Measurement Data Management

Measurement Data Collection Software
USB-ITPAK V3.0/V2.1
(**IT-016U**/**IT-020U**/**USB-ITN**/**U-WAVE**/**DP-1VA LOGGER** can be used to send the data to a Microsoft® Excel® worksheet.)

• **USB-ITPAK V3.0/V2.1** creates a procedure to input data from gages equipped with Digimatic output to Excel spreadsheets via **IT-016U**, **IT-020U**, **USB-ITN** or **U-WAVE**. This optional software facilitates the daily inspection work for mass-produced products.

V2.1	V3.0	Function
✓	✓	Sequential measurement: Inserts measurement data into the inspection certificate (Excel)
✓	✓	Simultaneous measurement: Simultaneously collects measurement data from multiple measuring instruments mounted on a jig
✓	✓	Individual measurement: Collects measurement data of separately conducted inspections into a single PC
—	✓	Simple measurement function: Automatically sorts measurement data and inserts the data into different columns in Excel
—	✓[1]	Setting of measuring instrument: Sets the calibration year and month, preset values, zero-setting, etc. for a measuring instrument
—	✓[1]	Measurement history: Records operators and measuring tools used in measurement data

Symbol: ✓[1]: Can be used only when connected with **USB-ITPAK V3.0**, **ID-CNX/ID-FNX** and **USB-ITN-SF/IT-020U**. ✓: Can be used —: Cannot be used
Note 1: **V3.0** can be downloaded from our website.
Note 2: For **V3.0**, features common with **V2.1** can be used by purchasing **V3.0** (**06AGR543**) and connecting a USB dongle to your PC.

Main features of USB-ITPAK V3.0 / V2.1

• **Setting of Microsoft Excel input:**
Designation of where to input (workbook, worksheet, cell range), cursor move (right, down), and others.
• **Selection of measuring method (3 modes available)**
1) Sequential measurement 2) Simultaneous measurement 3) Individual measurement (refer to page 09-17 for details).
• **Control item and instruction at data input**

Control item	Mouse operation	Function key	Foot switch + USB-FSW	Data switch when using **U-WAVE**	Data switch other than **U-WAVE**
Data output request	✓[1]	✓[1]	✓	✓[2]	✓
Data cancel	✓[1]	✓[1]	✓	✓ Press and hold[2]	
Data skip	✓[1]	✓[1]	✓		
Character input (example: OK or NG etc.)			✓ Pre-registered character strings		

*1 Not available during individual measurement.
*2 Not available during simultaneous measurement in the event driven mode.

• **Number of connectable gages**

Available devices	Maximum number of connection (total of (1), (2), and (3))	Others
1) **IT-020U**/**USB-ITN**	For Windows 2000/XP Up to 100 units*3	• Maximum registration (total of (1), (2), and (3)) 400 units
2) **USB-FSW**	For Windows Vista/7/8/8.1/10 Up to 20 units*3	• Control/identification of connecting gage VCP (Virtual COM port)
3) **U-WAVE-R** Up to 100 gages connectable to each **U-WAVE-R**. **U-WAVE-T** ID: 00 to 99	For **U-WAVE-R**, plus 100 per unit in terms of available gages.	Switch from HID to VCP for (1) and (2). The VCP driver software is supplied with **USB-ITPAK**.

• **Data loading time**: when using **IT-020U**/**USB-ITN**, 0.2 s to 0.3 s per gage unit
U-WAVE event driven mode: 0.5 s data refresh interval
• **Timer input function** (only in simultaneous measurement)
Input interval (time): 0.1 s*4 to 24 hours at maximum
• **Measurement date/time display function** (available in sequential and simultaneous measurements)
The display format is subject to the setting of the Excel sheet.
*3 The actual number can be less depending on the system configuration.
*4 If a shorter time is set, a priority is given to the longer time compared with the actual communication time.

Optional Accessories for USB-ITPAK

USB Foot Switch Adapter USB-FSW

This USB adapter for connecting a PC is required when using the Foot Switch (**937179T**) in **USB-ITN**.
A dedicated VCP driver for this adapter is included in **USB-ITPAK**.

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

Foot switch (**937179T**)

USB-FSW

Foot Switch Adapter USB-FSW
Overall length: 160 mm

Optional Accessories

Model	**USB-ITPAK V3.0**	**USB-ITPAK V2.1**
Code No.	**06AGR543** (USB dongle only)	**06AFM386** (Software+USB dongle)
Compatible OS (Windows)	Windows 10 64 bit only	Windows 2000 SP4 to Windows 10
Compatible Excel version	Excel 2010, 2013, 2016, Microsoft 365	Excel 2002, 2003, 2007, 2010, 2013, 2016, Microsoft 365

Upgrading from **V1.0**/**V2.0** is not supported.

USB-ITPAK V3.0
Download software

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

USB-ITPAK V2.1

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

Operating environment

Compatible OS*1	**USB-ITPAK V3.0**: Windows 10 (64 bit only)
	USB-ITPAK V2.1: Windows 2000 SP4 Windows XP SP2 or later Windows Vista Windows 7 Windows 8 Windows 8.1 Windows 10
Supported Excel versions*2	**USB-ITPAK V3.0**: 2010, 2013, 2016 Microsoft 365
	USB-ITPAK V2.1: 2002, 2003, 2007, 2010, 2013, 2016 Microsoft 365
Hard disk	**USB-ITPAK V3.0**: Free space of more than 15 MB **USB-ITPAK V2.1**: Free space of more than 10 MB
CD-ROM drive	For program installation*4
USB port*3	2 ports or more
Monitor resolution	**USB-ITPAK V3.0**: 1024×768, 256 colors or more **USB-ITPAK V2.1**: 800×600, 256 colors or more

*1 32-bit, 64-bit OS supported
*2 Operation with Excel for MAC OS is not guaranteed.
*3 A commercially available hub can be used. (USB certified product is recommended)
*4 **V3.0** does not require a CD drive but does require an Internet connection for download.

Language support
• Operation language (15 languages)
Japanese, English, German, French, Spanish, Italian, Czech, Swedish, Turkish, Polish, Hungarian, Russian, Korean, Chinese (traditional/simplified)
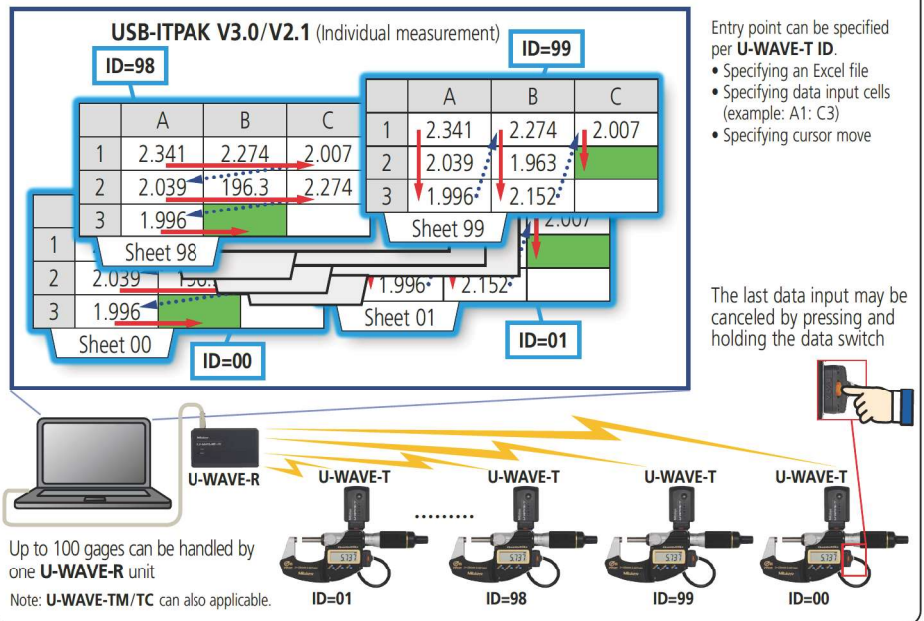• Operation manual (PDF file)
Japanese, English, German

Code No.

Model	USB-FSW
Code No.	**06ADV384**

Measurement Data Management

Software

Example of measurement using the U-WAVE Series wireless communication system

\<Data sorting of individual measurements>

Data from multiple Digimatic gages (U-WAVE-T, U-WAVE-TM/TC) sent to separate Excel sheets

Measurement data from multiple measuring instruments can easily be sorted and inserted into the respective sheets in Excel.
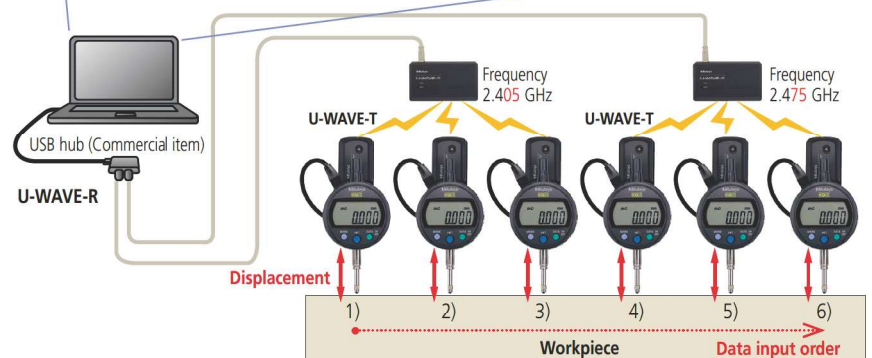
USB-ITPAK V3.0/V2.1 (Individual measurement)

ID=98

	A	B	C
1	2.341	2.274	2.007
2	2.039	196.3	2.274
3	1.996		

Sheet 98

ID=99

	A	B	C
1	2.341	2.274	2.007
2	2.039	1.963	
3	1.996	2.152	

Sheet 99

1			2.007
2	2.039	196.	1.996	2.152
3	1.996		

Sheet 01

Sheet 00

ID=00

ID=01

Entry point can be specified per **U-WAVE-T ID**.
• Specifying an Excel file
• Specifying data input cells (example: A1: C3)
• Specifying cursor move

The last data input may be canceled by pressing and holding the data switch

U-WAVE-R

U-WAVE-T U-WAVE-T U-WAVE-T U-WAVE-T

Up to 100 gages can be handled by one **U-WAVE-R** unit

Note: **U-WAVE-TM/TC** can also applicable.

ID=01   ID=98   ID=99   ID=00

\<timer input + measurement date/time display during simultaneous measurement>

Automatically obtains displacement data in a certain input interval

The event-driven operation function of **U-WAVE** enables data collection at a preset time by timer.

USB-ITPAK V3.0/V2.1 simultaneous measurement + timer input (example: 5 s interval)

	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							

5 s, 5 s, 5 s

USB hub (Commercial item)

U-WAVE-R

Frequency 2.405 GHz

Frequency 2.475 GHz

U-WAVE-T   U-WAVE-T

Displacement

1) 2) 3) 4) 5) 6)

Workpiece   Data input order

The input interval can be arbitrarily set by 0.1 seconds intervals up to 24 hours. If a smaller value than the data loading time is set, the actual measurement time will be the input interval.
With **U-WAVE**, an error (no data) may occur if less than 0.5 seconds is set for the input interval. This is because the data request signal is issued before the data comes in, based on the event driven data refresh interval that is set to 0.5 seconds (fixed).

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Measurement Data Management
USB-ITPAK V3.0/V2.1 (IT-016U/IT-020U/USB-ITN/U-WAVE/DP-1VA LOGGER connectable)

A desired measurement sequence to collect data into Excel can be created by using USB-ITPAK with an input tool or U-WAVE.

Measurement applications of USB-ITPAK (Three examples of how **USB-ITPAK** can be deployed are shown below)

Sequential measurement
Measurement values are collected from multiple measuring instruments as registered in the sequence

(Measurement example – see figure at right)

1) Measure outside diameter at X and Y of 5 workpieces with a micrometer.

2) Measure length H of 5 workpieces.

3) Inspect external view to check if there are any scratches or color shading and input "OK" or "NG".

U-WAVE-T, U-WAVE-TM/TC

U-WAVE-R

USB hub (Commercial item)

The last data input may be canceled by pressing and holding the data switch

USB-ITN-C

USB-FSW ×4 pcs. + Foot switch ×4 pcs.

* No data request for U-WAVE.

Character strings Input "OK"
Character strings Input "NG"
Data request*
Data cancel

X / Y / H

Cell movement direction after inputting data (down and right)
Carriage return (Low, column)

	A	B	C	D	E	F	
1	Setting	1	2	3	4	5	Microsoft Excel sheet previously specified
2	Dimension X	10.025	10.033	9.964	10.031	10.046	Input range of micrometer (B2 to F3)
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	Input range of caliper (B4 to F4)
5	External Appearance	OK	OK	NG			Input range of visual judgment (B5 to F5)

Cell that will receive next input is highlighted in green

Simultaneous measurement
Measurement values are input simultaneously from several Digimatic gages

U-WAVE-R

USB hub (Commercial item)

USB-ITN-F ×2

U-WAVE-T ×2 pcs.

USB-FSW ×2 pcs. + Foot switch ×2 pcs.

(Measurement examples) Simultaneous measurement of the heights A to D on the workpiece below.

Height A B C D

Data request
Data cancel

USB-ITPAK – C:\Batch.itp
Procedure : Batch (Batch)
Execute import manipulations of measurement data.
Data request | Data cancel | Data skip | Pause | Stop

	A	B	C	D	E	
1		Height A	Height B	Height C	Height D	
2	1	5.02	8.03	9.96	6.03	First measurement (finished)
3	2	4.98	8.02	10.01	5.99	Second measurement (finished)
4	3	4.97	8.04	10.07	5.96	Third measurement (finished)
5	4					Fourth measurement (Wait for next input)
6	5					

Individual measurement
Several operators input measurement data asynchronously according to individually defined procedures from each Digimatic gage.

(Measurement example) Two operators measure 6 workpieces 3 workpieces per operator

U-WAVE-R

USB hub (Commercial item)

A / B / C

Operator 1
USB-ITN-C
Workpiece Nos. 1 to 3
Data request
Data cancel

Operator 2
U-WAVE-T
Workpiece Nos. 4 to 6
The last data input may be canceled by pressing and holding the data switch

USB-FSW×2 pcs. + Foot switch×2 pcs.

	A	B	C	D	E	F	G
1	Setting	1	2	3	4	5	6
2	Dimension A	10.02	10.03	9.96	10.15	10.23	10.04
3	Dimension B	9.98	10.01	10.07	9.99	9.78	
4	Dimension C	10.15	10.14		9.96	10.27	

Operator 1
Cell that will receive next input
Operator 2
Cell that will receive next input

When a measuring procedure is executed, a window is displayed. "Data request*", "Data cancel*", "Data skip*", "Aborting", "Complete" can be specified.

* These operations can be allocated to the function key or foot switch (via **USB-FSW**).

Notes on using USB-ITPAK V3.0/V2.1:
Do not merge the cells in the specified range as a measurement data input.
During measurement, the Microsoft Excel worksheet cannot be modified in any way apart from entering data. If you need to modify the sheet, it is necessary to abort or finish the measurement.
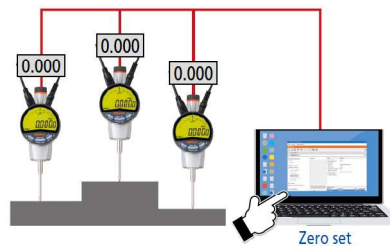**U-WAVE fit** *Bluetooth*® and U-WAVE ZigBee cannot be used together.

Bidirectional serial communication

With bidirectional serial communication (Digimatic S1) enabled measuring instruments, it is possible to use **USB-ITPAK V3.0** on a PC to control, configure, and collect information from the measuring instruments in addition to ordinary measurement data collection. This reduces labour and time for inspection and greatly increases efficiency.

Digimatic S1 applicable model Example of measurement using the **ID-CNX / ID-FNX**

Function example (1) Control of ID-C / ID-F from PC

ID-CNX / ID-FNX + USB-ITPAK V3.0

Instruments not supporting bidirectional serial communication + USB-ITPAK

0.000 0.000 0.000

0.000 0.000 0.000

Zero set

Zero set Zero set Zero set

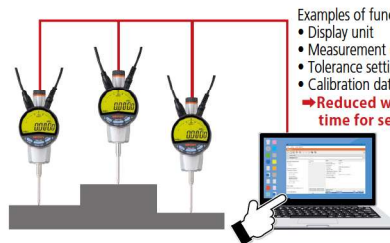- It is possible to zero-set or preset measuring instruments collectively from **USB-ITPAK V3.0** on a PC.
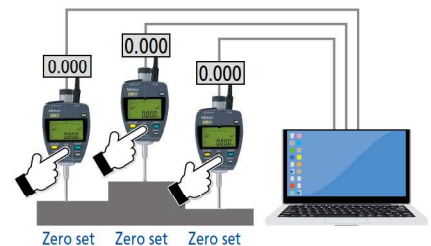
- It is necessary to manually zero-set or preset measuring instruments individually.

Function example (2) Measuring instrument setting

ID-CNX / ID-FNX + USB-ITPAK V3.0

Instruments not supporting bidirectional serial communication + USB-ITPAK

Examples of functions to set
- Display unit
- Measurement direction
- Tolerance setting
- Calibration date setting
➡**Reduced work time for setting**

- It is possible to set the functions of measuring instruments from **USB-ITPAK V3.0**.
- The settings of functions can be saved on a PC and copied to other measuring instruments.
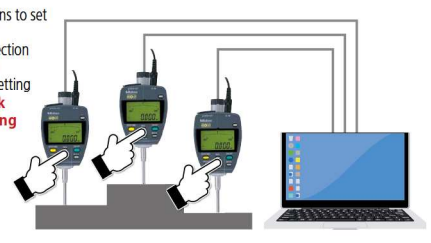
- It is necessary to manually change the settings.

Note: The above is possible only when bidirectional serial communication (Digimatic S1) enabled measuring instruments are used with USB Input Tool Direct or **IT-020U**. It is not possible with measuring instruments not supporting Digimatic S1 or **U-WAVE** Series.

Software

Mitutoyo reserves the right to change any or all aspects of any product specification, including prices, designs and service content, without notice.

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