

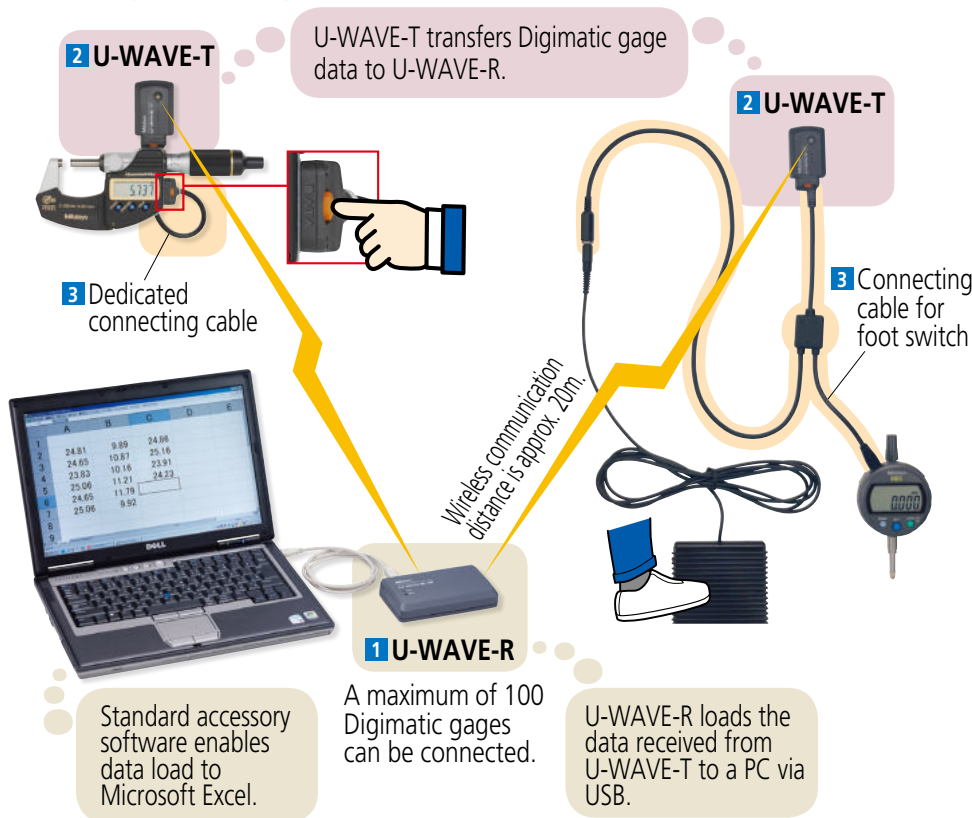
Measurement Data Management

Convenient data collection tool and quality control software

Measurement data wireless communication system U-WAVE

- Data from Digimatic gages can be loaded to a PC easily.
 - Wireless communication eliminates cabling, improving measuring operability.
 - The Data Interface Function of the U-WAVE-R standard accessory software enables data input to commonly available software by keyboard input (Microsoft Excel, Notepad, etc.).
 - USB-ITPAK V2.1 supports U-WAVE
- Loading multiple measurement data into separate Excel sheets, or simultaneous measurement using the special event drive is now available without the need for macro programming. (Automatic loading in a certain interval is available with the timer function.)

U-WAVE system configuration



Data from Digimatic gages can be loaded to a PC easily by using items **1** to **3** below.

1 U-WAVE-R

Receives data from U-WAVE-T and loads to a PC via USB.

Model	U-WAVE-R
Order No.	02AZD810D
Power supply	USB bus power system
Number of U-WAVE-R units that can be connected to one PC	Up to 15
Number of U-WAVE-T units that can be connected	Up to 100
External dimensions	140×80×31.6 mm
Mass	130 g

U-WAVEPAK software (standard accessory)

System Environment: Compatible OS

Windows 2000 Professional (SP4 or later)*
Windows XP Home Edition (SP2 or later)*
Windows XP Professional (SP2 or later)*
Windows Vista*, Windows 7*, Windows 8/8.1*
Windows 10*

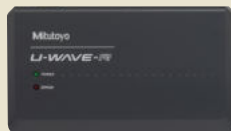
* Revision history (U-WAVEPAK)

Ver1.010 or later is compatible with 32/64-bit OS.
Ver1.020 or later is compatible with Windows 8.
Ver1.021 or later is compatible with Windows 8.1.
Ver1.022 or later is compatible with Windows 10.

Main specifications

- Setup of dedicated driver software (USB and virtual COM port)
- Initial setting of ID number and frequency selection (required only once for first time)
- Load data to Microsoft Excel or Notepad through data interface function
- Note: Cannot be connected to a device other than a PC (such as DP-1VA LOGGER, PDA, or controller).

U-WAVE-R main unit



USB2.0 cable (1m) attached

U-WAVEPAK



U-WAVE-T

System Communication Specifications

• Wireless communication

Wireless specifications	IEEE802.15.4 base
Wireless communication distance	Approx. 20 m (within visible range)
Wireless communication speed	250 kbps
Transmission output	1 mW (0dBm) or less
Modulation method	DS-SS (Direct Sequence - Spread Spectrum) Resistant to interfering signals and noise
Communication frequency	2.4GHz band (ISM band: Universal frequency)
Used band	15 channels (2.405 to 2.475GHz at intervals of 5MHz) The noise search function avoids interference with other communication devices.

Use of U-WAVE is allowed in the following countries:

This product is a radio equipment classified in the 2.4 GHz Wideband Low Power Data Communication System. To use this product, conformity to the radio law of each country is required.

For use in countries other than those below, please contact your dealer or nearest Mitutoyo sales office.

To use in countries other than the country where you purchased the product, please contact your dealer or nearest Mitutoyo sales office.

Applicable models	02AZD810D, 02AZD880G, 02AZD730G
Asia	Japan, China, Vietnam, Taiwan, Indonesia, Thailand, Malaysia, Philippines, India, Singapore
North America	US, Canada
Central and South America	Mexico, Costa Rica, Argentina
Europe	28 EU member nations (UK, France, Germany, Italy, Netherlands, Belgium, Luxembourg, Spain, Portugal, Austria, Sweden, Finland, Denmark, Bulgaria, Cyprus, Czech, Slovakia, Estonia, Greece, Hungary, Ireland, Latvia, Lithuania, Malta, Poland, Romania, Croatia) 4 EFTA member nations (Norway, Switzerland, Iceland, Liechtenstein) Turkey, Russia

Applicable models	02AZD810E, 02AZD880H, 02AZD730H
Central and South America	Brazil
Applicable models	02AZD810F, 02AZD880J, 02AZD730J
Asia	South Korea

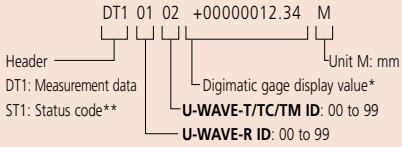
As of August, 2018



Refer to the U-WAVE Catalog (No. E12000) for more details.

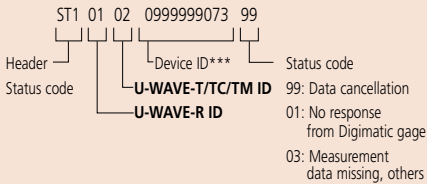
• Data format

Example of format when the Digimatic gage displays 12.34



* Data interface function is switchable to "Measurement value only" e.g.) +00000012.34

** Example of status code format



*** Unique number assigned to U-WAVE at shipment

Notes on identification of measurement data and multiple systems operation

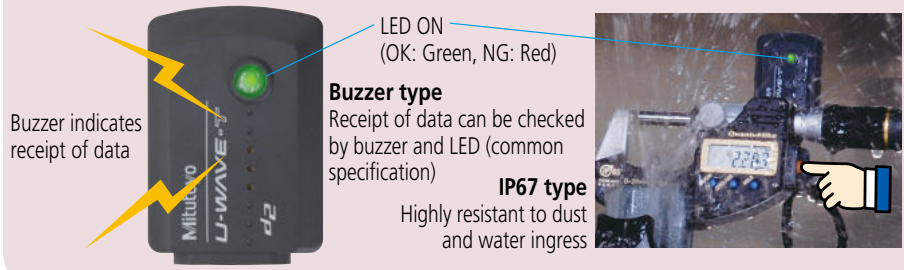
Following the above format, the U-WAVE data format starts with a 4-digit code where the first two digits represent receiver channels and the last two are transmitter channels. The large number of transmitter/receiver combinations possible with this scheme ensures that the receivers in a factory measurement system only accept data from the intended transmitters, even when several receivers are all within communication range of different transmitters using the same channel. Different frequency bands (up to 15 available) may also be used to further ensure that there are no communication problems between adjacent U-WAVE-R units.

Measurement data wireless communication system U-WAVE

2 U-WAVE-T

Transmits measurement data to U-WAVE-R. Select IP67 or buzzer model, according to your application. U-WAVE-R can be connected to Digimatic gages by dedicated cable for U-WAVE-T (option).

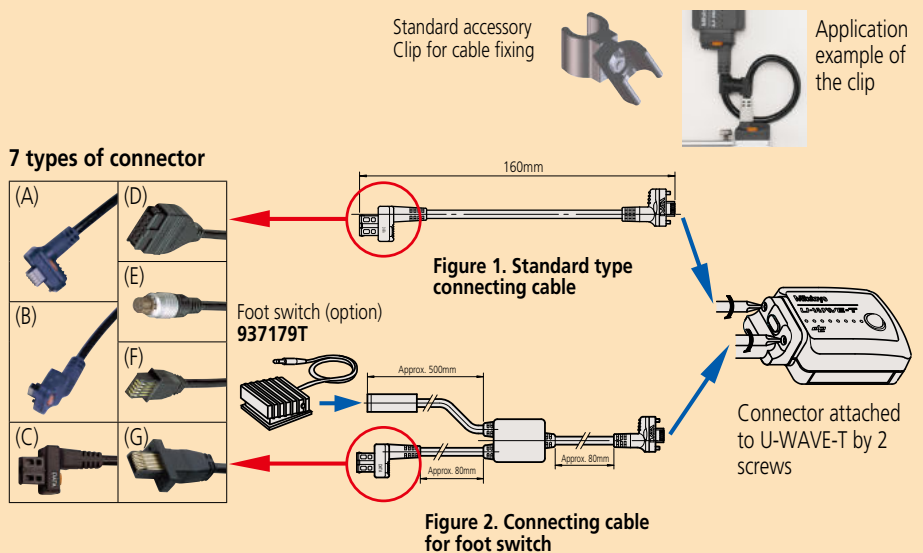
Model	U-WAVE-T (IP67 type)	U-WAVE-T (Buzzer type)
Order No.	02AZD730G	02AZD880G
Protection Rating	IP67	None
Data reception indication	LEDs	Buzzer and LEDs
Power supply	Lithium battery CR2032x1	
Battery life	Approx. 400,000 transmissions	
Dimensions	44x29.6x18.5 mm	
Mass	23 g	



3 U-WAVE-T dedicated connection cable

A dedicated cable connects a Digimatic gage to U-WAVE-T. Check the connector (A to G; refer to pages A-21 and A-22 for details) compatible with the Digimatic gage to be used and select either standard type (figure 1) or foot switch type (figure 2) according to your application.

Type	Standard connecting cable	Connecting cable for foot switch
	Part Nos.	Part Nos.
(A) Water-proof model with output button	02AZD790A	02AZE140A
(B) Water-proof model with output button	02AZD790B	02AZE140B
(C) With data-out button	02AZD790C	02AZE140C
(D) 10-pin plain type	02AZD790D	02AZE140D
(E) 6-pin round type	02AZD790E	02AZE140E
(F) Plain type straight	02AZD790F	02AZE140F
(G) Plain type straight water-proof model	02AZD790G	02AZE140G



Measurement Data Management

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Optional Accessories for U-WAVE-T

U-WAVE-T mounting plate

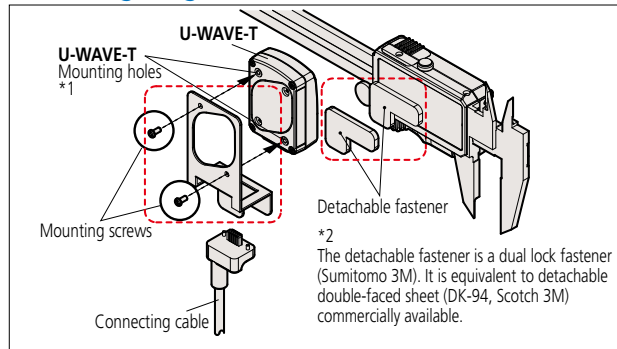
Since the standard cable clip is not sufficient to support the U-WAVE-T on a Digimatic gage, a mounting plate is provided. The mounting plate can be fixed to the gage by the easily detachable hook-and-eye type fasteners provided. Batteries can be replaced without needing to detach the U-WAVE-T from the gage.



U-WAVE-T mounting plate
Order No.02AZE200

- Standard accessories
- Detachable fasteners: 1 set
 - Mounting screw 2 pcs.

Mounting diagram (02AZE200)



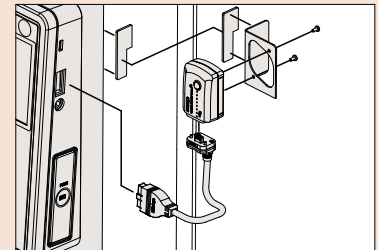
- *1 To avoid damaging the threaded holes in the plastic body of the U-WAVE-T unit, the mounting screws should be tightened only just sufficiently to grip. Repeated removal of these screws should also be avoided for the same reason.
- *2 In order to avoid loss of adhesion, do not allow oil or coolant to come into contact with the bonding surfaces of the detachable fasteners.

U-WAVE-T mounting plate for QM-Height Order No.02AZE990

Standard accessories

- Detachable fasteners: 1 set
- Mounting screw: 4 pcs

Mounting diagram for QM-Height (02AZE990)



Application examples of the mounting plate

Super Caliper CD67-S15PM



Front view Rear view

QuantuMike MDE-25MX



Front view Rear view

Digimatic Indicator ID-C112XB



Front view Rear view

Application example of the 'Event drive' mode

Data request support from PC. Special order U-WAVEPAK (Event drive)

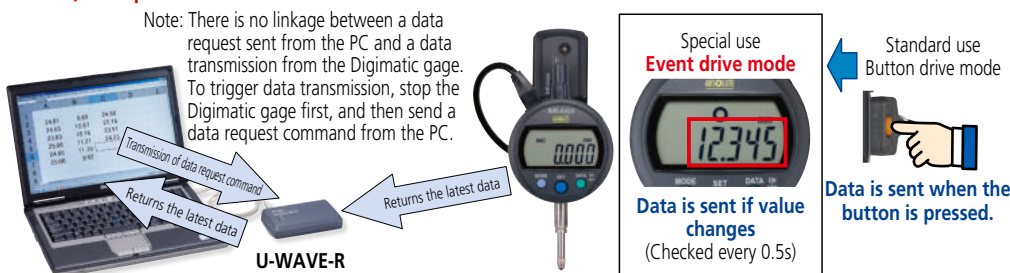
For standard type U-WAVE, the currently displayed data can be sent by pressing the data switch. This is called "button drive mode".

In the "event drive mode", the measurement value is checked every 0.5 seconds and measurement data is automatically sent if there is a change. At this time, the data switch is disabled. The sent data is written in the U-WAVE-R memory, and only the latest data is kept, it is not output to the PC. The data is loaded to the PC from the U-WAVE-R memory when the data request command is sent. The mode switching between "button drive" and "event drive" is enabled by the special order U-WAVEPAK (Event drive).

In the event drive mode, pressing the data switch on the Digimatic gage is not necessary. PC operation enables loading data from multiple gages at once.

To perform simultaneous measurement using USB-ITPAK V2.1, a special order U-WAVEPAK (Event drive) is required.

Note: There is no linkage between a data request sent from the PC and a data transmission from the Digimatic gage. To trigger data transmission, stop the Digimatic gage first, and then send a data request command from the PC.



When using the event drive please note:

- The battery life is shorter than in normal mode. The battery lasts approximately 20 days with continuous use. Switching to the button mode when the battery is not in use extends the battery life.
- When using several Digimatic gages (U-WAVE-T), communication errors may occur because of radio interference in simultaneous measuring. Therefore, it is required to add U-WAVE-R and set different frequencies (15ch) to avoid radio wave interference.

Special order U-WAVEPAK (Event drive)

This is a special order product. For the latest pricing, please contact your dealer or the nearest Mitutoyo Service Center.

Product configuration: Program on CD



For **U-WAVE-R**, **U-WAVE-T** and **U-WAVE-TC / TM**, please purchase the standard model. Install this special order **U-WAVEPAK** (Event drive) and gain the ability to perform setups without using the standard accessory **U-WAVEPAK**.

A program to send a data request command is separately required to load data to a PC.

Event drive supporting software:

- **USB-ITPAK V2.1** (timer input enabled)
- **MeasureReport** (function key operation)

Example of data request command - All Data Output:

