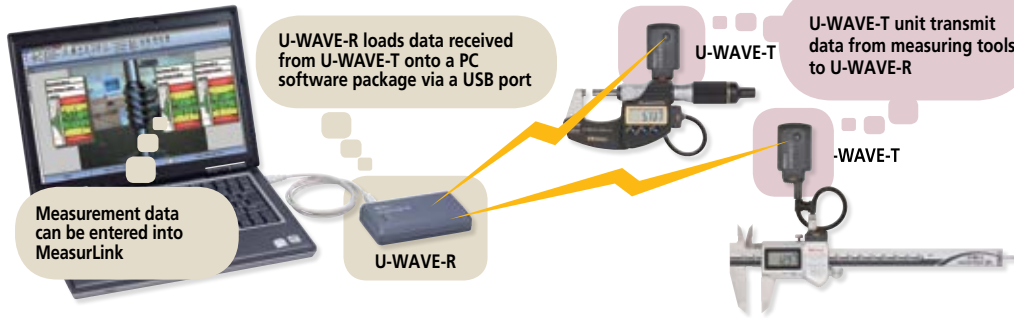


# U-WAVE

## Measurement Data Wireless Communication System

**MeasurLink® ENABLED**  
Data Management Software by Mitutoyo



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

### 1 U-WAVE-R · Registered Design (Japan)

#### Major Specifications of U-WAVE-R

| Model Order No.                                          | U-WAVE-R 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                                      | 5.51" x 3.15" x 1.24" (140 x 80 x 31.6mm) |
| Mass                                                     | .29 lbs (130g)                            |



\*Detailed information on conformity standards of wireless communication specification is given below.

### 2 U-WAVE-T · Registered Design (Japan)

#### U-WAVE-T sends measurement data to U-WAVE-R.

#### Actual size



#### Major specifications of U-WAVE-T

| Model Order No.           | U-WAVE-T (IP67 model) 02AZD730G*           | U-WAVE-T (Buzzer) 02AZD880G* |
|---------------------------|--------------------------------------------|------------------------------|
| Protection Rating         | IP67                                       | —                            |
| Data reception indication | LEDs                                       | LEDs and Buzzer              |
| Power supply              | Lithium battery CR2032★1                   |                              |
| Battery life              | Approx. 400,000 transmissions              |                              |
| External dimensions       | 1.73" x 1.17" x .73" (44 x 29.6 x 18.5 mm) |                              |
| Mass                      | .05 lbs (23g)                              |                              |

\*Detailed information on conformity standards of wireless communication specification is given below.

### ■ Installation Bracket Kit Order No. 02AZE200



\*"d2" is the name for Mitutoyo Digimatic output compatible with up to 8 digits of I/O data.



500 Series Caliper



293 Series Micrometer



543 Series Indicator

### Specifications of wireless communication

|                      |                                                                                                                                                                                              |                                 |                                                                                                                                               |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Conformity standards | European conformity standards*<br>EN 50371:2002<br>EN 300 440-1 V1.3.1<br>EN 300 440-2 V1.1.2<br>EN 301 489-01 V1.6.1<br>EN 301 489-03 V1.4.1                                                | Wireless standards              | Conform to IEEE802.15.4                                                                                                                       |
|                      | U.S.A. conformity standards<br>47 CFR Part 15.247:(Subpart :C)<br>47 CFR Part 15:(Subpart :B)<br>Canada conformity standards<br>RSS-210 (Issue 7)<br>RSS-Gen (Issue 2)<br>ICES 003 (Issue 4) | Wireless communication distance | Approx. 60ft (within visible range)                                                                                                           |
|                      |                                                                                                                                                                                              | Wireless communication speed    | 250 kbps                                                                                                                                      |
|                      |                                                                                                                                                                                              | Transmission output             | 1 mW (0 dBm) or less                                                                                                                          |
|                      |                                                                                                                                                                                              | Modulation method               | DS-SS (direct sequence spread spectrum)<br>Resistant to interfering signal or noise.                                                          |
|                      |                                                                                                                                                                                              | Communication frequency         | 2.4 GHz band<br>(ISM band: universal frequency)                                                                                               |
|                      |                                                                                                                                                                                              | Used band                       | 15 channels<br>(2.405 to 2.475GHz at intervals of 5MHz)<br>The noise search function can avoid interference with other communication devices. |

Note: In accordance with wireless regulations the use of this product is permitted in Japan, Europe (a total of 32 countries including 27 EU members, 4 EFTA members and Turkey), U.S.A. and Canada. This product must not be used in other countries or areas.

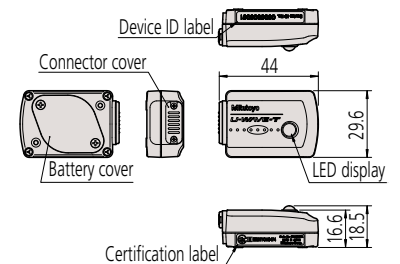
\* This product is not compatible with the conventional Mu-WAVE, for which communication specifications are different.

\* Japan conformity standards: ARIB STD-T66

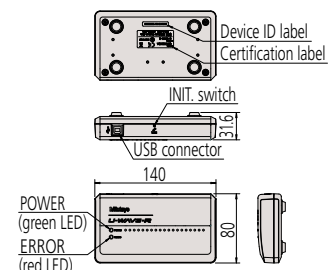
### ■ Dimensions of Each Part

Unit: mm

#### U-WAVE-T



#### U-WAVE-R



## Measurement Data Wireless Communication System

### List of U-WAVE-T Connecting Cables

Select one from cables **A** to **G**, referring to the part number of connecting cable for wired connection in your measuring tool catalog or manual. If you are unsure which cable is appropriate, check the cable connectors, the shapes of terminal on the measuring tool side, or the codes of compatible measuring tool for cables **A** to **G** below.

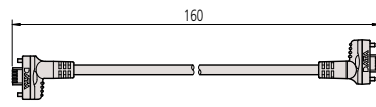
It is not possible to connect to EF and EH counters.

**When connected with U-WAVE-T** Select one of the USB input tool direct from table below to fit the connector (A to G) and also select either standard type (fig.1) or foot switch type (fig.2) dependent on usage.

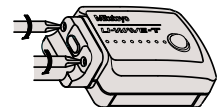
Note: Not connectable to these Mitutoyo products: Litematic VL, Linear Gage Counter EF/EH, Surtest SJ-500.

From seven types of cables (**A** to **G**), select one compatible with your measuring tool.

#### Measuring tool



#### U-WAVE-T



Fasten the connector to **U-WAVE-T** with two screws.



Fig.1 Standard type connecting cable

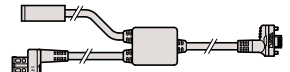


Fig.2 Connecting cable for foot switch

| Reference Order No. of connecting cable | 1m | 05CZA624 | 05CZA662 | 959149 | 936937 | 937387 | 905338 | 21EAA194 |
|-----------------------------------------|----|----------|----------|--------|--------|--------|--------|----------|
|                                         | 2m | 05CZA625 | 05CZA663 | 959150 | 965014 | 965013 | 905409 | 21EAA190 |

| For standard    | Order No. | 02AZD790A | 02AZD790B | 02AZD790C | 02AZD790D | 02AZD790E | 02AZD790F | 02AZD790G |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| For foot switch | Order No. | 02AZE140A | 02AZE140B | 02AZE140C | 02AZE140D | 02AZE140E | 02AZE140F | 02AZE140G |



| Cable type                                                | A Water-proof model with output button                                                                                                                                                                               | B Water-proof model with output button                                                                                                                                                                                                                                      | C With data-out button type                                                                                                                                                                 | D 10-pin plain type                                                                                                                                                                                                                                                                        | E 6-pin round                                                                                                                                                                                                             | F Plain type straight                                                                                                                                                                                                                                                                                                                                  | G Plain type straight water-proof model |
|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| Connector shape on the measuring tool side                | Light gray                                                                                                                                                                                                           | Light gray                                                                                                                                                                                                                                                                  |                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                        |                                         |
| Socket shape on the measuring tool                        |                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                        |                                         |
| Codes of major compatible measuring tools and instruments | [Digimatic Caliper]<br>CD67-S_PM<br>CD-PMX<br>CD-PM/GM<br>CDC-P_PMX<br>CDN-P_PMX<br>CFC-G/GL/GC/GU<br>[Digimatic Caliper]<br>NTD-PMX<br>[Digimatic Depth Gage]<br>VDS-PMX<br>[Digital Scale and DRO Systems]<br>SD-G | [Digimatic Micrometer]<br>MDE-MJ<br>MDC-MJ/MJT<br>[Digimatic Micrometer]<br>The code suffix is -MJ.<br>BLM-M<br>OMV-M<br>OMP-M<br>PDM-M<br>IMP-M<br>VM-M<br>[Digimatic Micrometer Heads]<br>MHN-M/MJ/MJN<br>[Digimatic Holtest]<br>HTD-R<br>[Digimatic Depth Gage]<br>DMC-M | [Digimatic Caliper]<br>CD-CX/-C<br>CD-S_C<br>CDC-CX/C<br>CDN-CX/C<br>[Digimatic Caliper]<br>NTD-CX/C<br>[Digimatic Depth Gage]<br>VDS-DCX<br>[Digital Scale and DRO Systems]<br>SD-D, SDV-D | [Digimatic Indicator]<br>ID-H/F<br>[Linear Height]<br>QMH-S<br>[Linear Gage/Counter]<br>EB,EC-D<br>[μ-checker]<br>Digital μ-checker<br>[Laser Scan Micrometer]<br>LSM-9506<br>[Reference Gage]<br>HDM-C<br>[Coating Thickness Gage]<br>DGE-745/755<br>[Form Measurement]<br>SJ-201/301/401 | [Digimatic Micrometer]<br>MDQ-M<br>MDC-M<br>CLM1-QM/DK<br>PDM-QM<br>PMU-DM<br>BD-M<br>[Digimatic Holtest]<br>HTD<br>[Reference Gage]<br>HDM-DM<br>[Hardness Testing Machines]<br>HM-100/200<br>HV-100<br>HR-500<br>HH-411 | [Digimatic Caliper]<br>CD, CFC-P/-L/-C/-U<br>[Digimatic Height Gages]<br>HD-AX, HDM-AX<br>HDS-H_C/-C<br>HDM-A<br>HDF-N<br>[Digimatic Indicator]<br>ID-C/_RB/_A/_GB<br>ID-S/U<br>[Digimatic Depth Gage]<br>Digimatic model (ID-C)<br>[Digital Scale and DRO Systems]<br>SD-E, SDV-E<br>SD-F, SDV-F<br>[Portable Hardness Testing Instruments]<br>HH-300 | [Digimatic Indicator]<br>ID-N<br>ID-B   |

### Note on Wireless Communication Environment

Although the communication range for **U-WAVE** is approximately 60 ft. line-of-sight, performance may be affected by obstacles or environmental factors.

#### Cautions

##### • Safety caution:

Do not use this device near medical equipment that might malfunction due to radio interference.

##### • Caution on radio law:

This device is certified as a 2.4 GHz band wide-band low-power data communication system based on the radio regulations in Japan, Europe, U.S.A. and Canada. It is prohibited by law to disassemble or modify this device or peel off the certification label from it.

| Item                                                                            | Contents                                                                                                                                   |
|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Concrete wall                                                                   | Communication is not possible in a completely enclosed room.                                                                               |
| Metal partition                                                                 | Communication speed may drop or communication may be interrupted.                                                                          |
| Wireless LAN, communication device such as ZigBee Bluetooth, and microwave oven | Communication speed may drop or communication may be interrupted. Maintain the set frequency and installation distance if at all possible. |
| Medical instrument                                                              | Do not use this product near a medical instrument such as a laser knife or electronic scale.                                               |



\*d2\* is the name for Mitutoyo Digimatic output compatible with up to 8 digits of I/O data.