Measurement Data Wireless Communication System
U-WAVE

SMALL TOOL INSTRUMENTS
AND DATA MANAGEMENT

Mitutoyo

U-WAVE *fit*

QuantuMike

ORIGIN
ZERO/ABS
HOLD

Mitutoyo

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.

Achieve Smart Measurement

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.
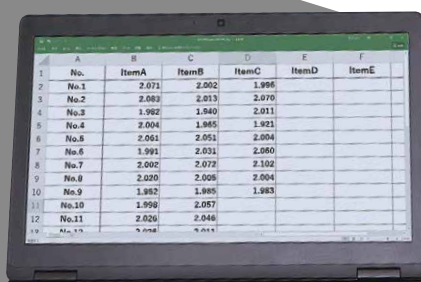
GOOD DESIGN AWARD 2018

U-WAVE fit

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

From a Digimatic gage connected with U-WAVE

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/TC 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.
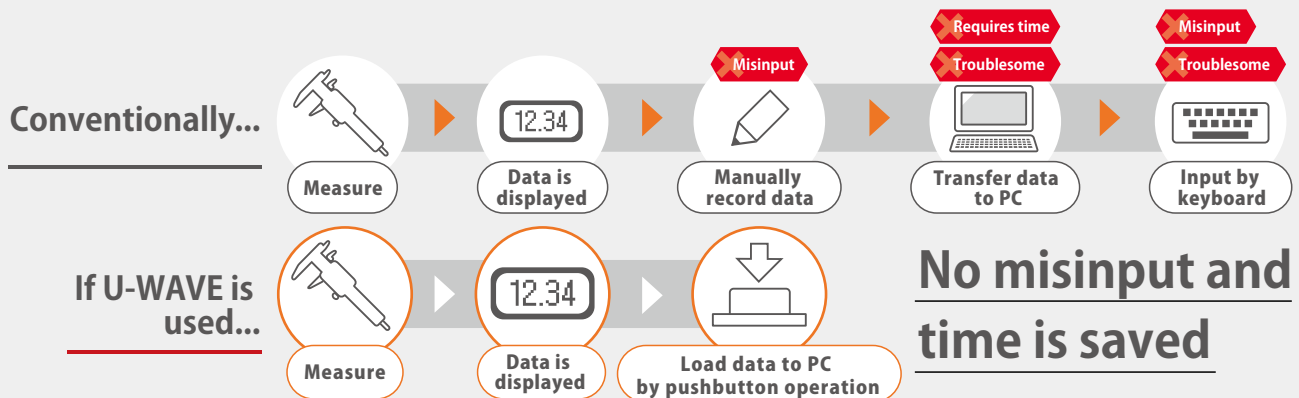
Solution

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.

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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
	12.34	Misinput	Requires time / Troublesome	Misinput / Troublesome

If U-WAVE is used...

Measure	Data is displayed	Load data to PC by pushbutton operation
	12.34	

No misinput and time is saved

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.

Patented in Japan

- 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.

IP67

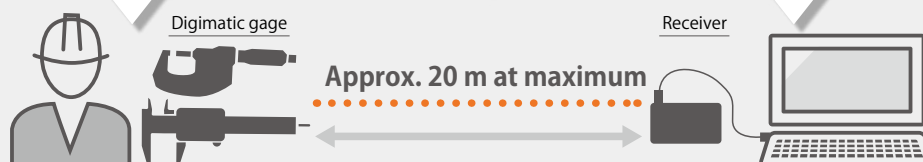---

Cordless enables freedom of movement

No cord allows easy operation.

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.

Digimatic gage

Receiver

Approx. 20 m at maximum

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.
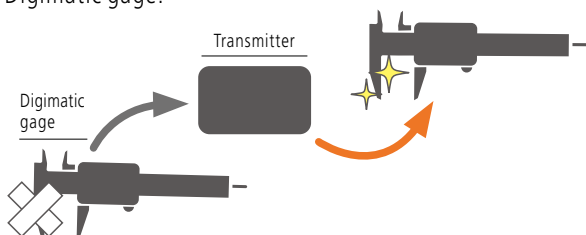
Receiver
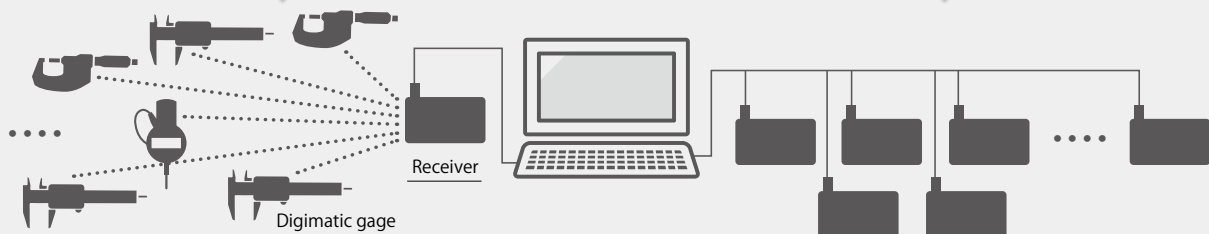
Digimatic gage

Cost Reduction Effect

Point

If a Digimatic gage is damaged, operation can be continued using a different gage

The transmitter can be reconnected to a different Digimatic gage.

Transmitter

Digimatic gage

Point

Connectable to any of your existing Digimatic gages

No need to buy a replacement if your tool is equipped with the Digimatic function.

Point

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.

PC (for storing data)

Data loaded to the PC via USB.

U-WAVE-R
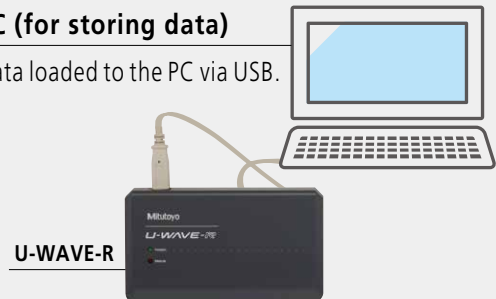
Transmitters

NEW Products

■ 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.

U-WAVE fit

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U-WAVE fit
U-WAVE-TM

U-WAVE-TC

U-WAVE-T

■ 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.

Connecting unit

Connecting unit

Connecting cable

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.

Digimatic caliper

Digimatic gage

Digimatic micrometer

Operators

Mitutoyo

U-WAVE fit
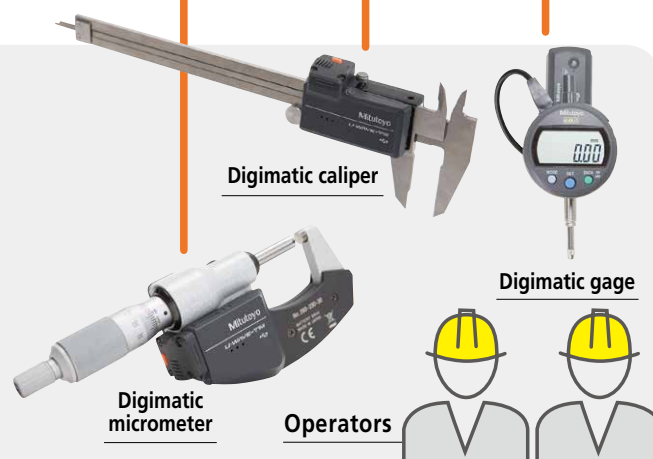
U-WAVE-TM/TC compatible Digimatic gages (reference)
For details, refer to a separate sheet "U-WAVE-TM/TC Compatible Devices" or our web site.

Digimatic micrometer	**Digimatic caliper**

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Transmitters

NEW Products

GOOD DESIGN AWARD 2018

U-WAVE-TM/TC

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

Design registered in Japan, U.S., EU, and China

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!
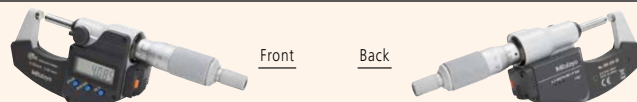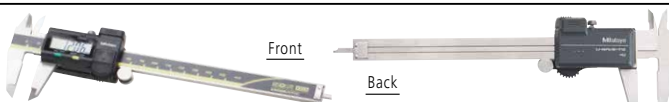
U-WAVE fit

For micrometers
U-WAVE-TM

ID No. 0200000080

Mitutoyo

U-WAVE-TM d2

For calipers
U-WAVE-TC

Mitutoyo
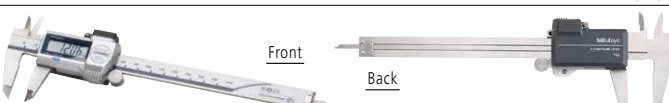
U-WAVE-TC d2

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.

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

Gage		Assembled appearance			Connecting unit/connecting cable	
For micrometers	Standard		Front	Back		02AZF310
	Dust/water-proof		Front	Back		
For calipers	Standard		Front Back			02AZF300
	Dust/water-proof		Front Back			02AZF310
Digimatic gages					Connecting cable*	

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

Type of Transmission Unit

U-WAVE-T

Design registered in Japan

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.

Transmitter		Receiver
U-WAVE-TM With buzzer 264-623	U-WAVE fit	
IP67 U-WAVE-TM Dust/water-proof 264-622	U-WAVE fit	
U-WAVE-TC With buzzer 264-621	U-WAVE fit	
IP67 U-WAVE-TC Dust/water-proof 264-620	U-WAVE fit	U-WAVE-R 02AZD810D
U-WAVE-T With buzzer 02AZD880G		Design registered in Japan
IP67 U-WAVE-T Dust/water-proof 02AZD730G		

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Typical Measuring Issues Solved

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

Case 1

Standard sequential measurement input

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.
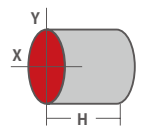
Point) Measurements in order

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.

❶ Measure X and Y for 5 workpieces with a micrometer.

❷ Measure H for 5 workpieces.
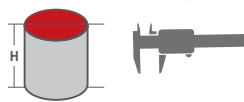
❸ Enter "OK" or "NG" for the visual check.

USB hub (Commercially available)
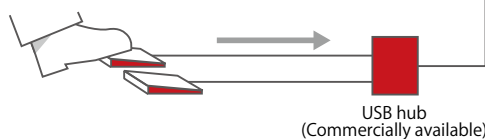
Designated Excel sheet

|	A	B	C	D	E	F
1	Setting	1	2	3	4	5
2	Dimension X	10.025	10.033	9.964	10.031	10.046
3	Dimension Y	9.982	10.017	10.008	9.996	10.027
4	Dimension H	29.97	30.02	30.07	29.96	30.04
5	External Appearance	OK	OK	NG		

Input range of micrometer
Input range of caliper
Input range of visual judgment

Data will be input one by one in the registered order to the cells of the Excel sheet designated beforehand.

⟨ Option ⟩

USB-ITPAK V2.1

Mitutoyo MiCAT
the standard in world metrology software
MeasurLink
USB-ITPAK

A USB dongle must be connected to the PC running the software.

USB dongle

Measurement Data Collection Software **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.

Case 2

Data input by multiple operators

Issue | To sort data into separate Excel sheets per Digimatic gage in the inspection process.

Solution | 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.

Point **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.

Point **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.

ID=00
ID=01
ID=02
ID=99

Sheet 1   ID=00
Sheet 2   ID=01
Sheet 3   ID=02
Sheet 100   ID=99
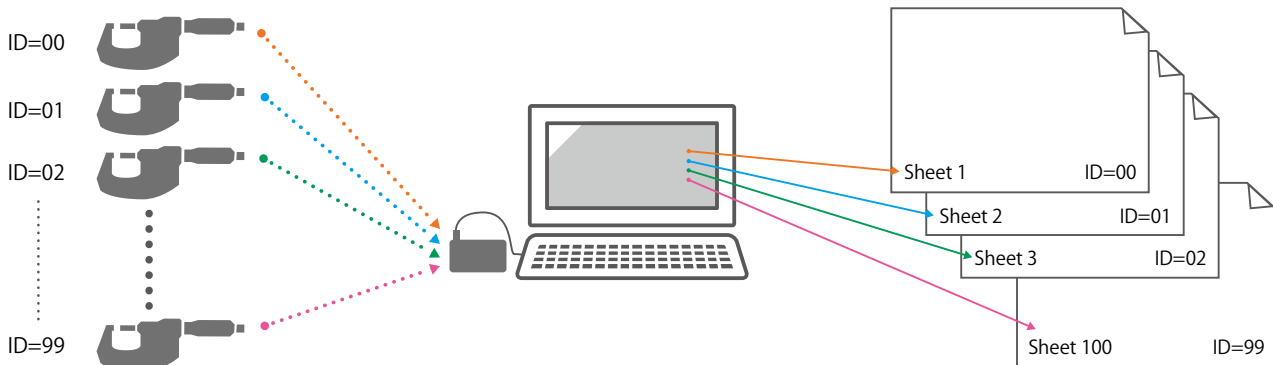
Multiple measurement data (via U-WAVE-TM/TC/T) can be sorted into the separate Excel sheets without requiring you to program macros.

Features of USB-ITPAK V2.1

- The measuring methods can be configured, such as sequential measurement, batch measurement, individual measurement and more.

- Data can be canceled by a single operation of the foot switch or function key.

- Input range can be specified per Digimatic gage, which reduces the chance of a misinput.

- Data input or cancellation can be instructed globally in multiple-point simultaneous measurement.

- The Excel sheet can be automatically called for data input.

- The cursor movement after data input can be set to enable automatic input.

Case 3
Batch measurement using timer

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.

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

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

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

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

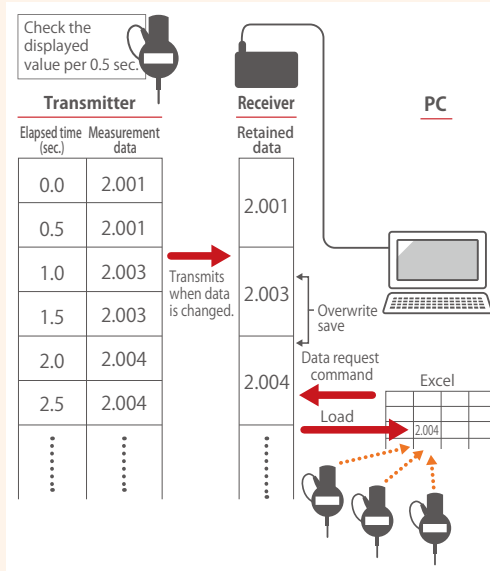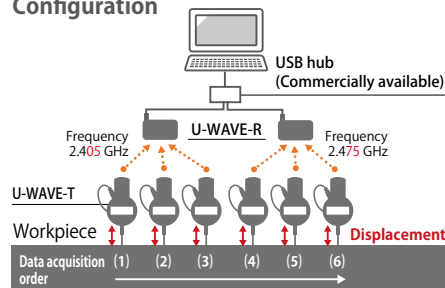|	A	B	C	D	E	F	G
1	Displacement (1)	Displacement (2)	Displacement (3)	Displacement (4)	Displacement (5)	Displacement (6)	Measurement date/time
2	0.281	0.162	0.121	0.051	0.011	−0.001	2013/4/1 7 30 00
3	0.279	0.152	0.133	0.064	0.018	−0.003	2013/4/1 7 30 05
4	0.265	0.149	0.142	0.089	0.021	−0.007	2013/4/1 7 30 10
5							
6							

After 5 sec. / After 5 sec. / After 5 sec.

● 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.

Configuration

USB hub (Commercially available)

U-WAVE-R

Frequency 2.405 GHz   Frequency 2.475 GHz

U-WAVE-T

Workpiece   **Displacement**

Data acquisition order (1) (2) (3) (4) (5) (6)

Check the displayed value per 0.5 sec.

Transmitter | **Receiver** | **PC**

Elapsed time (sec.)	Measurement data
0.0	2.001
0.5	2.001
1.0	2.003
1.5	2.003
2.0	2.004
2.5	2.004

Retained data

2.001

Transmits when data is changed.

2.003

Overwrite save

2.004

Data request command

Load

Excel

2.004

Responds to data request from PC
U-WAVEPAK (event drive)

Using event drive mode
1) 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.

● The battery life of the U-WAVE-TM/TC/T is shortened (20 days in continuous operation).
● U-WAVE is equipped with a function to avoid radio wave interference, and enables successful simultaneous data transmission of three U-WAVE-T units per U-WAVE-R. To perform simultaneous data transmission with more than three units of U-WAVE-T, add U-WAVE-R and set different frequencies (15 channels) to assure reliable wireless communication.

Achieve "Visualization of Quality"

Collecting the measurement data

Measurement Data Wireless Communication System
U-WAVE

IoT of Quality Control

Measurement Data Network System
MeasurLink

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

Inspection room

Shop floor

Network

U-WAVE

MeasurLink Database server

Inspection room

Data Collection Software   MeasurLink Real-Time
This SPC software allows data collection from each tool and instrument and still allows realtime 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

Measurement data	Collect data	Unify	Analyze	Visualize

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

■ Specifications

Wireless Communication Specifications

Wireless communication	Wireless communication distance	Wireless communication speed
Original (based on IEEE802.15.4 (2.4 GHz))	Approx. 20 m (line of sight)	250 kbps

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.)

Product name	Model	Order No.	Protection level	Data reception indication	Power supply
U-WAVE-TM (for micrometers)	IP67 type dust/water-proof	264-622	IP67	LED	Lithium battery CR2032×1
	Buzzer type	264-623	N/A	LED, buzzer	
U-WAVE-TC (for calipers)	IP67 type dust/water-proof	264-620	IP67	LED	
	Buzzer type	264-621	N/A	LED, buzzer	
U-WAVE-T	IP67 type dust/water-proof	02AZD730G	IP67	LED	
	Buzzer type	02AZD880G	N/A	LED, buzzer	
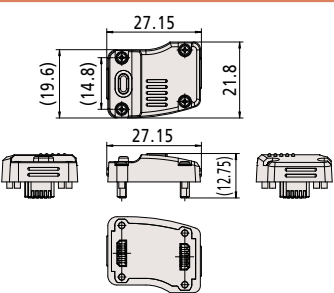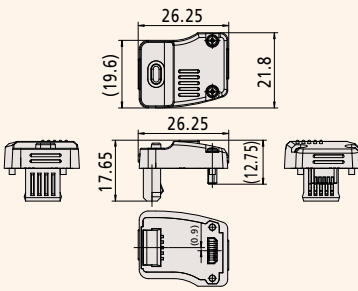
Connecting unit (Refer to pages 8 and 9 for combinations.)

Product name	Model	Order No.	Protection level
Connecting unit	For dust/water-proof type	02AZF310	IP67
	For standard type	02AZF300	N/A

Transmission output	Modulation method	Communication frequency	Used band
U-WAVE-T: 1 mW (0 dBm) or less U-WAVE-TC/TM: 2.5 mW (4 dBm) or less	DS-SS (Direct Sequence - Spread Spectrum) Resistant to interfering signals and noise	2.4 GHz band (ISM band: Universal frequency)	15 channels (2.405 to 2.475 GHz at intervals of 5 MHz) The noise search function avoids interference with other communication devices.

Battery life	Mass	Appearance	External dimensions
Approximately 400,000 transmissions	18 g		Unit: mm 38.8 / 12.9 / 41.9
	18 g		
	18 g		Unit: mm 56 / 30.4 / 11.45
	18 g		
	23 g		Unit: mm 44 / 29.6 / 16.6 / 18.5
	23 g		
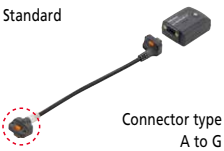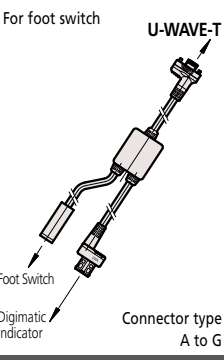
Compatible OS: Windows 2000 Professional (SP2 or later)/WindowsXP/Home Edition (SP2 or later)/Windows XP Professional (SP2 or later)*/Windows Vista*/Windows7*/Windows 8*/Windows 8.1*/Windows 10* (* compatible with 32/64-bit OS)

Mass	Appearance	External dimensions
6 g		Unit: mm 27.15 / (19.6) / (14.8) / 21.8 / 27.15 / (12.75)
6 g		Unit: mm 26.25 / (19.6) / 21.8 / 26.25 / 17.65 / (12.75) / (0.9)

Receiver (Refer to pages 8 and 9 for combinations.)

Product name	Model	Order No.	Power supply	Connectable U-WAVE-R units (per PC)	Connectable U-WAVE-T units	Mass	Appearance
U-WAVE-R	U-WAVE-R	02AZD810D	USB bus power system	Up to 15	Up to 100	130 g	

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

Product name	Connecting cable			Gage connectors on data cable	
	Connector type	Order No.		Picture of gage connector	Data switch
		Standard	For foot switch		
Dedicated cable for U-WAVE-T Standard Connector type A to G For foot switch **U-WAVE-T** Foot Switch Digimatic Indicator Connector type A to G Foot Switch (optional) Order No.937179T	A Water-proof type with output button	02AZD790A	02AZE140A		Available
	B Water-proof type with output button	02AZD790B	02AZE140B		Available
	C Straight type with output button	02AZD790C	02AZE140C		Available
	D Flat 10-pin type	02AZD790D	02AZE140D		N/A
	E Round 6-pin type	02AZD790E	02AZE140E		N/A
	F Flat straight type	02AZD790F	02AZE140F		N/A
	G Flat straight water-proof type	02AZD790G	02AZE140G		N/A

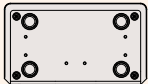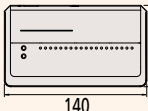| External dimensions	Standard accessory: U-WAVEPAK software		
	System Environment: Compatible OS	Main specifications	Data format
Unit: mm	Windows 2000 Professional (SP4 or later)* Windows XP Home Edition (SP2 or later)* Windows XP Professional (SP2 or later)* Windows Vista* Windows 7* Windows 8/8.1* Windows 10* Note: Windows 10 Mobile is not supported. * 32-bit, 64-bit OS supported <Versions confirmed operational on Windows 10> • U-WAVEPAK Ver.1.020 or later <Connectability confirmed for tablet PC> • Microsoft Surface Pro 6 (the version whose operation on Windows 10 Professional is confirmed) • Required environment: DVD drive (required for installation), USB port ×2 ports or more	• Setup of dedicated driver software (USB and virtual COM port) • Initial setting of ID number and frequency selection (required only once for the first time) • Load data to Microsoft Excel or Notepad through the data interface function	**Example of format when the Digimatic gage displays 12.34** **DT1 01 02 +00000012.34 M** Header ── DT1: Measurement data ST1: **Status code** ☆ Digimatic gage display value*1 Unit M: mm U-WAVE-TC/TM/T ID: 00 to 99 U-WAVE-R ID: 00 to 99 *1 Data interface function is switchable to "Measurement value only" ☆ **Example of status code format** **ST1 01 02 0999999073 99** Header ── Status code U-WAVE-R ID U-WAVE-TC/TM/T 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

Dimensions: 140 × 80 × 31.6

Digimatic ports on gage	
Picture of Digimatic port	Applicable models
	[**Digimatic caliper**] 500-712-20/500-713-20, etc. 550-301-20/550-331-20, etc. 551-301-20/551-331-20, etc. 552-302-10/552-303-10, etc. 552-150-10/552-151-10, etc. 552-155-10/552-156-10, etc. 552-181-10/552-182-10, etc. [**Digimatic special application caliper**] 573-601-20/573-602-20, etc. [**Digimatic depth gage**] 571-251-20/571-252-20, etc. [**Digimatic scale unit**] 572-600, 572-601, etc.
	[**Digimatic micrometer**] 293-140-30/293-141-30, etc. 293-230-30 etc. 340-251-30/340-252-30 293-666-20/293-667-20, etc. 227-201-20/227-203-20, etc. 227-205-20/227-206-20, etc. 227-221-20 etc. 227-223-20 etc. [**Dedicated micrometers for Digimatic**] 422-230-30/422-231-30, etc. 406-250-30/406-251-30, etc. 343-250-30/343-251-30, etc. 369-250-30/369-251-30, etc. 345-250-30/345-251-30, etc. 314-251-30/314-252-30, etc. [**Digimatic micrometer head**] 350-251-30/350-261-30, etc. [**Digimatic holtest**] 468-161/468-162, etc. [**Digimatic depth gage**] 329-250-30/329-251-30, etc.
	[**Digimatic caliper**] 500-150-30/500-151-30, etc. 500-500-10/500-501-10, etc. 500-443 etc. [**Digimatic special application caliper**] 573-718-20/573-719-20, etc. 573-716-20/573-717-20, etc. 573-191-30/573-291-30 573-181-30/573-182-30, etc. [**Digimatic depth gage**] 571-201-30/571-202-30, etc. [**Digimatic micrometer head**] 164-163/164-164 [**Digimatic scale unit**] 572-203-10/572-213-10 572-300-10/572-301-10, etc.
	[**Digimatic indicator**] ID-H ID-F (Note) [**High-precision height gage**] QM-Height
	[**Hardness testing machines**] HM-100, HM-200, HV-100, HR-300/400/500, HH-411
	[**Digimatic indicator**] ID-CX, ID-C (Peak-Value Hold Type), ID-C (Calculation type), ID-C (Bore Gage Type), ID-U (Note), ID-SS (Note), ID-SX (Note) [**Digimatic height gage**] 192-663-10/192-613-10/570-322/570-227, etc. (Flat L-shape, cable outlet is right) [**ABS borematic**] 568-361/568-362, etc. [**Digimatic bore gage**] 511-501/511-502, etc. [**Scale unit**] 572-460/572-560/572-480-10/572-580-10, etc. [**Hardness testing machines**] HH-300 [**Digimatic depth gage**] Digimatic type (ID-CX)
	[**Digimatic indicator**] ID-N, ID-B

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

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■ Optional Products

Application system

Product name	Model	Compatible OS: Windows[*1]	Compatible Excel version[*2]	Order No.
USB-ITPAK	USB-ITPAK V2.1	2000 SP4 XP SP2 or later Vista 7 8 8.1 10	2002 2003 2007 2010 2013 2016	06AFM386

*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

Product name	Appearance	Dimensions and fixing example	Order No.
U-WAVE-T Installation Bracket Kit		Hole to allow **U-WAVE-T** unit's battery to be replaced while the unit is still attached to the mounting plate 2-ø2.4 32.5 20 Access hole 61.6 71.6 49.6 15 Hole for connecting cable Unit: mm One fastener affixed to this surface Accessories • Detachable fastener, 2 pcs. (mirror-imaged) • Mounting screws, 2 pcs.	02AZE200
		Accessories • Detachable fastener, 2 pcs. (mirror-imaged) • Mounting screws, 2 pcs.	02AZE990

Application examples of the mounting plate (02AZE200)

Digimatic indicator ID-C

Front view Rear view Side view

### Image of fastener attachment to main gage

In the case of an indicator

ID-C

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

Coordinate Measuring Machines	Vision Measuring Systems	Form Measurement	Optical Measuring
Sensor Systems	Test Equipment and Seismometers	Digital Scale and DRO Systems	Small Tool Instruments and Data Management

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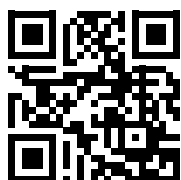
Find additional product literature and our complete catalog here.

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