



Wireless Communication System for Measurement Data

U-WAVE-TC/TM

Prior to using this product, first read the U-WAVE Setup Manual included with the Mitutoyo U-WAVE-R (option) to install the software and specify the communication settings.

This product connects with the connection unit (option) to a measuring tool with Digimatic output (including Digimatic 2 compliant models) and sends measurement data wirelessly to a U-WAVE-R device. There are two models: "IP67 type" and "buzzer type". To obtain the highest performance and the longest service life from this product, carefully read this manual thoroughly prior to use. After reading this manual, keep it close at hand for future reference.

Tips To refer to the instructions for use in Chinese, please see our website (https://manual.mitutoyo.co.jp/manuals/search).

Safety Precautions

To ensure operator safety, use this instrument in accordance with the directions and specifications given in this User's Manual. Not following the instructions may compromise safety.

WARNING - Always keep batteries out of reach of children, and if swallowed, consult a physician immediately. - Batteries should never be short-circuited, disassembled, or deformed, come into contact with extreme heat or flames, be subjected to excessive force, nor left in environments with excessively high temperatures or excessively low pressure. - If battery alkaline liquid comes in contact with the eyes, flush eyes immediately with clean water and consult a physician. If battery alkaline liquid comes in contact with the skin, flush the exposed area thoroughly with clean water.

CAUTION Never attempt to charge the primary battery or reverse the positive-negative terminals when mounting. Improper battery handling or mounting may cause the battery to explode, cause battery leakage and/or serious bodily injury or malfunctioning.

NOTICE - Do not use this product near medical equipment that may malfunction due to radio waves. - This product uses radio waves. Even within the communication range of the radio waves, communication may be interrupted due to factors such as external noise. In this case, take sufficient preventative measures (security measures). - Take sufficient preventative measures (security measures) to guard against the possibility of this product malfunctioning.

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Precautions regarding Export Regulations

This product is categorized as a good or program that falls into the Catch-All-Controlled Goods regulations under Category 16 of Appended Table 1 of the Export Trade Control Order or under Category 16 of the Appended Table of Foreign Exchange Control Order, based on the Foreign Exchange and Foreign Trade Act of Japan. This User's Manual also falls into technology categorized under the Catch-All-Controlled Goods regulations. Consult with Mitutoyo prior to exporting this product, transferring this product overseas, providing this technology to a non-resident, etc. An export license or written application and certificate for permission for service transactions may be required from the Ministry of Economy, Trade and Industry.

Precautions regarding Radio Law

This product can be used only in the countries where the wireless certification is acquired and in a purchased country. When using this product outside the purchased country, please contact the nearest Mitutoyo's sales office.

NOTICE - This product uses radio waves. Use this product in accordance with the relevant regulations stipulated in the country of use. - Do not disassemble or modify this product. These actions are prohibited by law. - Do not peel off the certification label affixed to this product. Use of this product without a certification label is prohibited. - Always remove the battery from this product when boarding an aircraft, and never use this product while on board. The use of wireless devices inside of aircrafts is prohibited by law.

Precautions regarding Wireless Communication Environments

Be aware that obstructions, etc., in the environment may degrade the performance of this product. Refer to the tables below for a list of potential obstructions.

1) Possibility that this product will not be able to communicate

Table with 2 columns: Item, Description. Lists obstructions like Concrete walls, Metallic partitions, Wireless LAN, Zigbee, Bluetooth, etc.

2) Possibility that this product will affect nearby equipment

Table with 2 columns: Item, Description. Lists devices like Medical devices.

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Precautions regarding Dust and Water Proofing

Observe the points below to obtain the highest performance from the IP67-type U-WAVE-TC/TM.

NOTICE - Dust and water proofing is guaranteed when the connection unit and battery cover are mounted correctly. When this product is not in use, mount all the covers to prevent water and oil from getting inside and store this product. - Fully tighten the battery cover using the battery cover key when inserting the battery to obtain sufficient protective performance (IP67) against water and dust. In addition, make sure the packing is attached correctly. - Mounting the connection unit with the packing removed or caught on something, may result in damage because the water proofing of this product cannot be ensured. - Be very careful when using this product not to let particles, debris, etc., damage the packing. In the event the packing has been damaged, send this product for replacement or repair immediately because the dust and water proofing will have been lost. - Materials such as the rubber used in the packing are not impervious to the wide range of coolants, chemicals, etc. Contact the nearest Mitutoyo service center if these materials become significantly deteriorated. - This product is constructed in a way such that it cannot be disassembled, due to the application of sealing in each area. Therefore, the specified performance cannot be obtained if this product is disassembled. - Do not use this product submerged in water. This product cannot prevent the penetration of coolant and other chemicals.

Tips Refer to IEC 60529 for more information about the IP67 protection level.

EU Disposal of waste batteries and accumulators (applicable in the European Union and other European countries with separate collection systems) Batteries and accumulators containing heavy metals such as mercury, lead, and cadmium may contaminate the environment if improperly discarded. When incinerated, certain chemicals are released into the air or concentrated in the ash residue from the combustion process.

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Other Precautions

Be aware that the actions or circumstances below can cause failure or malfunction.

NOTICE - Do not subject this product to sudden impacts, such as dropping it, nor apply excessive force. - If this product will not be used for three or more months, remove the battery from it and store it. This product may become damaged by liquid leaking from the battery. - Avoid using or storing this product in places with direct sunlight or in excessively hot or cold places. - Avoid using or storing this product in places where it may come into contact with solutions or organic solvents such as acid and alkali. - Electronic parts may be damaged if a high-voltage device such as an engraving pen is used. - Be careful not to apply undue force to or excessively bend the connection unit. - When the remaining power in the battery becomes low, replace it as soon as possible before operation becomes unreliable.

Electromagnetic Compatibility (EMC Directive and EMC Regulation)

This product complies with the EU EMC Directive and the UK's Electromagnetic Compatibility Regulations. Use of this product in environments with electromagnetic interference exceeding the requirements defined in the EMC Directive and EMC Regulation is outside the scope of the warranty and requires appropriate countermeasures.

Disposal of Old Electrical & Electronic Equipment (Applicable in the European Union and Other European Countries with Separate Collection Systems)

This symbol included on the product or the packaging indicates that this product should not be disposed of with general household waste for disposal in EU countries. Please reuse and recycle products to decrease the volume of Waste Electrical and Electronic Equipment (WEEE) in landfills and reduce the environmental impact.

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Table with 4 columns: Item, Description. Lists included accessories like screwdriver, battery, battery cover key, and manual.

2. Name and Function of Each Part

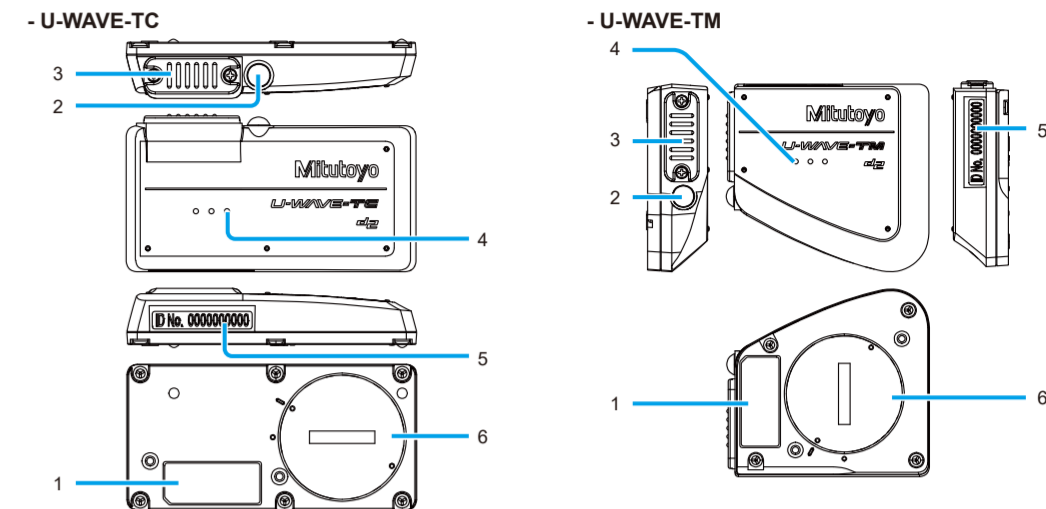


Table with 3 columns: No., Name, Function. Lists parts like Certification label, LED indicator, Connector cover, Buzzer holes, Device ID label, and Battery cover.

*1 Buzzer type only

Tips The LED indicator blinks red if the battery is out of power, and a warning message is sent to the U-WAVE-R device. Replace the battery immediately. (The buzzer type provides a warning both with a blinking LED and a buzz.)

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3. Using This Product

3.1. Operation When Sending Measurement Data This product has two measuring modes: button-driven mode and event-driven mode.

Tips For more information about the measuring modes, refer to [1] "1.7.4 Measuring Modes" in "U-WAVEPAK User's Manual".

• Types of communication operations Use the [DATA] switch on the connection unit to perform the communication operations below. The [DATA] switch is disabled when operating in event-driven mode.

Table with 3 columns: Description of communication, Length of time to press the [DATA] switch*, LED indicator. Lists modes like Transmission of measurement data, Notification to the U-WAVE-R device, etc.

*1 If you pressing this switch for 10 seconds or more, the LED indicator turns off and communication operations are disabled. Perform the operation again.

*2 This operation can also be performed using the [DATA] switch on a measuring tool that supports data output.

*3 If the device ID of this product is registered in the U-WAVE-R device to search for, the devices connect automatically.

• Verification of communication results The communication results with the U-WAVE-R device can be verified by the operational status of the LED indicator or buzzer on this product.

Table with 3 columns: Communication results, LED indicator, Buzzer*. Lists results like Wireless communication ended normally, Wireless communication failed, etc.

*1 Buzzer type only. *2 If in event-driven mode, this does not blink in green.

3.2. Initializing the Settings

You can reset the settings of this product to the factory default values. If this product stops communicating and communication is not re-established even after performing the countermeasures in [4] "5. Troubleshooting", initialize the settings with the procedure below.

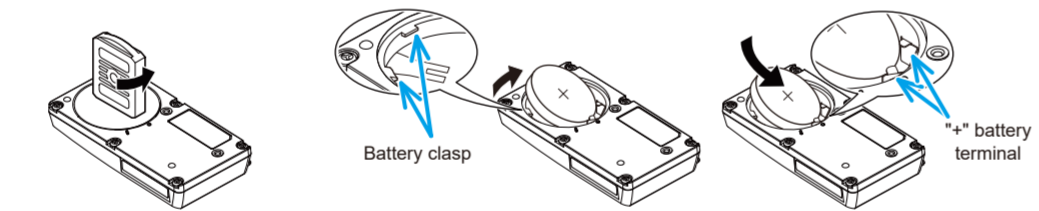
- 1 Remove the battery from this product. For more information about removing the battery, refer to [4] "4. Replacing the Battery". 2 While pressing and holding the [DATA] switch on the connection unit, insert the battery, wait 2 seconds or more, and then release the [DATA] switch. >> The settings of this product are initialized. 3 Mount the battery cover.

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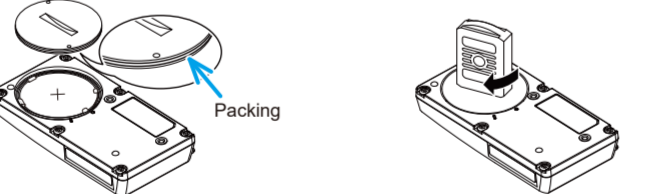
4. Replacing the Battery

The same procedure is used to replace the battery in U-WAVE-TC and U-WAVE-TM devices. The instructions in this section use a U-WAVE-TC device as an example.

- 1 Remove the battery cover on the back of the main body using the supplied battery cover key. 2 Remove the battery. 3 Insert the new battery into the "+" battery terminal, and then press the opposite side of the battery into the battery clasp.



- 4 Make sure that the packing (circular) is attached. 5 Mount the battery cover and tighten it using the supplied battery cover key.



CAUTION - Always use a CR2032 battery (lithium battery) for this product. There is a risk of explosion if a different type of battery is used. - When disposing of the battery, follow any applicable ordinances and regulations.

NOTICE - Do not remove the packing attached to the battery cover. - Be careful not to apply undue force and break or bend the battery terminals when replacing the battery. A fragment of a broken battery terminal in particular can cause damage if the fragment gets inside of this product.

Tips The battery provided is for confirming the functions and performance of the product. Note that this battery may not last for the entire expected life.

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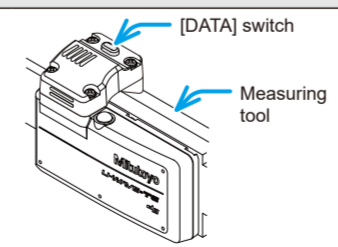
5. Troubleshooting

Try the countermeasures included in this section when trouble occurs during use of this product. Contact a Mitutoyo service center listed in the [1] "U-WAVEPAK User's Manual" if the trouble cannot be resolved.

Tips For more information about the issues and countermeasures of trouble related to the U-WAVE-R device, refer to [4] "4. Troubleshooting" in the "U-WAVE-R User's Manual".

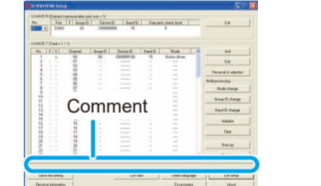
Troubleshooting table with columns: Issue, Check point, Countermeasure. Lists issues like Data transmission fails, LCD display problems, battery power, etc.

Troubleshooting table for communication issues. Includes steps for establishing communication, searching for the U-WAVE-R device, and tips for LED indicator.



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3. Check the [S] column and the comment of the [U-WAVEPAK Setup] screen. If [c] is displayed in the [S] column, communication has been established. If an ID number is displayed in the comment, proceed to Step 3.



[3] Register the settings again after initializing the settings of this product.

- 1. Initialize the settings of this product. [3] "3.2. Initializing the Settings" 2. Register the settings of this product. [3] "4.3. Registering the Settings" in the "U-WAVE Setup Manual"

Table with 2 columns: Issue, Countermeasure. Lists issue: Data transmission is not stable and errors occur frequently. Countermeasure: Check whether there is a problem with the usage environment.

6. Specifications

Table with 3 columns: Item, U-WAVE-TC, U-WAVE-TM. Lists specifications like Code No., Certification number, Protection level, Transmission output, Communication range, Standards conformance, etc.

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Table with 3 columns: Item, U-WAVE-TC, U-WAVE-TM. Lists specifications like Communication with measuring tool, Battery, Battery life, etc.

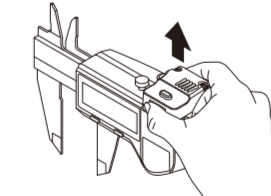
*1 The current consumption significantly increases when operating in event-driven mode.

6.2. Connection Unit (Option)

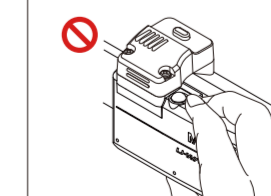
For more information about the specifications of the connection units and compatible measuring instruments, refer to Mitutoyo General Catalog and the separate U-WAVE catalog (Catalog No. 12000), etc.

- To remove the connection unit (water-proof type) Remove the screws using the supplied size 0 screwdriver, and then remove the connection unit.

- To remove the connection unit (standard type) Pinch both sides of the connection unit with your fingers, and then firmly pull straight up to remove it.



NOTICE - Do not hold the part indicated in the figure. Doing so may damage the connection unit or the measuring tool.



- When removing, be careful not to injure yourself on the ends of the caliper jaws.

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