We call U-WAVE-TM/TC "U-WAVE fit" based on its compact and thinner design that provides a better fit to the Digimatic gage and better operability.
Data is obtained via wireless communication and sent to commercial software such as Excel.

**Measurement Data Wireless Communication System**

**U-WAVE**

This is a system that transmits data from Mitutoyo Digimatic gages to software such as Excel or Notepad via wireless communication. It saves time and eliminates misinput, helps achieve cost reductions and better efficiency while maintaining excellent operability.

**Achieve Smart Measurement**

Promotes Smart Factory by Collecting and Managing Measurement Data

“U-WAVE”, the measurement data wireless communication system, collects data in the inspection process swiftly and accurately, and increases a company’s competitiveness based on detailed data analysis. In addition, together with MeasurLink, “IoT of Quality Control envisioned by Mitutoyo” can be achieved.

From a Digimatic gage connected with U-WAVE

Compared to U-WAVE-T, compact and thin design provides a better fit to the Digimatic gage and better operability.

Data is obtained via wireless communication and sent to commercial software such as Excel.
Advantages of Introducing U-WAVE

Higher Efficiency
Data can be input by single button operation! Since there is no need for manual input misinput does not occur. Efficiency is greatly improved!

Centralized Data Management
Measurement data can be managed centrally! *Visualization of quality* helps prevent the generation of defective products!

Cost Reduction Effect
Easily connected to the Digimatic gage* currently in use! A system configuration reducing the initial and running cost is possible.

*Some models of U-WAVE-TM/TMYC are not applicable.

U-WAVE resolves measuring process issues!

**Issue**
Manual input of measurement data is inefficient and frequently generates misinput.

**Solution**
U-WAVE immediately transmits the measurement data to your PC. Misinput due to manual input can be eliminated, and therefore data reliability and operational efficiency is improved.

**Issue**
Loading measurement data via wireless is seen as desirable but justifying any high initial investment is difficult.

**Solution**
No high initial investment required because U-WAVE can be inexpensively connected to your existing Digimatic gages. No need to purchase replacements.

**Issue**
Since multiple operators use Digimatic gages, it takes a long time for data collection and Pass/fail judgment.

**Solution**
Up to 100 Digimatic gages can be registered to a single U-WAVE receiver on the PC side. The data is automatically entered separately in the Excel sheet. Therefore, data collection and Pass/fail judgment are easily performed.
Speedy and Reliable Data Collection and Pass/fail Judgment Improves Manufacturing Competitiveness

Higher Efficiency

Conventionally...

- Measure
- Data is displayed
- Manually record data
- Transfer data to PC
- Input by keyboard

No misinput and time is saved

If U-WAVE is used...

- Measure
- Data is displayed
- Load data to PC by pushbutton operation

LED or a buzzer notifies data reception

Confirmation that data was successfully received.
Note: The buzzer sound is only available with the buzzer equipped model.
- Normally received: green LED blinks
- Buzzer sounds twice briefly
- Reception failed: red LED blinks
- Buzzer sounds once

Dustproof and water resistant IP67 model

The water-proofed transmitter is resistant to water and dust.

Wireless communication range up to 20 m* (line of sight)

The measurement site can be layout freely.
* May be less according to the operating environment.
* May be less, if the Digimatic gage is used while covered by hand.

Cordless enables freedom of movement

No cord allows easy operation.

Misinput generated by manual input is eliminated

The measurement data can be directly input by a single button operation.

Stable wireless communication

Mitutoyo’s original wireless communication based on IEEE802.15.4 (2.4 GHz) has been adopted.
Centralized Data Management

Operation in an Excel sheet
The data can be directly read into an Excel sheet.

Digitalization enables easy data collection and analysis
The measurement data from each process can be stored and managed centrally.

Up to 100 Digimatic gages can be registered
Using USB-ITPAK V2.1, data can be laid out for each Digimatic gage based on the data identification ID.

Up to 15 units can be connected to a PC
Data can be collected from any measuring instrument equipped with the Digimatic output function.

Cost Reduction Effect

If a Digimatic gage is damaged, operation can be continued using a different gage
The transmitter can be reconnected to a different Digimatic gage.

Point
Point
Point

Connectable to any of your existing Digimatic gages
No need to buy a replacement if your tool is equipped with the Digimatic function.

Approximately 400,000 continuous data transmissions are possible
Just one CR2032 lithium battery provides power for about 400,000 data transmissions.
Product Configuration

(Refer to pages 7 and 8 for details.)

Receiver

- **U-WAVE-R**
  - Receives measurement data and transmits to the PC via USB.
  - Since USB bus power system is used, a battery or adapter is not required.
  - The identification ID and frequency to be used can be set using supplied software U-WAVEPAK.
  - The data load function to Excel, etc. is supplied as a standard accessory.

Transmitters

- **U-WAVE-TM/TC/T**
  - Transmits the measurement data displayed on the gage to U-WAVE-R.
  - Compact, cable-less design provides a better fit with the Digimatic gage and better operability.

Connecting unit/connecting cable

- A compact connecting unit connects the U-WAVE-TM/TC/T transmitter to the Digimatic gage.
- A dedicated cable connects the U-WAVE-T transmitter to the Digimatic gage.

Digimatic gages

- **Compatibility**
  - U-WAVE-TM/TC can be used with most of the calipers and micrometers equipped with the Digimatic output function.
  - U-WAVE-T can be used with all the Digimatic gages equipped with the Digimatic output function.
U-WAVE™ compatible Digimatic gages (reference)
For details, refer to a separate sheet “U-WAVE-TM/TC Compatible Devices” or our web site.

Digimatic micrometer

Digimatic caliper
Transmitters

U-WAVE-TM/TC

With functions and performance inherited from U-WAVE-T, a compact and thinner design provides a neater solution by eliminating cabling around the Digimatic gage and thus better operability!

U-WAVE-TM for micrometers and U-WAVE-TC for calipers are available, both as the buzzer type and dust/water-proof IP67 type. The buzzer type notifies the normal reception of data by LED and buzzer sound. The dust/water-proof IP67 type is designed for a harsh environment and as such is only equipped with LED notification of data reception.

Patent applied for in Japan, U.S., China, and Germany
Design registered in Japan, U.S., EU, and China

Connecting compatible micrometers, calipers and other Digimatic gages to U-WAVE

<table>
<thead>
<tr>
<th>Gage</th>
<th>Assembled appearance</th>
<th>Connecting unit/connecting cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>For micrometers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>Front / Back</td>
<td>02AZF310</td>
</tr>
<tr>
<td>Dust/water-proof</td>
<td>Front / Back</td>
<td></td>
</tr>
<tr>
<td>For calipers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>Front / Back</td>
<td>02AZF300</td>
</tr>
<tr>
<td>Dust/water-proof</td>
<td>Front / Back</td>
<td></td>
</tr>
<tr>
<td>Digimatic gages</td>
<td>Connecting cable*</td>
<td></td>
</tr>
</tbody>
</table>

* Select according to the Digimatic gage to be connected. Refer to pages 16 and 17 for connecting cables.
U-WAVE-T

This product successfully introduced U-WAVE to the market.

U-WAVE-T is connected to a Digimatic gage with a dedicated cable that mates with the data connector on that particular gage.

The buzzer type and dust/water-proof IP67 type are available. The buzzer type notifies the normal reception of data by LED and buzzer sound. The dust/water-proof IP67 type is designed for a harsh environment and as such is only equipped with LED notification of data reception.

<table>
<thead>
<tr>
<th>Transmitter</th>
<th>Receiver</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-WAVE-TM</td>
<td>U-WAVE</td>
</tr>
<tr>
<td>With buzzer</td>
<td>fit</td>
</tr>
<tr>
<td>264-623</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>IP67</strong></td>
</tr>
<tr>
<td>U-WAVE-TM</td>
<td>U-WAVE</td>
</tr>
<tr>
<td>Dust/water-proof</td>
<td>fit</td>
</tr>
<tr>
<td>264-622</td>
<td></td>
</tr>
<tr>
<td>U-WAVE-TC</td>
<td>U-WAVE</td>
</tr>
<tr>
<td>With buzzer</td>
<td>fit</td>
</tr>
<tr>
<td>264-621</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>IP67</strong></td>
</tr>
<tr>
<td>U-WAVE-TC</td>
<td>U-WAVE</td>
</tr>
<tr>
<td>Dust/water-proof</td>
<td>fit</td>
</tr>
<tr>
<td>264-620</td>
<td></td>
</tr>
<tr>
<td>U-WAVE-T</td>
<td>U-WAVE</td>
</tr>
<tr>
<td>With buzzer</td>
<td>fit</td>
</tr>
<tr>
<td>02AZD880G</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>IP67</strong></td>
</tr>
<tr>
<td>U-WAVE-T</td>
<td>U-WAVE</td>
</tr>
<tr>
<td>Dust/water-proof</td>
<td>fit</td>
</tr>
<tr>
<td>02AZD730G</td>
<td></td>
</tr>
</tbody>
</table>
### Typical Measuring Issues Solved

In combination with application software USB-ITPAK V2.1, better efficiency in quality assurance can be achieved.

#### Case 1

**Issue**
To record the measurement results, on a chart, from three points on a mass-produced product measured using two gages.

**Solution**
If you set the procedure of inputting data to the Excel sheet with USB-ITPAK V2.1, the measurement data is automatically entered.

---

**Measure the workpiece dimensions, X and Y, with a micrometer. Then, measure H with a caliper. Finally, visually check the appearance and judge OK or NG. Perform the above for 5 workpieces consecutively.**

- **Measure X and Y for 5 workpieces with a micrometer.**
- **Measure H for 5 workpieces.**
- **Enter “OK” or “NG” for the visual check.**

**Set the sequential measurement input order**
Designate the Excel sheet, select the data loading range, loading order, and allocate the ID for each cell.

**Point**

**Measurements in order**
The designated table will be created by measuring and transmitting data for X and Y of 5 workpieces, measuring and transmitting data of H, and then entering the result of visual check.

**Point**

**Set the sequential measurement input order**
Designate the Excel sheet, select the data loading range, loading order, and allocate the ID for each cell.

---

**Option**

**USB-ITPAK V2.1**

USB-ITPAK V2.1 is optional software to be installed in the PC connected with U-WAVE-R. It enables setting up the procedure to input the measurement data received from U-WAVE-R to the Excel sheet and to achieve greater inspection efficiency and enhanced credibility.

**The combined use with U-WAVE will improve the operational efficiency of the inspection work.**

**Best suited for recording data in mass-production inspections where the procedure is repeated every day.**
To sort data into separate Excel sheets per Digimatic gage in the inspection process.

The data collected by multiple operators can be individually set to be input to the designated cells in the Excel sheet.

Input data of each Digimatic gage in order into the designated cells of the separate Excel sheet.

**Up to 100 Digimatic gages can be registered**

100 Digimatic gages at maximum can be registered to a receiver and the same number of Excel sheets can be designated.

**Designate the Excel sheet per Digimatic gage**

Using USB-ITPAK, designate the Excel sheet per Digimatic gage. Then, same as the sequential measurement, select the data loading range, loading order, and allocate the IDs.

Multiple measurement data (via U-WAVE-TM/TC/T) can be sorted into the separate Excel sheets without requiring you to program macros.

**Features of USB-ITPAK V2.1**

- The measuring methods can be configured, such as sequential measurement, batch measurement, individual measurement and more.
- Data input or cancellation can be instructed globally in multiple-point simultaneous measurement.
- Data can be canceled by a single operation of the foot switch or function key.
- The Excel sheet can be automatically called for data input.
- Input range can be specified per Digimatic gage, which reduces the chance of a misinput.
- The cursor movement after data input can be set to enable automatic input.
**Issue**

To measure displacement using multiple Digimatic gages and automatically obtain data in a certain input interval.

**Solution**

Batch timer input is available using the USB-ITPAK batch measurement function and the optional timer input function.

---

**Case Study**

**Batch measurement using timer**

**Point**

- **Batch measurement with all the Digimatic gages**
  
  Data can be obtained globally by a foot switch operation.

- **Timer input option**
  
  Using USB-ITPAK, the data request interval can be set by hours, minutes, and seconds (0.0 sec. to 24 hrs.).

- **Batch timer input**
  
  Data can be obtained at the desired interval using the timer input function in batch measurement.

---

**Option**

**Special order U-WAVEPAK (event drive)**

**Using event drive mode**

1) For configuration, special order software U-WAVEPAK (event drive) is used.

2) The data request command can be sent to U-WAVE-R at an arbitrary timing.

**Responds to data request command**

1) U-WAVE-TM/TC/T checks the displayed value of the Digimatic gage in the 0.5 sec. interval, and transfers data if the value is changed.

2) U-WAVE-R overwrites data in the storage.

3) Sends data responding to the data request command.

**Enables automatic data load**

Without operating the send button of the Digimatic gage, data can be obtained automatically from multiple Digimatic gages.

---

**Table**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Displacement (1)</td>
<td>Displacement (2)</td>
<td>Displacement (3)</td>
<td>Displacement (4)</td>
<td>Displacement (5)</td>
<td>Measurement date/time</td>
</tr>
<tr>
<td>2</td>
<td>0.75</td>
<td>0.102</td>
<td>0.123</td>
<td>0.051</td>
<td>0.06</td>
<td>-0.001</td>
</tr>
<tr>
<td>3</td>
<td>0.79</td>
<td>0.124</td>
<td>0.133</td>
<td>0.085</td>
<td>0.048</td>
<td>-0.003</td>
</tr>
<tr>
<td>4</td>
<td>0.69</td>
<td>0.139</td>
<td>0.149</td>
<td>0.098</td>
<td>0.041</td>
<td>-0.007</td>
</tr>
</tbody>
</table>

---

**Diagram**

- **Configuration**
  
  USB hub (Commercially available)

- **U-WAVE-T**
  
  Workpiece

- **Data acquisition order**
  
  (1) (2) (3) (4) (6)

- **Batch timer input**
  
  Frequency 2.405 GHz

- **Displacement**
  
  U-WAVE-R Frequency 2.471 GHz

---

**Specify the interval for measuring the displacement of the workpiece and collect data at once.**

- To perform simultaneous measurement using U-WAVE, a special order software U-WAVEPAK (event drive) is required.

- Since the data refresh interval of the event drive is fixed at 0.5 seconds, the setting range is from 0.5 seconds to 24 hours.
Achieve “Visualization of Quality”

Configure the measurement network system MeasurLink using U-WAVE as a base

What is MeasurLink®?
MeasurLink is an IoT platform for quality management that realizes “Visualization of Quality” by enabling real-time data collection from the networked Digimatic gages and global control and analysis. U-WAVE supports MeasurLink as an infrastructure that collects and controls data.

Preventing defectives
Collects data from the Digimatic gages on the network and performs statistical process control (SPC) to warn of possible generation of defectives.

Diagnosis by data analysis
Checking measurement results by accessing the data base and performing various analyses helps investigate and resolve process performance concerns.

Simply start achieving IoT
In addition to conventional data storage, the network can be configured in steps to simply start IoT of Quality Control.

Linkage between U-WAVE and MeasurLink

Data Collection Software MeasurLink Real-Time
This SPC software allows data collection from each tool and instrument and still allows real-time display of statistical processing data such as control charts, histograms and process capability indexes.

Process Management for Administrators MeasurLink Process Manager
This administrative software enables centralized monitoring of information from all MeasurLink data collection terminals networked together on the shop floor.

Process Analysis module for Administrators MeasurLink Process Analyzer
This administrative software allows confirmation of measurement results and various statistical analyses by access to the database where the measurement data collected with MeasurLink Real-Time is stored.

Gage Management Software MeasurLink Gage Management
This software plans and implements a complete calibration schedule and incorporates a powerful retrieval function in addition to recording and managing the operational status of gages.

Evaluation/Analysis Software for Measurement System Analysis (MSA) MeasurLink Gage R&R
This is evaluation and analysis software compliant with the MSA* required in ISO/TS 16949. * Measurement System Analysis

MeasurLink® is a registered trademark of Mitutoyo Corporation in Japan and Mitutoyo America Corporation in the United States.
### Specifications

#### Wireless Communication Specifications

<table>
<thead>
<tr>
<th>Wireless communication</th>
<th>Wireless communication distance</th>
<th>Wireless communication speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original (based on IEEE802.15.4 (2.4 GHz))</td>
<td>Approx. 20 m (line of sight)</td>
<td>250 kbps</td>
</tr>
</tbody>
</table>

Note 1: This product is a radio equipment classified in the 2.4 GHz Wide-band Low Power Data Communication System. To use this product, conformity to the radio law of each country is required. Please contact your dealer or nearest Mitutoyo sales office.

Note 2: Not compatible with the conventional Mu-WAVE, for which communication specifications are different.

#### Transmitter (Refer to pages 8 and 9 for combinations.)

<table>
<thead>
<tr>
<th>Product name</th>
<th>Model</th>
<th>Order No.</th>
<th>Protection level</th>
<th>Data/reception indication</th>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-WAVE-TM (for micrometers)</td>
<td>IP67 type dust/water-proof</td>
<td>264-622</td>
<td>IP67</td>
<td>LED</td>
<td>Lithium battery CR2032×1</td>
</tr>
<tr>
<td></td>
<td>Buzzer type</td>
<td>264-623</td>
<td>N/A</td>
<td>LED, buzzer</td>
<td></td>
</tr>
<tr>
<td>U-WAVE-TC (for calipers)</td>
<td>IP67 type dust/water-proof</td>
<td>264-620</td>
<td>IP67</td>
<td>LED</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Buzzer type</td>
<td>264-621</td>
<td>N/A</td>
<td>LED, buzzer</td>
<td></td>
</tr>
<tr>
<td>U-WAVE-T</td>
<td>IP67 type dust/water-proof</td>
<td>02AZD730G</td>
<td>IP67</td>
<td>LED</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Buzzer type</td>
<td>02AZD880G</td>
<td>N/A</td>
<td>LED, buzzer</td>
<td></td>
</tr>
</tbody>
</table>

#### Connecting unit (Refer to pages 8 and 9 for combinations.)

<table>
<thead>
<tr>
<th>Product name</th>
<th>Model</th>
<th>Order No.</th>
<th>Protection level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecting unit</td>
<td>For dust/water-proof type</td>
<td>02AZF310</td>
<td>IP67</td>
</tr>
<tr>
<td></td>
<td>For standard type</td>
<td>02AZF300</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Note 1: This product is a radio equipment classified in the 2.4 GHz Wide-band Low Power Data Communication System. To use this product, conformity to the radio law of each country is required. Please contact your dealer or nearest Mitutoyo sales office.

Note 2: Not compatible with the conventional Mu-WAVE, for which communication specifications are different.
<table>
<thead>
<tr>
<th>Transmission output</th>
<th>Modulation method</th>
<th>Communication frequency</th>
<th>Used band</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-WAVE-T: 1 mW (0 dBm) or less</td>
<td>DS-SS (Direct Sequence - Spread Spectrum)</td>
<td>2.4 GHz band</td>
<td>15 channels (2.405 to 2.475 GHz at intervals of 5 MHz) The noise search function avoids interference with other communication devices.</td>
</tr>
<tr>
<td>U-WAVE-TC/TM: 2.5 mW (4 dBm) or less</td>
<td></td>
<td>(ISM band: Universal frequency)</td>
<td></td>
</tr>
</tbody>
</table>

**Battery life**

<table>
<thead>
<tr>
<th>Mass</th>
<th>Appearance</th>
<th>External dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 g</td>
<td><img src="image1.jpg" alt="Image" /></td>
<td><img src="image2.jpg" alt="Image" /></td>
</tr>
<tr>
<td>18 g</td>
<td><img src="image3.jpg" alt="Image" /></td>
<td><img src="image4.jpg" alt="Image" /></td>
</tr>
<tr>
<td>18 g</td>
<td><img src="image5.jpg" alt="Image" /></td>
<td><img src="image6.jpg" alt="Image" /></td>
</tr>
<tr>
<td>23 g</td>
<td><img src="image7.jpg" alt="Image" /></td>
<td><img src="image8.jpg" alt="Image" /></td>
</tr>
</tbody>
</table>

Approximately 400,000 transmissions

**Mass**

<table>
<thead>
<tr>
<th>Appearance</th>
<th>External dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image9.jpg" alt="Image" /></td>
<td><img src="image10.jpg" alt="Image" /></td>
</tr>
<tr>
<td><img src="image11.jpg" alt="Image" /></td>
<td><img src="image12.jpg" alt="Image" /></td>
</tr>
</tbody>
</table>

Compatible OS: Windows 2000 Professional (SP2 or later)/Windows XP/Home Edition (SP2 or later)/Windows XP Professional (SP2 or later)/Windows Vista®/Windows® 7*/Windows® 8*/Windows® 8.1*/Windows® 10* (* compatible with 32/64-bit OS)
### Receiver (Refer to pages 8 and 9 for combinations.)

<table>
<thead>
<tr>
<th>Product name</th>
<th>Model</th>
<th>Order No.</th>
<th>Power supply</th>
<th>Connectable U-WAVE-R units (per PC)</th>
<th>Connectable U-WAVE-T units</th>
<th>Mass</th>
<th>Appearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-WAVE-R</td>
<td>U-WAVE-R</td>
<td>02AZDB10D</td>
<td>USB bus power system</td>
<td>Up to 15</td>
<td>Up to 100</td>
<td>130 g</td>
<td>![Image]</td>
</tr>
</tbody>
</table>

### Dedicated cable for U-WAVE-T (Refer to pages 8 and 9 for combinations.)

<table>
<thead>
<tr>
<th>Product name</th>
<th>Connecting cable</th>
<th>Gage connectors on data cable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Connecting type</td>
<td>Order No.</td>
</tr>
<tr>
<td></td>
<td>Connector type</td>
<td>Standard</td>
</tr>
<tr>
<td>Dedicated cable for U-WAVE-T</td>
<td>A Water-proof type with output button</td>
<td>02AZD790A</td>
</tr>
<tr>
<td></td>
<td>B Water-proof type with output button</td>
<td>02AZD790B</td>
</tr>
<tr>
<td></td>
<td>C Straight type with output button</td>
<td>02AZD790C</td>
</tr>
<tr>
<td></td>
<td>D Flat 10-pin type</td>
<td>02AZD790D</td>
</tr>
<tr>
<td></td>
<td>E Round 6-pin type</td>
<td>02AZD790E</td>
</tr>
<tr>
<td></td>
<td>F Flat straight type</td>
<td>02AZD790F</td>
</tr>
<tr>
<td></td>
<td>G Flat straight water-proof type</td>
<td>02AZD790G</td>
</tr>
</tbody>
</table>
Dedicated cable for

<table>
<thead>
<tr>
<th>Product name</th>
<th>Model</th>
<th>Order No.</th>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-WAVE-R</td>
<td>02AZD810D</td>
<td>USB bus power</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Straight type with water-proof type

- Connector type
- Output button
- Water-proof

<table>
<thead>
<tr>
<th>Connecting cable Gage connectors on data cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>02AZD790G 02AZE140G N/A</td>
</tr>
<tr>
<td>02AZD790C 02AZE140C Available</td>
</tr>
<tr>
<td>02AZD790A 02AZE140A Available</td>
</tr>
<tr>
<td>02AZD790D 02AZE140D N/A</td>
</tr>
<tr>
<td>02AZD790B 02AZE140B Available</td>
</tr>
<tr>
<td>02AZD790E 02AZE140E N/A</td>
</tr>
<tr>
<td>02AZD790F 02AZE140F N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard accessory: U-WAVEPAK software</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Environment: Compatible OS</td>
</tr>
<tr>
<td>Windows 2000 Professional (SP4 or later)*</td>
</tr>
<tr>
<td>Windows XP Home Edition (SP2 or later)*</td>
</tr>
<tr>
<td>Windows XP Professional (SP2 or later)*</td>
</tr>
<tr>
<td>Windows Vista*</td>
</tr>
<tr>
<td>Windows 7*</td>
</tr>
<tr>
<td>Windows 8/8.1*</td>
</tr>
<tr>
<td>Windows 10*</td>
</tr>
<tr>
<td>Note: Windows 10 Mobile is not supported.</td>
</tr>
<tr>
<td>* 32-bit, 64-bit OS supported</td>
</tr>
</tbody>
</table>

<Connectability confirmed for tablet PCs>

- Required environment: DVD drive (required for installation), USB port ×2 ports or more
- Microsoft Surface Pro 6 (the version whose operation on U-WAVEPAK Ver.1.020 or later is confirmed)
- System Environment: Compatible OS
- Main specifications
  - Data format
    - Example of format when the Digimatic gage displays 12.34
      - Header
        - ST1: Measurement data
      - DT1: Measurement data
      - U-WAVE-TC/TM/TM ID: 00 to 99
      - U-WAVE-R ID: 00 to 99
    - *1 Data interface function is switchable to "Measurement data only" "Measurement data only"

- Standard accessory: U-WAVEPAK software
  - Example of status code format
    - ST1 01 02 0999999073 99
    - U-WAVE-ID
    - U-WAVE-TC/TM/TM ID
    - Device ID*2
    - Status code
    - 99: Data cancellation
    - 01: No response from Digimatic gage
    - 03: Measurement data missing, others
    - *2 Unique number assigned to U-WAVE at shipment

- Note: ID-F, ID-U, ID-SS, ID-SX are required to use with the USB-ITN.

<table>
<thead>
<tr>
<th>Digimatic ports on gage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture of Digimatic port</td>
</tr>
<tr>
<td>Applicable models</td>
</tr>
</tbody>
</table>

- [Digimatic caliper]
  - 500-712-20/500-713-20, etc.
  - 550-301-20/550-331-20, etc.
  - 552-302-10/552-303-10, etc.
  - 552-155-10/552-156-10, etc.

- [Digimatic micrometer]
  - 293-140-30/293-141-30, etc.
  - 293-220-30 etc.
  - 340-250-30/340-252-30, etc.
  - 227-201-20/227-202-20, etc.

- [Digimatic depth gage]
  - 571-251-20/571-252-20, etc.
  - 571-253-20/571-254-20, etc.

- [Digimatic special application caliper]
  - 573-601-20/573-602-20, etc.
  - 573-603-20/573-604-20, etc.

- [Digimatic depth gage]
  - 571-251-20/571-252-20, etc.
  - 571-253-20/571-254-20, etc.

- [Digimatic special application caliper]
  - 573-601-20/573-602-20, etc.
  - 573-603-20/573-604-20, etc.

- [Digimatic depth gage]
  - 571-251-20/571-252-20, etc.
  - 571-253-20/571-254-20, etc.

- [Digimatic indicator]
  - ID-H (Note)
  - ID-F (Note)

- [High-precision height gage]
  - QM-Height

- [Hardness testing machines]
  - HM-100, HM-200, HV-100, HR-300/400/500, HH-411

- [Scale unit]
  - 572-460/572-560/572-480-10/572-580-10, etc.
  - HH-300

- [Digimatic depth gage]
  - Digimatic type (ID-CX)

Note: ID-F, ID-U, ID-SS, ID-SX are required to use with the USB-ITN.
### Optional Products

#### Application system

<table>
<thead>
<tr>
<th>Product name</th>
<th>Model</th>
<th>Compatible OS: Windows*1</th>
<th>Compatible Excel version*2</th>
<th>Order No.</th>
</tr>
</thead>
</table>

This is a special order product. For the latest pricing, please contact your dealer or the nearest Mitutoyo Service Center. Product configuration: Only the program CD.

- For U-WAVE-R and U-WAVE-TM/TC/T, please purchase the standard model.
- Install this special order U-WAVEPAK (event drive) and perform setups without using the standard accessory U-WAVEPAK.
- A program to send a data request command is separately required to load data to the PC.

<Event drive supporting software>
USB-ITPAK V2.1 (manual input by the function key or foot switch and automatic timer input enabled)

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*1 32-bit, 64-bit OS supported  Windows 10 Mobile is not supported  *2 The operation with Excel for MAC OS is not guaranteed.
Accessories for U-WAVE-T

<table>
<thead>
<tr>
<th>Product name</th>
<th>Appearance</th>
<th>Dimensions and fixing example</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-WAVE-T</td>
<td><img src="image1.jpg" alt="Image" /></td>
<td><img src="image2.jpg" alt="Image" /></td>
<td>02AZE200</td>
</tr>
<tr>
<td>Installation Bracket Kit</td>
<td><img src="image3.jpg" alt="Image" /></td>
<td><img src="image4.jpg" alt="Image" /></td>
<td>02AZE990</td>
</tr>
</tbody>
</table>

### Accessory Information
- **Accessories**
  - Detachable fastener, 2 pcs. (mirror-imaged)
  - Mounting screws, 2 pcs.

### Application examples of the mounting plate (02AZE200)

**Digimatic indicator ID-C112XB**

- **Front view**
- **Rear view**
- **Side view**

**In the case of an indicator**

- ID-C112XB
  - A back plate without a center lug is recommended. If a lug is present, attach fastener after cutting away material to clear the lug.

---

**Hole to allow U-WAVE-T unit’s battery to be replaced while the unit is still attached to the mounting plate**

![Image](image5.jpg)

**Hole for connecting cable**

![Image](image6.jpg)

**Access hole**

![Image](image7.jpg)

**Unit: mm**

- 15
- 20
- 32.5
- 49.6
- 61.6
- 71.6

**One fastener affixed to this surface**
Whatever your challenges are, Mitutoyo supports you from start to finish.

Mitutoyo is not only a manufacturer of top quality measuring products but one that also offers qualified support for the lifetime of the equipment, backed up by comprehensive services that ensure your staff can make the very best use of the investment.

Apart from the basics of calibration and repair, Mitutoyo offers product and metrology training, as well as IT support for the sophisticated software used in modern measuring technology. We can also design, build, test and deliver bespoke measuring solutions and even, if deemed cost-effective, take your critical measurement challenges in-house on a sub-contract basis.