

Refer to "4.2 recognizing this device to a PC"

↓

Set up a vibration measurement program

Refer to "4.3 Setting the vibration measurement program".

↓

Execute the vibration measurement program and check the operation.

Refer to "4.3 Setting the vibration measurement program".

4.1 Connect the Device to related devices

This section describes the procedures and points to note when connecting this device to related devices.

1 Connect the AC adapter (main unit side) and the AC adapter (power supply side).

AC Adapter
(power side)

AC Adapter
(main unit side)
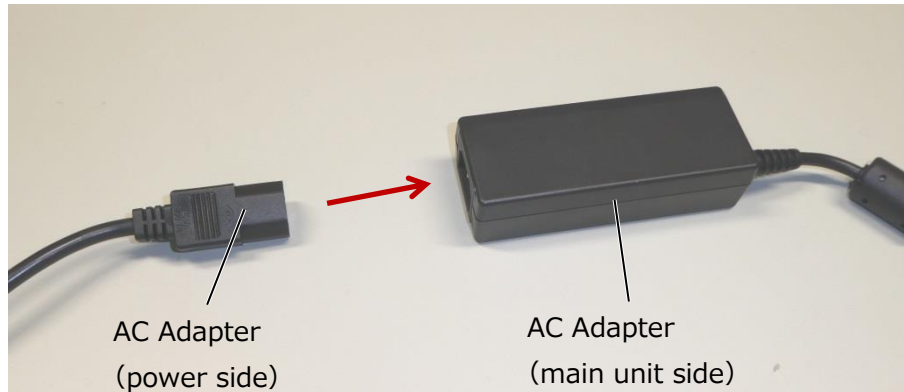
2 Plug the AC adapter (power side) into an electrical outlet.

Power Plug

Electtical
Outlet
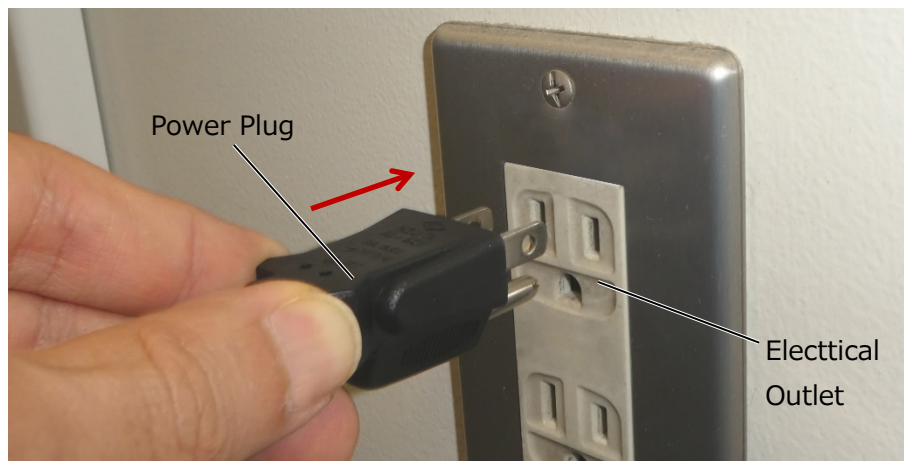
Memo When connecting to an electrical outlet without a 2P grounding ground, connect the wiring for grounding to the ground (FG) terminal on the back of this device and ensure that it is grounded.

3 **Plug the power supply DIN connector on the AC adapter (main unit side) into the DC-IN connector of this unit.**

Since it has a locking mechanism, firmly plug in the AC adapter until you hear a "click" sound.


power supply DIN connector   DC-IN connector

**4** **Attach the vibration pickup to the measurement object.**

Reference For information on how to install the vibrating pickup, please contact us or your dealer.

5 **Remove the cap of any sensor connection terminal and connect the HD-BNC connector of the vibration pickup.**

Please keep the cap so that it does not disappear.

Sensor connection

HD-BNC connector
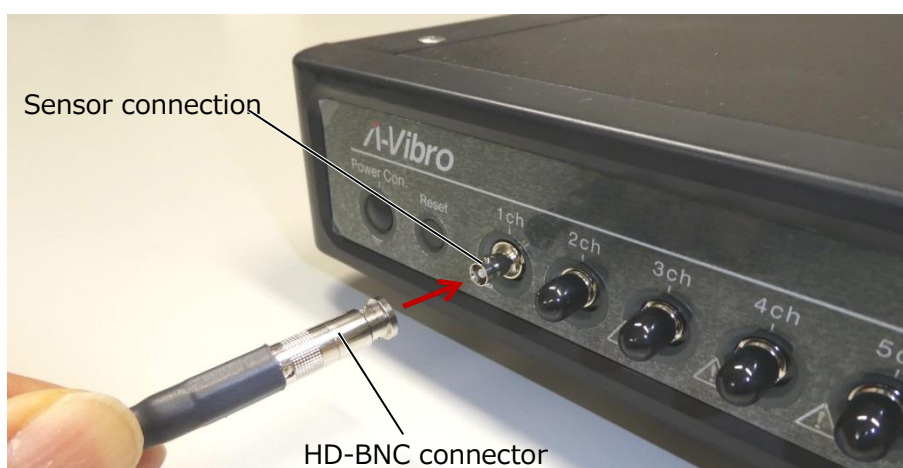
6 **Connect the connector of the LAN cable to the LAN port of this unit.**
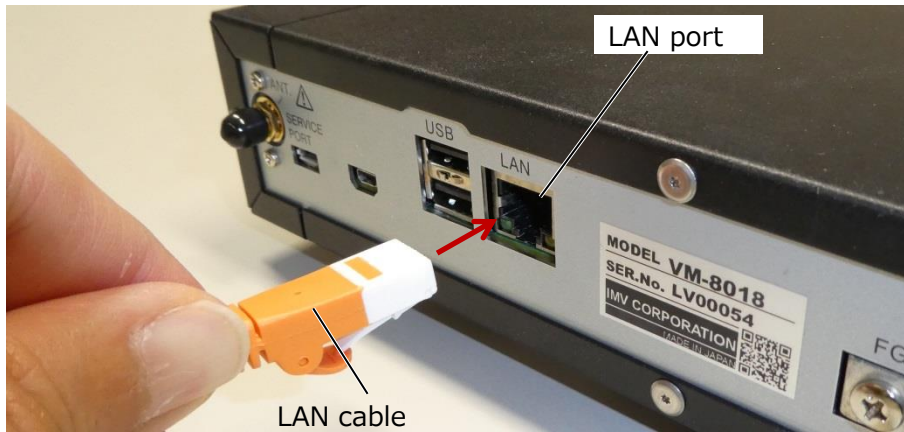
LAN port

LAN cable

7 **Connect the connector on the other side of the LAN cable to the LAN port on your PC.**


LAN port
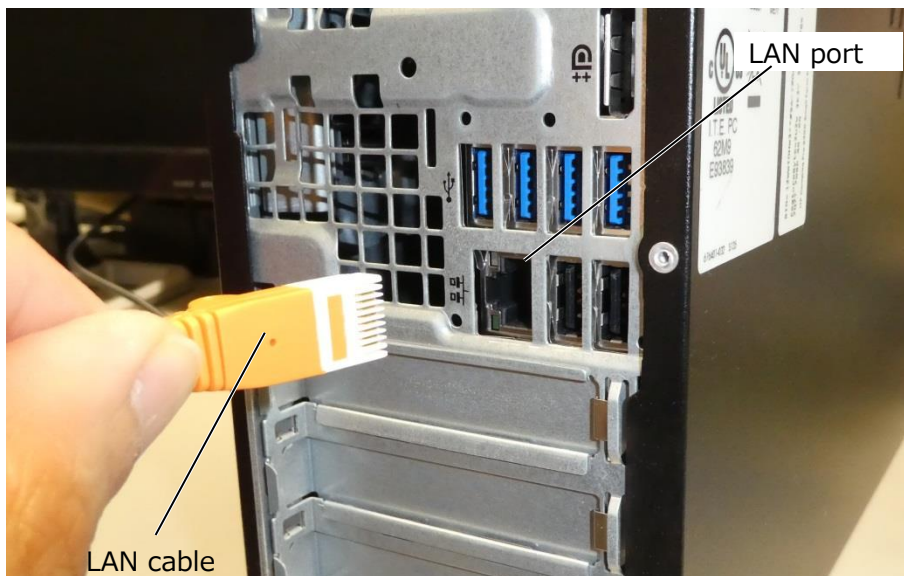
LAN cable

Memo When connecting this device directly to a PC, use a LAN crossover cable.

4.2 Allowing the PC to recognize this device

This section describes the procedure for making this device recognized by the PC.

Use the VM8018LN Utility (hereinafter referred to as "utility software) to check the connection between this device and the PC and change the settings.

For utility software, follow the installer and install it on your PC.

1 **Connect to this device with a LAN cable and start the PC.**

2 **On the PC screen, click [start menu]→[setting]**
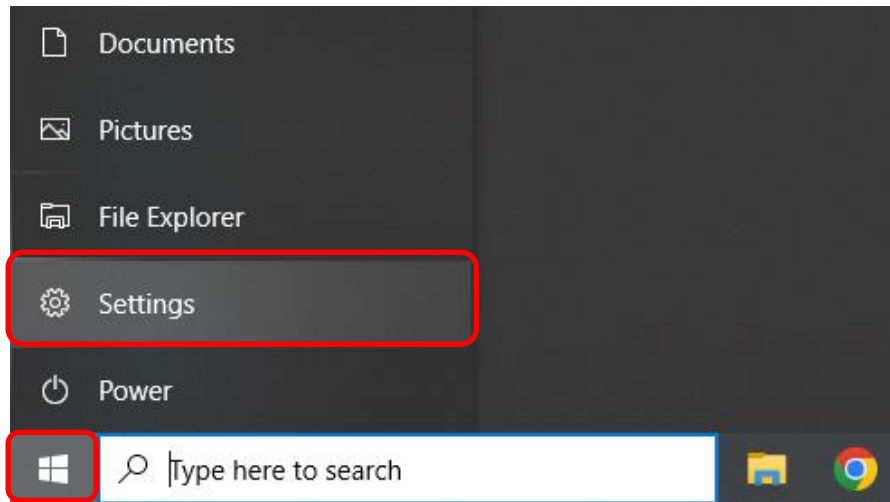
3 **Click [Network and Internet].**
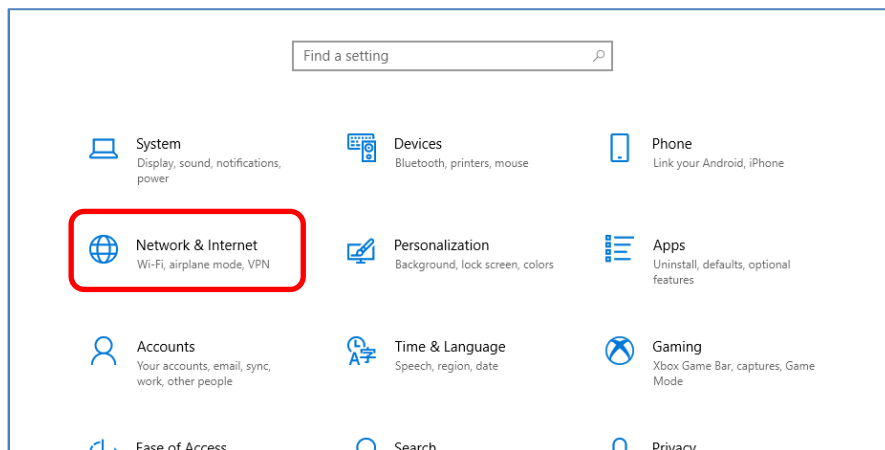
4 **Click [Ethernet]**
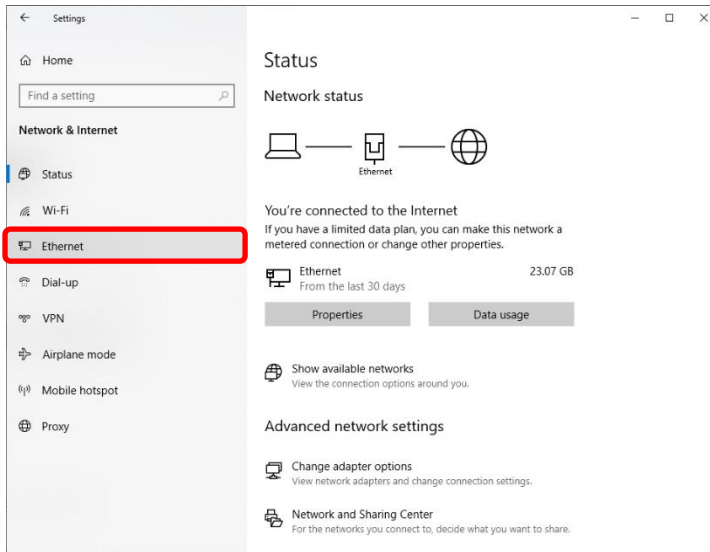
5 **Click [Change adapter options]**
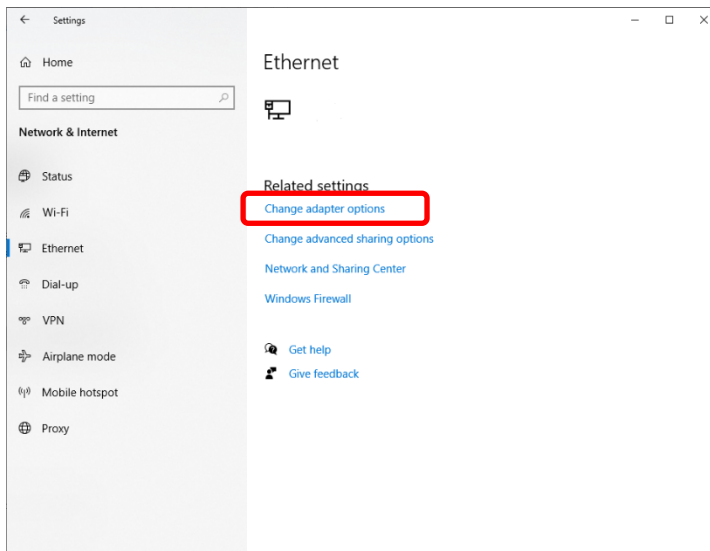
6 **Double-click the icon for the Ethernet you want to use for the connection.**

7 **Click [Internet Protocol Version4(TCP/IPv4)]→[Properties]**

8 **[Select Use the following IP address (S):], enter the following, and then click [OK].**

IP address	192.168.1.1
Subnet mask	255.255.255.0
Default gateway	192.168.1.1
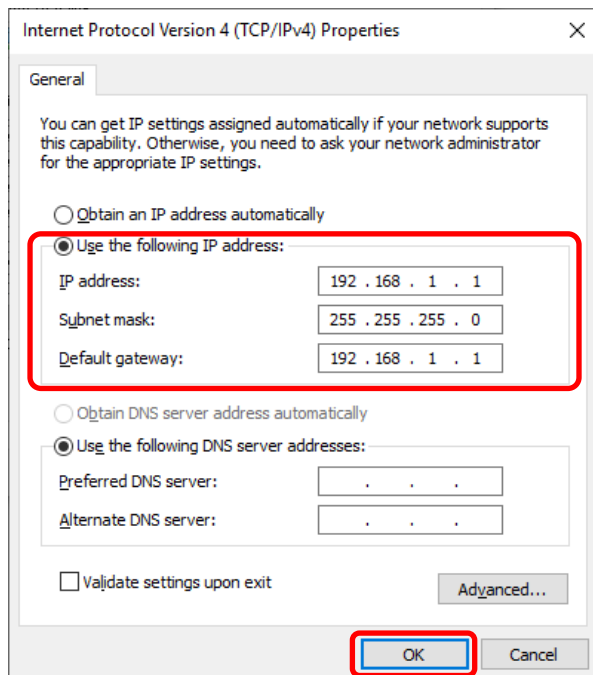
9 **Press POWER SW on the back of the unit.**

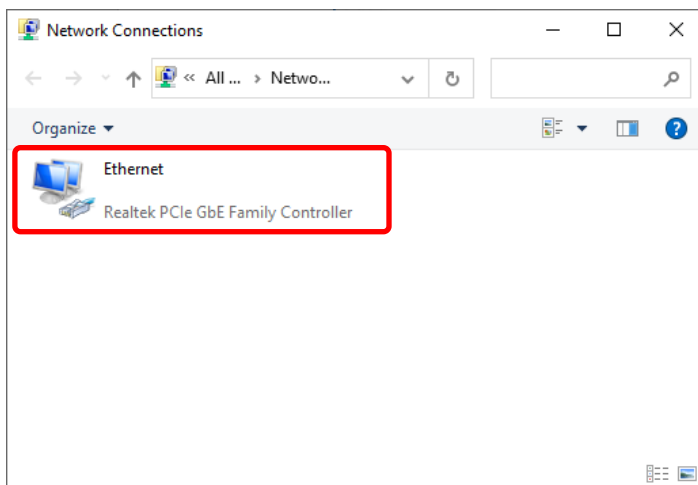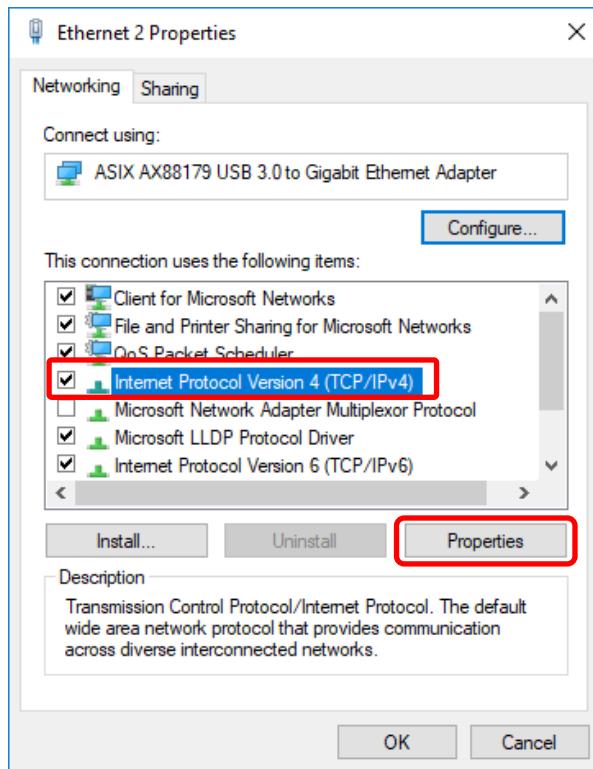Press the side marked with a white circle to turn the power on.
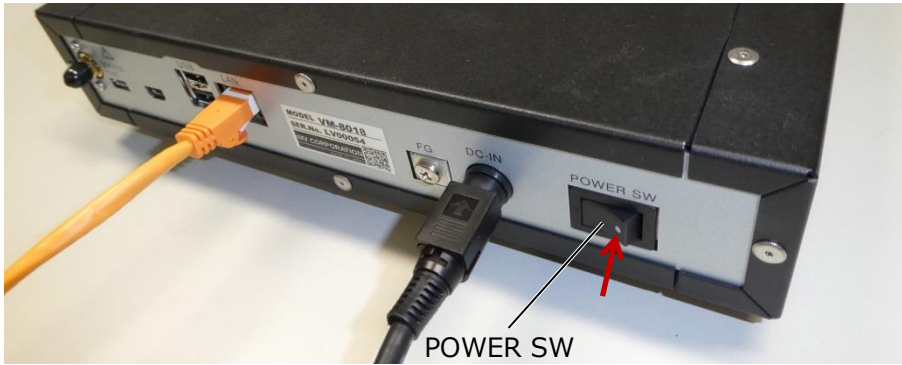
POWER SW

The state of the left LED and the right LED on the front of this device transitions as follows.

Left LED	Right LED		Left LED	Right LED
(no lights)	(no lights)		(no lights)	(Solid red)
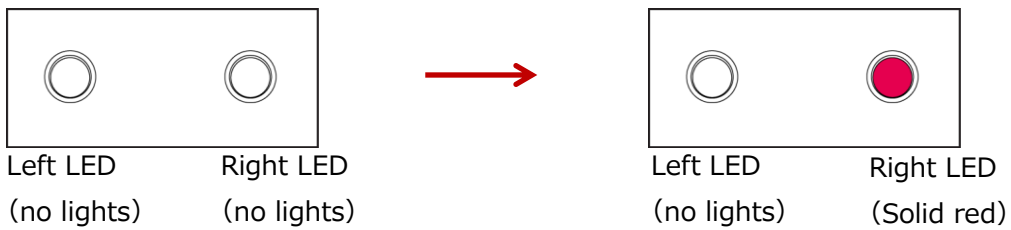
10 **Press and hold the button, "Power Con". (About 3 seconds)**

《Power Con.》 button

The state of the left LED and the right LED of this device transitions as follows.

1. Start booting the system. Immediately after startup, the left LED will be solid orange and the right LED will be solid red.

Left LED
（Solid orange）

Right LED
（blinking red）

2. After about 40 seconds, the right LED will blink and change → red to orange.

Left LED （solid odange） Right LED （blinking red）

Left LED （solid orange） Right LED （blinking orange）
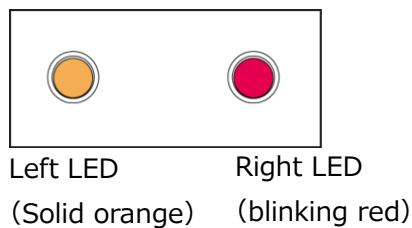
3. It takes tens of seconds for the system OS to fully boot. If the boot completes successfully, both the left and right LEDs will be solid orange.
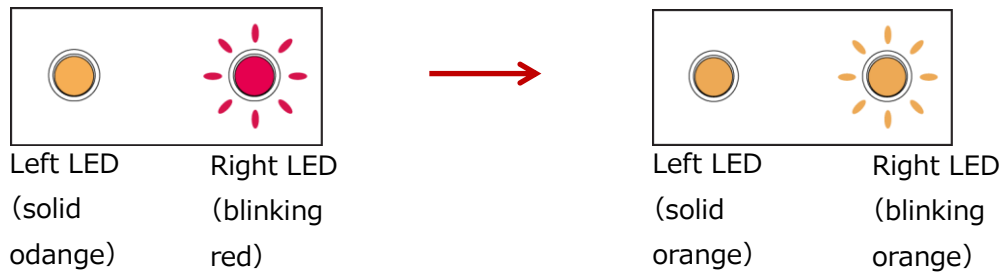
Left LED （solid orange）

Right LED （solid orange）
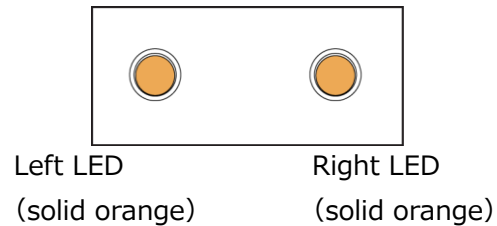
Memo When reading a file, the left LED will turn purple for a moment.

11 Start VM8018LN Utility (utility software) on the screen of the PC.

The following is the main screen after starting the utility software.
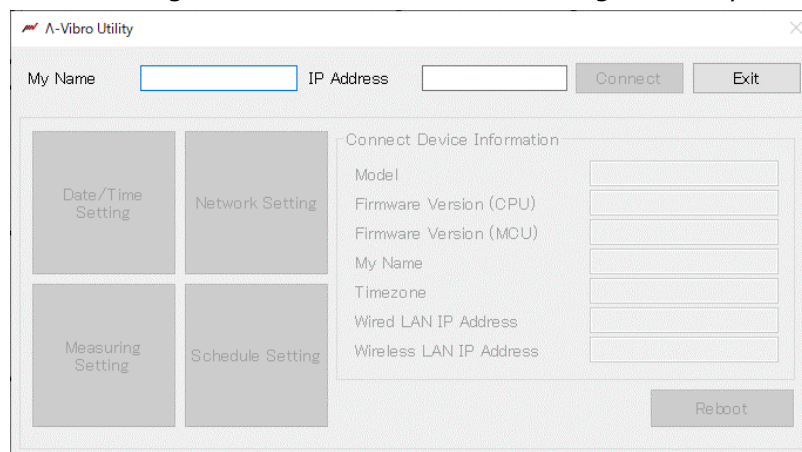
12 Enter "192.168.1.160" in the IP address input field.
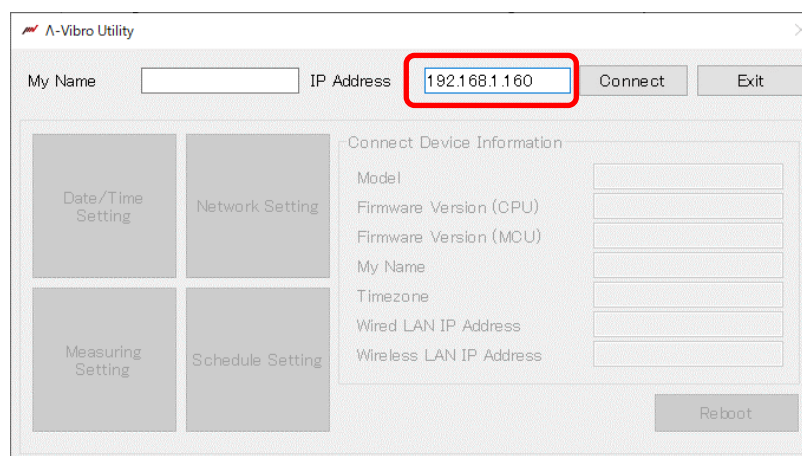
Memo The shipping IP address is "192.168.1.160".

13 **Press the "Connect" button.**

If the connection is successful, the following screen will be displayed.
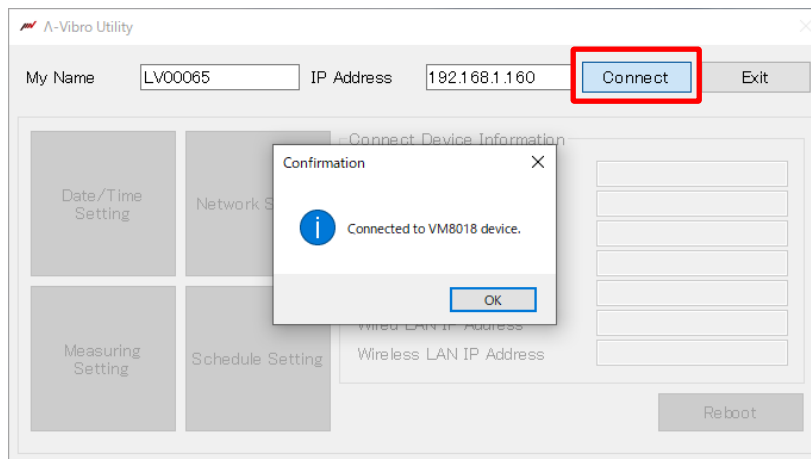
Memo Various settings are possible after successful connection. If the connection fails, check that the console is turned on and the IP address is correct.

14 **Various settings are possible after the connection is completed.**
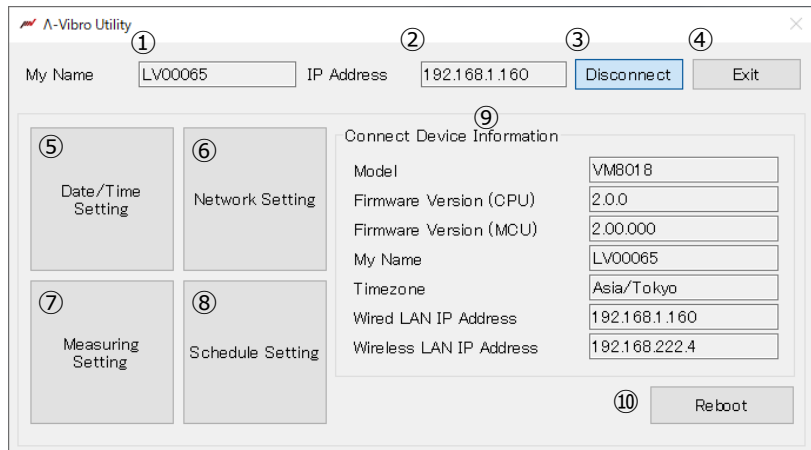
Number	Item / Button name	Function
①	My Name	Display or enter the serial number of this device
②	IP address	Enter the IP address of this device.
③	Connect/Disconnect	Connect/disconnect with this device
④	Exit	Quit the utility software
⑤	Date/Time Setting	Transition to the date and time setting screen
⑥	Network Setting	Transition to the network setting screen
⑦	Measuring Setting	Transition to the measurement condition setting screen
⑧	Schedule Setting	Transition to the schedule setting screen
⑨	Connect device information	Display various information of this device
⑩	Reboot	Restart this device

4.3   Setting up a vibration measurement program

Describes the procedure for setting up a vibration measurement program. Here, we will create a simple vibration measurement program to verify whether the connected vibration pickup operates properly. Next, run the vibration measurement program you created and check whether vibration measurement can be performed according to the settings. This device can change the vibration measurement program by rewriting the "LambdaSetting.ini" file for setting the measurement content and the "LambdaRecordSchedule.ini" file for setting the measurement schedule using a text editor. This section describes how to change the settings using utility software. This section begins with the completed procedure in "4.2 recognize this device by a PC".

Memo   Please try and measure in advance before taking actual measurements.

1   **On the PC screen, start the utility software and connect it to this device.**

The following is the main screen in which the utility software and this device are connected.
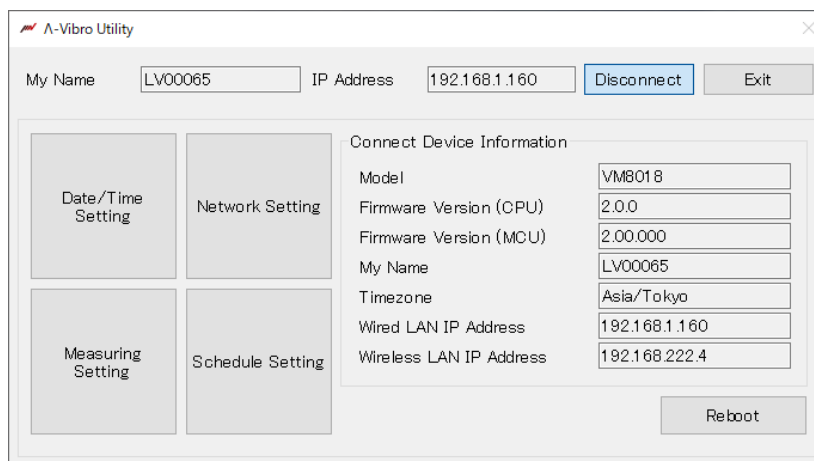
2   **Press the Schedule Setting button.**
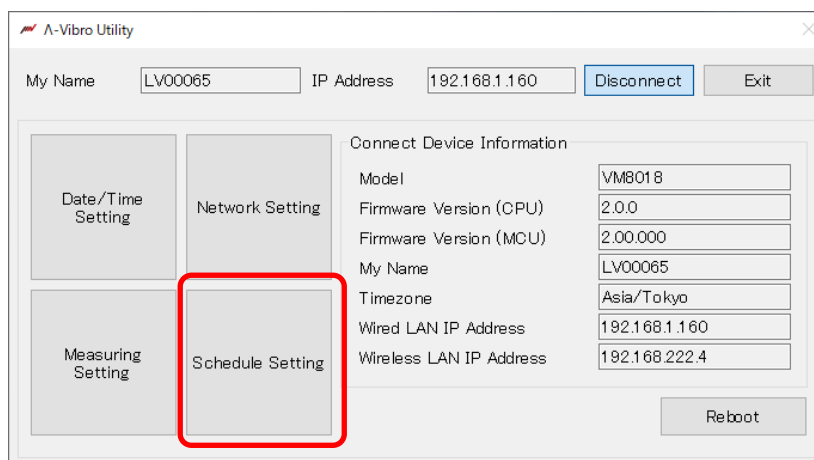
3 **Set the measurement schedule on the schedule setting screen.**
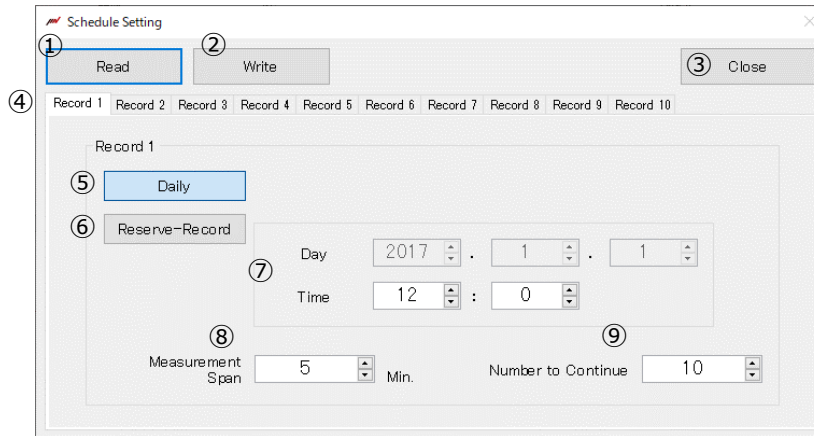
number	Item/Button name	Function
①	Read	Read the current schedule settings for this device
②	Write	Contents of the schedule setting screen to this device
③	Close	Close the schedule setting screen
④	Measurement reservation Tab 1-10	10 measurement reservation setting items setting tab
⑤	Daily	Take measurements at a set time every day
⑥	Reserve-Record	Measure only the reservation date If daily is valid, the booking date will be invalid
⑦	Reservation date and time	Set the measurement start date and time
⑧	Measurement interval	Set the time interval after the measurement starts until the next measurement start Set value: Up to 5 minutes ~ 1439 minutes
⑨	Number of consecutive times	Set the number of measurements Set value: Up to 1~288

Configuration example

1. Press the Read button to read the current schedule settings of this device.

2. Select Measurement Reservation 1 on the Measurement Reservation tab. All the setting items of measurement reservation 1 ~ 10 are the same.

3. Press the button every day. You cannot select Daily or Date and Time at the same time.

4. Set the reservation time.

5. Set the measurement interval to 5 minutes. The minimum interval is 5 minutes.

6. Set the number of consecutive times to 10. You can set it from 1 to 288 times.

7. Press the Write button to write the settings to this device.

In the case of the above screen setting, measurement starts at 12:00 and measurement is performed twice at 5-minute intervals.

1st measurement 12:00 ⇒ 2nd measurement 12:05 ⇒ …
⇒ 10th measurement 12:45

4 **Press the Set Measuring Setting button.**
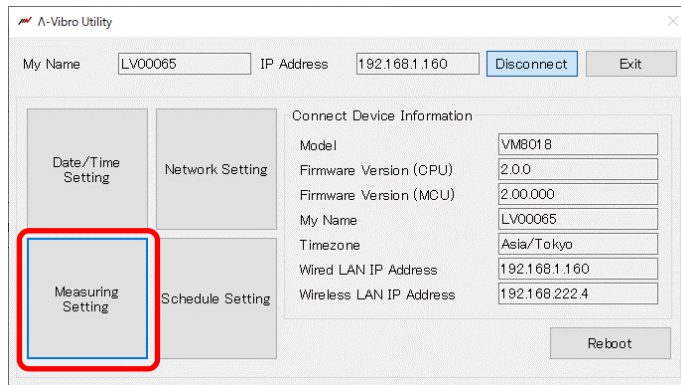
5 **Set the measurement conditions on the measurement condition setting screen.**

In this example, vibration measurement is performed by supplying current to the IEPE standard vibration pickup connected to the "1ch" of this device (serial number: LV00065), so each item is modified as follows.

Measuring setting > Basic Settings tab
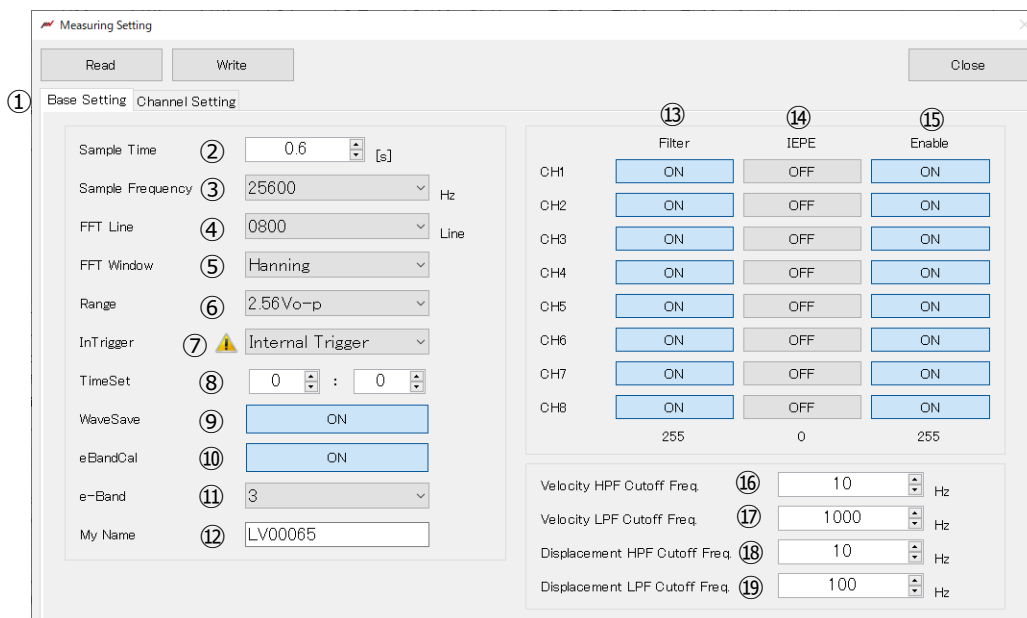
番号	項目・ボタン名	機能
①	Base Setting	Display the basic setting screen
②	Sample Time	Set the measurement time
③	Sample Freqency	Set the sampling frequency
④	FFT Line	Setting the FFT Lines
⑤	FFT Window	Selecting an FFT window function
⑥	Range	Setting the Input range
⑦	InTrigger	Select a trigger to start the measurement. Internal trigger == measurement reservation, external trigger = external signal
⑧	TimeSet	Set the time to synchronize the RTC inside this device and the OS system time of this device. When set to 00:00, synchronization is disabled

番号	項目・ボタン名	機能
⑨	WaveSave	Set whether to save waveform data / not to save
⑩	e-BandCal	Set e-band processing / not
⑪	e-Band	Choose the bandwidth of the e-Band
⑫	My Nmae	Set the device name. The initial value is the serial number.
⑬	Filter	Select HPF (DC Cut) enable/disable for each channel
⑭	IEPE	Select IEPE enable/disable for each channel. When disabled, it becomes a voltage input
⑮	Enable	Choose to enable/disable each channel
⑯	Velocity HPF Cutoff Freq.	Set the HPF cutoff frequency during speed conversion
⑰	Velocity LPF Cutoff Freq.	Set the LPF cutoff frequency during speed conversion
⑱	Displacement HPF Cutoff Freq.	Set the HPF cutoff frequency during displacement conversion.
⑲	Displacement LPF Cutoff Freq.	Set the LPF cutoff frequency during displacement conversion

Measuring Settings > Channel Settings Tab

Number	Item/Button name	Function
①	Name	Enter a channel name for each channel
②	Unit	Select units for each channel
③	Sensor Sensitivity	Enter the sensor sensitivity for each channel
④	Sensor Sensitivity Unit	Select the unit of sensor sensitivity for each channel

Configuration example

1. 1. Press the Read button to read the current measurement condition settings of this device.

2. Set the measurement conditions on the Basic Settings tab and the Channel Settings tab.

3. Press the Write button to write the settings to this device.

6 **In order to reflect the settings, restart this device.**

After setting the schedule and measurement conditions, a restart is required to reflect the setting contents to this device.

Restart on the utility software, or click "Power Con. Press the " button to shut down.

How to restart with utility software

After changing the schedule setting and measurement condition setting, press the restart button.
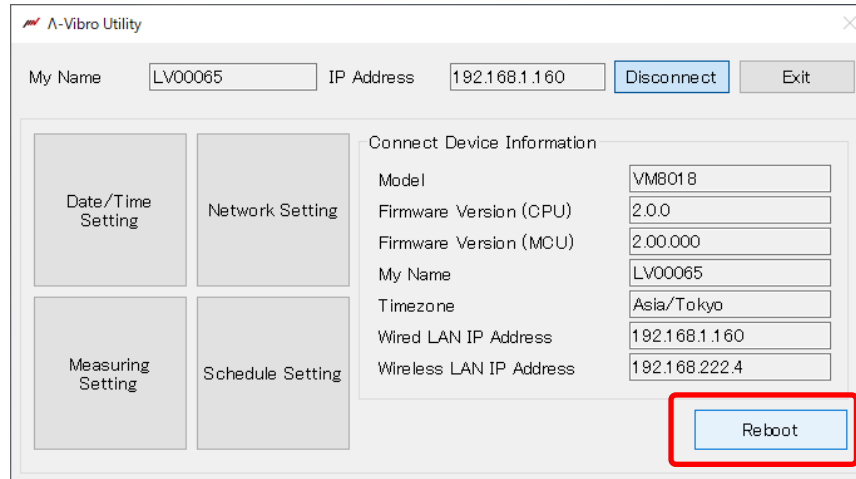
How to restart with the button, "Power Con."

《Power Con.》 button

After about 10 seconds, the left LED of this unit turns off.
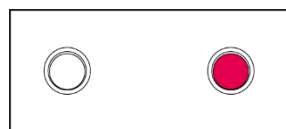
Left LED   Right LED
(Light off)   (Solid red)

After the left LED turns off, about 10 seconds have passed, and then "Power Con. "Press and hold the button.

《Power Con.》 button

The state of the left LED and the right LED of this device transitions as follows.

1. Start booting the system. Immediately after startup, the left LED will be solid orange and the right LED will be solid red.

Left LED　　右LED
（橙点灯）　　（赤点灯）

2. After about 40 seconds, the right LED will blink and change → red to orange.

Left LED　　　Right LED　　　Left LED　　　Right LED
(Solid orange)　(Blinking red)　(sold orange)　(Blinking orange)

3. It takes tens of seconds for the system OS to fully boot. If the boot completes successfully, both the left and right LEDs will be solid orange.

Left LED　　　Right LED
（Solid orange）　（solid orange）

When the system OS is fully started, the device recognizes the connected vibration pickup or PC.

Memo　When reading a file, the left LED will turn purple for a moment.

7　Wait until the time set in the schedule and verify that the left LED is solid purple.

Left LED　　　Right LED
(Solid purple)　　(Solid orange)

If the left LED turns purple, vibration measurement can be performed at the set time.

When the measurement process is finished, the left LED will be solid purple → amber.

Memo It may take a while for the measurement process to be completely finished.

4.4　Shutting down the device

This section describes the procedure for shutting down this device.

1　**Press the button, "Power Con.".**

《Power Con.》 button

After about 5 seconds, the left LED of this unit turns off.

Left LED	Right LED
（Lights off）	（Solid red）
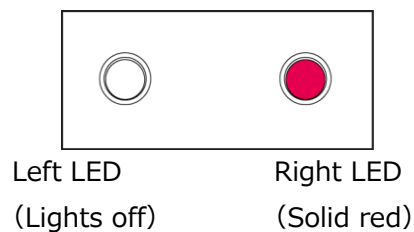
2　**Press POWER SW on the back of the unit.**

Press the side that does not have a white circle to turn off the power.

POWER SW

The state of the left LED and the right LED on the front of this device transitions as follows.

| Left LED (Lights off) | Right LED (Solid red) | → | Left LED (Lights off) | Right LED (Rights off) |
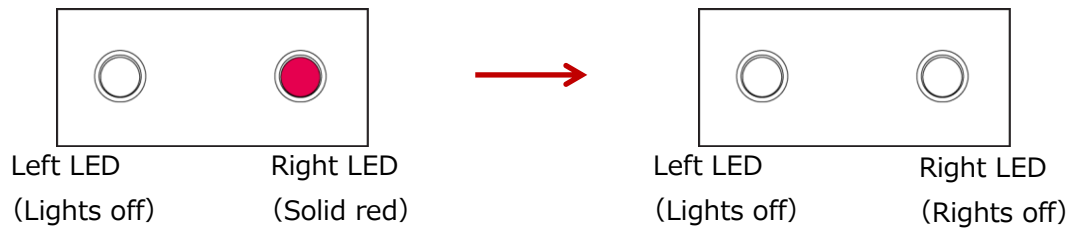
Memo To disconnect the power DIN connector on the AC adapter (console side), use your thumb and index finger to firmly pinch the sides of the power DIN connector and pull it toward you.

The lock is released and the power DIN connector is released.

5   Advanced settings by function

Here, based on "4 Basic operation methods", we will explain itemized settings necessary to build a more complex system.

The general flow of system construction is as follows.

Connect this device and related devices

Refer to "5.1 Points to note when connecting this device to related devices".

↓

Make the PC recognize this device in a wired LAN environment

Refer to "5.2 Recognizing this device to a PC in a wired LAN environment".

↓

Set the LAN connection method

Refer to "5.3 Setting the LAN connection method".

↓

Set up a vibration measurement program

See "5.4 Setting the vibration measurement program".

↓

Execute the vibration measurement program and check the operation.

Refer to "5.5 Operation check".

↓

Shut down the device

See "4.4 Shutting Down the Switch".

5.1 Points to note when connecting this device to related devices

When connecting this device to related equipment, perform the operation in accordance with the contents of "2.3.1 Precautions for Installation".
For power-related connections, refer to steps 1 ~ 3 of "4.1 Connecting this device to the related device".
The type and number of vibrating pickups depends on the system being built. Prepare as needed.

In the case of voltage signals such as rotational speed and current, set the measurement voltage range and DC coupling according to the voltage output range.
Also, please note that the voltage value is recorded in the saved file, not the physical quantity such as rotation speed and current.

When using an external trigger, enter the trigger pulse according to the condition of "5.4.4 Measurement method by external trigger".

Regarding the construction of a LAN, the connection method and necessary settings are different between wired LAN and wireless LAN. When using this device in a wireless LAN environment, attach the included Wi-Fi (wireless LAN) antenna to the Wi-Fi (wireless LAN) antenna terminal of this device.

> **Memo** Before connecting this device to the wireless LAN, it is necessary to connect to this device with a wired LAN and change the connection setting of this device.

5.2 Recognize this device to a PC in a wired LAN environment

Since this device is shipped with a fixed IP address set in advance, it is necessary to first have the PC recognize this device in a wired LAN environment and change the LAN setting contents from the PC side.

> **Reference** For the procedure of having the PC recognize this device in a wired LAN environment, refer to "4.2 Recognize this device to the PC".

5.3 Configure the LAN connection method

This section describes the procedure for setting up the LAN connection method. Utility software is used for wired LAN and wireless LAN settings. In a wired LAN environment, set a static IP address for this device. It is not possible to automatically acquire an IP address with the wired LAN setting. In a wireless LAN environment, both a fixed IP address and an automatic IP address can be set to this device.

The wireless LAN module built into this unit supports the IEEE802.11 b/g/n 2.4GHz band. In addition, the authentication method when connecting to the wireless LAN is WPA2-PSK and the encryption method is AES.

Reference • If you want to set a fixed IP address in a wired LAN environment, see "5.3.1 Setting a Static IP Address in a Wired LAN Environment".

• To automatically obtain an IP address in a wireless LAN environment, refer to "5.3.2 Wireless LAN".

• To set a fixed IP address in a wireless LAN environment, refer to "5.3.2.3 Automatic IP Address Acquisition in a Wireless LAN Environment".

This device is shipped with the IP address set to "192.168.1.160" in advance. If you want to use it without changing the IP address, you do not need to set the LAN connection method.

Memo In order to be able to write LAN connection settings, etc., a memo column is attached to the end of this book. Please use it as necessary.

5.3.1 Setting a Static IP Address in a Wired LAN Environment

This section describes the procedure for setting a fixed IP address in a wired LAN environment. This is explained from the state where this device is recognized by the PC in a wired LAN environment and connected to the utility software.

**1** **Press the network setting button on the utility software.**
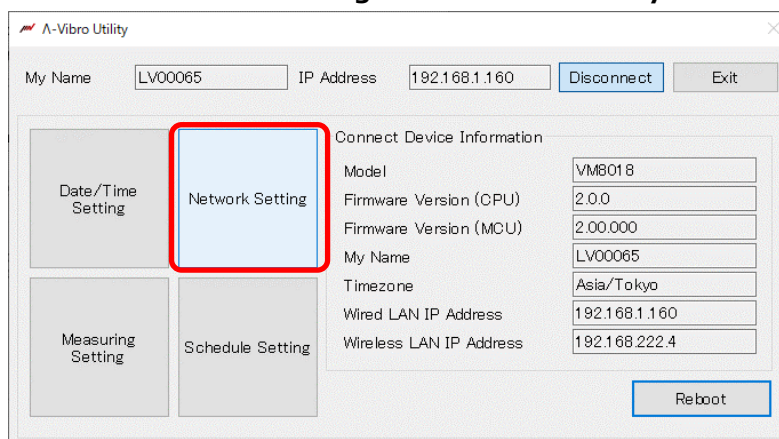
2 Press the wired LAN connect setting button on the network setting screen.
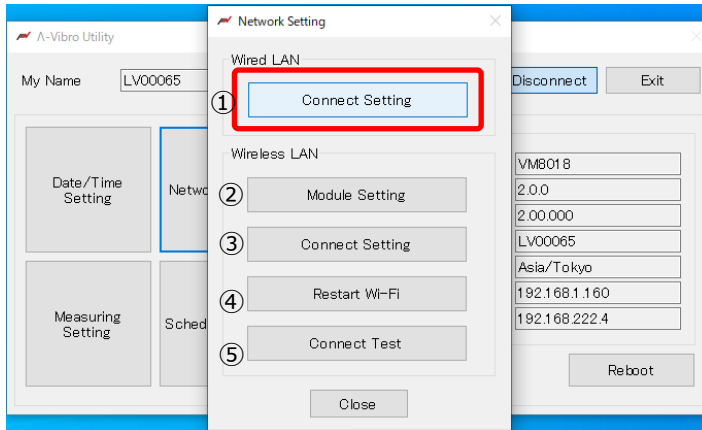
The following is an explanation of the network configuration screen.

Number	Item/Button name	Function
①	Wired LAN Connect Setting	Display the wired LAN connection setting screen
②	Wireless LAN Module Setting	Display the module setting screen
③	Wireless LAN Connect Setting	Display the wireless LAN connection setting screen
④	Wireless LAN Restart Wi-Fi	Restart the wireless LAN module in this device.
⑤	Wireless LAN Connect Test	Display the wireless LAN connection confirmation test screen

3 The Wired LAN connection setting screen opens.
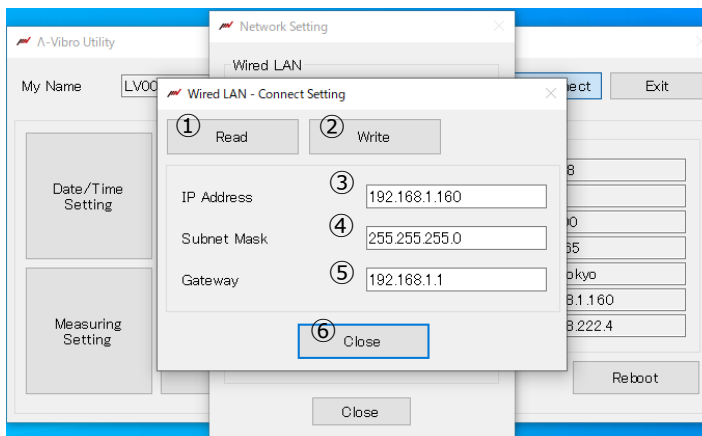
The following is an explanation of the wired LAN connection setting screen.

Number	Item/Button name	Function
①	Read	Read wired LAN connection settings
②	Write	Write wired LAN connection settings
③	IP Address	Enter and display the IP address Input values are periods and numbers only
④	Subnet Mask	Enter and display the subnet mask Input values are periods and numbers only
⑤	Default Gateway	Enter and display the default gateway Input values are periods and numbers only
⑥	Close	Close the connection settings screen After changing the connection settings, restart the wired LAN module.

4 **Press the read button on the wired LAN connection setting screen.**

Read the wired LAN connection settings of this device.
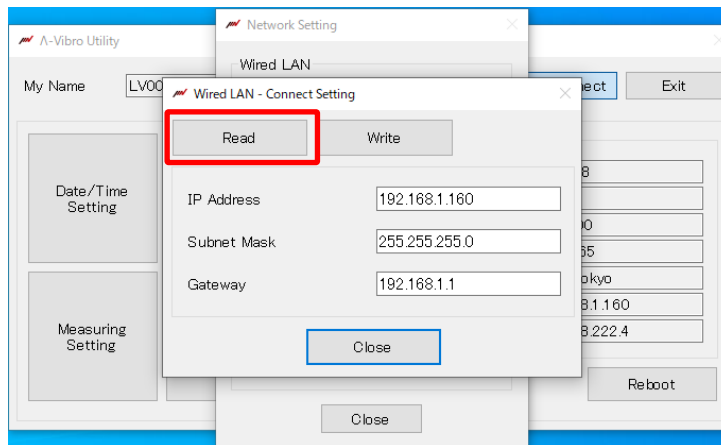
5 **Enter the IP address on the wired LAN connection setting screen.**

The input values are only half-width numbers and periods.

The IP address must match the wired LAN environment of the network to which you are connecting.

If the segment of the network to be connected does not match the IP address of this device, you will not be able to connect.

6 **Enter the subnet mask on the wired LAN connection settings screen.**

The input values are only half-width numbers and periods.

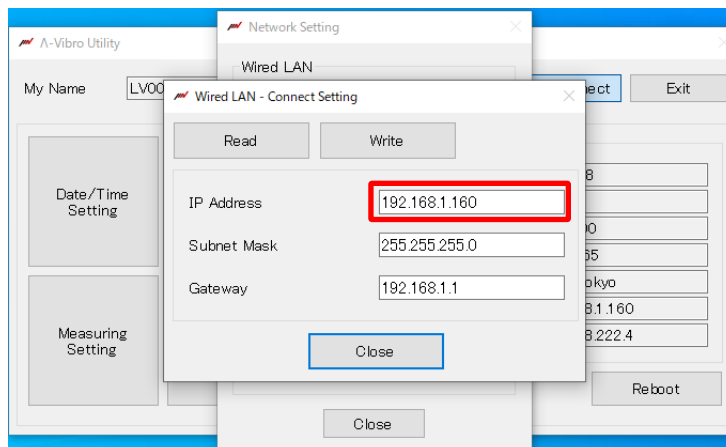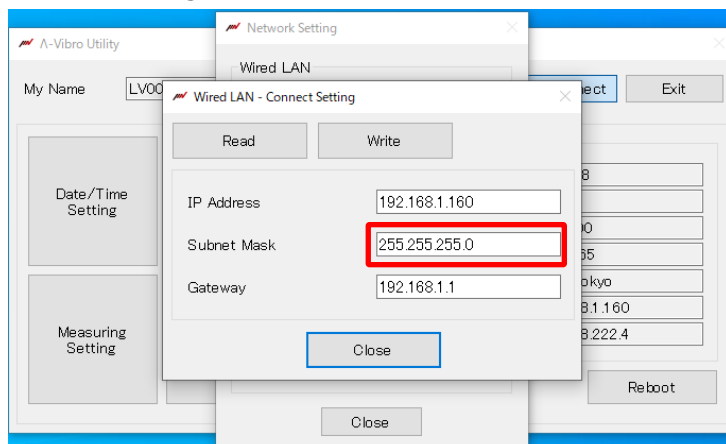The subnet mask must match the wired LAN environment of the network to which you are connecting.

7 **Enter the default gateway on the wired LAN connection settings screen.**

The input values are only half-width numbers and periods.

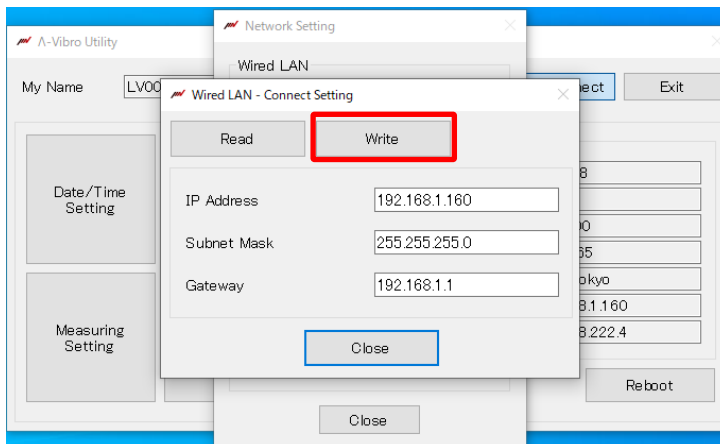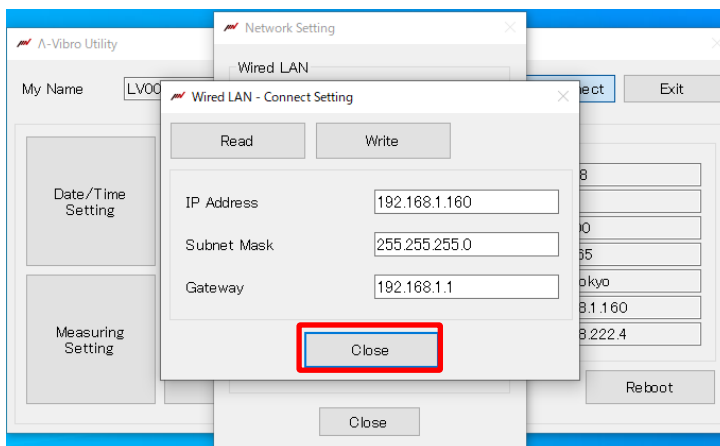The default gateway should be adapted to the wired LAN environment of the network to which you connect.
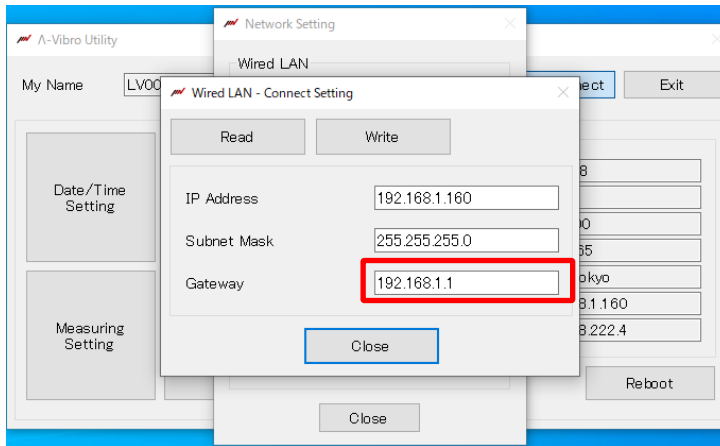
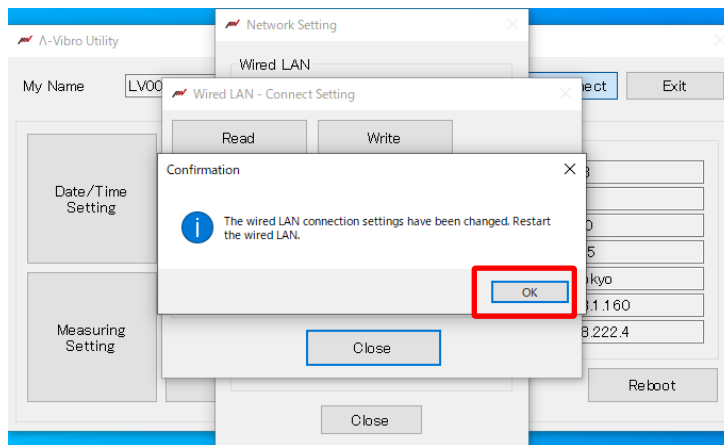**8** **Press the write button on the wired LAN connection setting screen.**

9 **Press the close button on the wireless LAN connection setting screen.**

10 **Restart the wired LAN module of this device when closing the wired LAN connection setting screen.**

Press the OK button on the confirmation screen below to restart the wired LAN module and reset the IP address.

The changed wired LAN connection settings take effect.

5.3.2 **When setting an IP address in a wireless LAN environment**

In order to construct a wireless LAN connection environment, the procedure for connecting the wireless LAN module of this device and the wireless LAN access point is explained. Set the IP address after connecting with the wireless LAN access point.

This is explained from the state where this device is recognized by the PC in a wired LAN environment and connected to the utility software.

The flow of wireless LAN connection setting is shown below.

Connect the wireless LAN module of this device and the wireless LAN access point

Refer to "5.3.2.1 How to connect wireless LAN module and wireless LAN access point".

↓   ↓

Set a static IP address to the wireless LAN module of this device

Refer to "5.3.2.2 Setting a Fixed IP Address in a Wireless LAN Environment".

Set the automatically obtained IP address to the wireless LAN module of this device

Refer to "5.3.2.3 Obtaining an IP Address Automatically in a Wireless LAN Environment".

How to connect the wireless LAN module and the wireless LAN access point

1 **Press the network setting button on the utility software.**
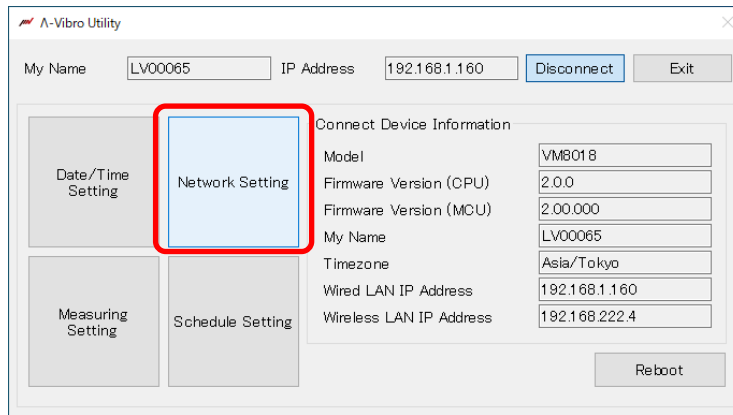
2 **Press Module Settings on the Network Settings screen.**

It is assumed that the wireless LAN access point to which you are connected is operating.
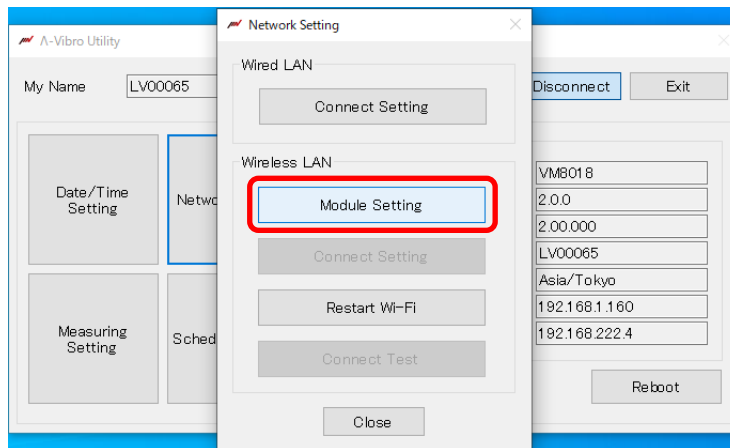
3 **The wireless LAN module setting screen opens.**
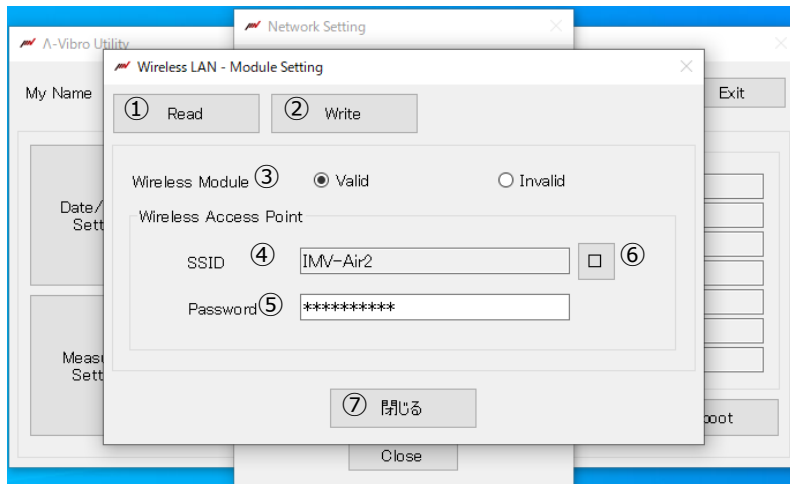
The following is an explanation of the wireless LAN module setting screen.

Number	Item/Button name	機能
①	Read	Read wireless LAN connection settings
②	Write	Write wireless LAN connection settings
③	Wireless Module Valid/Invalid	Select to valid or invalid the wireless LAN module When invalid, the wireless LAN module does not work
④	SSID	Display the SSID of the wireless LAN access point
⑤	Password	Enter the password of the wireless LAN access point
⑥	Wireless LAN search	Open the wireless LAN access point selection screen
⑦	Close button	Close the wireless LAN module setting screen

4 **Press the read button on the wireless LAN module setting screen.**

Read the wireless LAN module settings of this device.
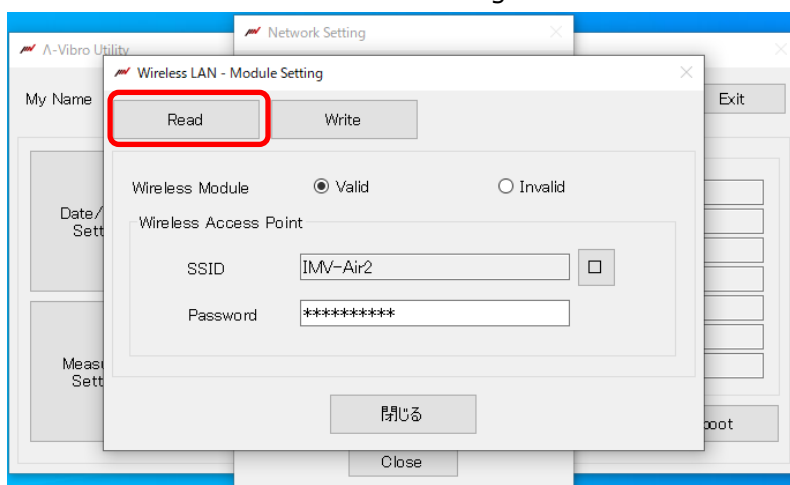
5 **Select Valid or Invalid Wireless Module on the Wireless LAN Module Settings screen.**

If you do not want to make a wireless LAN connection, select Invalid and press the write button.

Select Valid to make a wireless LAN connection and continue with the following steps.

6 **Press the wireless LAN search button on the wireless LAN module setting screen.**
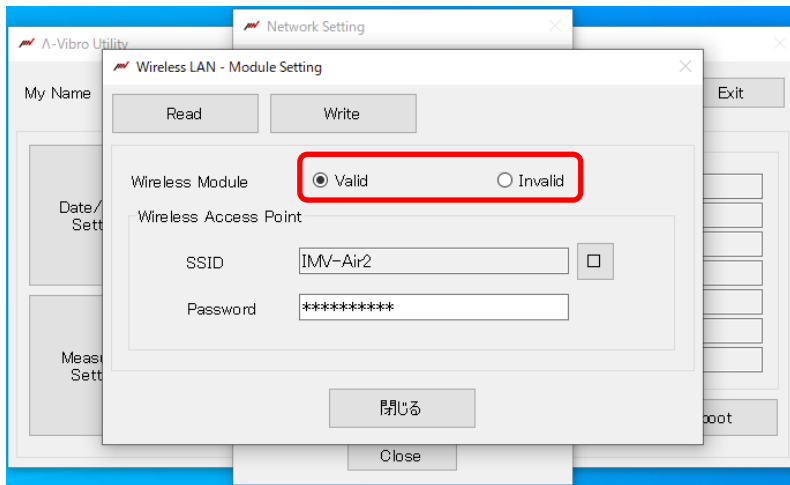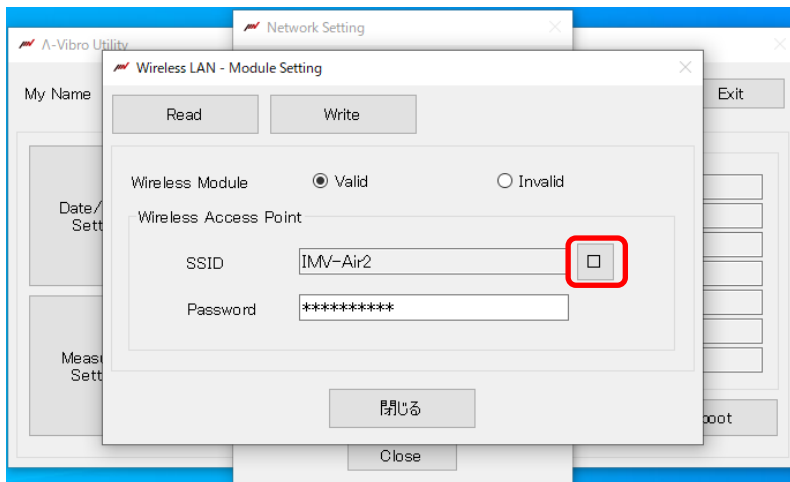
7 **The wireless LAN access point selection screen opens.**
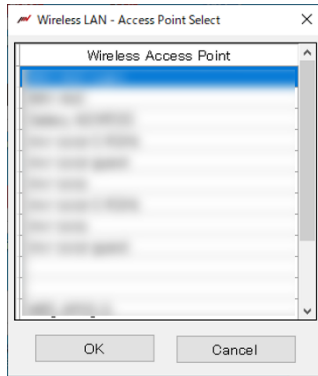
The following is an explanation of the wireless LAN module setting screen.

Number	Item/Button name	Function
1.	List of wireless LAN access points	Display the access points that can be connected from the wireless LAN module of this device.
2.	OK	Set the selected access point name and close the wireless LAN access point selection screen
3.	Cancel	Do not set the selected access point name, and close the wireless LAN access point selection screen

8 **Select the wireless LAN access point to connect to on the wireless LAN access point selection screen.**

Select the wireless access point you want to connect to from the access point list.

The selected part will be blue.
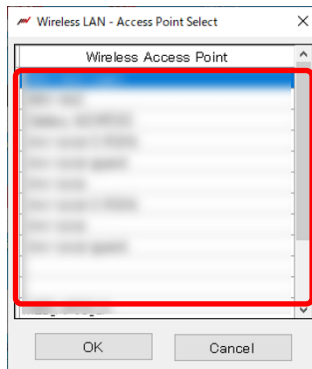
9 **Press the OK button on the wireless LAN access point selection screen.**

After selecting the access point, press the OK button to close the wireless LAN access point selection screen.
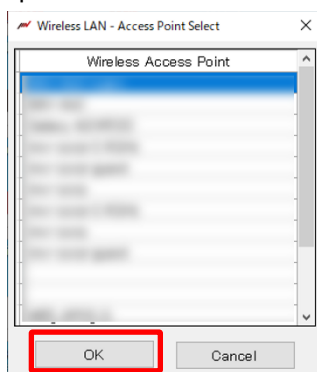
10 **Enter the password on the wireless LAN module setting screen.**

The name of the access point selected on the wireless LAN access point selection screen is displayed in the SSID column.

Enter the password of the wireless LAN access point in the password input field.

The wireless LAN access point that can be connected from this device is IEEE802.111 b/g/n.

In addition, the authentication method is WPA2-PSK and the encryption method is CCMP (AES) only.
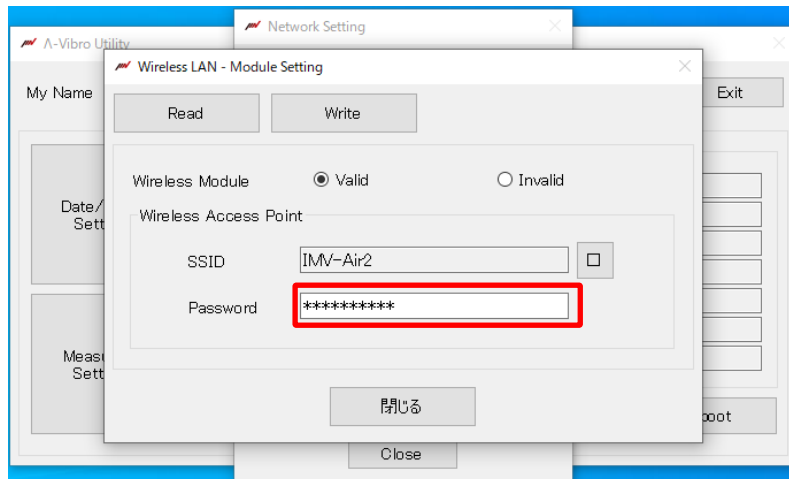
11 **Press the close button on the wireless LAN module setting screen.**
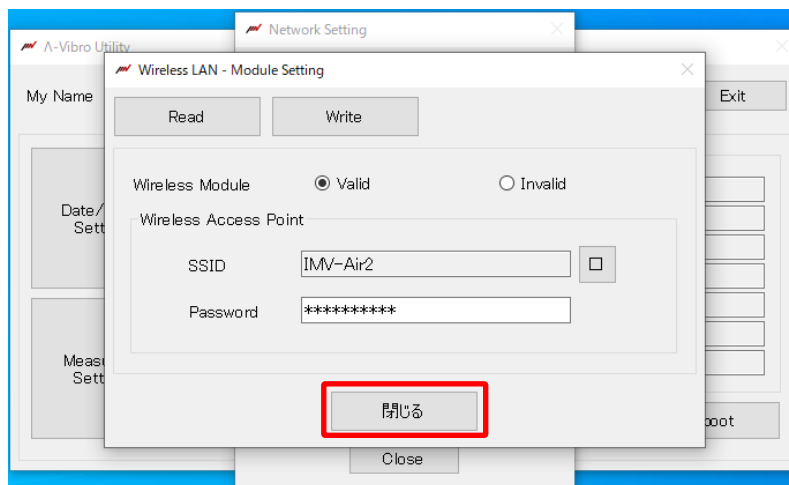
5.3.2.1 When setting a fixed IP address in a wireless LAN environment

This section describes the procedure for setting a fixed IP address in a wireless LAN environment. This section is explained from the state in which this device is recognized by the PC in a wired LAN environment, connected to the utility software, and wireless LAN module setting is completed.

1 Press the connect setting button on the network setting screen.
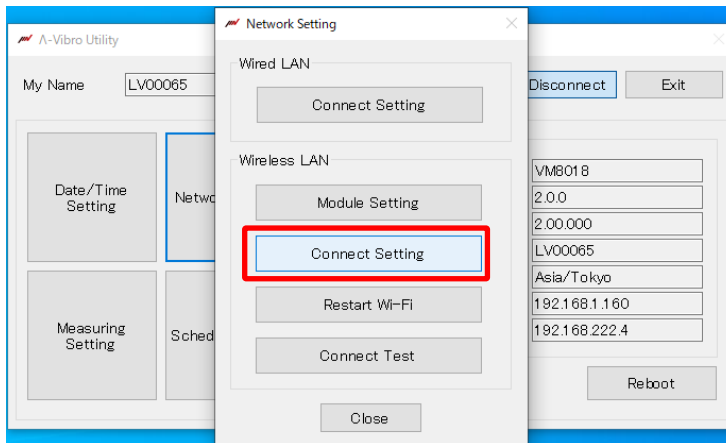
2 The wireless LAN connect setting screen opens.
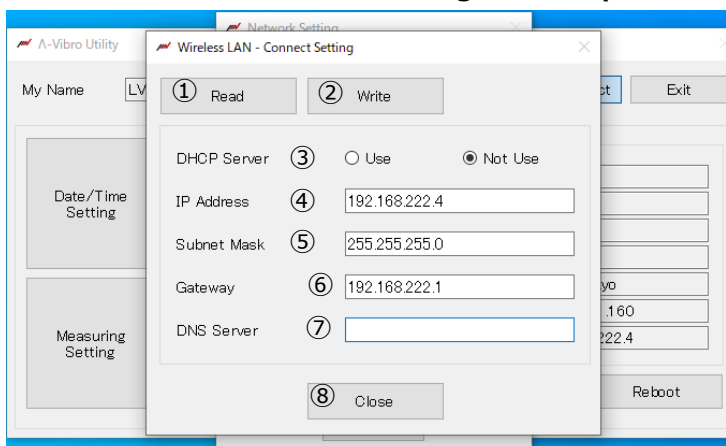
The following is an explanation of the wireless LAN connect setting screen.

Number	Item/Button name	Function
①	Read	Read wired LAN connection settings
②	Write	Write wired LAN connection settings
③	DHCP Server Selection	Select to use or not use DHCP server
④	IP Address	るEnter and display the IP address
⑤	Subnet mask	Enter and display the subnet mask
⑥	Default gateway	Enter and display the default gateway
⑦	DNS servers	Enter and display the address of the DNS server
⑧	Close	Close the connection settings screen After changing the connection settings, restart the wired LAN module.

3 **Press the read button on the wireless LAN connection setting screen.**

Read the wireless LAN connection settings of this device.
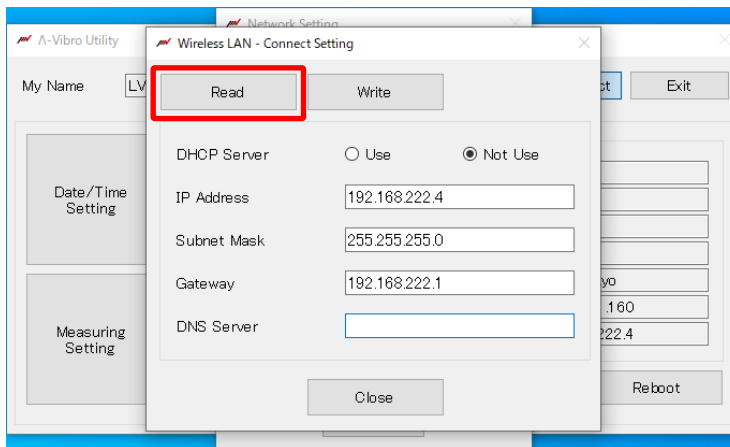
4 **Select "Do not use" on the wireless LAN connection setting screen.**

When using DHCP, the IP address is automatically assigned, so the IP address and subnet mask. No need to enter the default gateway or DNS server.

If you do not want to use DHCP, follow the steps below to enter the IP address, subnet mask, default gateway, and DNS server. Select Do not use to set the IP address, subnet mask, default gateway, and DNS server.
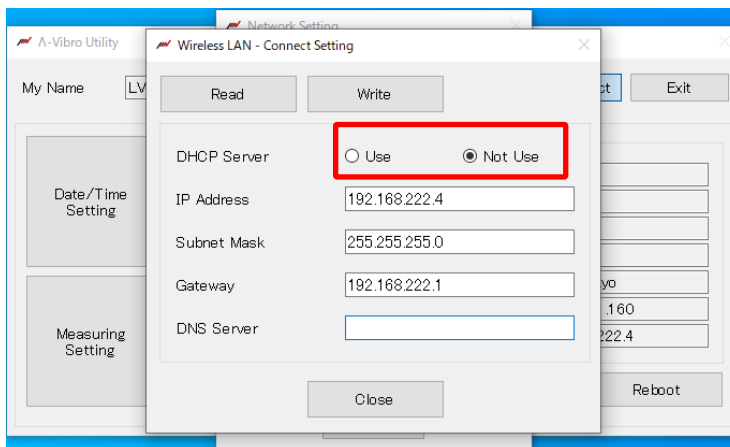
5 **Enter the IP address on the wireless LAN connection setting screen.**

The input values are only half-width numbers and periods.

Please match the IP address to your wireless LAN environment.
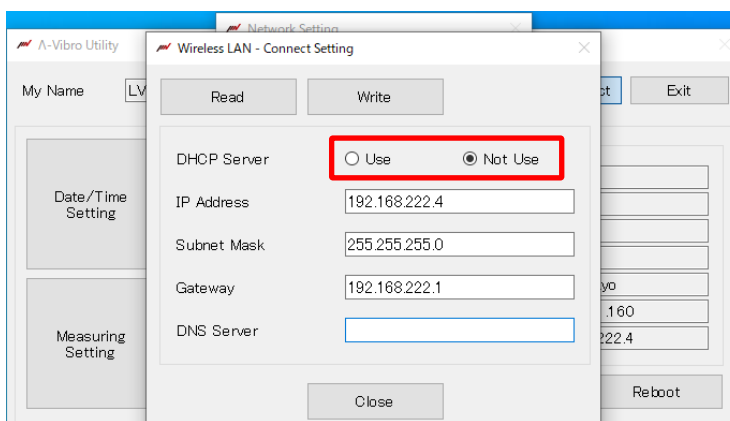
6 **Enter the subnet mask on the wireless LAN connection setting screen.**

The input values are only half-width numbers and periods.

Please match the subnet mask to your wireless LAN environment.
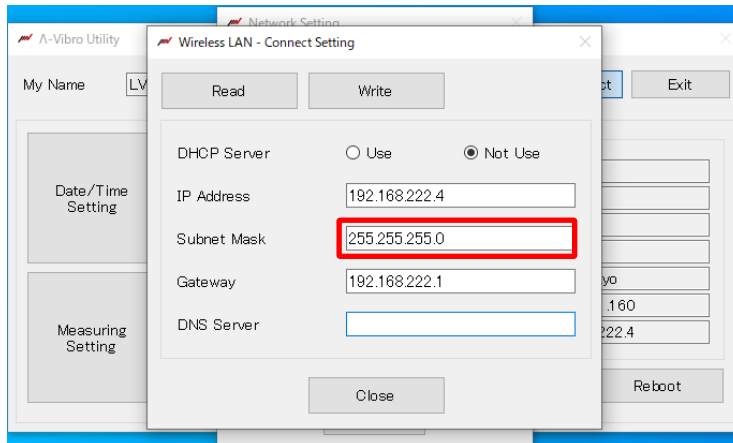
7 **Enter the default gateway on the wireless LAN connection setting screen.**

The input values are only half-width numbers and periods.

The default gateway should be adapted to your wireless LAN environment.
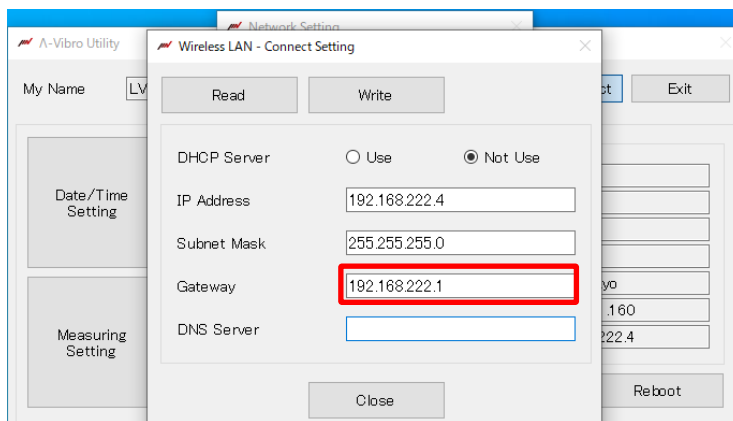
8 **Enter the DNS server on the wireless LAN connection setting screen.**

The input values are only half-width numbers and periods.

Please match the DNS server to your wireless LAN environment.

For the DNS server input field, the state of not entering (blank) can also be set.
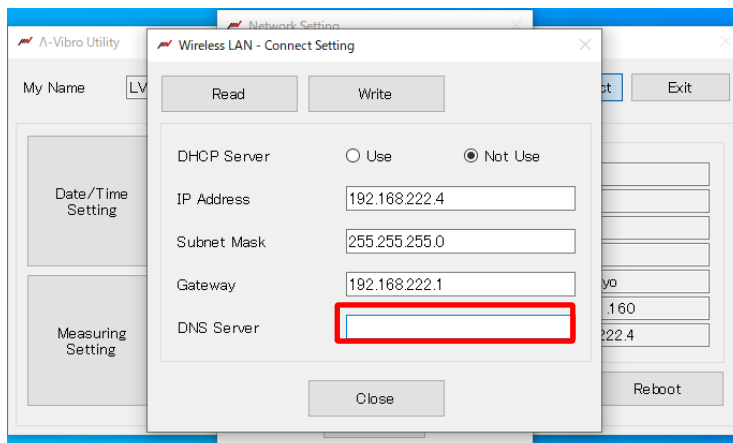
9 **Press the write button on the wireless LAN connect setting screen.**
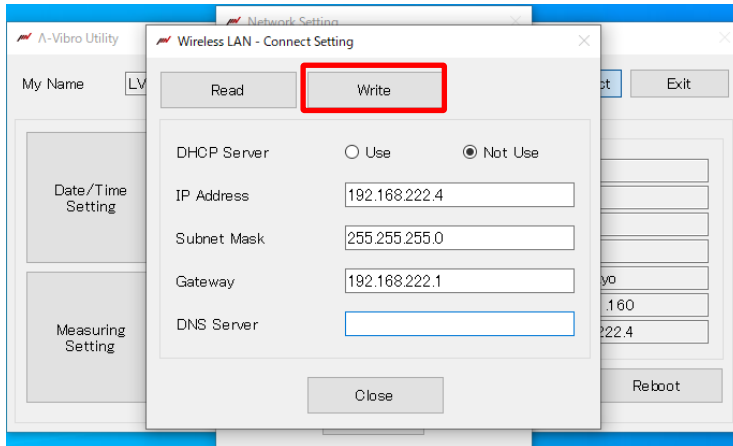
10 **Press the close button on the wireless LAN connect setting screen.**
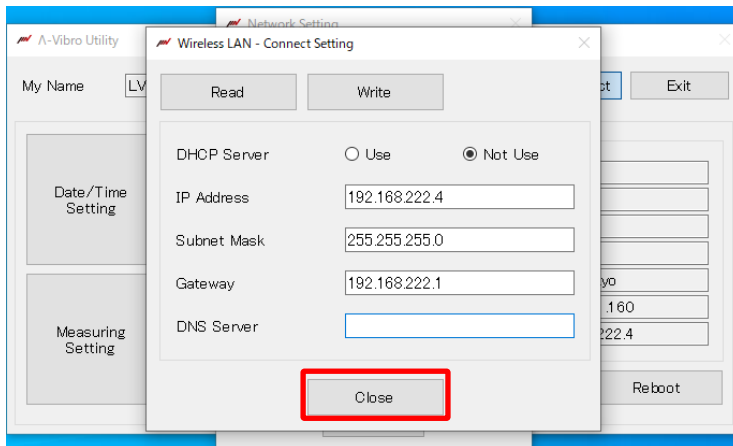
11 **Press the wireless LAN restart button on the network setting screen.**

It takes a few seconds ~ several minutes to restart the wireless LAN.

After restarting the wireless LAN, the wireless LAN connection setting will be completed.
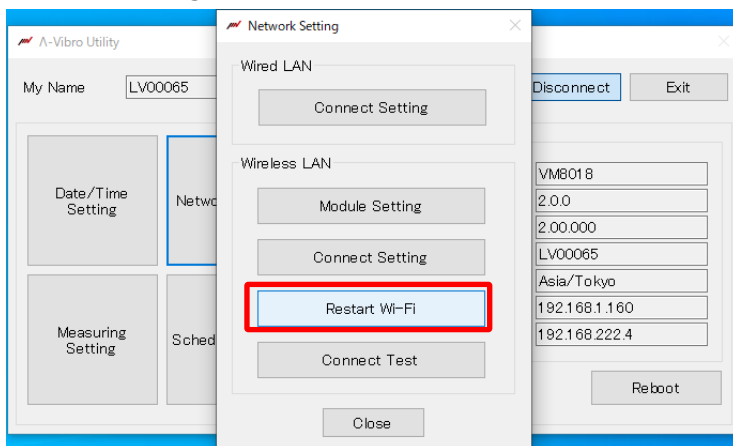
5.3.2.2 When automatically acquiring an IP address in a wireless LAN environment

This section describes the procedure for automatically acquiring an IP address in a wireless LAN environment. This section is explained from the state in which this device is recognized by the PC in a wired LAN environment, connected to the utility software, and wireless LAN module setting is completed.

12 Perform steps 1 ~ 3 of "5.3.2.2 Setting a fixed IP address in a wireless LAN environment".

13 Select "Use" on the wireless LAN connection setting screen.

When using DHCP, the IP address is automatically assigned, so the IP address and subnet mask. No need to enter the default gateway or DNS server.
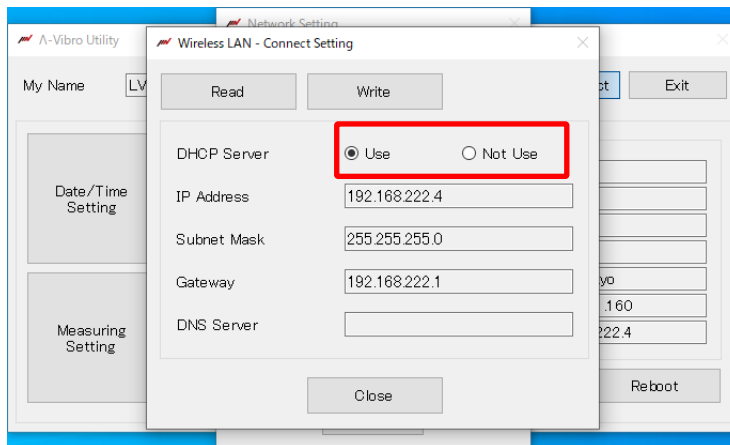

14 Perform step 9~11 of "5.3.2.2 Setting a fixed IP address in a wireless LAN environment".

5.4   Setting up a vibration measurement program

Describes the procedure for setting up a vibration measurement program.

There are two ways to set the vibration measurement program:

Access the shared folder of this device,

Edit the config file with a text editor

- Refer to "5.4.1 accsecing the internal shared folder of this device" for how to access the configuration file.
- For details on the LambdaSetting.ini file, refer to "5.4.2 LambdaSetting.ini file settings."
- For details on the LambdaRecordSchedule.ini file, refer to "5.4.3 LambdaRecordSchedule.ini file settings"

Change schedule settings and measurement condition settings from utility software

See "4.3 Setting the vibration measurement program".

Finally, make sure that the vibration measurement program you set up works as expected.

5.4.1   Access the internal shared folder of this device

Execute "5.3 Setting the LAN Connection Method" and explain from the state where this device is connected to the LAN.

1 On the PC screen, click the [Explorer]
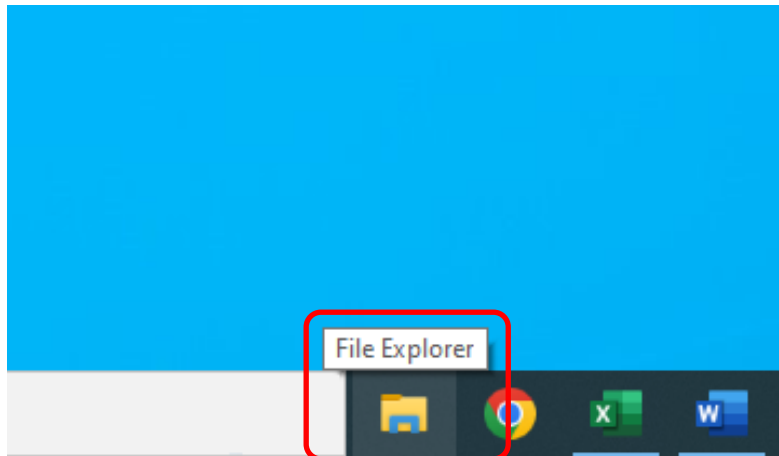
2 In the address input field, enter ¥¥< IP address of this device >¥mmc" and press the [Enter] key on the keyboard.
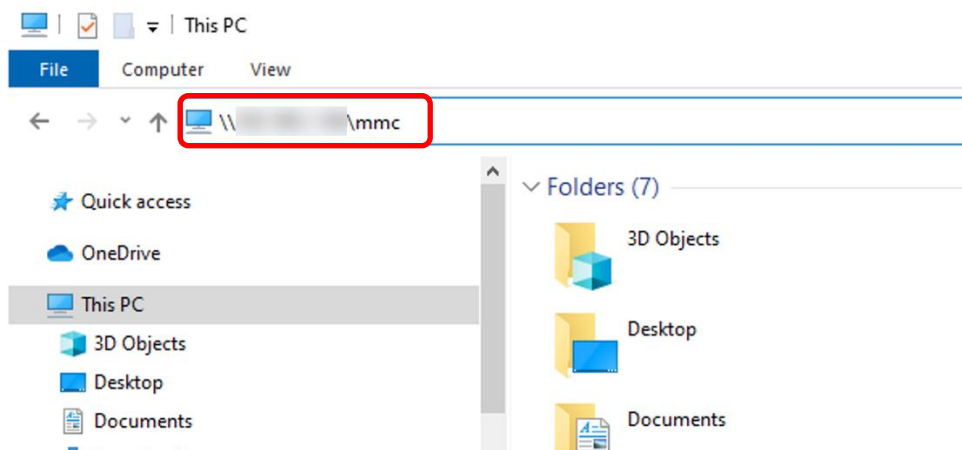
The internal shared folder of this device is displayed.

The [SaveData] folder stores measurement result files, etc.

The Setting folder contains vibration measurement programs, such as LambdaSetting .ini files and LambdaRecordSchedule files.ini files.
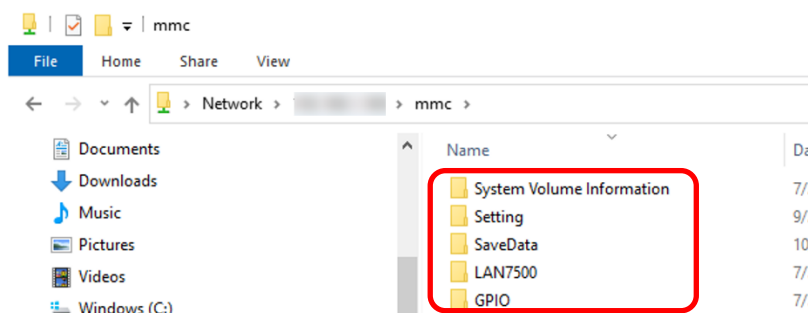
Reference • For details on the folder structure of this unit, refer to "9.2 Folder Configuration".

5.4.1.1 Configuring the SaveData Folder

The SaveData folder consists of the following:
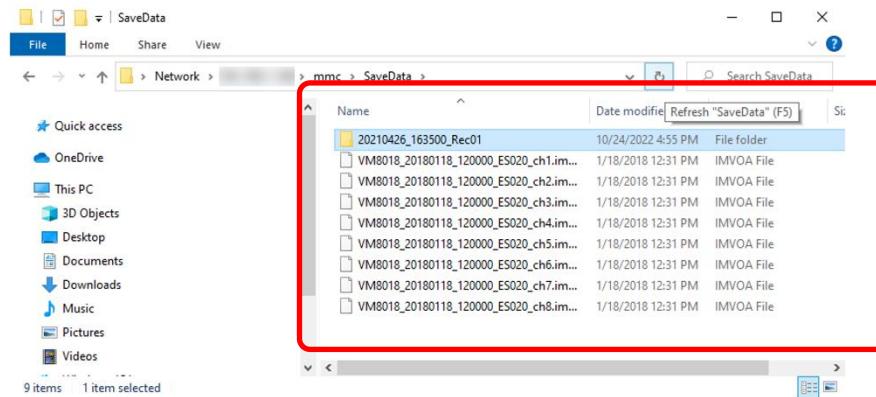
・Time reservation measurement folder: All saved files measured by time reservation
(Example of folder name)20181011_182000_Rec01
・External trigger measurement folder: All saved files measured by trigger
(Example of folder name)20181011_182000_exTrg

Files stored in each folder can be renamed by changing the extension and character encoding of the LambdaSetting .ini setting in the file's 018@SaveFile.

	16bit Text setting	8bit Text setting
OA value file	*.imvoa	*.imv8a
Time waveform file	*.imvfw	*.imv8w
Frequency waveform file	*.imvff	*.imv8f
Log file	*.txt	
Error file	*.txt	

<Name and type of OA value file>

<The name and type of WAV file>

VM8018_20171207_171000_ES020.imvfw   2017/12/07 17:11   IMVFW File

Device name | Save data and time | Device name

< name and type of FFT file>

VM8018_20171207_173000_ES020_Acc.imvff   2017/12/07 17:33   IMVFF File
VM8018_20171207_173000_ES020_Disp.imvff   2017/12/07 17:33   IMVFF File
VM8018_20171207_173000_ES020_Vel.imvff   2017/12/07 17:33   IMVFF File

Device name | Save data and time | Device name | Conversion type
Acc.: Acceleration
Vel.: Velocity
Disp.: Displacement
eBand.: e-Band

5.4.1.2 Configuration of the Setting folder

The configuration of the Setting folder is as follows:
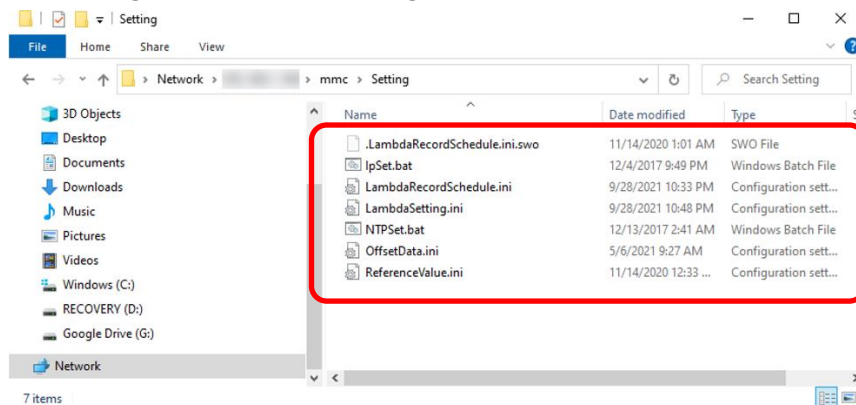
LambdaRecordSchedule.ini : The file that configures the measurement schedule.

LambdaSetting.ini : The file that configures the measurement.

Reference • For more information about LambdaSetting .ini files, see 5.4.2 LambdaSetting .ini Files.

• For more information about .ini LambdaRecordSchedule file, see Setting Up a File .ini 0 LambdaRecordSchedule.

5.4.2 Configuration Items in the LambdaSetting .ini File

The configuration items in the LambdaSetting .ini file are as follows:

No.	Configuration Name	Example input	Explanation	Input Range
01	SampleTime	00001	Set the time to actually measure. /b10>Enter a value 10 times the measurement time [s] with 5 digits. 23> 1.0s, enter [00010]. To measure 0.1s, set it to [00001].	00001-00200
02	SampleFreq	25600	Sets the sampling frequency at the time of measurement. Be sure to select from the values on the right with 5 digits.	51200 25600 12800 10240 06400 05120 03200 02560 02048 01600 01280 01024 00800 00640 00512 00400
03	Filter	000	Toggles whether the high-pass filter is enabled or disabled during speed displacement conversion. See the appendix "Ch-bit Setting Correspondence Table."	000 - 255
04	IEPE	003	When connecting an IEPE (ICP) type VP-100M or VP-A52IW to each channel, set the current supply to be enabled. If enabled, make sure the BIT corresponding to each channel is [1]. See the appendix "Ch-bit Setting Correspondence Table."	000 - 255
05	ChEnable	255	Enables or disables each channel.	000 - 255
06	OutUNIT	2	Sets the output unit at the time of AD conversion. It does not work with the current version. Be sure to use [2].	Always 2

No.	Configuration Name	Example input	Explanation	Input Range
07	Range	0	Set the input voltage range. The range is as follows: 0:2.56Vo-p → Effective Measurement Voltage Range±2.5V 1:5.12Vo-p → Effective Measurement Voltage Range±5.0V 2:10.24o-p → Effective measurement voltage range ±10.0V 3:20.48o-p → Effective measurement voltage range± 15.0V	0 - 3
08	InTrigger	0	Target trigger Sets the target trigger to be used for measurement. 0: Internal trigger → Time Reservation Measurement with LambdaRecordSchedule.ini 1: Measurement by trigger signal input to external trigger → TTL pin	0 or 1
09	FFTLine	1600	Sets the frequency resolution during FFT conversion. Be sure to select from the values on the right with 4 digits. The higher the number, the finer the resolution, but the longer it takes to measure.	3200 1600 0800 0400 0200 0100
10	FFTWindow	Rectangular	Select the window function to use for the FFT conversion. Choose from six function names on the right.	Rectangular Hanning Hamming Gaussian Blackman FlatTop
11	VelHPF	0010	Select the window function to use for the FFT conversion. Choose from six function names on the right.	0010 - 0099
12	VelLPF	1000	Sets the lowpass filter cutoff frequency [Hz] when performing speed conversion of channels with the [Filter] setting enabled. Be sure to set it to 4 digits and less than 1/2.56 of the sampling rate.	0100 - 9999

No.	Configuration Name	Example input	Explanation	Input Range
13	DspHPF	0010	Sets the highpass filter cutoff frequency [Hz] when performing displacement conversion of channels with the [Filter] setting enabled. Be sure to have 4 digits and set to 1/2.56 or less of the SampleFreq.	0010 - 0099
14	DspLPF	0100	Sets the lowpass filter cutoff frequency [Hz] when performing displacement conversion of channels with the Filter setting enabled. It does not work with the current version. Be sure to have 4 digits and set to 1/2.56 or less of the SampleFreq.	0100 - 9999
15	TimeSet	00:00	Set the time to reflect the time set in the OS on the high-precision built-in clock (RTC). Use only when correcting the time. Be sure to set both hours (00 - 24) and minutes (00 - 59) with two characters. By setting it to [00:00], reflection is not performed. * Please operate at [00:00] during normal operation.	colon-delimited Hours: Minutes
16	WaveSave	1	Select to save the time waveform file (imvfw). If you do not save the file, the saving time will be reduced. 0 → Do not save files 1 → Save the file	0 or 1
17	eBandCal	1	Choose whether to perform e-Band arithmetic processing and file saving. If you do not perform calculations and save files, the time is reduced. 0 → Do not process e-band 1 → e-band processing	0 or 1
18	SaveFile	0	Select the text encoding of the file you want to save. 0:16bit → UTF-16BE 1:8bit → UTF-8	0 or 1

No.	Configuration Name	Example input	Explanation	Input Range
19	MyName	LV00021	Enter a name to identify the device. This name is reflected in the saved file name.	Must be up to 15 alphanumeric characters
20	CH[X]Name	ch[X]	Enter a name to identify each channel (CH[X]). This name is reflected in the file header.	Alphanumeric strings
21	CH[X]UNIT	m/s^2	Select from the five types of strings on the right stored in each channel (CH[X]).	V mV m/s^2 gal G
22	CH[X]Sens	1024	Set the value of 100 times the sensitivity of the connected vibration pickup (CH[X] sensor). Be sure to set it with 4 digits. When voltage measurement is performed, set it to [0100]. For example, if the sensitivity of the connected vibration pickup is 10.24 m/s^2:[1024]	0000 - 9999
23	CH[X]SUNIT	mV/(m/s^2)	Sets the sensitivity unit for the input pickup (CH[X] sensor). /b12>Select from the five types of strings on the right. rs. When measuring by voltage, set it to the same unit as 21:CH[X]UNIT.	V mV mV/(m/s^2) mV/gal mV/G
24	CH[X]eBAND	3	Set the e-band for each channel. However, when choosing each e-band, please observe the following conditions for SampleFreq. e-Band1: 400 or more e-Band2: 2560 or higher e-Band3: 25600 or higher e-Band4: 51200 or more In order for the setting to take effect, click 《POWER Con. Restart with the " button.	1 - 4

5.4.3 Configuration Items in the LambdaRecordSchedule .ini File

You can change the settings for time reservation measurements by rewriting the configuration items in the LambdaRecordSchedule .ini file. Up to 10 time reservation measurements can be entered. At the beginning of each reservation, enter the recognition characters [Record01]~[Record10]. From the next line of recognition characters, continue to enter the time reservation. The setting items are as follows.

Config. Name	Example input	Explanation	Input Range
Day	2018.02.13	Timer Measurement Reservation date (always 2 characters filled in zeros) Example: Day=2018.02.13	Period-delimited, years. May. sun
	Daily	Daily repeat measurement TimeWithin 24 hours of the set time Example: Day=Daily	
Time	19:05	Reservation time (always 2 characters and zero-padded in them) Time, enter at 00 – 24 Minutes entered in 00 – 59	Colon delimited, hour: minute
Span	60	Measurement interval [min] (5 - 1439) If you want to perform stable continuous measurements, it is recommended that the setting value of [Span] is [20] (20 minutes) or more. If the setting value of [Span] is set to less than [20] (20 minutes), the saving of the measurement file may not be finished within the time depending on the measurement conditions.	5 - 1439
Continu	24	Number of consecutive times (1 or more)	1 - 288

Memo Be careful that the combination of Span and Continu does not exceed 1440 minutes (1 day).

5.4.3.1 Priority of date and time reservation settings

The order of precedence for date and time reservations is as follows:

Priority	Reserved Name
1	Measurement reservation 01 (trigger measurement when in external trigger mode)
2	Measurement Reservation 02
3	Measurement Reservation 03
4	Measurement Reservation 04
5	Measurement Reservation 05
6	Measurement Reservation 06
7	Measurement Reservation 07
8	Measurement Reservation 08
9	Measurement Reservation 09
10	Measurement Reservation 10

For the time of the time reservation measurement, the next time reservation measurement will not start until all one reservation has been completed, not just once. For details, see "5.4.3.2 Date Designation Reservation Measurement Settings" and "5.4.3.3 Daily Scheduled Reservation Measurement Settings".

5.4.3.2 Date Designation Reservation Measurement Settings

Here, we will explain the case where the time reservation measurement is performed with the following input values.

[[Record01]
Day=2017.12.13 : Reservation date and time
Time=00:00:00 : Reservation time
Span=10 : Measurement interval [minutes]]
Continu=6 : Number of consecutive times

[Record02]
Day=2017.12.13 : Reservation date and time
Time=00:30:00 : Reservation time
Span=5 : Measurement interval [minutes]]
Continu=12 : Number of consecutive times

5.4.3.3 Daily scheduled reservation measurement setting

Here, we will explain the case where a timed reservation is made with the following input values.

[Record01]

Day=Daily : Reservation date and time

Time=06:00:00 : Reservation time

Span=20 : Measurement interval [minutes]]

Continu=46 : Number of consecutive times

For Daily measurements, [Span]×[Continu] is Please set it not to exceed 1440 minutes. If [Span] is [20], the maximum number of consecutive times is 72 times. 1440÷20＝722
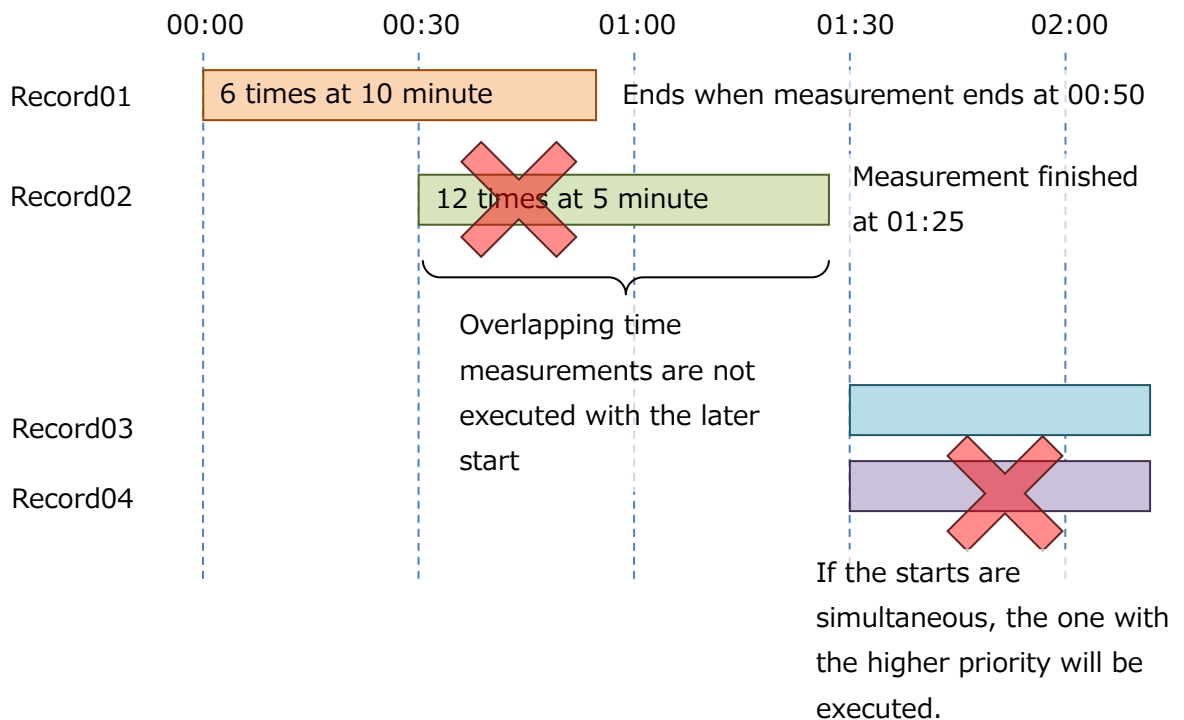
[Record02]

Day=2017.12.13 : Reservation date and time

Time=00:30:00 : Reservation time

Span=5 : Measurement interval [minutes]]

Continu=12 : Number of consecutive times

For Daily measurements, enter a date that is past the current so that [Record02] and later are disabled.
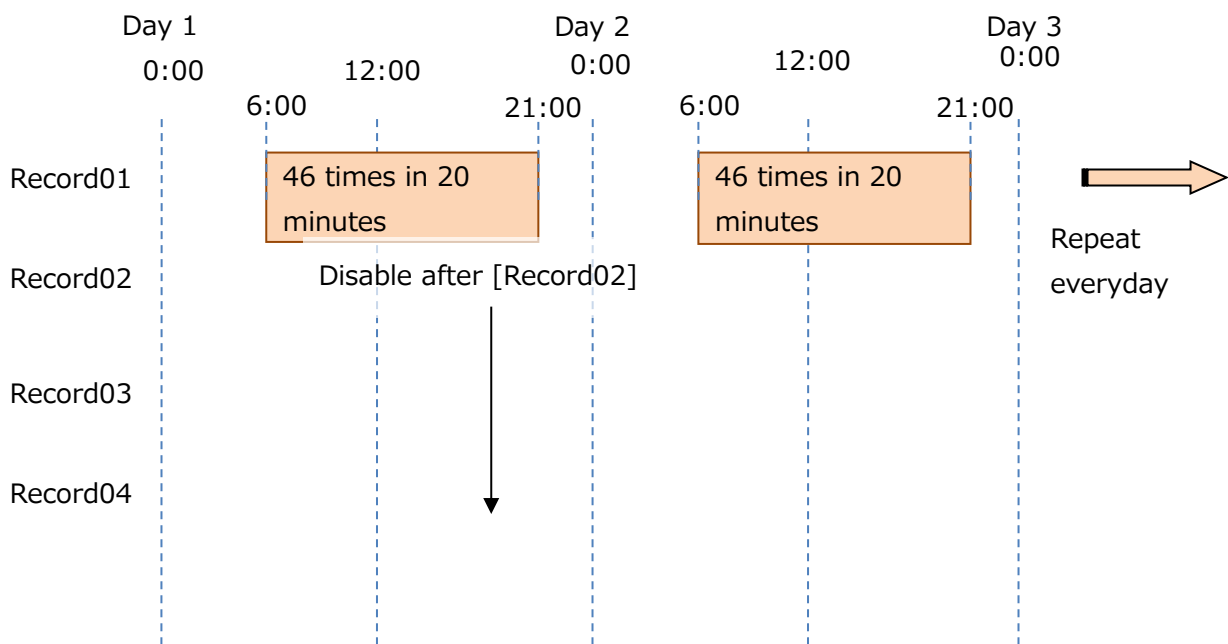
5.4.4   Measurement method by external trigger

When [08 InTrigger] of the LambdaSetting .ini file is set to [1], the external trigger input terminal of this device is enabled, and measurement using the external trigger is enabled. When you use external triggers, the date and time reservation settings that you set in the LambdaRecordSchedule .ini file are disabled.

One measurement is taken per pulse trigger, and the WAV file and each FFT file are saved. With external triggers, the measurement results are combined into a single OA value file up to 300 times, and when the measurement results exceed 300 times, the measurement application restarts and the measurement result file is saved in a new folder.

Enter the trigger pulse in the following form.
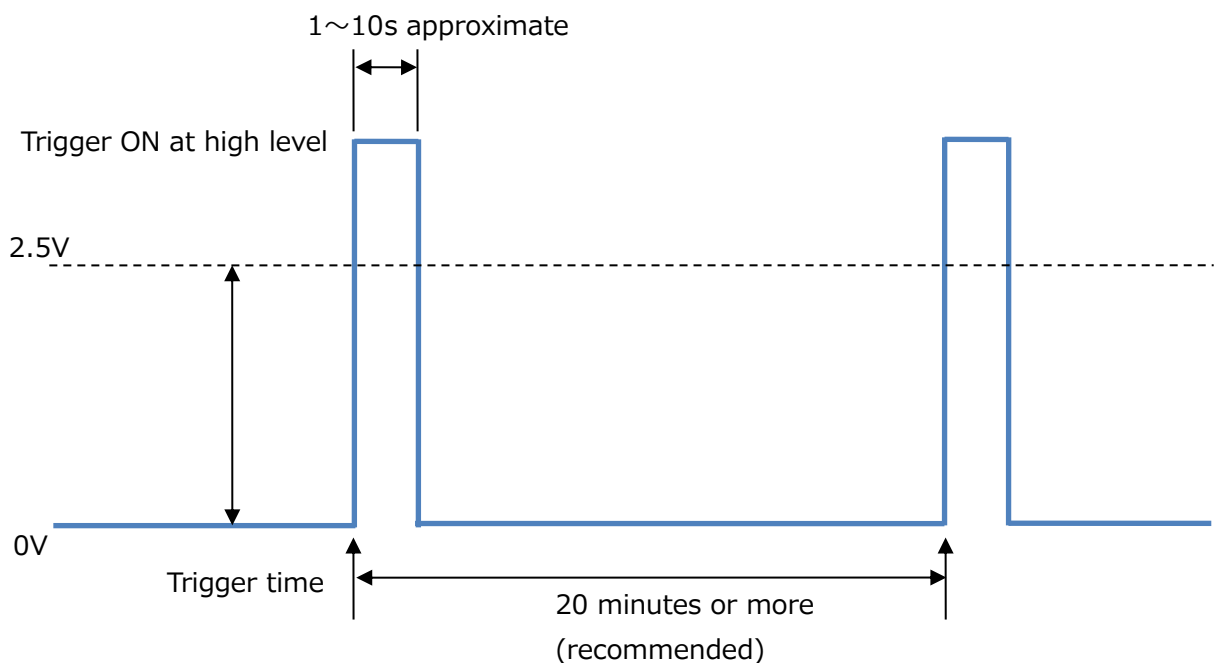
If the trigger time interval is short, the next external trigger may be executed before the file save process is finished, and the measurement data may not be saved successfully. If you want to acquire all measurement data, it is recommended to have a trigger interval of at least 20 minutes.

5.5 Operation check

Describes the procedure to check whether the vibration measurement measurement program that changes the measurement condition setting and scheduling settings in the utility software, or changes the LambdaSetting .ini file and the LambdaRecordSchedule file, .ini works as expected.

In this section, we will rewrite .ini contents of the LambdaSetting file and .ini LambdaRecordSchedule file and start with the data saved.

1 In order to reflect the settings in the LambdaSetting .ini file and the LambdaRecordSchedule .ini file, the "Power Con. button to shut down.

《Power Con.》ボタン

After about 5 seconds, the left LED of this unit turns off.

Left LED	Right LED
（Lights off）	（Solid red）

2 **After the left LED turns off, about 10 seconds have passed, and then the Power Con. Press and hold the 》 button.**

《Power Con.》ボタン

The left and right LEDs of this system transition as follows.

1. Start booting the system. Immediately after startup, the left LED lights amber and the right LED lights red.

Left LED　　　Right LED
（Solid　　　　（Solid
orange）　　　red）
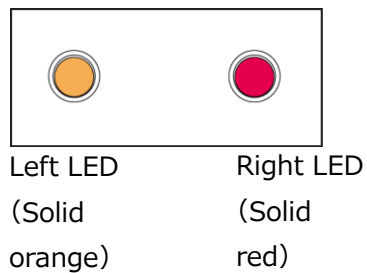
2. After about 40 seconds, the right LED will flash and change → red to orange.

Left LED　　　Right LED　　　　　　Left LED　　　Right LED
（Solid　　　　（flashing　　　　　　（Solid　　　　（flashing
orange）　　　red）　　　　　　　　orange）　　　orange）
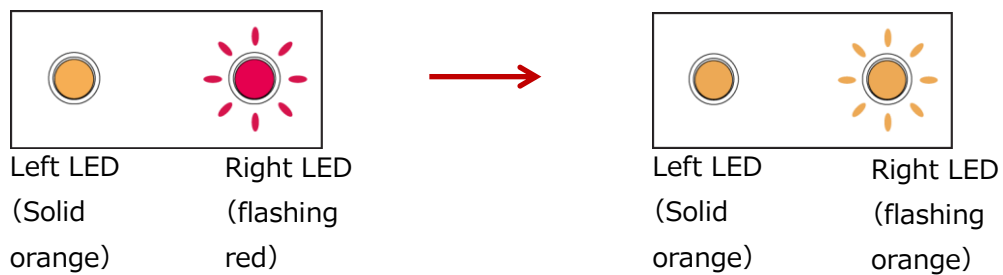
3. It takes tens of seconds for the system OS to boot completely. If the boot is successful, both the left and right LEDs are solid amber.

Left LED　　　Right LED
（Solid　　　　（Solid
orange）　　　orange）
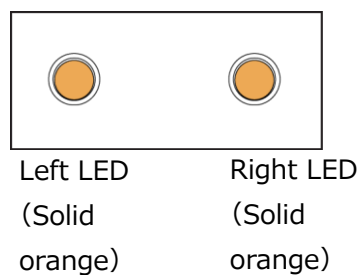
When the system operating system is fully booted, the device recognizes the connected vibration pickup and PC. It reads the contents of the LambdaSetting.ini file .ini LambdaRecordSchedule file.

Memo   When reading a file, the left LED lights up purple for a moment.

3 **Check the operation of this device to see if measurements are performed according to the settings in the LambdaSetting .ini file and the LambdaRecord.ini Schedule file.**
If the setting takes a long time to measure, measure only one cycle to check the status, or continue to check until the measurement starts.

5.5.1 Checking the execution status of measurement

When scheduled measurement and trigger measurement are executed during operation of this device, the left LED and right LED of this device transition as follows according to the progress of processing.

1. Measure the set time. At this time, the left LED lights up amber → purple.

Left LED
(Solid
orange)

Right LED
(Solid
orange)

Left LED
(Illuminated
purple)

Right LED
(Solid
orange)
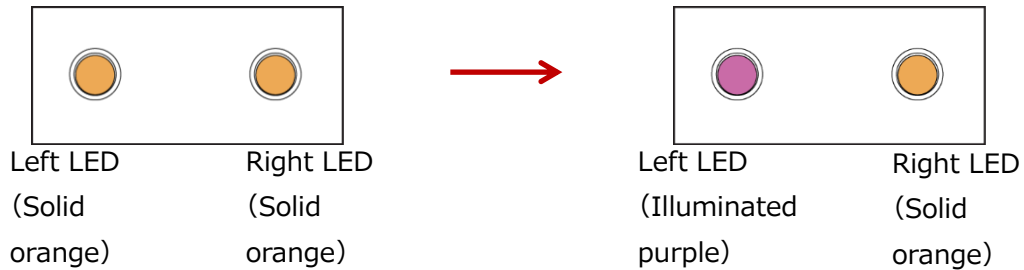
2. After the measurement is completed, internal processing is performed. At this time, the left LED lights up amber → purple.

Left LED
(Solid
orange)

Right LED
(Solid
orange)

Left LED
(Illuminate
d purple)
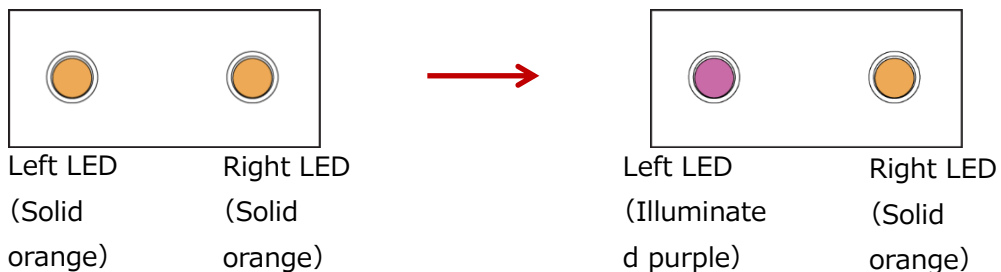
Right LED
(Solid
orange)
Performs the
shutdown process.

3. When the process is finished, save the IMVFW file. At this time, the left LED lights up amber → purple.

Left LED
(Solid
orange)

Right LED
(Solid
orange)

Left LED
(Illuminated
purple)

Right LED
(Solid
orange)
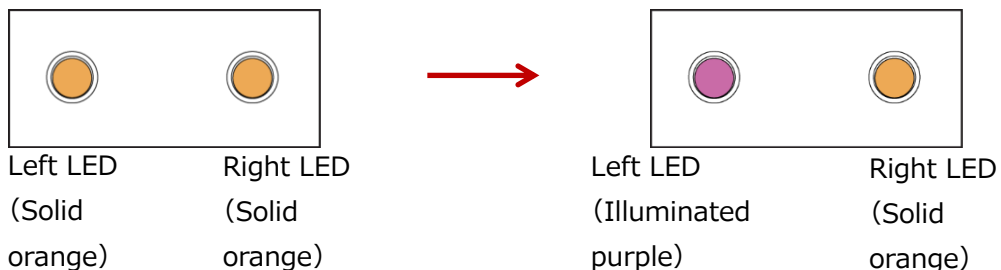
4. Save IMVFF and IMVOA files. At this time, the left LED lights up amber → purple.

Left LED
(Solid
orange)

Right LED
(Solid
orange)

Left LED
(Illuminated
purple)

Right LED
(Solid
orange)
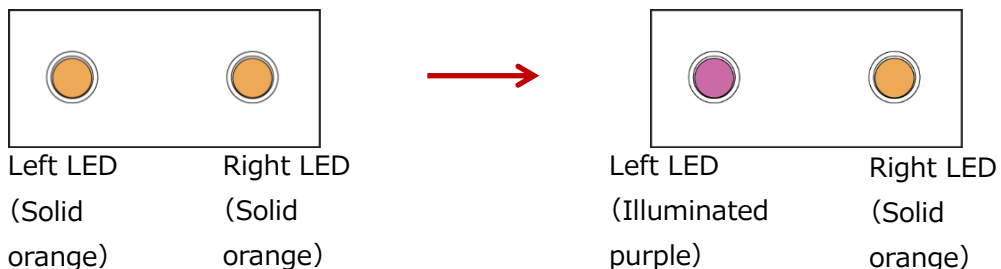
5. When all processing is completed, both the right and left LEDs will light amber and wait for measurement.

Left LED
(Solid
orange)

Right LED
(Solid
orange)

Performs the
shutdown process.

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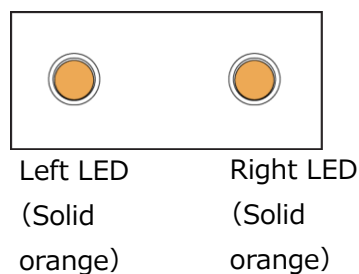
5.5.2   Log files

Log files are saved in text format in the SaveData folder. Log files are used to log when the device is started and shut down.

5.5.3   Error files

When an error occurs in the device, the left and right LEDs on the front of the device flash alternately as follows, and an error file "LambdaVibroErrLog.txt" is generated in the [SaveData] folder.

| Left LED (flashing orange) | Right LED (flashing orange) | | Left LED (flashing purple) | Right LED (flashing red) |
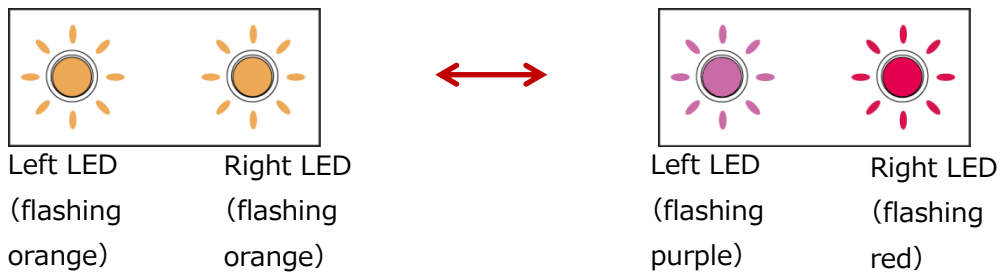
The following is a list of each error number and what it is

Error Number	Error details
E01	Drive read error
E02	GPIO Driver Read Error
E03	(Reservation)
E04	Application register read error
E05	Free command transmission error
E06	Log saving errors
E07	Clock read error
E08	AD value read error
E09	WAV file saving error
E10	Configuration file read error
E11	Error reading measurement schedule file
E12	SPI Transmit Timeout Error
E13	Internal temperature abnormality error
E99	ADC data capture error

6   Other features

This section describes features that are not directly related to measurement tasks, such as procedures for updating the measurement application and setting up the internal clock. Configure or update as needed.

6.1   Updating the Measurement Application

When you receive a new version of your measurement application from us, please update it in the following way.

1   Verify that the extracted files contain the following files and folders:

LambdaVibroFwUpdate	2021/06/18 10:38	ファイル フォルダー	
LambdaVibro_Linux	2021/06/14 14:03	ファイル	133 KB

LambdaVibroFwUpdate folder : Software for updating measurement apps

LambdaVibro_Linux : Measurement App File

2   Open the Lambda VibroFwUpdate folder.

LambdaVibroFwUpdate.exe	2020/02/14 16:13	アプリケーション	387 KB
LambdaVibroFwUpdate.exe.config	2020/01/16 13:42	XML Configuratio...	1 KB
Renci.SshNet.dll	2017/10/16 20:53	アプリケーション拡張	413 KB
System.Net.Http.dll	2014/05/28 4:35	アプリケーション拡張	82 KB

Double-click the LambdaVibroFwUpdate .exe to launch the update software.

3   Launch the LambdaVibroFwUpdate .exe.
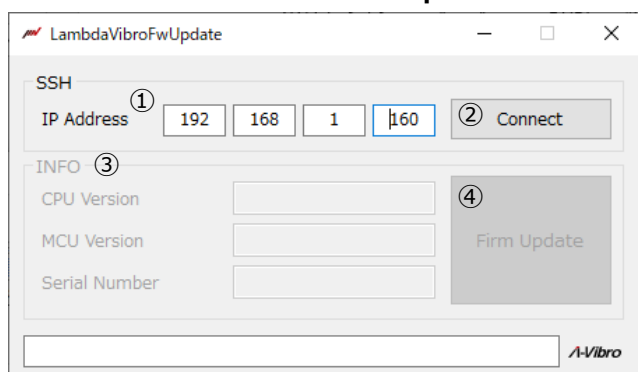
Below is a description of LambdaVibroFwUpdate.

number	Item/Button name	Function
①	IP Address	Enter the IP address of the unit.
②	Connect button	Connecting to this device
③	INFO	Display information about this device
④	Firm Update button	Update the measurement app of this device

4 **Enter the IP address of the device in the IPAddress field.**
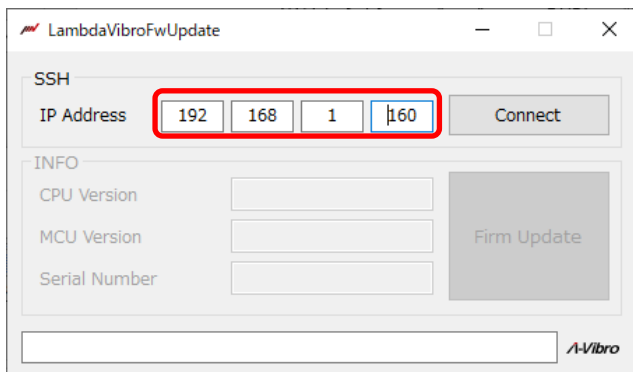
5 **Press the Connect button.**
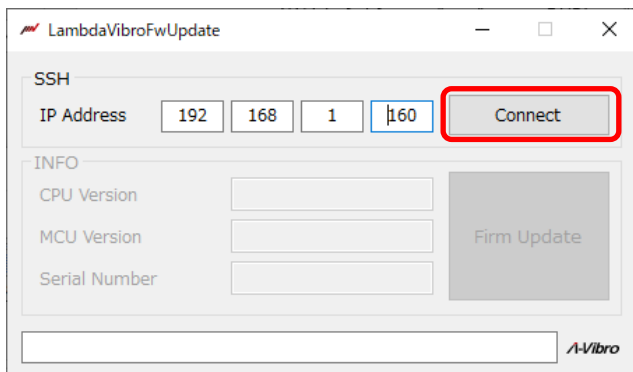
6 **Information about this device is displayed in INFO.**
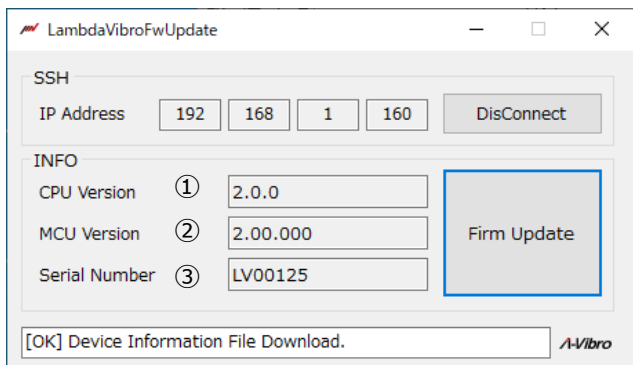
Below is a description of INFO.

Number	Item/Button name	Function
①	CPU Version	Display the version number of the measurement application of this device
②	MCU Version	Displays the MCU firmware version number of this device
③	Serial Number	Display the serial number of the device LambdaVibroSetting .ini the same as Myname of the file or the device name of the utility software

7 **Press the Firm Update button.**
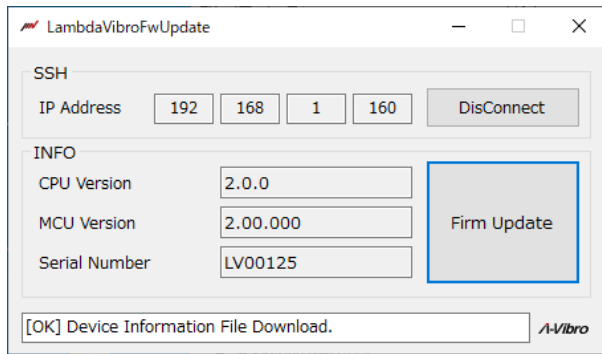
8 **Select the measurement app file you want to update.**
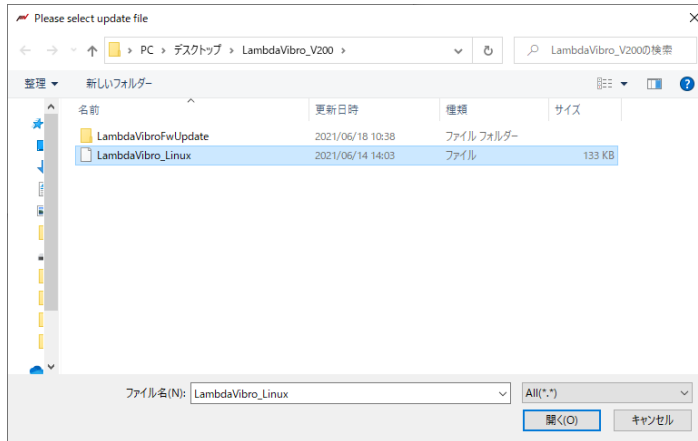
Select the "LambdaVibro_Linux" file in the unzipped folder.

9 **Press the Open button.**
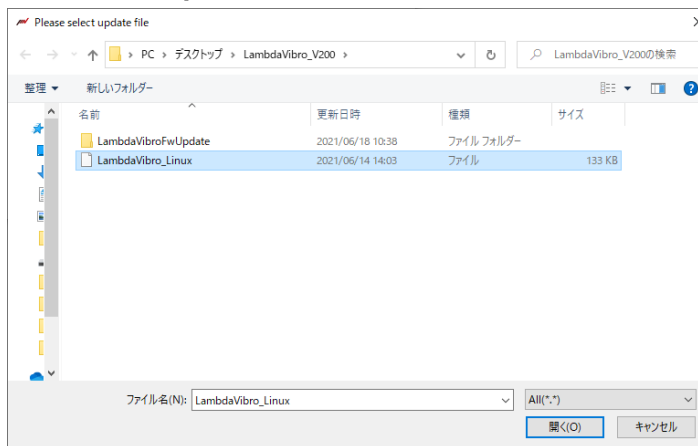
10 **A dialog box appears.**
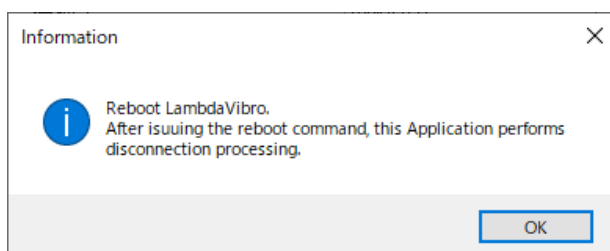
The measurement application file is written to this device and the above dialog box is displayed.

Press OK to complete the update of the measurement app.

6.2 Checking the Version of a Measurement Application

You can see which version of the measurement application you are currently using. This section describes the device from the state where it is recognized by a PC in a wired LAN environment and connected to utility software.

1 **The CPU firmware version on the screen of the utility software is the version of the measurement application.**
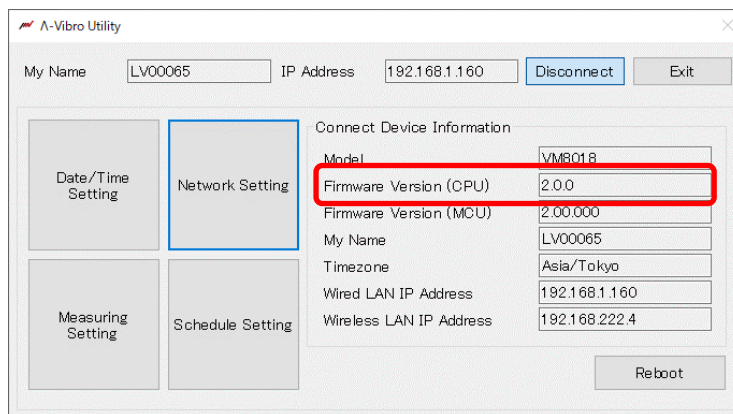
6.3 Setting the Time

Since this device always retains the current time by a high-precision built-in clock (RTC), the following settings are not required at the time of purchase. However, if it is necessary to set the time during long-term operation, set the high-precision built-in clock (RTC) of this unit. This section describes the device from the state where it is recognized by a PC in a wired LAN environment and connected to utility software.

1 Press the date and time setting button on the utility software.
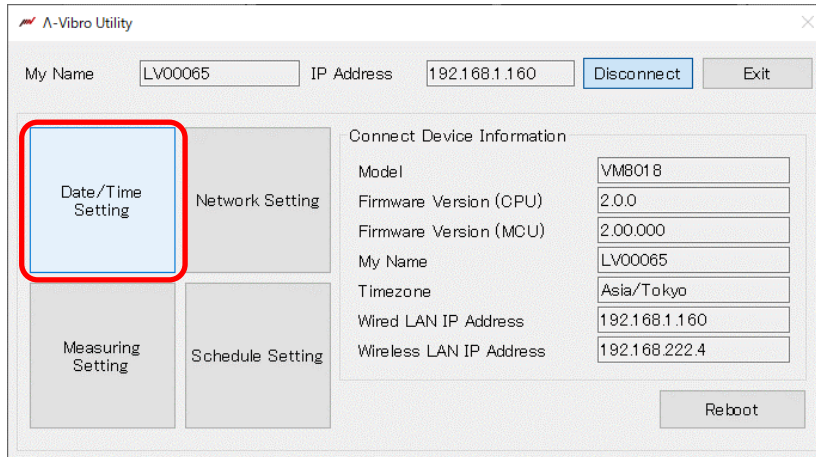
2 The date/time setting screen opens.
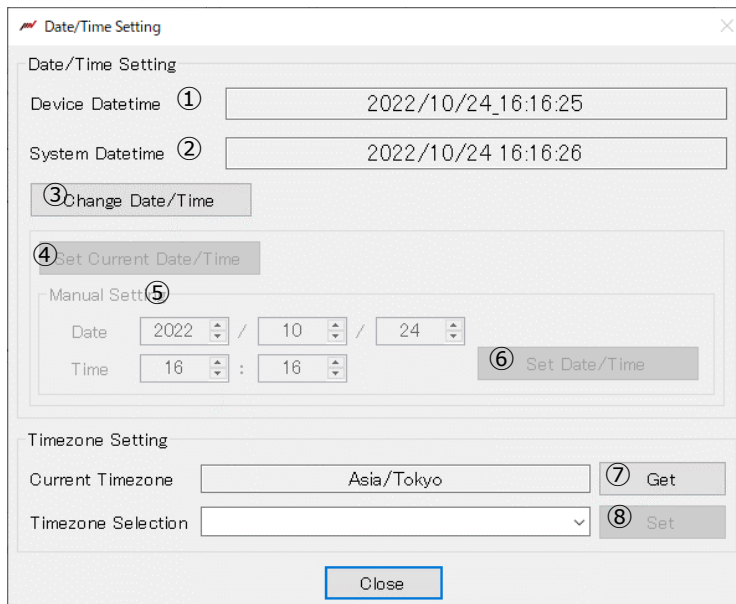
The following is an explanation of the date and time setting screen.

Number	Item/Button name	Function
①	Equipment Date Time	Display the current time of the device.
②	PC Date Time	View the current time on your PC
③	Date/time change button	Make the date and time changeable
④	Current date/time button	Synchronizing the date and time of this device to the PC date and time.

Number	Item/Button name	Function
⑤	Manual setting date and time input field	Enter the date and time for manual setup
⑥	Manual date/time setting button	Synchronizing the date and time of this device to the manually set date and time
⑦	Get button	Obtaining the time zone setting of this unit
⑧	Settings button	Setting the time zone of this unit

3 **Press the Change Date/Time button on the date/time setting screen.**

The date and time setting items can be entered.

4 Set the date and time on the date/time setting screen.

To match the date and time of this device to the date and time of the PC to which it is connected, press the current date/time setting button.

To set the date and time of this device manually, set the date and time, and then press the date/time setting button.
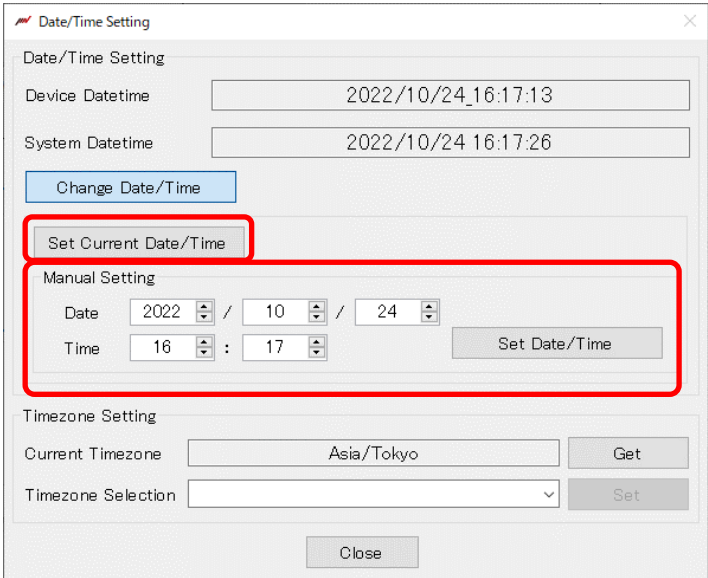
In the dialog box, "Date and time setting completed" will be displayed and the date and time setting will be completed.

5 Press the Get button on the date/time setting screen.

Gets the time zone setting of this unit.

85
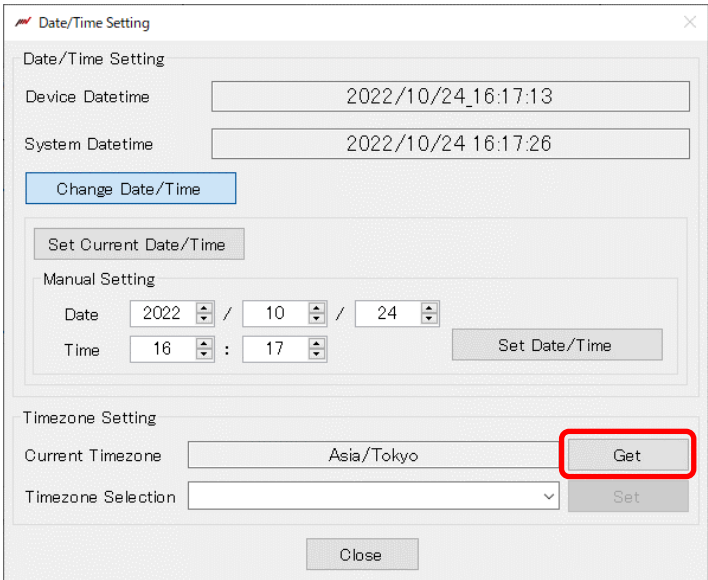
6 **On the date/time setting screen, press the right edge of the time zone selection input field.**
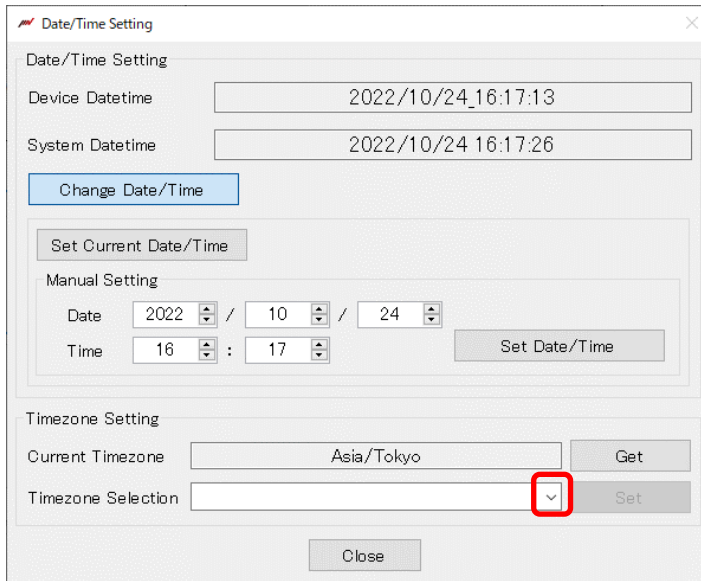
A pull-down list will appear in the time zone selection field.

7 **On the date/time setting screen, select any time zone from the pull-down list.**
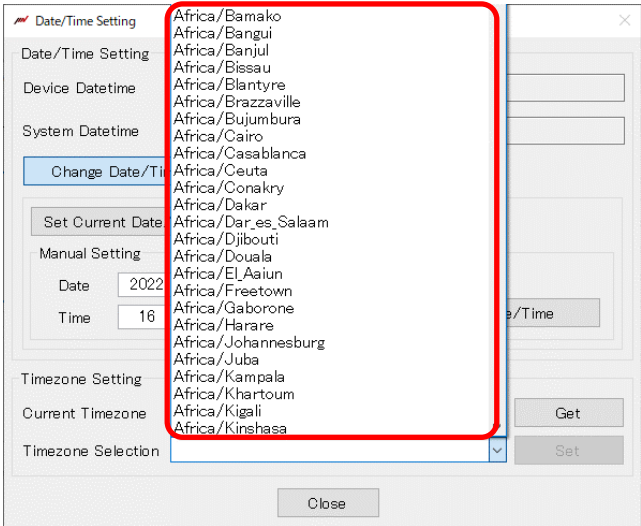
8 **Press the setting button on the date/time setting screen.**
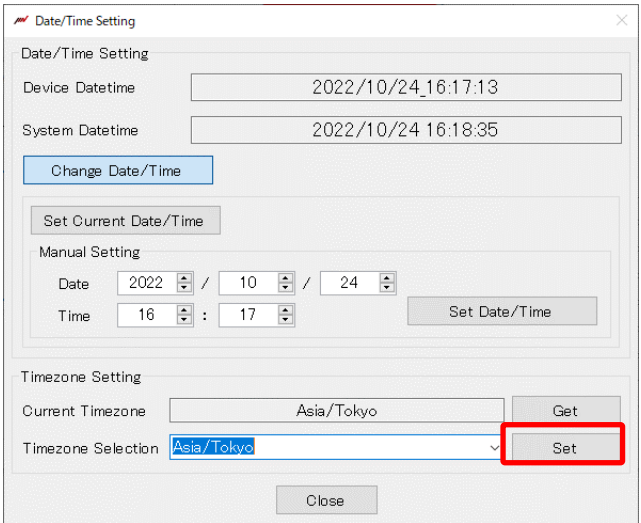
In the dialog box, "Time zone setting completed" will be displayed and the time zone setting will be completed.

9 **Press the close button on the date/time setting screen.**
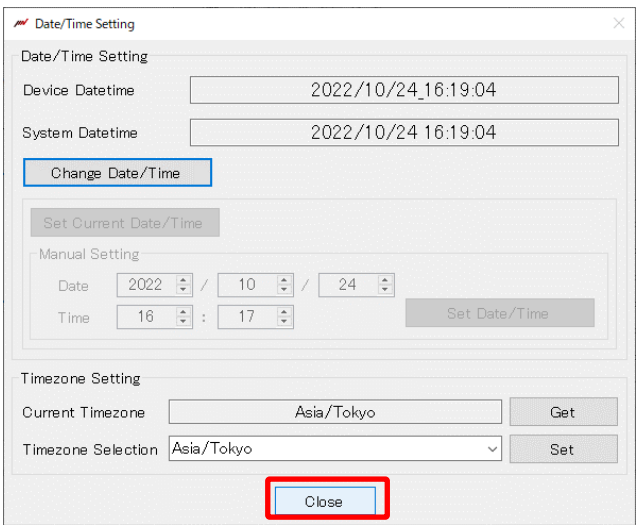
7   Troubleshooting

This section describes how to deal with problems that occur when using this equipment

_____

Q1.   When I set the measurement for a relatively long time, this device restarts during measurement.

A1.   There is a measurement time limit for setting the sampling rate. Do not enter a setting value that exceeds the configurable measurement time in the table below in the configuration file. Also, if the amount of data is large, it may take up to 5 minutes for the file to finish saving.

Measurement frequency	Configurable measurement time
51200Hz	0.1s～0.3s
25600Hz	0.1s～0.6s
12800Hz	0.1s～1.2s
10240Hz	0.1s～1.5s
6400Hz	0.1s～2.5s
5120Hz	0.1s～3.1s
3200Hz	0.1s～5.0s
2560Hz	0.1s～6.2s
2048Hz	0.2s～7.5s
1600Hz	0.2s～10s
1280Hz	0.2s～12.5s
1024Hz	0.3s～15.5s
800Hz	0.4s～20.0s
640Hz	0.4s～20.0s
512Hz	0.5s～20.0s
400Hz	0.8s～20.0s

Q2.　I measured with a vibration pickup (sensor), but only data such as noise is saved.

A2. Please confirm whether the vibration pickup you are using is insulated type or non-insulated type. If an isolated magnet is used for an isolated vibration pickup, the vibration pickup housing may float and introduce noise into the measured values. In the worst case, the vibration pickup may be damaged, so be very careful. A similar phenomenon can also occur if the main unit is not grounded. In an environment where high noise occurs, be sure to ground ground before starting measurement.

Q3. I don't know what to set in the FFT window function.

A3. If you do not know what kind of waveform will be observed, please set the Hanning window and observe the value change. The Hanning window can minimize the transients that occur at the start and end of each frame in which the OA value is calculated, so that the value is close to the expected measurement value.

Q4. The OA value changes depending on the number of lines to be set.

A4. This is because the FFT operation changes depending on the number of lines and the amount of data acquired.
For example, the number of data required to perform an 800Line FFT operation is
fPoint = 800 × 2.56 = 2048
The number of data sampled at 0.1 s at 12800 Hz is
sPoint = 12800 × 0.1 = 1280
Therefore, the number of data is insufficient to perform 800Line FFT calculation. In this case, the FFT operation is performed with the missing data as 0, so the OA value is reduced overall. In other words, under the conditions of fPoint < sPoint, the OA value can be stabilized by setting the maximum number of lines to be secured.

Q5. I want to check the bearing, but I don't know which measurement value to see.

A5. It is said that vibrations caused by scratches on bearings are most likely to occur in the frequency band of e-Band 3. This is useful for determining rpm up to 3600 rpm. Also, note that the frequency observed by the e-Band FFT is a waveform after enveloping processing, so the value of the vibration acceleration is different from the frequency observed by the FFT.

_____

Q6．The OA value is different from vibration measuring instruments other than this device.

A6．Since the OA value changes depending on various factors such as the number of revolutions and the method of fixing the equipment, it is necessary to observe the difference in the relative vibration level by trend graph for each measurement point. When making measurements, use the same instrument as much as possible, fix the vibration pickups in the same location and observe the relative variation.

_____

Q7．D I would like to measure the DC component, is it possible?

A7．This device can also measure voltage. If the set unit of measurement is the unit of acceleration, the value after cutting the DC component is always measured. If a DC component is required, the measurement unit can be set to [mV] and the sensing sensitivity unit is also set to [mV], so that measurements including the DC component are possible.

_____

Q8．I modified .ini LambdaSetting file, but the configuration value remains the same.

A8．.The configuration file is loaded at startup. Restart the system for the changes to take effect.

_____

Q9．The internal memory is full and I can't save it.

A9．After long-term operation, measurement files accumulate in this device and the internal memory becomes full. Since the measurement file will not be overwritten by the new file, back up the measurement file regularly and delete the file from this device when the backup is complete.

_____

Q10．Is it possible to separate IMVOA files?

A10．MVOA files are stored in units of scheduled measurements. If you want to split the file, please separate the reservations and measure them.

_____

Q11．Measurements are not performed at the set interval.

A11．Due to the sampling rate and measurement time, it may take up to 5 minutes for the file to be saved. While the file is being saved, the following measurements are not

performed: When performing continuous measurements, verify in advance whether the measurement of the desired setting is completed within the reservation interval.

Q12. The internal memory has been cleared. Is there a way to get back?

A12. We recommend backing up the entire internal memory in advance. If you do not have a backup of the files required for startup, please contact us or your dealer.

Q13.   An unexpectedly large value was measured.

A13. There is a possibility that it is actually vibrating, but please check the vibration pickup you are using once and the sensitivity and sensitivity unit set. In the configuration file of this device, enter the sensitivity as 100 times (without decimal point). If the sensitivity is 1/100, the measured acceleration is multiplied by 100.

Q14. This system is repeatedly restarting.

A14. There is a possibility of an abnormality in the configuration file or an error reading the internal memory. Please contact us or your dealer.

Q15. I would like to import IMVOA files with my own software, can you tell me the specifications?

A15. All measurement files are comma-separated data of text. It can also be read with a general text viewer or spreadsheet software. If you need more detailed specifications, please contact us.

Q16. The file of this device cannot be read.

A16. .In environments where the frequency of reading and writing is high, files may be corrupted due to the write limit of the internal memory. If the files of this device cannot be read, please contact us or your dealer.

_____

Q17. What can the e-Band be used for?

A17. Band is a type of analysis method that applies various filters to vibration waveforms generated by bearings, etc., and performs enveloping treatment. There are 1~4 e-Bands, and each e-Band is used as shown in the example diagnostic items in the table below.

Examples of e-Band diagnostic items

e-Band	Examples of diagnostic items
e-Band1	Imbalance, misalignment
e-Band2	Visual level scratch components
e-Band3	Scratch components that can be heard as sound
e-Band4	Lubricating oil components

_____

Q18. The e-Band results are not output.

A18. It is possible that the minimum sampling rate requirements for e-Band calculations are not met. Check the sampling rate required for each e-band in the table below and enter it in the configuration file.

Sampling rate required for e-Band

e-Band	Measurement frequency
e-Band1	400Hz or higher
e-Band2	2560Hz or higher
e-Band3	25600Hz or higher
e-Band4	51200Hz

_____

Q19. I can no longer measure normally, such as all saved values of measurement results becoming 0.

A19. Disconnect the power outlet from this device, connect the power outlet again after 10 seconds, turn the power on and then take measurements. If the measured values are still clearly abnormal, please contact us or your dealer.

_____

Q20. What is the size of the file stored in the internal memory?

A20. The size of each file set to 16-bit-text can be calculated by the following calculation (due to approximate estimates, there may be a slight difference from the actual size).

WAV file: Capacity [kByte] = Measurement frequency ×0.1758× Measurement time

FFT file: capacity [kByte] = number of lines×0.230625

OA value file: capacity [kByte] = measurement count ×0.198

If it is set to 8bit-text, it will be half the capacity calculated by the above calculation.

8 Specifications

This section describes the specifications of this equipment.

8.1 External view of λ-Vibro
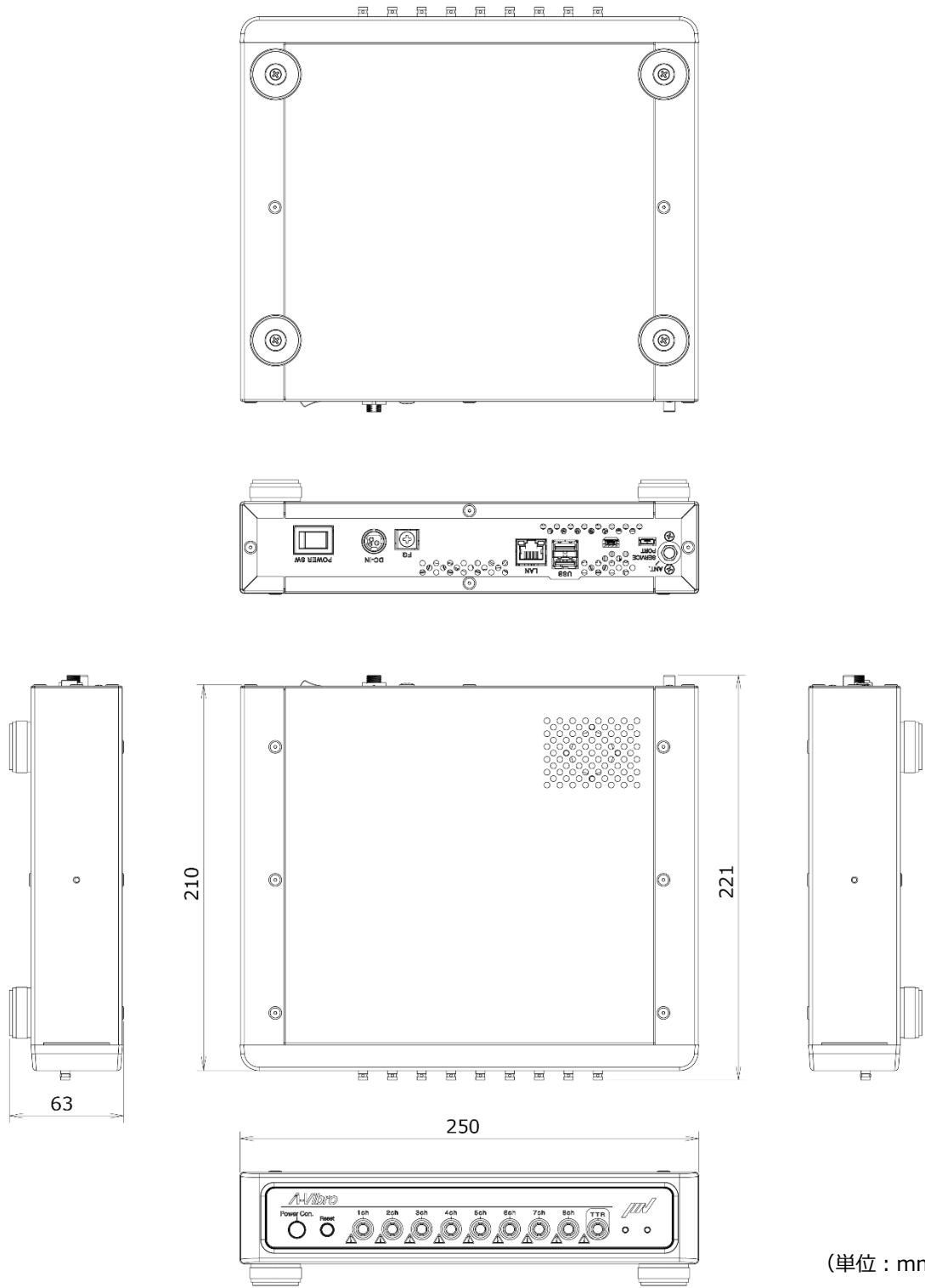
（単位：mm）

8.2 Basic specifications (32GB version hardware)

Item	Specification	Supplement
Analog channel	8Ch	Voltage ± 15V、 IEPE + 24V
Sampling resolution	16Bit	Serial type
Sampling frequency	400 Hz～51.2 kHz	Supports simultaneous sampling
Connected pickup	VP-A52IW、VP-100M、VP-8013、VP-8013S、CA-3021（charge amplifier）	
IEPE （ICP） output current	3.5mA	
Read TEDS	With function	Version upgrade will be supported
Trigger channel	1Ch（input）MAX. 24V	Trigger ON at 2.5V or higher
Channel terminal shape	HD-BNC（micro-BNC）	
Function port	USB2.0 typeB（host mode） Wired LAN (file sharing)	
Wireless connectivity	WLAN 802.11b/g/n（file sharing）	
Installed OS	Linux4.14.96（linaro-alip）	
LED display	red green, orange blue（2LED）	
Power supply	AC 100～240V（AC adapter）	
Power consumption	15W approximate	100V/50 Hz
Size/weight	250 mm x 210 mm x 63 mm / 2.5 kg	without protrusions
Temperature range	-10℃～+50℃	
Storage capacity	32GB	

8.3　Measurement specifications

Function	Specification
Measurement object	Acceleration : m/s^2,gal,G Velocity (calculated value) : mm/s Displacement (calculated value) : um Voltage : V、mV
Sampling Rate	51200sps、25600sps、12800sps、10240sps、6400sps、5120sps、3200sps、2560sps、2048sps、1600sps、1280sps、1024sps、800sps、640sps、512sps、400sps
Low pass filter Cutoff frequency (-3dB)	Sampling rate/2.56 [Hz] （Only 51200sps is 10[kHz].）
Voltage range	±2.56V、±5.12V、±10.24V、±20.48V （*Measurement range is ±15V.）
Measurement time	0.1s～20.0s
Trigger	Measurement start by external trigger and reserved trigger
Number of FFT lines	3200Line、1600Line、800Line、400Line、200Line、100Line

8.4　LED display specifications

Function	LED mode
Mail power ON	Right LED:Light red
System powerON	Left LED : Lights orange
System startup	Right LED : Blinking red → Blinking orange
Normal system startup	Right LED : Lights orange
Measurement data transfer	Left LED : Blinking orange → Blinking purple
Save file	Left LED : Light purple
Error detection	Left and right LED : Flashing alternately

9 Appendix

Helpful materials when using this equipment are summarized as an appendix.

9.1 Relationship between the channel connected to the IEPE type vibration pickup and the set value

When using an IEPE (ICP) type vibration pickup, it is necessary to have this device correctly recognize which sensor connection terminal (1ch ~ 8ch) of this device is connected. If the settings are incorrect, no current will be supplied to the vibration pickup and no measurement will be performed. Set this setting by entering a number in 004@IEPE= in the LambdaSetting .ini file.

Use the attached "Supplementary List of Setting Values CH Bit Setting Correspondence Table" to set the correct value. First, visually check which sensor connection terminal (1ch~8ch) of this device is connected to the IEPE (ICP) type vibration pickup. Next, in the attached "Supplementary List of Setting Values CH Bit Setting Correspondence Table", find the line marked with " ✓ in the same place as the connection position of this device. The value listed in the setting value field at the left end of the line is the value that should be set to [004@IEPE=] in the LambdaSetting.ini file.

Example 1) When the vibration pickup is connected only to 3ch, the setting value of [004@IEPE=] is [004].
Example 2) When vibration pickups are connected to four locations: 1ch, 2ch, 3ch, and 4ch, the setting value of [004@IEPE=] is [015].

Setting value	8Ch	7Ch	6Ch	5Ch	4Ch	3Ch	2Ch	1Ch	Binary notation
000									0
001								✔	1
002							✔		10
003							✔	✔	11
004						✔			100
005						✔		✔	101
006						✔	✔		110
007						✔	✔	✔	111
008					✔				1000
009					✔			✔	1001
010					✔		✔		1010
011					✔		✔	✔	1011
012					✔	✔			1100

Setting value	8Ch	7Ch	6Ch	5Ch	4Ch	3Ch	2Ch	1Ch	Binary notation
013					✔	✔		✔	1101
014					✔	✔	✔		1110
015					✔	✔	✔	✔	1111

9.2　Folder structure

```
¥¥192.168.1.160¥mmc ──┬─ ¥Setting                     ※2
                      └─ ¥SaveData ──┬─ ¥Manual
              ※1                     ├─ ¥20181211_120000_Rec01 ──┬─ ¥FFT
                                     │                           ├─ ¥OA
                                     │                           └─ ¥WAV
                                     │
                                     ├─ ¥20181212_120000_Rec01 ──┬─ ¥FFT
                                     │                           ├─ ¥OA
                                     │                           └─ ¥WAV
                                     │
                                     ├─ ¥20181215_213000_Rec01 ──┬─ ¥FFT
                                     │                  ※3       ├─ ¥OA
                                     │                           └─ ¥WAV
                                     │
                                     ├─ Various log files
                                     ┊
```
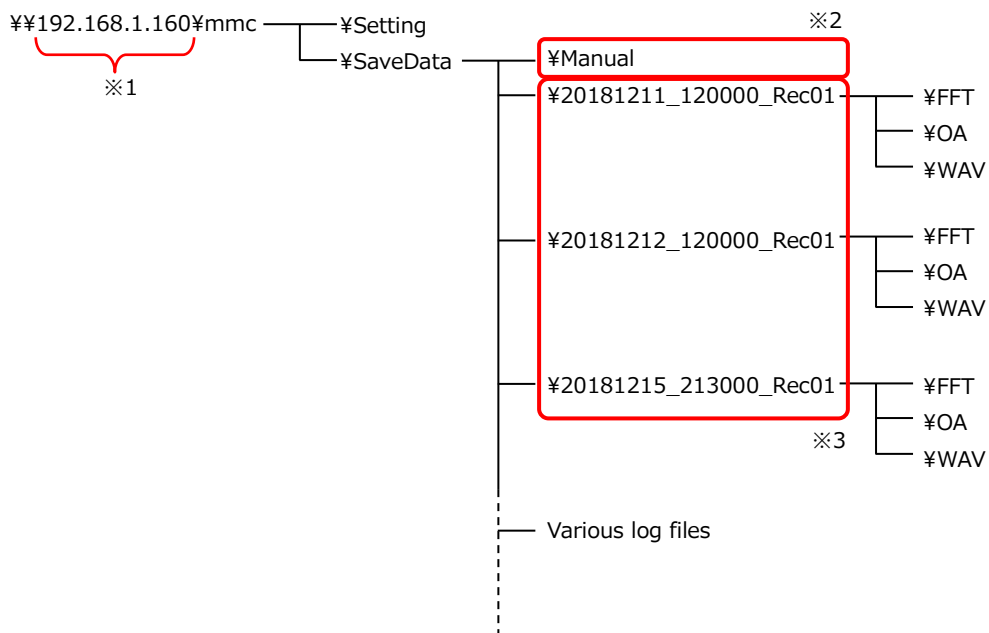
*1: This is the IP address of the wired LAN of this device. If you change it, please use the changed IP address.

*2: This folder is generated when this unit is inspected. It will be automatically created at the start of the next measurement, so please be careful not to delete it.

*3: A folder is automatically created when you make a reservation for measurement. (Folder name: ¥year, month, day_hour_reservation number)

Memo

This is a memo field for writing the setting contents. Please feel free to use it.

Revision History

Version	Revision Date	Revisions
V1.00	Apr 2019	First edition published
V1.01	18 Apr 2019	5.4.2 Speed HPF and Speed LPF setting range error correction
V2.00	3 Aug 2021 25 Oct 2022	All items revised due to OS changes First edition of the English manual