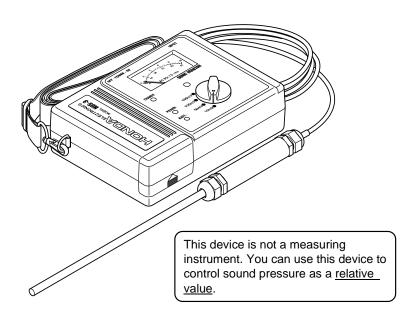
Instruction Manual

HUS-3

Sonic Monitor



- Please read this instruction manual carefully before using to ensure correct and safe use of this product.
- After reading this manual, please keep it in a safe place where you can read it at any time.



Foreword

Thank you very much for using the Sonic Monitor HUS-3.

To fully understand each function of this device and to use it more effectively, please read the instruction manual carefully before use.

- This manual has been compiled to ensure the correct and safe use of this device by all users.
- Before using this device, be sure to read this manual to fully understand its contents.
- When using this device, be sure to observe the safety warnings and cautions specified in this manual. Failure to do so may result in a serious accident or damage to other property.
- If you resell or transfer this product, please give this instruction manual to the new owner.
- The company assumes no responsibility under the Product Liability Law (PL Law) for any personal injury or property damage resulting from use not described in this manual or from an incorrect use of the product.

- No part of this manual may be reproduced in any form or by any means without permission.
- Please note that due to changes in specifications, etc., the contents of this document may differ in some cases.
- If you have any questions about the contents of this document, please contact us.

Contents

1. Safety Precautions (Please read carefully)	1
2. Features and applications	6
3. Specifications, components, and optional components	6
4. Dimensions ·····	8
5. Connection diagram ·····	8
6. Part names	9
7. How to use and precautions	9
8. Operations and measurement method	10
9. How to install the battery ·····	14
0. How to change the battery ·····	15
11. How to use the optional components·····	16
11-1. How to use the charging stand (optional)	16
11-2. How to use the point sensing cover (optional)	17
2. Precautions for use ·····	18
12-1. How to attach the belt ······	18
12-2. Storing the device in the case ·····	18
13. Troubleshooting ······	19

1. Safety Precautions (Please read carefully)

The "Safety Precautions" section describes the important precautions to follow to prevent harm to the user, harm to others using the product, or property damage.

Symbols and meanings				
⚠Danger	Failure to follow the instructions can lead to accidents resulting in death or serious injury.			
⚠Warning	Failure to follow the instructions may result in death or serious injury.			
△ Caution	Failure to follow the instructions may result in minor injury or damage to other physical property.			
Indicators				
\Diamond	This symbol means "Don't do".			
This symbol means "You must do".				
Do not disassem	ble Do not wet the Unplug the General product power supply instruction			

• Symbols used in this document.

In addition to the above warning symbols, the following symbols are used in this manual for other notes on operation and reference pages.



If you do not use the device correctly as described in this manual, the device itself may be damaged or may not be able to perform its intended function.

Safety precautions

⚠ Danger

Protect the device from moisture by not placing it in locations where it
will be exposed to water. Failure to do so may result in a malfunction
or, in some cases, a serious accident such as electric shock.

- Never use the device in the following environments. Failure to observe these warnings may result in malfunction or, in some cases, serious accidents such as electric shock.
 - * Locations subject to high temperatures such as direct sunlight
 - * Locations where dust, dirt, flammable or corrosive gases are generated.
 - * Places subject to heavy vibration or strong shocks
 - * Wet or humid locations

Safety precautions during operation

⚠ Danger

 Do not touch the plug or the control panel with wet hands. Doing so may result in electric shock.

. Caution

- Always perform an initial inspection before operation.
- Be careful not to cut your hands or other parts of your body when the quartz glass probe has broken.
- If any of the following occurs when the power is turned on, stop operation immediately, turn off the power, and contact us or your nearest dealer.
 - * Abnormal noise or heat
 - * When the power indicator lamp does not turn on.
- If the unit is splashed with water or a liquid, or if you feel a tingling sensation when you touch the device, turn off the power immediately.
 Contact us or your local distributor to report the situation and receive the necessary instructions.

Battery handling precautions

⚠ Danger

- Do not subject the battery to strong shocks, e.g., striking with a hammer, stepping on it, throwing it, or dropping it.
- Do not puncture the battery with a nail or any other means.
- Do not disassemble or modify the battery.
- Do not solder the battery directly.
- Do not use batteries that have been damaged or deformed.
- When connecting the battery to a charging stand or device, if it does not connect properly, do not force the connection, but check the (+) and (-) direction and the way the battery has been installed.

Warning

- When charging, stop charging if charging has not completed, even after the predefined charging time has been exceeded.
- Do not place the battery in a microwave oven, oven, dryer, or highpressure container. Do not place on top of an induction cooker.
- Do not mix primary batteries, such as dry cell batteries, or batteries of different capacities, types, or brands.
- Do not use the battery if it generates heat, emits a strange odor, is discolored or deformed, or is otherwise unusual.
- If the battery leaks or smells strange, keep it away from fire immediately.
- If liquid leaking from the battery comes in contact with skin or clothing, immediately wash the affected area thoroughly with clean water.
- If liquid leaking from the battery gets into your eyes, immediately wash them thoroughly with clean water without rubbing, and then seek immediate medical attention.

ACaution

- Do not use the battery except for the HUS-3.
- Do not charge the battery except for the HUS-3 itself and the dedicated charger (charging stand).
- Do not charge or leave the battery near a fire, stove, in the sun, in a hot car, or in any other place where the temperature will exceed 60°C.
- Do not connect the battery directly to a power outlet or a car cigarette lighter.
- For details on how to install and remove the battery from the device, please read this manual (P14) carefully.
- The battery is not fully charged at the time of purchase. Please charge it before use.
- Do not use or charge the battery in a place where static electricity is generated. Do not use the battery by touching it with or near anything that is charged with static electricity.
- If the battery terminals get dirty, wipe them with a dry cloth to clean before use.
- Charge the battery within the specified charging temperature range (0°C to 40°C).
- Replace the batteries with new ones when the usage time of the device becomes much shorter.
- Store the battery within the specified storage temperature range (-20°C to 40°C).
- If the battery will not be used for a long period, remove it from the device and store it in a cool, dry place.

- When disposing of batteries, insulate the (+) and (-) terminals with tape, etc., and dispose of them according to the method specified by the local government, or place them in the recycling bins available at participating rechargeable battery recycling stores.
- Do not throw the battery into a fire or heat it.
- Do not get the battery wet by dipping it in water or seawater, or throwing it into water.
- Do not put batteries in pockets or bags with metal necklaces, hairpins, coins, screws, etc., or store them together.
- Do not short circuit or connect the (+) and (-) of the battery with metal objects such as wires, necklaces, hairpins, etc.
- Do not use the battery with the (+) and (-) terminals reversed.

Precautions for long-term storage

- Lithium-ion batteries do not have any memory effect at all like nickelcadmium or nickel-metal hydride batteries, whose capacity decreases
 after repeated shallow charge/discharge cycles. However, if a battery is
 left in a charged state, it will deteriorate and its capacity will decrease
 when it is recharged. This deterioration is more severe when the battery
 is stored with a full charge, and the higher the storage temperature, the
 faster the deterioration.
- When storing lithium-ion batteries for a long period, it is recommended
 to store them in a cool and dark place as much as possible and not to
 charge them too much. However, if the battery is not charged and
 stored with the red indicator, it may become deeply discharged and
 cannot be recharged depending on the storage period.
- For long-term storage, the battery indicator on the main unit should be orange.

2. Features and applications

Features

- Rechargeable batteries can be used in a variety of places. (Can be used for about 10 hours)
- It can be checked by simply inserting the probe tip into a liquid. (Unit: mV)
- A wide range of frequencies from 10 kHz (low frequency) to 5 MHz (high frequency) is supported.

Applications

- For adjustment inspection and quality control of cleaning machine manufacturers, and for quality control of cleaning processes
- For experiments in laboratories, etc.

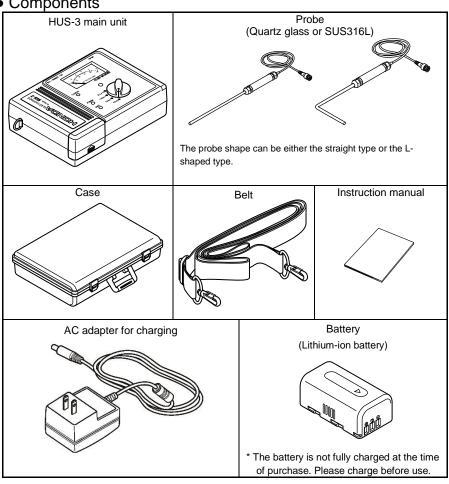
3. Specifications, components, and optional components

Specifications

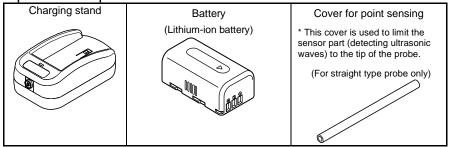
	Frequency characteristics	10kHz~5MHz	
HUS-3 Main unit	Signal Input	Specified probe	
	Measurement range	10mV / 50mV / 100mV / 500mV	
	Meter indicated value	Voltage of probe detected (mV) rms: relative value	
	Power	Dedicated lithium-ion battery: HBP-001	
	Consumption current	100mA or less	
	External dimensions (unit: mm)	179(W)×132(D)×55(H) (Not including protrusions)	
	Mass	0.64kg (When a lithium-ion battery is inserted)	
	Operating temperature range	5~40°C	
Probe	Material	Quartz glass (SUS316L also available)	
	Operating temperature range	0~70°C	
	Probe dimensions	Straight type: 340mm L-shape type: 260mm (L-shape part: 80mm)	
	Cable length	1.5m	
	Mass	Quartz glass: 80g SUS316L: 140 g	
	Cleaning solutions that cannot be used	Quartz glass: Heated strong alkali, Thermal phosphoric acid, Hydrofluoric acid SUS316L: Acid	
	Input	100V~240V AC 50 / 60Hz	
AC	Output	17.2V DC 0.87A	
adapter for	External dimensions (unit: mm)	42×60×42 (Main unit only, not including protrusions)	
charging	Mass	140g	
	Cable length	180cm	
Battery (Lithium- ion battery)	Nominal voltage	14.8V DC	
	Nominal capacity	1400mAh	
	External dimensions (unit: mm)	41×73×30	
	Mass	130g	
	* The lithium-ion battery is a consumable item and is not covered by the warranty.		

^{*} Please note that the specifications and appearance are subject to change without notice.

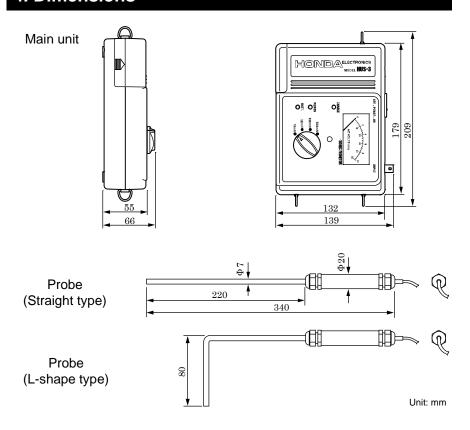
Components



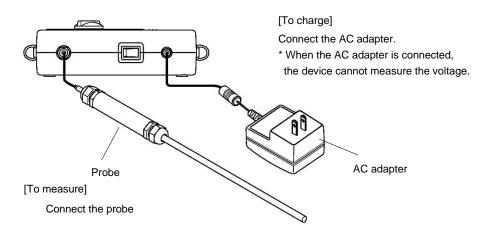
Optional components



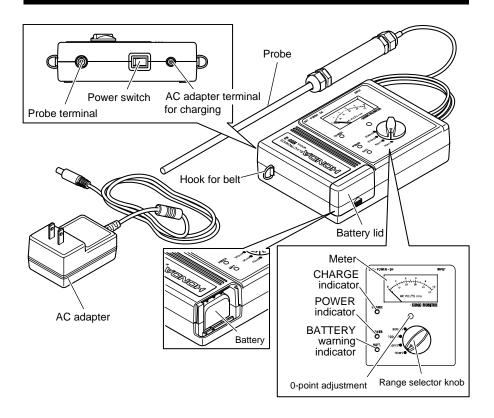
4. Dimensions



5. Connection diagram



6. Part names



7. How to use and precautions

■ Principle

Ultrasonic vibrations are transmitted to the probe. \Rightarrow The vibration energy of the probe is converted to an electrical signal. \Rightarrow This is amplified in the main unit. \Rightarrow It is displayed.

■ How to use

Connect the probe to the probe terminal on the main unit.

By placing the probe into the tank of the ultrasonic cleaner (or running water), the strength of the ultrasonic waves generated inside the tank is displayed in mV.

- 1. Location where the device is used (environment)
- Use the device in a stable place free from vibration.
- Use the device in a well-ventilated area with minimal temperature variation.
- Do not use the device in dusty or damp places, or in an atmosphere of flammable or corrosive gases such as organic solvents.

- 2. Handling the probe
- The probe is a precision instrument. Do not subject the probe to strong shocks. Doing so may cause a malfunction not only in its appearance but also inside the probe.
- Please handle the quartz glass probe with care to avoid injury from breakage.
- •The probe should be used in a place where it will not be affected by an object being cleaned or transport equipment.
- •Do not use the probe in a liquid or atmosphere that may damage the probe material (quartz glass, SUS316L, nylon, polyacetal, vinyl chloride).

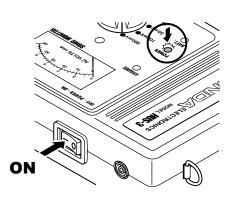


- •When the probe is used or moved, it may be damaged by impact.
- •Be careful not to cut your hands or other parts of your body when the quartz glass probe has broken.
- •When a new probe is replaced, it cannot be linked with the measurements of the previous probe.

8. Operation and measurement method

- 1. When the power switch is turned on, the POWER (Green LED) will turn on.
 - * The power cannot be turned on when the AC adapter is connected. Disconnect the AC adapter when using the device.





• The BATT. (Red LED) will turn on when the battery is depleted.

When the BATT. (Red LED) turns on, recharge the battery or replace it.

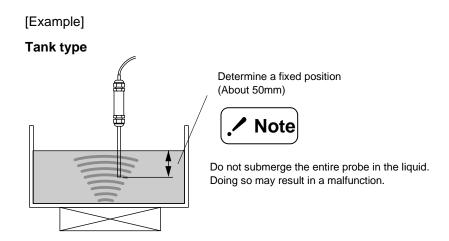


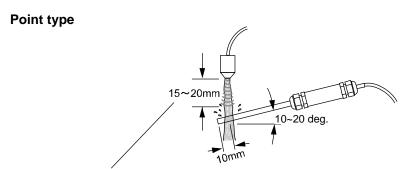


- **2.** Place the probe in the tank of the ultrasonic cleaner (or under running water).
- This device indicates the ultrasonic vibration generated in the cleaner as a voltage detected by the probe.

If the ultrasonic vibration is large, the voltage detected by the probe will be large; if the ultrasonic vibration is small, the voltage detected by the probe will be small.

* Be sure to perform measurements under constant conditions.





The distance from the nozzle should be the effective distance specified by the respective cleaning machine.

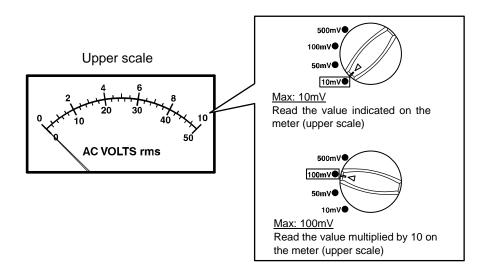


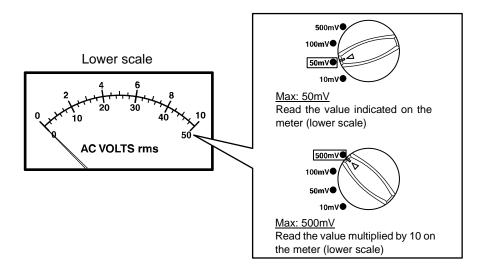
Please do not use the device with the probe installed, as it may cause a malfunction.

3. Measure from a large range (500 mV) to prevent the meter from swinging over.

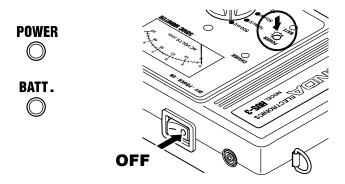
Switch the range so that the meter swings.

Select a range so as not to let the meter swing out of the limit.





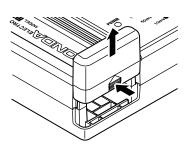
4. When the power switch is turned off, the POWER (Green LED) will turn off.



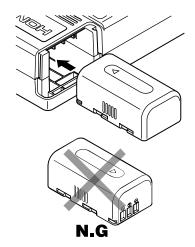
Be sure to turn off the power switch when the measurement is finished to prevent the battery from being depleted.

9. How to install the battery

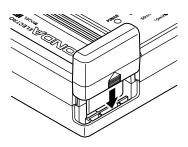
- **1.** Remove the lid by sliding it upward while holding .
- Be careful not to damage the lid.



- **2.** Insert the battery with the electrode side facing inside the hole.
- Be careful not to insert the battery in the wrong direction.
- Be careful not to bend the electrodes.
- The battery is not fully charged at the time of purchase. Please charge it before use.

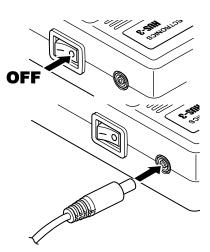


- **3.** While pressing the battery to the back, align the lid with the groove and secure it until you hear a click.
- Be careful not to damage the pawl and the part that secures the lid when closing it.
- The lid serves to hold the battery in place.

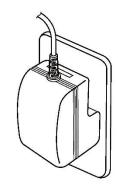


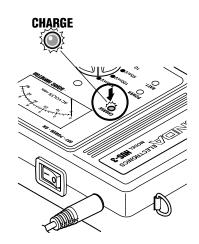
10. How to charge the battery

- **1.** Turn off the power switch.
- Charging the battery while the power switch is on may cause a malfunction
- **2.** Connect the terminal of the supplied AC adapter to the charging terminal.
- You cannot measure the voltage when the AC adapter is connected.
- Be sure to charge the battery with the supplied AC adapter. If you connect another AC adapter, it may cause a malfunction.



- **3.** Plug the AC adapter into an electrical outlet.
- 4. The CHARGE indicator LED will turn on. (Charging: Orange / Charged: Green) It charges the battery for 3~4 hours. The LED will change from orange to green when the battery is 80% charged. If you continue to charge the battery for another 2~3 hours, it will be 100% charged. When charging is complete, the CHARGE LED will remain on.
- ① Overcharging the battery will cause it to drain faster.
- When charging, stop charging if charging is not completed even after the specified charging time has been exceeded.
- When charging a battery that has a low voltage, the LED on the CHARGE indicator may not turn on. If the LED does not turn on after 30 minutes of charging, stop charging.
- The battery can be used for about 10 hours after it is fully charged.





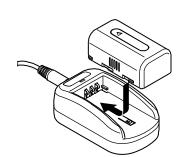
11. How to use the optional components

11-1. How to use the charging stand (optional)

1. Plug the AC adapter's terminal into the jack on the front of the charging stand.

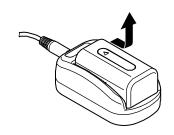


- 2. Insert the battery into the charging stand.
- Be careful not to damage or bend the hooks and electrodes of the charging stand.
- If the battery terminals are dirty, wipe them with a dry cloth and clean the terminals before inserting them.



- **3.** The LED on the front of the charging stand will turns on red.
- **4.** The LED will turn from orange to green when the battery is 80% charged. If you continue charging for another 2-3 hours, the battery will be 100% charged. The LED on the adapter will stay on even after charging is complete.
- When charging, stop charging if charging is not completed even after the specified charging time has been exceeded.
- When charging a battery with a low voltage, the LED may not turn on. If the LED does not turn on after 30 minutes of charging, stop charging.
- **5.** Remove the battery from the charging stand.

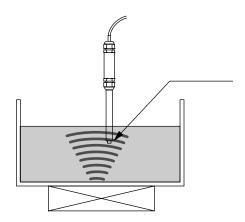




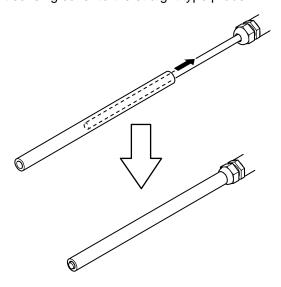
11-2. How to use the point sensing cover (optional)

This cover is used to limit the location for confirmation. (For straight type only)

You can limit the measurement point to the area indicated by the arrow.



Install the point sensing cover to the straight type probe.



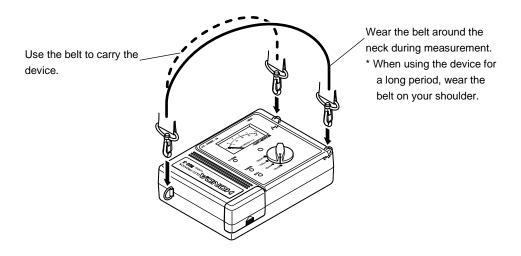
Please take special care not to rotate the mounting rod, as this may cause the wire to break inside the device.

* Please ask us to install the point sensing cover to the straight type probe.

12. Precautions for use

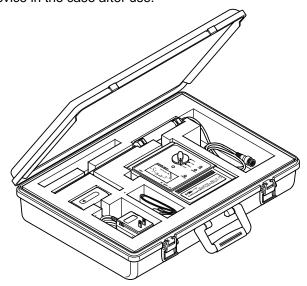
12-1. How to attach the belt

The belt should be attached as shown in the figure.



12-2. Storing the device in the case

Store the device in the case after use.



13. Troubleshooting

• If you suspect that the device is not functioning properly, please check the following points before calling for repair.

Symptom	Items to be checked	Countermeasure
The device does not work when the power switch is turned on.	Is the AC adapter still plugged in?	Disconnect the AC adapter. If the AC adapter is connected, the device will not operate even if the power switch is turned on.
	Is the battery installed?	If no battery is installed, install it.
	POWER (green LED) does not turn on.	Charge the battery.
	BATT. (red LED) does not turn on.	Replace the battery.
The meter swings out.	Is the measurement range correct?	Raise the range switch knob one step.
The meter does not swing.	Is the measurement range correct?	Lower the range selection knob one step.
	Is the probe set to the correct measurement position?	Move the probe position.

If the device does not operate normally even after the above inspections, stop using it immediately and contact us or your dealer.

Please note that we will not be responsible for any repair work done by your company that does not follow our instructions.

◆ After sales service

When the after service such as the repair is required, please contact the seller of product with the detailed information about the malfunction.

Do not copy

HUS-3



Industrial Equipment Division

20 Oyamazuka, Oiwa-cho, Toyohashi, Aichi 441-3193, Japan

TEL: +81-532-41-2774 FAX: +81-532-41-2923

Web site: https://www.honda-el.co.jp/en/

• This instruction manual is current as of October 2023.

• For product improvement, specifications are subject to change without notice.

2023.10