

Wireless Communication System for Measurement Data

U-WAVE-TCB/U-WAVE-TMB

Configure the communication settings before using this product. To use the dedicated communication app option (free) in dedicated communication mode, you must also install the software.

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 via Bluetooth to a receiving device (PC, smartphone, or tablet). 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

- This product does not guarantee the connection to all the Bluetooth devices.
- Bluetooth® is a trademark or a registered trademark of Bluetooth SIG, Inc. in the United States and/or other countries.
- 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.

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 (safety measures).

Take sufficient preventative measures (safety measures) to guard against the possibility of this product malfunctioning.

WARNING Shows risks that could result in death or serious injury.

- Always keep batteries out of reach of small 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 Shows risks that could result in minor or moderate injury.

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.

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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 for Radio Waves

This product can be used only in the countries where the wireless certification is acquired and in the country of purchase. When using this product outside the country of purchase, please contact a Mitutoyo sales representative.

! 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

Item	Description
Concrete walls	Communication is not possible in a completely shielded state.
Metallic partitions, etc.	The communication speed may deteriorate or communication may be blocked.
Wireless LAN, Zigbee, Bluetooth, and other communication devices as well as microwave ovens	The communication speed may deteriorate or communication may be blocked. Use this product by installing it as far away from these devices as possible.
Machine tools, etc.	The communication speed may deteriorate or communication may be blocked in a workplace where machine tools, such as electrical discharge machines, carrying cranes, and arc welding equipment, are operated.
If this product is held and covered by the hands	The communication speed may deteriorate or the communication distance may be decreased. Use this product as close as possible to the installation location of the receiving device.

2) Possibility that this product will affect nearby equipment

Item	Description
Medical devices	Do not use this product near medical equipment that may malfunction due to radio waves, such as laser scalpels and scales.

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Precautions regarding Dust and Water Proofing

- Observe the points below to obtain the highest performance from the IP67-type product.
- This product is guaranteed to be dust and water proofing 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 a Mitutoyo sales representative 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.



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. These may lead to health risks to humans and animals, and also damage the environment in general.

In compliance with legal requirements, the symbol of a 'crossed-out wheeled bin' is either applied on the battery or on its packaging. This symbol indicates that disposal of the batteries as household wastes is strictly prohibited. Instead, the batteries must be disposed according to separate collection and recycling rules. Additional marking identifies that heavy metal content (i.e. Cd = cadmium, Hg = mercury, Pb = lead) contained within the battery is over prescribed levels. End users are obliged by law to comply with the discarding procedure for waste batteries. At Mitutoyo facilities, or at its appointed distributors, receptacles will be provided to accept the disposal of previously supplied batteries at no charge.

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Other Precautions

- Be aware that the actions or circumstances below can cause failure or malfunction.
- 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 such as acid and alkali, or organic solvents.
- 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 on the product or on its packaging is based on WEEE Directive (Directive on Waste Electrical and Electronic Equipment), which is a regulation in EU member countries, and this symbol indicates that this product shall not be treated as household waste.

To reduce the environmental impact and minimize the volume of landfills, please cooperate in reuse and recycle.

For details about how to dispose of this product, please consult the agent where you purchased the product or a Mitutoyo sales representative.

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3. Using This Product

3.1. Operation Mode

This product has two operation modes: keyboard input mode and a dedicated communication mode that uses a dedicated communication app option (free). For details of the pairing procedures of the receiving device, refer to the instructions for the receiving device. If you do not use this product for an extended period of time, cut the connection between the receiving device and Bluetooth to prevent the battery from being depleted.

Keyboard input mode

Follow the procedure below to set up keyboard input mode and send measurement data. The keyboard layout of a computer may vary by language, and the measured value may not be input correctly. If it is not input correctly, use the dedicated communication mode.

- Press the [DATA] switch on the connection unit for less than two seconds while this product is not paired yet. >> The LED will blink orange, and the blink will turn green when pairing is completed successfully.
- Start the application (Excel, for example) where measurement data will be input.
- Set the input method of the receiving device to single-byte alphanumeric.
- Select the cell or move the input cursor to the location where you want to input the measurement data.
- Press the [DATA] switch on the connection unit (less than 2 seconds). >> The measurement data is sent.

Dedicated communication mode

If you are using the USB-ITPAK or MeasuLink options with this product, use dedicated communication mode. To use dedicated communication mode, you must install the dedicated communication app on the receiving device. You can download the dedicated communication app from the following locations. This app is offered free of charge, but any data transfer fees incurred by downloading are the responsibility of the user.

- Windows 10: Mitutoyo's web site (<https://www.mitutoyo.co.jp>)
- Android: Google Play
- iOS: App Store

3.2. Measuring Modes

This product has two measuring modes: button-driven mode and event-driven mode. Button-driven mode can be used with keyboard input mode, and both button-driven mode and event-driven mode*1 can be used with dedicated communication mode.

*1 It can be used only with the Windows 10 app.

Tips

- Measurement data is read into the software program that is currently active.
- In button-driven mode, you can use the [DATA] switch on a measuring tool that supports data output to input the measured value.
- If multiple measuring tools are connected, measurement data is input one tool at a time.

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Button-driven mode (available in keyboard input and dedicated communication modes)

In button-driven mode, use the [DATA] switch on the connection unit to perform the communication operations below.

Description of communication	Length of time to press the [DATA] switch*1	LED indicator
Transmission of measurement data	Less than 2 seconds	Off
Notification to the receiving device of a cancel request for the previously transmitted measurement data	2 seconds or more and less than 5 seconds	Blinks orange in intervals of 0.1 seconds

*1 If you press the [DATA] switch for 5 seconds or more, the LED indicator turns off and communication operations are disabled. Perform the operation again.

The results of communication with the receiving device can be verified by the operational status of the LED indicator or buzzer on this product.

Communication results	LED indicator	Buzzer*1
- Wireless communication ended normally.	Blinks green	2 short buzzes
- Wireless communication failed.	Blinks red	1 long buzz
- An error occurred.		

*1 Buzzer type only

Event-driven mode (available only in dedicated communication mode)

In event-driven mode, measurement data is automatically sent when the measured value on the measuring tool changes. Therefore, the [DATA] switch on the connection unit is disabled, which in turn disables the cancellation request operation.

The results of communication with the receiving device can be verified by the operational status of the LED indicator or buzzer on this product.

Communication results	LED indicator	Buzzer*1
- Wireless communication ended normally.	No blinking	No sound
- Wireless communication failed.	Blinks red	1 long buzz
- An error occurred.		

*1 Buzzer type only

Changing the Measurement Mode (Available only in Dedicated Communication Mode)

In dedicated communication mode, you can change the measurement mode setting (button-driven mode or event-driven mode).

Follow the procedure below to set the measurement mode.

Switching from button-driven mode to event-driven mode

- Using the dedicated communication app, connect to this product.
- From the dedicated communication app, switch the measurement mode setting.
- Press the [DATA] switch on the connection unit of this product. >> The mode switches from button-driven mode to event-driven mode.

Switching from event-driven mode to button-driven mode

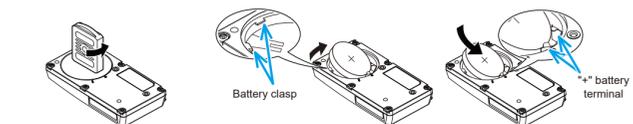
- Using the dedicated communication app, connect to this product.
- From the dedicated communication app, switch the measurement mode setting.
- Change the measured value on the measuring tool. >> The mode switches from event-driven mode to button-driven mode.

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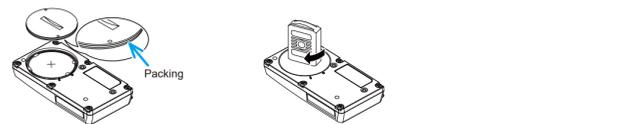
4. Replacing the Battery

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

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



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



CAUTION Shows risks that could result in minor or moderate injury.

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 Shows risks that could result in property damage.

- 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.

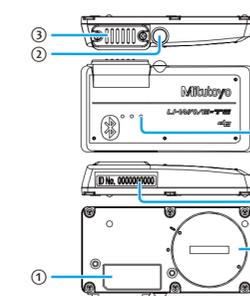
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1. Included Accessories

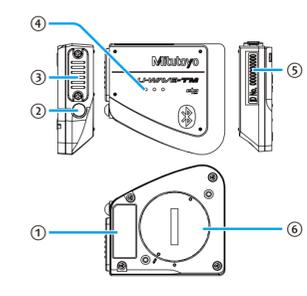
Size 0 screwdriver No. 05CZA619	Lithium battery (for function verification) CR2032	Battery cover key No. 06AEY282	Manual and accessory documentation - U-WAVE-TCB/U-WAVE-TMB User's Manual (this document) (No. 99MAL126B) - Certification and Regulation (No. 99MAL124W) - Warranty card
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2. Name and Function of Each Part

- U-WAVE-TCB



- U-WAVE-TMB



No.	Name	Function
①	Certification label	Includes the code number and wireless certification number for this product.
②	LED indicator	LED for indicating the communication state.
③	Connector cover	Remove this cover to access the connector for connecting the connection unit.
④	Buzzer holes*1	A buzzer that sounds to indicate the communication state.
⑤	Device ID label	Includes the identification number for this product. The identification number is used when connecting with a receiving device.
⑥	Battery cover	Remove the battery cover to replace the battery.

*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 receiving device. Replace the battery immediately. (The buzzer type provides a warning both with a blinking LED and a buzz.)

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Model	U-WAVE-TCB		U-WAVE-TMB	
	IP67 type	Buzzer type	IP67 type	Buzzer type
Communication frequency	2.402 GHz-2.480 GHz			
Modulation method	FHSS (Frequency Hopping Spread System)			
LED display	Green/orange/red three-color display			
Communication with measuring tool	Digimatic (6 digits), Digimatic 2 (8 digits) *Automatic identification			
Battery	CR2032 (3 V): 1			
Battery life*1	For Windows: Approx. 3 months, For iOS and Android: Approx. 1 year			
Operating temperature (humidity)	0 °C-40 °C (20 % RH-80 % RH with no condensation)			
Storage temperature (humidity)	-10 °C-60 °C (20 % RH-80 % RH with no condensation)			
External dimensions	56 × 30.4 × 11.5 (mm)		41.9 × 38.7 × 12.9 (mm)	
Mass	Approx. 20 g			

*1 When operating for 8 hours (sending once every 20 seconds). The battery life changes depending on the receiving device in the keyboard input 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 pull straight up to remove it.



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



CAUTION Shows risks that could result in minor or moderate injury.

When attaching the connection unit to or removing it from the caliper, be careful not to injure yourself on the ends of the caliper jaws.

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6. Specifications

6.1. Basic Specifications

Model	U-WAVE-TCB		U-WAVE-TMB	
	IP67 type	Buzzer type	IP67 type	Buzzer type
Code No.	264-624	264-625	264-626	264-627
Protection level	IP67	None	IP67	None
Equipped with buzzer	No	Yes	No	Yes
Transmission output	Class2 (3.2 mW (5 dBm) or less)			
Communication range	Approx. 16 m (in open space), Approx. 10 m (in a factory environment)			
Wireless specifications	Bluetooth 4.2 Low Energy			
Standards conformance	Japan	ARIB STD-T66		
	EU	Radio Equipment Directive		
		RoHS Directive (EN IEC 63000)		
	UK	Radio Equipment Regulation		

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