Measurement Data Wireless Communication System

U-WAVE

New system improves workability by eliminating long and cumbersome cables when communicating data to a PC
Measurement Data Wireless Communication System

**U-WAVE**

The U-WAVE system enables easy wireless data communication from a measuring tool to a PC using the Digimatic protocol. Measurement workability is improved by eliminating the long and cumbersome data cables usually required and the user-friendly interface allows data to be loaded into any software product that accepts keyboard input, such as Excel* or Notepad.

**Easy loading in Excel format**

The U-WAVEPAK, U-WAVE-R standard package features a keyboard interface function. This allows measurement data to be easily loaded to a PC in Excel, Notepad or other format that accepts numeric value input via a keyboard.

**Combination with optional accessories**

The combined use with USB-ITPAK V2.0 will improve the operational efficiency of repetition inspection work. Best suited for keeping track of inspection data of mass-produced products. Refer to page 10 and 11 for details.

**Dustproof and water resistant IP67 model**

IP67-type U-WAVE-T (No.02AZD730D) has an IP67-level dust/water-proof function. This model can be used in combination with, for example, a coolant-proof caliper, micrometer or indicator.

**Reception is reported by LEDs (and a beep sound).**

The U-WAVE-T main unit has two LEDs and a buzzer* that can be used to check if sent data was successfully received. *Beep indication is supported by the buzzer type No.02AZD880D only.

*Excel is a registered trademark of Microsoft Corporation.
Up to 100 measuring tools can be connected to one U-WAVE-R unit

Up to 100 U-WAVE-T units can be registered with one U-WAVE-R unit, and up to 16 U-WAVE-R units can be connected via a commercially available USB hub.

Data communication range up to 20 m possible

The maximum reliable communication range is approximately 20 m*. Even when multiple U-WAVE-R units are used within the range of 20 m, interference does not occur since an ID (00 to 99) is assigned to each unit. Radio interference between U-WAVE-R units can also be avoided by setting different frequencies (selected from 15 bands).

*The range achievable depends on the local radio transmission characteristics.

Different frequencies ensure no radio interference

Because different frequencies are used, radio interference does not occur even when multiple devices are used in the same communication range.

Approximately 400,000 Data Transmissions

One commercially available CR2032 lithium battery can be used for about 400,000 data transmissions. Assuming that the device is used twenty days a month, sending data 2,000 times a day, one battery would last for about ten months.

Cordless operation improves workability in measurement data recording

Measurement on surface plate

With a cordless device, the surface plate and PC desk no longer need to be adjacent, enabling freer layout in the inspection room.

Measurement of large workpieces

With U-WAVE operators can perform measurement freely walking around the workpiece. There are no cable constraints.

Measurement using long measuring tools

Long measuring tools are hard to handle, but U-WAVE eliminates cable constraints and improves workability.
Just pressing a switch loads measured data

Purchase the following four products (1 to 4) to enable data loading onto your PC.

U-WAVE-T/tool connection

A short cable is used to connect a measuring tool to its U-WAVE-T unit. Select the appropriate cable from A to G below (7 types) to suit the measuring tool. Detailed information on cable suitability is given on page 10.

<table>
<thead>
<tr>
<th>Type</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Water-proof model with output button</td>
<td>02AZD790A</td>
</tr>
<tr>
<td>B Water-proof model with output button</td>
<td>02AZD790B</td>
</tr>
<tr>
<td>C With data-out button type</td>
<td>02AZD790C</td>
</tr>
<tr>
<td>D 10-pin plain type</td>
<td>02AZD790D</td>
</tr>
<tr>
<td>E 6-pin round</td>
<td>02AZD790E</td>
</tr>
<tr>
<td>F Plain type straight</td>
<td>02AZD790F</td>
</tr>
<tr>
<td>G Plain type straight water-proof model</td>
<td>02AZD790G</td>
</tr>
</tbody>
</table>

U-WAVE-T

- Registered Design (Japan)
- U-WAVE-T sends measurement data to U-WAVE-R.
- Select IP67 or buzzer model, according to your application.

Major specifications of U-WAVE-T

<table>
<thead>
<tr>
<th>Model</th>
<th>U-WAVE-T (IP67 model)</th>
<th>U-WAVE-T (buzzer model)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order No.</td>
<td>02AZD730*</td>
<td>02AZD880*</td>
</tr>
<tr>
<td>Protection Rating</td>
<td>IP67</td>
<td>-</td>
</tr>
<tr>
<td>Data reception indication</td>
<td>LEDs</td>
<td>Buzzer and LEDs</td>
</tr>
<tr>
<td>Power supply</td>
<td>Lithium battery CR2032×1</td>
<td></td>
</tr>
<tr>
<td>Battery life</td>
<td>Approx. 400,000 transmissions</td>
<td></td>
</tr>
<tr>
<td>External dimensions</td>
<td>44×29.6×18.5 mm</td>
<td></td>
</tr>
<tr>
<td>Mass</td>
<td>23g</td>
<td></td>
</tr>
</tbody>
</table>

*Detailed information on order No. and conformity standards of wireless communication specification is given on page 6.

Mitutoyo Measuring Tool with Digimatic Output

This product can be connected to a measuring tool that provides Digimatic data output. Digimatic output is Mitutoyo’s proprietary output format. The Digimatic specifications remain unchanged since the first Digimatic measuring tool was released. Therefore any tool having a Digimatic port can be used, regardless of whether the instrument is new or old, although note that the connectors on some older instruments are not compatible with the connectors used on the above-listed cables. Check with the cable list on page 10.

Some Digimatic measuring tools pictured with suitable connecting cables. The product numbers for the cables are shown underneath the instrument descriptions.

- Super Caliper CD67-515PM No.02AZD790A
- QuantuMike MDE-25MJ No.02AZD790B
- ABS Digimatic Caliper CD-15CX No.02AZD790C
- Digimatic Indicator ID-H0530 No.02AZD790D
onto a PC through wireless communication.

When the data input button is pressed, the value displayed by the measuring tool is input to the active cell of Excel followed by “Enter” key input. The cursor movement direction after input (up, down, left or right) can be set in Excel.

Communication distance of approximately 20 m
(in a good transmission/reception location)

*Refer to page 6 for wireless communication specification

<table>
<thead>
<tr>
<th>Model</th>
<th>U-WAVE-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order No.</td>
<td>02AZD810*</td>
</tr>
<tr>
<td>Power supply</td>
<td>USB bus power system</td>
</tr>
<tr>
<td>Number of U-WAVE-R units that can be connected to one PC</td>
<td>Up to 16</td>
</tr>
<tr>
<td>Number of U-WAVE-T units that can be connected</td>
<td>Up to 100</td>
</tr>
<tr>
<td>External dimensions</td>
<td>140x80x31.6mm</td>
</tr>
<tr>
<td>Mass</td>
<td>130g</td>
</tr>
</tbody>
</table>

*Detailed information on order No. and conformity standards of wireless communication specification is given on page 6.
*Refer to page 6 for specification of U-WAVEPAK (setup software)
Specifications of Wireless Communication

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wireless standards</td>
<td>Conform to IEEE802.15.4</td>
</tr>
<tr>
<td>Wireless communication distance</td>
<td>Approx. 20 m (within visible range)</td>
</tr>
<tr>
<td>Wireless communication speed</td>
<td>250 kbps</td>
</tr>
<tr>
<td>Transmission output</td>
<td>1 mW (0 dBm) or less</td>
</tr>
<tr>
<td>Modulation method</td>
<td>DS-SS (direct sequence spread spectrum)</td>
</tr>
<tr>
<td>Communication frequency</td>
<td>2.4 GHz band (ISM band: universal frequency)</td>
</tr>
<tr>
<td>Used band</td>
<td>15 channels (2.405 to 2.475 GHz at intervals of 5 MHz)</td>
</tr>
<tr>
<td>Note: This product is not compatible with the conventional Mu-WAVE, for which communication specifications are different.</td>
<td></td>
</tr>
</tbody>
</table>

Conformity standards

- Japanese conformity standards: ARIB STD-T66
- European conformity standards: R&TTE Directive
- U.S.A. conformity standards: 47 CFR Part 15.247 (Subpart :C)
  47 CFR Part 15 (Subpart :B)
- Canada conformity standards: RSS-210 (Issue 7)
  RSS-Gen (Issue 2)
  ICES 003 (Issue 4)
- Brazilian conformity standards: Resolution 442 and Resolution 506
- Indian conformity standards: SD/RAD-01/01.SEP 2005USB-FSW
- Korean conformity standards: KN22, KN301 489-1/17, KN61000-4-2 and KN61000-4-3

Note: According to the Radio Regulations the use of this product is permitted in the following countries or areas. This product must not be used in other countries or areas.

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Countries or areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>02AZD810D, 02AZD730D, 02AZD880D</td>
<td>Japan, Indonesia, Thailand, Vietnam, Malaysia, Philippines and India, (\text{Europe (a total of 32 countries including 27 EU members, 4 EFTA members and Turkey), USA and Canada}) (\text{Mexico and Costa Rica (Available for only products labeled with a wireless accreditation label for Mexico)})</td>
</tr>
<tr>
<td>02AZD810E, 02AZD730E, 02AZD880E</td>
<td>Brazil</td>
</tr>
<tr>
<td>02AZD810F, 02AZD730F, 02AZD880F</td>
<td>South Korea</td>
</tr>
</tbody>
</table>

1 U-WAVE-R

Receives data from U-WAVE-T and loads it onto a PC via a USB connection

<Specifications of U-WAVEPAK (setup software)>

Before using U-WAVEPAK for the first time after purchase, IDs, frequencies, and other settings must be made. The data interface function allows measurement data to be loaded into a PC in Excel, Notepad or other software file that accepts keyboard input.

Data can also be input to a program that supports RS-232C serial communication using the virtual COM driver.

1) Operating environment

- Supported OS: Windows 2000 Professional (SP4 or higher)
  Windows XP Home Edition (SP2 or higher)
  Windows XP Professional (SP2 or higher)
  Windows Vista
  Windows 7
  Windows 8*
  Windows 8.1*
  * 32-bit/64-bit operating systems are supported.

- Other information: USB port needed

2) Initial setup procedure

(1) Install the U-WAVEPAK (setup software).
(2) Connect the U-WAVE-R main unit to the PC with a USB 2.0 cable.
(3) Install the dedicated USB driver and virtual COM driver.
(4) Set IDs and frequencies for U-WAVE-R and U-WAVE-T with U-WAVEPAK.
(5) Press the DATA button of U-WAVE-T once to write settings into U-WAVE-T. Once this procedure has been performed when using U-WAVE-T for the first time, settings are then stored in the main unit memory.
Accessories (Optional)

Foot Switch Type Connecting Cable
Connect one of the optional foot switch type connecting cables in place of the standard cable to use the footswitch. Select an appropriate cable that fits the measuring tool to be connected.

**If the standard connecting cable is connected:**
Data is sent by one press on the switch on the connecting cable connector (U-WAVE-T end).

**If the foot switch is connected:**
Data is sent by operating the foot switch. No problem even if both hands are busy.

**External View and Dimensions Example**
Order No.02AZE140F

Select a connector type according to the measuring tool to be used.

**Order Numbers**
Select a connecting cable from among the following 7 types (A to G) that fits the measuring tool. For detailed information, refer to the list of connecting cables on page 10.

<table>
<thead>
<tr>
<th>Connector type</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Water-proof with switch</td>
<td>02AZE140A</td>
</tr>
<tr>
<td>B Water-proof with switch</td>
<td>02AZE140B</td>
</tr>
<tr>
<td>C With switch</td>
<td>02AZE140C</td>
</tr>
<tr>
<td>D 10-pin plain</td>
<td>02AZE140D</td>
</tr>
<tr>
<td>E 6-pin round</td>
<td>02AZE140E</td>
</tr>
<tr>
<td>F Straight type</td>
<td>02AZE140F</td>
</tr>
<tr>
<td>G Water-proof straight type</td>
<td>02AZE140G</td>
</tr>
</tbody>
</table>

**Foot Switch (Optional)**
Order No.937179T

Dimensions
Unit : mm
Accessories (Optional)

**U-WAVE-T Instration Kit**

A plastic mounting plate is provided to enable the U-WAVE-T unit and measuring tool to be held together by means of adhesive-backed hook and eye fasteners. This method makes attaching/detaching the tool and U-WAVE-T unit quick and convenient. Batteries can be replaced without needing to detach the tool.

**Dimensions**

- Hole to allow U-WAVE-T unit’s battery to be replaced while the unit is still attached to the mounting plate.
- Connecting cable
- Mounting holes (2 positions)*
- Detachable fastener dimensions

**Mounting Drawing**

- Mounting screws, round-head Phillips type, nominal size 2.0x4 (2 pieces)
- Sunmonto 3M Dual Lock Reclosable fastener is employed for the removable sheet.
- This is equivalent to commercially available Scotch 3M Fastener Tape DK-94.

**Major measuring tools intended to use the U-WAVE-T mounting plate**

<table>
<thead>
<tr>
<th>Series No.</th>
<th>Product name</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>ABS Coolant Proof Caliper CD-FM0/PM0M</td>
</tr>
<tr>
<td>293</td>
<td>ABS Digimatic Caliper CD-CX/C</td>
</tr>
<tr>
<td>293</td>
<td>Coolant Proof Micrometer MDC-MJ/MJT/MJE-MJ</td>
</tr>
<tr>
<td>543</td>
<td>ABS Digimatic Indicator ID-CX1B/ID-5B</td>
</tr>
</tbody>
</table>

**Other measuring tools than the above-mentioned can also be used if they have a flat area big enough to accept the detachable fastener (refer to the dimensions on the mounting drawing). However, note that the positional relationship of the connector and U-WAVE-T unit needs to be carefully considered when establishing the connecting cable run.**

**Typical Fastener Locations on Measuring Tools**

- **Digimatic indicator**
  - ID-C112XB
    - A flat back type is recommended. The fastener can be affixed to a lug-type backplate if it is positioned to avoid the lug.

- **Digimatic caliper**
  - CD-15CX
    - The fastener is attachable to the rear face of the slider unit of almost all models.

- **Digital micrometer**
  - MDC-25MJ
    - The fastener can be affixed to the rear of the body if the battery cover is avoided.

- **Unusable**
  - MDC-25M
    - The fastener will not fit on the MDC-25M (old model), MDQ-30M, etc., since there is no space on the rear of the body due to connectors.

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*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.**

**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.**

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**U-WAVE-T Instraction Kit**

Order No.02A2E2800

**Accessories**

- Detachable fasteners: 2 pieces (mirror-imaged)
- Mounting screws: 2 pieces

**Order No.02A2E970**

**Accessories**

- Detachable fasteners: 2 pieces (mirror-imaged)
- Mounting screws: 2 pieces

---

**Dimensions**

- Unit : mm
- Hole for connecting cable
- One fastener affixed to this surface
- Mounting screws, round-head Phillips type, nominal size 2.0x4 (2 pieces)
- Sunmonto 3M Dual Lock Reclosable fastener is employed for the removable sheet.
- This is equivalent to commercially available Scotch 3M Fastener Tape DK-94.
Introduction to Custom-order System
Example/Dimensions

Example of a custom-order – Support of data request from a PC (Event Drive mode)

This custom-ordered Event Drive enables data request from the PC end. This system is effective if no operator is in attendance on a measuring tool or if the tool is installed at an inaccessible site. (Data acquisition from a measuring tool such as a Digimatic indicator mounted on a machine or a jig)

Precautions

1. About battery life:
The battery lifespan in the Event Drive mode is shorter than that in the Normal mode (button-drive). Change to the Normal (button-drive) mode after every measurement to extend the battery life span.

2. If using multiple measuring tools:
If multiple U-WAVE-T units are connected to one U-WAVE-R unit in the Event Drive mode, a communication error could result due to conflict between the signals when data is transmitted simultaneously from the U-WAVE-T units since they use the same frequency. To avoid any transmission conflict, shift the timing of each measurement or provide enough U-WAVE-R units (a maximum of 16 units are connectable) for each measuring tool and set different frequencies (15 channels).

For detailed information, contact the nearest Mitutoyo Sales Department.

Updated data can be acquired by sending the Data Request command from a PC to the U-WAVE-R unit.

Data is automatically transmitted in the Event Drive mode upon change in display value of a measuring tool and thus the latest data is stored in the U-WAVE-R unit.

You do not need to press the Data switch on the measuring tool.

Create a program that supports the data request command as system software by the customer or use Mitutoyo USB-ITPAK V2.0.

This system needs the custom-ordered U-WAVEPAK that supports the event drive. Purchase the standard models for U-WAVE-T and U-WAVE-R units.

Physical Features and Dimensions

U-WAVE-T

- Connector cover
- Battery cover
- Buzzer (buzzer model only)
- LED display
- Device ID label

U-WAVE-R

- Device ID label
- Certification label
- POWER (green LED)
- ERROR (red LED)
- USB connector
- INIT. switch

Precautions for use in Radio Communication Environments

The U-WAVE communication distance is approximately 20m line-of-sight. The system may not deliver its full performance in an environment detrimental to transmission. (Refer to Table 1.)

Safety Precautions

Do not use the U-WAVE-T and U-WAVE-R units near a medical device due to risk of causing a malfunction due to electromagnetic interference. (Refer to Table 2.)

Radio Law Requirements

These U-WAVE units have obtained accreditation as 2.4GHz-band advanced small-power data communication systems in compliance with the Radio Communication Laws in the specified countries and regions. (Details on page 6)

These laws prohibit the disassembly or modification of these units or their use without the accreditation label affixed to the body.

Table 1 Features that could impair data communication between U-WAVE units

<table>
<thead>
<tr>
<th>Feature</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete wall</td>
<td>Disables data communication if any unit is completely enclosed by a concrete wall.</td>
</tr>
<tr>
<td>Metallic partition or similar structure</td>
<td>May reduce communication speed or block data transmission.</td>
</tr>
<tr>
<td>Communication devices for wireless LAN, Zigbee, Bluetooth, etc., or a microwave oven</td>
<td>May reduce communication speed or block data transmission. A remedy is to separate the communication channel (band ID) and installation site of each device as far as possible from the U-WAVE-R unit.</td>
</tr>
<tr>
<td>Machine tools, etc.</td>
<td>May reduce communication speed or block data transmission at worksites where machine tools such as electrical discharge machines, carier cranes, arc welders, etc., are operating.</td>
</tr>
</tbody>
</table>

Table 2 Equipment that could be affected by U-WAVE units

<table>
<thead>
<tr>
<th>Device</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical equipment</td>
<td>Using U-WAVE units near a medical device such as a laser surgical knife or electronic scale may cause that device to malfunction.</td>
</tr>
</tbody>
</table>
Connecting Cables

Two Types of Connecting Cables

A much-needed foot switch type connecting cable (lower drawing at right) has been provided in addition to the conventional type (upper drawing at right) of connecting cable between the U-WAVE-T unit and a measuring tool. Identify the connector type compatible with your measuring tool in the following table listing 7 types (A to G), and select either the standard type or foot switch type cable according to the purpose. The table also lists wired-type connecting cables with the same connector as those 7 types on each measuring tool. Specify those cables as required.

Foot switch (Optional)
Order No. 937179T

The foot switch is connected to the measuring tool.

To measuring tool

U-WAVE-T unit end

To measuring tool

U-WAVE-T unit

Cable type

<table>
<thead>
<tr>
<th>Cable type</th>
<th>Socket type on the measuring instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major compatible measuring instruments</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard type</th>
<th>Foot switch type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order No.</td>
<td>Order No.</td>
</tr>
<tr>
<td>02AZD790A</td>
<td>02AZD790B</td>
</tr>
<tr>
<td>02AZD790C</td>
<td>02AZD790D</td>
</tr>
<tr>
<td>02AZD790E</td>
<td>02AZD790F</td>
</tr>
<tr>
<td>02AZD790G</td>
<td>02AZE140A</td>
</tr>
<tr>
<td>02AZE140B</td>
<td>02AZE140C</td>
</tr>
<tr>
<td>02AZE140D</td>
<td>02AZE140E</td>
</tr>
<tr>
<td>02AZE140F</td>
<td>02AZE140G</td>
</tr>
</tbody>
</table>

Wired-type connecting cable

Cable type

<table>
<thead>
<tr>
<th>Cable type</th>
<th>Reference: Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard type</td>
<td>05CZA624</td>
</tr>
<tr>
<td>Foot switch type</td>
<td>05CZA625</td>
</tr>
</tbody>
</table>

Measuring instruments that cannot be connected

Reference: Order No. of wire-type connecting cable

1m

| 05CZA624 | 05CZA662 | 959149 | 936937 | 937387 | 905338 | 21EAA194 |
| 05CZA663 | 959150 | 965014 | 965013 | 905409 | 21EAA190 |

2m

| 05CZA625 | 05CZA663 | 959149 | 936937 | 937387 | 905338 | 21EAA194 |
| 05CZA663 | 959150 | 965014 | 965013 | 905409 | 21EAA190 |
Combination with application systems

Combining this product with USB-ITPAK V2.0, Excel-based inspection work can be performed more efficiently.

Measurement data collection software USB-ITPAK V2.0

Upgraded USB-ITPAK V2.0 now supports U-WAVE, a wireless communication system. Both wired connection (IT-016U/USB-ITN) and wireless system (U-WAVE) are supported.

New functions of USB-ITPAK V2.0
- Supports the U-WAVE wireless communication system
- Timer input function
- Measurement date/time display
- Others: Compatible with Windows 8, 64-bit OS, and Russian included in the operating language selection

USB-ITPAK V2.0 creates a procedure to input data from gages equipped with Digimatic output to Excel sheets via USB-ITN or U-WAVE. This optional software facilitates the daily inspection work for mass-produced products.

The combined use with USB-ITPAK V2.0 will improve the operational efficiency of repetition inspection work. Best suited for keeping track of inspection data of mass-produced products.

- Automatically calls Excel sheet.
- Cursor moves can be specified.
- Input range can be specified per Digimatic gage, which reduces improper input.
- The last data input can be canceled by a single operation (foot switch, function key etc.)
- Data input or cancellation can be performed at once in multiple-point simultaneous measurement.

USB-ITPAK V2.0 measurement examples:

Sequential measurement  Measurement values are input one by one according to a procedure previously defined by using one or more Digimatic gages (via IT-016U/USB-ITN or U-WAVE).

(Measurement example – see figure at right)

Order No.
Model No. USB-ITPAK V2.0
Order No. 06AEN846
Upgrade pricing from V1.0 is not available. Please purchase V2.0.

USB-ITPAK V2.0 USB dongle
A USB dongle must be connected to the PC running the software.

USB-ITPAK V2.0 measurement examples:

Operating environment
- Compatible OS: Windows 2000 SP4, Windows XP SP2 or later, Windows Vista, Windows7, Windows8
- Hard disk: Free space of more than 100MB
- CD-ROM drive: For program installation
- USB port: 2 ports or more
- Monitor resolution: 800×600, 256 colors or more

Language support
- Operation language (15 languages) Japanese, English, German, French, Spanish, Italian, Czech, Swedish, Turkish, Polish, Hungarian, Russian, Korean, Chinese (traditional/simplified), and Simplified Chinese
- Operation manual (PDF file) Japanese, English, German
USB Foot Switch Adapter USB-FSW

This USB adapter for connecting a PC is required when using the Foot Switch (No. 937179T) in USB-ITN. A dedicated VCP driver* for this adapter is included in USB-ITPAK V2.0.

Main specification
- With USB-ITPAK V2.0, application of the foot switch can be set.
- Data control: “Data request”, “Data cancel”, “Data skip”
- Character string input (e.g. GO/NG, etc.)
*USB-FSW is used for installation of the VCP driver.

Order No.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>USB-FSW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order No.</td>
<td>06ADV384</td>
</tr>
</tbody>
</table>

Foot Switch Adapter USB-FSW

Overall length: 160mm

The wired interface USB Input Tools shown below can also be used with USB ITPAK V2.0 for data acquisition. Refer to the USB Input Tool Catalog (E12007) for details.

USB Input Tool IT-016U

USB Input Tool Direct USB-ITN

USB-ITN-C
Order No. 06ADV380C
Example of measurement using the U-WAVE wireless communication system — data sorting of individual measurements

Data from multiple Digimatic gages sent to separate Excel sheets

Loading data from multiple Digimatic gages (U-WAVE-T) into separate Excel sheets is now available without the need for macro programming.

Example of measurement using the U-WAVE wireless communication system — timer input + measurement date/time display during simultaneous measurement

Automatically obtains displacement data in a certain input interval

If using USB-ITPAK V2.0 supporting U-WAVE event drive, arbitrary timer input is allowed without the need for macro programming.

Points to note when performing simultaneous measurement using U-WAVE and USB-ITPAK V2.0
- Besides U-WAVE, a special order U-WAVEPAK (Event drive) is required.
- The battery life of U-WAVE-T becomes shorter in the event mode, reducing to approximately 20 days for continuous measurement.
- When using several Digimatic gages, communication errors may occur because simultaneous transmission from all gages may cause radio interference.
- With U-WAVE, radio wave interference can be mostly avoided if data is transmitted after making sure there is no other radio communication.
- CSMA/CA method: this avoids radio interference and enables successful simultaneous data transmission of three U-WAVE-T units per U-WAVE-R.
- To perform simultaneous measurement with more than three units of U-WAVE-T, add U-WAVE-R and set different frequencies (15 ch) to avoid radio interference.
Complies with
- R 005WWCA0166
- R 005WWCA0168
- R 005WWCA0167
- U.S.A/ FCC VXU-02AZD730D, VXU-02AZD880D, VXU-02AZD810D
- Canada/IC 43968-02AZD730D, 43968-02AZD880D, 43968-02AZD810D
- Mexico RCPMUUV09-0826
- Brazil Anatel: 0069-1058-15, Anatel: 0068-10-5815
- Singapore IDA standard license No. No. 259-10, Dealer’s License No. DA105175
- India NR-ETA/1193, NR-ETA/1191, NR-ETA/1192
- Korea KCC-CRI-MTS-02AZD730F, KCC-CRI-MTS-02AZD880F, KCC-CRI-MTS-02AZD810F

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.

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