

MiCAT

Mitutoyo Intelligent Computer Aided Technology

the standard in world
metrology software

MeasurLink

No. 99MAM024A1

USB-ITPAK

User's Manual

Read this User's Manual thoroughly before using the instrument. After reading, retain it close at hand for future reference.

Mitutoyo

Second Edition December 2014 Ver 2.001

First Edition March 2013 Ver 2.000

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Types of Notes

The following types of **notes** are used in this manual to help the operator obtain reliable measurement data through correct instrument operation.

IMPORTANT An *important note* provides information essential to use the product. You cannot disregard this note.

An *important note* is a type of precaution, which if neglected could result in degraded performance or accuracy, or instrument malfunction/failure.

NOTE A *note* provides information to be especially noted or supplemented to use the product.

A *note* also supplies information to be noted for specific operations (e.g., memory limitation, instrument configuration, or details that apply to specific versions of a program).

TIP A *tip* is a type of note that helps the user to apply the operation method and procedures to his or her specific conditions.

A *tip* also indicates the reference destination if there is information to be referred to.

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Electromagnetic Compatibility



This product complies with the EMC Directive. Note that in environments where electromagnetic interference exceeds EMC requirements defined in this directive, appropriate countermeasures are required to assure the product performance.

- EMC directive

EN61326-1

Immunity test requirement : Clause 6.2 Table 2

Emission limit : Class B

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A display value on this product may flicker or disappear temporarily due to electromagnetic interference caused by electrostatic discharge. However, this product will return to normal after removing the interference.

External power supply models may not acquire correct measurement data due to electromagnetic interference acting on the AC or DC power line.

If this is the case, check the circumference of the power line and then perform measurement again.

External power supply models will be turned off automatically if a brownout occurs. However, this product will return to normal after the recovery from the low voltage.

Conventions for Describing Software Operation

This software runs on Windows operating systems.

This manual assumes that the reader is familiar with the operation of Windows-based software. If you are not familiar with the operation of Windows, refer to a Windows operation manual such as the "Microsoft Windows First Step Guide".

This manual features screen displays and operation explanations for when the software is used on Windows 7, but the functions and operation method of the software are the same regardless of the Windows platform.

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To reduce the environmental impact and minimize the volume of landfills, please cooperate in reuse and recycle.

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SERVICE NETWORK

1

BASIC KNOWLEDGE

1.1 Overview

USB-ITPAK is software for inputting measurement data of measuring tools connected to the USB Input Tool Direct (hereafter referred to as USB-ITN) (separately sold), U-WAVE (separately sold) and USB Input Tool (hereafter referred to IT-016U) (separately sold) to Microsoft Excel (hereafter referred to as Excel).

Users can create their own software that captures measurement data via virtual RS-232C interface using a dedicated VCP driver supplied with USB-ITPAK.

- TIP**
- For the specifications of the virtual RS-232C interface of USB-ITN / IT-016U, refer to "CHAPTER 7 COMMUNICATION COMMAND SPECIFICATIONS".
 - For details about the U-WAVE, refer to the instruction manuals supplied with U-WAVE.

USB-ITPAK supports the following functions to input data to Excel.

1) Inputting measurement data directly to inspection table sheets on Excel

Input cells can be specified for respective measuring tools when multiple measuring tools are connected using USB-ITN, U-WAVE, and/or IT-016U, such as "1st measuring tool data input to cells of column A, 2nd measuring tool data input to cells of column B".

Further, when measuring three dimensions using one measuring tool, the location of the input cells for the dimension can be specified, such as "length data input to cell A, width data to cell B, height data to cell C".

By specifying the location of the input cells according to the measurement procedure of the user, inspection certificates can easily be created with Excel, and inspection data for manufacturing processes can easily be managed.

2) Inputting multi-point measurement data using measurement jigs at a time

USB-ITPAK allows the user to issue a request from a PC for the output of measurement data from a measuring tool connected to USB-ITN, U-WAVE and/or IT-016U.

Optional USB Foot Switch Adapter (hereafter referred to as USB-FSW) and foot switch allows acquiring measurement data of a measuring tool in batch by simply pressing a foot switch.

NOTE • When using U-WAVE, the event driven mode (special order) must be set. For details, refer to the U-WAVEPAK User's Manual (for the event driven).

3) Randomly inputting measurement data from multiple measuring tools to worksheets

USB-ITPAK allows you to individually set the worksheets and cells to which measurement data is to be input for each measuring tool. This allows multiple operators to randomly perform measurements and input the measurement data from each measuring tool to the respectively specified cells.

4) Request for data output to measuring tool using foot switch

With the USB-FSW and a foot switch, USB-ITPAK allows you to instruct a measuring tool to output measurement data without having to operate the PC, by using the foot switch.

Measurement data output can also be requested from the PC if there is no foot switch.

Connecting a foot switch (option) to IT-016U enables data request using the foot switch.

NOTE • When using U-WAVE, the event driven mode (special order) must be set. For details, refer to the U-WAVEPAK User's Manual (for the event driven).

5) Data cancellation using foot switch

With the USB-FSW and a foot switch, USB-ITPAK allows you to cancel measurement data without having to operate the PC, by using the foot switch, in order to restore the state before measurement.

Measurement data can also be canceled via the PC if there is no foot switch.

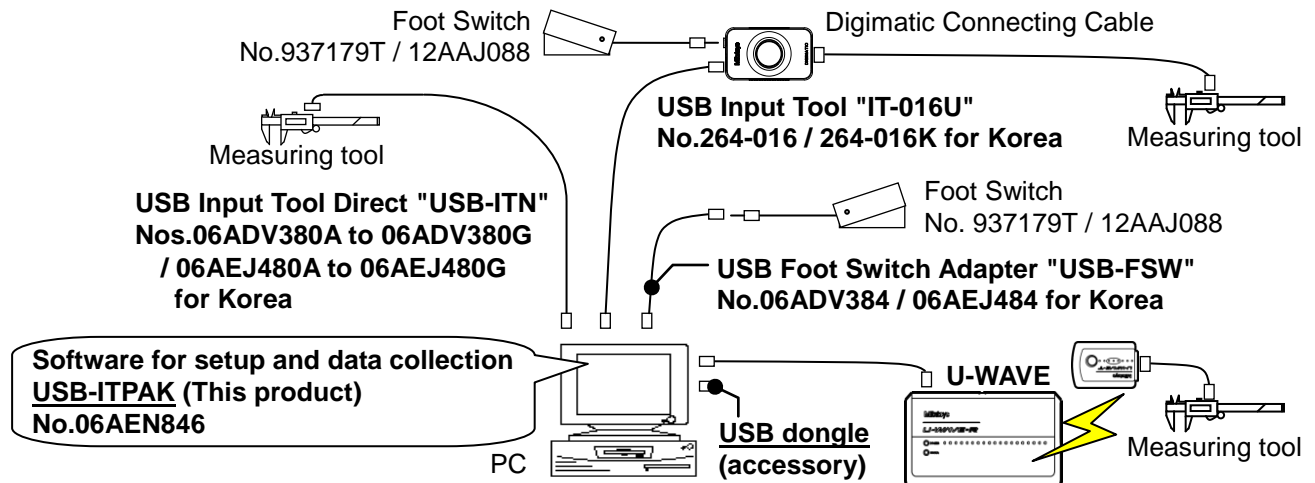
6) Inputting character string such as "PASS" or "FAIL" using foot switch

When preparing inspection certificates, there are items such as visual inspection results that need character input. However, inputting character strings such as "PASS" and "FAIL" from the keyboard at each inspection takes time and effort. Also, it may not be possible to operate the keyboard in some work environments.

With USB-ITPAK, character strings such as "PASS" and "FAIL" can be registered in advance and input to the specified cells by simply pressing a foot switch, when the USB-FSW and a foot switch are used.

1.2 System Configuration

An example of the system configuration of USB Input Tool Direct is shown in the figure below.



- Provide the measuring tool(s) and PC according to the system to be used.
- If any of multiple USB-ITN, USB-FSW, U-WAVE, or IT-016U units (more than 1 model is allowed) are used, a corresponding number of USB ports are required. If the PC does not have the required number of USB ports, use a USB hub (commercially available).
- Select USB-ITN or U-WAVE that is suitable for the connector of the measuring tool to be used.

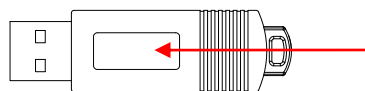
Supported connectors can be identified by suffixes A to G. Choose an appropriate device.

For details about the USB-ITN, refer to any of "1.4 Tools that work with USB-ITPAK", the user's manual of the USB-ITN, or each instruction manual supplied with U-WAVE.


- Provide USB-FSW and foot switch units only if required.
- IT-016U requires a Digimatic connecting cable to be connected with the measuring tool.
- The data request sent from the foot switch connected to IT-016U also functions in the HID mode, however it will only be input to the connection source IT-016U.

IMPORTANT • When processing data collection with USB-ITPAK, it requires the autosave function of Excel to be disabled.
(For operations regarding Excel, refer to instructions of Excel.)

- USB-ITPAK operates only when the supplied USB dongle is connected to the PC. Connect the USB dongle to the PC before using USB-ITPAK. In addition, USB-ITPAK operates only when the version of USB dongle is the same or higher than that of USB-ITPAK. When using a USB dongle not supplied, check the version.



USB dongle (Serial side)

C/N:06ADU006
 IMT5-06ADU006(A)
 D/N:D01-###00001

Serial label

: Version display
 Example : 010 ~ 999

USB dongles that can be used with USB-ITPAK

Version of USB-ITPAK	Version of USB dongle		
	V1.0 (010)	V2.0 (020)	V99.9 (999)
V1.0xx	✓	✓	✓
V2.0xx	—	✓	✓
V99.9xx	—	—	✓

1.3 PC Specification Requirements

The following specifications are required of the PC on which USB-ITPAK is used.

<Hardware Specifications>

- Monitor (800 x 600 or higher resolution, 256 or more colors)
- 10 MB or more hard disk space
(5 MB is the minimum required amount for installation.)
- CD-ROM drive
(required to install USB-ITPAK)
- 2 or more USB ports
(required to connect any of the USB dongle, or USB-ITN / USB-FSW / U-WAVE-R / IT-016U)

NOTE • Other hardware specifications must meet those required by the OS on which USB-ITPAK runs.

<Software Specifications>

- | | | | |
|-------|----------------------------------|--------------|---------------|
| • OS: | Microsoft Windows 2000 | Professional | SP4 |
| | Microsoft Windows XP | Professional | SP2 or higher |
| | Microsoft Windows XP | Home Edition | SP2 or higher |
| | Microsoft Windows Vista | Ultimate | |
| | Microsoft Windows Vista | Enterprise | |
| | Microsoft Windows Vista | Business | |
| | Microsoft Windows Vista | Home Premium | |
| | Microsoft Windows Vista | Home Basic | |
| | Microsoft Windows 7 | Ultimate | |
| | Microsoft Windows 7 | Enterprise | |
| | Microsoft Windows 7 | Professional | |
| | Microsoft Windows 7 | Home Premium | |
| | Microsoft Windows 7 | Home Basic | |
| | Microsoft Windows 7 | Starter | |
| | Microsoft Windows 8 / 8.1 | | |
| | Microsoft Windows 8 / 8.1 | Pro | |
| | Microsoft Windows 8 / 8.1 | Enterprise | |
| | (Update included in Windows 8.1) | | |

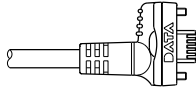
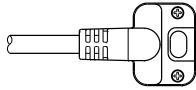
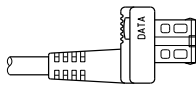
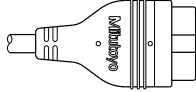

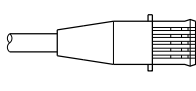
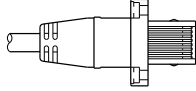
IMPORTANT • Use the same OS language as the USB-ITPAK language. The operation on an OS with a different language is not guaranteed.

• To input measurement data to Excel using USB-ITPAK, Excel 2000 or higher is required.

1.4 Tools that work with USB-ITPAK

USB-ITPAK supports the following.

1) USB Input Tool Direct

Model	Code No.	Connector type on measuring tool side	
USB-ITN-A	06ADV380A / 06AEJ480A for Korea		Equipped with the DATA switch Waterproof type
USB-ITN-B	06ADV380B / 06AEJ480B for Korea		Equipped with the DATA switch Waterproof type
USB-ITN-C	06ADV380C / 06AEJ480C for Korea		Equipped with the DATA switch
USB-ITN-D	06ADV380D / 06AEJ480D for Korea		Flat (10-pin)
USB-ITN-E	06ADV380E / 06AEJ480E for Korea		Round (6-pin)
USB-ITN-F	06ADV380F / 06AEJ480F for Korea		Flat straight
USB-ITN-G	06ADV380G / 06AEJ480G for Korea		Flat straight Waterproof type

IMPORTANT

- Select the USB-ITN model according to the shape of the connector of the measuring tool to be connected.
- Mitutoyo products other than the above (such as IT-005D, IT-006N, IT-007R, IT-008Z, IT-012U, IT-013UD, IT-014UT, and MUX-10F) employ different communication methods and thus cannot be used for USB-ITPAK.

2) USB Foot Switch Adapter

Model	Code No.	Compatible foot switch
USB-FSW	06ADV384 / 06AEJ484 for Korea	937179T / 12AAJ088

3) U-WAVE

For details, refer to the instruction manuals supplied with U-WAVE.

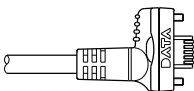
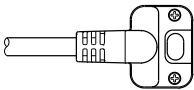
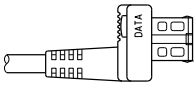

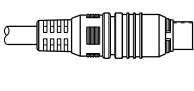
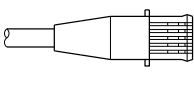
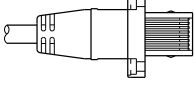
4) USB Input Tool

Model	Code No.
IT-016U	264-016 / 264-016K for Korea

A Digimatic connecting cable (option) is required to connect with the measuring tool.

Select the digimatic connecting cable suitable for the connected measuring tool.

<Digimatic connecting cables for each connected device>

The connector style of measuring tool	Part Nos.	Main Applicable measuring tool
 <p>Equipped with the output switch Waterproof type</p>	<p>1m: 05CZA624 2m: 05CZA625</p>	ABS coolant proof caliper IP65/66/67
 <p>Equipped with the output switch Waterproof type</p>	<p>1m: 05CZA662 2m: 05CZA663</p>	Coolant proof micrometer Quantumike IP65
 <p>Equipped with the output switch Straight</p>	<p>1m: 959149 2m: 959150</p>	ABS digimatic caliper
 <p>Flat (10-pin)</p>	<p>1m: 936937 2m: 965014</p>	ABS digimatic indicator ID-H/F QM-Height
 <p>Round (6-pin)</p>	<p>1m: 937387 2m: 965013</p>	Quick micro Digimatic Holtest (Models before 2007) ABS Borematic (Models before 2011)
 <p>Flat straight</p>	<p>1m: 905338 2m: 905409</p>	ABS digimatic indicator ID-C/S/U
 <p>Flat straight Waterproof type</p>	<p>1m: 21EAA194 2m: 21EAA190</p>	ABS digimatic indicator ID-N/B

1.5 Technical Terms

1.5.1 Device No.

The device No. displayed on each the USB connector ("A" plug) of the USB-ITN unit, USB-FSW unit, USB dongle, U-WAVE, and IT-016U unit is individual identification information. These devices Nos. are fixed and cannot be changed.

USB-ITPAK displays the device No. of the USB-ITN, USB-FSW, U-WAVE, and IT-016U units as the default.

The device Nos. displayed by USB-ITPAK can be changed.

NOTE • The "Device ID" of U-WAVE means the "Device No." of USB-ITPAK.

TIP • For how to change device Nos., refer to "CHAPTER 4 MEASUREMENT DATA COLLECTION (BASICS)".

1.5.2 Dedicated VCP driver

USB-ITN / IT-016U operates in either the Human Interface Device (HID) or Virtual COM Port (VCP) mode.

USB-ITPAK uses USB-ITN / IT-016U in the VCP mode to achieve various functions.

The dedicated VCP driver is required to use USB-ITN / IT-016U in the VCP mode, and is included on the CD supplied with USB-ITPAK.

TIP • For how to install the dedicated VCP driver, refer to "2.2 Installing and Uninstalling the VCP driver".

1.5.3 Procedure

The procedure consists of information that specifies the data collection method in USB-ITPAK. This information includes the Excel file that is the output destination, the USB-ITN / U-WAVE / IT-016U unit to be used, the input method ("sequential", "batch", etc.), the cell movement direction following input ("down", "right", etc.).

The procedure is saved as a "setting file" by USB-ITPAK.

Inspections can be performed efficiently by preparing in-process inspection and acceptance inspection procedures in advance.

1.5.4 Setting files

These are the files for saving the "procedures" used in USB-ITPAK (file extension: itp ,it2).

1.5.5 Sequential measurement

Sequential measurement is a measurement method that can be selected in the "procedure" used by USB-ITPAK.

During sequential measurement, one or more measuring tools are used and the measurement data is input from the measuring tool(s) registered beforehand in the procedure to an Excel inspection table sheet.

Example: Measurements in a pre-set sequence using one measuring tool, such as measuring the length and then the width

Example: Measurements using multiple measuring tools, such as measuring the length with a caliper and then the diameter using a micrometer

1.5.6 Batch measurement

Batch measurement is a measurement method that can be selected in the "procedure" used by USB-ITPAK.

During batch measurement, measurement data is acquired in batch from multiple measuring tools.

Example: Batch collection of measurement data from all measuring tools registered in the procedure by attaching multiple measuring tools to measurement jigs, setting workpieces to these tools, and operating a foot switch

1.5.7 Individual measurement

Individual measurement is a measurement method that can be selected in the "procedure" used in USB-ITPAK.

For individual measurement, the worksheet and cells to which the measurement data is input are set for each measuring tool. This method allows multiple operators to randomly perform measurement, and the measurement data from each measuring tool is input to the respectively specified cells.

Example: Data collection from three measuring tools operated by respective operators

1.5.8 Data entry application

When selecting [Excel], data input is available only in Excel (2000 or higher).

Data input is not available using spreadsheet software other than Excel (such as OpenOffice Calc).

When selecting [Optional], data input is available in an active application (that means keyboard input is available) at the time of data collection.

Data input is also available using spreadsheet software equivalent to Excel (such as OpenOffice Calc).

MEMO

2

INSTALLATION AND UNINSTALLATION

2.1 Installing and Uninstalling USB-ITPAK

2.1.1 Installing USB-ITPAK

- NOTE**
- To install USB-ITPAK, log in to Windows with "Administrator" authority.
 - Do not connect USB-ITN, USB-FSW or IT-016U to the PC before USB-ITPAK has been installed.
 - To use USB-ITN, USB-FSW or IT-016U with USB-ITPAK, a dedicated VCP driver must be installed for each USB-ITN, USB-FSW or IT-016U unit.
For how to install the dedicated VCP driver, refer to "2.2 Installing and Uninstalling the VCP driver".

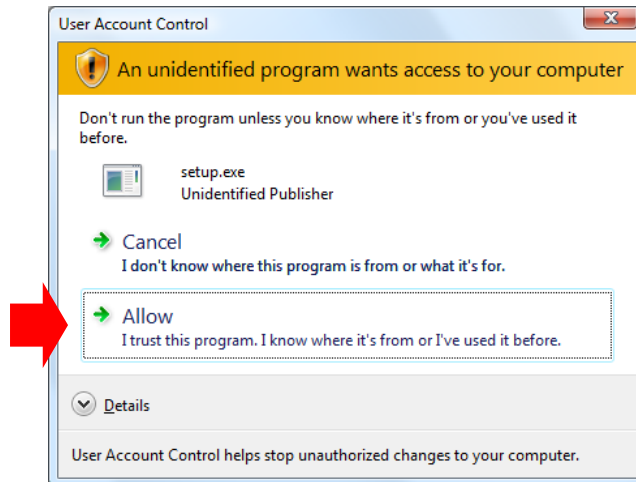
- IMPORTANT**
- When using USB-ITPAK on Windows 8/8.1, ".NET Framework 3.5" is required.
 - If ".NET Framework 3.5" has not been installed on Windows 8/8.1, connect the PC to the Internet before installing USB-ITPAK. While installing USB-ITPAK, ".NET Framework 3.5", which is required for operation, will be downloaded from the Internet.
 - After USB-ITPAK has been installed on Windows 8/8.1, connection of the PC to the Internet is not required. The Internet connection is neither required when ".NET Framework 3.5" has already been installed on Windows 8/8.1.
 - When using U-WAVE, U-WAVEPAK supplied with U-WAVE-R is required.
For details about the U-WAVE, refer to the instruction manuals supplied with U-WAVE.
 - To use U-WAVE with USB-ITPAK, perform the following in advance.
 - 1) Install the exclusive VCP driver for each U-WAVE-R from the supplied CD with U-WAVEPAK.
 - 2) Register U-WAVE-T to U-WAVE-R using U-WAVEPAK.

- 1) Start the PC and insert the supplied CD in the CD drive.

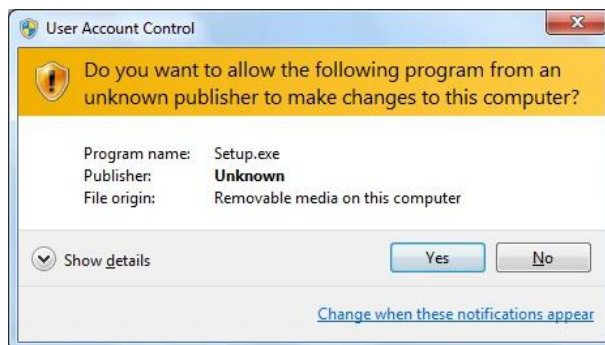
-
- 2) From Windows Explorer, execute "Setup.exe" in the "Setup" folder of the supplied CD.

If the [User Account Control] warning is displayed in Windows Vista / Windows 7/ Windows 8/8.1, perform as follows.

Windows Vista: Select [Allow].

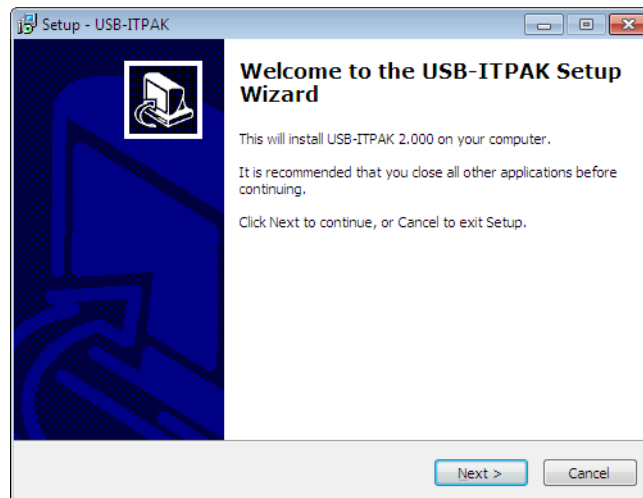


Windows 7/ Windows 8/8.1: Click the [Yes] button.

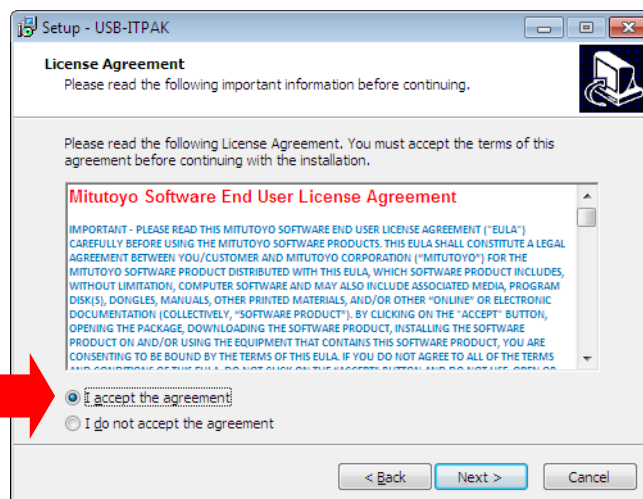


2. INSTALLATION AND UNINSTALLATION

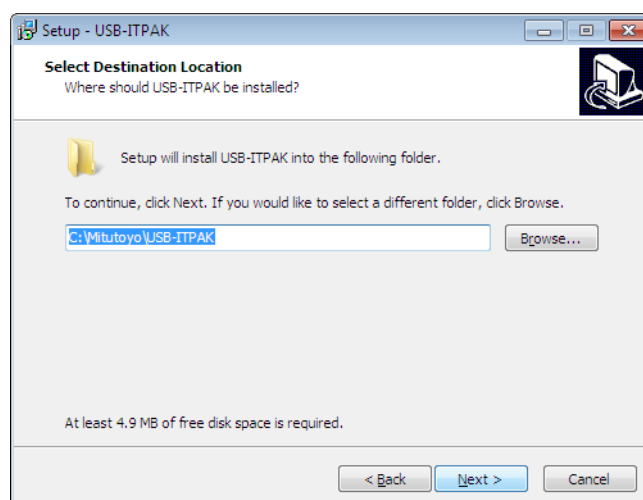
- 3) When the [Welcome to the USB-ITPAK Setup Wizard] dialog box is displayed, click the [Next] button.



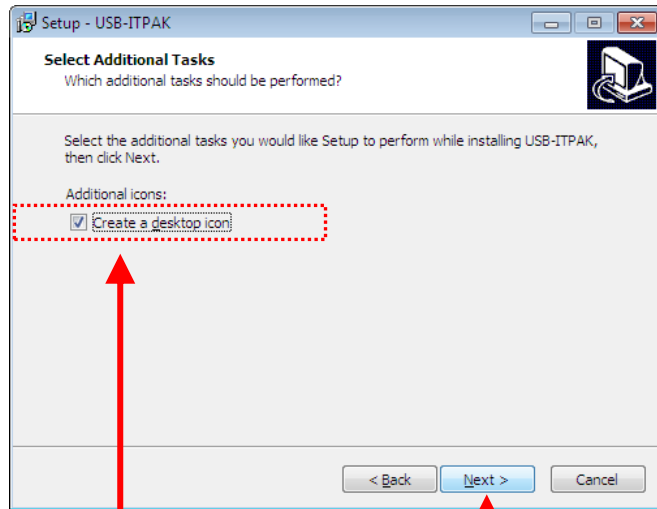
- 4) Read the [License Agreement] and if you accept this agreement, select [I accept the agreement] and then click the [Next] button.



- 5) When the [Select Destination Location] dialog box is displayed, click the [Next] button.



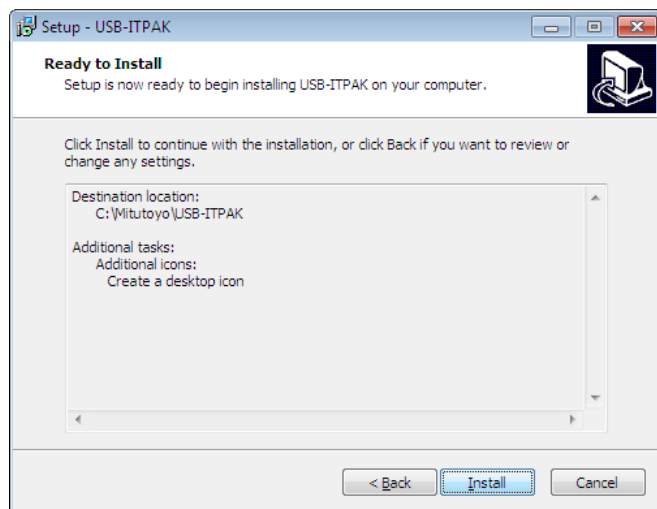
-
- 6) When the [Select Additional Tasks] dialog box is displayed, click the [Next] button. To create an icon on the desktop, follow steps a) and b), in this sequence.



b) Click the [Next] button.

a) Select [Create a desktop icon].

- 7) When the [Ready to Install] dialog box is displayed, click the [Install] button.



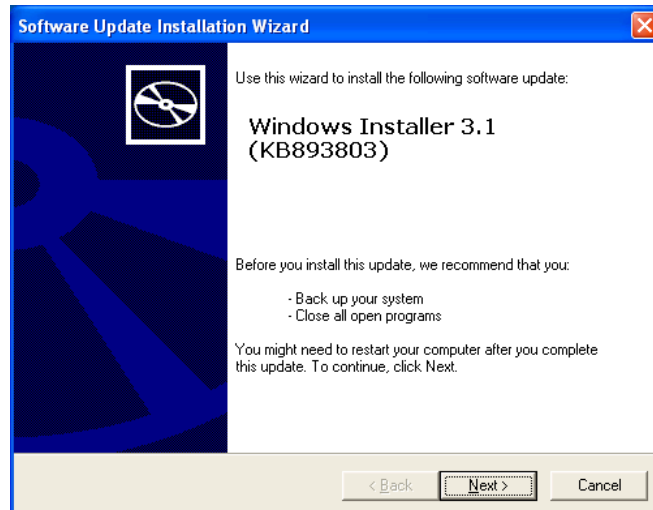
NOTE • When USB-ITPAK has been installed, a "Sample Inspection Table File" is installed in the "Sample" folder in the install destination folder.

If a "Sample Inspection Table File" already exists in the "Sample" folder, back up this file to a different folder if it will be needed later before installing USB-ITPAK.

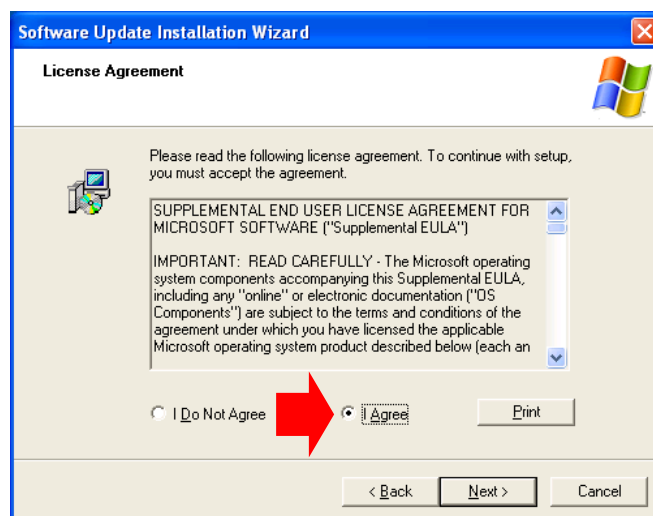
2. INSTALLATION AND UNINSTALLATION

- 8) If Windows Installer 3.1 is not yet installed, the [Windows Installer 3.1 (KB893803)] dialog box is displayed. Click the [Next] button.

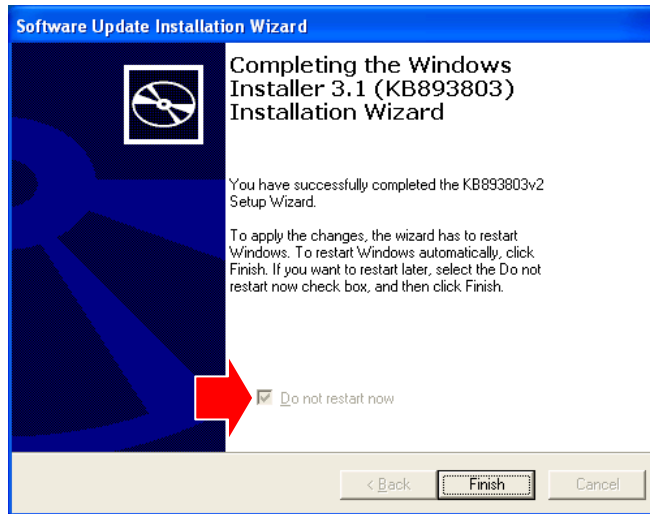
- NOTE**
- If Windows Installer 3.1 is already installed, step 8) is skipped.
 - This section explains using the screenshots of Windows XP.



Read the [License Agreement] and if you accept this agreement, select [I Agree] and then click the [Next] button.



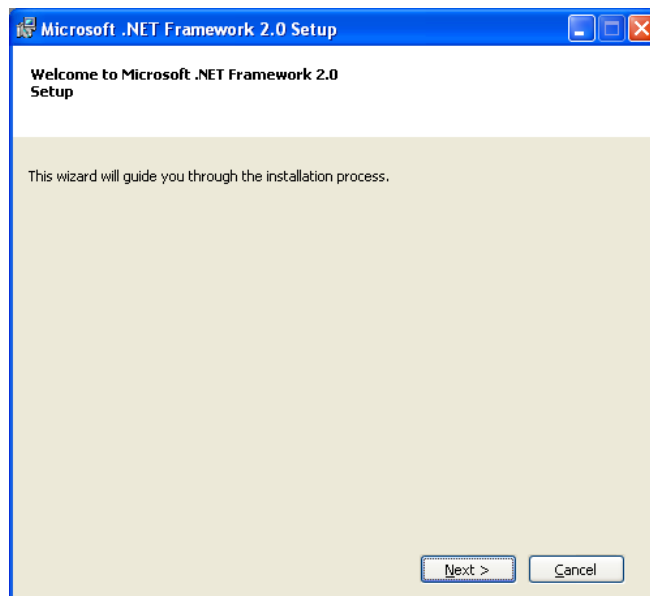
When the [Completing the Windows Installer 3.1 (KB893803) Installation Wizard] dialog box is displayed, select [Do not restart now] and click the [Finish] button.



- 9) If Microsoft .NET Framework 2.0 is not yet installed, the [Welcome to Microsoft .NET Framework 2.0 Setup] dialog box is displayed. Click the [Next] button.

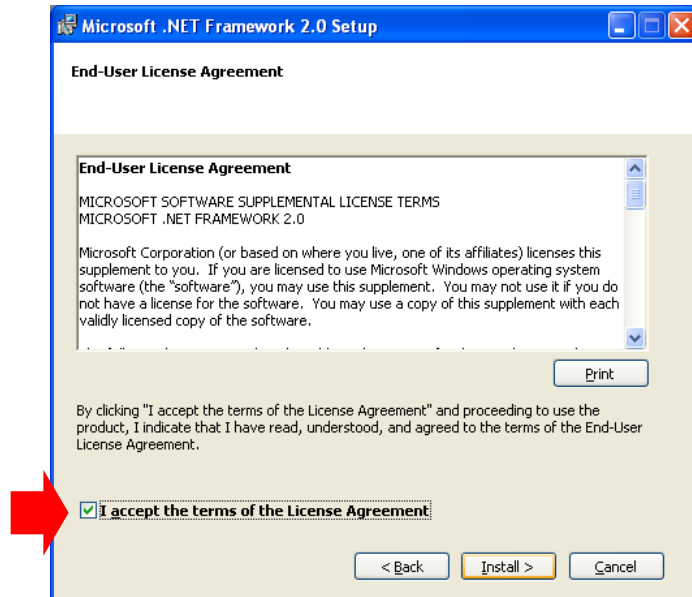
NOTE

- If Microsoft .NET Framework 2.0 is already installed, step 9) is skipped.
- This section explains using the screenshots of Windows XP.

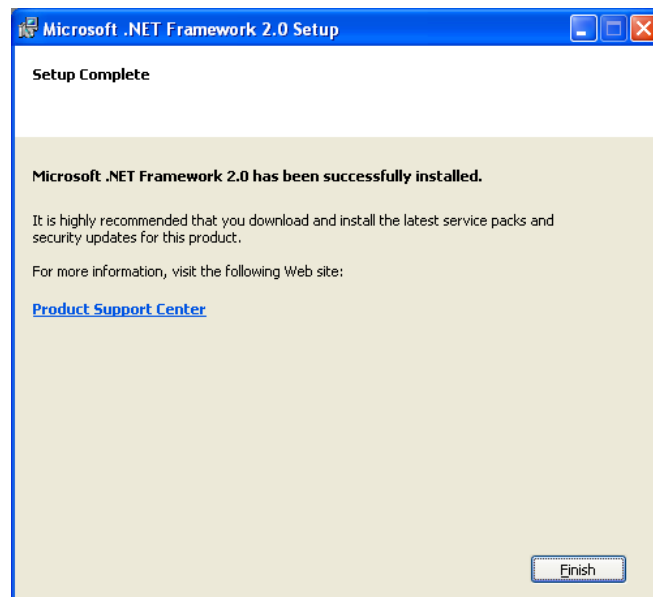


2. INSTALLATION AND UNINSTALLATION

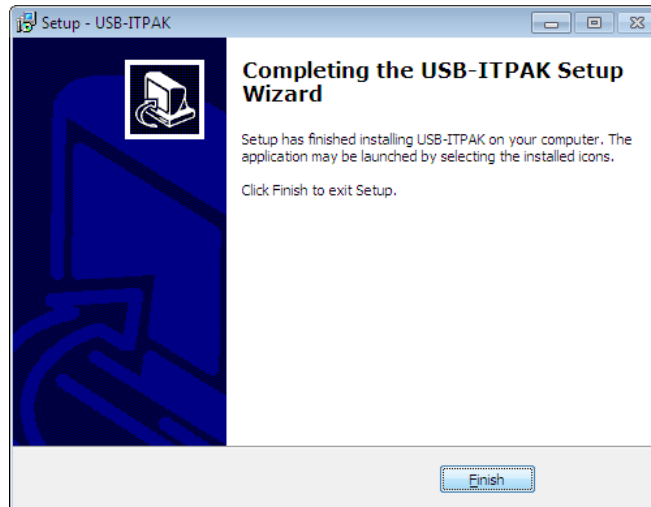
Read the [License Agreement] and if you accept this agreement, select [I accept the terms of the License Agreement] and click the [Install] button.



When the [Setup Complete] dialog box is displayed, click the [Finish] button.



-
- 10) When the following dialog box is displayed, click the [Finish] button to complete the installation procedure.



2.1.2 Uninstalling USB-ITPAK

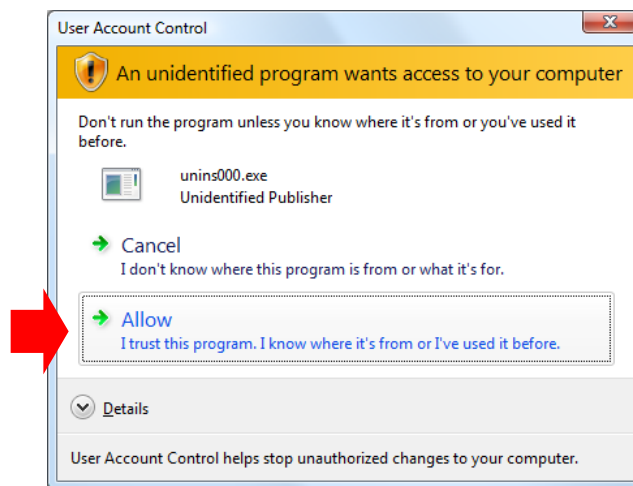
- NOTE**
- To uninstall USB-ITPAK, log in to Windows with "Administrator" authority.
 - For details about the U-WAVE, refer to the instruction manuals supplied with U-WAVE.

- 1) Click the Start button of Windows and select [All Programs] - [USB-ITPAK], and then [Uninstall USB-ITPAK].

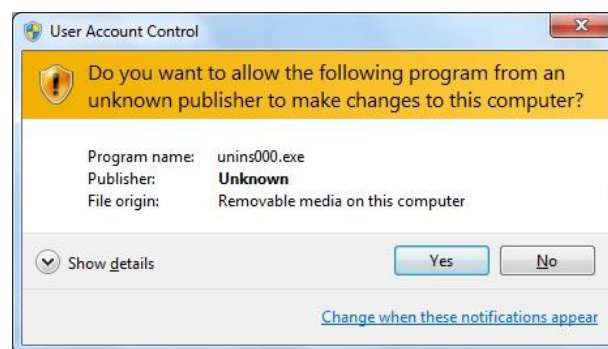
- NOTE**
- If the OS is Windows 8/8.1, press the [X] key while holding down the Windows logo key. Select [Programs and Features] from the displayed menu and open [Programs and Features]. Select USB-ITPAK from the list and click [Uninstall].

If the [User Account Control] warning is displayed in Windows Vista / Windows 7, perform as follows.

Windows Vista: Select [Allow].



Windows 7: Click the [Yes] button.



- 2) When [Are you sure you want to completely remove USB-ITPAK and all of its components?] is displayed, click the [Yes] button.
- 3) When [USB-ITPAK was successfully removed from your computer.] is displayed, uninstallation is successful. Click the [OK] button.

2.2 Installing and Uninstalling the VCP Driver

2.2.1 Installing the VCP driver (Windows XP)

- NOTE**
- To install the VCP driver, log in to Windows with "Administrator" authority.
 - For details about the installation of the device driver for U-WAVE, refer to the U-WAVEPAK User's Manual.
-

To use USB-ITN, USB-FSW or IT-016U with USB-ITPAK, a dedicated VCP driver must be installed for each USB-ITN, USB-FSW or IT-016U unit.

- 1) Connect USB-ITN, USB-FSW or IT-016U to the PC.

When USB-ITN, USB-FSW or IT-016U is connected to a PC for the first time, the PC recognizes it as a USB human interface device and the HID driver is automatically installed.

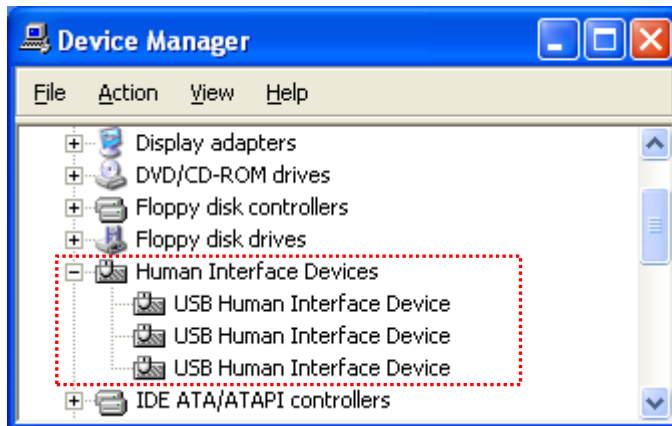
- 2) Check whether USB-ITN, USB-FSW or IT-016U is correctly connected as the USB human interface device.

Click the Start button of Windows and open [Control Panel].

From [Performance and Maintenance], open [System].

Select the [Hardware] tab and open [Device Manager].

When the following is displayed, open [Human Interface Devices].



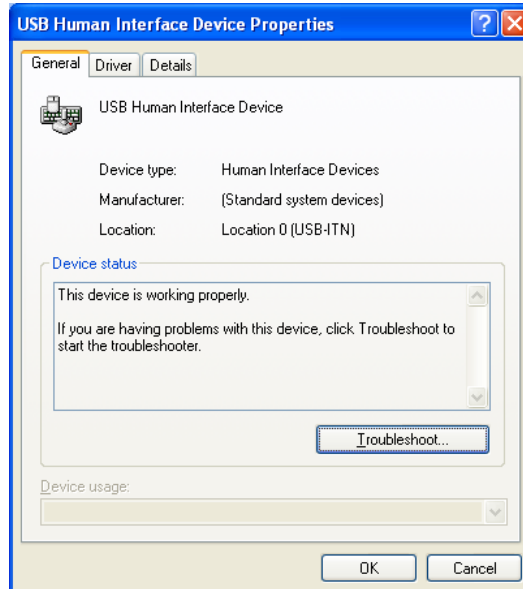
When USB-ITN, USB-FSW or IT-016U is connected to the USB connector, one [USB Human Interface Device] is added.

Connect or disconnect USB-ITN, USB-FSW or IT-016U and check whether the number of displayed [USB Human Interface Device] increases or decreases as a result.

NOTE • To identify the connected device, follow the steps below.

Right-click the desired [USB Human Interface Device] and click [Properties] in the menu.

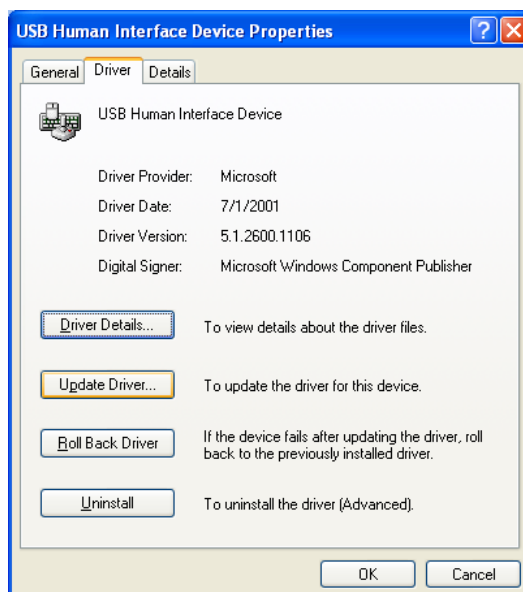
Check if USB-ITN or USB-FSW is displayed in the Location field of the [General] tab. (IT-016U will be displayed as "USB-ITN".)



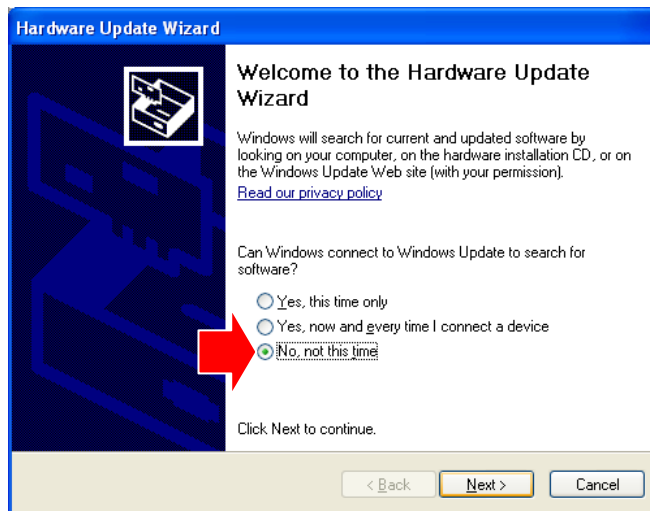
3) Install the dedicated VCP driver.

Right-click the added [USB Human Interface Device] and click [Properties] in the menu.

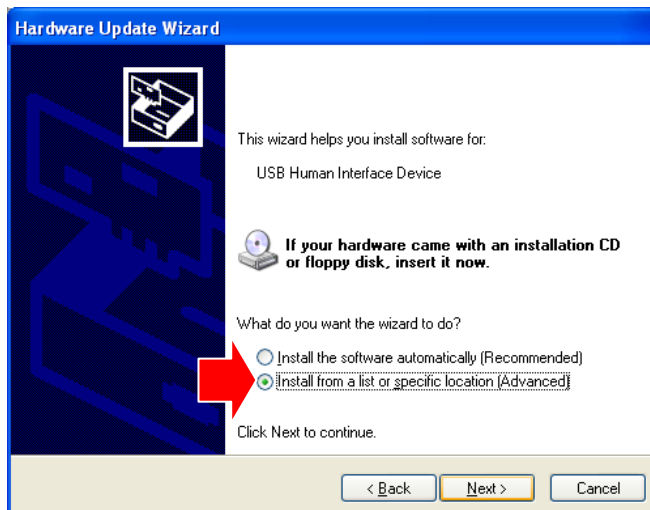
Click the [Update Driver] button in the [Driver] tab, and install the dedicated VCP driver following the procedure below.



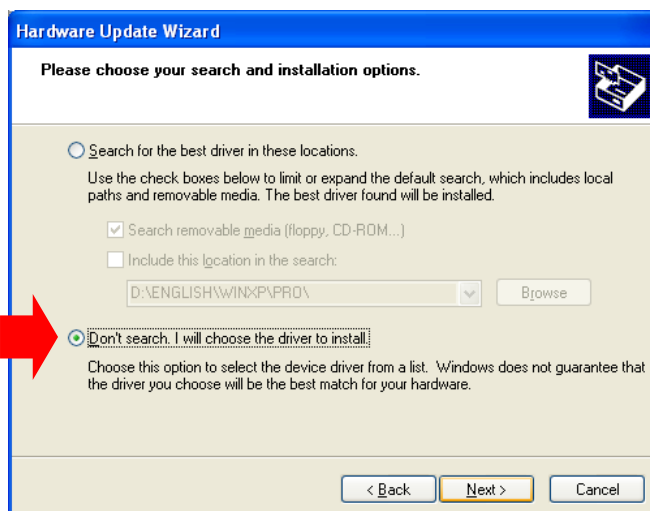
Select [No, not this time] and click the [Next] button.



Select [Install from a list or specific location] and click the [Next] button.



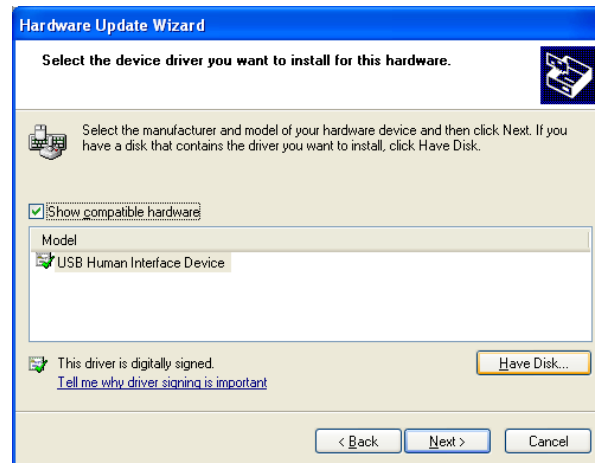
Select [Don't search. I will choose the driver to install.] and click the [Next] button.



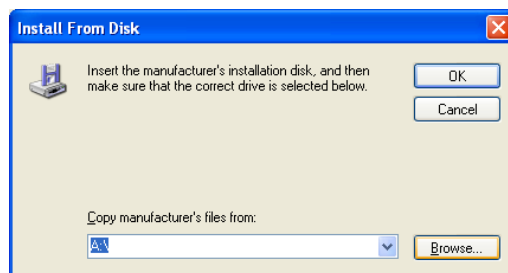
2. INSTALLATION AND UNINSTALLATION

NOTE • Make sure to select "Don't search. I will choose the driver to install.". The driver will not be installed when selecting a searching place if "Search for the best driver in these locations." is selected.

Click the [Have Disk...] button.



Click the [Browse...] button.



Insert the supplied CD in the PC and select the folder according to the device in the "Drivers" folder.

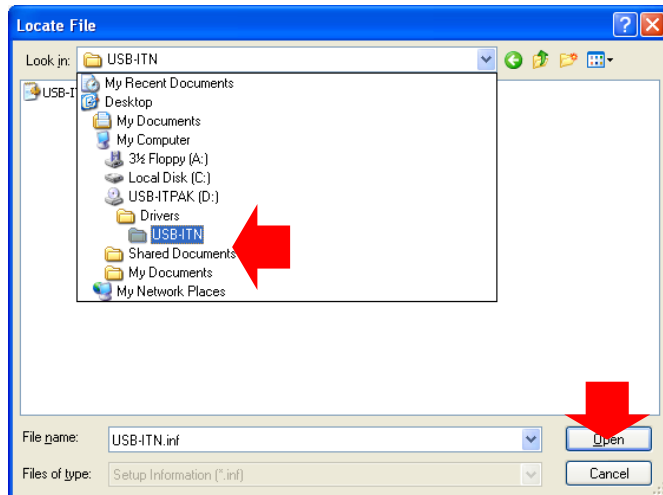
To install USB-ITN, select the "USB-ITN" folder.

To install USB-FSW, select the "USB-FSW" folder.

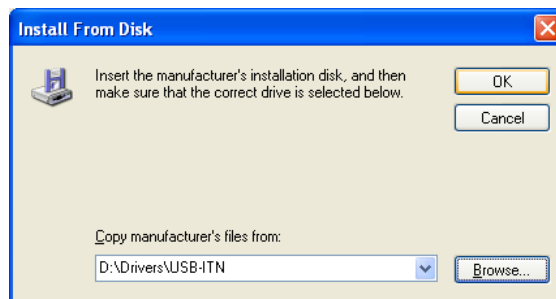
When installing IT-016U, select the "USB-ITN" folder.

Select any one of the files in the folder and click the [Open] button.

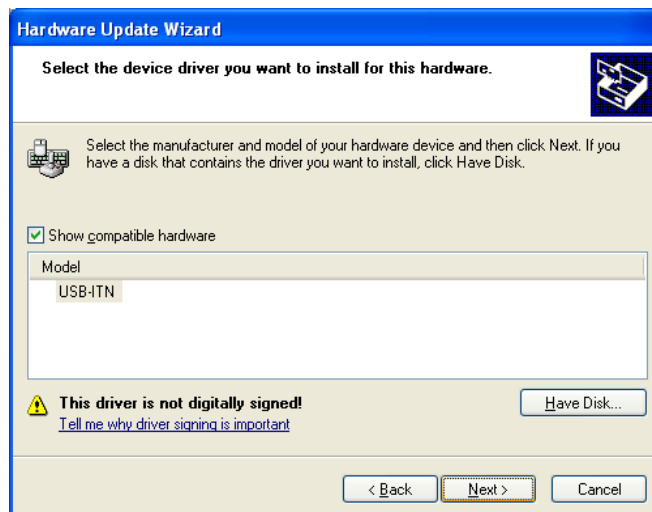
NOTE • Regardless of the file selected by the user, the installer selects the appropriate file from the specified folder according to the connected device.



Click the [OK] button.



Check that USB-ITN or USB-FSW is selected in the Model field, and then click the [Next] button.

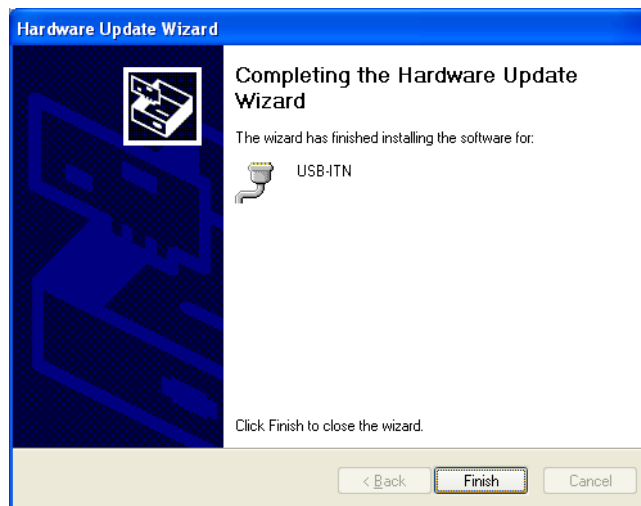


2. INSTALLATION AND UNINSTALLATION

A warning about Windows XP logo authentication is displayed. Click the [Continue Anyway] button.

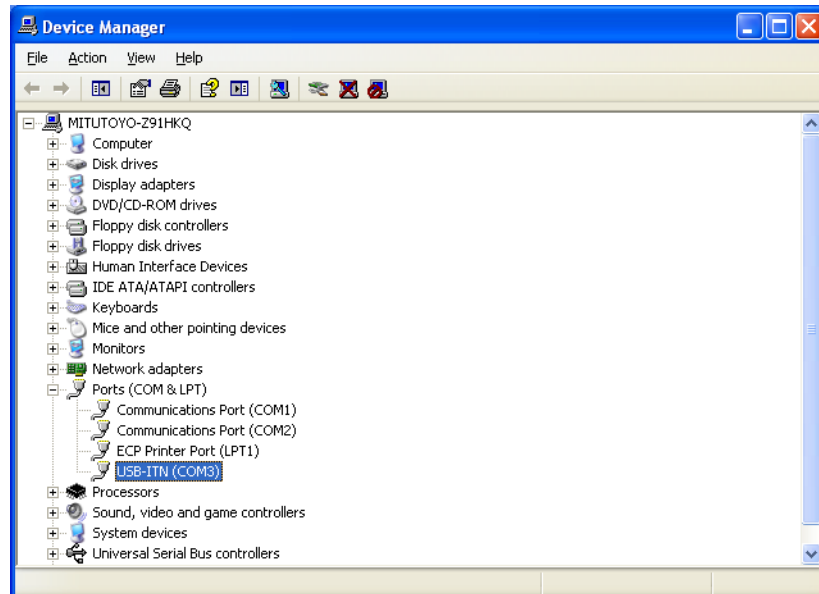


When the [Completing the Hardware Update Wizard] dialog box is displayed, click the [Finish] button.



-
- 4) If the hardware has been correctly updated, the item of the device that has been installed moves from [Human Interface Device] to USB-ITN (COMx) or USB-FSW (COMx) under [Ports (COM & LPT)] in the [Device Manager] dialog box.

- NOTE**
- The "x" in COMx is the COM port number; the installer automatically assigns an available number. In the following example, this number is "3".
 - When the VCP driver is installed, USB-ITN, USB-FSW and IT-016U are recognized as ports (COM & LPT), not human interface devices. At this time, IT-016U will be displayed as "USB-ITN".



- 5) If multiple USB-ITN, USB-FSW or IT-016U units are to be connected, repeat steps 1) to 4).

- NOTE**
- When installing multiple USB-ITN, USB-FSW or IT-016U units, the above procedure is required for each unit.

2.2.2 Installing the VCP driver (Windows 8/8.1 / Windows 7 / Windows Vista)

- NOTE**
- To install the VCP driver, log in to Windows with "PC administrator" authority.
 - If the OS is Windows Vista, [USB Human Interface Device] corresponds to [USB Input Device].
 - For details about the installation of the device driver for U-WAVE, refer to the U-WAVEPAK User's Manual.
-

To use USB-ITN, USB-FSW or IT-016U with USB-ITPAK, a dedicated VCP driver must be installed for each USB-ITN, USB-FSW or IT-016U unit.

- 1) Connect USB-ITN, USB-FSW or IT-016U to the PC.

When USB-ITN, USB-FSW or IT-016U is connected to a PC for the first time, the PC recognizes it as a USB human interface device and the HID driver is automatically installed.

- 2) Check whether USB-ITN, USB-FSW or IT-016U is correctly connected as the USB human interface device.

If the OS is Windows 8/8.1, press the [X] key while holding down the Windows logo key. Select [Device Manager] from the displayed menu and open [Device Manager].

If the OS is Windows 7 / Windows Vista, click the Windows Start button and perform as follows in [Control Panel].

Windows 7: Open [System and Security], and open [Device Manager] in [System].

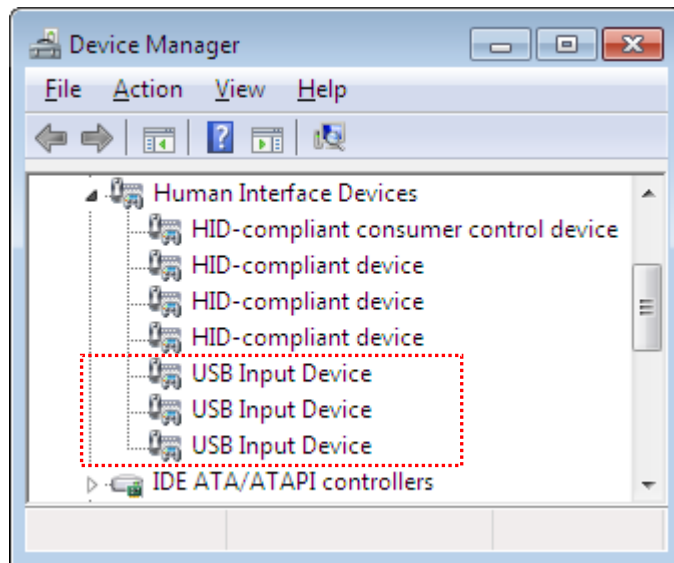
Windows Vista: From [System and Maintenance], open [Device Manager].

If the [User Account Control] warning is displayed, perform as follows.

Windows 7: click [Yes].

Windows Vista: click [Continue].

When the following is displayed, open [Human Interface Devices].



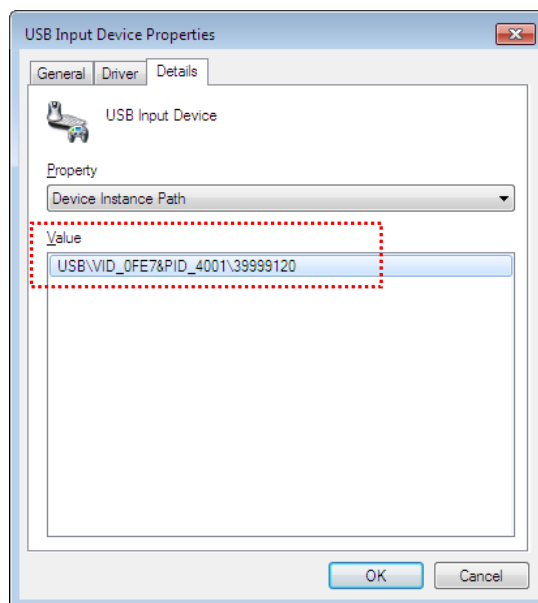
When USB-ITN, USB-FSW or IT-016U is connected to the USB connector, one [USB Input Device] is added.

Connect or disconnect USB-ITN, USB-FSW or IT-016U and check whether the number of displayed [USB Input Device] increases or decreases as a result.

NOTE • To identify the connected device, follow the steps below.

Right-click the desired [USB Input Device] and click [Properties] in the menu.

Select the [Details] tab and select [Device Instance Path] in Property.



Devices can be identified depending on the contents of [Value] as follows.

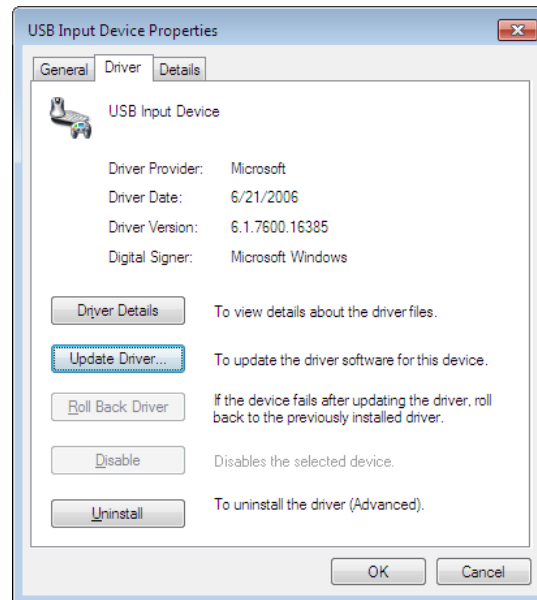
- USB-ITN : USB\VID_0FE7&PID_4001\ *****
- USB-FSW : USB\VID_0FE7&PID_4002\ *****
- IT-016U : USB\VID_0FE7&PID_4001\ 8*****

***** indicates an 8-digit serial number.

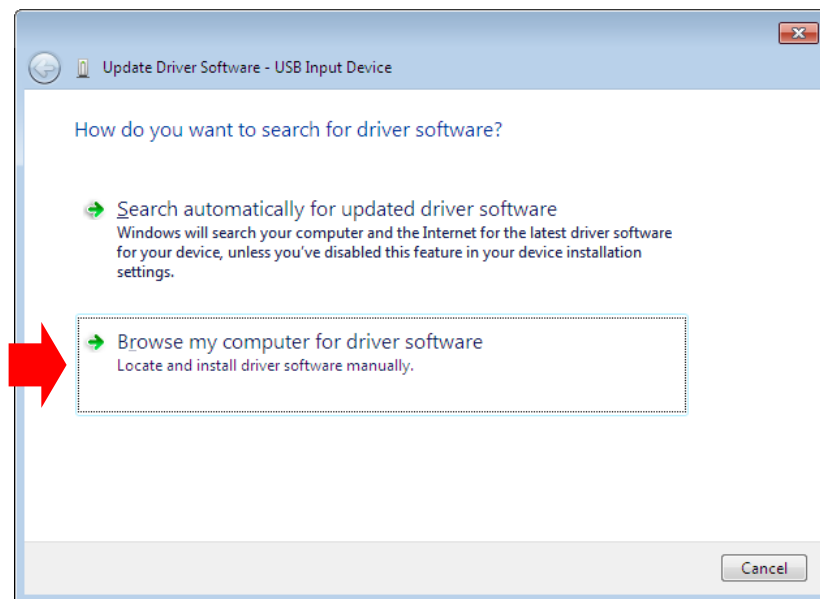
3) Install the dedicated VCP driver.

Right-click the added [USB Input Device] and click [Properties] in the menu.

Click the [Update Driver] button in the [Driver] tab, and install the dedicated VCP driver following the procedure below.

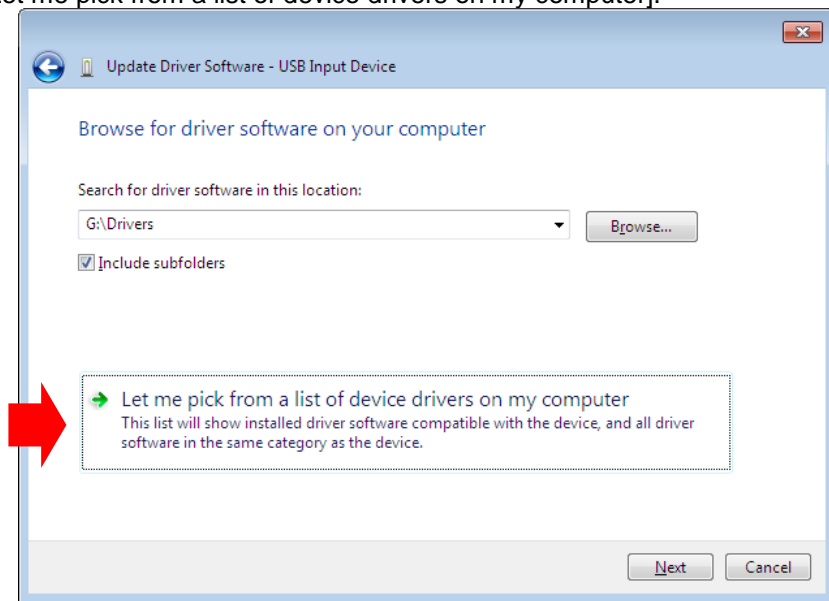


Select [Browse my computer for driver software].

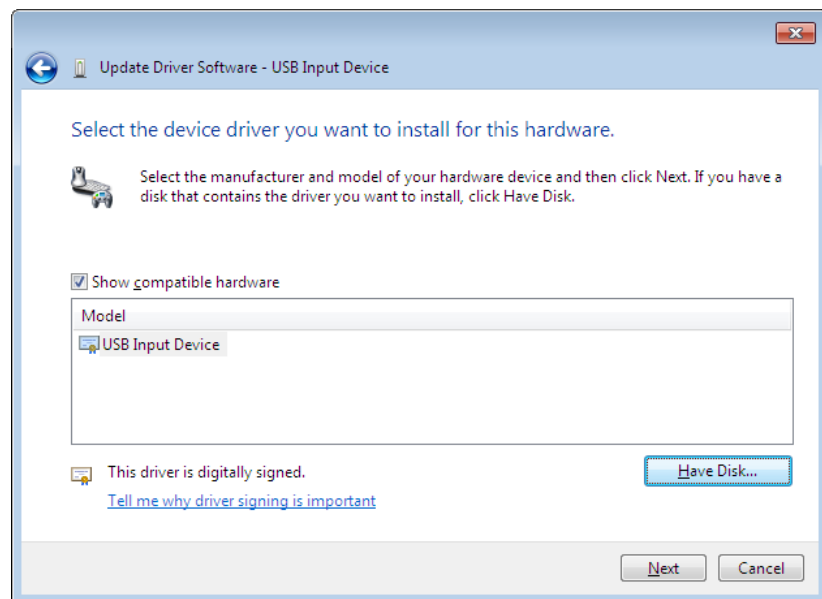


2. INSTALLATION AND UNINSTALLATION

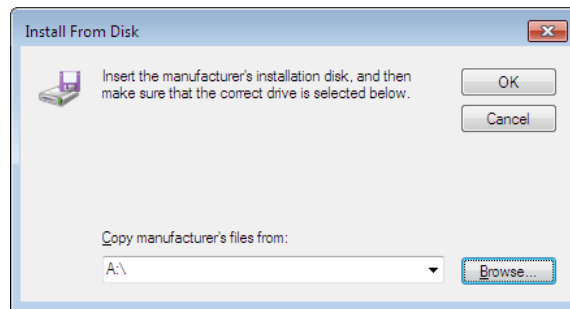
Select [Let me pick from a list of device drivers on my computer].



Click the [Have Disk...] button.



Click the [Browse...] button.



Insert the supplied CD in the PC and select the folder according to the device in the "Drivers" folder.

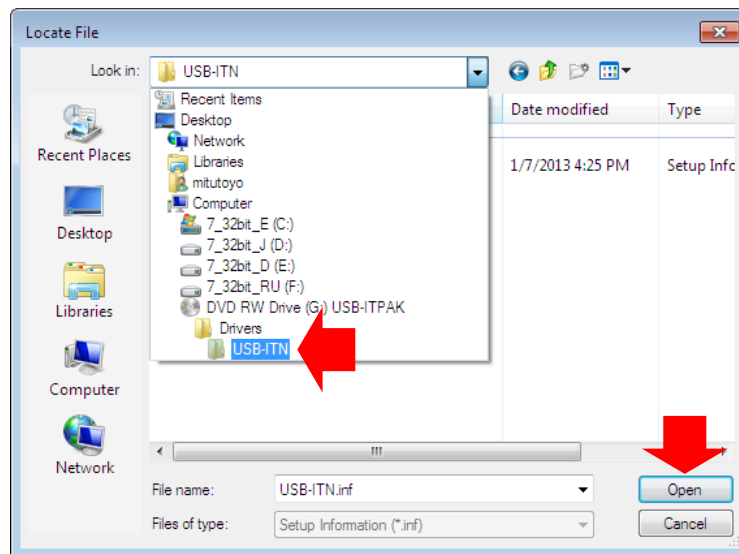
To install USB-ITN, select the "USB-ITN" folder.

To install USB-FSW, select the "USB-FSW" folder.

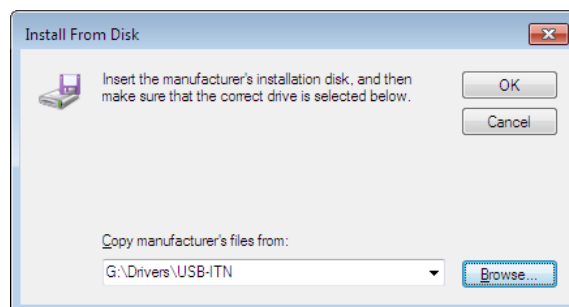
To install IT-016U, select the "USB-ITN" folder.

Select any one of the files in the folder and click the [Open] button.

NOTE • Regardless of the file selected by the user, the installer selects the appropriate file from the specified folder according to the connected device.

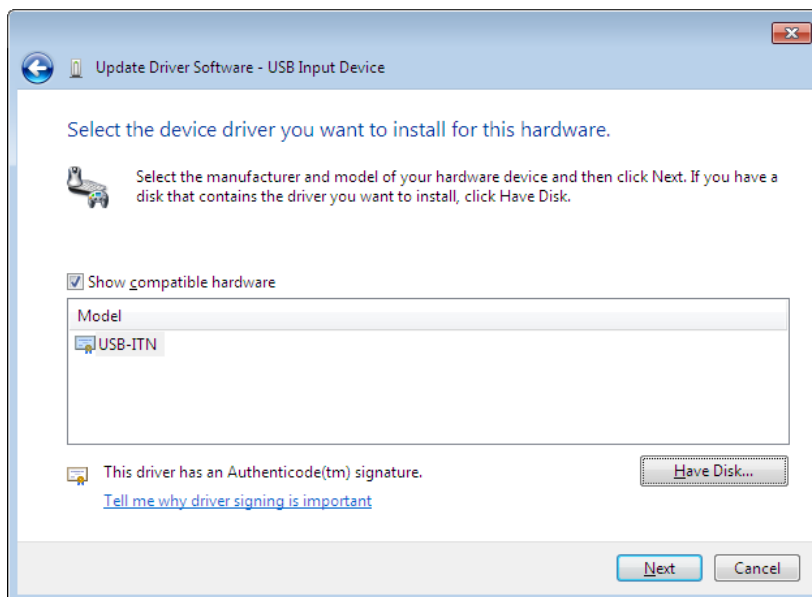


Click the [OK] button.

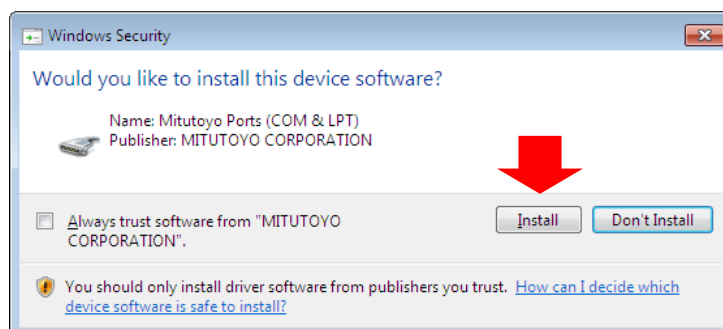


2. INSTALLATION AND UNINSTALLATION

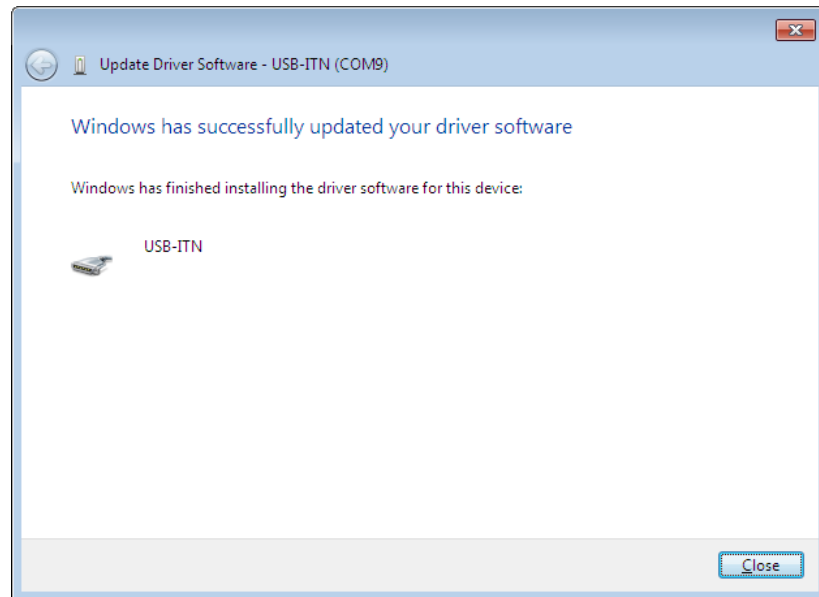
Check that USB-ITN or USB-FSW is selected in the Model field, and then click the [Next] button.



Click the [Install] button.

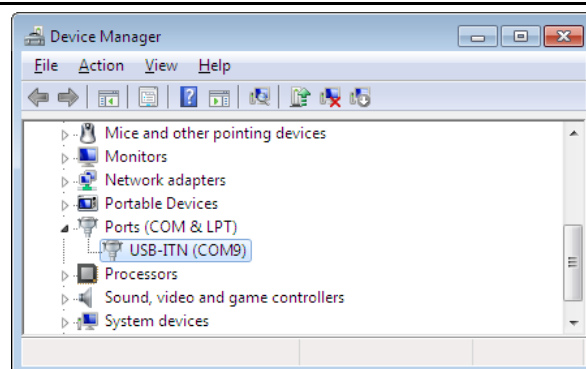


When the message [Windows has successfully updated your driver software] is displayed, the installation is completed. Click the [Close] button.



- 4) If the hardware has been correctly updated, the item of the device that has been installed moves from [Human Interface Device] to USB-ITN (COMx) or USB-FSW (COMx) under [Ports (COM & LPT)] in the [Device Manager] dialog box.

- NOTE**
- The "x" in COMx is the COM port number; the installer automatically assigns an available number. In the following example, this number is "4".
 - When the VCP driver is installed, USB-ITN, USB-FSW and IT-016U are recognized as ports (COM & LPT), not human interface devices. At this time, IT-016U will be displayed as "USB-ITN".



- 5) If multiple USB-ITN, USB-FSW or IT-016U units are to be connected, repeat steps 1) to 4).

- NOTE**
- When installing multiple USB-ITN, USB-FSW or IT-016U units, the above procedure is required for each unit.

2.2.3 Installing the VCP driver (Windows 2000)

- NOTE**
- To install the VCP driver, log in to Windows with "Administrator" authority.
 - For details about the installation of the device driver for U-WAVE, refer to the U-WAVEPAK User's Manual.

To use USB-ITN, USB-FSW or IT-016U with USB-ITPAK, a dedicated VCP driver must be installed for each USB-ITN, USB-FSW or IT-016U unit.

- 1) Connect USB-ITN, USB-FSW or IT-016U to the PC.

When USB-ITN, USB-FSW or IT-016U is connected to a PC for the first time, the PC recognizes it as a USB human interface device and the HID driver is automatically installed.

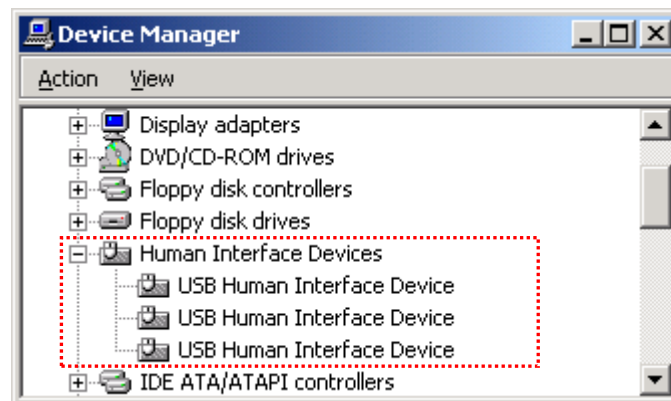
- 2) Check whether USB-ITN, USB-FSW or IT-016U is correctly connected as the USB human interface device.

Click the Start button of Windows and open [Control Panel] from the [Settings] menu.

Open [System].

Select the [Hardware] tab and open [Device Manager].

When the following is displayed, open [Human Interface Devices].



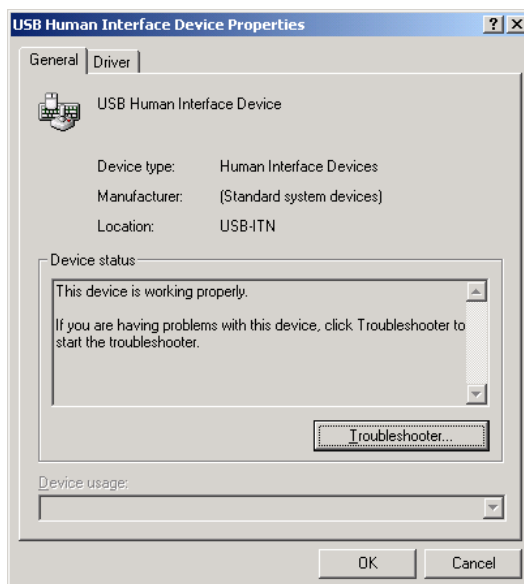
When USB-ITN, USB-FSW or IT-016U is connected to the USB connector, one [USB Human Interface Device] is added.

Connect or disconnect USB-ITN, USB-FSW or IT-016U and check whether the number of displayed [USB Human Interface Device] increases or decreases as a result.

NOTE • To identify the connected device, follow the steps below.

Right-click the desired [USB Human Interface Device] and click [Properties] in the menu.

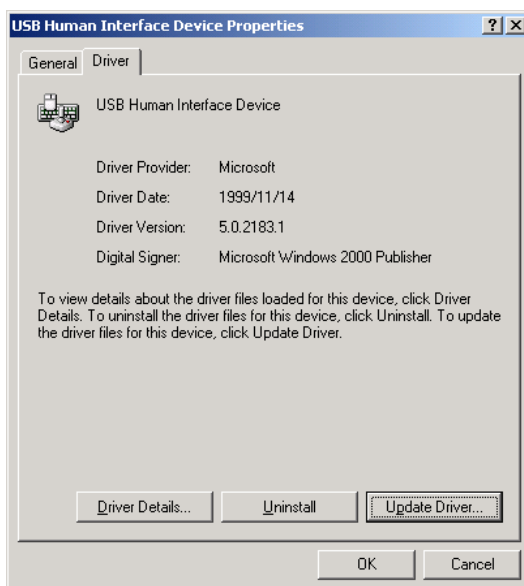
Check if USB-ITN or USB-FSW is displayed in the Location field of the [General] tab. (IT-016U will be displayed as "USB-ITN".)



3) Install the dedicated VCP driver.

Right-click the added [USB Human Interface Device] and click [Properties] in the menu.

Click the [Update Driver] button in the [Driver] tab, and install the dedicated VCP driver following the procedure below.



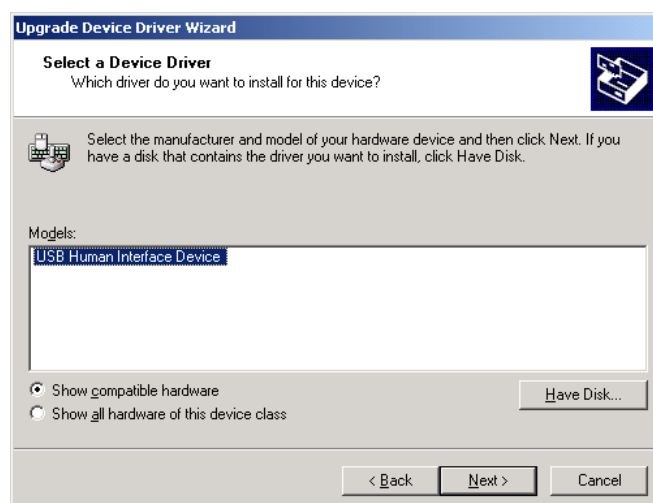
Click the [Next] button.



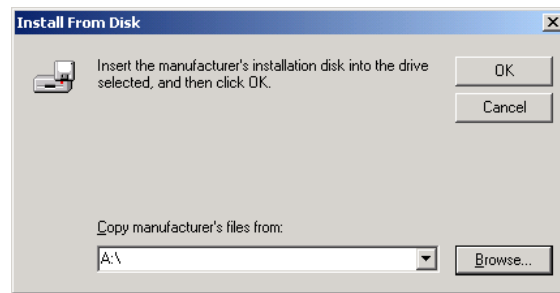
Select [Display a list of the known drivers for this device so that I can choose a specific driver] and click the [Next] button.



Click the [Have Disk...] button.



Click the [Browse...] button.



Insert the supplied CD in the PC and select the folder according to the device in the "Drivers" folder.

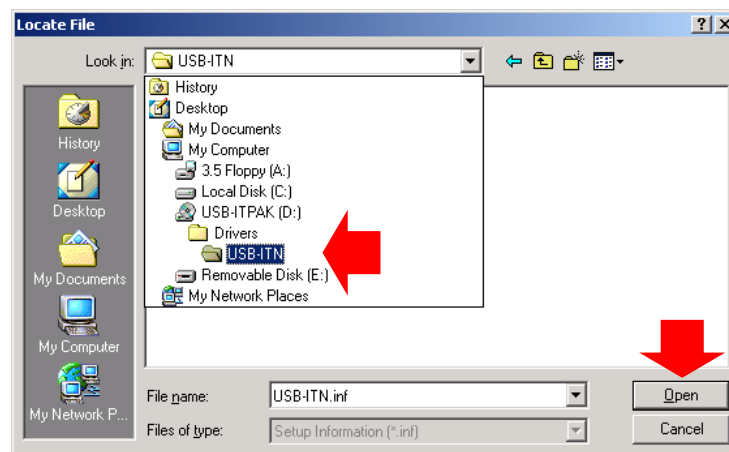
To install USB-ITN, select the "USB-ITN" folder.

To install USB-FSW, select the "USB-FSW" folder.

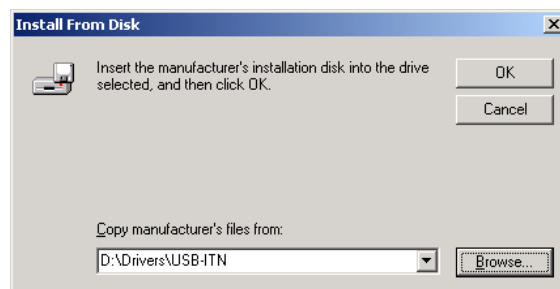
To install IT-016U, select the "USB-ITN" folder.

Select any one of the files in the folder and click the [Open] button.

NOTE • Regardless of the file selected by the user, the installer selects the appropriate file from the specified folder according to the connected device.



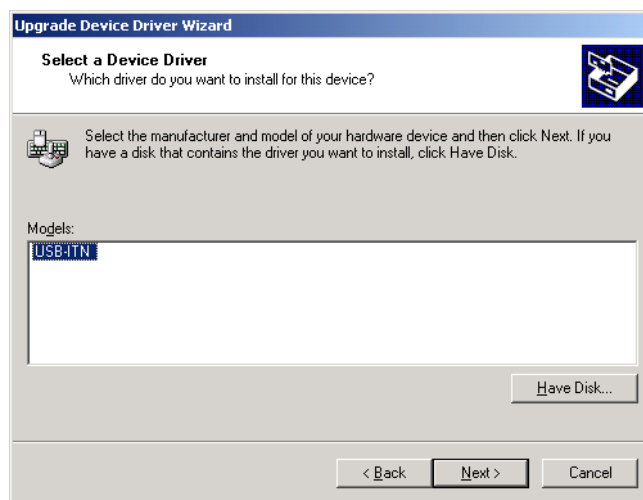
Click the [OK] button.



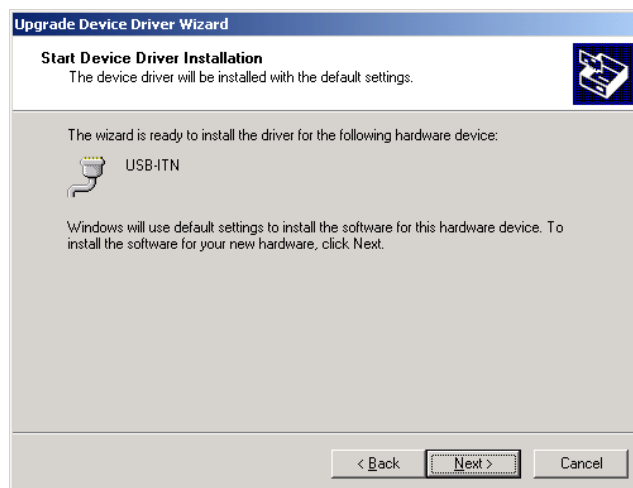
2. INSTALLATION AND UNINSTALLATION

- NOTE** • When the [OK] button on the above dialog box is clicked, the "The specified location does not contain information about your hardware." message may be displayed and the VCP driver may not be recognized. In this case, select again the folder according to the model in the "Drivers" folder on the supplied CD. For details, refer to "8.3.1 Problems related to installing VCP driver".

Check that USB-ITN or USB-FSW is selected in the Model field, and then click the [Next] button.



When the [Start Device Driver Installation] dialog box is displayed, click the [Next] button.

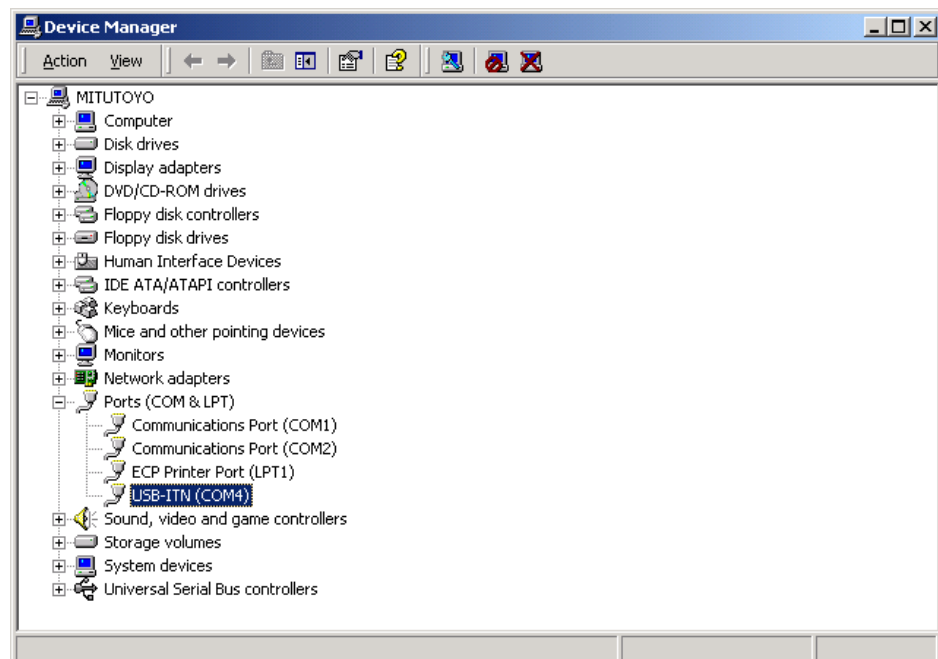


When the [Completing the Upgrade Device Driver Wizard] dialog box is displayed, click the [Finish] button.



- 4) If the hardware has been correctly updated, the item of the device that has been installed moves from [Human Interface Device] to USB-ITN (COMx) or USB-FSW (COMx) under [Ports (COM & LPT)] in the [Device Manager] dialog box.

-
- NOTE**
- The "x" in COMx is the COM port number; the installer automatically assigns an available number. In the following example, this number is "4".
 - When the VCP driver is installed, USB-ITN, USB-FSW and IT-016U are recognized as ports (COM & LPT), not human interface devices. At this time, IT-016U will be displayed as "USB-ITN".
-



- 5) If multiple USB-ITN, USB-FSW or IT-016U units are to be connected, repeat steps 1) to 4).

-
- NOTE**
- When installing multiple USB-ITN, USB-FSW or IT-016U units, the above procedure is required for each unit.
-

2.2.4 Uninstalling the VCP driver (Windows XP)

- NOTE**
- To uninstall the VCP driver, log in to Windows with "Administrator" authority.
 - For details about the uninstallation of the device driver for U-WAVE, refer to the U-WAVEPAK User's Manual.

Connect the USB-ITN, USB-FSW or IT-016U unit whose VCP driver is to be removed.

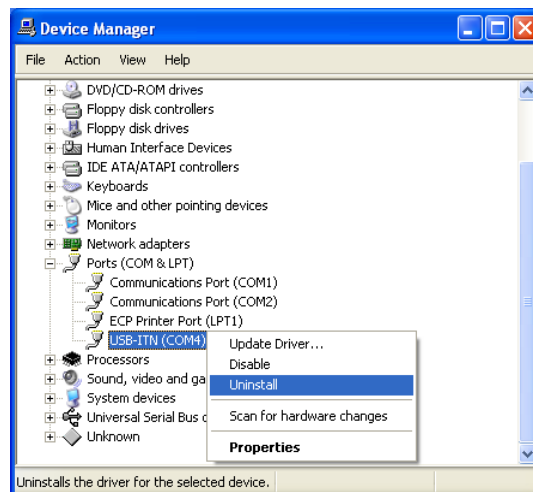
Click the Start button of Windows and open [Control Panel].

Open [System] from [Performance and Maintenance].

Select the [Hardware] tab and open [Device Manager].

When the [Device Manager] dialog box is displayed, right-click the USB-ITN (COMx) or USB-FSW (COMx) in [Ports (COM & LPT)] whose VCP driver is to be deleted, and select [Uninstall].

- NOTE**
- The "x" in COMx is the COM port number. This number is automatically assigned by the installer. In the following example, this number is "4".



When the [Confirm Device Removal] dialog box is displayed, click the [OK] button.



This completes uninstallation.

If the OS is restarted or USB-ITN, USB-FSW or IT-016U is disconnected and then reconnected, the PC recognizes USB-ITN, USB-FSW or IT-016U as a USB human interface device similarly to when it is connected to the PC for the first time and the HID driver is automatically installed.

2.2.5 Uninstalling the VCP driver (Windows 8/8.1 / Windows 7 / Windows Vista)

- NOTE**
- To uninstall the VCP driver, log in to Windows with "PC administrator" authority.
 - For details about the uninstallation of the device driver for U-WAVE, refer to the U-WAVEPAK User's Manual.
-

Connect the USB-ITN, USB-FSW or IT-016U unit whose VCP driver is to be removed.

If the OS is Windows 8/8.1, press the [X] key while holding down the Windows logo key. Select [Device Manager] from the displayed menu and open [Device Manager].

If the OS is Windows 7 / Windows Vista, click the Windows Start button and perform as follows in [Control Panel].

Windows 7: Open [System and Security], and open [Device Manager] in [System].

Windows Vista: From [System and Maintenance], open [Device Manager].

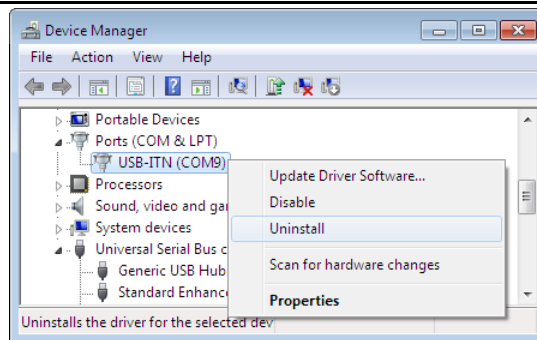
If the [User Account Control] warning is displayed, perform as follows.

Windows 7: click [Yes].

Windows Vista: click [Continue].

When the [Device Manager] dialog box is displayed, right-click the USB-ITN (COMx) or USB-FSW (COMx) in [Ports (COM & LPT)] whose VCP driver is to be deleted, and select [Uninstall].

- NOTE**
- The "x" in COMx is the COM port number. This number is automatically assigned by the installer. In the following example, this number is "4".
-



When the [Confirm Device Uninstall] dialog box is displayed, select the [Delete the driver software for this device.] and click the [OK] button.



This completes uninstallation.

If the OS is restarted or USB-ITN, USB-FSW or IT-016U is disconnected and then

2. INSTALLATION AND UNINSTALLATION

reconnected, the PC recognizes USB-ITN, USB-FSW or IT-016U as a USB human interface device similarly to when it is connected to the PC for the first time and the HID driver is automatically installed.

2.2.6 Uninstalling the VCP driver (Windows 2000)

- NOTE**
- To uninstall the VCP driver, log in to Windows with "Administrator" authority.
 - For details about the uninstallation of the device driver for U-WAVE, refer to the U-WAVEPAK User's Manual.
-

Connect the USB-ITN, USB-FSW or IT-016U unit whose VCP driver is to be deleted.

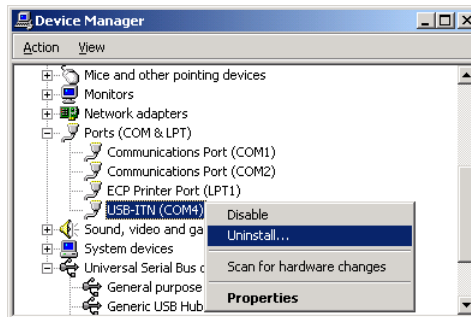
Click the Start button of Windows and open [Control Panel] from the [Settings] menu.

Open [System].

Select the [Hardware] tab and open [Device Manager].

When the [Device Manager] dialog box is displayed, right-click the USB-ITN (COMx) or USB-FSW (COMx) in [Ports (COM & LPT)] whose VCP driver is to be deleted, and select [Uninstall].

- NOTE**
- The "x" in COMx is the COM port number. This number is automatically assigned by the installer. In the following example, this number is "4".
-



When the [Confirm Device Removal] dialog box is displayed, click the [OK] button.



This completes uninstallation.

To return USB-ITN, USB-FSW or IT-016U to the USB human interface device, the HID driver must be installed. In this case, follow the procedure below.

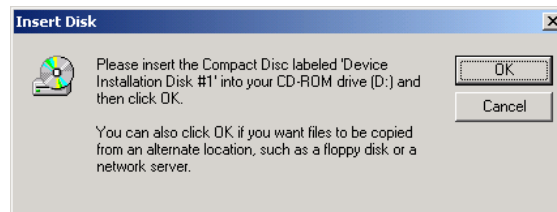
- 1) Remove the CD supplied with USB-ITPAK from the PC.
-

- IMPORTANT**
- If the supplied CD is inserted in the PC, the VCP driver will automatically be installed and USB-ITN, USB-FSW or IT-016U cannot be returned to the USB human interface device.
-

2. INSTALLATION AND UNINSTALLATION

- 2) Restart the OS or disconnect and connect back again the USB-ITN, USB-FSW or IT-016U unit whose HID driver is to be installed.

When the [New Hardware Detected] dialog box is displayed followed by the [Insert Disk] dialog box, click the [Cancel] button.

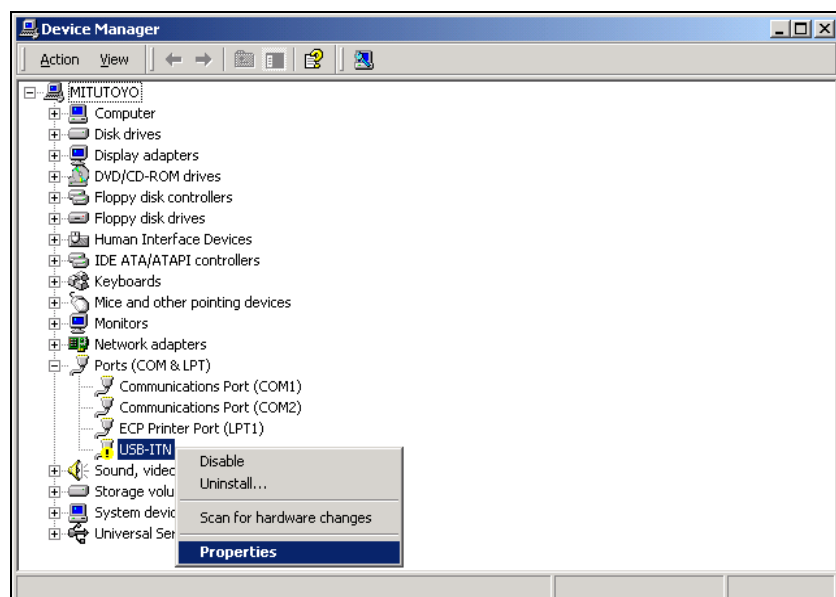


- 3) Click the Start button of Windows and open [Control Panel] from the [Settings] menu.

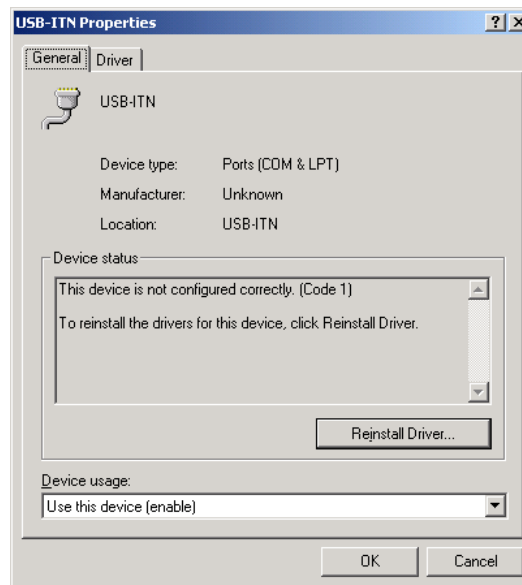
Open [System].

Select the [Hardware] tab and open [Device Manager].

The USB-ITN, USB-FSW or IT-016U is recognized as [Port (COM & LPT)]. Right-click the USB-ITN, USB-FSW or IT-016U with the [!] mark, and select [Properties].



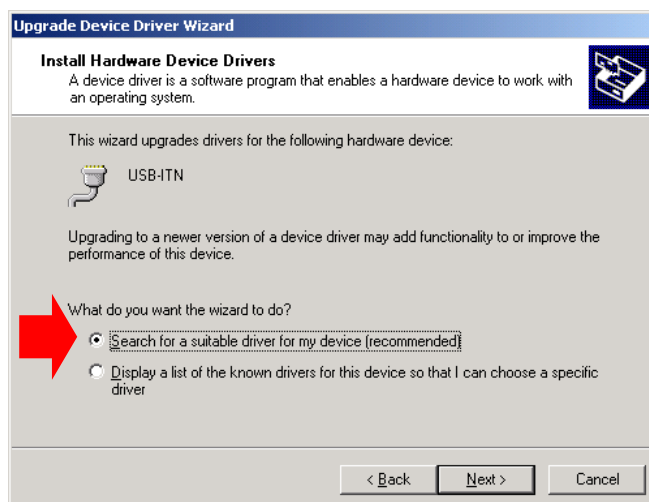
Click the [Reinstall Driver...] button.



Click the [Next] button.

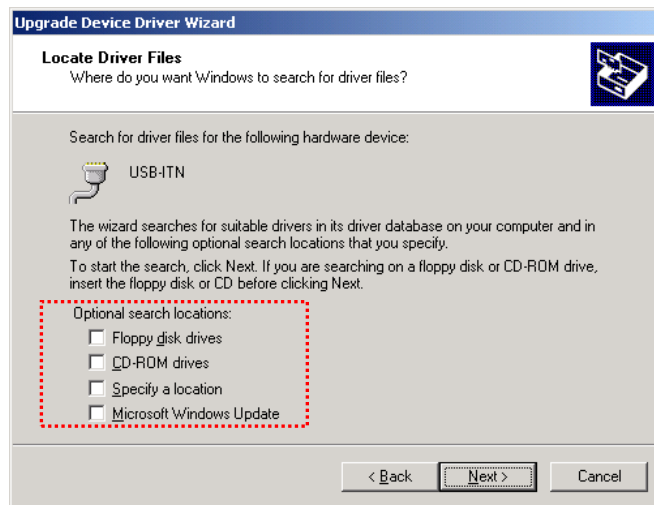


Select [Search for a suitable driver for my device] and click the [Next] button.

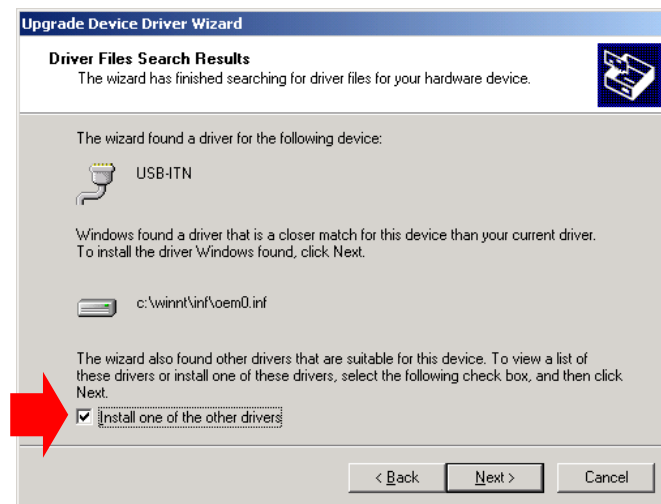


2. INSTALLATION AND UNINSTALLATION

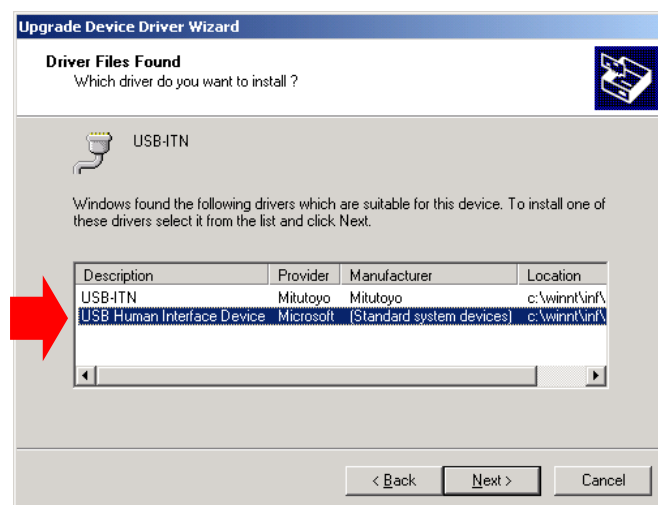
Clear all the check box for [Option search locations] and then click the [Next] button.



Select [Install one of the other drivers] and click the [Next] button.



Select [USB Human Interface Device] and then click the [Next] button.

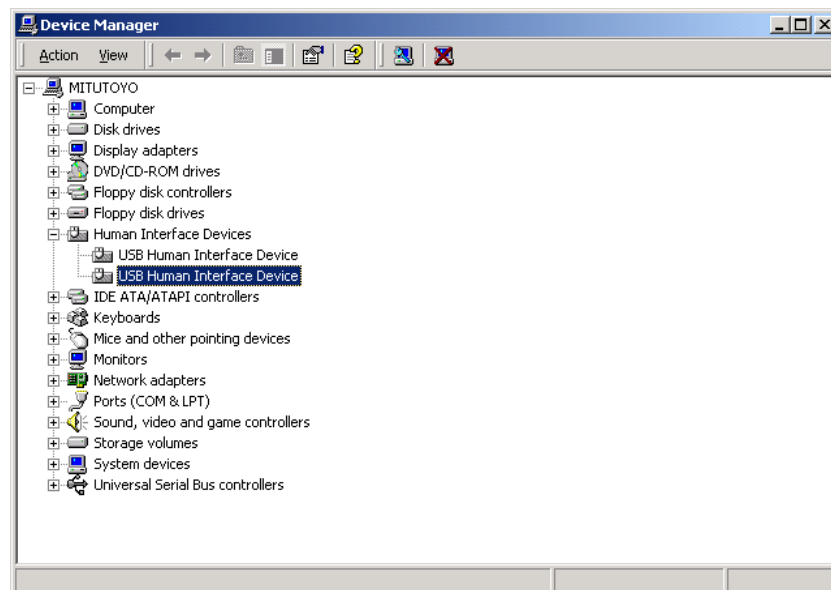


If a warning about digital signature is displayed, click the [Yes] button.

When the [Completing the Upgrade Device Driver Wizard] dialog box is displayed, click the [Finish] button.



This completes the HID driver installation procedure. From Device Manager, check that USB-ITN, USB-FSW or IT-016U is connected as a USB human interface device.



3

STARTUP AND TERMINATION OF USB-ITPAK

3.1 Starting up USB-ITPAK

3.1.1 Connecting the measuring tool and foot switch to the PC

- 1) Connect the measuring tool to USB-ITN and connect USB-ITN to a USB port of the PC.
- 2) Connect the foot switch to USB-FSW and connect USB-FSW to a USB port of the PC.
- 3) Connect the measuring tools to U-WAVE-T and connect U-WAVE-R to the USB port of the PC.
- 4) Connect the measuring tool to IT-016U using a Digimatic connecting cable, and connect IT-016U to a USB port of the PC.

IMPORTANT • Select the USB-ITN and U-WAVE-T appropriate for the measuring tool to be used.

For details, refer to "1.4 Tools that work with USB-ITPAK".

For details about the U-WAVE, refer to the instruction manuals supplied with U-WAVE.

- If any of multiple USB-ITN, USB-FSW, U-WAVE-R or IT-016U units (more than 1 model is possible) are used, a corresponding number of USB ports are required. If the PC does not have the required number of USB ports, use a USB hub (commercially available).
- To use USB-ITN, USB-FSW or IT-016U with USB-ITPAK, a dedicated VCP driver must be installed for each USB-ITN or USB-FSW unit.
For how to install the dedicated VCP driver, refer to "2.2 Installing and Uninstalling the VCP driver".
- To use U-WAVE with USB-ITPAK, the installation of device driver for each U-WAVE-R is required.
- When using U-WAVE, U-WAVEPAK supplied with U-WAVE-R is required.

For details about the U-WAVE, refer to the instruction manuals supplied with U-WAVE.

- To use U-WAVE with USB-ITPAK, perform the following in advance.

- 1) Install the exclusive VCP driver for each U-WAVE-R from the supplied CD with

U-WAVEPAK.

2) Register U-WAVE-T to U-WAVE-R using U-WAVEPAK.

- Do not use USB-ITPAK and U-WAVEPAK at the same time.
Be sure to exit U-WAVEPAK before starting up USB-ITPAK.
Be sure to exit USB-ITPAK before starting up U-WAVEPAK.
The VCP communication may fail when both of them are used at the same time.
-

TIP • USB-ITPAK and U-WAVEPAK are not required to be installed on the same PC. Even if U-WAVE-T has been registered to U-WAVE-R using U-WAVEPAK on a different PC, the registered settings will be valid on the PC on which USB-ITPAK has been installed.

3.1.2 Connecting the USB dongle to the PC

Connect the supplied USB dongle to a USB port on the PC to be used.

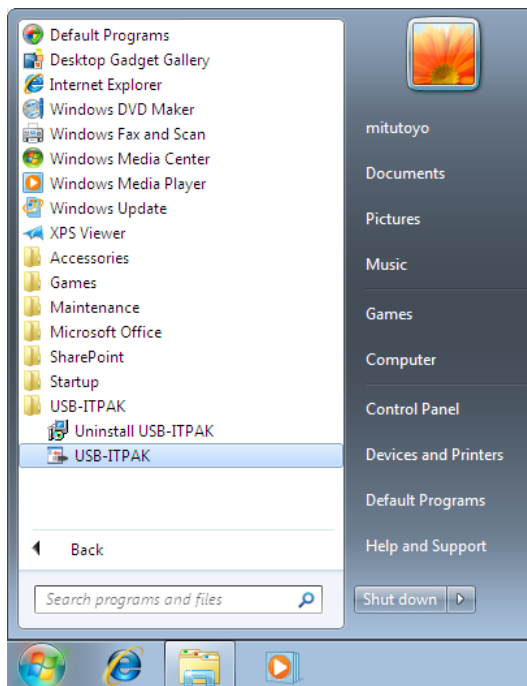
IMPORTANT • USB-ITPAK can be installed even if the USB dongle is not inserted, but the USB dongle is required to start up USB-ITPAK.

3. STARTUP AND TERMINATION OF USB-ITPAK

3.1.3 Starting up USB-ITPAK

- IMPORTANT** • To use USB-ITPAK, Microsoft Excel (Excel 2000 or higher) is required. Install Excel on the same PC as USB-ITPAK.

Click the Start button of Windows and select [All Programs] - [USB-ITPAK], and then [USB-ITPAK].



If a shortcut icon is created on the desktop, USB-ITPAK can be started up by double-clicking this icon.



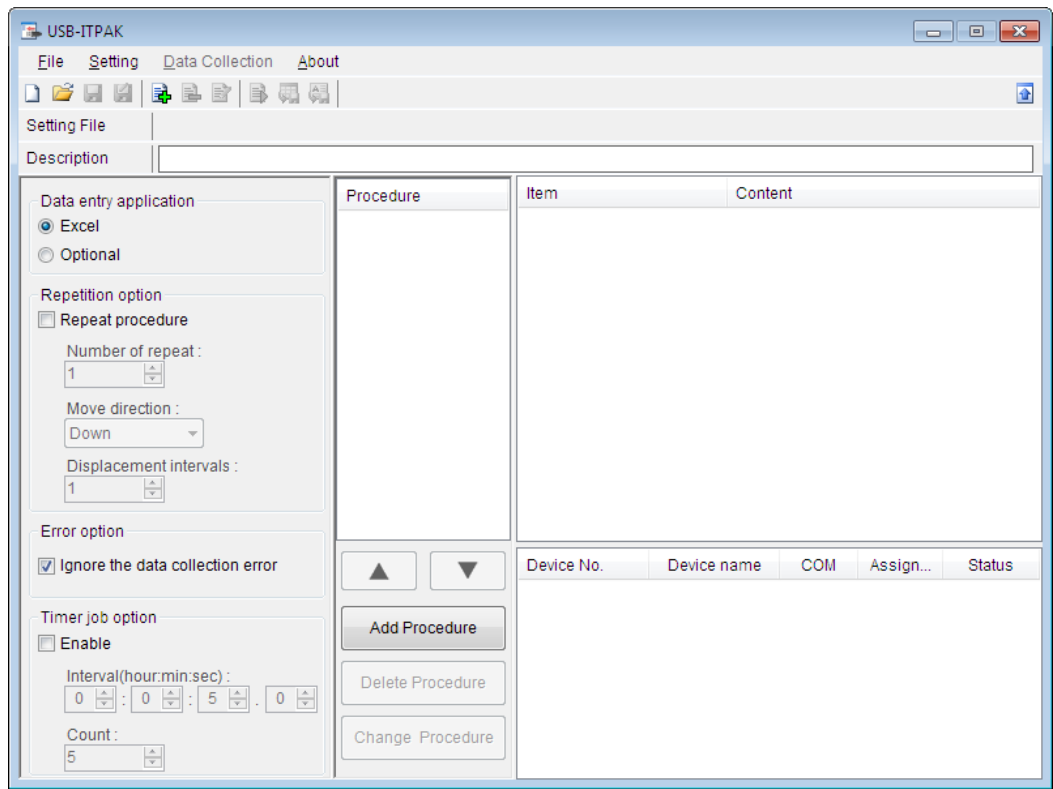
- IMPORTANT** • If any of USB-ITN, USB-FSW, U-WAVE-R or IT-016U (multiple choices allowed) is connected after USB-ITPAK is started up, the device is not recognized. In this case, exit USB-ITPAK and then restart it.
- Windows 8/8.1 has no Windows Start button. Start up USB-ITPAK from the shortcut icon created on the desktop.

When USB-ITPAK is started up, either of the following two dialog boxes is displayed, depending on the setting.

IMPORTANT • For details about setting whether to select Quick Menu as the initial dialog box after USB-ITPAK startup, refer to "6.5 Options".

1) Main dialog box

The main dialog box is displayed for operators who create the setting file.
All the functions of USB-ITPAK, from setting of the procedure to data collection, can be used from this dialog box.

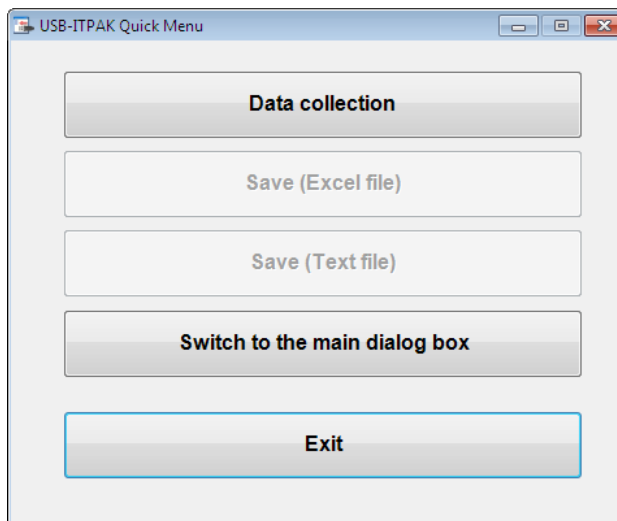


3. STARTUP AND TERMINATION OF USB-ITPAK

2) Quick Menu

Quick Menu is displayed for operators who collect data.

Operators can start measurement by clicking the [Data collection] button to open an already set procedure (setting file). Quick Menu is very useful for performing actual measurement work.



3.1.4 Exiting USB-ITPAK

IMPORTANT • Save data if it is not saved, before exiting USB-ITPAK.

Perform one of the two following ways to exit USB-ITPAK.

- 1: Click [Exit] button in Quick Menu.
- 2: Select [File] and then [Exit] on the main dialog box.

3.1.5 Disconnecting the USB dongle from the PC

Exit USB-ITPAK before disconnecting the USB dongle from the PC.

NOTE • To continuously use USB-ITPAK, keep the USB dongle connected.

3.1.6 Disconnecting the measuring tool and foot switch from the PC

Exit USB-ITPAK before disconnecting any of USB-ITN, USB-FSW, U-WAVE-R or IT-016U from the USB ports of the PC.

NOTE • To continuously use USB-ITPAK, keep USB-ITN, USB-FSW, U-WAVE-R or IT-016U connected.

MEMO

4

MEASUREMENT DATA COLLECTION (BASICS)

This chapter explains the basic use of USB-ITPAK.

"CHAPTER 5 MEASUREMENT DATA COLLECTION (ADVANCED)" explains the advanced use of USB-ITPAK, such as collecting data by using the foot switch and combining multiple procedures.

"CHAPTER 6 DIALOG BOX CONFIGURATIONS OF USB-ITPAK" describes the menus and dialog box configuration for all the functions of USB-ITPAK.

4.1 General Cautions Regarding Use

Carefully read the following cautions before using USB-ITPAK.

1. Handling Excel files registered in USB-ITPAK procedures

USB-ITPAK manages Excel files by using the Excel workbook and worksheet names registered to procedures.

Therefore, do not make the following changes to Excel files registered to procedures in Excel:

- Deleting or changing workbook and worksheet names
- Saving a workbook in a different folder

2. Handling Excel files currently used for data collection

Do not perform the following manipulations in Excel while collecting data by executing a procedure in USB-ITPAK:

- Exiting Excel
- Closing an Excel file registered to a procedure
- Changing the contents of an Excel file registered to a procedure.

3. Executing procedure test (recommended)

Multiple procedures can be registered to the setting file of USB-ITPAK to provide a complex procedure that can be run as a whole. Before running procedures, it is recommended to check their operation by testing them beforehand.

4.2 Sequential Measurement (Basics)

4.2.1 Overview

Sequential measurement is one of the measurement methods that can be selected in the procedures used in USB-ITPAK.

During sequential measurement, one or more measuring tools are used and measurement data is input from the tools to cells specified in advance in an inspection table worksheet in Excel or other applications.

Example: Measurement in a pre-set sequence such as measuring the length, and then the width by using one measuring tool

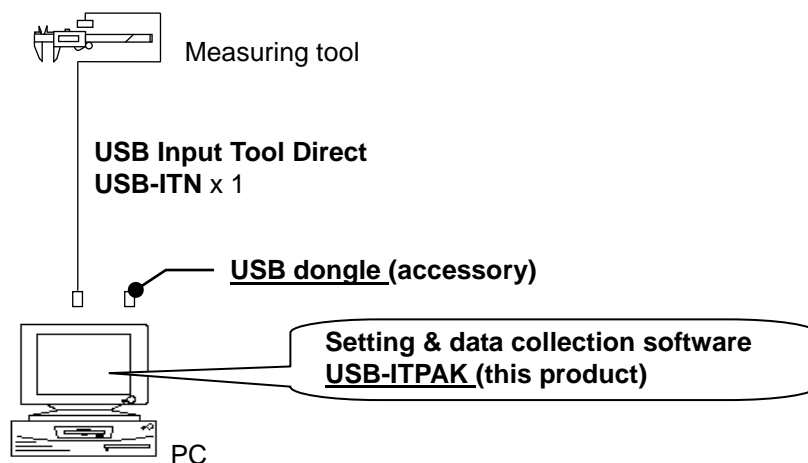
Example: Sequential measurement of measurement locations on a workpiece using multiple measuring tools, such as measuring the length by using a caliper and measuring the diameter by using a micrometer

[Data request] button of USB-ITPAK, function keys of a PC, the DATA switch of the measuring tools, and the foot switch can be used when collecting measurement data.

This section explains the basic use of sequential measurement.

1) Connection

In the example used in this section, one measuring tool is connected to USB-ITN. The connection diagram is shown below.

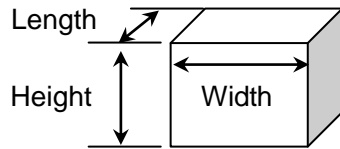


TIP • IT-016U can be used in combination with USB-ITN.

2) Workpiece for measurement

The following workpiece is used in the explanation. The measurement locations are the length, width, and height of the rectangular parallelepiped.

4. MEASUREMENT DATA COLLECTION (BASICS)



3) Measurement

The image of the inspection table upon completion of data collection is shown below.

No.	Inspection item	Permissible value		Unit	Measuring item	X1	X2	X3	X4	X5
1	Length	13.60	13.40	mm	CD	13.49	13.51	13.52	13.53	13.50
2	Width	12.20	12.00	mm	CD	12.12	12.15	12.13	12.15	12.14
3	Height	10.60	10.50	mm	CD	10.58	10.58	10.55	10.57	10.56

In this measurement procedure, the length, width, and height of the first workpiece are measured and the input data is output to the first row (Length), the second row (Width), and the third row (Height), respectively, of the X1 column on the Excel worksheet.

Next, the second workpiece is similarly measured, and so on, until all five workpieces have been measured.

X1	X2	X3	X4	X5
Length (1) ↓ Width (1) ↓ Height (1)				
				Height (5)

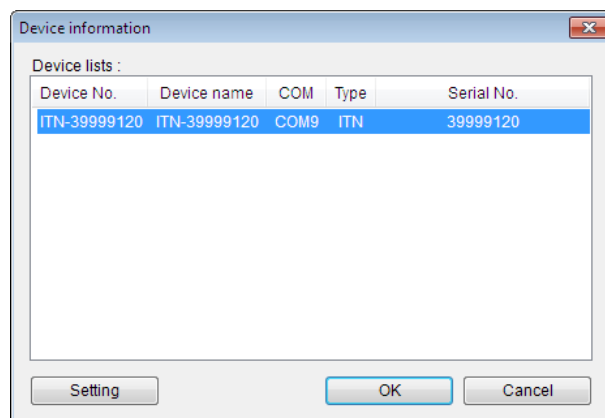
The following describes how to set up the measurement procedure, perform measurement, and save the results.

4.2.2 Setting

1) Check the device information.

NOTE • USB-ITPAK loads the information of connected devices at startup. Therefore, connect all the devices to be used before starting up USB-ITPAK.

From the menu of the main dialog box, select [Settings] and then [Device information]. This opens the [Device information] dialog box, which allows you to check the devices that are connected to the PC.



TIP • When using IT-016U, also it will be recognized as ITN type. The Serial No. of IT-016U is represented starting with "8" as "ITN-8*****".

If you do not want to change the device number or device name, click the [Cancel] button to return to the main dialog box.

If you want to change the device number or device name, click the [Setting] button.



Click the [OK] button if you change any settings.

NOTE • In the procedure created from step "2)", the device number is used to specify the device to be used. If you change the number, revise all the setting files that use it.

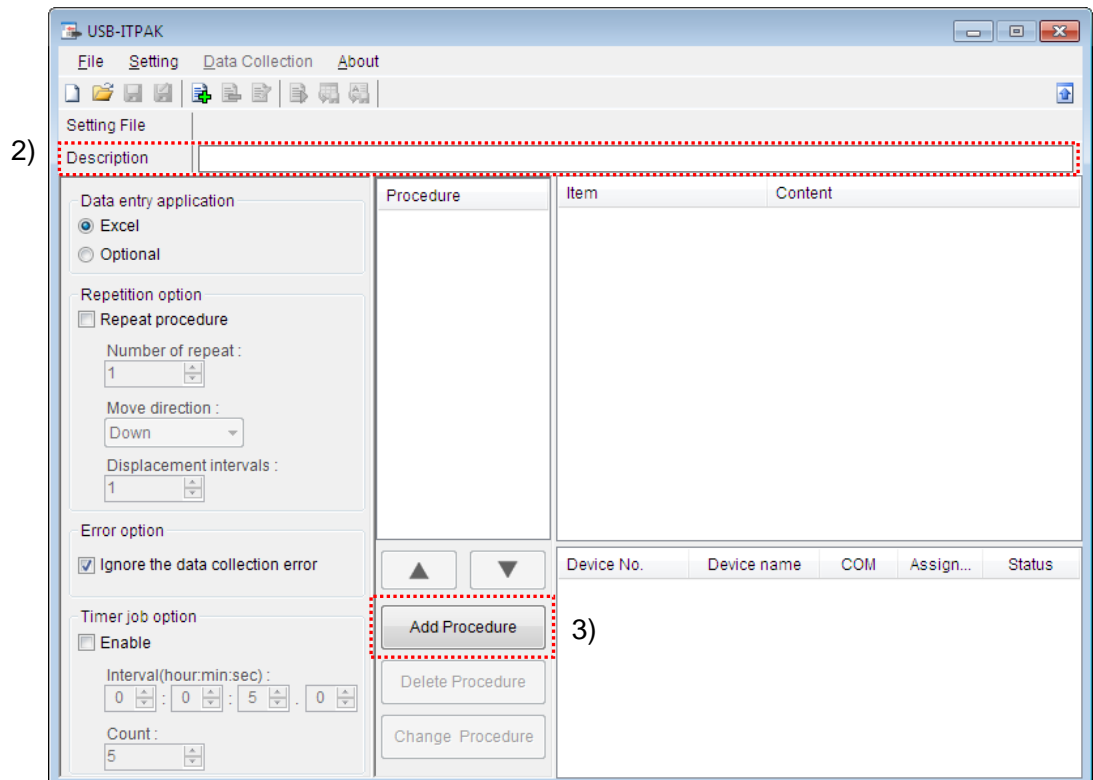
4. MEASUREMENT DATA COLLECTION (BASICS)

TIP • If multiple units are connected, specify settings for each.

TIP • If performing measurement using existing setting files, skip this section and refer to "4.2.3 Measurement".

2) Enter information about the setting file in the [Description] field.

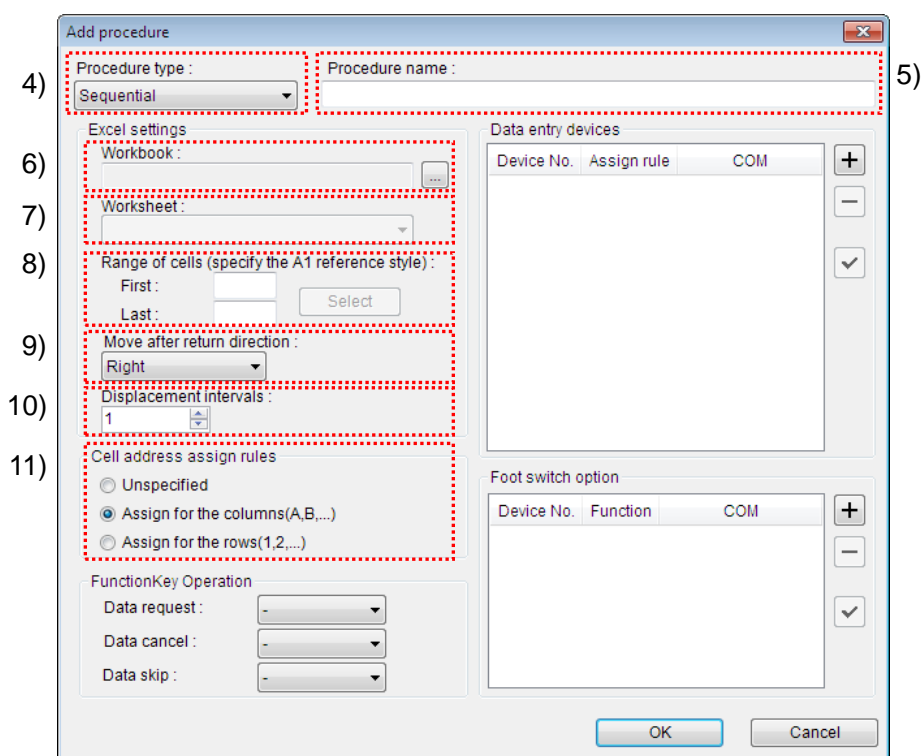
Enter a description of the setting file. This field may be left blank.



3) Add a procedure to the setting file.

Click the [Add Procedure] button on the main dialog box.

4) Select a procedure type for the [Procedure type] field.



Check that [Sequential] is selected as the procedure type, and if not, select [Sequential] from the drop-down list.

5) Enter a name in the [Procedure name] field.

Entering the procedure name is required.

TIP • Since the procedure name will be displayed in the [Procedure] field at the center of the main dialog box, enter an easily identifiable name.

Here, enter [3 side measurement].

6) Specify an Excel file in the [Workbook] field under [Excel settings].

Enter the workbook name of the Excel file to which the measured data is to be input.

The file can be selected from the [Open] dialog box by clicking the [...] button.

Here, select the following file.

C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sample_Form_1_GB.xls

IMPORTANT • If you want to use a file other than the sample inspection table file, create an inspection file using Excel before starting up USB-ITPAK. Inspection table files can be saved to any folder. Save the inspection table file to a folder location that will be easy to manage.

4. MEASUREMENT DATA COLLECTION (BASICS)

- 7) Select a worksheet for the [Worksheet] field under [Excel settings].

Select the worksheet name to be included in the workbook of step "6)" from the drop-down list.

Here, select [Sample_F1].

- 8) Enter the input range in the [Range of cells] fields under [Excel settings].

No.	Inspection item	Permissible value	Unit	Measuring item	X1	X2	X3	X4	X5	judgment
1	Length	13.60	13.40							
2	Width	12.20	12.00							
3	Height	10.60	10.50							
4										
5										
6										
7										
8										
9										
10										

To specify the area indicated by the dot-line in the above inspection table as the input cell range, enter:

First: H11

Last: L13

TIP • The inspection table above is shown with the [Inspection item] and [Permissible value] cells filled.

- 9) Select the desired direction for the [Move after return direction] field under [Excel settings].

During measurement using USB-ITPAK, once data is input from the measuring tools, the measurement data is input to the current cell and then the entry point (cell) automatically moves to the next cell.

In the inspection table example shown above, select [Down].

- 10) Specify the [Displacement intervals] under [Excel settings].

Specify the interval for the cell movement specified in step 9). Specifying "1" results in movement to the next cell. Specifying "2" results in movement to the cell after the next.

In the inspection table example above, specify "1".

11) Select an option under [Cell address assign rules].

In USB-ITPAK, the measuring items can be assigned to columns (vertical) or rows (horizontal) of the inspection table worksheet.

In the inspection table example above, the measuring items are assigned to respective rows, so select [Assign for the rows (1, 2...)].

TIP • Data can be collected even if the device is not assigned to columns (A, B, ...) or rows (1, 2, ...). In this case, select [Unspecified].

When data is input from the device registered in the procedure during data collection, the data is written to the cell that is currently active in the order of input, regardless of the cell position.

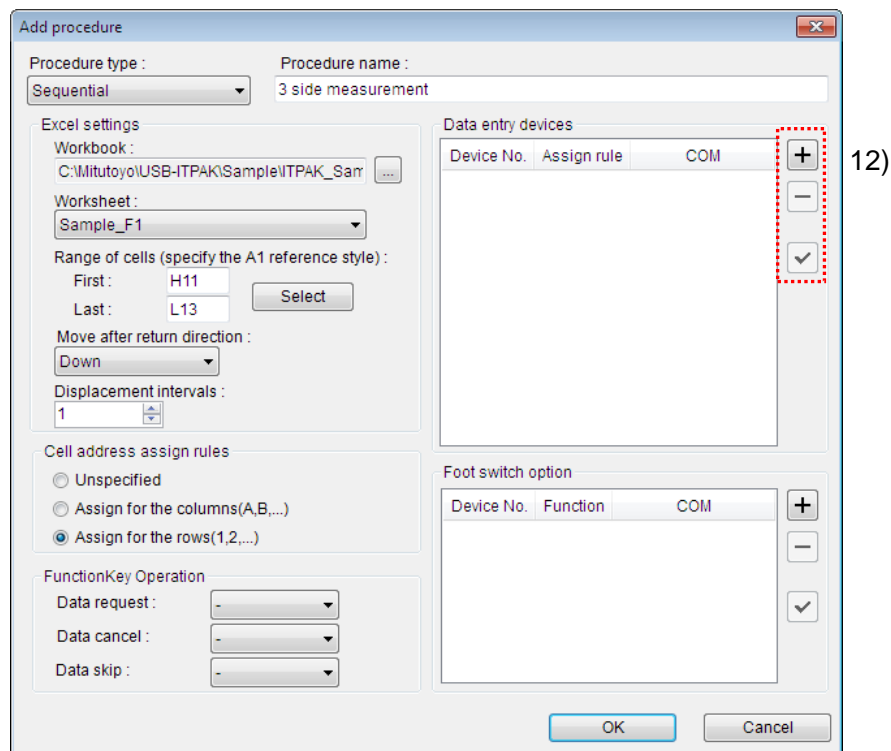
For details, refer to "6.6.3 Cell address assign rules".

12) Specify the [Data entry devices] settings.

The functions of the buttons for the [Data entry devices] field are as follows:

- [+]: Adds device settings.
- [-]: Deletes the device setting selected from the list.
- [✓]: Changes the device setting selected from the list.

Here, click the [+] button to switch to the [Data entry device settings] dialog box.



4. MEASUREMENT DATA COLLECTION (BASICS)

- 13) Specify the settings in the [Excel cells assignment] field on the [Data entry device settings] dialog box.

13) 14) 15)

In the [Excel cells assignment] field, specify columns (vertical) or rows (horizontal) according to the specification in step 11). Specify the rows here.

There are three input areas in the previously described inspection table. Here, one device is assigned on all the rows, so enter start row number "11" in the input field on the left, and input "13" in the input field on the right.

- 14) In the [Entry data settings] field, select the entry data type.

The entry data types consist of measurement data input from the measuring tools (numeric data), and character string data input by pressing the foot switch.

TIP • For details about the method for inputting character string data using a foot switch, refer to "CHAPTER 5 MEASUREMENT DATA COLLECTION (ADVANCED)".

Here, select the [Measurement data entry] radio button.

- 15) In the [Select device] field, select the device to be assigned.

From the drop-down list, select the device to be assigned.

This completes the settings on the [Data entry device settings] dialog box, so click the [OK] button.

16) Close [Add procedure].

Add procedure

Procedure type : Sequential Procedure name : 3 side measurement

Excel settings

Workbook : C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sam

Worksheet : Sample_F1

Range of cells (specify the A1 reference style) :

First : H11 Last : L13 **Select**

Move after return direction : Down

Displacement intervals : 1

Cell address assign rules

☐ Unspecified

☐ Assign for the columns(A,B,...)

☒ Assign for the rows(1,2,...)

FunctionKey Operation

Data request : -

Data cancel : -

Data skip : -

Data entry devices

Device No.	Assign rule	COM
ITN-39999120	11:13	COM9

Foot switch option

Device No.	Function	COM
------------	----------	-----

OK **Cancel**

This completes the settings on the [Add procedure] dialog box, so click the [OK] button.

4. MEASUREMENT DATA COLLECTION (BASICS)

17) Save the created setting file.

Setting File	Description
C:\Mitutoyo\USB-ITPAK\4-2.it2	Measure 3 sides(length x width x height).

Item	Content
Procedure type	Sequential
Data entry application	Excel
Excel settings:	
Workbook	C:\Mit...ITPAK_Sample_Form_1_GB.xls
Worksheet	Sample_F1
Range of cells	H11:L13
Move after return direction	Down
Displacement intervals	1
Cell address assign rules	Assign for the rows(1,2,...)
Foot switch option:	
FunctionKey Operation:	

Device No.	Device name	COM	Assigned cells	Status
ITN-39999120	ITN-39999120	COM9	11:13	Connect

From the menu of the main dialog box, select [File], [Save As], and then save the file by giving it a name. When the file has been saved, the file name is displayed as a full path in the [Setting File] field.

4.2.3 Measurement

1) Open [Setting File].

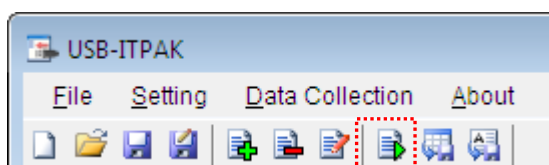
TIP • If starting measurement immediately after specifying the settings in "4.2.2 Setting", the setting file is already opened. In this case, skip step "1)".

From the menu of the main dialog box, select [File] and then [Open], or open [Setting file] from [Recent files].

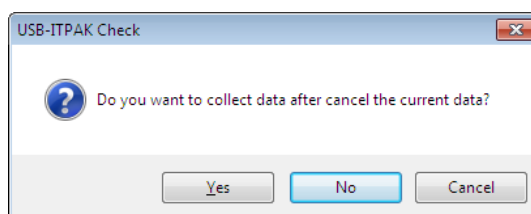
2) Open the data collection dialog box.

IMPORTANT • In USB-ITPAK, following data collection, the Excel file to which the data was input is saved through overwriting under the existing file name. To use the original Excel file later, back it up beforehand.

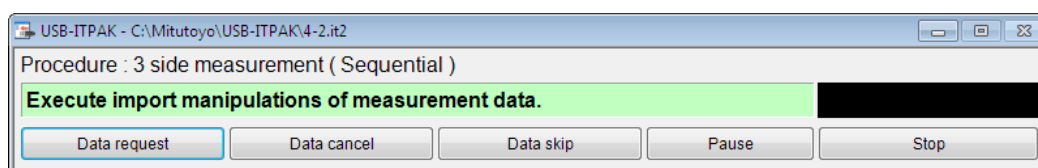
From the menu of the main dialog box, select [Data Collection] and then [Start], or click the icon shown below.



When data collection starts, the message [Do you want to collect data after cancel the current data?] is displayed. Click [Yes] to clear the existing data or [No] not to.



The data collection dialog box is displayed and data collection can now be performed.



TIP • If you click [No] for the message [Do you want to collect data after cancel the current data?], the data collection dialog box will be paused. In this case, resume the data collection. For details, refer to "6.14.1 [Pause/Resume] button" and "8.2.5 To resume the Excel data collection previously paused".

4. MEASUREMENT DATA COLLECTION (BASICS)

3) Perform data collection.

During data collection, the cell to which data will be input next is highlighted in green.

AAA Corporation											SAMPLE			
CERTIFICATE OF INSPECTION														
Name of inspection					Lot No.		BBB Corporation		Approval		Inspector		Overall judgment	
Product name					Number of lots		CCC Division							
Part name					Date									
Part No.					Number of inspections									
No.	Inspection item	Permissible value	Unit	Measuring item	X1	X2	X3	X4	X5	Judgment	Special note Drawing No.			
1	Length	13.60	13.40											
2	Width	12.20	12.00											
3	Height	10.60	10.50											
4														
5														
6														
7														
8														
9														
10														

【Measuring item】
CD: Caliper MD: Micrometer ID: Indicator HD: Height Gage LG: Linear Gage SD: Scale
AN: Surf-test CMM: Coordinate Measuring Machine PP: Profile Projector MS: Microscope
HT: Hardness Testing Machine VI: Visual inspection MG: Master Gage EX: Others

Input data from the measuring tools through one of the following operations:

- (1) Pressing the DATA switch on the measuring tool.
- (2) Pressing the DATA switch if USB-ITN has one.

TIP • When using IT-016U, data input can be performed using the DATA switch equipped with IT-016U or the foot switch connected to IT-016U.

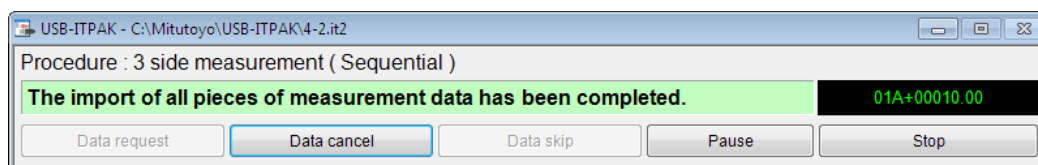
- (3) Clicking the [Data request] button on the data collection dialog box.

To cancel data that has been input, click the [Data cancel] button on the data collection dialog box. The data in the entry cell is canceled and the previous cell is highlighted.

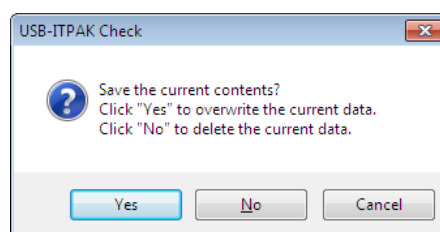
To skip the current data entry cell without inputting data, click the [Data skip] button on the data collection dialog box. The next cell is highlighted.

4) End data collection and save the results.

Once all the data has been input, a completion message is displayed on the data collection dialog box.



Click the [Stop] button on the data collection dialog box. The following message is displayed.



[Yes]: The Excel file to which data was input is saved through overwriting under the existing file name.

[No]: The Excel file is not overwritten and the data that was input is deleted.

[Cancel]: The message dialog box is closed and the data collection dialog box is displayed.

Click the [Yes] button. The Excel file is saved through overwriting and the dialog box switches to the main dialog box.

This completes basic data collection for sequential measurement.

4.3 Batch Measurement (Basics)

4.3.1 Overview

Batch measurement is one of the measurement methods that can be selected in the procedures used in USB-ITPAK.

During batch measurement, multiple measuring tools are used to acquire measurement data in batch.

Example: Multiple measuring tools are attached to measuring jigs and workpieces are set to these jigs, and then measurement data is collected from all the connected measuring tools by using a foot switch, etc.

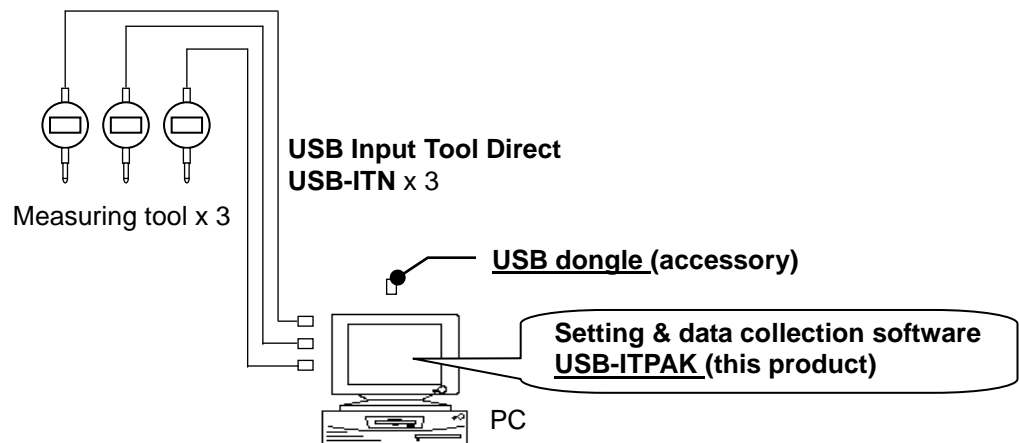
The [Data request] button of USB-ITPAK, function keys of a PC, and the foot switch can be used when collecting measurement data.

- IMPORTANT**
- During batch measurement, a data output request is sent to all the measuring tools through a single operation, but some differences arise among the measurement times of the measuring tools. Therefore, it is not possible to perform measurement while moving measuring jigs or workpieces. Be sure to fix jigs and workpieces in place during measurement.

This section explains the basic use of batch measurement.

1) Connection

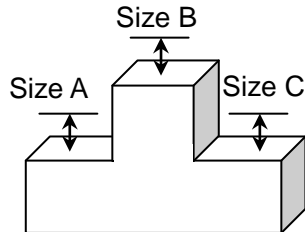
In the example used in this section, three indicators are connected to USB-ITN. The connection diagram is shown below.



- TIP**
- IT-016U can be used in combination with USB-ITN.

2) Workpiece for measurement

The following workpiece is used in the explanation. Three indicators are used and measurement is done with measuring jigs. "Size A", "Size B", and "Size C", which are shown in the figure below, are measured.



3) Measurement

The image of the inspection table upon completion of data collection is shown below.

Inspection item		Size A	Size B	Size C
Measuring item				
Tolerance	Upper limit	5.150	10.100	5.150
	Lower limit	4.850	9.900	4.850
Result of inspection	Sample 1	5.054	10.023	5.070
	Sample 2	5.086	10.016	5.064
	Sample 3	5.093	10.000	5.056
	Sample 4	5.077	10.039	5.063
	Sample 5	5.085	9.992	5.047
	Sample 6	5.084	10.024	5.065
	Sample 7	5.062	9.990	5.050
	Sample 8	5.073	9.985	5.054
	Sample 9	5.071	10.011	5.045
	Sample 10	5.062	10.000	5.060

The measurement procedure is as follows. The three locations of the first workpiece are measured, and the input data is output to the "Size A", "Size B", and "Size C" columns. Next, the three locations of the second workpiece are measured, and the input data is output to the "Size A", "Size B", and "Size C" columns in the "Sample 2" row of the Excel worksheet.

The remaining workpieces up to the tenth one are measured in the same manner.

Result of inspection	Sample 1	Batch (1)		
	Sample 2	Batch (2)		
	Sample 3			
	Sample 4			
	Sample 5			
	Sample 6			
	Sample 7			
	Sample 8			
	Sample 9			
	Sample 10	Batch (10)		

The following describes how to set up the measurement procedure, perform measurement, and save the results.

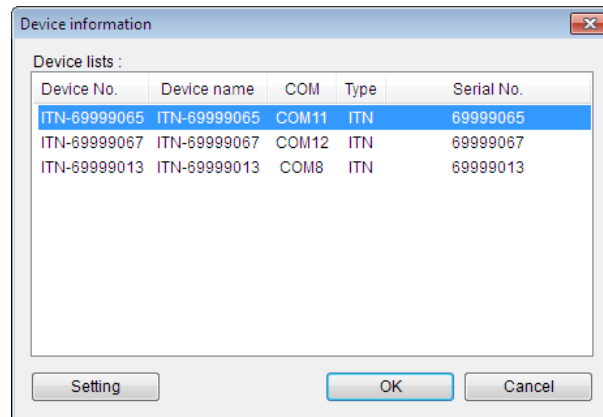
4. MEASUREMENT DATA COLLECTION (BASICS)

4.3.2 Setting

1) Check the device information.

NOTE • USB-ITPAK loads the information of connected devices at startup. Therefore, connect all the devices to be used before starting up USB-ITPAK.

From the menu of the main dialog box, select [Settings] and then [Device information]. This opens the [Device information] dialog box, which allows you to check the devices that are connected to the PC.



TIP • When using IT-016U, also it will be recognized as ITN type. The Serial No. of IT-016U is represented starting with "8" as "ITN-8*****".

If you do not want to change the device number or device name, click the [Cancel] button to return to the main dialog box.

If you want to change a device number or device name, select the device, and then click the [Setting] button.



Click the [OK] button if you change any settings.

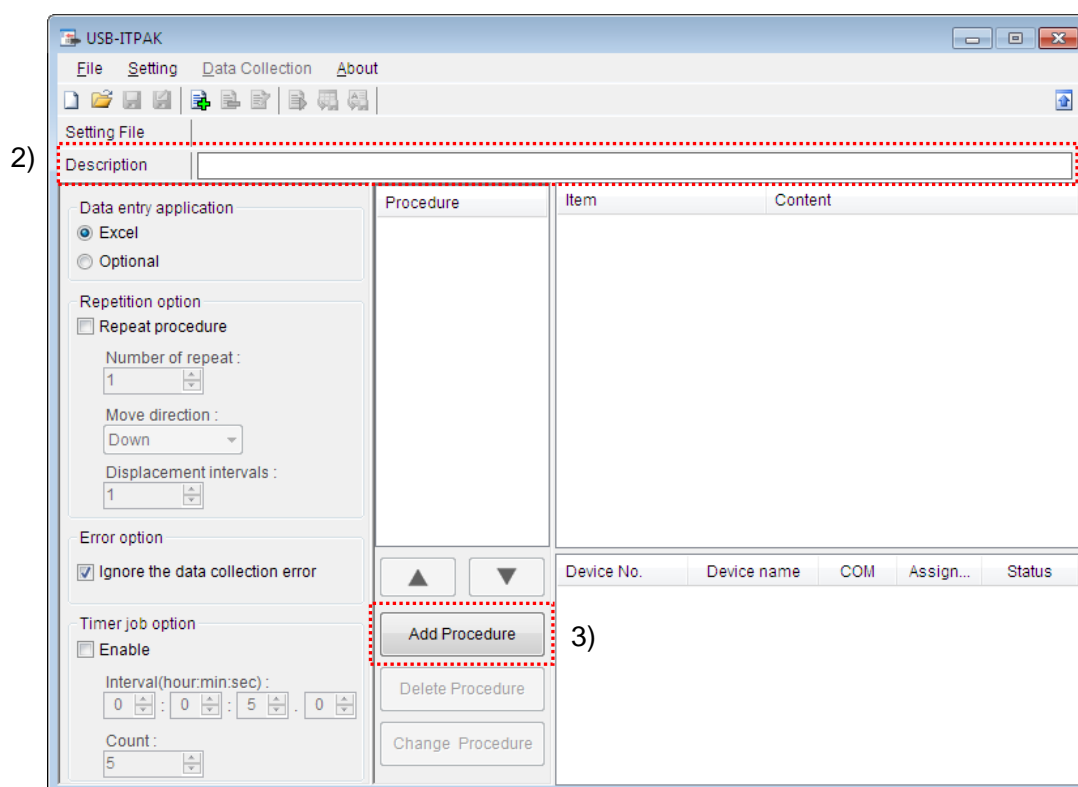
NOTE • In the procedure created from step "2)", the device number is used to specify the device to be used. If you change the number, revise all the setting files that use it.

TIP • If multiple units are connected, specify settings for each.

TIP • If performing measurement using existing setting files, skip this section and refer to "4.3.3 Measurement".

2) Enter information about the setting file in the [Description] field.

Enter a description of the setting file. This field may be left blank.



3) Add a procedure to the setting file.

Click the [Add Procedure] button on the main dialog box.

4. MEASUREMENT DATA COLLECTION (BASICS)

- 4) Select a procedure type for the [Procedure type] field.

5) Enter a name in the [Procedure name] field.

Check that [Batch] is selected as the procedure type, and if not, select [Batch] from the drop-down list.

- 5) Enter a name in the [Procedure name] field.

Entering the procedure name is required.

TIP • Since the procedure name will be displayed in the [Procedure] field at the center of the main dialog box, enter an easily identifiable name.

Here, enter [3 position batch measurement].

- 6) Specify an Excel file in the [Workbook] field under [Excel settings].

Enter the workbook name of the Excel file to which the measured data is to be input.

The file can be selected from the [Open] dialog box by clicking the [...] button.

Here, select the following file.

C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sample_Form_3_GB.xls

IMPORTANT • If you want to use a file other than the sample inspection table file, create an inspection file using Excel before starting up USB-ITPAK. Inspection table files can be saved to any folder. Save the inspection table file to a folder location that will be easy to manage.

7) Select a worksheet for the [Worksheet] field under [Excel settings].

Select the worksheet name to be included in the workbook of step "6)" from the drop-down list.

Here, select [Sample_F3].

8) Enter the input range in the [Range of cells] fields under [Excel settings].

Inspection item	Size A	Size B	Size C	Size D	Size E
Measuring item					
Tolerance					
Upper limit	0.15	0.10	0.15		
Lower limit	-0.15	-0.10	0.00		
Result of inspection					
Sample 1					
Sample 2					
Sample 3					
Sample 4					
Sample 5					
Sample 6					
Sample 7					
Sample 8					
Sample 9					
Sample 10					
Average (Av.)					
standard deviation (σ)					
Overall judgment					
[Special note]					

To specify the area indicated by the dot-line in the above inspection table as the input cell range, enter:

First: D18

Last: F27

TIP • The inspection table above is shown with the [Upper limit] and [Lower limit] cells filled.

4. MEASUREMENT DATA COLLECTION (BASICS)

- 9) Select the desired direction for the [Move after return direction] field under [Excel settings].

During measurement using USB-ITPAK, once data is input from the measuring tools, the measurement data is input to the current cell and then the entry point (cell) automatically moves to the next cell.

In the inspection table example shown above, select [Down].

- 10) Specify the [Displacement intervals] under [Excel settings].

Specify the interval for the cell movement specified in step 9). Specifying "1" results in movement to the next cell. Specifying "2" results in movement to the cell after the next.

In the inspection table example above, specify "1".

- 11) Select an option under [Cell address assign rules].

In USB-ITPAK, the measuring items can be assigned to columns (vertical) or rows (horizontal) of the inspection table worksheet.

In the inspection table example above, the measuring items are assigned to respective columns, so select [Assign for the columns (A, B...)].

- 12) Specify the [Data entry devices] settings for the first device.

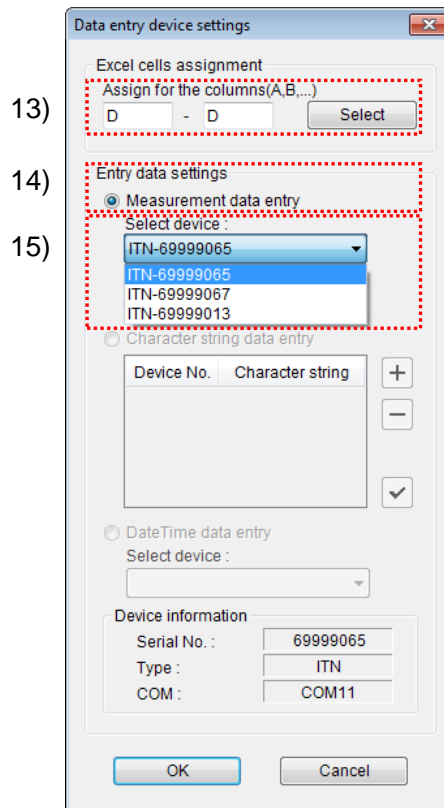
The functions of the buttons for the [Data entry devices] field are as follows:

- [+]: Adds device settings.
- [-]: Deletes the device setting selected from the list.
- [✓]: Changes the device setting selected from the list.

Here, click the [+] button to switch to the [Data entry device settings] dialog box.

12)

-
- 13) Specify the settings in the [Excel cells assignment] field on the [Data entry device settings] dialog box.



In the [Excel cells assignment] field, specify columns (vertical) or rows (horizontal) according to the specification in step 11). Specify the columns here.

There are three input areas in the previously described inspection table. Here, the first device is assigned to the D column, which is the first column, so enter "D" in both fields.

- 14) In the [Entry data settings] field, select the entry data type.

The entry data types consist of measurement data input from the measuring tools (numeric data), and character string data input by pressing the foot switch.

TIP • For details about the method for inputting character string data using a foot switch, refer to "CHAPTER 5 MEASUREMENT DATA COLLECTION (ADVANCED)".

Here, select the [Measurement data entry] radio button.

- 15) In the [Select device] field, select the device to be assigned.

From the drop-down list, select the device to be assigned.

Here, select the first device.

This completes the settings on the [Data entry device settings] dialog box for the first device, so click the [OK] button.

4. MEASUREMENT DATA COLLECTION (BASICS)

- 16) Repeat steps "12) to 15)" to specify the [Data entry device] settings for the second device.

Here, assign the second device to the E column.

- 17) Repeat steps "12) to 15)" to specify the [Data entry device] settings for the third device.

Here, assign the third device to the F column.

16)

Data entry device settings

Excel cells assignment
Assign for the columns(A,B,...)
E - E Select

Entry data settings
☒ Measurement data entry
Select device : ITN-69999067
Channel : --
☐ Character string data entry
Device No. Character string + -
☒
☐ DateTime data entry
Select device : ITN-69999065[D:D]
Device information
Serial No. : 69999067
Type : ITN
COM : COM12
OK Cancel

17)

Data entry device settings

Excel cells assignment
Assign for the columns(A,B,...)
F - F Select

Entry data settings
☒ Measurement data entry
Select device : ITN-69999013
Channel : --
☐ Character string data entry
Device No. Character string + -
☒
☐ DateTime data entry
Select device : ITN-69999065[D:D]
Device information
Serial No. : 69999013
Type : ITN
COM : COM8
OK Cancel

18) Close [Add procedure].

Add procedure

Procedure type : Batch Procedure name : 3 position batch measurement

Excel settings

Workbook : C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sam

Worksheet : Sample_F3

Range of cells (specify the A1 reference style) :

First : D18 Last : F27 **Select**

Move after return direction : Down

Displacement intervals : 1

Cell address assign rules

☐ Unspecified

☒ Assign for the columns(A,B,...)

☐ Assign for the rows(1,2,...)

FunctionKey Operation

Data request : -

Data cancel : -

Data skip : -

Data entry devices

Device No.	Assign rule	COM
ITN-69999065	D:D	COM11
ITN-69999067	E:E	COM12
ITN-69999013	F:F	COM8

Foot switch option

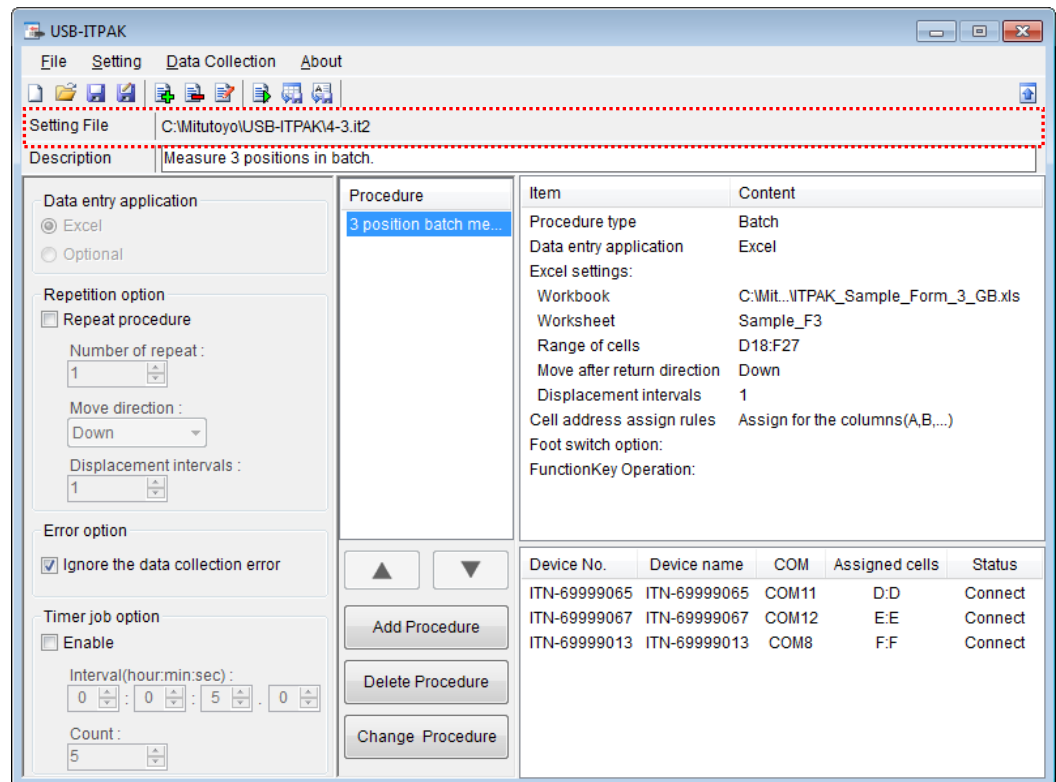
Device No.	Function	COM
------------	----------	-----

OK **Cancel**

This completes the settings on the [Add procedure] dialog box, so click the [OK] button.

4. MEASUREMENT DATA COLLECTION (BASICS)

19) Save the created setting file.



From the menu of the main dialog box, select [File], [Save As], and then save the file by giving it a name. When the file has been saved, the file name is displayed as a full path in the [Setting File] field.

4.3.3 Measurement

1) Open [Setting File].

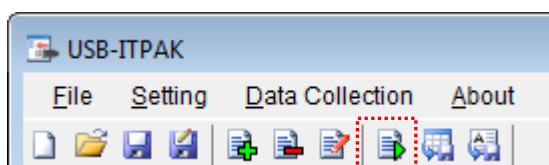
TIP • If starting measurement immediately after specifying the settings in "4.3.2 Setting", the setting file is already opened. In this case, skip step "1)".

From the menu of the main dialog box, select [File] and then [Open], or open [Setting file] from [Recent files].

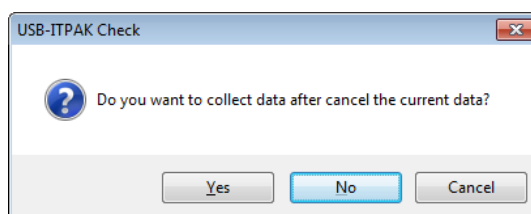
2) Open the data collection dialog box.

IMPORTANT • In USB-ITPAK, following data collection, the Excel file to which the data was input is saved through overwriting under the existing file name. To use the original Excel file later, back it up beforehand.

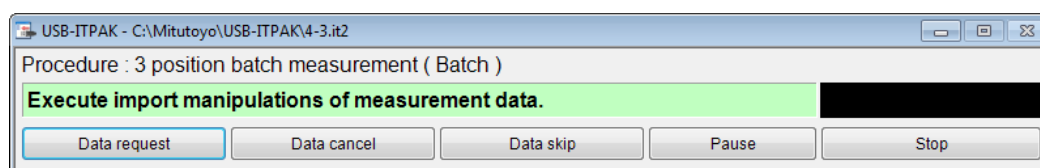
From the menu of the main dialog box, select [Data Collection] and then [Start], or click the icon shown below.



When data collection starts, the message [Do you want to collect data after cancel the current data?] is displayed. Click [Yes] to clear the existing data or [No] not to.



The data collection dialog box is displayed and data collection can now be performed.



TIP • If you click [No] for the message [Do you want to collect data after cancel the current data?], the data collection dialog box will be paused. In this case, resume the data collection. For details, refer to "6.14.1 [Pause/Resume] button" and "8.2.5 To resume the Excel data collection previously paused".

4. MEASUREMENT DATA COLLECTION (BASICS)

3) Perform data collection.

During data collection, the cell to which data will be input next is highlighted in green.

Inspection item		Size A	Size B	Size C	Size D	Size E
Tolerance	Upper limit	0.15	0.10	0.15		
	Lower limit	-0.15	-0.10	0.00		
Result of inspection	Sample 1					
	Sample 2					
	Sample 3					
	Sample 4					
	Sample 5					
	Sample 6					
	Sample 7					
	Sample 8					
	Sample 9					
	Sample 10					
Average (Av.)						
standard deviation (σ)						
Overall judgment		[Special note]				

[Measuring item]
CD: Caliper MD: Micrometer ID: Indicator HD: Height Gage LG: Linear Gage SD: Scale
AN: Surf test CMM: Coordinate Measuring Machine PP: Profile Projector MS: Microscope
VI: Visual inspection MG: Master Gage EX: Others

Sample_F3 BBB Corporation

Click the [Data request] button on the data collection dialog box and perform data input from the measuring tools.

To cancel data that has been input, click the [Data cancel] button on the data collection dialog box. The data in the entry cell is canceled and the previous cell is highlighted.

To skip the current data entry cell without inputting data, click the [Data skip] button on the data collection dialog box. The next cell is highlighted.

IMPORTANT • During batch measurement, data is collected all at once, so data cannot be collected through the following operations:

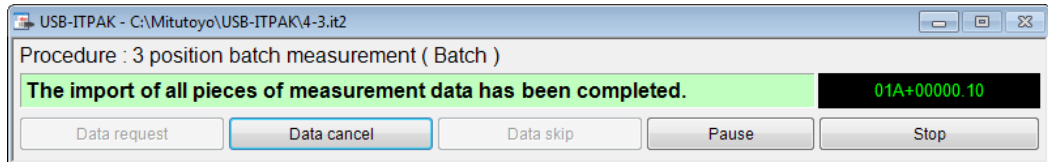
- (1) Pressing the DATA switch on the measuring tool
- (2) Pressing the DATA switch if USB-ITN has one

(3) When using IT-016U, press the DATA switch.

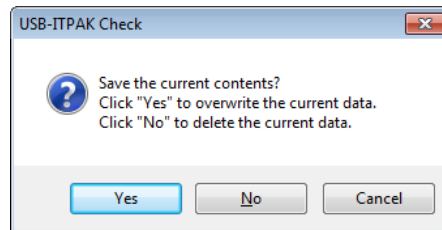
(4) When using IT-016U, operate the foot switch connected to IT-016U.

4) End data collection and save the results.

Once all the data has been input, a completion message is displayed on the data collection dialog box.



Click the [Stop] button on the data collection dialog box. The following message is displayed.



[Yes]: The Excel file to which data was input is saved through overwriting under the existing file name.

[No]: The Excel file is not overwritten and the data that was input is deleted.

[Cancel]: The message dialog box is closed and the data collection dialog box is displayed.

Click the [Yes] button. The Excel file is saved through overwriting and the dialog box switches to the main dialog box.

This completes basic data collection for batch measurement.

4.4 Individual Measurement (Basics)

4.4.1 Overview

Individual measurement is one of the measurement methods that can be selected in the procedures used in USB-ITPAK.

During individual measurement, measurement data from multiple operators can be input to the respectively assigned cells in the specified Excel worksheet.

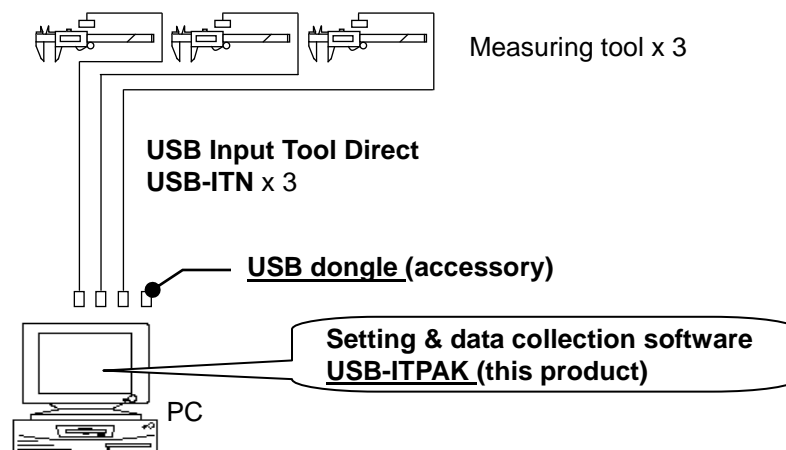
Example: Collection of data while three operators perform measurements with their respective measuring tools.

The DATA switch of the measuring tool and the foot switch can be used when collecting measurement data.

This section explains the basic use of individual measurement.

1) Connection

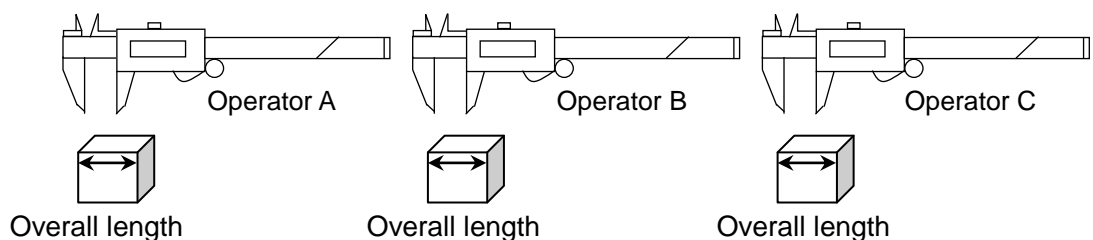
In the example used in this section, three measuring tools are connected to USB-ITN. The connection diagram is shown below.



TIP • IT-016U can be used in combination with USB-ITN.

2) Workpieces for measurement

The following workpieces are used in the explanation. The measurement location is the overall length of the same workpiece for all three operators (designated as A, B, and C).

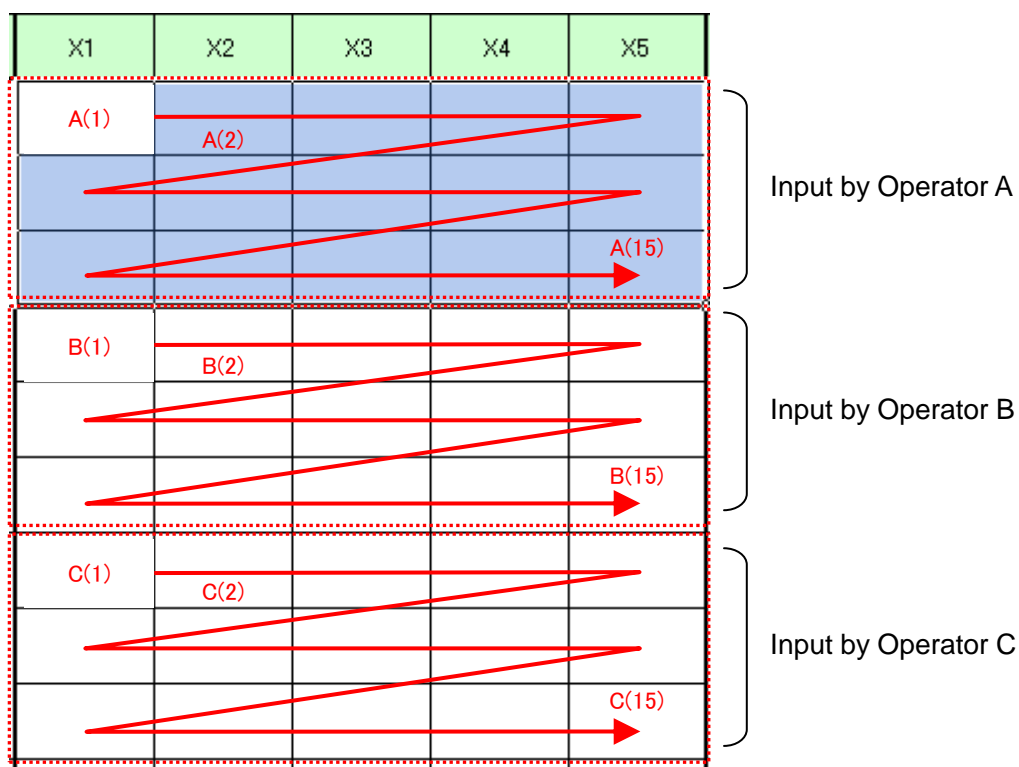


3) Measurement

The image of the inspection table upon completion of data collection is shown below.

No.	Inspection item	Permissible value		Unit	Measuring item	X1	X2	X3	X4	X5
1	Overall Length	10.05	9.95	mm	CD	10.02	10.01	10.01	10.03	10.03
2	Operator A					10.01	10.02	10.02	10.03	10.01
3						10	10.03	10.03	10.02	10.01
4	Overall Length	10.05	9.95	mm	CD	10.02	10.02	10	10.01	10.01
5	Operator B					10.02	10.01	10.01	9.99	10.01
6						10.01	10	9.99	10	10.01
7	Overall Length	10.05	9.95	mm	CD	10.01	10.03	10.02	10	10.02
8	Operator C					10.03	10.02	10.02	10.01	10.03
9						10.03	10.02	10.02	10.01	10.01

The measurement procedure is as follows. Operator A, Operator B, and Operator C each measure the width of the first workpiece, and the input data is output to the first row (for Operator A), fourth row (for Operator B), and seventh row (for Operator C) of the X1 column on the Excel worksheet. Next, the second workpiece is measured in the same manner, with each operator measuring 15 workpieces in all.



The following describes how to set up the measurement procedure, perform measurement, and save the results.

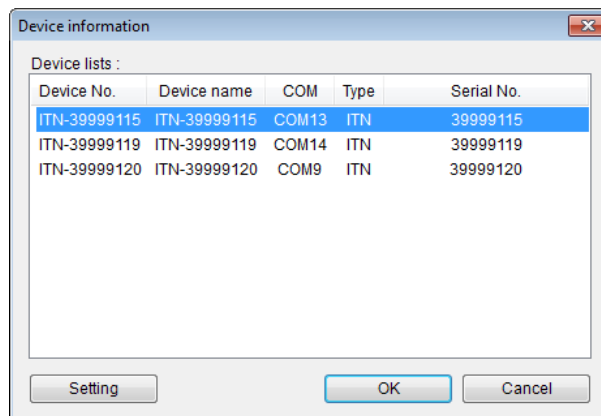
4. MEASUREMENT DATA COLLECTION (BASICS)

4.4.2 Setting

1) Check the device information.

NOTE • USB-ITPAK loads the information of connected devices at startup. Therefore, connect all the devices to be used before starting up USB-ITPAK.

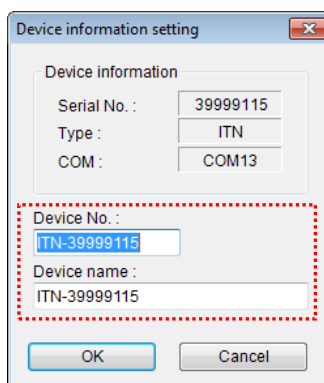
From the menu of the main dialog box, select [Settings] and then [Device information]. This opens the [Device information] dialog box, which allows you to check the devices that are connected to the PC.



TIP • When using IT-016U, also it will be recognized as ITN type. The Serial No. of IT-016U is represented starting with "8" as "ITN-8*****".

If you do not want to change the device number or device name, click the [Cancel] button to return to the main dialog box.

If you want to change a device number or device name, select the device, and then click the [Setting] button.



Click the [OK] button if you change any settings.

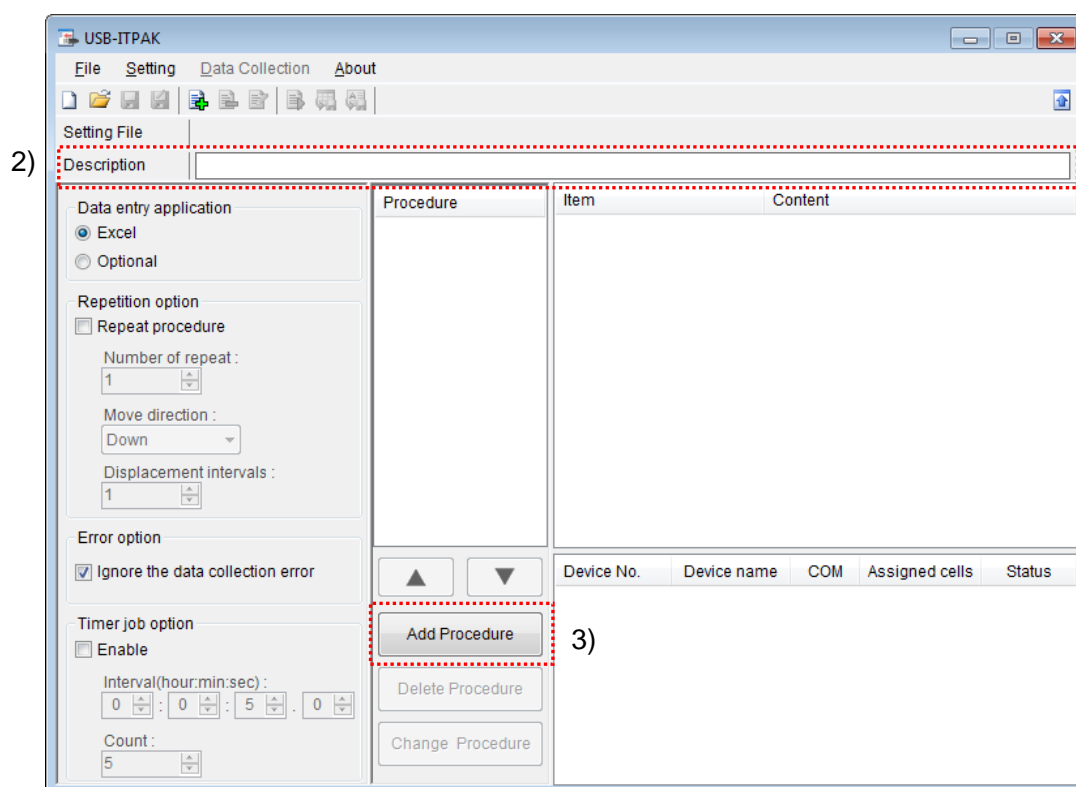
NOTE • In the procedure created from step "2)", the device number is used to specify the device to be used. If you change the number, revise all the setting files that use it.

TIP • If multiple units are connected, specify settings for each.

TIP • If performing measurement using existing setting files, skip this section and refer to "4.4.3 Measurement".

2) Enter information about the setting file in the [Description] field.

Enter a description of the setting file. This field may be left blank.



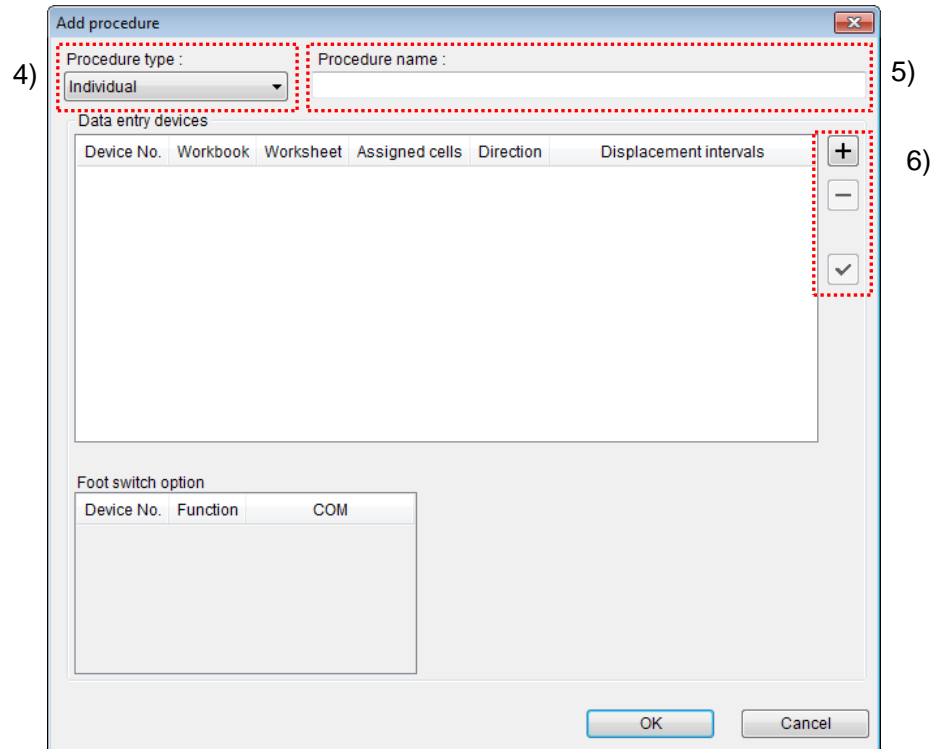
3) Add a procedure to the setting file.

Click the [Add Procedure] button on the main dialog box.

4. MEASUREMENT DATA COLLECTION (BASICS)

4) Select a procedure type for the [Procedure type] field.

If [Individual] is selected, the dialog box switches to the following dialog box.



If a different dialog box is displayed, select [Individual] from the drop-down list.

5) Enter a name in the [Procedure name] field.

Entering the procedure name is required.

TIP • Since the procedure name will be displayed in the [Procedure] field at the center of the main dialog box, enter an easily identifiable name.

Here, enter [3 posi. individual measurement].

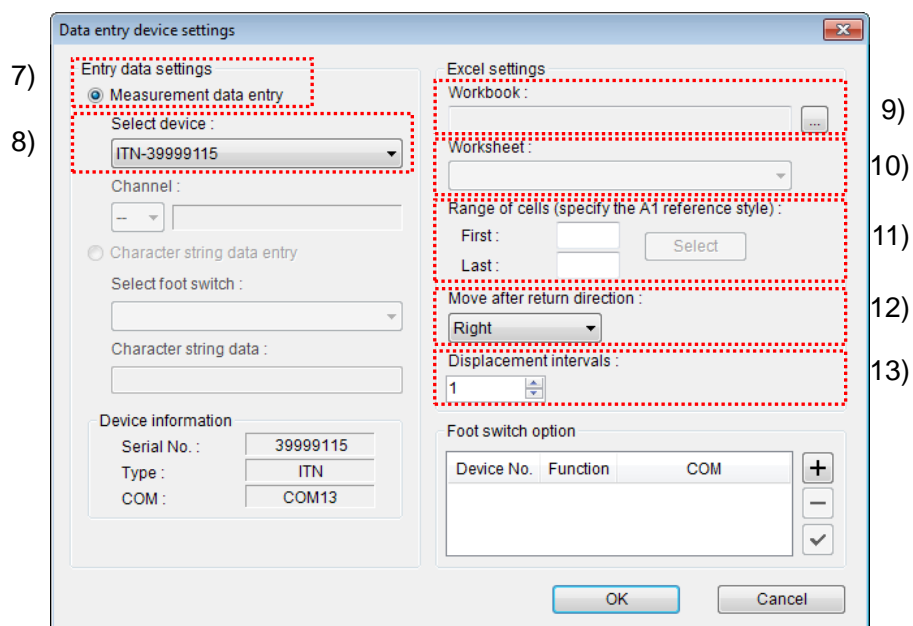
6) Specify the [Data entry devices] settings for the first device.

The functions of the buttons for the [Data entry devices] field are as follows:

- [+]: Adds device settings.
- [-]: Deletes the device setting selected from the list.
- [✓]: Changes the device setting selected from the list.

Here, click the [+] button to switch to the [Data entry device settings] dialog box.

7) In the [Entry data settings] field, select the entry data type.



The entry data types consist of measurement data input from the measuring tools (numeric data), and character string data input by pressing the foot switch.

TIP • For details about the method for inputting character string data using a foot switch, refer to "CHAPTER 5 MEASUREMENT DATA COLLECTION (ADVANCED)".

Here, select the [Measurement data entry] radio button.

8) In the [Select device] field, select the device to be assigned.

From the drop-down list, select the device to be assigned.

Here, select the first device.

9) Specify an Excel file in the [Workbook] field under [Excel settings]

Enter the workbook name of the Excel file to which the measured data is to be input.

The file can be selected from the [Open] dialog box by clicking the [...] button.

Here, select the following file.

C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sample_Form_4_GB.xls

IMPORTANT • If you want to use a file other than the sample inspection table file, create an inspection file using Excel before starting up USB-ITPAK. Inspection table files can be saved to any folder. Save the inspection table file to a folder location that will be easy to manage.

4. MEASUREMENT DATA COLLECTION (BASICS)

- 10) Select a worksheet for the [Worksheet] field under [Excel settings].

Select the worksheet name to be included in the workbook of step "9)" from the drop-down list.

Here, select [Sample_F4].

- 11) Enter the input range in the [Range of cells] fields under [Excel settings].

No.	Inspection item	Permissible value	Unit	Measuring item	X1	X2	X3	X4	X5	Judgment
1	Overall Length									
2	Operator A	10.05	9.95							
3										
4	Overall Length									
5	Operator B	10.05	9.95							
6										
7	Overall Length									
8	Operator C	10.05	9.95							
9										
10										

To specify the area indicated by the dot-line in the above inspection table as the input cell range, enter:

First: H11

Last: L13

- TIP** • The inspection table above shows the [Inspection item] and [Permissible value] cells filled, and the three rows provided respectively for operators A, B, and C.

- 12) Select the desired direction for the [Move after return direction] field under [Excel settings].

During measurement using USB-ITPAK, once data is input from the measuring tools, the measurement data is input to the current cell and then the entry point (cell) automatically moves to the next cell.

In the inspection table example shown above, select [Right].

- 13) Specify the [Displacement intervals] under [Excel settings].

Specify the interval for the cell movement specified in step 12). Specifying "1" results in movement to the next cell. Specifying "2" results in movement to the cell after the next.

In the inspection table example above, specify "1".

This completes the settings on the [Data entry device settings] dialog box for the first device, so click the [OK] button.

- 14) Repeat steps "6) to 13)" to specify the [Data entry device] settings for the second device.

Here, assign the second device to the [H14:L16].

The screenshot shows the 'Data entry device settings' dialog box. On the left, under 'Entry data settings', 'Measurement data entry' is selected. 'Select device' is set to 'ITN-39999119'. 'Channel' is set to '--'. Under 'Character string data entry', 'Select foot switch' is set to '--'. 'Character string data' is empty. 'Device information' shows 'Serial No.: 39999119', 'Type: ITN', and 'COM: COM14'. On the right, 'Excel settings' show 'Workbook: C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sample_...' and 'Worksheet: Sample_F4'. 'Range of cells' has 'First: H14' and 'Last: L16'. 'Move after return direction' is 'Right'. 'Displacement intervals' is '1'. 'Foot switch option' is empty. 'OK' and 'Cancel' buttons are at the bottom.

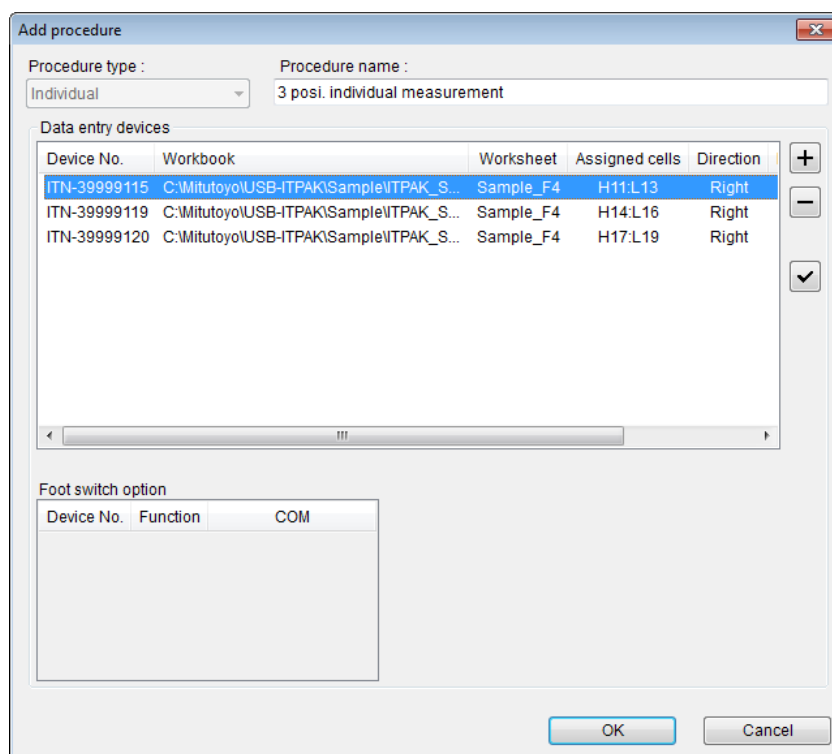
- 15) Repeat steps "6) to 13)" to specify the [Data entry device] settings for the third device.

Here, assign the third device to the [H17:L19].

The screenshot shows the 'Data entry device settings' dialog box. On the left, under 'Entry data settings', 'Measurement data entry' is selected. 'Select device' is set to 'ITN-39999120'. 'Channel' is set to '--'. Under 'Character string data entry', 'Select foot switch' is set to '--'. 'Character string data' is empty. 'Device information' shows 'Serial No.: 39999120', 'Type: ITN', and 'COM: COM9'. On the right, 'Excel settings' show 'Workbook: -ITPAK\Sample\ITPAK_Sample_Form_4_GB.xls' and 'Worksheet: Sample_F4'. 'Range of cells' has 'First: H17' and 'Last: L19'. 'Move after return direction' is 'Right'. 'Displacement intervals' is '1'. 'Foot switch option' is empty. 'OK' and 'Cancel' buttons are at the bottom.

4. MEASUREMENT DATA COLLECTION (BASICS)

16) Close [Add procedure].



This completes the settings on the [Add procedure] dialog box, so click the [OK] button.

17) Save the created setting file.

The screenshot shows the USB-ITPAK software window. The 'Setting File' field is highlighted with a red dashed box and contains the path 'C:\Mitutoyo\USB-ITPAK\4-4.it2'. The 'Description' field contains 'Individually measure 3 positions.' The interface is divided into several sections: 'Data entry application' (Excel selected), 'Repetition option' (Repeat procedure unchecked, Number of repeat: 1, Move direction: Down, Displacement intervals: 1), 'Error option' (Ignore the data collection error checked), and 'Timer job option' (Enable unchecked, Interval: 0:0:5, Count: 5). A 'Procedure' list shows '3 posi. individual me...'. A table at the bottom right lists device settings.

Device No.	Device name	COM	Assigned cells	Status
ITN-39999115	ITN-39999115	COM13	H11:L13	Connect
ITN-39999119	ITN-39999119	COM14	H14:L16	Connect
ITN-39999120	ITN-39999120	COM9	H17:L19	Connect

From the menu of the main dialog box, select [File], [Save As], and then save the file by giving it a name. When the file has been saved, the file name is displayed as a full path in the [Setting File] field.

4. MEASUREMENT DATA COLLECTION (BASICS)

4.4.3 Measurement

1) Open [Setting File].

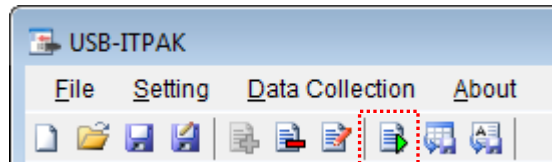
- TIP** • If starting measurement immediately after specifying the settings in "4.4.2 Setting", the setting file is already opened. In this case, skip step "1)".

From the menu of the main dialog box, select [File] and then [Open], or open [Setting file] from [Recent files].

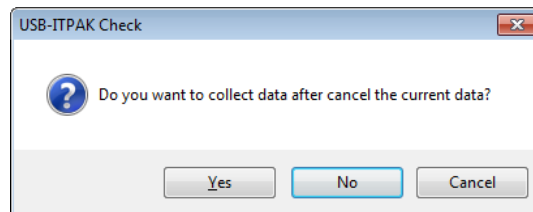
2) Open the data collection dialog box.

- IMPORTANT** • In USB-ITPAK, following data collection, the Excel file to which the data was input is saved through overwriting under the existing file name. To use the original Excel file later, back it up beforehand.

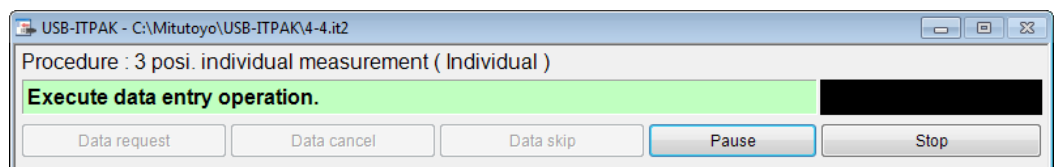
From the menu of the main dialog box, select [Data Collection] and then [Start], or click the icon shown below.



When data collection starts, the message [Do you want to collect data after cancel the current data?] is displayed. Click [Yes] to clear the existing data or [No] not to.



The data collection dialog box is displayed and data collection can now be performed.



- TIP** • If you click [No] for the message [Do you want to collect data after cancel the current data?], the data collection dialog box will be paused. In this case, resume the data collection. For details, refer to "6.14.1 [Pause/Resume] button" and "8.2.5 To resume the Excel data collection previously paused".

3) Perform data collection.

During data collection, the cell to which data will be input next is highlighted in green.

ITPAK_Sample_Form_4_GB [Compatibility Mode] - Microsoft Excel

AAA Corporation

CERTIFICATE OF INSPECTION

SAMPLE

Name of inspection		Lot No.		BBB Corporation		Approval	Inspector	Overall judgment			
Product name		CCC Division		Date							
Part name		Number of lots									
Part No.		Number of inspections									
No.	Inspection item	Permissible value	Unit	Measuring item	X1	X2	X3	X4	X5	judgment	Special note Drawing No.
1	Overall Length										
2	Operator A	10.05	9.95								
3											
4	Overall Length										
5	Operator B	10.05	9.95								
6											
7	Overall Length										
8	Operator C	10.05	9.95								
9											
10											

BBB Corporation

Sample_F4

Ready

Input data from the measuring tools through one of the following operations:

- (1) Pressing the DATA switch on the measuring tool.
- (2) Pressing the DATA switch if USB-ITN has one.

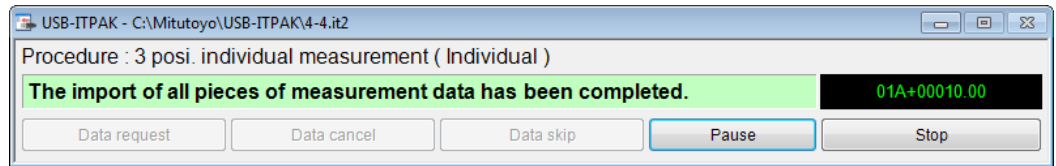
TIP • When using IT-016U, data input can be performed using the DATA switch equipped with IT-016U or the foot switch connected to IT-016U.

IMPORTANT • During individual measurement, data is collected separately for each measuring tool, so data cannot be collected by clicking the [Data request] button on the data collection dialog box.

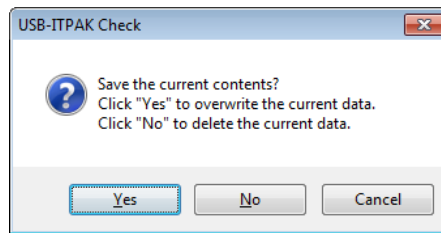
4. MEASUREMENT DATA COLLECTION (BASICS)

4) End data collection and save the results.

Once all the data has been input, a completion message is displayed on the data collection dialog box.



Click the [Stop] button on the data collection dialog box. The following message is displayed.



[Yes]: The Excel file to which data was input is saved through overwriting under the existing file name.

[No]: The Excel file is not overwritten and the data that was input is deleted.

[Cancel]: The message dialog box is closed and the data collection dialog box is displayed.

Click the [Yes] button. The Excel file is saved through overwriting and the dialog box switches to the main dialog box.

This completes basic data collection for individual measurement.

4.5 Sequential Measurement (Basics) using U-WAVE

4.5.1 Overview

Sequential measurement is one of the measurement methods that can be selected in the procedures used in USB-ITPAK.

During sequential measurement, one or more measuring tools are used and measurement data is input from the tools to cells specified in advance in an inspection table worksheet in Excel or other applications.

Example: Measurement in a pre-set sequence such as measuring the length, and then the width by using one measuring tool

Example: Sequential measurement of measurement locations on a workpiece using multiple measuring tools, such as measuring the length by using a caliper and measuring the diameter by using a micrometer

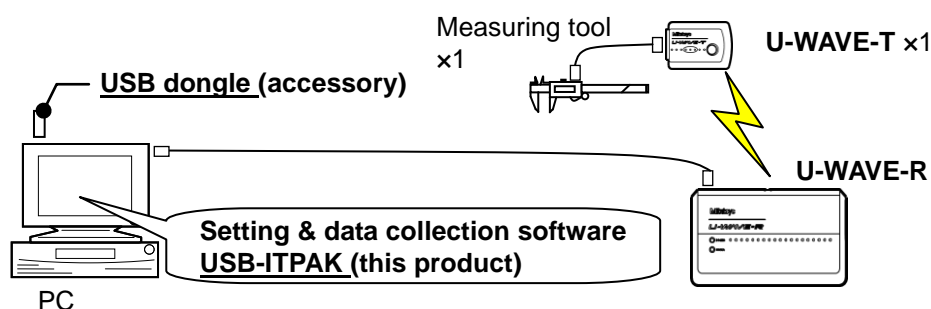
When using U-WAVE, the measurement data collection is available with the DATA switch operation on U-WAVE-T and the DATA switch operation on the measuring tools. When using USB-ITN, the measurement data collection is available with the [Data request] button operation on USB-ITPAK, the function key operation on the PC, the DATA switch operation on the measuring tools and the foot switch operation.

- IMPORTANT**
- To use U-WAVE with USB-ITPAK, the installation of device driver for each U-WAVE-R is required.
 - To use U-WAVE with USB-ITPAK, the setup of U-WAVE-R and U-WAVE-T using U-WAVEPAK is required in advance. In addition, write down the selected channel of U-WAVE-T together with the device ID. The information is required for the channel selection setting on USB-ITPAK.
 - U-WAVE-T will be used in the button driven mode. Check the mode on U-WAVEPAK in advance. For details, refer to the U-WAVEPAK User's Manual. In the button driven mode, the measurement data collection is not available with the [Data request] button operation on the data collection dialog box, the function key operation on the PC or the foot switch operation using USB-FSW.
-

This section explains the basic use of sequential measurement.

1) Connection

In the example used in this section, one measuring tool is connected to U-WAVE-T. The connection diagram is shown below.

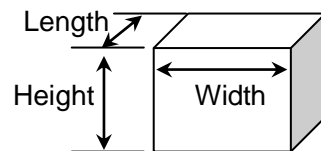


4. MEASUREMENT DATA COLLECTION (BASICS)

TIP • USB-ITN / IT-016U can be used in combination with U-WAVE.

2) Workpiece for measurement

The following workpiece is used in the explanation. The measurement locations are the length, width, and height of the rectangular parallelepiped.



3) Measurement

The image of the inspection table upon completion of data collection is shown below.

No.	Inspection item	Permissible value		Unit	Measuring item	X1	X2	X3	X4	X5
1	Length	13.60	13.40	mm	CD	13.49	13.51	13.52	13.53	13.50
2	Width	12.20	12.00	mm	CD	12.12	12.15	12.13	12.15	12.14
3	Height	10.60	10.50	mm	CD	10.58	10.58	10.55	10.57	10.56

In this measurement procedure, the length, width, and height of the first workpiece are measured and the input data is output to the first row (Length), the second row (Width), and the third row (Height), respectively, of the X1 column on the Excel worksheet.

Next, the second workpiece is similarly measured, and so on, until all five workpieces have been measured.

X1	X2	X3	X4	X5
Length (1) ↓ Width (1) ↓ Height (1)				
				Height (5)

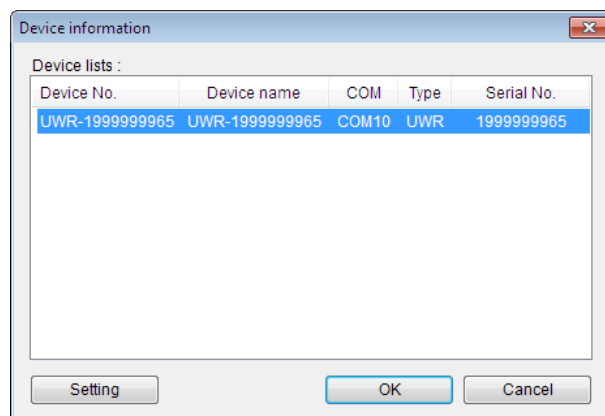
The following describes how to set up the measurement procedure, perform measurement, and save the results.

4.5.2 Setting

1) Check the device information.

NOTE • USB-ITPAK loads the information of connected devices at startup. Therefore, connect all the devices to be used before starting up USB-ITPAK.

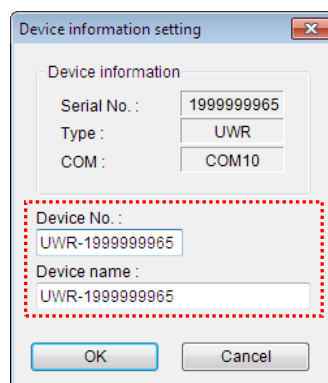
From the menu of the main dialog box, select [Settings] and then [Device information]. This opens the [Device information] dialog box, which allows you to check the devices that are connected to the PC.



TIP • U-WAVE-R will be displayed as "UWR".

If you do not want to change the device number or device name, click the [Cancel] button to return to the main dialog box.

If you want to change the device number or device name, click the [Setting] button.



Click the [OK] button if you change any settings.

NOTE • In the procedure created from step "2)", the device number is used to specify the device to be used. If you change the number, revise all the setting files that use it.

TIP • If multiple units are connected, specify settings for each.

4. MEASUREMENT DATA COLLECTION (BASICS)

- TIP** • If performing measurement using existing setting files, skip this section and refer to "4.5.3 Measurement".

2) Enter information about the setting file in the [Description] field.

Enter a description of the setting file. This field may be left blank.

2)

The screenshot shows the USB-ITPAK software window. The 'Setting' tab is selected. The 'Description' field is highlighted with a red dashed box. The 'Add Procedure' button is also highlighted with a red dashed box and labeled with '3)'.

Setting File

Description

Data entry application

☒ Excel

☐ Optional

Repetition option

☐ Repeat procedure

Number of repeat : 1

Move direction : Down

Displacement intervals : 1

Error option

☒ Ignore the data collection error

Timer job option

☐ Enable

Interval(hour:min:sec) : 0 : 0 : 5 : 0

Count : 5

Procedure

Item

Content

Device No.

Device name

COM

Assign...

Status

3)

Add Procedure

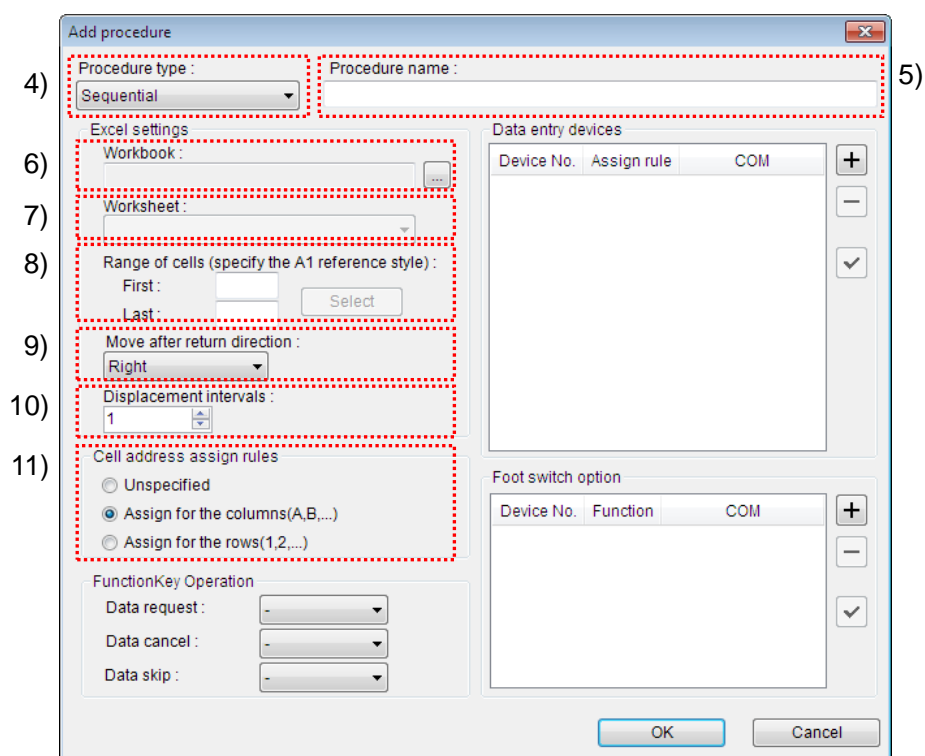
Delete Procedure

Change Procedure

3) Add a procedure to the setting file.

Click the [Add Procedure] button on the main dialog box.

4) Select a procedure type for the [Procedure type] field.



Check that [Sequential] is selected as the procedure type, and if not, select [Sequential] from the drop-down list.

5) Enter a name in the [Procedure name] field.

Entering the procedure name is required.

TIP • Since the procedure name will be displayed in the [Procedure] field at the center of the main dialog box, enter an easily identifiable name.

Here, enter [3 side measurement].

6) Specify an Excel file in the [Workbook] field under [Excel settings].

Enter the workbook name of the Excel file to which the measured data is to be input.

The file can be selected from the [Open] dialog box by clicking the [...] button.

Here, select the following file.

C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sample_Form_1_GB.xls

IMPORTANT • If you want to use a file other than the sample inspection table file, create an inspection file using Excel before starting up USB-ITPAK. Inspection table files can be saved to any folder. Save the inspection table file to a folder location that will be easy to manage.

4. MEASUREMENT DATA COLLECTION (BASICS)

- 7) Select a worksheet for the [Worksheet] field under [Excel settings].

Select the worksheet name to be included in the workbook of step "6)" from the drop-down list.

Here, select [Sample_F1].

- 8) Enter the input range in the [Range of cells] fields under [Excel settings].

The screenshot displays an Excel spreadsheet titled 'ITPAK_Sample_Form_1_GB [Compatibility Mode] - Microsoft Excel'. The spreadsheet contains a 'CERTIFICATE OF INSPECTION' form for 'AAA Corporation'. The form includes fields for 'Name of inspection', 'Product name', 'Part name', 'Lot No.', 'Number of lots', 'Date', 'Approval', 'Inspector', and 'Overall judgment'. A table with 10 rows and 5 columns (X1 to X5) is highlighted with a red dotted border and red arrows indicating a downward movement pattern. The status bar at the bottom shows 'Sample_F1' and '90%' zoom.

To specify the area indicated by the dot-line in the above inspection table as the input cell range, enter:

First: H11

Last: L13

TIP • The inspection table above is shown with the [Inspection item] and [Permissible value] cells filled.

- 9) Select the desired direction for the [Move after return direction] field under [Excel settings].

During measurement using USB-ITPAK, once data is input from the measuring tools, the measurement data is input to the current cell and then the entry point (cell) automatically moves to the next cell.

In the inspection table example shown above, select [Down].

- 10) Specify the [Displacement intervals] under [Excel settings].

Specify the interval for the cell movement specified in step 9). Specifying "1" results in movement to the next cell. Specifying "2" results in movement to the cell after the next.

In the inspection table example above, specify "1".

11) Select an option under [Cell address assign rules].

In USB-ITPAK, the measuring items can be assigned to columns (vertical) or rows (horizontal) of the inspection table worksheet.

In the inspection table example above, the measuring items are assigned to respective rows, so select [Assign for the rows (1, 2...)].

TIP • Data can be collected even if the device is not assigned to columns (A, B, ...) or rows (1, 2, ...). In this case, select [Unspecified].

When data is input from the device registered in the procedure during data collection, the data is written to the cell that is currently active in the order of input, regardless of the cell position.

For details, refer to "6.6.3 Cell address assign rules".

12) Specify the [Data entry devices] settings.

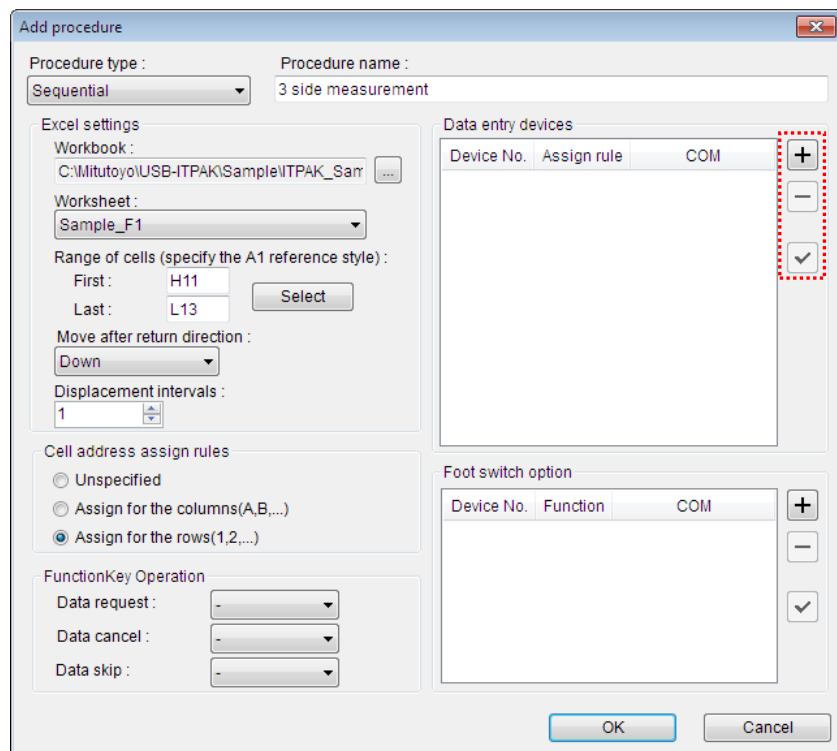
The functions of the buttons for the [Data entry devices] field are as follows:

[+]: Adds device settings.

[-]: Deletes the device setting selected from the list.

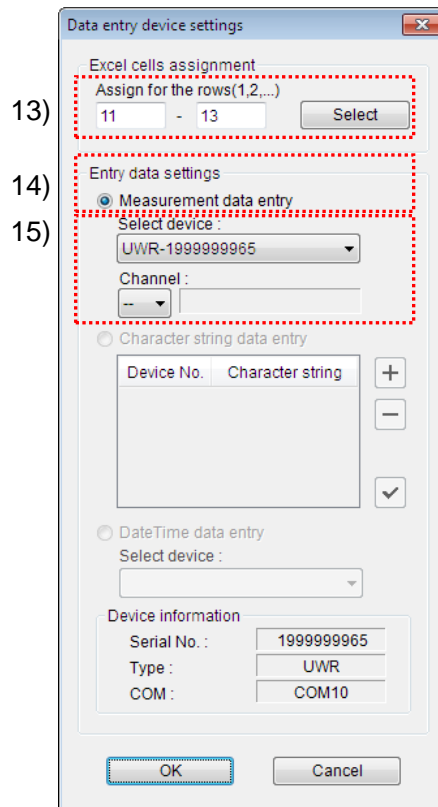
[√]: Changes the device setting selected from the list.

Here, click the [+] button to switch to the [Data entry device settings] dialog box.



4. MEASUREMENT DATA COLLECTION (BASICS)

- 13) Specify the settings in the [Excel cells assignment] field on the [Data entry device settings] dialog box.



In the [Excel cells assignment] field, specify columns (vertical) or rows (horizontal) according to the specification in step 11). Specify the rows here.

There are three input areas in the previously described inspection table. Here, one device is assigned on all the rows, so enter start row number "11" in the input field on the left, and input "13" in the input field on the right.

- 14) In the [Entry data settings] field, select the entry data type.

The entry data types consist of measurement data input from the measuring tools (numeric data), and character string data input by pressing the foot switch.

TIP • For details about the method for inputting character string data using a foot switch, refer to "CHAPTER 5 MEASUREMENT DATA COLLECTION (ADVANCED)".

Here, select the [Measurement data entry] radio button.

- 15) In the [Select device] field, select the device to be assigned.

From the drop-down list, select the device to be assigned. Select U-WAVE-R (UWR) and then select the channel of U-WAVE-T to be used.

NOTE • Before starting up U-WAVEPAK for channel check, exit USB-ITPAK. In this case, return to "4.5.2 Setting" and retry the USB-ITPAK settings.

This completes the settings on the [Data entry device settings] dialog box, so click the [OK] button.

16) Close [Add procedure].

Add procedure

Procedure type : Sequential Procedure name : 3 side measurement

Excel settings

Workbook : C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sam

Worksheet : Sample_F1

Range of cells (specify the A1 reference style) :
First : H11 Last : L13 [Select]

Move after return direction : Down

Displacement intervals : 1

Cell address assign rules

☐ Unspecified
☐ Assign for the columns(A,B,...)
☒ Assign for the rows(1,2,...)

FunctionKey Operation

Data request : -
Data cancel : -
Data skip : -

Data entry devices

Device No.	Assign rule	COM
UWR-1999999965(05)	11:13	COM10

Foot switch option

Device No.	Function	COM
------------	----------	-----

[OK] [Cancel]

This completes the settings on the [Add procedure] dialog box, so click the [OK] button.

4. MEASUREMENT DATA COLLECTION (BASICS)

17) Save the created setting file.

The screenshot shows the USB-ITPAK software window. The 'Setting File' field is highlighted with a red dashed box and contains the path 'C:\Mitutoyo\USB-ITPAK\4-5.it2'. The 'Description' field contains 'Measure 3 sides(length x width x height)'. The 'Data entry application' section has 'Excel' selected. The 'Repetition option' section has 'Repeat procedure' checked, with 'Number of repeat' set to 1, 'Move direction' set to 'Down', and 'Displacement intervals' set to 1. The 'Error option' section has 'Ignore the data collection error' checked. The 'Timer job option' section has 'Enable' unchecked, with 'Interval(hour:min:sec)' set to 0:0:5 and 'Count' set to 5. The 'Procedure' list shows '3 side measurement' selected. The 'Excel settings' table lists various parameters like Workbook, Worksheet, Range of cells, etc. The 'Device No.' table lists device information like UWR-1999999965(05), UWR-1999999965, COM10, and 11:13.

Setting File	Description
C:\Mitutoyo\USB-ITPAK\4-5.it2	Measure 3 sides(length x width x height).

Item	Content
Procedure type	Sequential
Data entry application	Excel
Excel settings:	
Workbook	C:\Mit...ITPAK_Sample_Form_1_GB.xls
Worksheet	Sample_F1
Range of cells	H11:L13
Move after return direction	Down
Displacement intervals	1
Cell address assign rules	Assign for the rows(1,2,...)
Foot switch option:	
FunctionKey Operation:	

Device No.	Device name	COM	Assigned cells
UWR-1999999965(05)	UWR-1999999965	COM10	11:13

From the menu of the main dialog box, select [File], [Save As], and then save the file by giving it a name. When the file has been saved, the file name is displayed as a full path in the [Setting File] field.

4.5.3 Measurement

1) Open [Setting File].

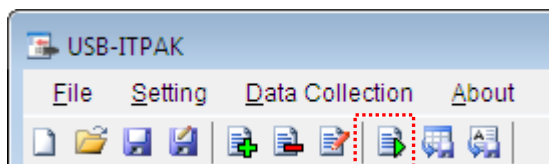
TIP • If starting measurement immediately after specifying the settings in "4.5.2 Setting", the setting file is already opened. In this case, skip step "1)".

From the menu of the main dialog box, select [File] and then [Open], or open [Setting file] from [Recent files].

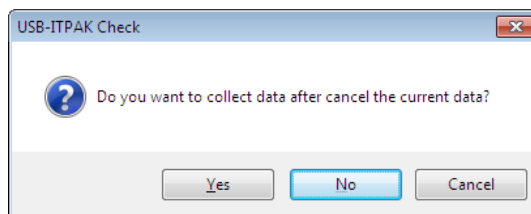
2) Open the data collection dialog box.

IMPORTANT • In USB-ITPAK, following data collection, the Excel file to which the data was input is saved through overwriting under the existing file name. To use the original Excel file later, back it up beforehand.

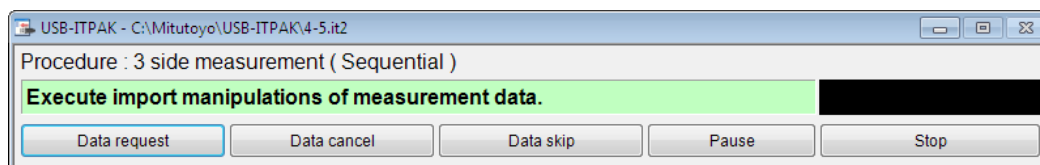
From the menu of the main dialog box, select [Data Collection] and then [Start], or click the icon shown below.



When data collection starts, the message [Do you want to collect data after cancel the current data?] is displayed. Click [Yes] to clear the existing data or [No] not to.



The data collection dialog box is displayed and data collection can now be performed.



TIP • If you click [No] for the message [Do you want to collect data after cancel the current data?], the data collection dialog box will be paused. In this case, resume the data collection. For details, refer to "6.14.1 [Pause/Resume] button" and "8.2.5 To resume the Excel data collection previously paused".

4. MEASUREMENT DATA COLLECTION (BASICS)

3) Perform data collection.

During data collection, the cell to which data will be input next is highlighted in green.

AAA Corporation										Lot No.		CCC Division		Approval	Inspector	Overall judgment
Product name										Number of lots		Date				
Part name										Number of inspections						
Part No.																
No.	Inspection item	Permissible value	Unit	Measuring item	X1	X2	X3	X4	X5	judgment	Special note Drawing No.					
1	Length	13.60	13.40													
2	Width	12.20	12.00													
3	Height	10.60	10.50													
4																
5																
6																
7																
8																
9																
10																

【Measuring item】
CD: Caliper MD: Micrometer ID: Indicator HD: Height Gage LG: Linear Gage SD: Scale
AN: Surf test CMM: Coordinate Measuring Machine PP: Profile Projector MS: Microscope
HT: Hardness Testing Machine VF: Visual inspection MG: Master Gage EX: Others

BBB Corporation

Input data from the measuring tools through one of the following operations:

- (1) Pressing the DATA switch on the measuring tool.
- (2) Pressing the DATA switch on U-WAVE-T. (Within about 2 seconds)
- (3) Clicking the [Data request] button on the data collection dialog box.

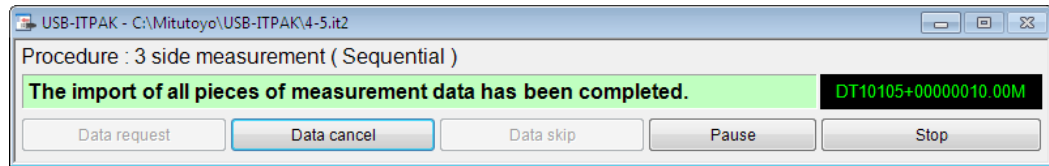
To cancel data that has been input, click the [Data cancel] button on the data collection dialog box. The data in the entry cell is canceled and the previous cell is highlighted.

To skip the current data entry cell without inputting data, click the [Data skip] button on the data collection dialog box. The next cell is highlighted.

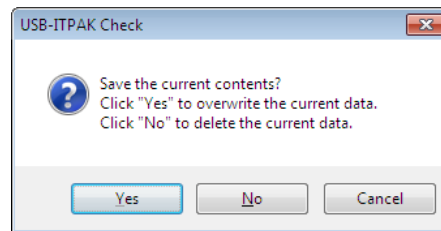
- TIP**
- For details about the "measurement mode (button driven, event driven)" and "data cancel" of U-WAVE, refer to the U-WAVEPAK User's Manual. For details about the precautions for "data cancel" of U-WAVE, refer to "8.2 Supplementary Explanation of Use".

4) End data collection and save the results.

Once all the data has been input, a completion message is displayed on the data collection dialog box.



Click the [Stop] button on the data collection dialog box. The following message is displayed.



[Yes]: The Excel file to which data was input is saved through overwriting under the existing file name.

[No]: The Excel file is not overwritten and the data that was input is deleted.

[Cancel]: The message dialog box is closed and the data collection dialog box is displayed.

Click the [Yes] button. The Excel file is saved through overwriting and the dialog box switches to the main dialog box.

This completes basic data collection for sequential measurement.

4.6 Batch Measurement (Basics) using U-WAVE

4.6.1 Overview

Batch measurement is one of the measurement methods that can be selected in the procedures used in USB-ITPAK.

During batch measurement, multiple measuring tools are used to acquire measurement data in batch.

Example: Multiple measuring tools are attached to measuring jigs and workpieces are set to these jigs, and then measurement data is collected from all the connected measuring tools by using a foot switch, etc.

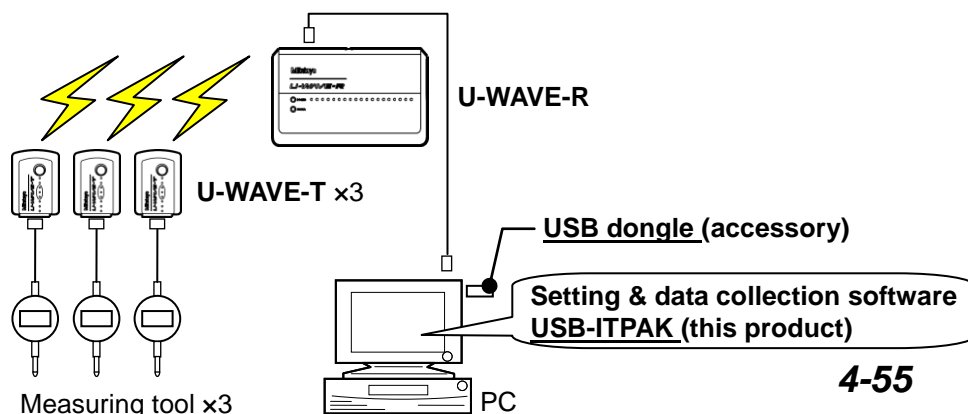
The [Data request] button of USB-ITPAK, function keys of a PC, and the foot switch can be used when collecting measurement data.

- IMPORTANT**
- To use U-WAVE with USB-ITPAK, the installation of device driver for each U-WAVE-R is required.
 - To use U-WAVE with USB-ITPAK, the setup of U-WAVE-R and U-WAVE-T using U-WAVEPAK is required in advance. In addition, write down the selected channel of U-WAVE-T together with the device ID. The information is required for the channel selection setting on USB-ITPAK.
 - When using U-WAVE-T, the event driven mode must be set on U-WAVEPAK (special order) in advance. For details, refer to the U-WAVEPAK User's Manual. For details about U-WAVEPAK (special order), contact your nearest service center. In the event driven mode, the measurement data collection is not available with the DATA switch operation on U-WAVE-T and the DATA switch operation on the measuring tools.
 - During batch measurement, a data output request is sent to all the measuring tools through a single operation, but some differences arise among the measurement times of the measuring tools. Therefore, it is not possible to perform measurement while moving measuring jigs or workpieces. Be sure to fix jigs and workpieces in place during measurement.

This section explains the basic use of batch measurement.

1) Connection

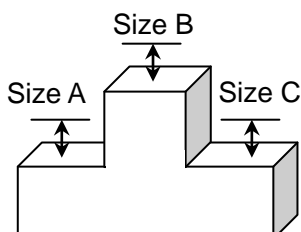
In the example used in this section, three indicators are connected to U-WAVE-T. The connection diagram is shown below.



TIP • USB-ITN / IT-016U can be used in combination with U-WAVE.

2) Workpiece for measurement

The following workpiece is used in the explanation. Three indicators are used and measurement is done with measuring jigs. "Size A", "Size B", and "Size C", which are shown in the figure below, are measured.



3) Measurement

The image of the inspection table upon completion of data collection is shown below.

Inspection item		Size A	Size B	Size C
Measuring item				
Tolerance	Upper limit	5.150	10.100	5.150
	Lower limit	4.850	9.900	4.850
Result of inspection	Sample 1	5.054	10.023	5.070
	Sample 2	5.086	10.016	5.064
	Sample 3	5.093	10.000	5.056
	Sample 4	5.077	10.039	5.063
	Sample 5	5.085	9.992	5.047
	Sample 6	5.084	10.024	5.065
	Sample 7	5.062	9.990	5.050
	Sample 8	5.073	9.985	5.054
	Sample 9	5.071	10.011	5.045
	Sample 10	5.062	10.000	5.060

The measurement procedure is as follows. The three locations of the first workpiece are measured, and the input data is output to the "Size A", "Size B", and "Size C" columns. Next, the three locations of the second workpiece are measured, and the input data is output to the "Size A", "Size B", and "Size C" columns in the "Sample 2" row of the Excel worksheet.

The remaining workpieces up to the tenth one are measured in the same manner.

Result of inspection	Sample 1	Batch (1)		
	Sample 2	Batch (2)		
	Sample 3			
	Sample 4			
	Sample 5			
	Sample 6			
	Sample 7			
	Sample 8			
	Sample 9			
	Sample 10	Batch (10)		

The following describes how to set up the measurement procedure, perform measurement, and save the results.

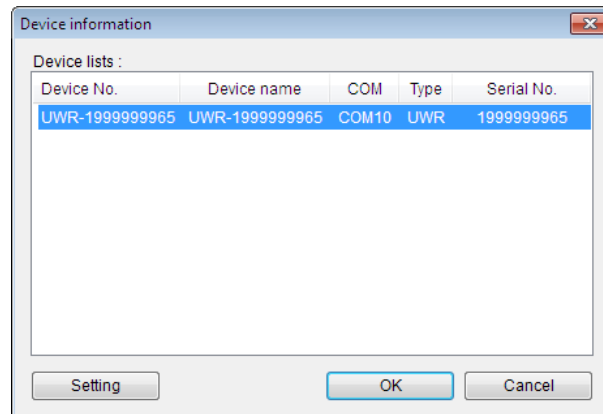
4. MEASUREMENT DATA COLLECTION (BASICS)

4.6.2 Setting

1) Check the device information.

NOTE • USB-ITPAK loads the information of connected devices at startup. Therefore, connect all the devices to be used before starting up USB-ITPAK.

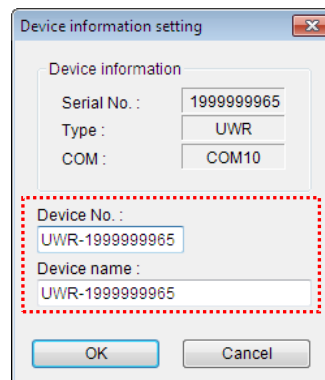
From the menu of the main dialog box, select [Settings] and then [Device information]. This opens the [Device information] dialog box, which allows you to check the devices that are connected to the PC.



TIP • U-WAVE-R will be displayed as "UWR".

If you do not want to change the device number or device name, click the [Cancel] button to return to the main dialog box.

If you want to change a device number or device name, select the device, and then click the [Setting] button.



Click the [OK] button if you change any settings.

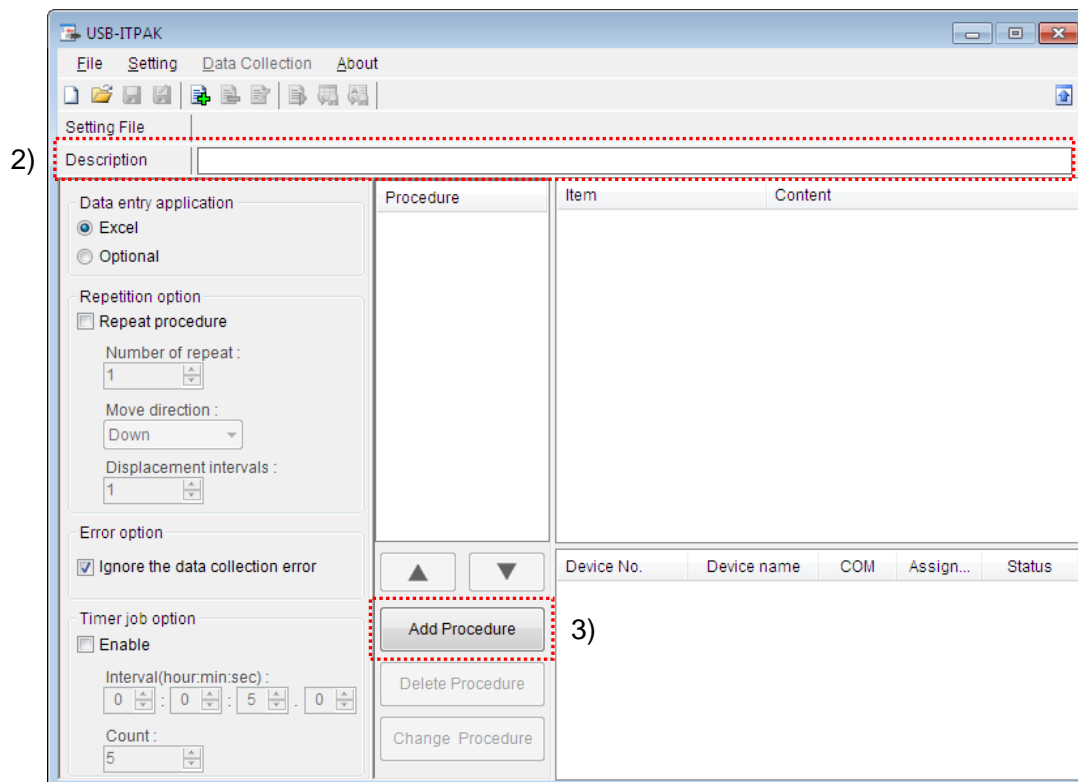
NOTE • In the procedure created from step "2)", the device number is used to specify the device to be used. If you change the number, revise all the setting files that use it.

TIP • If multiple units are connected, specify settings for each.

TIP • If performing measurement using existing setting files, skip this section and refer to "4.6.3 Measurement".

2) Enter information about the setting file in the [Description] field.

Enter a description of the setting file. This field may be left blank.



3) Add a procedure to the setting file.

Click the [Add Procedure] button on the main dialog box.

4. MEASUREMENT DATA COLLECTION (BASICS)

- 4) Select a procedure type for the [Procedure type] field.

The screenshot shows the 'Add procedure' dialog box with the following fields and annotations:

- 4) Procedure type: Batch (dropdown menu)
- 5) Procedure name: (text field)
- 6) Excel settings: Workbook: (text field with [...] button)
- 7) Worksheet: (dropdown menu)
- 8) Range of cells (specify the A1 reference style): First: (text field), Last: (text field), Select: (button)
- 9) Move after return direction: Right (dropdown menu)
- 10) Displacement intervals: 1 (spin box)
- 11) Cell address assign rules:
 - ☐ Unspecified
 - ☒ Assign for the columns(A,B,...)
 - ☐ Assign for the rows(1,2,...)
- FunctionKey Operation: Data request: (dropdown menu), Data cancel: (dropdown menu), Data skip: (dropdown menu)
- Data entry devices: Table with columns Device No., Assign rule, COM. Buttons: +, -, ✓
- Foot switch option: Table with columns Device No., Function, COM. Buttons: +, -, ✓
- OK, Cancel buttons at the bottom.

Check that [Batch] is selected as the procedure type, and if not, select [Batch] from the drop-down list.

- 5) Enter a name in the [Procedure name] field.

Entering the procedure name is required.

TIP • Since the procedure name will be displayed in the [Procedure] field at the center of the main dialog box, enter an easily identifiable name.

Here, enter [3 position batch measurement].

- 6) Specify an Excel file in the [Workbook] field under [Excel settings].

Enter the workbook name of the Excel file to which the measured data is to be input.

The file can be selected from the [Open] dialog box by clicking the [...] button.

Here, select the following file.

C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sample_Form_3_GB.xls

IMPORTANT • If you want to use a file other than the sample inspection table file, create an inspection file using Excel before starting up USB-ITPAK. Inspection table files can be saved to any folder. Save the inspection table file to a folder location that will be easy to manage.

7) Select a worksheet for the [Worksheet] field under [Excel settings].

Select the worksheet name to be included in the workbook of step "6)" from the drop-down list.

Here, select [Sample_F3].

8) Enter the input range in the [Range of cells] fields under [Excel settings].

AAA Corporation

CERTIFICATE OF INSPECTION **SAMPLE**

Part name		BBB Corporation			
Part No.		CCC Division			
Name of inspection		Date of inspection		Inspector	
Lot No.		Approval			
Number of lots					
Number of inspections					
Drawing No.					

Inspection item	Size A	Size B	Size C	Size D	Size E
Measuring item					
Tolerance					
Upper limit	5.150	10.100	5.150		
Lower limit	4.850	9.900	4.850		
Result of inspection					
Sample 1					
Sample 2					
Sample 3					
Sample 4					
Sample 5					
Sample 6					
Sample 7					
Sample 8					
Sample 9					
Sample 10					
Average (Av.)					
standard deviation (σ)					
Overall judgment		[Special note]			

[Measuring item]
CD: Caliper MD: Micrometer ID: Indicator HD: Height Gage LG: Linear Gage SD: Scale
AN: SurfTest CMM: Coordinate Measuring Machine PP: Profile Projector MS: Microscope
VC: Visual inspection MG: Master Gage EX: Others

BBB Corporation

To specify the area indicated by the dot-line in the above inspection table as the input cell range, enter:

First: D18

Last: F27

TIP • The inspection table above is shown with the [Upper limit] and [Lower limit] cells filled.

4. MEASUREMENT DATA COLLECTION (BASICS)

- 9) Select the desired direction for the [Move after return direction] field under [Excel settings].

During measurement using USB-ITPAK, once data is input from the measuring tools, the measurement data is input to the current cell and then the entry point (cell) automatically moves to the next cell.

In the inspection table example shown above, select [Down].

- 10) Specify the [Displacement intervals] under [Excel settings].

Specify the interval for the cell movement specified in step 9). Specifying "1" results in movement to the next cell. Specifying "2" results in movement to the cell after the next.

In the inspection table example above, specify "1".

- 11) Select an option under [Cell address assign rules].

In USB-ITPAK, the measuring items can be assigned to columns (vertical) or rows (horizontal) of the inspection table worksheet.

In the inspection table example above, the measuring items are assigned to respective columns, so select [Assign for the columns (A, B...)].

- 12) Specify the [Data entry devices] settings for the first device.

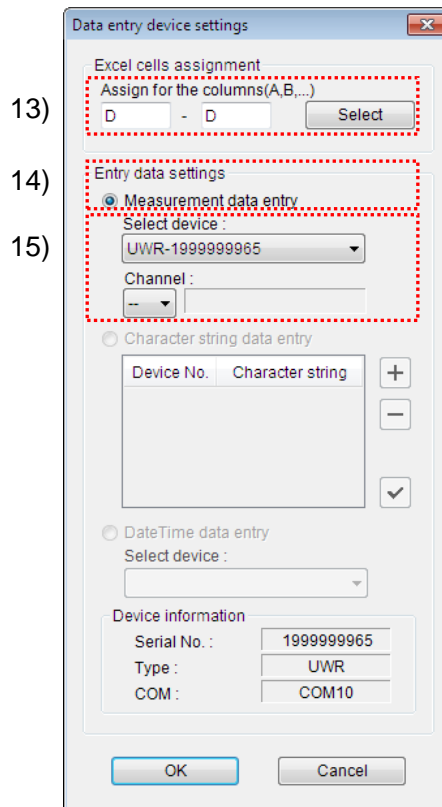
The functions of the buttons for the [Data entry devices] field are as follows:

- [+]: Adds device settings.
- [-]: Deletes the device setting selected from the list.
- [✓]: Changes the device setting selected from the list.

Here, click the [+] button to switch to the [Data entry device settings] dialog box.

12)

-
- 13) Specify the settings in the [Excel cells assignment] field on the [Data entry device settings] dialog box.



In the [Excel cells assignment] field, specify columns (vertical) or rows (horizontal) according to the specification in step 11). Specify the columns here.

There are three input areas in the previously described inspection table. Here, the first device is assigned to the D column, which is the first column, so enter "D" in both fields.

- 14) In the [Entry data settings] field, select the entry data type.

The entry data types consist of measurement data input from the measuring tools (numeric data), and character string data input by pressing the foot switch.

TIP • For details about the method for inputting character string data using a foot switch, refer to "CHAPTER 5 MEASUREMENT DATA COLLECTION (ADVANCED)".

Here, select the [Measurement data entry] radio button.

- 15) In the [Select device] field, select the device to be assigned.

From the drop-down list, select the device to be assigned. Select U-WAVE-R (UWR) and then select the channel of U-WAVE-T to be used.

NOTE • Before starting up U-WAVEPAK for channel check, exit USB-ITPAK. In this case, return to "4.6.2 Setting" and retry the USB-ITPAK settings.

4. MEASUREMENT DATA COLLECTION (BASICS)

This completes the settings on the [Data entry device settings] dialog box for the first device, so click the [OK] button.

- 16) Repeat steps "12) to 15)" to specify the [Data entry device] settings for the second device.

Here, assign the second device to the E column.

- 17) Repeat steps "12) to 15)" to specify the [Data entry device] settings for the third device.

Here, assign the third device to the F column.

16)

Data entry device settings

Excel cells assignment
Assign for the columns(A,B,...)
E - E Select

Entry data settings
☒ Measurement data entry
Select device : UWR-1999999965
Channel : 01 0999999118
☐ Character string data entry
Device No. Character string + - ✓
☐ DateTime data entry
Select device : UWR-1999999965(00)[D:D]
Device information
Serial No. : 1999999965
Type : UWR
COM : COM10
OK Cancel

17)

Data entry device settings

Excel cells assignment
Assign for the columns(A,B,...)
F - F Select

Entry data settings
☒ Measurement data entry
Select device : UWR-1999999965
Channel : 02 0999999120
☐ Character string data entry
Device No. Character string + - ✓
☐ DateTime data entry
Select device : UWR-1999999965(00)[D:D]
Device information
Serial No. : 1999999965
Type : UWR
COM : COM10
OK Cancel

18) Close [Add procedure].

Add procedure

Procedure type: Batch Procedure name: 3 position batch measurement

Excel settings

Workbook: C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sam

Worksheet: Sample_F3

Range of cells (specify the A1 reference style):
First: D18 Last: F27 [Select]

Move after return direction: Down

Displacement intervals: 1

Cell address assign rules

☐ Unspecified
☒ Assign for the columns(A,B,...)
☐ Assign for the rows(1,2,...)

FunctionKey Operation

Data request: -
Data cancel: -
Data skip: -

Data entry devices

Device No.	Assign rule	COM
UWR-1999999965(00)	D:D	COM10
UWR-1999999965(01)	E:E	COM10
UWR-1999999965(02)	F:F	COM10

Foot switch option

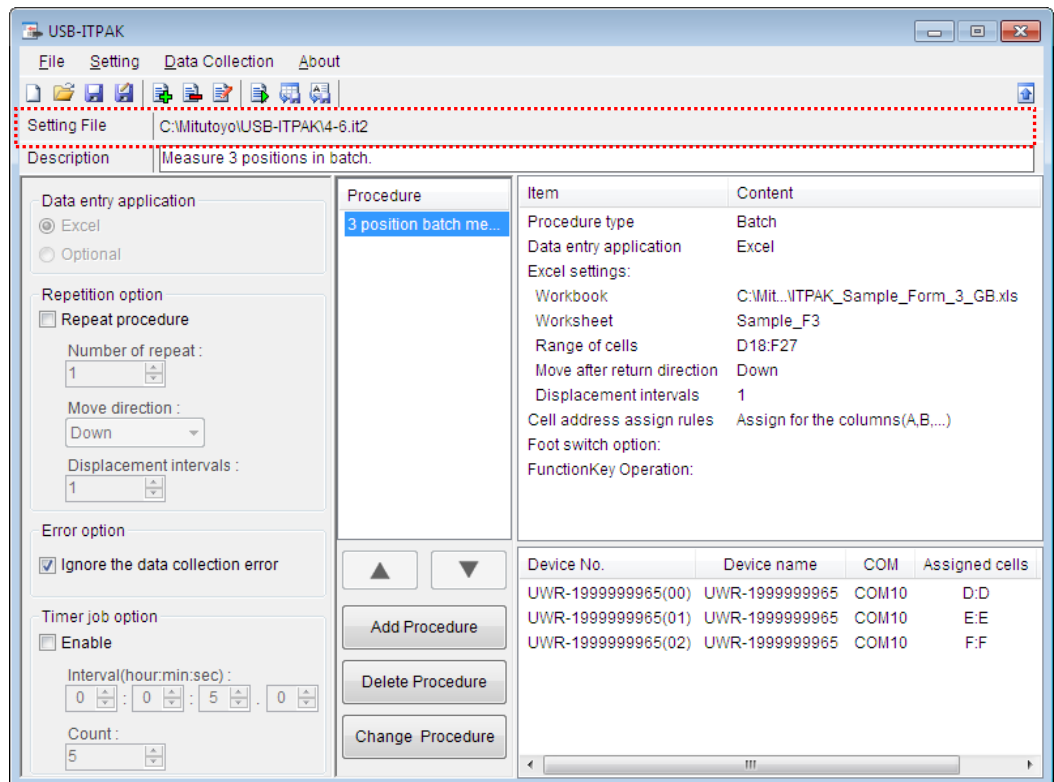
Device No.	Function	COM
------------	----------	-----

[OK] [Cancel]

This completes the settings on the [Add procedure] dialog box, so click the [OK] button.

4. MEASUREMENT DATA COLLECTION (BASICS)

19) Save the created setting file.



From the menu of the main dialog box, select [File], [Save As], and then save the file by giving it a name. When the file has been saved, the file name is displayed as a full path in the [Setting File] field.

4.6.3 Measurement

1) Open [Setting File].

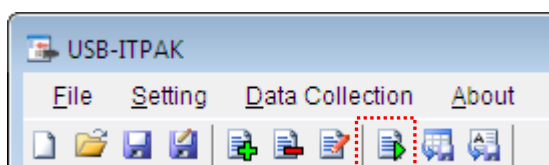
TIP • If starting measurement immediately after specifying the settings in "4.6.2 Setting", the setting file is already opened. In this case, skip step "1)".

From the menu of the main dialog box, select [File] and then [Open], or open [Setting file] from [Recent files].

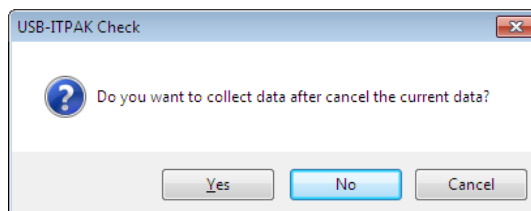
2) Open the data collection dialog box.

IMPORTANT • In USB-ITPAK, following data collection, the Excel file to which the data was input is saved through overwriting under the existing file name. To use the original Excel file later, back it up beforehand.

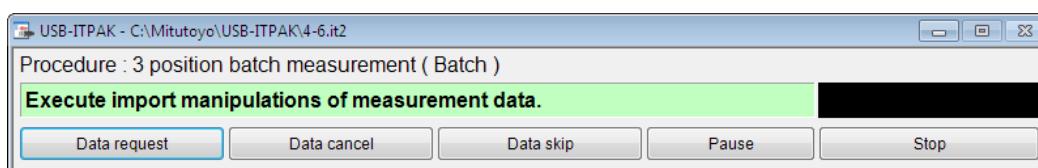
From the menu of the main dialog box, select [Data Collection] and then [Start], or click the icon shown below.



When data collection starts, the message [Do you want to collect data after cancel the current data?] is displayed. Click [Yes] to clear the existing data or [No] not to.



The data collection dialog box is displayed and data collection can now be performed.

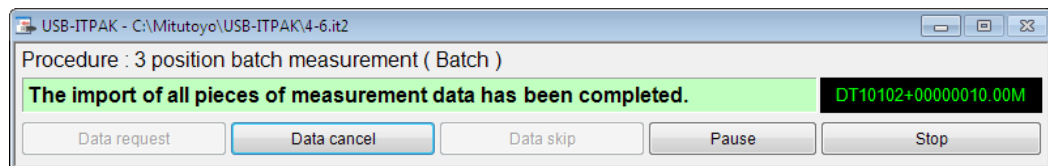


TIP • If you click [No] for the message [Do you want to collect data after cancel the current data?], the data collection dialog box will be paused. In this case, resume the data collection. For details, refer to "6.14.1 [Pause/Resume] button" and "8.2.5 To resume the Excel data collection previously paused".

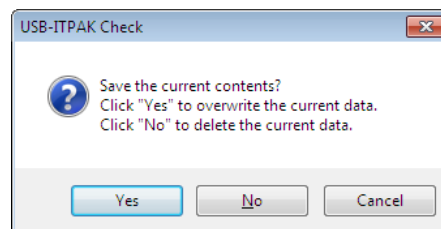
IMPORTANT • When using U-WAVE-T in the event driven mode, the next data will not be input until the data of connected measuring tool is changed. For details, refer to the U-WAVEPAK User's Manual.

4) End data collection and save the results.

Once all the data has been input, a completion message is displayed on the data collection dialog box.



Click the [Stop] button on the data collection dialog box. The following message is displayed.



[Yes]: The Excel file to which data was input is saved through overwriting under the existing file name.

[No]: The Excel file is not overwritten and the data that was input is deleted.

[Cancel]: The message dialog box is closed and the data collection dialog box is displayed.

Click the [Yes] button. The Excel file is saved through overwriting and the dialog box switches to the main dialog box.

This completes basic data collection for batch measurement.

4.7 Individual Measurement (Basics) using U-WAVE

4.7.1 Overview

Individual measurement is one of the measurement methods that can be selected in the procedures used in USB-ITPAK.

During individual measurement, measurement data from multiple operators can be input to the respectively assigned cells in the specified Excel worksheet.

Example: Collection of data while four operators perform measurements with their respective measuring tools.

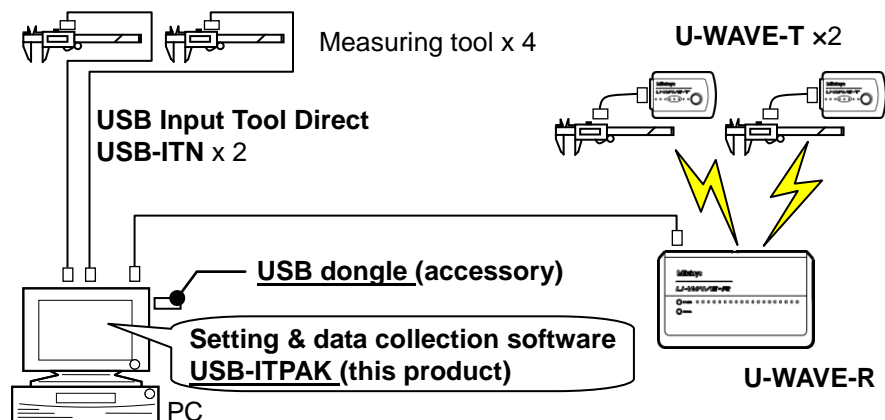
When using U-WAVE, the measurement data collection is available with the DATA switch operation on U-WAVE-T and the DATA switch operation on the measuring tools. When using USB-ITN, the measurement data collection is available with the DATA switch operation on the measuring tools and the foot switch operation.

- IMPORTANT**
- To use U-WAVE with USB-ITPAK, the installation of device driver for each U-WAVE-R is required.
 - To use U-WAVE with USB-ITPAK, the setup of U-WAVE-R and U-WAVE-T using U-WAVEPAK is required in advance. In addition, write down the selected channel of U-WAVE-T together with the device ID. The information is required for the channel selection setting on USB-ITPAK.
 - U-WAVE-T will be used in the button driven mode. Check the mode on U-WAVEPAK in advance. For details, refer to the U-WAVEPAK User's Manual. In the button driven mode, the measurement data collection is not available with the [Data request] button operation on the data collection dialog box, the function key operation on the PC or the foot switch operation using USB-FSW.

This section explains the basic use of individual measurement.

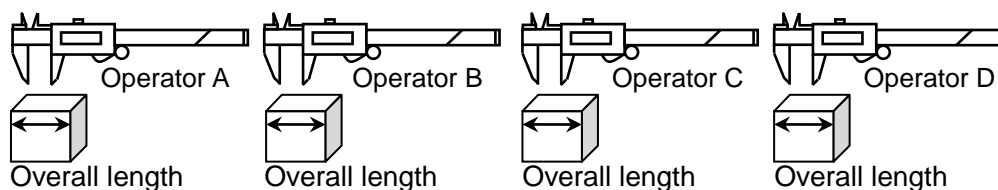
1) Connection

In the example used in this section, four measuring tools are connected to U-WAVE-T and USB-ITN. The connection diagram is shown below.



2) Workpieces for measurement

The following workpieces are used in the explanation. The measurement location is the overall length of the same workpiece for all four operators (designated as A, B, C, and D).



3) Measurement

The image of the inspection table upon completion of data collection is shown below.

No.	Inspection item	Permissible value	Unit	Measuring item	X1 (X6)	X2 (X7)	X3 (X8)	X4 (X9)	X5 (X10)
1	Overall Length Operator A	10.05	mm	CD	10.01	10.01	9.99	9.98	9.99
		9.95			10.02	10.01	10.00	10.00	10.01
2	Overall Length Operator B	10.05	mm	CD	10.00	9.99	9.99	10.02	10.02
		9.95			10.01	10.01	10.00	9.99	9.99
3	Overall Length Operator C	10.05	mm	CD	10.01	10.01	9.99	9.98	9.99
		9.95			10.02	10.01	10.00	10.00	10.01
4	Overall Length Operator D	10.05	mm	CD	10.00	9.99	9.99	10.02	10.02
		9.95			10.01	10.01	10.00	9.99	9.99

The measurement procedure is as follows. Operator A, Operator B, Operator C, and Operator D each measure the width of the first workpiece, and the input data is output to the first row (for Operator A), third row (for Operator B), fifth row (for Operator C), and seventh row (for Operator D) of the X1 column on the Excel worksheet. Next, the second workpiece is measured in the same manner, with each operator measuring 10 workpieces in all.

X1 (X6)	X2 (X7)	X3 (X8)	X4 (X9)	X5 (X10)	
A(1)	A(2)				Input by Operator A
				A(10)	
B(1)	B(2)				Input by Operator B
				B(10)	
C(1)	C(2)				Input by Operator C
				C(10)	
D(1)	D(2)				Input by Operator D
				D(10)	

The following describes how to set up the measurement procedure, perform measurement, and save the results.

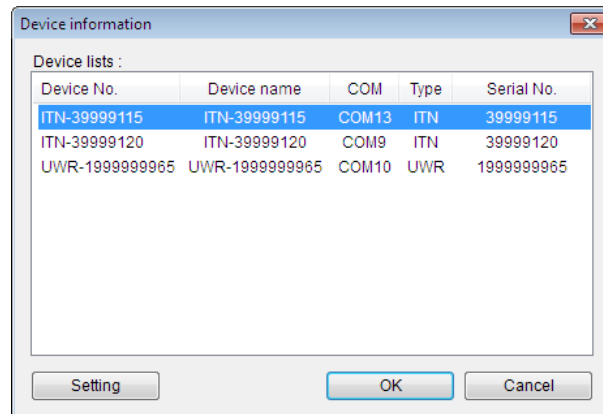
4. MEASUREMENT DATA COLLECTION (BASICS)

4.7.2 Setting

1) Check the device information.

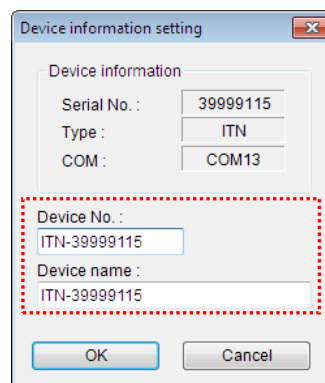
NOTE • USB-ITPAK loads the information of connected devices at startup. Therefore, connect all the devices to be used before starting up USB-ITPAK.

From the menu of the main dialog box, select [Settings] and then [Device information]. This opens the [Device information] dialog box, which allows you to check the devices that are connected to the PC.



If you do not want to change the device number or device name, click the [Cancel] button to return to the main dialog box.

If you want to change a device number or device name, select the device, and then click the [Setting] button.



Click the [OK] button if you change any settings.

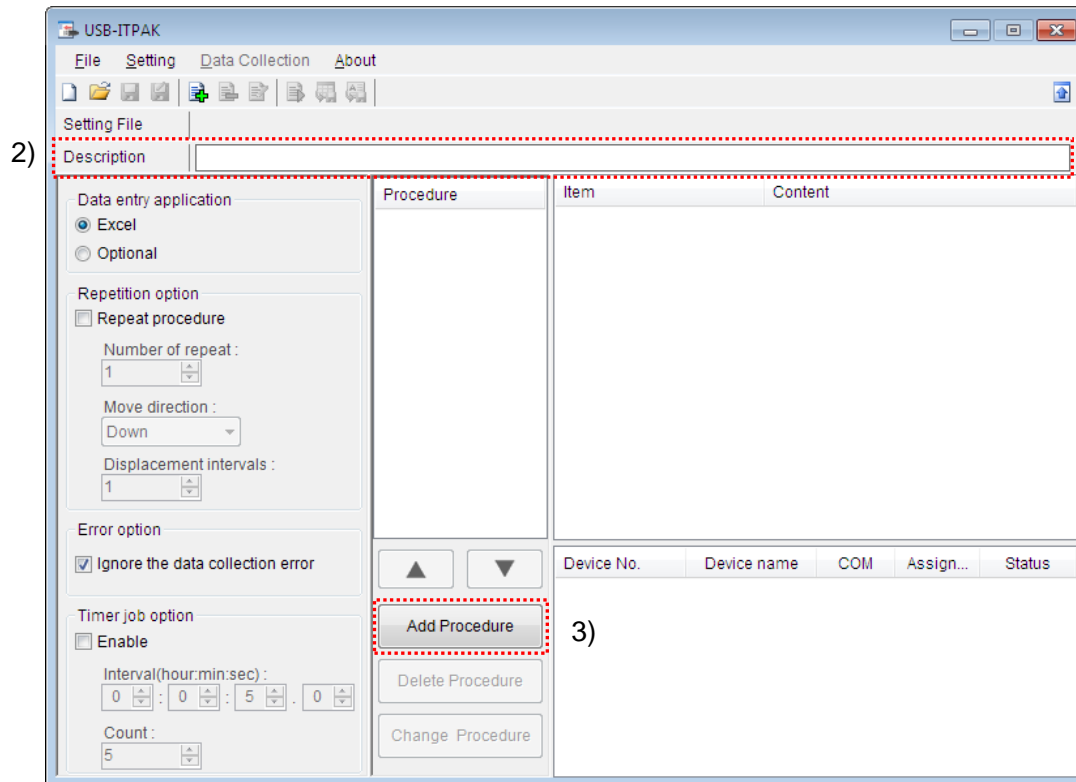
NOTE • In the procedure created from step "2)", the device number is used to specify the device to be used. If you change the number, revise all the setting files that use it.

TIP • If multiple units are connected, specify settings for each.

TIP • If performing measurement using existing setting files, skip this section and refer to "4.7.3 Measurement".

2) Enter information about the setting file in the [Description] field.

Enter a description of the setting file. This field may be left blank.



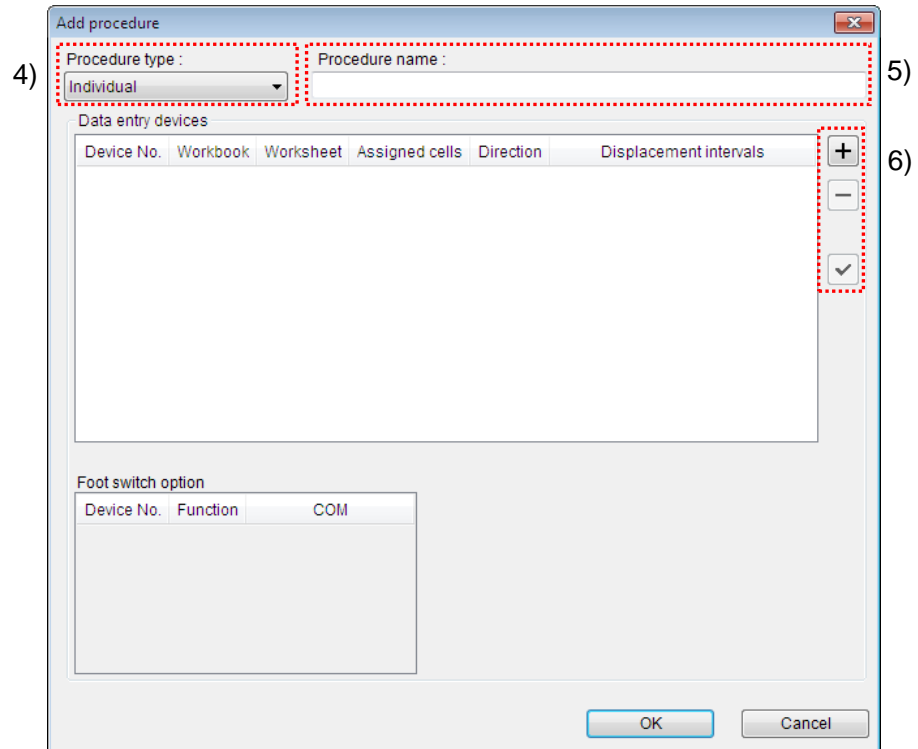
3) Add a procedure to the setting file.

Click the [Add Procedure] button on the main dialog box.

4. MEASUREMENT DATA COLLECTION (BASICS)

4) Select a procedure type for the [Procedure type] field.

If [Individual] is selected, the dialog box switches to the following dialog box.



If a different dialog box is displayed, select [Individual] from the drop-down list.

5) Enter a name in the [Procedure name] field.

Entering the procedure name is required.

TIP • Since the procedure name will be displayed in the [Procedure] field at the center of the main dialog box, enter an easily identifiable name.

Here, enter [4 posi. individual measurement].

6) Specify the [Data entry devices] settings for the first device.

The functions of the buttons for the [Data entry devices] field are as follows:

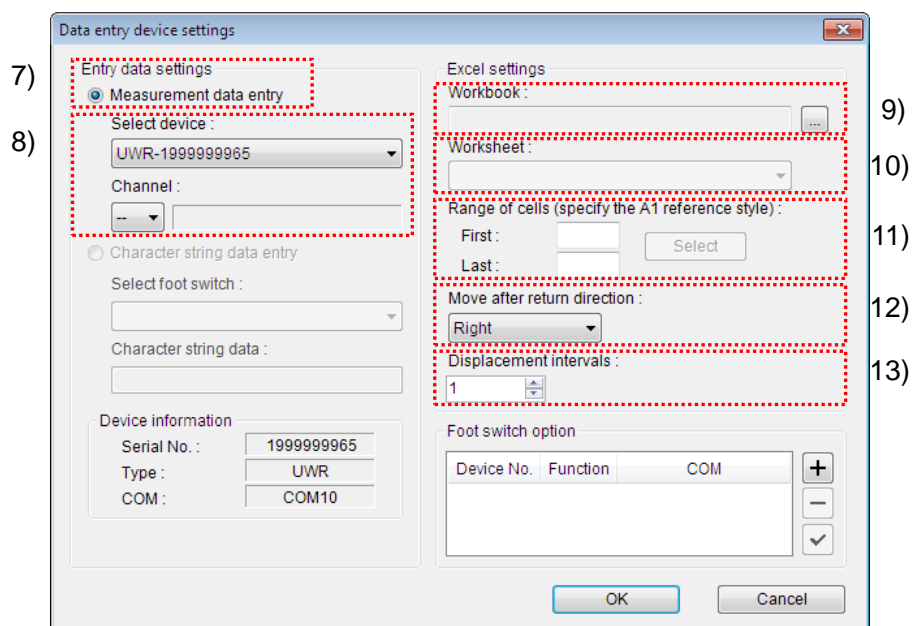
[+]: Adds device settings.

[-]: Deletes the device setting selected from the list.

[✓]: Changes the device setting selected from the list.

Here, click the [+] button to switch to the [Data entry device settings] dialog box.

7) In the [Entry data settings] field, select the entry data type.



The entry data types consist of measurement data input from the measuring tools (numeric data), and character string data input by pressing the foot switch.

TIP • For details about the method for inputting character string data using a foot switch, refer to "CHAPTER 5 MEASUREMENT DATA COLLECTION (ADVANCED)".

Here, select the [Measurement data entry] radio button.

8) In the [Select device] field, select the device to be assigned.

From the drop-down list, select the device to be assigned. Select U-WAVE-R (UWR) and then select the channel of U-WAVE-T to be used.

NOTE • Before starting up U-WAVEPAK for channel check, exit USB-ITPAK. In this case, return to "4.7.2 Setting" and retry the USB-ITPAK settings.

9) Specify an Excel file in the [Workbook] field under [Excel settings]

Enter the workbook name of the Excel file to which the measured data is to be input.

The file can be selected from the [Open] dialog box by clicking the [...] button.

Here, select the following file.

C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sample_Form_2_GB.xls

IMPORTANT • If you want to use a file other than the sample inspection table file, create an inspection file using Excel before starting up USB-ITPAK. Inspection table files can be saved to any folder. Save the inspection table file to a folder location that will be easy to manage.

4. MEASUREMENT DATA COLLECTION (BASICS)

- 10) Select a worksheet for the [Worksheet] field under [Excel settings].

Select the worksheet name to be included in the workbook of step "9)" from the drop-down list.

Here, select [Sample_F2].

- 11) Enter the input range in the [Range of cells] fields under [Excel settings].

AAA Corporation										
CERTIFICATE OF INSPECTION										
Name of inspection				Lot No.		BBB Corporation		Approval		Inspector
Product name				Number of lots		CCC Division		Date		Overall judgment
Part No.				Number of inspections						
No.	Inspection item	Permissible value	Unit	Measuring item	X1 (X6)	X2 (X7)	X3 (X8)	X4 (X9)	X5 (X10)	judgment
1	Overall Length Operator A	10.05								Special note
2	Overall Length Operator B	10.05								
3	Overall Length Operator C	10.05								
4	Overall Length Operator D	10.05								
5										Drawing No.
6										
7										
8										
9										
10										
[Measuring item]										
CD: Caliper MD: Micrometer ID: Indicator HD: Height Gage LG: Linear Gage SD: Scale										
AN: Surf test CMM: Coordinate Measuring Machine PP: Profile Projector MS: Microscope										
HT: Hardness Testing Machine VI: Visual inspection MG: Master Gage EX: Others										

To specify the area indicated by the dot-line in the above inspection table as the input cell range, enter:

First: G11

Last: K12

- TIP** • The inspection table above shows the [Inspection item] and [Permissible value] cells filled, and the three rows provided respectively for operators A, B, and C.

- 12) Select the desired direction for the [Move after return direction] field under [Excel settings].

During measurement using USB-ITPAK, once data is input from the measuring tools, the measurement data is input to the current cell and then the entry point (cell) automatically moves to the next cell.

In the inspection table example shown above, select [Right].

- 13) Specify the [Displacement intervals] under [Excel settings].

Specify the interval for the cell movement specified in step 12). Specifying "1" results in movement to the next cell. Specifying "2" results in movement to the cell after the next.

In the inspection table example above, specify "1".

This completes the settings on the [Data entry device settings] dialog box for the first device, so click the [OK] button.

- 14) Repeat steps "6) to 13)" to specify the [Data entry device] settings for the second device.

Here, assign the second device to the [G13:K14].

The screenshot shows the 'Data entry device settings' dialog box. The 'Entry data settings' section has 'Measurement data entry' selected. 'Select device' is set to 'UWR-1999999965'. 'Channel' is set to '01' and '0999999118'. 'Character string data entry' is unselected. 'Excel settings' shows 'Workbook' as 'C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sample_...', 'Worksheet' as 'Sample_F2', 'Range of cells' as 'G13:K14', 'Move after return direction' as 'Right', and 'Displacement intervals' as '1'. 'Device information' shows 'Serial No.' as '1999999965', 'Type' as 'UWR', and 'COM' as 'COM10'. 'Foot switch option' is empty. 'OK' and 'Cancel' buttons are at the bottom.

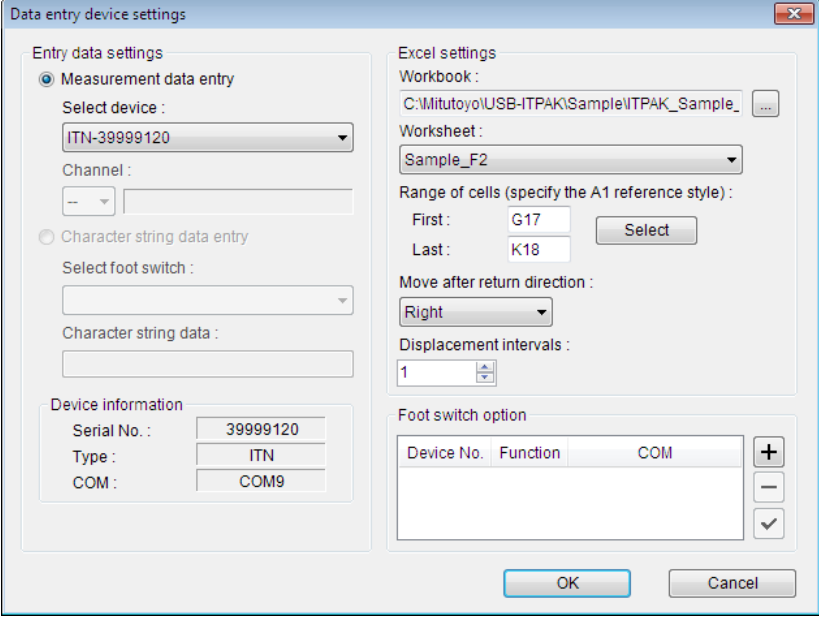
- 15) Repeat steps "6) to 13)" to specify the [Data entry device] settings for the third device.

Here, assign the third device (USB-ITN) to the [G15:K16].

The screenshot shows the 'Data entry device settings' dialog box. The 'Entry data settings' section has 'Measurement data entry' selected. 'Select device' is set to 'ITN-39999115'. 'Channel' is set to '--'. 'Character string data entry' is unselected. 'Excel settings' shows 'Workbook' as 'C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sample_...', 'Worksheet' as 'Sample_F2', 'Range of cells' as 'G15:K16', 'Move after return direction' as 'Right', and 'Displacement intervals' as '1'. 'Device information' shows 'Serial No.' as '39999115', 'Type' as 'ITN', and 'COM' as 'COM13'. 'Foot switch option' is empty. 'OK' and 'Cancel' buttons are at the bottom.

4. MEASUREMENT DATA COLLECTION (BASICS)

- 16) Repeat steps "6) to 13)" to specify the [Data entry device] settings for the fourth device. Here, assign the fourth device (USB-ITN) to the [G17:K18].



The "Data entry device settings" dialog box is shown. It has two main sections: "Entry data settings" and "Excel settings".

Entry data settings:

- ☒ Measurement data entry
- Select device: ITN-39999120
- Channel: --
- ☐ Character string data entry
- Select foot switch: --
- Character string data: --
- Device information:
 - Serial No.: 39999120
 - Type: ITN
 - COM: COM9

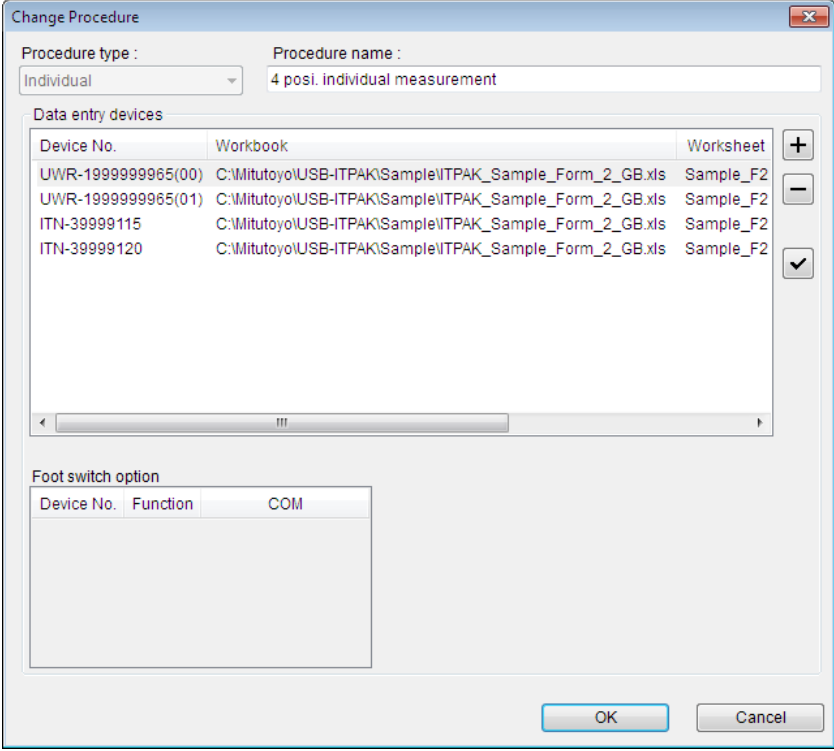
Excel settings:

- Workbook: C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sample_...
- Worksheet: Sample_F2
- Range of cells (specify the A1 reference style):
 - First: G17
 - Last: K18
 - Select button
- Move after return direction: Right
- Displacement intervals: 1
- Foot switch option:

Device No.	Function	COM
------------	----------	-----

Buttons: OK, Cancel

- 17) Close [Add procedure].



The "Change Procedure" dialog box is shown. It has two main sections: "Procedure type" and "Data entry devices".

Procedure type:

- Individual

Procedure name:

4 posi. individual measurement

Data entry devices:

Device No.	Workbook	Worksheet
UWR-1999999965(00)	C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sample_Form_2_GB.xls	Sample_F2
UWR-1999999965(01)	C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sample_Form_2_GB.xls	Sample_F2
ITN-39999115	C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sample_Form_2_GB.xls	Sample_F2
ITN-39999120	C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sample_Form_2_GB.xls	Sample_F2

Buttons: +, -, ✓

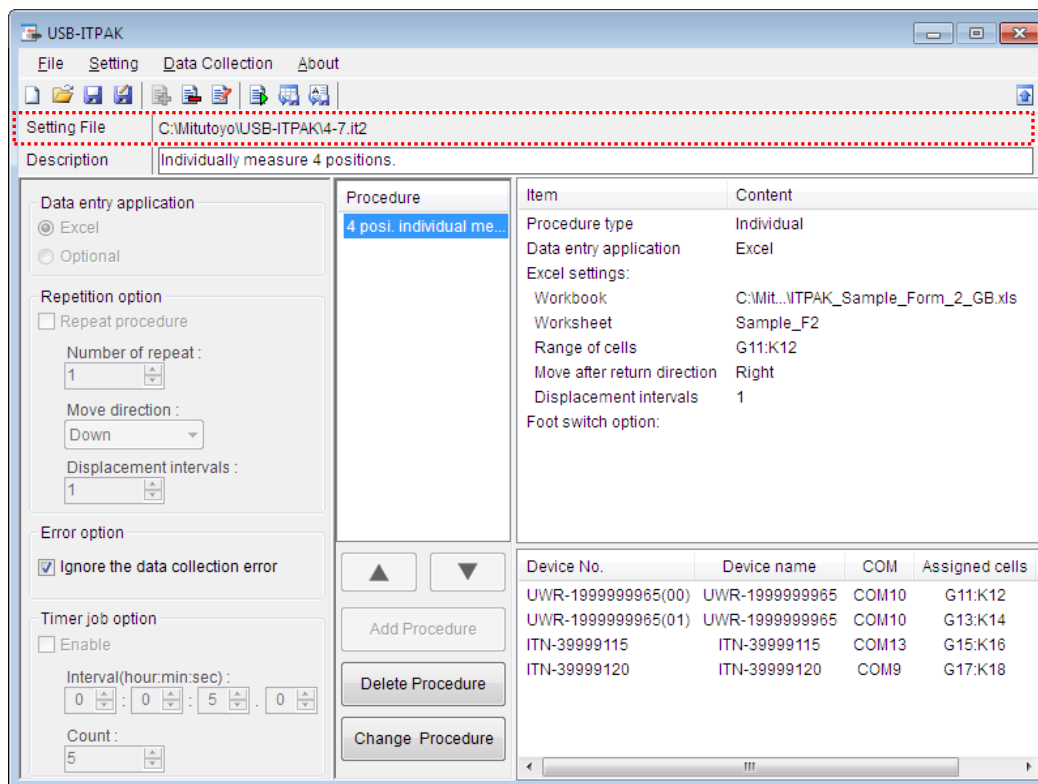
Foot switch option:

Device No.	Function	COM
------------	----------	-----

Buttons: OK, Cancel

This completes the settings on the [Add procedure] dialog box, so click the [OK] button.

18) Save the created setting file.



From the menu of the main dialog box, select [File], [Save As], and then save the file by giving it a name. When the file has been saved, the file name is displayed as a full path in the [Setting File] field.

4. MEASUREMENT DATA COLLECTION (BASICS)

4.7.3 Measurement

1) Open [Setting File].

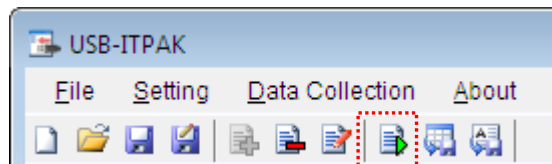
- TIP** • If starting measurement immediately after specifying the settings in "4.7.2 Setting", the setting file is already opened. In this case, skip step "1)".

From the menu of the main dialog box, select [File] and then [Open], or open [Setting file] from [Recent files].

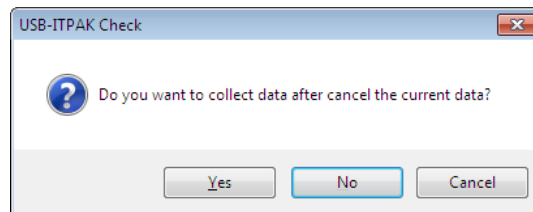
2) Open the data collection dialog box.

- IMPORTANT** • In USB-ITPAK, following data collection, the Excel file to which the data was input is saved through overwriting under the existing file name. To use the original Excel file later, back it up beforehand.

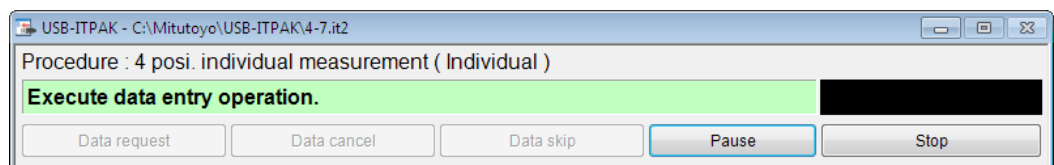
From the menu of the main dialog box, select [Data Collection] and then [Start], or click the icon shown below.



When data collection starts, the message [Do you want to collect data after cancel the current data?] is displayed. Click [Yes] to clear the existing data or [No] not to.



The data collection dialog box is displayed and data collection can now be performed.



- TIP** • If you click [No] for the message [Do you want to collect data after cancel the current data?], the data collection dialog box will be paused. In this case, resume the data collection. For details, refer to "6.14.1 [Pause/Resume] button" and "8.2.5 To resume the Excel data collection previously paused".

3) Perform data collection.

During data collection, the cell to which data will be input next is highlighted in green.

AAA Corporation				BBB Corporation					Approval	Inspector	Overall judgment
CERTIFICATE OF INSPECTION				CCC Division							
Product name				Lot No.		Date					
Part name				Number of lots							
Part No.				Number of inspections							
No.	Inspection item	Permissible value	Unit	Measuring item	X1 (X6)	X2 (X7)	X3 (X8)	X4 (X9)	X5 (X10)	Judgment	Special note
1	Overall Length Operator A	10.05	mm	CD							Drawing No.
		9.95									
2	Overall Length Operator B	10.05	mm	CD							
		9.95									
3	Overall Length Operator C	10.05	mm	CD							
		9.95									
4	Overall Length Operator D	10.05	mm	CD							
		9.95									
5											
6											
7											
8											
9											
10											

[Measuring item]
 CD: Caliper MD: Micrometer ID: Indicator HD: Height Gage LG: Linear Gage SD: Scale
 AN: Surf test CMM: Coordinate Measuring Machine PP: Profile Projector MS: Microscope
 HT: Hardness Testing Machine VC: Visual Inspection MG: Master Gage EX: Others

BBB Corporation

Input data from the measuring tools through one of the following operations:

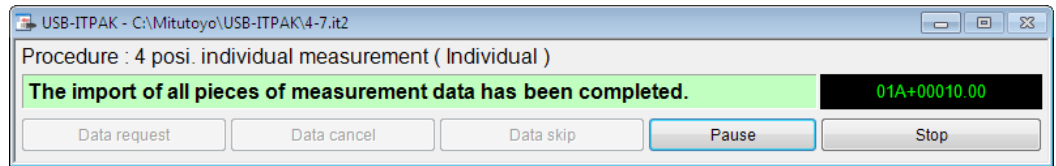
- (1) Pressing the DATA switch on the measuring tool.
- (2) Pressing the DATA switch if USB-ITN has one.
- (3) Pressing the DATA switch on U-WAVE-T. (Within about 2 seconds)

- IMPORTANT**
- During individual measurement, data is collected separately for each measuring tool, so data cannot be collected by clicking the [Data request] button on the data collection dialog box.
 - For details about the "measurement mode (button driven, event driven)" and "data cancel" of U-WAVE, refer to the U-WAVEPAK User's Manual. For details about the precautions for "data cancel" of U-WAVE, refer to "8.2 Supplementary Explanation of Use".

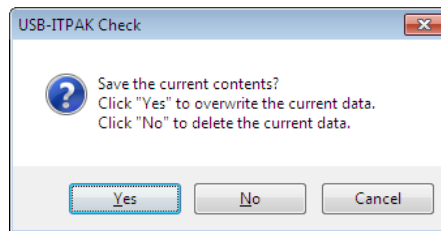
4. MEASUREMENT DATA COLLECTION (BASICS)

4) End data collection and save the results.

Once all the data has been input, a completion message is displayed on the data collection dialog box.



Click the [Stop] button on the data collection dialog box. The following message is displayed.



[Yes]: The Excel file to which data was input is saved through overwriting under the existing file name.

[No]: The Excel file is not overwritten and the data that was input is deleted.

[Cancel]: The message dialog box is closed and the data collection dialog box is displayed.

Click the [Yes] button. The Excel file is saved through overwriting and the dialog box switches to the main dialog box.

This completes basic data collection for individual measurement.

MEMO

5

MEASUREMENT DATA COLLECTION (ADVANCED)

This chapter explains the advanced use of USB-ITPAK, such as the data collection using the foot switch and the combination of multiple procedures. This chapter covers the following contents.

- 5.1 Data Input Request Using Foot Switch
- 5.2 Setting File That Includes Two Procedures
- 5.3 Measurement by Repeating Procedure
- 5.4 Character Input Using Foot Switch
- 5.5 Data Input to an Optional Application
- 5.6 DateTime data entry
- 5.7 Timer Job

"CHAPTER 4 MEASUREMENT DATA COLLECTION (BASICS)" explains the basic use of USB-ITPAK.

"CHAPTER 6 DIALOG BOX CONFIGURATIONS OF USB-ITPAK" describes the menus and dialog box configuration for all the functions of USB-ITPAK.

5.1 Data Input Request Using Foot Switch

5.1.1 Overview

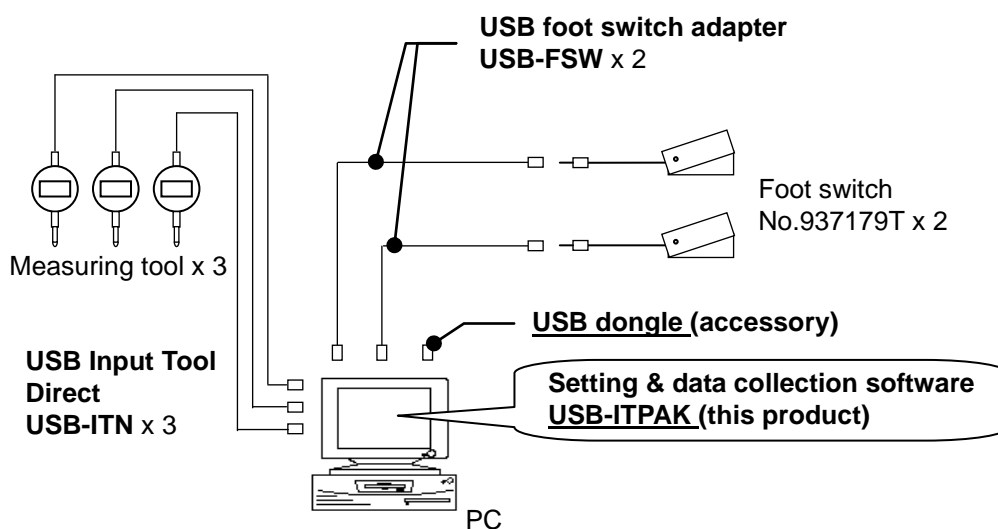
This section explains how to issue data input requests and how to cancel data by using the foot switch (via USB-FSW).

TIP • The procedure used in the explanation in this section is based on the batch measurement method described in "CHAPTER 4 MEASUREMENT DATA COLLECTION (BASICS)". The setting file created in "CHAPTER 4 MEASUREMENT DATA COLLECTION (BASICS)" is used with some modifications.

NOTE • The foot switch can be used to issue data input requests or cancel data for all measurement methods, i.e. sequential, batch, and individual measurement. When using U-WAVE, data input can be requested on U-WAVE-T in the event driven mode with the foot switch operation.

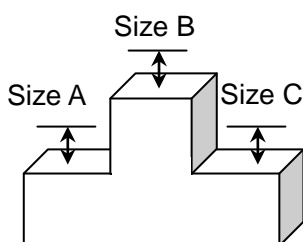
1) Connection

In the explanation in this section, three indicators are connected to USB-ITN, and two foot switches are connected to USB-FSW. The connection diagram is shown below.



2) Workpiece for measurement

The following workpiece is used in the explanation. Three indicators are used and measurement is done with measuring jigs. "Size A", "Size B", and "Size C", which are shown in the figure below, are measured.



5. MEASUREMENT DATA COLLECTION (ADVANCED)

3) Measurement

The image of the inspection table upon completion of data collection is shown below.

Inspection item		Size A	Size B	Size C
Measuring item				
Tolerance	Upper limit	5.150	10.100	5.150
	Lower limit	4.850	9.900	4.850
Result of inspection	Sample 1	5.054	10.023	5.070
	Sample 2	5.086	10.016	5.064
	Sample 3	5.093	10.000	5.056
	Sample 4	5.077	10.039	5.063
	Sample 5	5.085	9.992	5.047
	Sample 6	5.084	10.024	5.065
	Sample 7	5.062	9.990	5.050
	Sample 8	5.073	9.985	5.054
	Sample 9	5.071	10.011	5.045
	Sample 10	5.062	10.000	5.060

The measurement procedure is as follows. The three locations of the first workpiece are measured, and the input data is output to the "Size A", "Size B", and "Size C" columns. Next, the three locations of the second workpiece are measured, and the input data is output to the "Size A", "Size B", and "Size C" columns in the "Sample 2" row of the Excel worksheet.

The remaining workpieces up to the tenth one are measured in the same manner.

Result of inspection	Sample 1	Batch (1)		
	Sample 2	Batch (2)		
	Sample 3			
	Sample 4			
	Sample 5			
	Sample 6			
	Sample 7			
	Sample 8			
	Sample 9			
	Sample 10	Batch (10)		

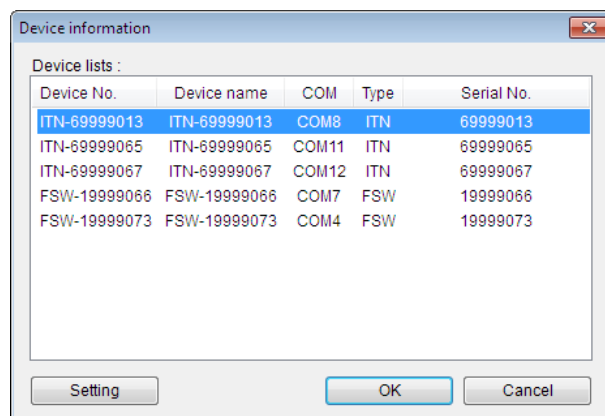
The following describes how to set up the measurement procedure, perform measurement, and save the results.

5.1.2 Setting

1) Check the device information.

NOTE • USB-ITPAK loads the information of connected devices at startup. Therefore, connect all the devices to be used before starting up USB-ITPAK.

From the menu of the main dialog box, select [Settings] and then [Device information]. This opens the [Device information] dialog box, which allows you to check the devices that are connected to the PC.



If you do not want to change the device number or device name, click the [Cancel] button to return to the main dialog box.

If you want to change a device number or device name, select the device, and then click the [Setting] button.



Click the [OK] button if you change any settings.

NOTE • In the procedure created from step "2)", the device number is used to specify the device to be used. If you change the number, revise all the setting files that use it.

TIP • If multiple units are connected, specify settings for each.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

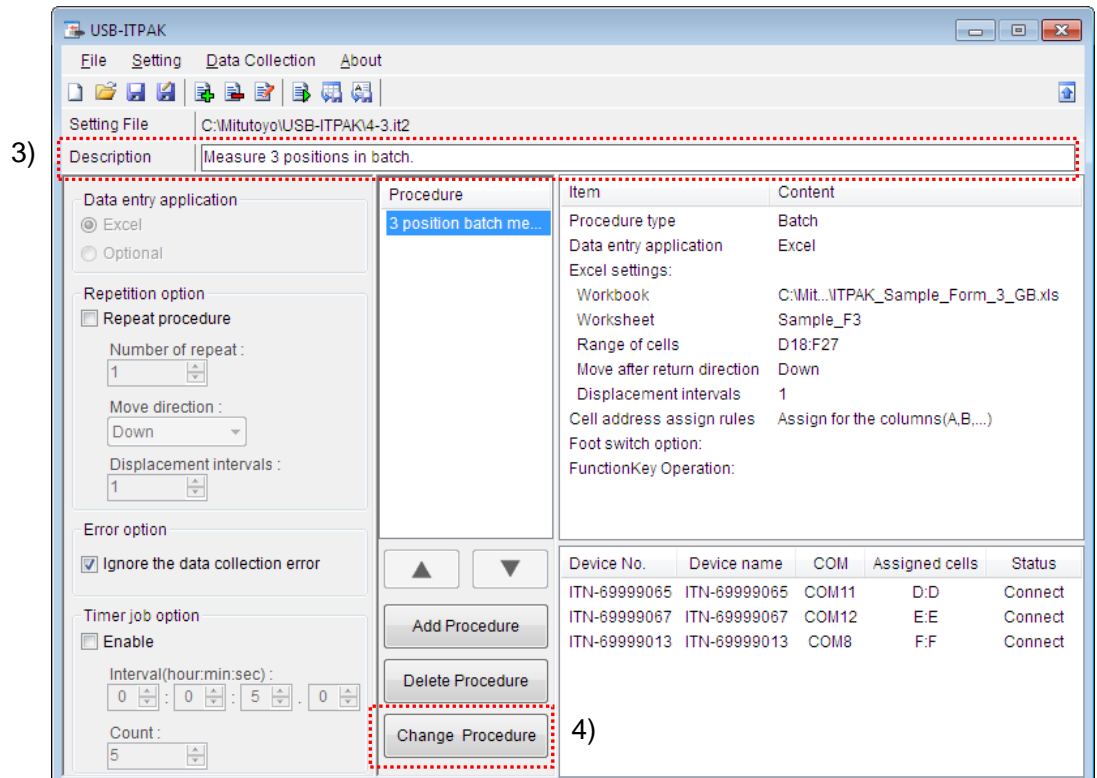
TIP • If performing measurement using existing setting files, skip this section and refer to "5.1.3 Measurement".

2) Open the setting file created in "4.3 Batch Measurement (Basics)".

From the menu of the main dialog box, select [File] and then [Open], or open [Setting file] from [Recent files].

3) Enter information about the setting file in the [Description] field.

Enter a description of the setting file. This field may be left blank.



4) Start the procedure change.

Click the [Change Procedure] button on the main dialog box.

5) Enter a name in the [Procedure name] field.

Entering the procedure name is required.

TIP • Since the procedure name will be displayed in the [Procedure] field at the center of the main dialog box, enter an easily identifiable name.

Here, enter [3 position batch and foot switch].

Change Procedure

Procedure type : Batch

Procedure name : 3 position batch and foot switch

Excel settings

Workbook : K:\Sample\TPAK_Sample_Form_3_GB.xls

Worksheet : Sample_F3

Range of cells (specify the A1 reference style) :

First : D18 Last : F27

Move after return direction : Down

Displacement intervals : 1

Cell address assign rules

☐ Unspecified

☒ Assign for the columns(A,B,...)

☐ Assign for the rows(1,2,...)

FunctionKey Operation

Data request : -

Data cancel : -

Data skip : -

Data entry devices

Device No.	Assign rule	COM
ITN-69999065	D:D	COM11
ITN-69999067	E:E	COM12
ITN-69999013	F:F	COM8

Foot switch option

Device No.	Function	COM
------------	----------	-----

Buttons: +, -, ✓

6) Specify the [Foot switch option] settings for the first device.

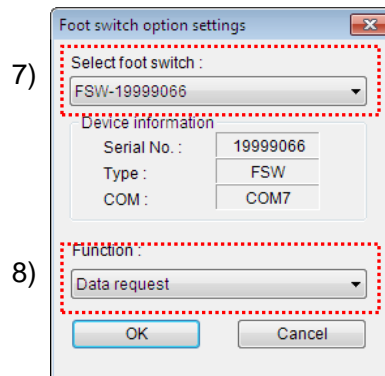
The functions of the buttons for the [Foot switch option] field are as follows:

- [+]: Adds device settings.
- [-]: Deletes the device setting selected from the list.
- [✓]: Changes the device setting selected from the list.

Here, click the [+] button to switch to the [Data entry device settings] dialog box.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

- 7) In the [Select foot switch] field on the [Foot switch option settings] dialog box, select the device to be assigned.



From the drop-down list, select the device to be assigned.

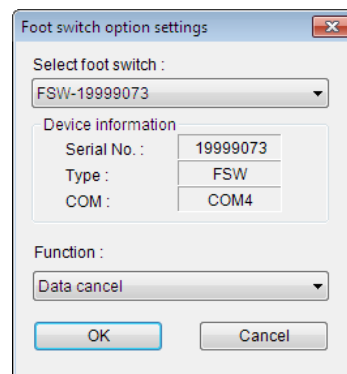
Here, select the first device.

- 8) In the [Function] field, select the function to be assigned.

Here, select [Data request].

This completes the setting on the [Foot switch option settings] dialog box for the first device, so click the [OK] button.

- 9) Repeat steps "6) to 8)" to specify the [Foot switch option] settings for the second device.



10) Close [Change Procedure].

Change Procedure

Procedure type : Batch Procedure name : 3 position batch and foot switch

Excel settings

Workbook : K:\Sample\TPAK_Sample_Form_3_GB.xls

Worksheet : Sample_F3

Range of cells (specify the A1 reference style) :

First : D18 Last : F27 Select

Move after return direction : Down

Displacement intervals : 1

Cell address assign rules

☐ Unspecified

☒ Assign for the columns(A,B,...)

☐ Assign for the rows(1,2,...)

FunctionKey Operation

Data request : -

Data cancel : -

Data skip : -

Data entry devices

Device No.	Assign rule	COM
ITN-69999065	D:D	COM11
ITN-69999067	E:E	COM12
ITN-69999013	F:F	COM8

Foot switch option

Device No.	Function	COM
FSW-19999066	Data request	COM7
FSW-19999073	Data cancel	COM4

OK Cancel

This completes the settings on the [Change Procedure] dialog box, so click the [OK] button.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

11) Save the created setting file.

The screenshot shows the USB-ITPAK software window. The 'Setting File' field is highlighted with a red dashed box and contains the path 'C:\Mitutoyo\USB-ITPAK\5-1.it2'. The 'Description' field contains 'Measure 3 positions in batch and operate the foot switch.'.

Data entry application

☒ Excel
☐ Optional

Repetition option

☐ Repeat procedure

Number of repeat : 1

Move direction : Down

Displacement intervals : 1

Error option

☒ Ignore the data collection error

Timer job option

☐ Enable

Interval(hour:min:sec) : 0 : 0 : 5

Count : 5

Procedure

3 position batch and...

Item

Item	Content
Procedure type	Batch
Data entry application	Excel
Excel settings:	
Workbook	C:\Mit...ITPAK_Sample_Form_3_GB.xls
Worksheet	Sample_F3
Range of cells	D18:F27
Move after return direction	Down
Displacement intervals	1
Cell address assign rules	Assign for the columns(A,B,...)
Foot switch option:	
FSW-19999066	Data request - Connect
FSW-19999073	Data cancel - Connect
FunctionKey Operation:	

Device No. **Device name** **COM** **Assigned cells** **Status**

ITN-69999065	ITN-69999065	COM11	D:D	Connect
ITN-69999067	ITN-69999067	COM12	E:E	Connect
ITN-69999013	ITN-69999013	COM8	F:F	Connect

Buttons: Add Procedure, Delete Procedure, Change Procedure

From the menu of the main dialog box, select [File], [Save As], and then save the file by giving it a name. When the file has been saved, the file name is displayed as a full path in the [Setting File] field.

5.1.3 Measurement

1) Open [Setting File].

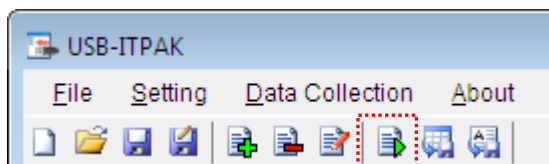
TIP • If starting measurement immediately after specifying the settings in "5.1.2 Setting", the setting file is already opened. In this case, skip step "1)".

From the menu of the main dialog box, select [File] and then [Open], or open [Setting file] from [Recent files].

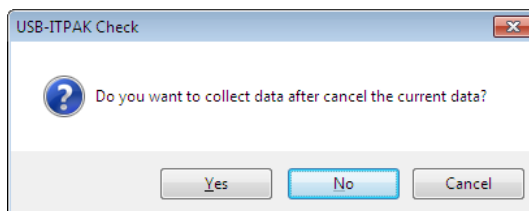
2) Open the data collection dialog box.

IMPORTANT • In USB-ITPAK, following data collection, the Excel file to which the data was input is saved through overwriting under the existing file name. To use the original Excel file later, back it up beforehand.

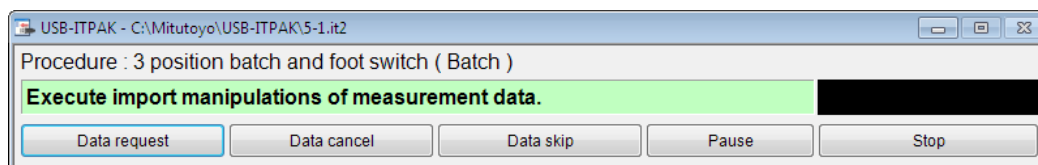
From the menu of the main dialog box, select [Data Collection] and then [Start], or click the icon shown below.



When data collection starts, the message [Do you want to collect data after cancel the current data?] is displayed. Click [Yes] to clear the existing data or [No] not to.



The data collection dialog box is displayed and data collection can now be performed.



TIP • If you click [No] for the message [Do you want to collect data after cancel the current data?], the data collection dialog box will be paused. In this case, resume the data collection. For details, refer to "6.14.1 [Pause/Resume] button" and "8.2.5 To resume the Excel data collection previously paused".

5. MEASUREMENT DATA COLLECTION (ADVANCED)

3) Perform data collection.

During data collection, the cell to which data will be input next is highlighted in green.

Inspection item		Size A	Size B	Size C	Size D	Size E
Tolerance	Upper limit	0.15	0.10	0.15		
	Lower limit	-0.15	-0.10	0.00		
Result of inspection	Sample 1					
	Sample 2					
	Sample 3					
	Sample 4					
	Sample 5					
	Sample 6					
	Sample 7					
	Sample 8					
	Sample 9					
	Sample 10					
Average (Av.)						
standard deviation (σ)						
Overall judgment		[Special note]				

CD: Caliper MD: Micrometer ID: Indicator HD: Height Gage LG: Linear Gage SD: Scale
 AN: Surf test CMV: Coordinate Measuring Machine PP: Profile Projector MS: Microscope
 VI: Visual inspection MG: Master Gage EX: Others

TIP • The inspection table above is shown with the [Upper limit] and [Lower limit] cells filled for explanatory purposes.

In the foot switch option settings, press the foot switch to which the [Data request] function has been assigned to input data.

To cancel the data that was input, in the foot switch option settings, press the foot switch to which the [Data cancel] function was assigned. This cancels the data of the input cell and the green highlight moves to the previous cell.

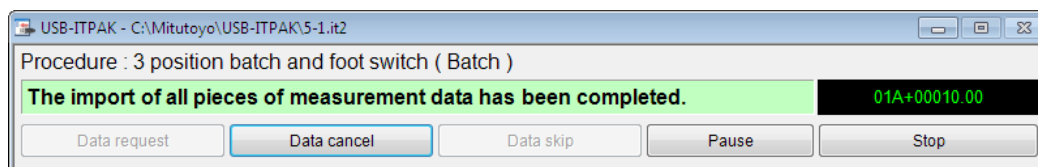
To skip the current data entry cell without inputting data, click the [Data skip] button on the data collection dialog box. The next cell is highlighted.

IMPORTANT • During batch measurement, data is collected all at once, so data cannot be collected through the following operations:

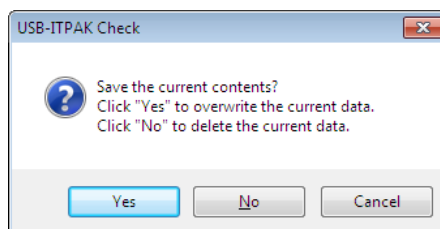
- (1) Pressing the DATA switch on the measuring tool
 - (2) Pressing the DATA switch if USB-ITN has one
 - (3) When using IT-016U, press the DATA switch.
 - (4) When using IT-016U, operate the foot switch connected to IT-016U.
-

4) End data collection and save the results.

Once all the data has been input, a completion message is displayed on the data collection dialog box.



Click the [Stop] button on the data collection dialog box. The following message is displayed.



[Yes]: The Excel file to which data was input is saved through overwriting under the existing file name.

[No]: The Excel file is not overwritten and the data that was input is deleted.

[Cancel]: The message dialog box is closed and the data collection dialog box is displayed.

Click the [Yes] button. The Excel file is saved through overwriting and the dialog box switches to the main dialog box.

This completes data collection for batch measurement using a foot switch.

5.2 Setting File That Includes Two Procedures

5.2.1 Overview

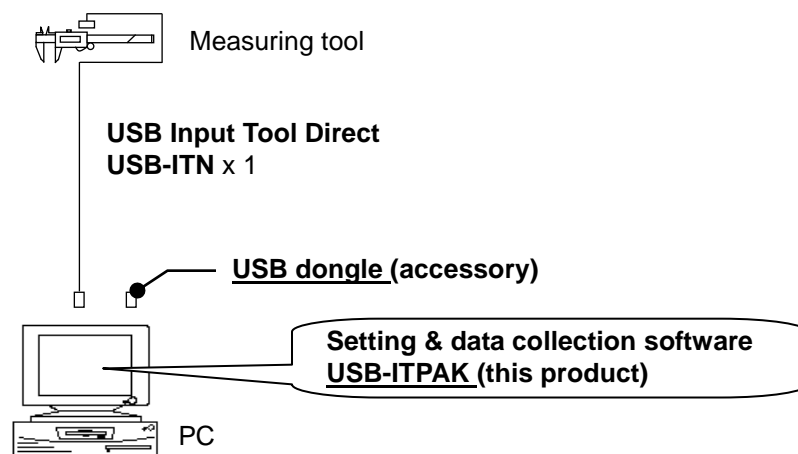
This section explains how to register two procedures to a single setting file.

TIP • The procedure used in the explanation in this section is based on the sequential measurement method described in "CHAPTER 4 MEASUREMENT DATA COLLECTION (BASICS)". Since the setting file requires many changes, a new setting file is created.

NOTE • Setting files that include two procedures can be used for sequential measurement and batch measurement. Procedures can be combined and registered regardless of whether they are of the same type. Only one procedure can be registered to one setting file for individual measurement.

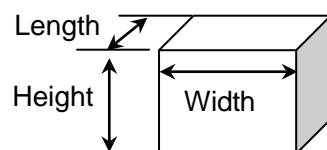
1) Connection

In the explanation in this section, one caliper is connected to USB-ITN for use. The connection diagram is shown below.



2) Workpiece for measurement

The following workpiece is used in the explanation. The measurement locations are the length, width, and height of the rectangular parallelepiped.



3) Measurement

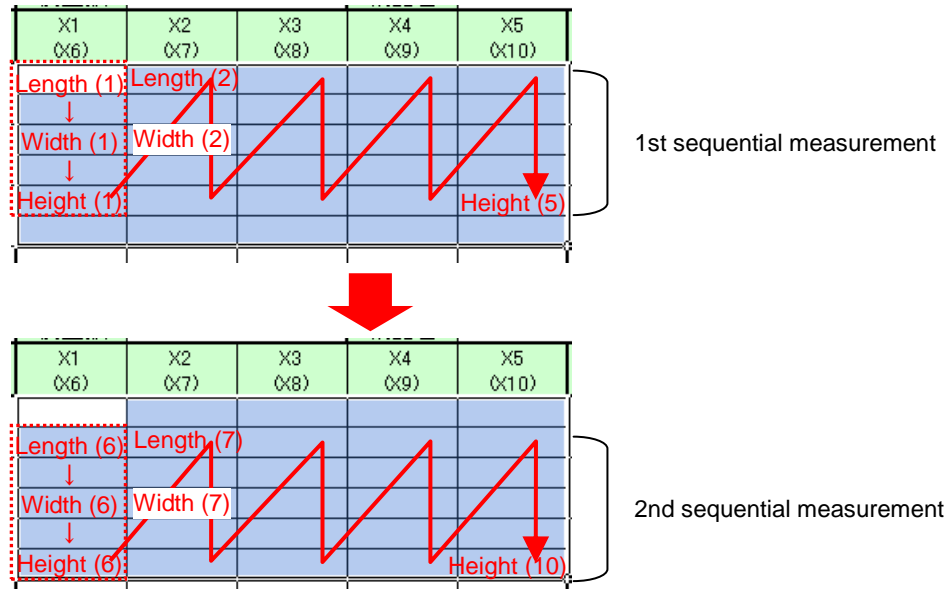
The image of the inspection table upon completion of data collection is shown below.

No.	Inspection item	Permissible value	Unit	Measuring item	X1 (X6)	X2 (X7)	X3 (X8)	X4 (X9)	X5 (X10)
1	Length	13.60	mm	CD	13.49	13.51	13.52	13.53	13.50
		13.40			13.53	13.49	13.53	13.52	13.53
2	Width	12.20	mm	CD	12.12	12.15	12.13	12.15	12.14
		12.00			12.15	12.12	12.14	12.15	12.13
3	Height	10.60	mm	CD	10.58	10.58	10.55	10.57	10.56
		10.50			10.57	10.56	10.56	10.57	10.55

This inspection table includes the measurement data of 10 workpieces, and the measurement data of each measurement item consists of 2 rows.

The measurement procedure consists in the following:

- (1) In this measurement procedure, the length, width, and height of the first workpiece are measured and the input data is output to the first row (Length), third row (Width), and fifth row (Height) of the X1 column on the Excel worksheet. Next, the length, width, and height of the second workpiece are measured and the input data is output to the first row (Length), third row (Width), and fifth row (Height) of the X2 column. The remaining workpieces are similarly measured, until 5 workpieces have been measured.
- (2) Next, the length, width, and height of the sixth workpiece are measured and the input data is output to the second row (Length), fourth row (Width), and sixth row (Height) of the X1 (X6) column on the Excel worksheet. Then, the length, width, and height of the seventh workpiece are measured and the input data is output to the second row (Length), fourth row (Width), and sixth row (Height) of the X2 (X7) column. The remaining workpieces are similarly measured, until all 10 workpieces have been measured.



The above measurement procedure flow is performed by creating (1) and (2) above as separate procedures and executing the two procedures one after the next.

The following describes how to set up the measurement procedure, perform measurement, and save the results.

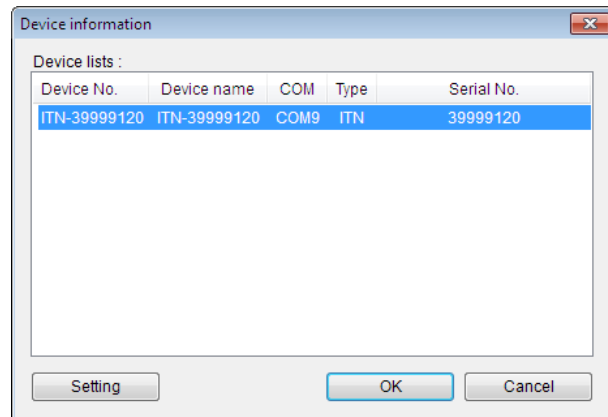
5. MEASUREMENT DATA COLLECTION (ADVANCED)

5.2.2 Setting

1) Check the device information.

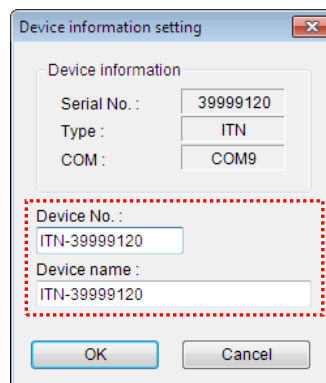
NOTE • USB-ITPAK loads the information of connected devices at startup. Therefore, connect all the devices to be used before starting up USB-ITPAK.

From the menu of the main dialog box, select [Settings] and then [Device information]. This opens the [Device information] dialog box, which allows you to check the devices that are connected to the PC.



If you do not wish to change the device number or device name, click the [Cancel] button to return to the main dialog box.

If you want to change the device number or device name, click the [Setting] button.



Click the [OK] button if you change any settings.

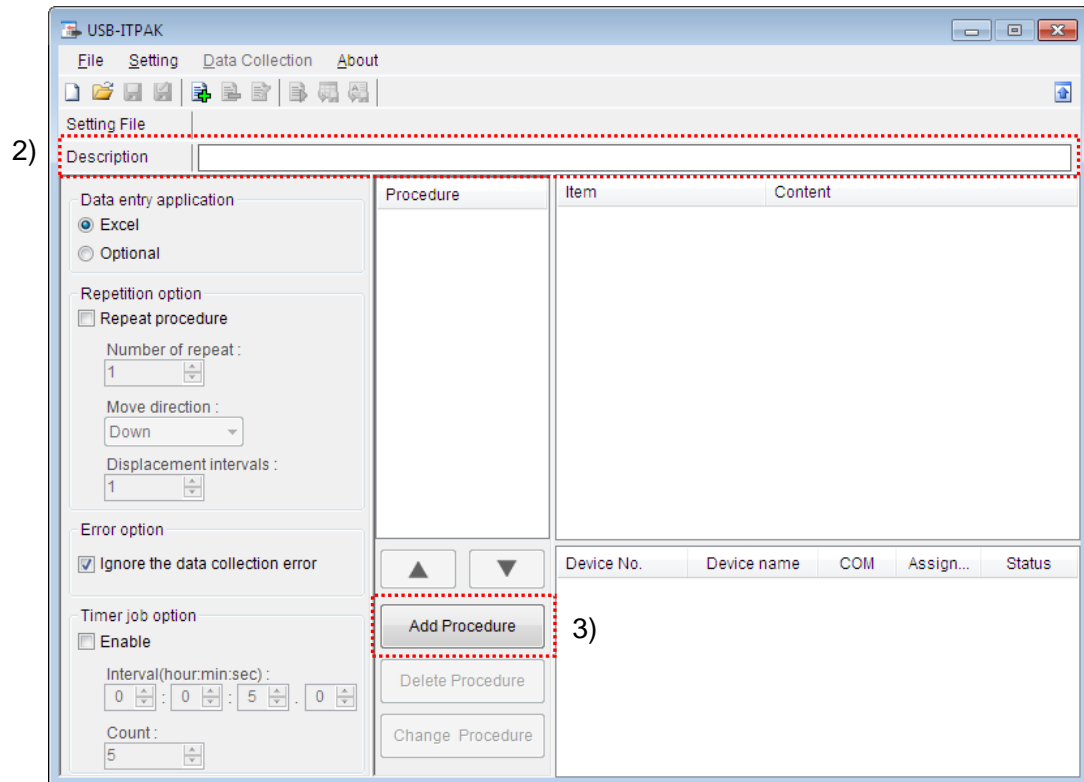
NOTE • In the procedure created from step "2)", the device number is used to specify the device to be used. If you change the number, revise all the setting files that use it.

TIP • If multiple units are connected, specify settings for each.

TIP • If performing measurement using existing setting files, skip this section and refer to "5.2.3 Measurement".

2) Enter information about the setting file in the [Description] field.

Enter a description of the setting file. This field may be left blank.



3) Add the first procedure to the setting file.

Click the [Add Procedure] button on the main dialog box.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

- 4) Select a procedure type for the [Procedure type] field.

The screenshot shows the 'Add procedure' dialog box with the following fields and annotations:

- 4) Procedure type: Batch (dropdown menu)
- 5) Procedure name: (text field)
- 6) Excel settings: Workbook: (text field with browse button)
- 7) Worksheet: (dropdown menu)
- 8) Range of cells (specify the A1 reference style): First: (text field), Last: (text field), Select: (button)
- 9) Move after return direction: Right (dropdown menu)
- 10) Displacement intervals: 1 (spin box)
- 11) Cell address assign rules:
 - ☐ Unspecified
 - ☒ Assign for the columns(A,B,...)
 - ☐ Assign for the rows(1,2,...)
- FunctionKey Operation: Data request: (dropdown menu), Data cancel: (dropdown menu), Data skip: (dropdown menu)
- Data entry devices: Table with columns Device No., Assign rule, COM. Contains one row with Device No. and Assign rule empty, and COM set to COM.
- Foot switch option: Table with columns Device No., Function, COM. Contains one row with Device No. and Function empty, and COM set to COM.
- Buttons: OK, Cancel

Check that [Sequential] is selected as the procedure type, and if not, select [Sequential] from the drop-down list.

- 5) Enter a name in the [Procedure name] field.

Entering the procedure name is required.

TIP • Since the procedure name will be displayed in the [Procedure] field at the center of the main dialog box, enter an easily identifiable name.

Here, enter [3 side measurement_1].

- 6) Specify an Excel file in the [Workbook] field under [Excel settings].

Enter the workbook name of the Excel file to which the measured data is to be input.

The file can be selected from the [Open] dialog box by clicking the [...] button.

Here, select the following file.

C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sample_Form_2_GB.xls

IMPORTANT • If you want to use a file other than the sample inspection table file, create an inspection file using Excel before starting up USB-ITPAK. Inspection table files can be saved to any folder. Save the inspection table file to a folder location that will be easy to manage.

7) Select a worksheet for the [Worksheet] field under [Excel settings].

Select the worksheet name to be included in the workbook of step "6)" from the drop-down list.

Here, select [Sample_F2].

8) Enter the input range in the [Range of cells] fields under [Excel settings].

AAA Corporation										
CERTIFICATE OF INSPECTION										
Name of inspection					BBB Corporation			Approval		
Product name					CCC Division			Inspector		
Part name					Date			Overall judgment		
Part No.					Number of inspections					
No.	Inspection item	Permissible value	Unit	Measuring item	X1 (X6)	X2 (X7)	X3 (X8)	X4 (X9)	X5 (X10)	Judgment
1	Length	13.60								
2	Width	13.40								
3	Height	12.20								
4		12.00								
5		10.60								
6		10.50								
7										
8										
9										
10										

To specify the area indicated by the bold lines in the above inspection table as the input cell range, enter:

First: G11
Last: K16

TIP • The inspection table above is shown with the [Inspection item] and [Permissible value] cells filled.

9) Select the desired direction for the [Move after return direction] field under [Excel settings].

During measurement using USB-ITPAK, once data is input from the measuring tools, the measurement data is input to the current cell and then the entry point (cell) automatically moves to the next cell.

In the inspection table example shown above, select [Down].

10) Specify the [Displacement intervals] under [Excel settings].

Specify the interval for the cell movement specified in step "9)". Specifying "1" results in movement to the next cell. Specifying "2" results in movement to the cell after the next.

In the inspection table example above, specify "2".

5. MEASUREMENT DATA COLLECTION (ADVANCED)

11) Select an option under [Cell address assign rules].

In USB-ITPAK, the measuring items can be assigned to columns (vertical) or rows (horizontal) of the inspection table worksheet.

In the inspection table example above, the measuring items are assigned to respective rows, so select [Assign for the rows (1, 2...)].

12) Specify the [Data entry devices] settings.

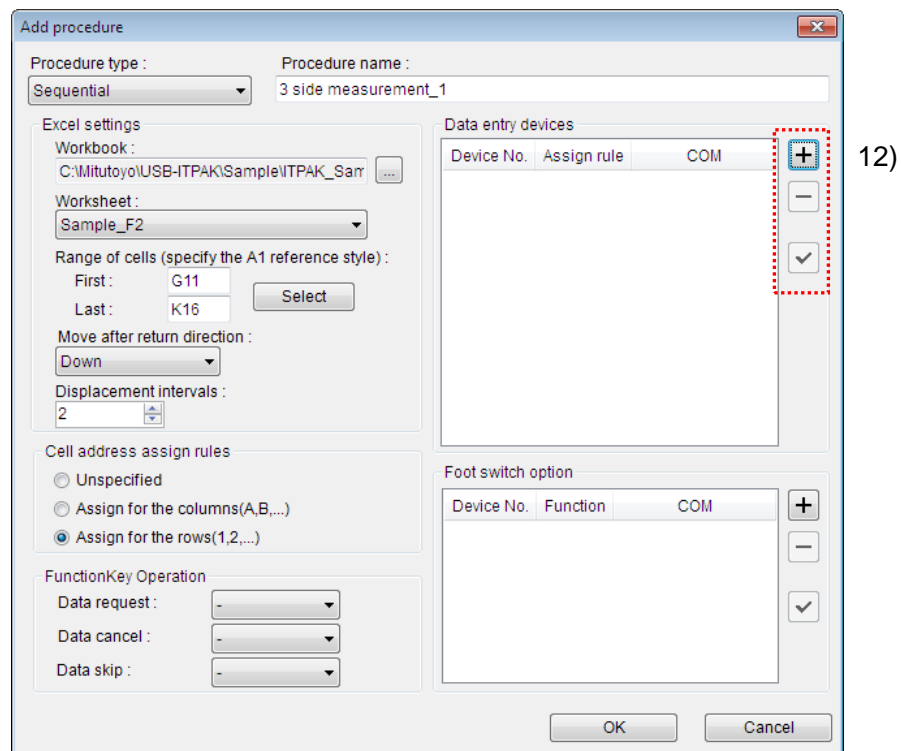
The functions of the buttons for the [Data entry devices] field are as follows:

[+]: Adds device settings.

[-]: Deletes the device setting selected from the list.

[✓]: Changes the device setting selected from the list.

Here, click the [+] button to switch to the [Data entry device settings] dialog box.



-
- 13) Specify the settings in the [Excel cells assignment] field on the [Data entry device settings] dialog box.

13)

14)

15)

Excel cells assignment
Assign for the rows(1,2,...)
11 - 16 Select

Entry data settings
☒ Measurement data entry
Select device :
ITN-39999120
Channel :
--

☐ Character string data entry
Device No. Character string +
-
✓

☐ DateTime data entry
Select device :
--

Device information
Serial No. : 39999120
Type : ITN
COM : COM9

OK Cancel

In the [Excel cells assignment] field, specify columns (vertical) or rows (horizontal) according to the specification in step 11). Specify the rows here.

There are three input areas in the previously described inspection table. Here, one device is assigned on all the rows, so enter start row number "11" in the input field on the left, and input "16" in the input field on the right.

- 14) In the [Entry data settings] field, select the entry data type.

The entry data types consist of measurement data input from the measuring tools (numeric data), and character string data input by pressing the foot switch.

TIP • For details about the method for inputting character string data using a foot switch, refer to "5.4 Character Input Using Foot Switch".

Here, select the [Measurement data entry] radio button.

- 15) In the [Select device] field, select the device to be assigned.

From the drop-down list, select the device to be assigned.

This completes the settings on the [Data entry device settings] dialog box, so click the [OK] button.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

16) Close [Add procedure].

Add procedure

Procedure type : Sequential Procedure name : 3 side measurement_1

Excel settings

Workbook : C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sarr ...

Worksheet : Sample_F2

Range of cells (specify the A1 reference style) :

First : G11 Last : K16 **Select**

Move after return direction : Down

Displacement intervals : 2

Cell address assign rules

☐ Unspecified

☐ Assign for the columns(A,B,...)

☒ Assign for the rows(1,2,...)

FunctionKey Operation

Data request : -

Data cancel : -

Data skip : -

Data entry devices

Device No.	Assign rule	COM
ITN-39999120	11:16	COM9

Foot switch option

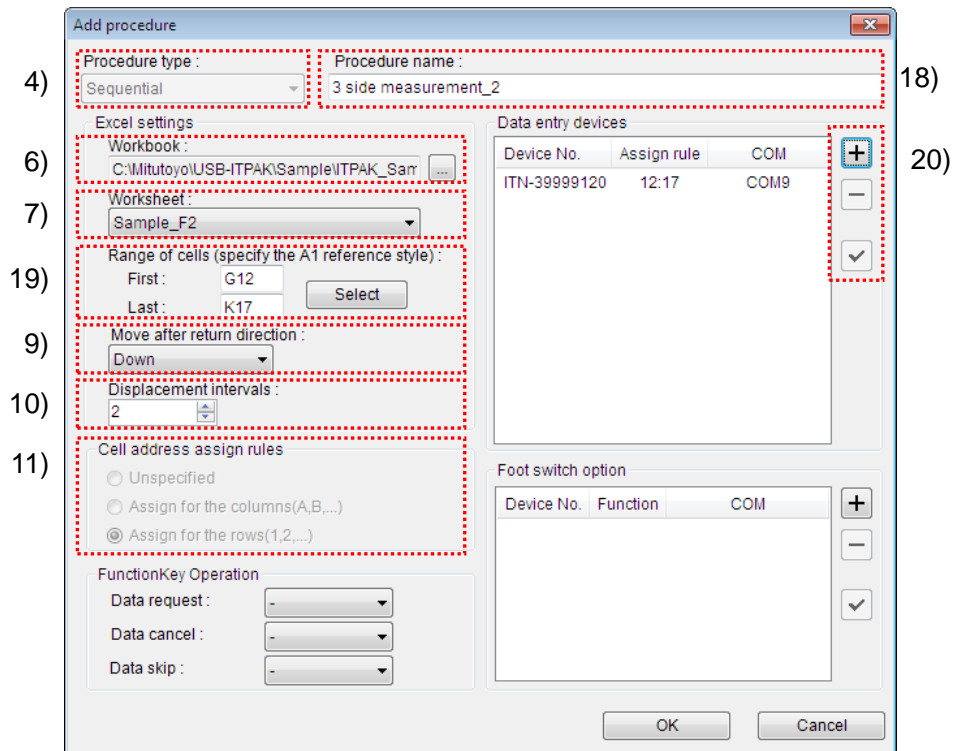
Device No.	Function	COM

OK **Cancel**

This completes the settings on the [Add procedure] dialog box for the first procedure, so click the [OK] button.

17) Repeat steps "3) to 16)" to create the second procedure.

How to perform steps 18) and subsequent steps in the figure below is described below.



18) Enter a name in the [Procedure name] field.

Here, enter [3 side measurement_2].

19) Enter the input range in the [Range of cells] fields under [Excel settings].

Here, enter:

First: G12

Last: K17

20) Specify the [Data entry devices] settings.

Here, click the [+] button to switch to the [Data entry device settings] dialog box.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

- 21) Specify the settings in the [Excel cells assignment] field on the [Data entry device settings] dialog box.

21)

22)

23)

Excel cells assignment

Assign for the rows(1,2,...)

12 - 17 Select

Entry data settings

☒ Measurement data entry

Select device : ITN-39999120

Channel : --

☐ Character string data entry

Device No. Character string + - ✓

☐ DateTime data entry

Select device :

Device information

Serial No. : 39999120

Type : ITN

COM : COM9

OK Cancel

In the [Excel cells assignment] field, specify columns (vertical) or rows (horizontal) according to the specification in step 11). Specify the rows here.

There are three input areas in the previously described inspection table. Here, one device is assigned on all the rows, so enter start row number "12" in the input field on the left, and input "17" in the input field on the right.

- 22) In the [Entry data settings] field, select the entry data type.

The entry data types consist of measurement data input from the measuring tools (numeric data), and character string data input by pressing the foot switch.

TIP • For details about the method for inputting character string data using a foot switch, refer to "5.4 Character Input Using Foot Switch".

Here, select the [Measurement data entry] radio button.

- 23) In the [Select device] field, select the device to be assigned.

From the drop-down list, select the device to be assigned.

This completes the settings on the [Data entry device settings] dialog box, so click the [OK] button.

24) Close [Add procedure].

Add procedure

Procedure type: Sequential Procedure name: 3 side measurement_2

Excel settings

Workbook: C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sam

Worksheet: Sample_F2

Range of cells (specify the A1 reference style):
First: G12 Last: K17 [Select]

Move after return direction: Down

Displacement intervals: 2

Cell address assign rules

☐ Unspecified
☐ Assign for the columns(A,B,...)
☒ Assign for the rows(1,2,...)

FunctionKey Operation

Data request: -
Data cancel: -
Data skip: -

Data entry devices

Device No.	Assign rule	COM
ITN-39999120	12:17	COM9

Foot switch option

Device No.	Function	COM
------------	----------	-----

OK Cancel

This completes the settings on the [Add procedure] dialog box, so click the [OK] button.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

25) Save the created setting file.

The screenshot shows the USB-ITPAK software window. The 'Setting File' field is highlighted with a red dashed box and contains the path 'C:\Mitutoyo\USB-ITPAK\5-2.it2'. The 'Description' field contains 'Measure 3 sides for 10 samples.'.

Data entry application

☒ Excel
☐ Optional

Repetition option

☐ Repeat procedure

Number of repeat : 1

Move direction : Down

Displacement intervals : 1

Error option

☒ Ignore the data collection error

Timer job option

☐ Enable

Interval(hour:min:sec) : 0 : 0 : 5

Count : 5

Procedure

3 side measuremen.
3 side measuremen...

Item

Item	Content
Procedure type	Sequential
Data entry application	Excel
Excel settings:	
Workbook	C:\Mit...ITPAK_Sample_Form_2_GB.xls
Worksheet	Sample_F2
Range of cells	G11:K16
Move after return direction	Down
Displacement intervals	2
Cell address assign rules	Assign for the rows(1,2,...)
Foot switch option:	
FunctionKey Operation:	

Device No. **Device name** **COM** **Assigned cells** **Status**

ITN-39999120	ITN-39999120	COM9	11:16	Connect
--------------	--------------	------	-------	---------

Buttons: Add Procedure, Delete Procedure, Change Procedure

From the menu of the main dialog box, select [File], [Save As], and then save the file by giving it a name. When the file has been saved, the file name is displayed as a full path in the [Setting File] field.

5.2.3 Measurement

1) Open [Setting File].

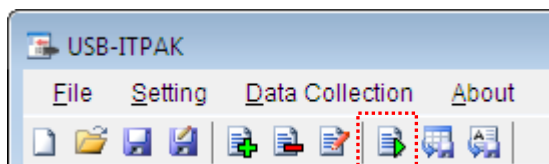
TIP • If starting measurement immediately after specifying the settings in "5.2.2 Setting", the setting file is already opened. In this case, skip step "1)".

From the menu of the main dialog box, select [File] and then [Open], or open [Setting file] from [Recent files].

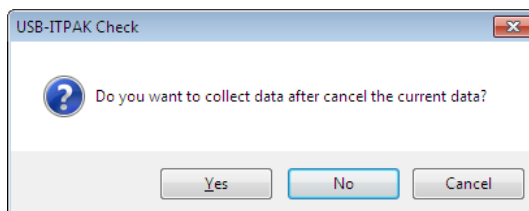
2) Open the data collection dialog box.

IMPORTANT • In USB-ITPAK, following data collection, the Excel file to which the data was input is saved through overwriting under the existing file name. To use the original Excel file later, back it up beforehand.

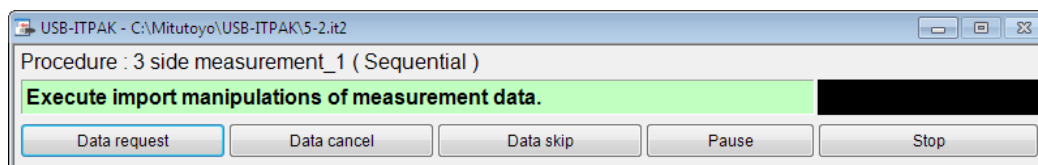
From the menu of the main dialog box, select [Data Collection] and then [Start], or click the icon shown below.



When data collection starts, the message [Do you want to collect data after cancel the current data?] is displayed. Click [Yes] to clear the existing data or [No] not to.

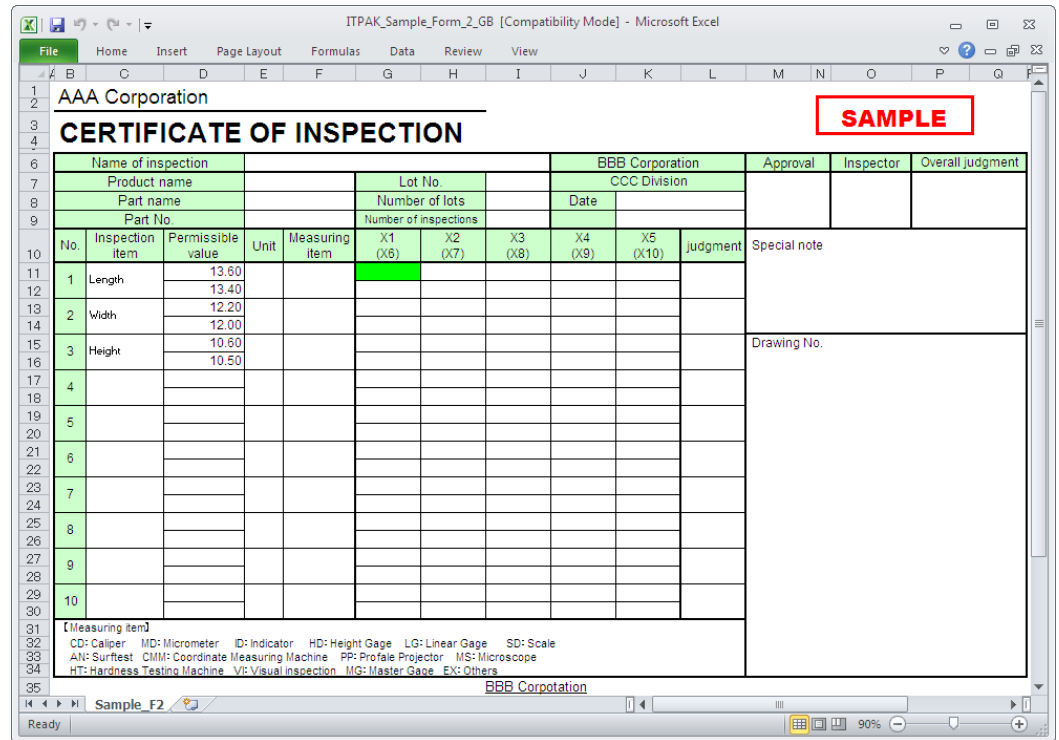


The data collection dialog box is displayed and data collection can now be performed.



TIP • If you click [No] for the message [Do you want to collect data after cancel the current data?], the data collection dialog box will be paused. In this case, resume the data collection. For details, refer to "6.14.1 [Pause/Resume] button" and "8.2.5 To resume the Excel data collection previously paused".

During data collection, the cell to which data will be input next is highlighted in green.



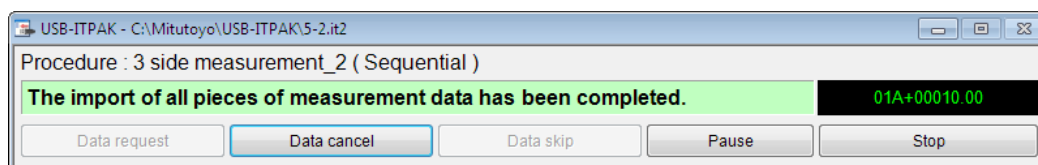
(1) Pressing the DATA switch on the measuring tool.

When using IT-016U, data input can be performed using the DATA switch equipped with IT-016U or the foot switch connected to IT-016U.

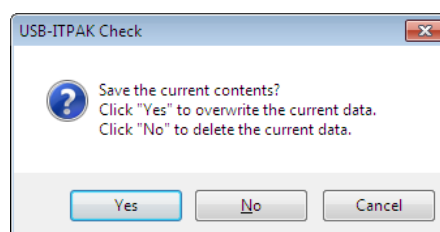
To cancel data that has been input, click the [Data cancel] button on the data collection dialog box. The data in the entry cell is canceled and the previous cell is highlighted.

4) End data collection and save the results.

Once all the data has been input, a completion message is displayed on the data collection dialog box.



Click the [Stop] button on the data collection dialog box. The following message is displayed.



[Yes]: The Excel file to which data was input is saved through overwriting under the existing file name.

[No]: The Excel file is not overwritten and the data that was input is deleted.

[Cancel]: The message dialog box is closed and the data collection dialog box is displayed.

Click the [Yes] button. The Excel file is saved through overwriting and the dialog box switches to the main dialog box.

This completes data collection for measurement that includes two procedures.

5.3 Measurement by Repeating Procedure

5.3.1 Overview

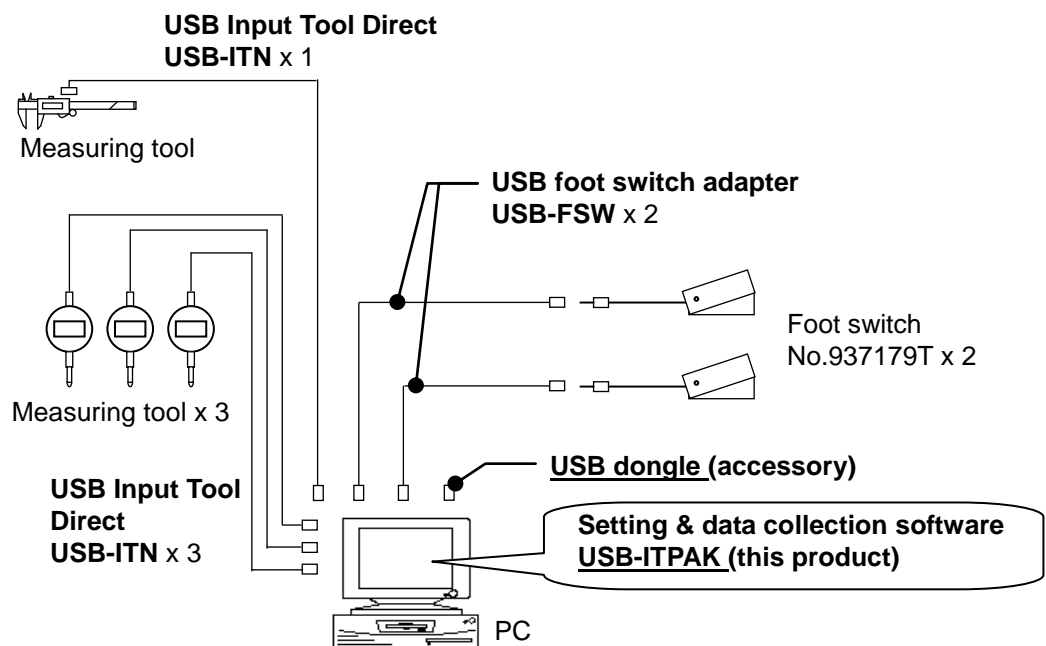
This section explains how to register two procedures to a single setting file and execute these two procedures repeatedly.

TIP • The procedure used in the explanation in this section is based on the batch measurement method described in "5.1 Data Input Request Using Foot Switch". The setting file created in "5.1 Data Input Request Using Foot Switch" is used with some modifications.

NOTE • Measurement by repeating the procedure can be used for both sequential measurement and batch measurement. This function cannot be used for individual measurement.

1) Connection

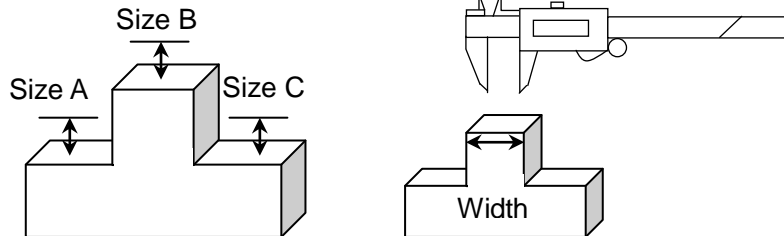
In the explanation in this section, measurement is done with three indicators connected, along with one caliper connected to USB-ITN, and two foot switches connected to USB-FSW. The connection diagram is shown below.



2) Workpiece for measurement

The following workpiece is used in the explanation. Three indicators are used and measurement is done with the measuring jigs. "Size A", "Size B", and "Size C", which are shown in the figure below, are measured.

A caliper is then used to measure the width at the top of the work.



3) Measurement

The image of the inspection table upon completion of data collection is shown below.

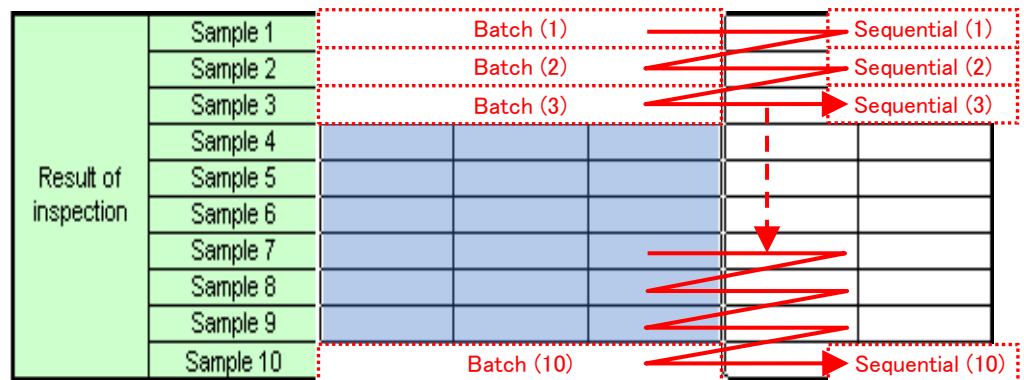
Inspection item		Size A	Size B	Size C	Size D	Size E
Measuring item						
Tolerance	Upper limit	5.150	10.100	5.150		13.550
	Lower limit	4.850	9.900	4.850		13.450
Result of inspection	Sample 1	5.054	10.023	5.070		13.502
	Sample 2	5.086	10.016	5.064		13.500
	Sample 3	5.093	10.000	5.056		13.511
	Sample 4	5.077	10.039	5.063		13.520
	Sample 5	5.085	9.992	5.047		13.512
	Sample 6	5.084	10.024	5.065		13.510
	Sample 7	5.062	9.990	5.050		13.501
	Sample 8	5.073	9.985	5.054		13.520
	Sample 9	5.071	10.011	5.045		13.500
	Sample 10	5.062	10.000	5.060		13.510

5. MEASUREMENT DATA COLLECTION (ADVANCED)

The measurement procedure consists of the measurement of ten workpieces using the following procedure.

- (1) "Size A", "Size B", and "Size C" of the first workpiece are measured in batch by using the measuring jigs, and the input data is output to the respective columns of the Sample 1 row on the Excel worksheet.
- (2) Next, "Size E" is measured using the caliper and the input data is output to the "Size E" column of the Sample 1 row on the Excel worksheet.

The above steps are performed for the second to tenth workpieces, and the input data is output to the Sample 2 row to the Sample 10 row on the Excel worksheet.



To perform such procedures, create (1) and (2) above as separate procedures, and set up the procedures so they are repeated a total of 10 times. By executing these procedures, the measurements for one workpiece are performed by executing procedures (1) and (2) in series one time, and the measurements for all workpieces are done by doing this total of 10 times.

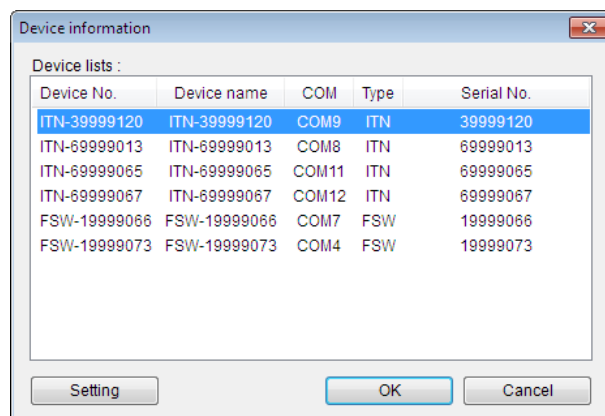
The following describes how to set up the measurement procedure, perform measurement, and save the results.

5.3.2 Setting

1) Check the device information.

NOTE • USB-ITPAK loads the information of connected devices at startup. Therefore, connect all the devices to be used before starting up USB-ITPAK.

From the menu of the main dialog box, select [Settings] and then [Device information]. This opens the [Device information] dialog box, which allows you to check the devices that are connected to the PC.



If you do not want to change the device number or device name, click the [Cancel] button to return to the main dialog box.

If you want to change a device number or device name, select the device, and then click the [Setting] button.



Click the [OK] button if you change any settings.

NOTE • In the procedure created from step "2)", the device number is used to specify the device to be used. If you change the number, revise all the setting files that use it.

TIP • If multiple units are connected, specify settings for each.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

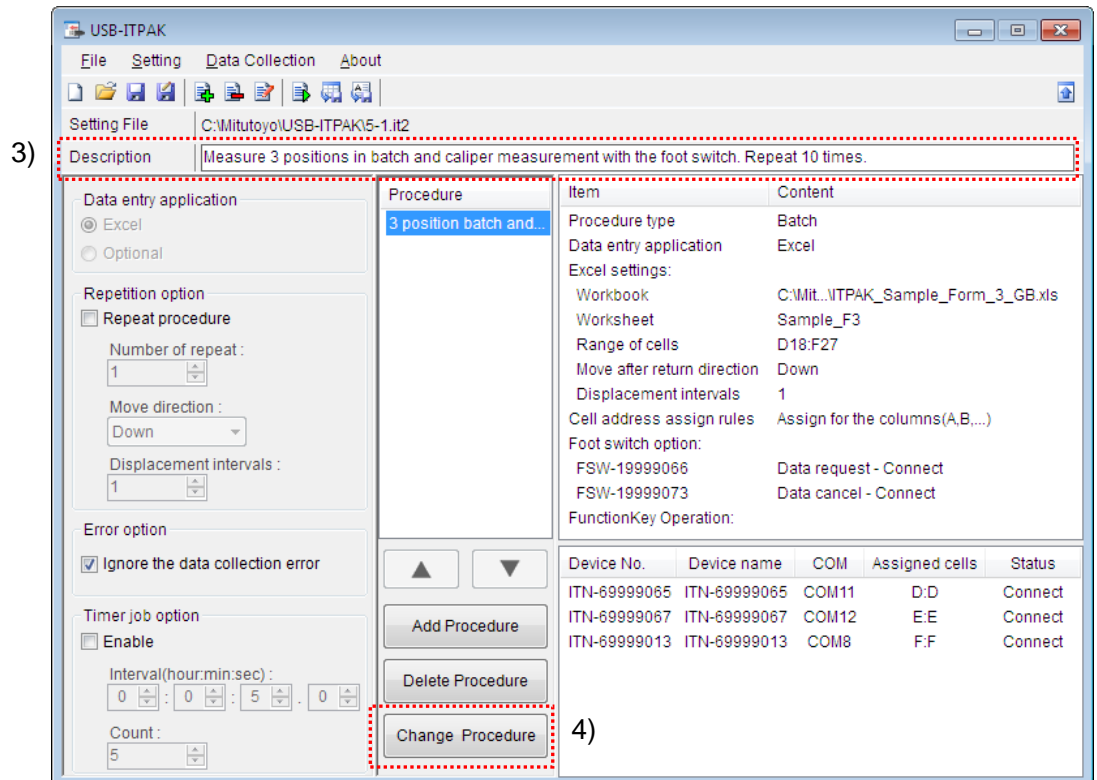
TIP • If performing measurement using existing setting files, skip this section and refer to "5.3.3 Measurement".

2) Open the setting file created in "5.1 Data Input Request Using Foot Switch".

From the menu of the main dialog box, select [File] and then [Open], or open [Setting file] from [Recent files].

3) Enter information about the setting file in the [Description] field.

Enter a description of the setting file. This field may be left blank.



4) Start the procedure change.

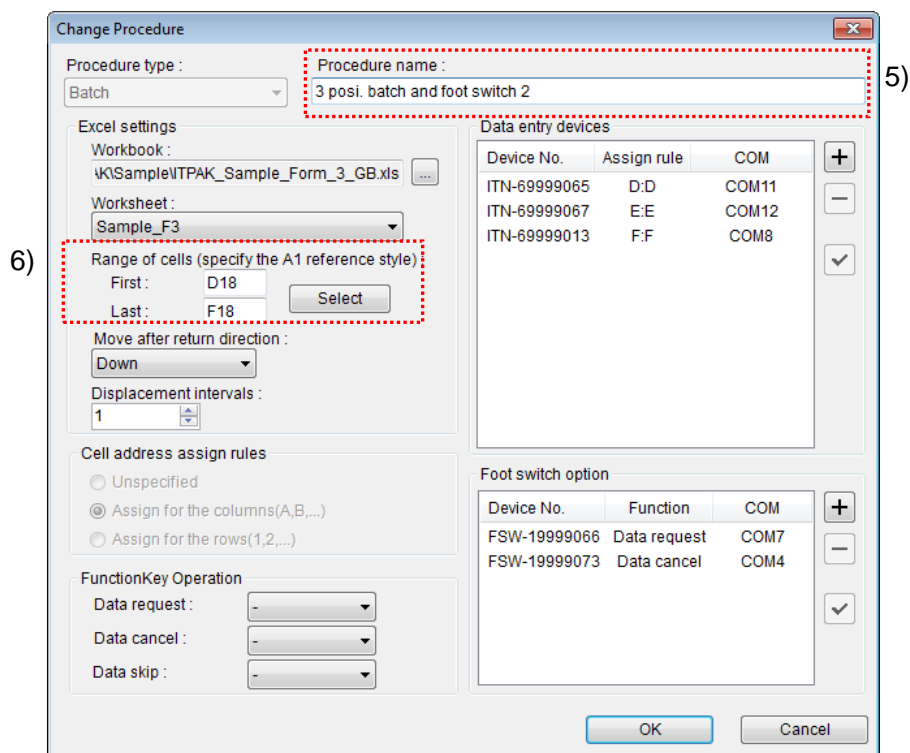
Click the [Change Procedure] button on the main dialog box.

5) Enter a name in the [Procedure name] field.

Entering the procedure name is required.

TIP • Since the procedure name will be displayed in the [Procedure] field at the center of the main dialog box, enter an easily identifiable name.

Here, enter [3 posi. batch and foot switch 2].



6) Change the input range in the [Range of cells] fields under [Excel settings].

Here, enter:

First: D18

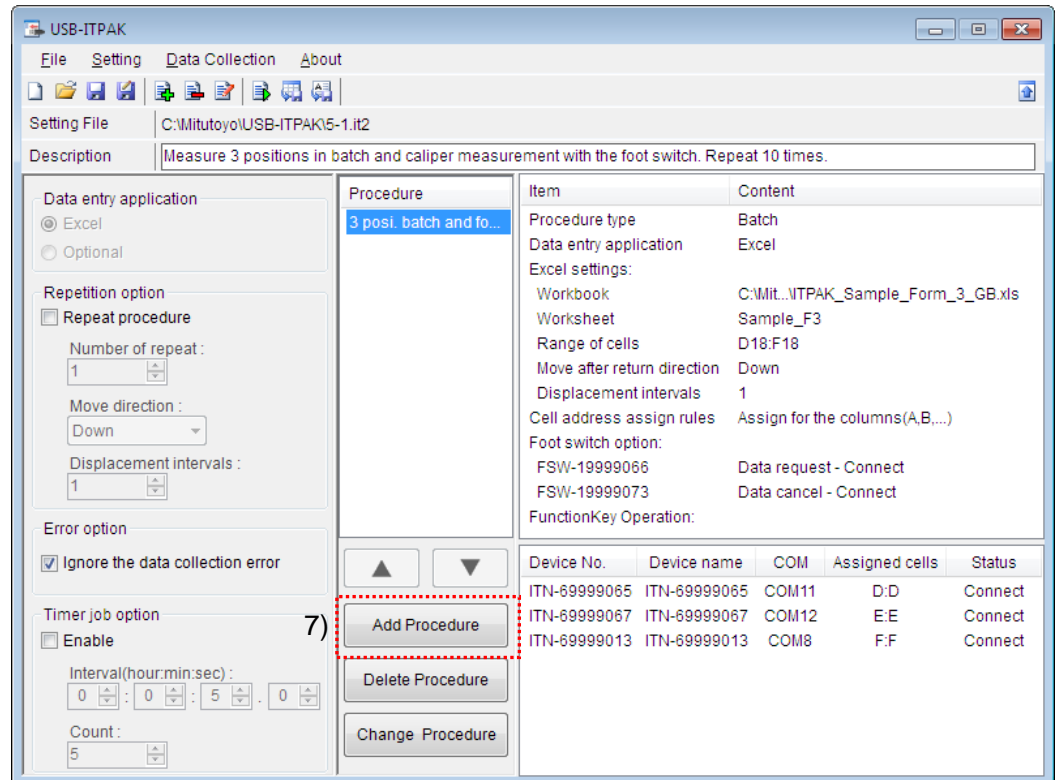
Last: F18

This completes the settings on the [Change Procedure] dialog box, so click the [OK] button.

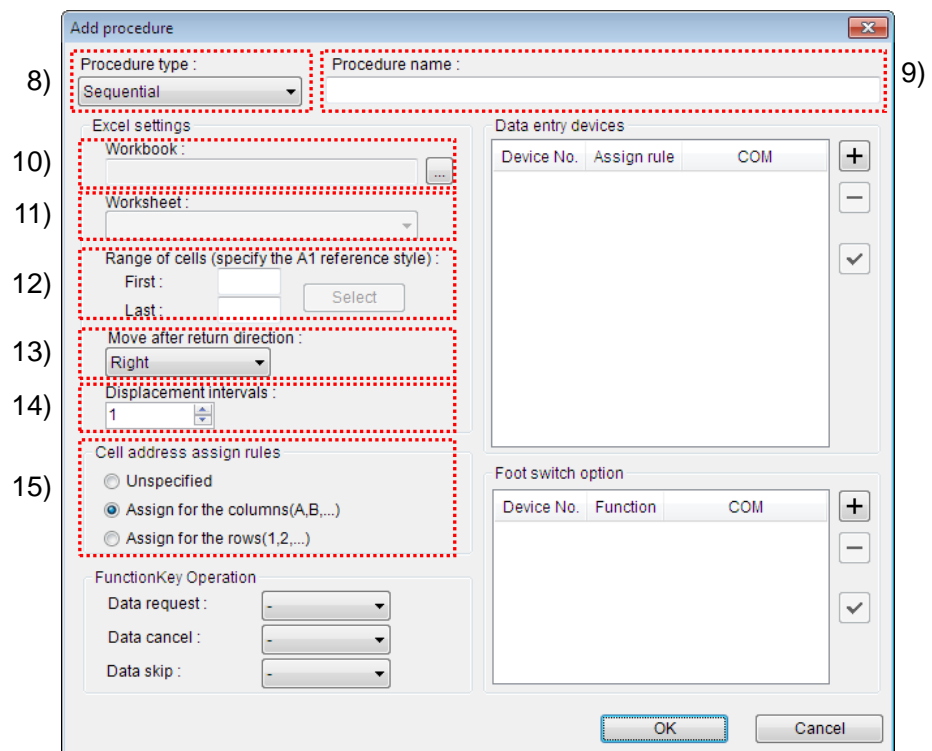
5. MEASUREMENT DATA COLLECTION (ADVANCED)

7) Add the second procedure to the setting file.

Click the [Add Procedure] button on the main dialog box.



8) Select a procedure type for the [Procedure type] field.



Check that [Sequential] is selected as the procedure type, and if not, select [Sequential] from the drop-down list.

9) Enter a name in the [Procedure name] field.

Entering the procedure name is required.

TIP • Since the procedure name will be displayed in the [Procedure] field at the center of the main dialog box, enter an easily identifiable name.

Here, enter [Caliper measurement].

10) Specify an Excel file in the [Workbook] field under [Excel settings].

Enter the workbook name of the Excel file to which the measured data is to be input.

The file can be selected from the [Open] dialog box by clicking the [...] button.

Here, select the following file.

C:\Mitutoyo\USB-ITPAK\Sample\ ITPAK_Sample_Form_3_GB.xls

IMPORTANT • If you want to use a file other than the sample inspection table file, create an inspection file using Excel before starting up USB-ITPAK. Inspection table files can be saved to any folder. Save the inspection table file to a folder location that will be easy to manage.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

11) Select a worksheet for the [Worksheet] field under [Excel settings].

Select the worksheet name to be included in the workbook of step "10)" from the drop-down list.

Here, select [Sample_F3].

12) Enter the input range in the [Range of cells] fields under [Excel settings].

Inspection item		Size A	Size B	Size C	Size D	Size E
Tolerance	Upper limit	5.150	10.100	5.150		13.550
	Lower limit	4.850	9.900	4.850		13.450
Result of inspection	Sample 1					
	Sample 2					
	Sample 3					
	Sample 4					
	Sample 5					
	Sample 6					
	Sample 7					
	Sample 8					
	Sample 9					
	Sample 10					
Average (Av.)						
standard deviation (σ)						
Overall judgment		[Special note]				

[Measuring item]
 CD: Caliper MD: Micrometer ID: Indicator HD: Height Gage LG: Linear Gage SD: Scale
 AN: Surf test CMM: Coordinate Measuring Machine PP: Profile Projector MS: Microscope
 VI: Visual inspection MG: Master Gage EX: Others

BBB Corporation

To specify the area indicated by the bold lines in the above inspection table as the input cell range, enter:

First: H18

Last: H18

- 13) Select the desired direction for the [Move after return direction] field under [Excel settings].

During measurement using USB-ITPAK, once data is input from the measuring tools, the measurement data is input to the current cell and then the entry point (cell) automatically moves to the next cell.

In the inspection table example shown above, select [Down].

- 14) Specify the [Displacement intervals] under [Excel settings].

Specify the interval for the cell movement specified in step 13). Specifying "1" results in movement to the next cell. Specifying "2" results in movement to the cell after the next.

In the inspection table example above, specify "1".

- 15) Select an option under [Cell address assign rules].

In USB-ITPAK, the measuring items can be assigned to columns (vertical) or rows (horizontal) of the inspection table worksheet.

In the inspection table example above, the measurement items are assigned to respective columns, so select [Assign for the columns (A,B,...)].

- 16) Specify the [Data entry devices] settings.

The functions of the buttons for the [Data entry devices] field are as follows:

- [+]: Adds device settings.
- [-]: Deletes the device setting selected from the list.
- [✓]: Changes the device setting selected from the list.

Here, click the [+] button to switch to the [Data entry device settings] dialog box.

16)

5. MEASUREMENT DATA COLLECTION (ADVANCED)

- 17) Specify the settings in the [Excel cells assignment] field on the [Data entry device settings] dialog box.

17) 18) 19)

In the [Excel cells assignment] field, specify columns (vertical) or rows (horizontal) according to the specification in step 11). Specify the columns here.

Here, the device is assigned to one column, the H column, so enter "H" in both input fields.

- 18) In the [Entry data settings] field, select the entry data type.

The entry data types consist of measurement data input from the measuring tools (numeric data), and character string data input by pressing the foot switch.

TIP • For details about the method for inputting character string data using a foot switch, refer to "5.4 Character Input Using Foot Switch".

Here, select the [Measurement data entry] radio button.

- 19) In the [Select device] field, select the device to be assigned.

From the drop-down list, select the device to be assigned.

This completes the settings on the [Data entry device settings] dialog box, so click the [OK] button.

20) Close [Add procedure].

Add procedure

Procedure type: Sequential Procedure name: Caliper measurement

Excel settings

Workbook: C:\Mitutoyo\USB-ITPAK\Sample\ITPAK_Sam

Worksheet: Sample_F3

Range of cells (specify the A1 reference style):
First: H18 Last: H18 **Select**

Move after return direction: Down

Displacement intervals: 1

Cell address assign rules

☐ Unspecified
☒ Assign for the columns(A,B,...)
☐ Assign for the rows(1,2,...)

FunctionKey Operation

Data request: -
Data cancel: -
Data skip: -

Data entry devices

Device No.	Assign rule	COM
ITN-39999120	H:H	COM9

Foot switch option

Device No.	Function	COM
FSW-19999066	Data request	COM7
FSW-19999073	Data cancel	COM4

OK **Cancel**

This completes the settings on the [Add procedure] dialog box, so click the [OK] button.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

21) Specify the repetition settings.

Select [Repeat procedure] in the [Repetition option] field.

The "22) to 24)" fields shown below activate.

21) ☒ Repeat procedure

22) Number of repeat : 10

23) Move direction : Down

24) Displacement intervals : 1

Procedure: 3 posl. batch and fo...
Caliper measurement

Item	Content
Procedure type	Batch
Data entry application	Excel
Excel settings:	
Workbook	C:\Mitutoyo\ITPAK_Sample_Form_3_GB.xls
Worksheet	Sample_F3
Range of cells	D18:F18
Move after return direction	Down
Displacement intervals	1
Cell address assign rules	Assign for the columns(A,B,...)
Foot switch option:	
FSW-19999066	Data request - Connect
FSW-19999073	Data cancel - Connect
FunctionKey Operation:	

Device No.	Device name	COM	Assigned cells	Status
ITN-69999065	ITN-69999065	COM11	D:D	Connect
ITN-69999067	ITN-69999067	COM12	E:E	Connect
ITN-69999013	ITN-69999013	COM8	F:F	Connect

22) Specify [Number of repeat] in the [Repetition option] field.

Specify the number of times the created procedure is to be repeated.

Here, specify "10".

23) Specify [Move direction] in the [Repetition option] field.

After the created procedure has been performed, the entry point (cell) automatically moves to the next position.

Here, select [Down].

24) Specify [Displacement intervals] in the [Repetition option] field.

Specify the interval for the cell movement specified in step "23)". Specifying "1" results in movement to the next cell. Specifying "2" results in movement to the cell after the next.

Here, specify "1".

25) Save the created setting file.

The screenshot shows the USB-ITPAK software window. The 'Setting File' field is highlighted with a red dashed box and contains the path 'C:\Mitutoyo\USB-ITPAK\5-3.it2'. The 'Description' field contains 'Measure 3 positions in batch and caliper measurement with the foot switch. Repeat 10 times.' The interface includes various configuration options for data entry application, repetition, error handling, and timer jobs, as well as a table of device settings.

Item	Content
Procedure type	Batch
Data entry application	Excel
Excel settings:	
Workbook	C:\Mit...ITPAK_Sample_Form_3_GB.xls
Worksheet	Sample_F3
Range of cells	D18:F18
Move after return direction	Down
Displacement intervals	1
Cell address assign rules	Assign for the columns(A,B,...)
Foot switch option:	
FSW-19999066	Data request - Connect
FSW-19999073	Data cancel - Connect
FunctionKey Operation:	

Device No.	Device name	COM	Assigned cells	Status
ITN-69999065	ITN-69999065	COM11	D:D	Connect
ITN-69999067	ITN-69999067	COM12	E:E	Connect
ITN-69999013	ITN-69999013	COM8	F:F	Connect

From the menu of the main dialog box, select [File], [Save As], and then save the file by giving it a name. When the file has been saved, the file name is displayed as a full path in the [Setting File] field.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

5.3.3 Measurement

1) Open [Setting File].

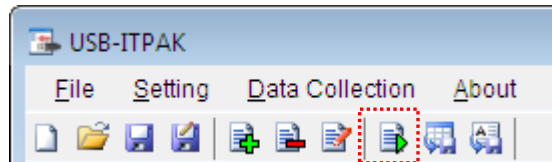
- TIP** • If starting measurement immediately after specifying the settings in "5.3.2 Setting", the setting file is already opened. In this case, skip step "1)".

From the menu of the main dialog box, select [File] and then [Open], or open [Setting file] from [Recent files].

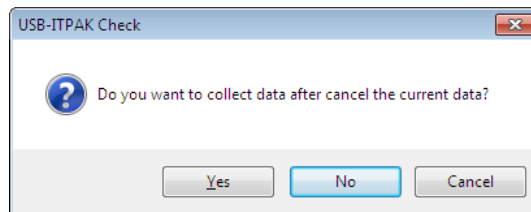
2) Open the data collection dialog box.

- IMPORTANT** • In USB-ITPAK, following data collection, the Excel file to which the data was input is saved through overwriting under the existing file name. To use the original Excel file later, back it up beforehand.

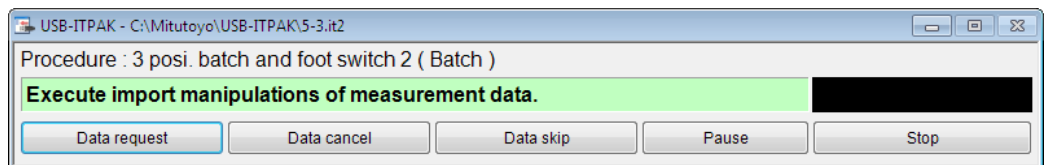
From the menu of the main dialog box, select [Data Collection] and then [Start], or click the icon shown below.



When data collection starts, the message [Do you want to collect data after cancel the current data?] is displayed. Click [Yes] to clear the existing data or [No] not to.



The data collection dialog box is displayed and data collection can now be performed.



- TIP** • If you click [No] for the message [Do you want to collect data after cancel the current data?], the data collection dialog box will be paused. In this case, resume the data collection. For details, refer to "6.14.1 [Pause/Resume] button" and "8.2.5 To resume the Excel data collection previously paused".

3) Perform data collection.

During data collection, the cell to which data will be input next is highlighted in green.

Inspection item	Size A	Size B	Size C	Size D	Size E
Measuring item					
Tolerance					
Upper limit	5.150	10.100	5.150		13.550
Lower limit	4.850	9.900	4.850		13.450
Sample 1					
Sample 2					
Sample 3					
Sample 4					
Sample 5					
Sample 6					
Sample 7					
Sample 8					
Sample 9					
Sample 10					
Average (Av.)					
standard deviation (σ)					
Overall judgment		[Special note]			

Legend:
 CD: Caliper MD: Micrometer ID: Indicator HD: Height Gage LG: Linear Gage SD: Scale
 AN: Surf test CMM: Coordinate Measuring Machine PP: Profile Projector MS: Microscope
 VI: Visual inspection MG: Master Gage EX: Others

Input data from the measuring tools through one of the following operations:

- (1) Press the foot switch to which the [Data request] function was assigned in the foot switch option setting.
- (2) Click the [Data request] button on the data collection dialog box.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

To cancel the data that was input, do either of the following. The data in the entry cell is canceled and the previous cell is highlighted.

- (1) Press the foot switch to which the [Data cancel] function was assigned in the foot switch option setting.
- (2) Click the [Data cancel] button on the data collection dialog box.

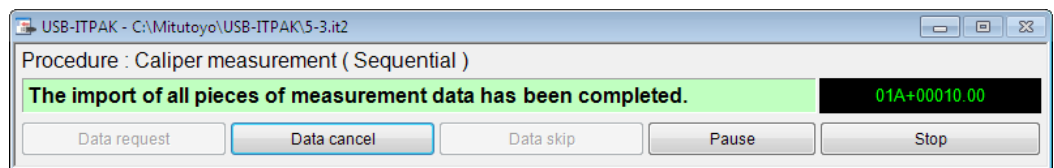
To skip the current data entry cell without inputting data, click the [Data skip] button on the data collection dialog box. The next cell is highlighted.

IMPORTANT • During batch measurement, data is collected all at once, so data cannot be collected through the following operations:

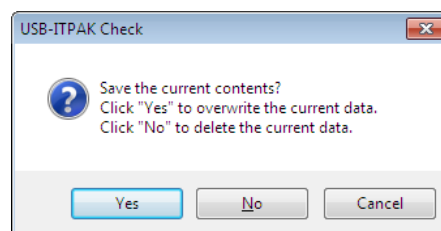
- (1) Pressing the DATA switch on the measuring tool
- (2) Pressing the DATA switch if USB-ITN has one
- (3) When using IT-016U, press the DATA switch.
- (4) When using IT-016U, operate the foot switch connected to IT-016U.

4) End data collection and save the results.

Once all the data has been input, a completion message is displayed on the data collection dialog box.



Click the [Stop] button on the data collection dialog box. The following message is displayed.



[Yes]: The Excel file to which data was input is saved through overwriting under the existing file name.

[No]: The Excel file is not overwritten and the data that was input is deleted.

[Cancel]: The message dialog box is closed and the data collection dialog box is displayed.

Click the [Yes] button. The Excel file is saved through overwriting and the dialog box switches to the main dialog box.

This completes the data collection for measurement by repeating procedure.

5.4 Character Input Using Foot Switch

5.4.1 Overview

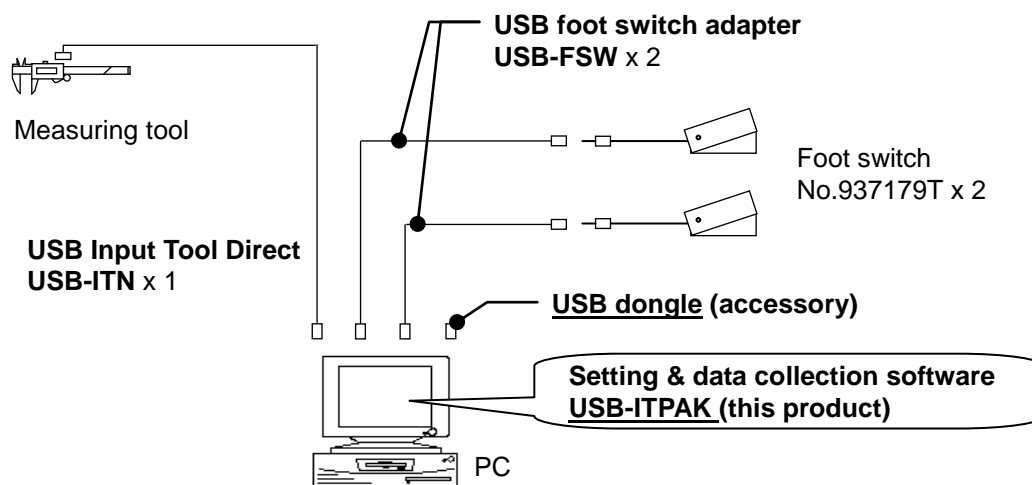
This section explains how to input pre-registered characters in the inspection table using the foot switch (via USB-FSW). This function is used for inputting sensory inspection results (PASS/FAIL), etc.

TIP • The procedure used in the explanation in this section is based on the sequential measurement method described in "CHAPTER 4 MEASUREMENT DATA COLLECTION (BASICS)". The setting file created in "CHAPTER 4 MEASUREMENT DATA COLLECTION (BASICS)" is used with some modifications.

NOTE • Character input using the foot switch can be used for both sequential measurement and individual measurement. This function cannot be used for batch measurement.

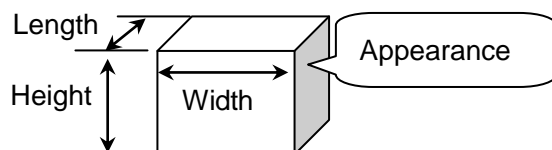
1) Connection

In the explanation in this section, one caliper is connected to USB-ITN and two foot switches are connected to USB-FSW. The connection diagram is shown below.



2) Workpieces for measurement

The following workpiece is used in the explanation. The measurement locations are the length, width, height, and appearance (visual) of the rectangular parallelepiped.



5. MEASUREMENT DATA COLLECTION (ADVANCED)

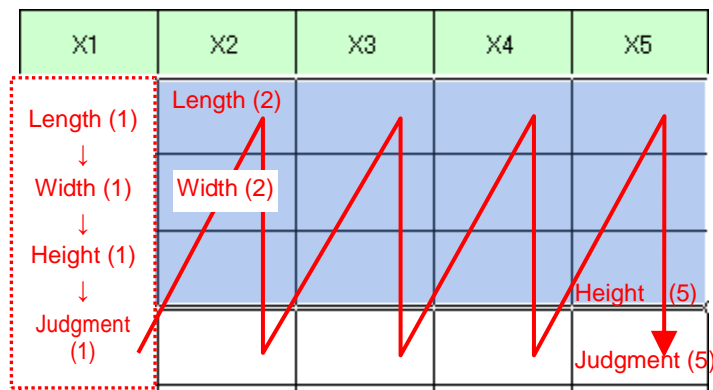
3) Measurement

The image of the inspection table upon completion of data collection is shown below.

No.	Inspection item	Permissible value		Unit	Measuring item	X1	X2	X3	X4	X5
1	Length	13.60	13.40	mm	CD	13.49	13.51	13.52	13.53	13.50
2	Width	12.20	12.00	mm	CD	12.12	12.15	12.13	12.15	12.14
3	Height	10.60	10.50	mm	CD	10.58	10.58	10.55	10.57	10.56
4	Visual	-	-	-	-	OK	OK	OK	OK	OK

In this measurement procedure, the length, width, and height of the first workpiece are measured and the input data is output to the first row (Length), the second row (Width), and the third row (Height), respectively, of the X1 column on the Excel worksheet. Next, the first workpiece is visually inspected and the result is output to the fourth row (Visual) of the X1 column.

Next, the second workpiece is similarly measured, and so on, until all five workpieces have been measured.



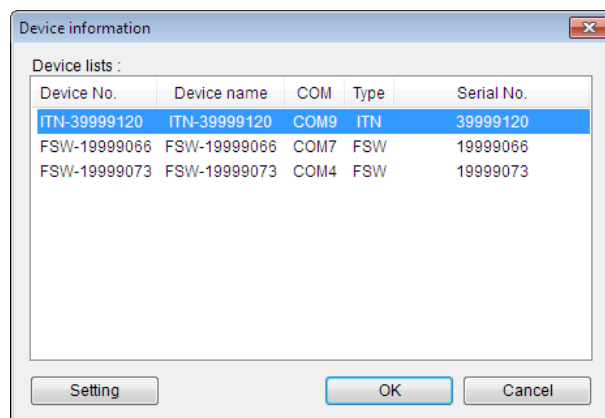
The following describes how to set up the measurement procedure, perform measurement, and save the results.

5.4.2 Setting

1) Check the device information.

NOTE • USB-ITPAK loads the information of connected devices at startup. Therefore, connect all the devices to be used before starting up USB-ITPAK.

From the menu of the main dialog box, select [Settings] and then [Device information]. This opens the [Device information] dialog box, which allows you to check the devices that are connected to the PC.



If you do not want to change the device number or device name, click the [Cancel] button to return to the main dialog box.

If you want to change a device number or device name, select the device, and then click the [Setting] button.



Click the [OK] button if you change any settings.

NOTE • In the procedure created from step "2)", the device number is used to specify the device to be used. If you change the number, revise all the setting files that use it.

TIP • If multiple units are connected, specify settings for each.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

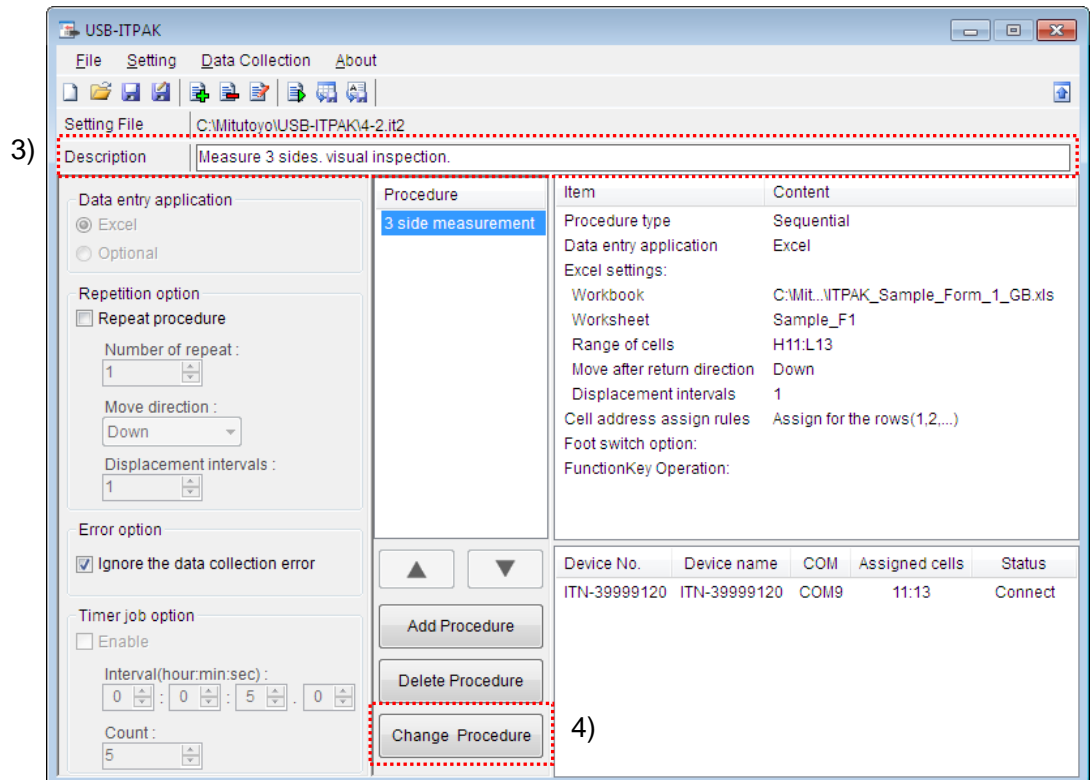
TIP • If performing measurement using existing setting files, skip this section and refer to "5.4.3 Measurement".

2) Open the setting file created in "4.2 Sequential Measurement (Basics)".

From the menu of the main dialog box, select [File] and then [Open], or open [Setting file] from [Recent files].

3) Enter information about the setting file in the [Description] field.

Enter a description of the setting file. This field may be left blank.



4) Start the procedure change.

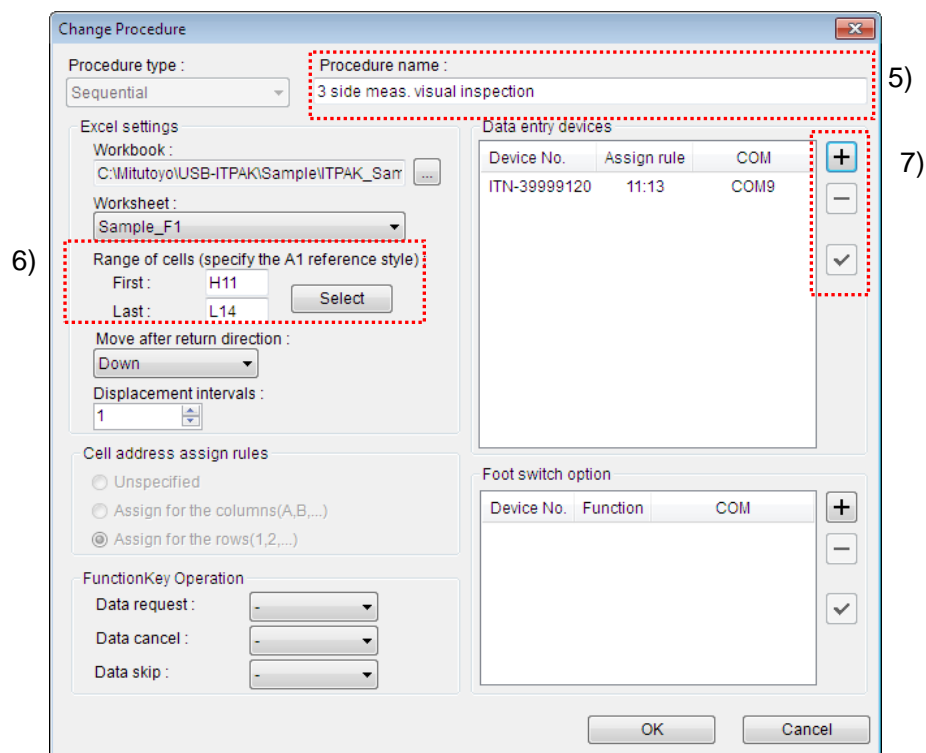
Click the [Change Procedure] button on the main dialog box.

5) Enter a name in the [Procedure name] field.

Entering the procedure name is required.

TIP • Since the procedure name will be displayed in the [Procedure] field at the center of the main dialog box, enter an easily identifiable name.

Here, enter [3 side meas. visual inspection].



6) Change the input range in the [Range of cells] fields under [Excel settings].

Here, enter:

First: H11

Last: L14

7) Specify the [Data entry devices] settings.

The functions of the buttons for the [Data entry devices] field are as follows:

[+]: Adds device settings.

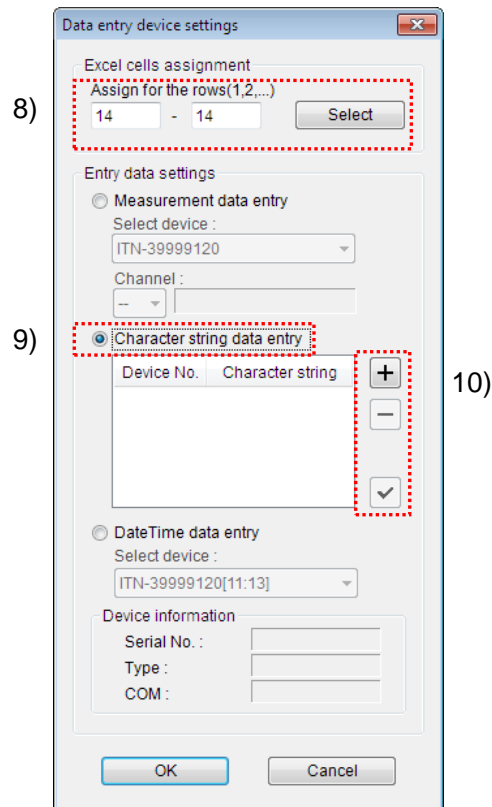
[-]: Deletes the device setting selected from the list.

[√]: Changes the device setting selected from the list.

Here, click the [+] button to switch to the [Data entry device settings] dialog box.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

- 8) Specify the settings in the [Excel cells assignment] field on the [Data entry device settings] dialog box.



In the [Excel cells assignment] field, specify columns (vertical) or rows (horizontal) according to the specification in the [Cell address assign rules] field on the main dialog box. Specify the rows here.

Here, enter "14" in both input fields to assign the device to one row, [Row 14].

- 9) In the [Entry data settings] field, select the entry data type.

The entry data types consist of measurement data input from the measuring tools (numeric data), and character string data input by pressing the foot switch.

Here, select [Character string data entry].

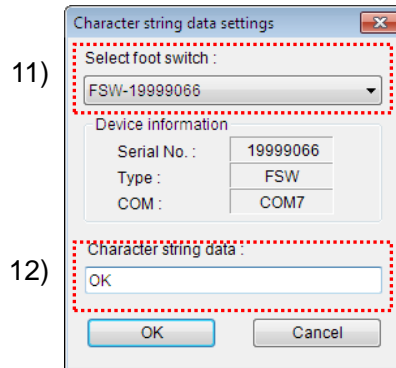
- 10) Specify the settings of the first device for inputting character strings.

The functions of the buttons for the [Entry data settings] field are as follows:

- [+]: Adds device settings.
- [-]: Deletes the device setting selected from the list.
- [✓]: Changes the device setting selected from the list.

Here, click the [+] button to switch to the [Character string data settings] dialog box.

-
- 11) Select the device to be assigned in the [Select foot switch] field of the [Character string data settings] dialog box.



Select the device to be assigned from the drop-down list.

Here, select the first device.

- 12) In the [Character string data] field, enter the character string to be input in the Excel cell.

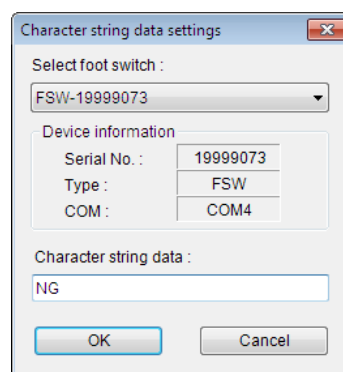
Here, enter [OK].

NOTE • If [Optional] was selected in the [Data entry application] field on the main dialog box, only ASCII code character strings (strings consisting of alphanumeric characters and some symbols that can be entered directly from the keyboard) can be input.

This completes the settings on the [Character string data settings] dialog box for the first device, so click the [OK] button.

- 13) Repeat steps "10) to 12)" to specify the settings of the second device for inputting character strings.

Here, specify settings so that [NG] is input from the second device.



5. MEASUREMENT DATA COLLECTION (ADVANCED)

14) Close [Data entry device settings].

The 'Data entry device settings' dialog box is shown. It has a title bar with a close button. The main area is divided into several sections:

- Excel cells assignment:** A section with a label 'Assign for the rows(1,2,...)' and a text input field containing '14 - 14'. A 'Select' button is to the right.
- Entry data settings:** A section with three radio buttons:
 - Measurement data entry:** Unselected. Below it is a 'Select device:' dropdown menu showing 'ITN-39999120' and a 'Channel:' dropdown menu showing '--'.
 - Character string data entry:** Selected. Below it is a table with two columns: 'Device No.' and 'Character string'. The table contains two rows: 'FSW-19999066' with 'OK' and 'FSW-19999073' with 'NG'. To the right of the table are '+' and '-' buttons and a checkmark button. Below the table is a scroll bar.
 - DateTime data entry:** Unselected. Below it is a 'Select device:' dropdown menu showing 'ITN-39999120[11:13]'.
- Device information:** A section with three labels and text input fields: 'Serial No.:' with '19999066', 'Type:' with 'FSW', and 'COM:' with 'COM7'.

At the bottom are 'OK' and 'Cancel' buttons.

This completes the settings on the [Data entry device settings] dialog box, so click the [OK] button.

15) Close [Change Procedure].

The 'Change Procedure' dialog box is shown. It has a title bar with a close button. The main area is divided into several sections:

- Procedure type:** A dropdown menu showing 'Sequential'.
- Procedure name:** A text input field containing '3 side meas. visual inspection'.
- Excel settings:** A section with two labels and text input fields: 'Workbook:' with 'C:\Mitutoyo\USB\ITPAK\Sample\ITPAK_Samr' and 'Worksheet:' with 'Sample_F1'. Below these is a 'Range of cells (specify the A1 reference style):' section with 'First:' set to 'H11' and 'Last:' set to 'L14'. A 'Select' button is to the right. Below this is a 'Move after return direction:' dropdown menu showing 'Down' and a 'Displacement intervals:' text input field containing '1'.
- Cell address assign rules:** A section with three radio buttons:
 - Unspecified:** Unselected.
 - Assign for the columns(A,B,...):** Unselected.
 - Assign for the rows(1,2,...):** Selected.
- FunctionKey Operation:** A section with three labels and dropdown menus: 'Data request:', 'Data cancel:', and 'Data skip:'.
- Data entry devices:** A section with a table with two columns: 'Device No.' and 'Assign rule'. The table contains two rows: 'ITN-39999120' with '11:13' and 'FSW-19999066 / FSW-19999073' with '14:14'. To the right of the table are '+' and '-' buttons and a checkmark button. Below the table is a scroll bar.
- Foot switch option:** A section with a table with three columns: 'Device No.', 'Function', and 'COM'. The table is currently empty. To the right of the table are '+' and '-' buttons and a checkmark button.

At the bottom are 'OK' and 'Cancel' buttons.

This completes the settings on the [Change Procedure] dialog box, so click the [OK] button.

16) Save the created setting file.

The screenshot shows the USB-ITPAK software window. The 'Setting File' field is highlighted with a red dashed box, displaying the path 'C:\Mitutoyo\USB-ITPAK\5-4.it2'. The 'Description' field shows 'Measure 3 sides. visual inspection.'.

Data entry application
☒ Excel
☐ Optional

Repetition option
☐ Repeat procedure
 Number of repeat : 1
 Move direction : Down
 Displacement intervals : 1

Error option
☒ Ignore the data collection error

Timer job option
☐ Enable
 Interval(hour:min:sec) : 0 : 0 : 5
 Count : 5

Procedure
 3 side meas. visual i...

Item	Content
Procedure type	Sequential
Data entry application	Excel
Excel settings:	
Workbook	C:\Mit...ITPAK_Sample_Form_1_GB.xls
Worksheet	Sample_F1
Range of cells	H11:L14
Move after return direction	Down
Displacement intervals	1
Cell address assign rules	Assign for the rows(1,2,...)
Foot switch option:	
FunctionKey Operation:	

Device No.	Device name	COM	Assigned cells	Status
ITN-39999120	ITN-39999120	COM9	11:13	Connect
FSW-19999066	FSW-19999066	COM7	14:14	Connect
FSW-19999073	FSW-19999073	COM4	14:14	Connect

Buttons: Add Procedure, Delete Procedure, Change Procedure

From the menu of the main dialog box, select [File], [Save As], and then save the file by giving it a name. When the file has been saved, the file name is displayed as a full path in the [Setting File] field.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

5.4.3 Measurement

1) Open [Setting File].

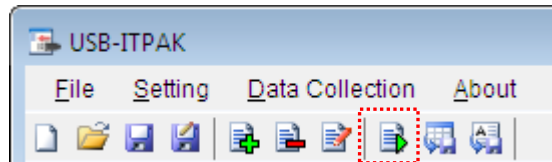
- TIP** • If starting measurement immediately after specifying the settings in "5.4.2 Setting", the setting file is already opened. In this case, skip step "1)".

From the menu of the main dialog box, select [File] and then [Open], or open [Setting file] from [Recent files].

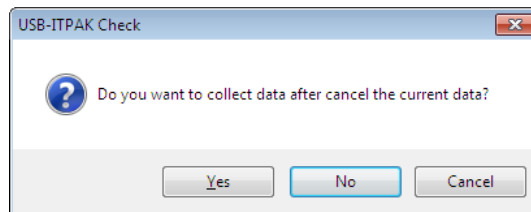
2) Open the data collection dialog box.

- IMPORTANT** • In USB-ITPAK, following data collection, the Excel file to which the data was input is saved through overwriting under the existing file name. To use the original Excel file later, back it up beforehand.

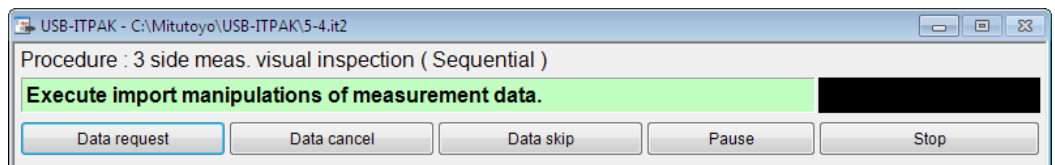
From the menu of the main dialog box, select [Data Collection] and then [Start], or click the icon shown below.



When data collection starts, the message [Do you want to collect data after cancel the current data?] is displayed. Click [Yes] to clear the existing data or [No] not to.



The data collection dialog box is displayed and data collection can now be performed.



- TIP** • If you click [No] for the message [Do you want to collect data after cancel the current data?], the data collection dialog box will be paused. In this case, resume the data collection. For details, refer to "6.14.1 [Pause/Resume] button" and "8.2.5 To resume the Excel data collection previously paused".

3) Perform data collection.

During data collection, the cell to which data will be input next is highlighted in green.

TIP • The inspection table above is shown with the [Inspection item] and [Permissible value] cells filled.

The cells from [row 11] to [row 13] in the above inspection table are those input from the measurement data input device. Input data from the measuring tools through one of the following operations:

- (1) Pressing the DATA switch on the measuring tool.
- (2) Pressing the DATA switch if USB-ITN has one.

TIP • When using IT-016U, data input can be performed using the DATA switch equipped with IT-016U or the foot switch connected to IT-016U.

- (3) Clicking the [Data request] button on the data collection dialog box.

The cells of [row 14] in the above inspection table are those input from the character string data input device. Press the foot switch to which the characters to be input are assigned.

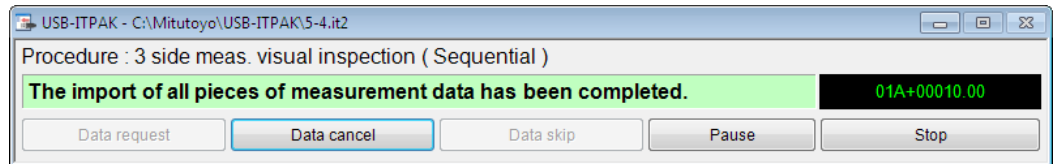
To cancel data that has been input, click the [Data cancel] button on the data collection dialog box. The data in the entry cell is canceled and the previous cell is highlighted.

To skip the current data entry cell without inputting data, click the [Data skip] button on the data collection dialog box. The next cell is highlighted.

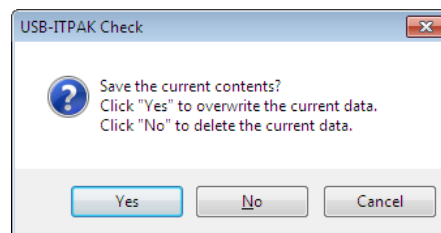
5. MEASUREMENT DATA COLLECTION (ADVANCED)

4) End data collection and save the results.

Once all the data has been input, a completion message is displayed on the data collection dialog box.



Click the [Stop] button on the data collection dialog box. The following message is displayed.



[Yes]: The Excel file to which data was input is saved through overwriting under the existing file name.

[No]: The Excel file is not overwritten and the data that was input is deleted.

[Cancel]: The message dialog box is closed and the data collection dialog box is displayed.

Click the [Yes] button. The Excel file is saved through overwriting and the dialog box switches to the main dialog box.

This completes data collection for sequential measurement using a foot switch for character input.

5.5 Data Input to an Optional Application

5.5.1 Overview

This section explains how to input measurement data to an optional application.

By using this function, it is possible to input measurement data to an optional application in the same way as through regular keyboard input.

NOTE • Data input to an optional application is possible for all measurement methods, i.e., sequential, batch, and individual measurement.

NOTE • During data input to an optional application, the measurement data is input to the current position of the cursor in the currently active application. Unlike the case when Excel is selected as the data input application, the input position cannot be specified in the setting file.

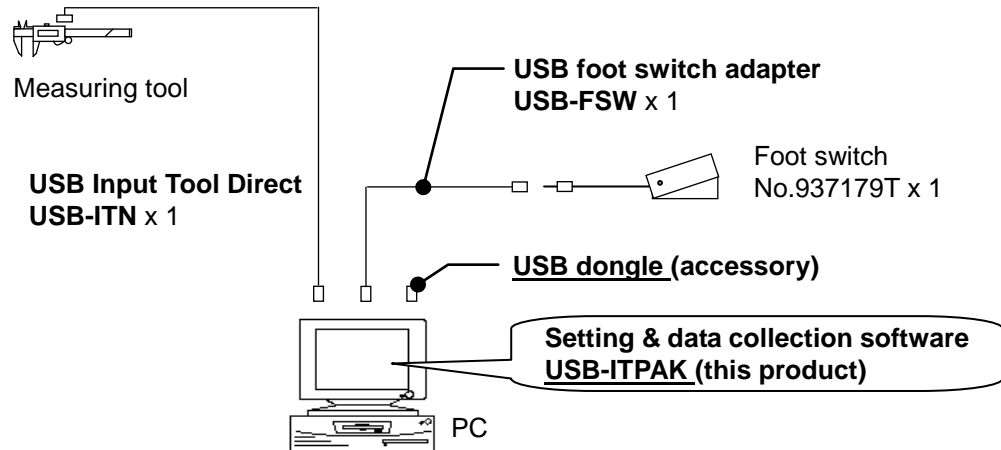
The DATA switch of the measuring tools, the [Data request] button of USB-ITPAK, and the foot switch can be used when collecting measurement data.

NOTE • A foot switch can be used only to request data, not to cancel or skip data.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

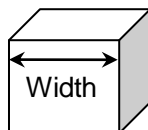
1) Connection

In the explanation in this section, one caliper is connected to USB-ITN and one foot switch is connected to USB-FSW. The connection diagram is shown below.



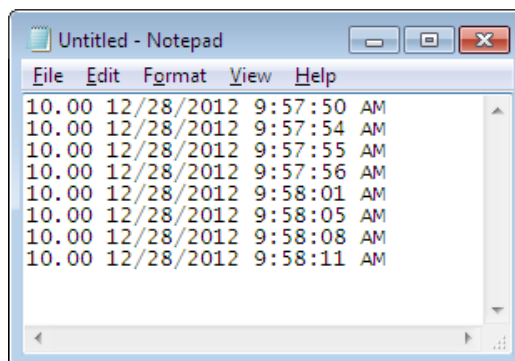
2) Workpiece for measurement

The following workpiece is used in the explanation. The measurement location is the width of a cube.



3) Measurement

In the explanation in this section, "Notepad", which is supplied as standard with Windows, is used as the optional application. The following shows the appearance during data collection.



The workpieces are sequentially measured in this procedure.

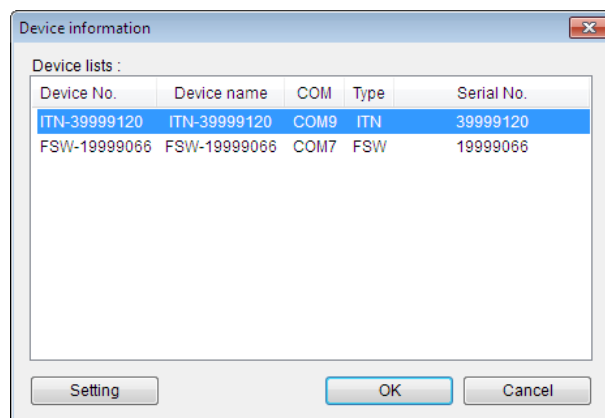
The following describes how to set up the measurement procedure, perform measurement, and save the results.

5.5.2 Setting

1) Check the device information.

NOTE • USB-ITPAK loads the information of connected devices at startup. Therefore, connect all the devices to be used before starting up USB-ITPAK.

From the menu of the main dialog box, select [Settings] and then [Device information]. This opens the [Device information] dialog box, which allows you to check the devices that are connected to the PC.



If you do not want to change the device number or device name, click the [Cancel] button to return to the main dialog box.

If you want to change a device number or device name, select the device, and then click the [Setting] button.



Click the [OK] button if you change any settings.

NOTE • In the procedure created from step "2)", the device number is used to specify the device to be used. If you change the number, revise all the setting files that use it.

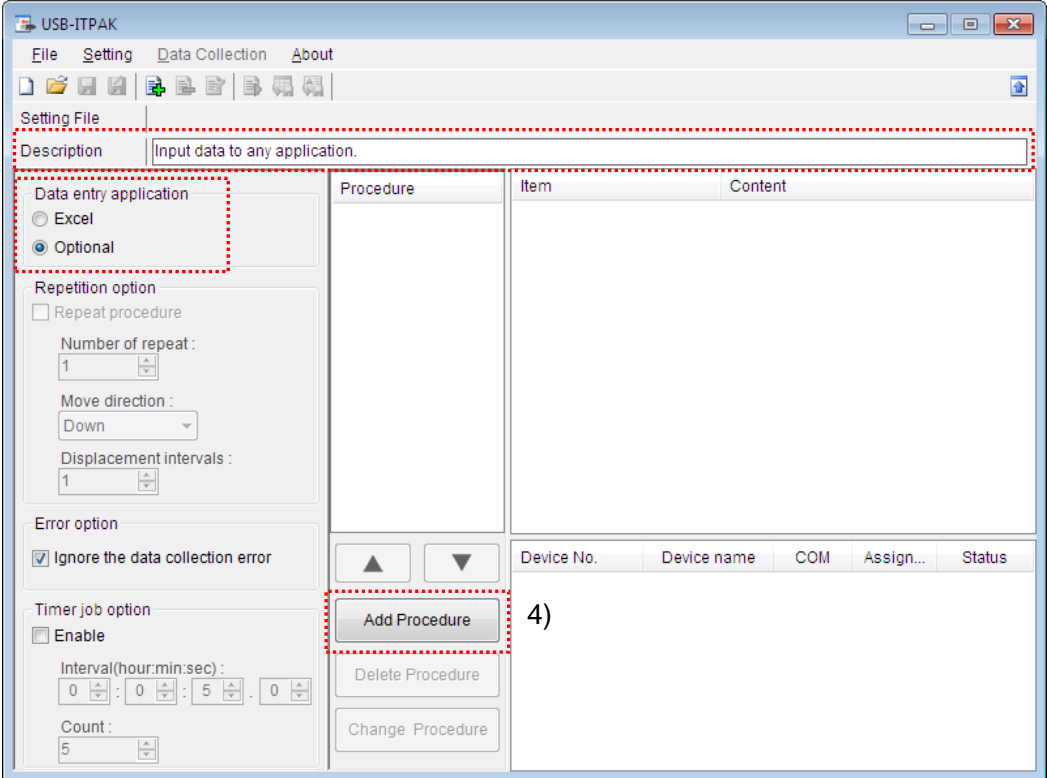
TIP • If multiple units are connected, specify settings for each.

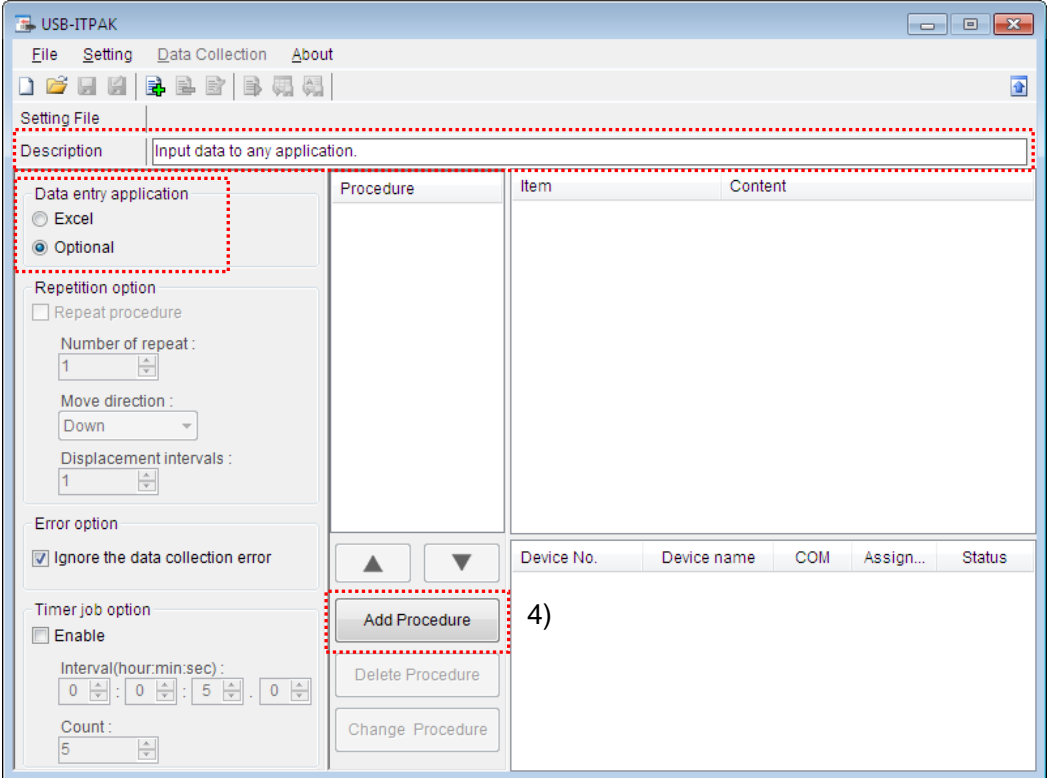
5. MEASUREMENT DATA COLLECTION (ADVANCED)

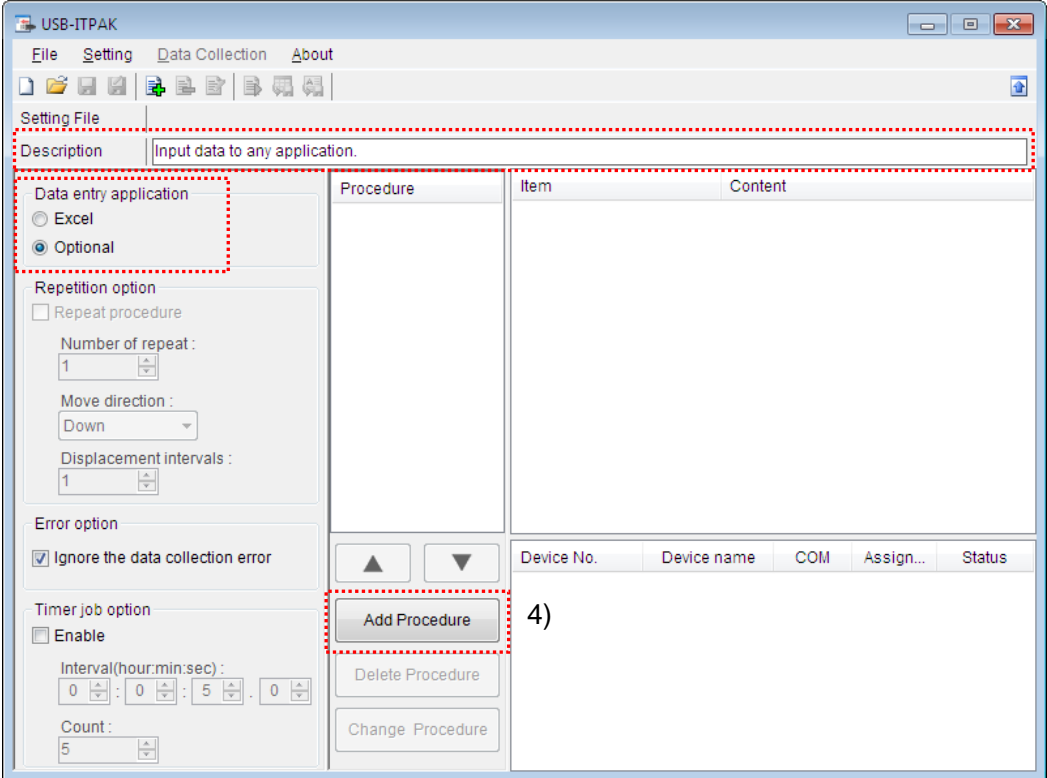
TIP • If performing measurement using existing setting files, skip this section and refer to "5.5.3 Measurement".

2) Enter information about the setting file in the [Description] field.

Enter a description of the setting file. This field may be left blank.

2) 

3) 

4) 

Procedure	Item	Content

Device No.	Device name	COM	Assign...	Status

3) Select [Data entry application].

Select [Optional] in the [Data entry application] field on the main dialog box.

4) Add a procedure to the setting file.

Click the [Add Procedure] button on the main dialog box.

5) Select a procedure type for the [Procedure type] field.

The screenshot shows the 'Add procedure' dialog box with the following elements and annotations:

- 5)** Points to the 'Procedure type' dropdown menu, which is currently set to 'Sequential'.
- 6)** Points to the 'Procedure name' text input field.
- 7)** Points to the 'Control Code' dropdown menu, which is currently set to 'Enter'.
- 8)** Points to the 'Data format' dropdown menu, which is currently set to 'Numeric form'.
- 9)** Points to the 'Data entry devices' table, which contains one row with 'Device No.' and 'COM'.

The dialog box also includes a 'Foot switch option' section at the bottom right, an 'Add the date and time data' checkbox, and 'Date and Time' and 'Separator' dropdowns. The 'OK' and 'Cancel' buttons are at the bottom.

Check that [Sequential] is selected for the procedure type, and if not, select [Sequential] from the drop-down list.

6) Enter a name in the [Procedure name] field.

Entering the procedure name is required.

TIP • Since the procedure name will be displayed in the [Procedure] field at the center of the main dialog box, enter an easily identifiable name.

Here, enter [Optional data input].

7) Select [Control Code] in the [Data settings] field.

Select the code to be added after data input from [Unspecified], [Enter], [Up], [Down], [Right], [Left], and [Tab].

Here, select [Enter].

5. MEASUREMENT DATA COLLECTION (ADVANCED)

8) Select [Data format] in the [Data settings] field.

Select the format of the data to be input to the application.

The data formats below can be selected. In the example used in this explanation, 32.14 mm was measured using a measuring tool on channel 1 and with COM number 13.

- [Numeric form]:

Only the measurement data is input.

Example: "32.14"

- [Command form]:

The channel No. and measurement data are input.

Example: "01A+00032.14"

- [COM No. + Command form]:

The COM number (3 digits), channel number and measurement data are input.

Example: "01301A+00032.14"

Here, select [Numeric form].

9) Specify the [Data entry devices] settings.

The functions of the buttons for the [Data entry devices] field are as follows:

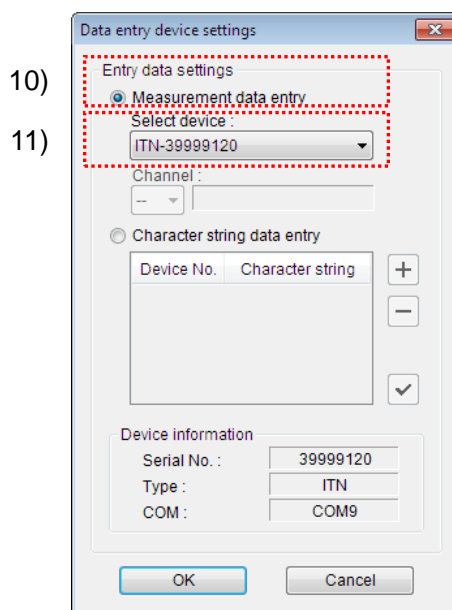
[+]: Adds device settings.

[-]: Deletes the device setting selected from the list.

[√]: Changes the device setting selected from the list.

Here, click the [+] button to switch to the [Data entry device settings] dialog box.

10) In the [Entry data settings] field, select the entry data type.



The entry data types consist of measurement data input from the measuring tools (numeric data), and character string data input by pressing the foot switch.

TIP • For details about the method for inputting character string data using a foot switch, refer to "5.4 Character Input Using Foot Switch".

Here, select the [Measurement data entry] radio button.

11) In the [Select device] field, select the device to be assigned.

From the drop-down list, select the device to be assigned.

This completes the settings on the [Data entry device settings] dialog box, so click the [OK] button.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

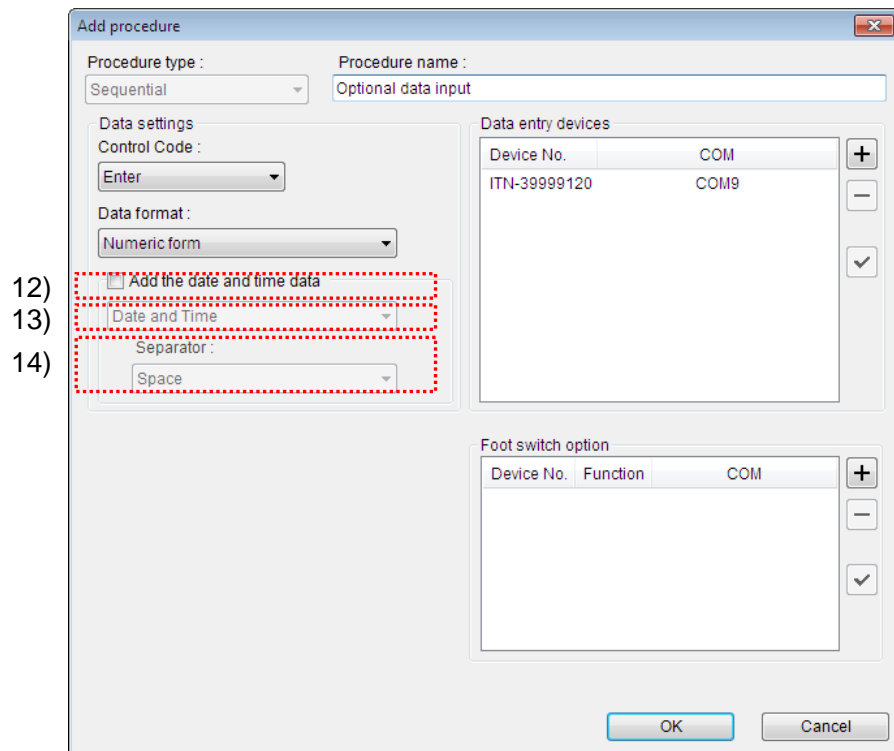
12) Set the date and time data input.

The measurement data collection with date and time is available when the date and time data is set to the measurement data.

Select [Add the date and time data] when adding the date and time data.

Items 13) and 14) will be activated for selection.

TIP • For the procedure type of date and time data input, [Sequential], [Batch] and [Individual] are available to a desired application.



13) Select [Date and Time].

Select the format of the date and time data added to the measurement data to be input to an application.

The following describes the available formats of the date and time data. In the example used in this explanation, 32.14 mm was measured using a measuring tool.

- [Date and Time]
The date and time will be added.
Example: 32.14 2013/01/23 12:34:56
- [Date]
Only the date will be added.
Example: 32.14 2013/01/23
- [Time]
Only the time will be added.
Example: 32.14 12:34:56

Here, select [Date and Time].

14) Select [Separator].

Select [Space], [Tab], [Comma (,)] or [Semicolon (;)] for the separator between the measurement data and the date and time data.

Here, select [Space].

NOTE • If [Add the date and time data] is selected and the following are selected:

[Numeric form] for [Data format]

[Space], [Comma (,)] or [Semicolon (;)] for [Separator]

When selecting [Excel] for an application to input data, and the measurement data to be input is a negative value (the minus-sign ("-") is added to the top), the following error message is displayed in Excel.

"The formula you typed contains an error."

When selecting [Excel] for an application to input data, perform the following remedies.

- Select [Tab] for [Separator].
 - In advance, select "Text" for "Format Cells" in Excel.
-

TIP • For details, refer to "6.12 Adding and Changing Procedures (Optional)".

15) Close [Add procedure].

Device No.	COM
ITN-39999120	COM9

Device No.	Function	COM

This completes the settings on the [Add procedure] dialog box, so click the [OK] button.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

16) Save the created setting file.

USB-ITPAK

File Setting Data Collection About

Setting File C:\Mitutoyo\USB-ITPAK\5-5.it2

Description Input data to any application.

Data entry application

☐ Excel

☒ Optional

Repetition option

☐ Repeat procedure

Number of repeat : 1

Move direction : Down

Displacement intervals : 1

Error option

☒ Ignore the data collection error

Timer job option

☐ Enable

Interval(hour:min:sec) : 0 : 0 : 5

Count : 5

Procedure

Optional data input

Item

Content

Procedure type Sequential

Data entry application Optional

Control Code Enter

Data format Numeric form

Add the date and time data Date and Time

Foot switch option:

Device No. Device name COM Status

ITN-39999120 ITN-39999120 COM9 Connect

Add Procedure

Delete Procedure

Change Procedure

From the menu of the main dialog box, select [File], [Save As], and then save the file by giving it a name. When the file has been saved, the file name is displayed as a full path in the [Setting File] field.

5.5.3 Measurement

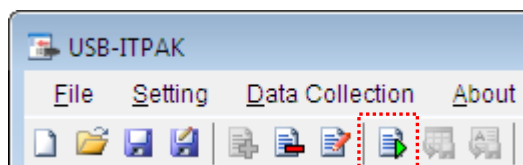
1) Open [Setting File].

TIP • If starting measurement immediately after specifying the settings in "5.5.2 Setting", the setting file is already opened. In this case, skip step "1)".

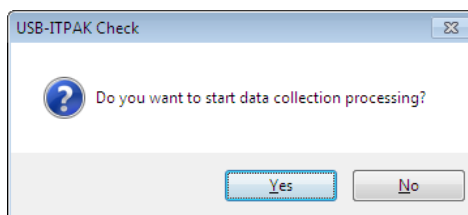
From the menu of the main dialog box, select [File] and then [Open], or open [Setting file] from [Recent files].

2) Open the data collection dialog box.

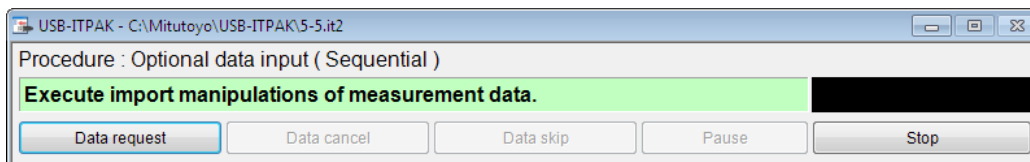
From the menu of the main dialog box, select [Data Collection] and then [Start], or click the icon shown below.



When the [Do you want to start data collection processing?] message is displayed, click [Yes].



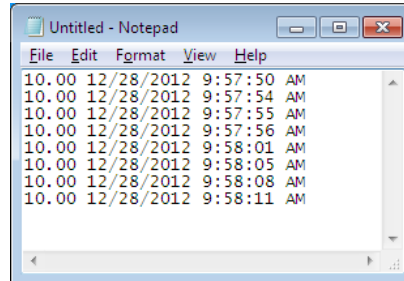
The data collection dialog box is displayed and data collection can now be performed.



5. MEASUREMENT DATA COLLECTION (ADVANCED)

- 3) Open the application to which the measurement data is to be input and start data collection.

Open "Notepad", which is supplied as standard with Windows, and make it the active (currently selected) application.

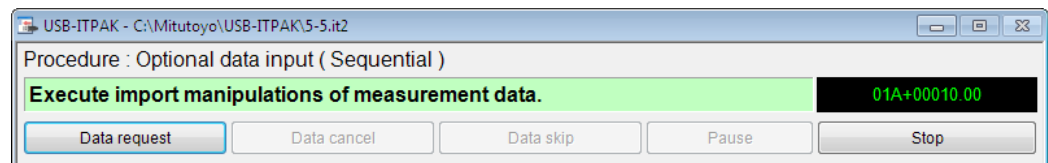


Input data from the measuring tool through one of the following operations:

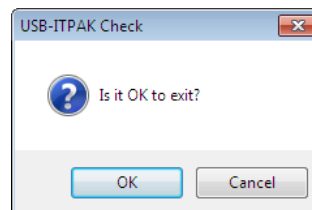
- (1) Pressing the DATA switch on the measuring tool.
- (2) Pressing the DATA switch if USB-ITN has one.
- (3) Clicking the [Data request] button on the data collection dialog box.

TIP • When using IT-016U, data input can be performed using the DATA switch equipped with IT-016U or the foot switch connected to IT-016U.

- 4) End data collection.



Click the [Stop] button on the data collection dialog box.



Click the [OK] button. The dialog box switches to the main dialog box.

NOTE • The function to input data to an optional application does not allow saving the result. Save the measurement data using the save function of the application.

This completes data collection to an optional application.

5.6 DateTime data entry (When using Excel)

5.6.1 Overview

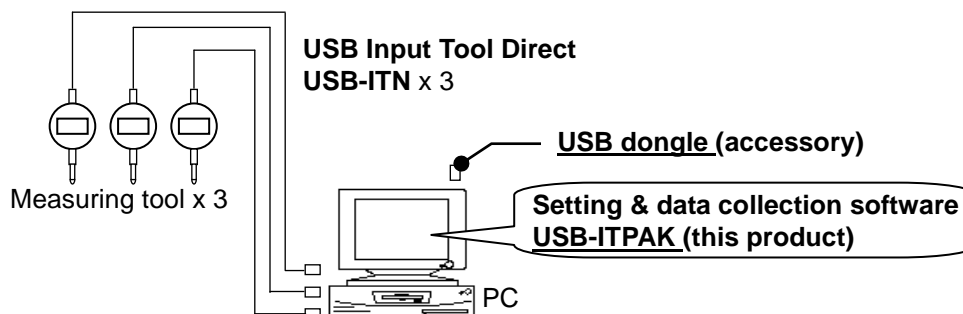
This section explains how to input the date and time data together with the measurement data.

NOTE • For details about the measurement procedures in which the date and time data can be input, refer to the following table.

Procedure type	Cell address assign rules	Availability
Sequential	• Unspecified	—
	• Assign for the columns(A,B,...)	✓
	• Assign for the rows(1,2,...)	✓
Batch	• Unspecified	—
	• Assign for the columns(A,B,...)	✓
	• Assign for the rows(1,2,...)	✓
Individual		—

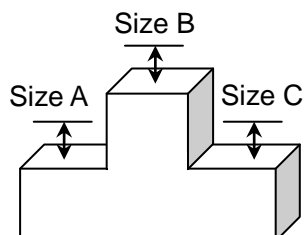
1) Connection

In the example used in this section, three indicators are connected to USB-ITN. The connection diagram is shown below.



2) Workpiece for measurement

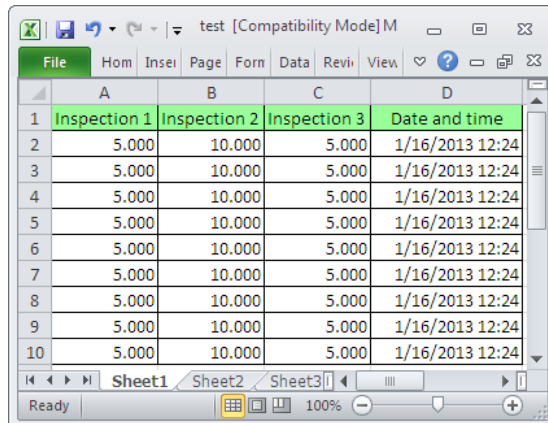
The following workpiece is used in the explanation. Three indicators are used and measurement is done with measuring jigs. "Size A", "Size B", and "Size C", which are shown in the figure below, are measured.



5. MEASUREMENT DATA COLLECTION (ADVANCED)

3) Measurement

The image of the inspection table upon completion of data collection is shown below.



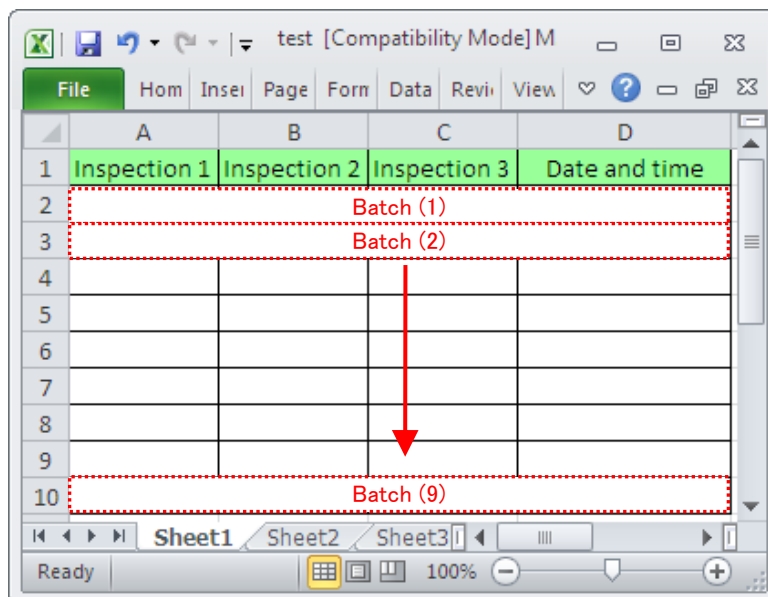
The screenshot shows an Excel spreadsheet with the following data:

	A	B	C	D
1	Inspection 1	Inspection 2	Inspection 3	Date and time
2	5.000	10.000	5.000	1/16/2013 12:24
3	5.000	10.000	5.000	1/16/2013 12:24
4	5.000	10.000	5.000	1/16/2013 12:24
5	5.000	10.000	5.000	1/16/2013 12:24
6	5.000	10.000	5.000	1/16/2013 12:24
7	5.000	10.000	5.000	1/16/2013 12:24
8	5.000	10.000	5.000	1/16/2013 12:24
9	5.000	10.000	5.000	1/16/2013 12:24
10	5.000	10.000	5.000	1/16/2013 12:24

The measurement procedure is as follows: measure three positions on a workpiece at one time and then output the input data in the columns "Inspection 1", "Inspection 2" and "Inspection 3" of an Excel sheet.

Then, measure other three positions on the same workpiece at one time and then output the input data in the subsequent columns of "Inspection 1", "Inspection 2" and "Inspection 3" of the same Excel sheet.

Continue the measurement on the workpiece in the same procedure.



The screenshot shows an Excel spreadsheet with the following data and annotations:

	A	B	C	D
1	Inspection 1	Inspection 2	Inspection 3	Date and time
2	Batch (1)			
3	Batch (2)			
4				
5				
6				
7				
8				
9				
10	Batch (9)			

A red arrow points from the "Batch (2)" label in row 3 to the "Batch (9)" label in row 10, indicating the continuation of the measurement procedure.

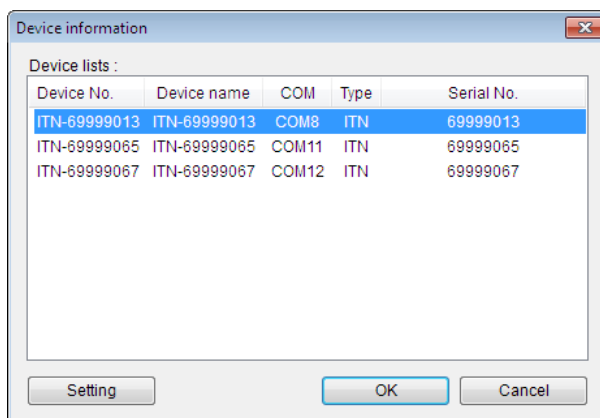
The following describes how to set up the measurement procedure, perform measurement, and save the results.

5.6.2 Setting

1) Check the device information.

NOTE • USB-ITPAK loads the information of connected devices at startup. Therefore, connect all the devices to be used before starting up USB-ITPAK.

From the menu of the main dialog box, select [Settings] and then [Device information]. This opens the [Device information] dialog box, which allows you to check the devices that are connected to the PC.



If you do not want to change the device number or device name, click the [Cancel] button to return to the main dialog box.

If you want to change a device number or device name, select the device, and then click the [Setting] button.



Click the [OK] button if you change any settings.

NOTE • In the procedure created from step "2)", the device number is used to specify the device to be used. If you change the number, revise all the setting files that use it.

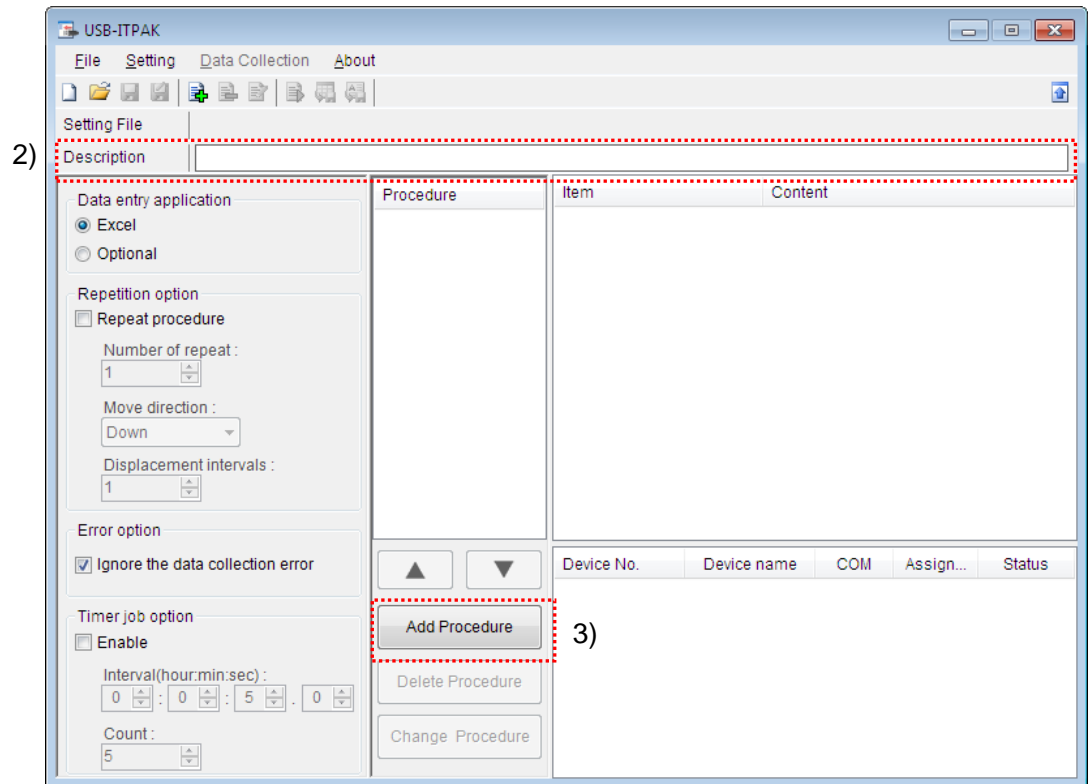
TIP • If multiple units are connected, specify settings for each.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

- TIP** • If performing measurement using existing setting files, skip this section and refer to "5.6.3 Measurement".

2) Enter information about the setting file in the [Description] field.

Enter a description of the setting file. This field may be left blank.



3) Add a procedure to the setting file.

Click the [Add Procedure] button on the main dialog box.

4) Select a procedure type for the [Procedure type] field.

4) Procedure type : Batch

5) Procedure name :

6) Excel settings

7) Workbook : ...

8) Worksheet :

9) Range of cells (specify the A1 reference style) :

10) First : Last : Select

11) Move after return direction : Right

Displacement intervals : 1

Cell address assign rules

☐ Unspecified

☒ Assign for the columns(A,B,...)

☐ Assign for the rows(1,2,...)

FunctionKey Operation

Data request : Data cancel : Data skip :

Data entry devices

Device No.	Assign rule	COM

Foot switch option

Device No.	Function	COM

OK Cancel

Check that [Batch] is selected as the procedure type, and if not, select [Batch] from the drop-down list.

5) Enter a name in the [Procedure name] field.

Entering the procedure name is required.

TIP • Since the procedure name will be displayed in the [Procedure] field at the center of the main dialog box, enter an easily identifiable name.

Here, enter [3 position batch measurement + date and time input].

6) Specify an Excel file in the [Workbook] field under [Excel settings].

Enter the workbook name of the Excel file to which the measured data is to be input.

The file can be selected from the [Open] dialog box by clicking the [...] button.

Here, select the following file.

C:\Mitutoyo\USB-ITPAK\Sample\test.xls

IMPORTANT • Refer to "5.6.1 Overview" and create the file mentioned above.

- If you want to use a file other than the sample inspection table file, create an inspection file using Excel before starting up USB-ITPAK. Inspection table files can be saved to any folder. Save the inspection table file to a folder location that will be easy to manage.

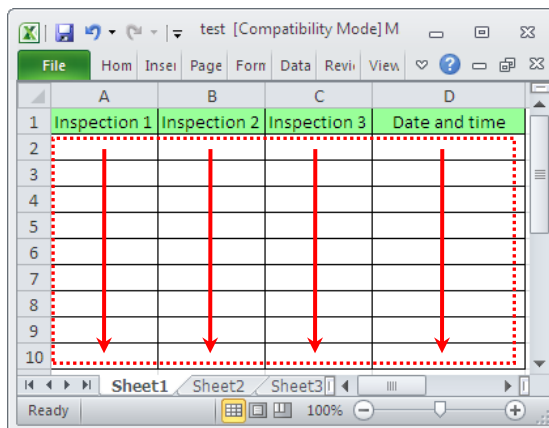
7) Select a worksheet for the [Worksheet] field under [Excel settings].

5. MEASUREMENT DATA COLLECTION (ADVANCED)

Select the worksheet name to be included in the workbook of step "6)" from the drop-down list.

Here, select [Sample_F3].

- 8) Enter the input range in the [Range of cells] fields under [Excel settings].



To specify the area indicated by the dot-line in the above inspection table as the input cell range, enter:

First: A2

Last: D10

- 9) Select the desired direction for the [Move after return direction] field under [Excel settings].

During measurement using USB-ITPAK, once data is input from the measuring tools, the measurement data is input to the current cell and then the entry point (cell) automatically moves to the next cell.

In the inspection table example shown above, select [Down].

- 10) Specify the [Displacement intervals] under [Excel settings].

Specify the interval for the cell movement specified in step 9). Specifying "1" results in movement to the next cell. Specifying "2" results in movement to the cell after the next.

In the inspection table example above, specify "1".

- 11) Select an option under [Cell address assign rules].

In USB-ITPAK, the measuring items can be assigned to columns (vertical) or rows (horizontal) of the inspection table worksheet.

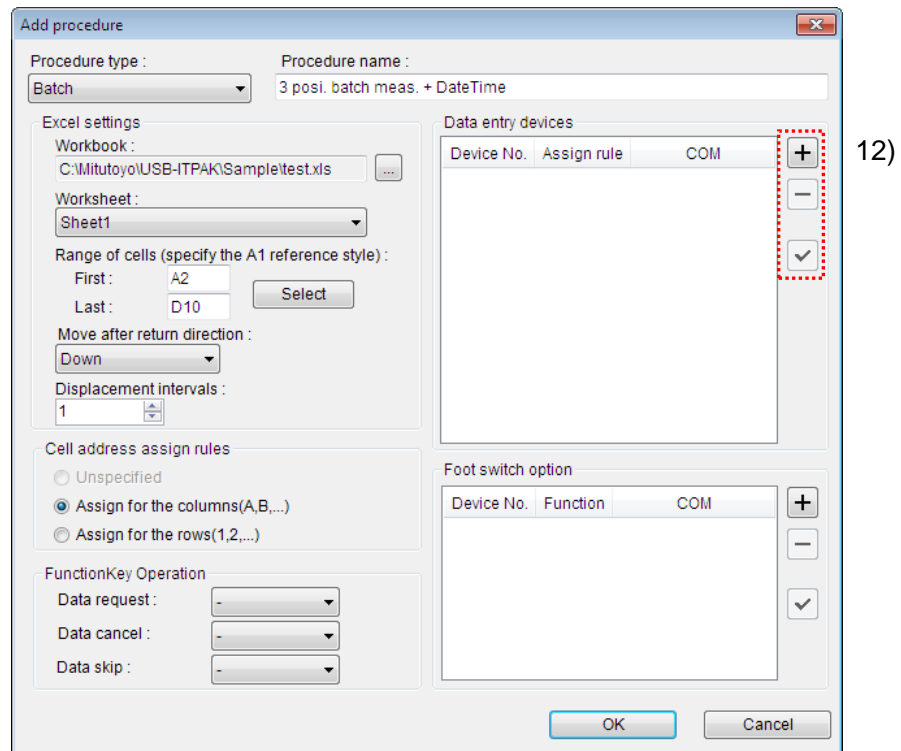
In the inspection table example above, the measuring items are assigned to respective columns, so select [Assign for the columns (A, B...)].

12) Specify the [Data entry devices] settings for the first device.

The functions of the buttons for the [Data entry devices] field are as follows:

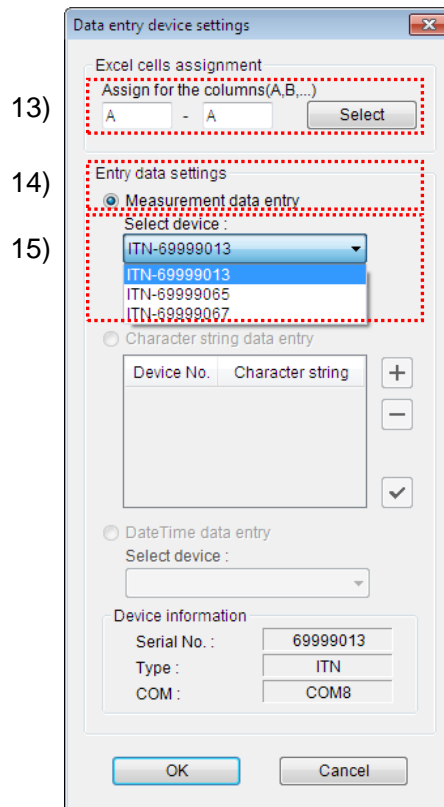
- [+]: Adds device settings.
- [-]: Deletes the device setting selected from the list.
- [✓]: Changes the device setting selected from the list.

Here, click the [+] button to switch to the [Data entry device settings] dialog box.



5. MEASUREMENT DATA COLLECTION (ADVANCED)

- 13) Specify the settings in the [Excel cells assignment] field on the [Data entry device settings] dialog box.



In the [Excel cells assignment] field, specify columns (vertical) or rows (horizontal) according to the specification in step 11). Specify the columns here.

There are four input areas in the previously described inspection table. Here, the first device is assigned to the A column, which is the first column, so enter "A" in both fields.

- 14) In the [Entry data settings] field, select the entry data type.

The entry data types consist of measurement data input from the measuring tools (numeric data), and character string data input by pressing the foot switch.

TIP • For details about the method for inputting character string data using a foot switch, refer to "CHAPTER 5 MEASUREMENT DATA COLLECTION (ADVANCED)".

Here, select the [Measurement data entry] radio button.

- 15) In the [Select device] field, select the device to be assigned.

From the drop-down list, select the device to be assigned.

Here, select the first device.

This completes the settings on the [Data entry device settings] dialog box for the first device, so click the [OK] button.

- 16) Repeat 12) and switch to the [Data entry device settings] dialog box to select the date and time input settings.

19)

17)

18)

- 17) In the [Entry data settings] field, select the [DateTime data entry].
- 18) In the [Select device:] field, select the device to add the date and time data.
- From the drop-down list, select the device to be assigned.
- Here, select the first device.
- 19) In the [Excel cells assignment] field, specify columns (vertical) or rows (horizontal) according to the specification in step 11). Specify the columns here.
- Input "D" in the entry field to assign the date and time data to the [D] column.
- The date and time data input setting is finished at this step. Click the [OK] button.

IMPORTANT • Before the date and time data setting, one or more data entry devices must be set for [Data entry devices].

5. MEASUREMENT DATA COLLECTION (ADVANCED)

- 20) Repeat steps "12) to 15)" to specify the [Data entry device] settings for the second device.

Here, assign the second device to the B column.

- 21) Repeat steps "12) to 15)" to specify the [Data entry device] settings for the third device.

Here, assign the third device to the C column.

20)

Data entry device settings

Excel cells assignment
Assign for the columns(A,B,...)
B - B Select

Entry data settings
☒ Measurement data entry
Select device :
ITN-69999065
ITN-69999065
ITN-69999067
☐ Character string data entry
Device No. Character string + -
☒
☐ DateTime data entry
Select device :
Device information
Serial No. : 69999065
Type : ITN
COM : COM11
OK Cancel

21)

Data entry device settings

Excel cells assignment
Assign for the columns(A,B,...)
C - C Select

Entry data settings
☒ Measurement data entry
Select device :
ITN-69999067
ITN-69999067
--
☐ Character string data entry
Device No. Character string + -
☒
☐ DateTime data entry
Select device :
Device information
Serial No. : 69999067
Type : ITN
COM : COM12
OK Cancel

22) Close [Add procedure].

Change Procedure

Procedure type : Batch Procedure name : 3 posi. batch meas. + DateTime

Excel settings

Workbook : C:\Mitutoyo\USB-ITPAK\Sample\test.xls

Worksheet : Sheet1

Range of cells (specify the A1 reference style) :
First : A2 Last : D10 [Select]

Move after return direction : Down

Displacement intervals : 1

Cell address assign rules

☐ Unspecified
☒ Assign for the columns(A,B,...)
☐ Assign for the rows(1,2,...)

FunctionKey Operation

Data request : -
Data cancel : -
Data skip : -

Data entry devices

Device No.	Assign rule	COM
ITN-69999013	A:A	COM8
ITN-69999013	D:D	DateTime[A:A]
ITN-69999065	B:B	COM11
ITN-69999067	C:C	COM12

Foot switch option

Device No.	Function	COM
------------	----------	-----

OK Cancel

This completes the settings on the [Add procedure] dialog box, so click the [OK] button.

IMPORTANT • Check whether the Excel cells are correctly assigned without duplication.

NOTE • For batch measurement, the date and time data can be added to only one device.

- If the data entry device information including the date and time data input is deleted from the list [Data entry devices], the setting information on the date and time data input will also be deleted.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

23) Save the created setting file.

The screenshot shows the USB-ITPAK software window. The 'Setting File' field is highlighted with a red dashed box and contains the path 'C:\Mitutoyo\USB-ITPAK\5-6.it2'. The 'Description' field contains 'Measure 3 positions in batch + Date and Time input'.

Data entry application

☒ Excel
☐ Optional

Repetition option

☐ Repeat procedure

Number of repeat : 1

Move direction : Down

Displacement intervals : 1

Error option

☒ Ignore the data collection error

Timer job option

☐ Enable

Interval(hour:min:sec) : 0 : 0 : 5

Count : 5

Procedure

3 position batch me...

Item

Item	Content
Procedure type	Batch
Data entry application	Excel
Excel settings:	
Workbook	C:\Mitutoyo\USB-ITPAK\Sample\test.xls
Worksheet	Sheet1
Range of cells	A2:D10
Move after return direction	Down
Displacement intervals	1
Cell address assign rules	Assign for the columns(A,B,...)
Foot switch option:	
FunctionKey Operation:	

Device No. **Device name** **COM** **Assigned cells** **Status**

ITN-69999013	ITN-69999013	COM8	A:A	Connect
ITN-69999013	ITN-69999013	DateTime	D:D	Connect
ITN-69999065	ITN-69999065	COM11	B:B	Connect
ITN-69999067	ITN-69999067	COM12	C:C	Connect

Buttons: Add Procedure, Delete Procedure, Change Procedure

From the menu of the main dialog box, select [File], [Save As], and then save the file by giving it a name. When the file has been saved, the file name is displayed as a full path in the [Setting File] field.

5.6.3 Measurement

1) Open [Setting File].

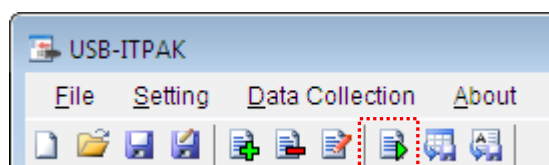
TIP • If starting measurement immediately after specifying the settings in "5.6.2 Setting", the setting file is already opened. In this case, skip step "1)".

From the menu of the main dialog box, select [File] and then [Open], or open [Setting file] from [Recent files].

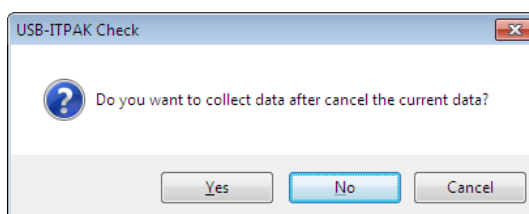
2) Open the data collection dialog box.

IMPORTANT • In USB-ITPAK, following data collection, the Excel file to which the data was input is saved through overwriting under the existing file name. To use the original Excel file later, back it up beforehand.

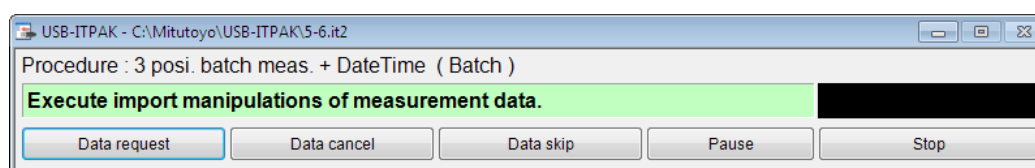
From the menu of the main dialog box, select [Data Collection] and then [Start], or click the icon shown below.



When data collection starts, the message [Do you want to collect data after cancel the current data?] is displayed. Click [Yes] to clear the existing data or [No] not to.



The data collection dialog box is displayed and data collection can now be performed.

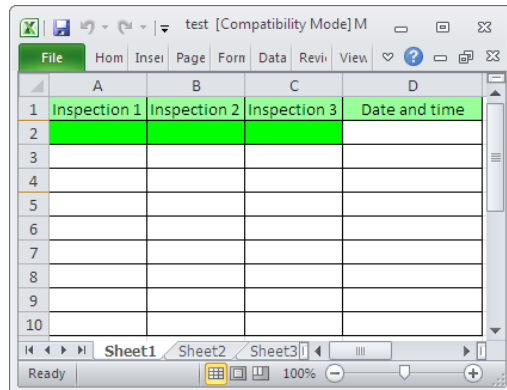


TIP • If you click [No] for the message [Do you want to collect data after cancel the current data?], the data collection dialog box will be paused. In this case, resume the data collection. For details, refer to "6.14.1 [Pause/Resume] button" and "8.2.5 To resume the Excel data collection previously paused".

5. MEASUREMENT DATA COLLECTION (ADVANCED)

3) Perform data collection.

During data collection, the cell to which data will be input next is highlighted in green.



Click the [Data request] button on the data collection dialog box and perform data input from the measuring tools.

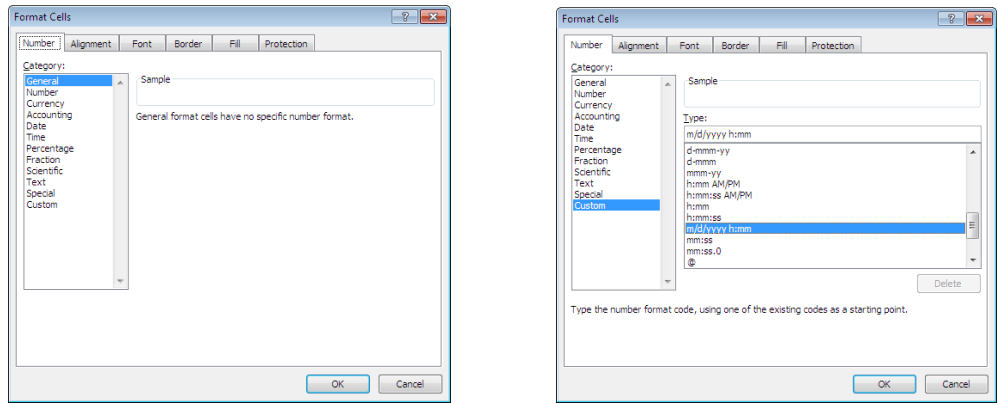
To cancel data that has been input, click the [Data cancel] button on the data collection dialog box. The data in the entry cell is canceled and the previous cell is highlighted.

To skip the current data entry cell without inputting data, click the [Data skip] button on the data collection dialog box. The next cell is highlighted.

-
- IMPORTANT**
- During batch measurement, data is collected all at once, so data cannot be collected through the following operations:
 - (1) Pressing the DATA switch on the measuring tool
 - (2) Pressing the DATA switch if USB-ITN has one
 - (3) When using IT-016U, press the DATA switch.
 - (4) When using IT-016U, operate the foot switch connected to IT-016U.
-

NOTE • When the date and time data is input to a cell for which [General] is selected for [Category] of the [Number] tab in the [Format Cells] dialog box in Excel, [Category] and [Type] for the cells including the date and time data input will be changed to "Custom" and "m/d/yyyy h:mm" respectively.

Therefore, if a value other than the date and time data (such as the measurement data obtained from a measuring tool) is input to a cell including the date and time data input, the display format of the cell may not be correct.

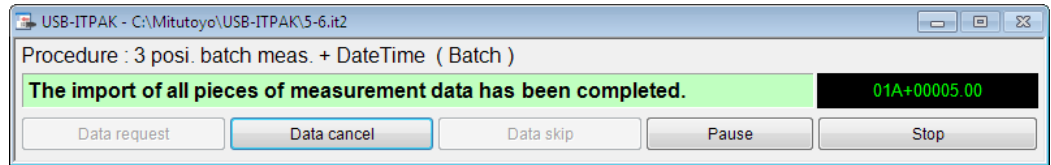


<Display format before the date and time is input> <Display format after the date and time is input>

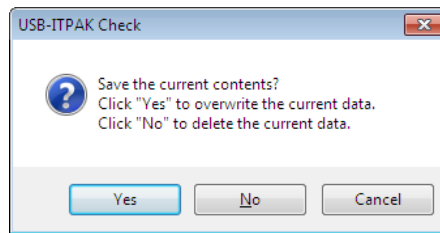
5. MEASUREMENT DATA COLLECTION (ADVANCED)

4) End data collection and save the results.

Once all the data has been input, a completion message is displayed on the data collection dialog box.



Click the [Stop] button on the data collection dialog box. The following message is displayed.



[Yes]: The Excel file to which data was input is saved through overwriting under the existing file name.

[No]: The Excel file is not overwritten and the data that was input is deleted.

[Cancel]: The message dialog box is closed and the data collection dialog box is displayed.

Click the [Yes] button. The Excel file is saved through overwriting and the dialog box switches to the main dialog box.

This completes data collection.

5.7 Timer Job

5.7.1 Overview

This section explains how to use the timer job option.

By using the timer job option, the automatic input of the measurement data is available in the specified interval.

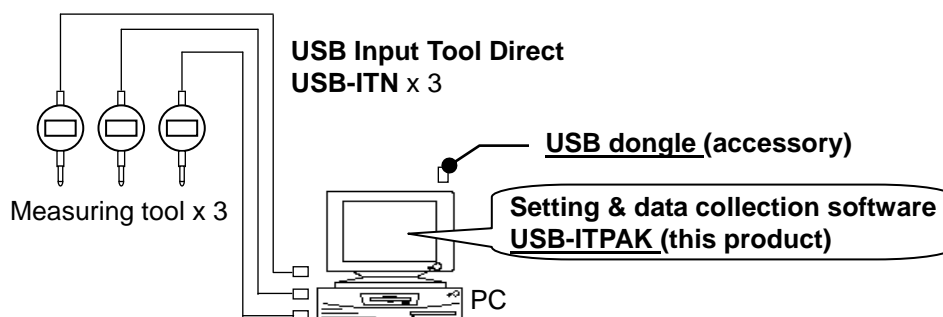
TIP • The procedure used in this explanation is based on the batch measurement described in "5.6 Date and time Data Input (When using Excel)". The setting file used here is the modification of the file created in "5.6 Date and time Data Input (When using Excel)".

NOTE • The automatic input of measurement data using the timer job option is available only with the batch measurement.

IMPORTANT • As the operating condition, the autosave function of Excel needs to be disabled. If the autosave runs while the timer input option is used, an error may occur. (For operations regarding Excel, refer to instructions of Excel.)

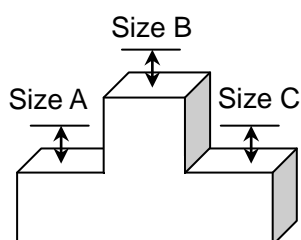
1) Connection

In the example used in this section, three indicators are connected to USB-ITN. The connection diagram is shown below.



2) Workpiece for measurement

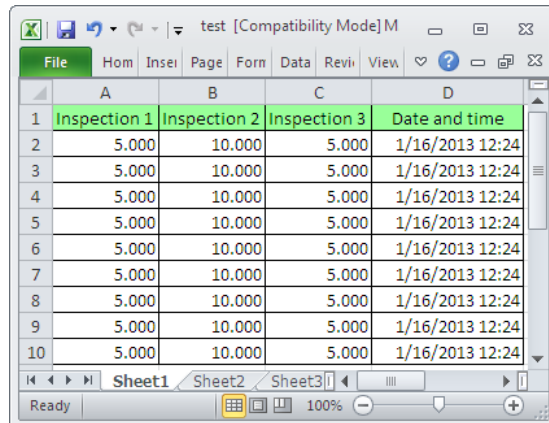
The following workpiece is used in the explanation. Three indicators are used and measurement is done with measuring jigs. "Size A", "Size B", and "Size C", which are shown in the figure below, are measured.



5. MEASUREMENT DATA COLLECTION (ADVANCED)

3) Measurement

The image of the inspection table upon completion of data collection is shown below.



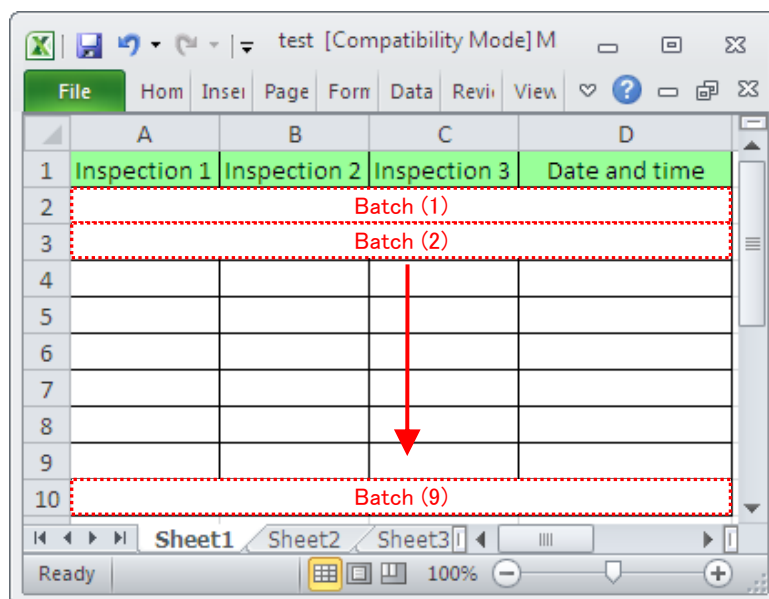
The screenshot shows an Excel spreadsheet with the following data:

	A	B	C	D
1	Inspection 1	Inspection 2	Inspection 3	Date and time
2	5.000	10.000	5.000	1/16/2013 12:24
3	5.000	10.000	5.000	1/16/2013 12:24
4	5.000	10.000	5.000	1/16/2013 12:24
5	5.000	10.000	5.000	1/16/2013 12:24
6	5.000	10.000	5.000	1/16/2013 12:24
7	5.000	10.000	5.000	1/16/2013 12:24
8	5.000	10.000	5.000	1/16/2013 12:24
9	5.000	10.000	5.000	1/16/2013 12:24
10	5.000	10.000	5.000	1/16/2013 12:24

The measurement procedure is as follows: measure three positions on a workpiece at one time and then output the input data in the columns "Inspection 1", "Inspection 2" and "Inspection 3" of an Excel sheet.

Then, measure other three positions on the same workpiece at one time and then output the input data in the subsequent columns of "Inspection 1", "Inspection 2" and "Inspection 3" of the same Excel sheet.

Continue the measurement on the workpiece in the same procedure. Data will be automatically requested using the timer job option.



The screenshot shows an Excel spreadsheet with the following data and annotations:

	A	B	C	D
1	Inspection 1	Inspection 2	Inspection 3	Date and time
2	Batch (1)			
3	Batch (2)			
4				
5				
6				
7				
8				
9				
10	Batch (9)			

A red arrow points from the "Batch (2)" label to the "Batch (9)" label, indicating a sequence of measurements.

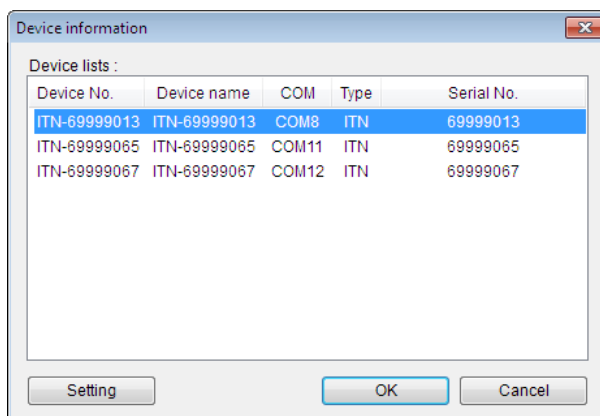
The following describes how to set up the measurement procedure, perform measurement, and save the results.

5.7.2 Setting

1) Check the device information.

NOTE • USB-ITPAK loads the information of connected devices at startup. Therefore, connect all the devices to be used before starting up USB-ITPAK.

From the menu of the main dialog box, select [Settings] and then [Device information]. This opens the [Device information] dialog box, which allows you to check the devices that are connected to the PC.



If you do not want to change the device number or device name, click the [Cancel] button to return to the main dialog box.

If you want to change a device number or device name, select the device, and then click the [Setting] button.



Click the [OK] button if you change any settings.

NOTE • In the procedure created from step "2)", the device number is used to specify the device to be used. If you change the number, revise all the setting files that use it.

TIP • If multiple units are connected, specify settings for each.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

TIP • If performing measurement using existing setting files, skip this section and refer to "5.7.3 Measurement".

2) Open the setting file created in "5.6 Date and time Data Input (When using Excel)".

3) Enter information about the setting file in the [Description] field.

Enter a description of the setting file. This field may be left blank.

3)

4)

5)

Setting File	Description
C:\Mitutoyo\USB-ITPAK\5-6.it2	Measure 3 positions in batch + Date and Time input

Data entry application	Repetition option	Error option	Timer job option
<input checked="" type="radio"/> Excel <input type="radio"/> Optional	<input checked="" type="checkbox"/> Repeat procedure Number of repeat: 1 Move direction: Down Displacement intervals: 1	<input checked="" type="checkbox"/> Ignore the data collection error	<input checked="" type="checkbox"/> Enable Interval(hour:min:sec): 0 : 0 : 5 Count: 5

Procedure	Item	Content
3 position batch me...	Procedure type	Batch
	Data entry application	Excel
	Excel settings:	
	Workbook	C:\Mitutoyo\USB-ITPAK\Sample\test.xls
	Worksheet	Sheet1
	Range of cells	A2:D10
	Move after return direction	Down
	Displacement intervals	1
	Cell address assign rules	Assign for the columns(A,B,...)
	Foot switch option:	
	FunctionKey Operation:	

Device No.	Device name	COM	Assigned cells	Status
ITN-69999013	ITN-69999013	COM8	A:A	Connect
ITN-69999013	ITN-69999013	DateTime	D:D	Connect
ITN-69999065	ITN-69999065	COM11	B:B	Connect
ITN-69999067	ITN-69999067	COM12	C:C	Connect

4) Specify the Timer job settings.

Select [Enable] in the [Timer job option] field.

The "5)" fields shown below activate.

5) Select [hour], [min] and [sec] in the [Interval] field.

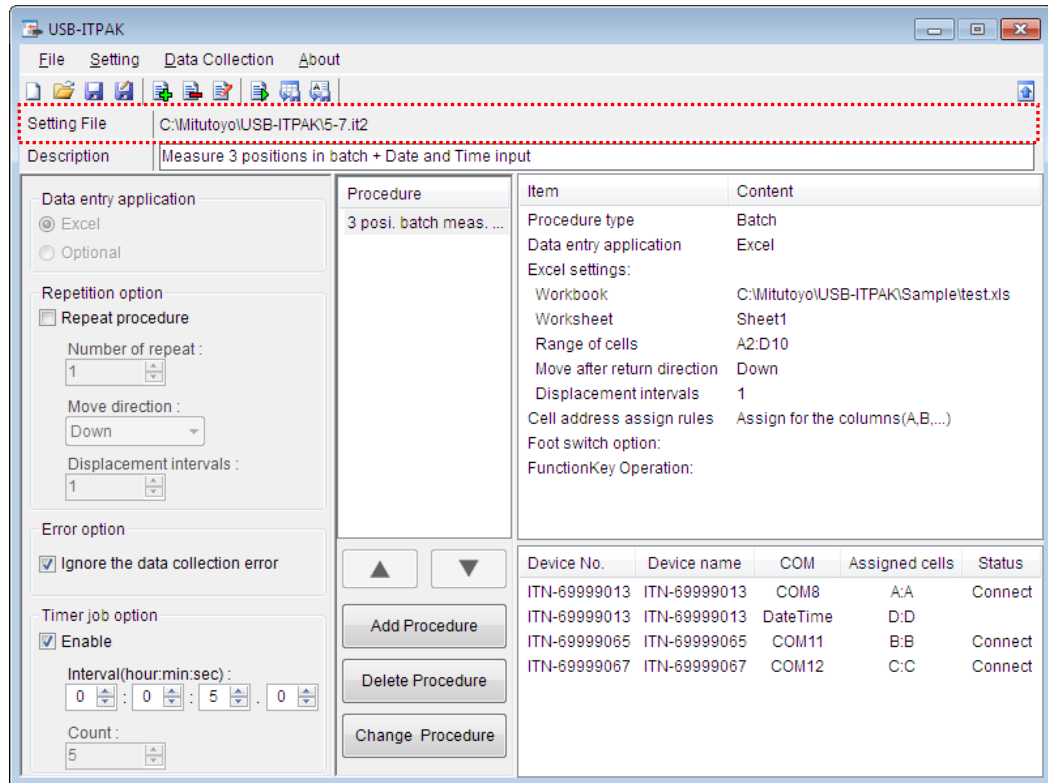
Specify the interval for data request.

Here, select "5" (sec).

NOTE • A value between 0.0 seconds and 24 hours (0:0:0.0 - 24:0:0.0) can be specified for [Interval].
For details, refer to "6.15 Timer job option setting".

NOTE • When selecting [Excel] for an application to input data, [Count] cannot be selected in the [Timer job option] field.

6) Save the created setting file.



From the menu of the main dialog box, select [File], [Save As], and then save the file by giving it a name. When the file has been saved, the file name is displayed as a full path in the [Setting File] field.

5. MEASUREMENT DATA COLLECTION (ADVANCED)

5.7.3 Measurement

1) Open [Setting File].

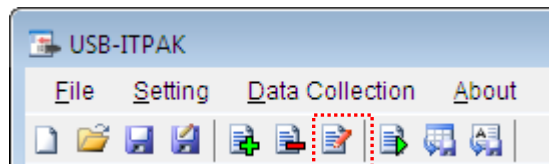
- TIP** • If starting measurement immediately after specifying the settings in "5.7.2 Setting", the setting file is already opened. In this case, skip step "1)".

From the menu of the main dialog box, select [File] and then [Open], or open [Setting file] from [Recent files].

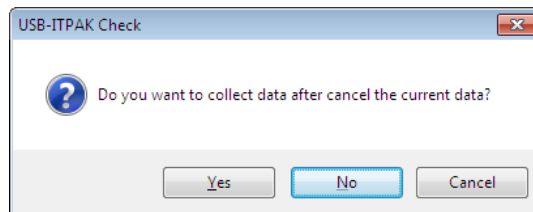
2) Open the data collection dialog box.

- IMPORTANT** • In USB-ITPAK, following data collection, the Excel file to which the data was input is saved through overwriting under the existing file name. To use the original Excel file later, back it up beforehand.

From the menu of the main dialog box, select [Data Collection] and then [Start], or click the icon shown below.



Click [Yes] for the message [Do you want to collect data after cancel the current data?] displayed before the data collection starts.

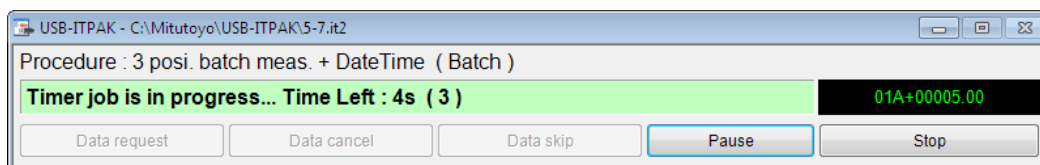


- TIP** • If you click [No] for the message [Do you want to collect data after cancel the current data?], the data collection dialog box will be paused. In this case, resume the data collection. For details, refer to "6.14.1 [Pause/Resume] button" and "8.2.5 To resume the Excel data collection previously paused".

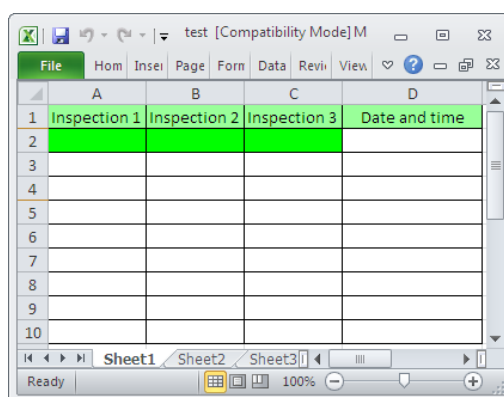
3) The data collection dialog box will be displayed to request the data automatically in the specified interval.

The screenshot shown below is an example of the data collection dialog box during timer job.

As the information on the timer job, "4s" that means the remaining time before the next data request and "3" that means the number of times for the data collection.



During data collection, the cell to which data will be input next is highlighted in green.



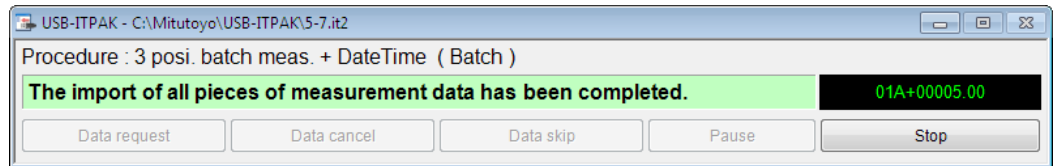
IMPORTANT • For the batch measurement using the timer job option, the measurement data collection is not available with the following operations.

- (1) Pressing the DATA switch on the measuring tool
 - (2) Pressing the DATA switch if USB-ITN has one
 - (3) Clicking the [Data request] button on the data collection dialog box.
 - (4) When using IT-016U, press the DATA switch.
 - (5) When using IT-016U, operate the foot switch connected to IT-016U.
-

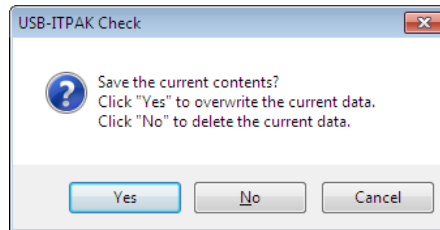
5. MEASUREMENT DATA COLLECTION (ADVANCED)

4) End data collection and save the results.

Once all the data has been input, a completion message is displayed on the data collection dialog box.



Click the [Stop] button on the data collection dialog box. The following message is displayed.



[Yes]: The Excel file to which data was input is saved through overwriting under the existing file name.

[No]: The Excel file is not overwritten and the data that was input is deleted.

[Cancel]: The message dialog box is closed and the data collection dialog box is displayed.

Click the [Yes] button. The Excel file is saved through overwriting and the dialog box switches to the main dialog box.

This completes data collection.

MEMO

6

DIALOG BOX CONFIGURATIONS OF USB-ITPAK

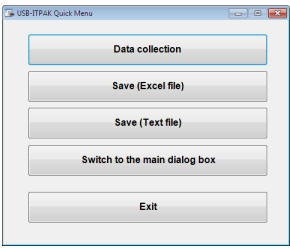
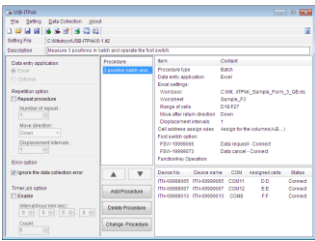
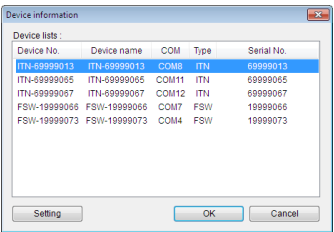
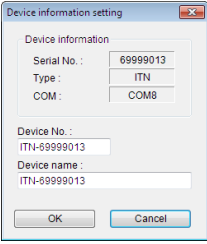
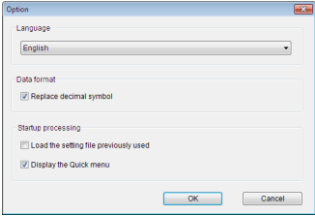
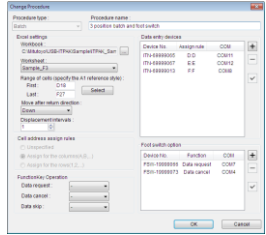

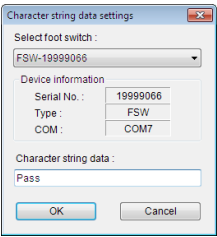
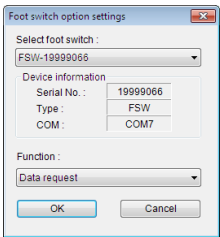
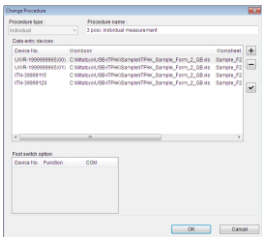
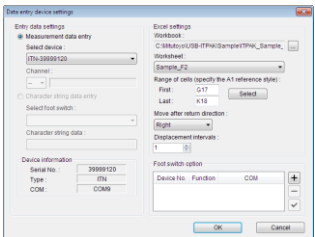
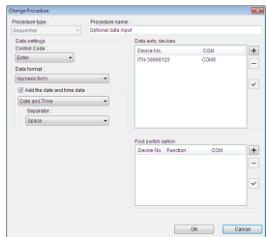

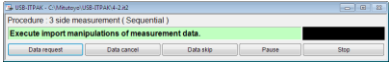
"CHAPTER 4 MEASUREMENT DATA COLLECTION (BASICS)" explains the basic use of USB-ITPAK.

"CHAPTER 5 MEASUREMENT DATA COLLECTION (ADVANCED)" explains the applied use of USB-ITPAK, such as data collection using the foot switch and the combination of multiple procedures.

"CHAPTER 6 DIALOG BOX CONFIGURATIONS OF USB-ITPAK" explains the configuration and contents of all the dialog boxes of USB-ITPAK. This chapter also explains functions not described in "CHAPTER 4 MEASUREMENT DATA COLLECTION (BASICS)" and "CHAPTER 5 MEASUREMENT DATA COLLECTION (ADVANCED)".

The hierarchy of the dialog boxes of USB-ITPAK is shown below. The numbers in parentheses are the numbers of the sections explaining the corresponding dialog boxes.

1. Quick Menu (6.1)
2. Main Dialog Box (6.2)
 - 2.1 Device Information (6.3)
 - 2.1.1 Device Information Setting (6.4)
 - 2.2 Options (6.5)
 - 2.3 Adding and Changing Procedures (Excel/Sequential or Batch) (6.6)
 - 2.3.1 Data Entry Device Settings (Excel/Sequential or Batch) (6.7)
 - 2.3.2 Character String Data Settings (6.8)
 - 2.3.4 Foot Switch Option Settings (6.9)
 - 2.3 Adding and Changing Procedures (Excel/Individual) (6.10)
 - 2.3.1 Data Entry Device Settings (Excel/Individual) (6.11)
 - 2.4 Adding and Changing Procedures (Optional) (6.12)
 - 2.4.1 Data Entry Device Settings (Optional) (6.13)
 - 2.4.2 Character String Data Settings (6.8)
 - 2.4.3 Foot Switch Option Settings (6.9)
3. Data Collection (6.14)

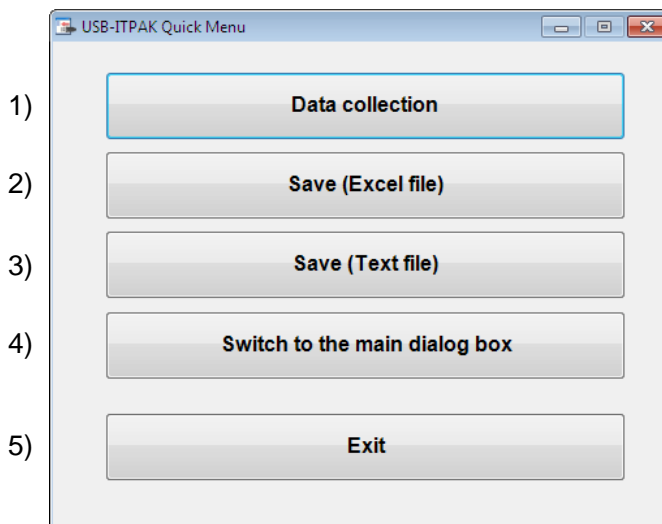
1. Quick Menu (6.1) 	2. Main Dialog Box (6.2) 	2.1 Device Information (6.3) 
2.1.1 Device Information Setting (6.4) 	2.2 Options (6.5) 	2.3 Adding and Changing Procedures (Excel/Sequential or Batch) (6.6) 
2.3.1 Data Entry Device Settings (Excel/Sequential or Batch) (6.7) 	2.3.2 Character String Data Settings (6.8) 	2.3.4 Foot Switch Option Settings (6.9) 
2.3 Adding and Changing Procedures (Excel/Individual) (6.10) 	2.3.1 Data Entry Device Settings (Excel/Individual) (6.11) 	2.4 Adding and Changing Procedures (Optional) (6.12) 
2.4.1 Data Entry Device Settings (Optional) (6.13) 	3. Data Collection (6.14) 	

6.1 Quick Menu

If the [Display the Quick menu] option is enabled, Quick Menu is displayed when USB-ITPAK starts up.

Quick Menu is a dialog box for operators who collect data. By clicking the [Data collection] button to open the setting file, measurement can be started quickly, making Quick Menu a useful feature for the execution of actual measurement work.

TIP • For the [Display the Quick menu] options, refer to "6.5 Options".



1) [Data collection] button

Opens an already created setting file and executes data collection according to that procedure.

For the operation method, refer to "6.1.1 [Data collection] button".

2) [Save (Excel file)] button

Saves the Excel file to which measurement data is input, after data collection.

For the operation method, refer to "6.1.2 [Save (Excel file)] button".

3) [Save (Text file)] button

Saves the measurement data as a text file, after data collection.

For the operation method, refer to "6.1.3 [Save (Text file)] button".

4) [Switch to the main dialog box] button

Switches the dialog box to the main dialog box.

5) [Exit] button

Exits USB-ITPAK.

6.1.1 [Data collection] button

An already created setting file is opened and data is collected according to the procedure in the file.

- 1) Select the setting file to be executed on the [Open] dialog box.

Select the setting file (extension: itp, it2) from the list of files, and then click the [Open] button.

NOTE • If [Load the setting file previously used] was selected in the [Startup processing] field in "6.5 Options", the setting file that was used last is loaded when USB-ITPAK starts up, so step "1)" is skipped in this case.

- 2) Collect data.

When the [Do you want to collect data after cancel the current data?] message is displayed, click either the [Yes] or [No] button.

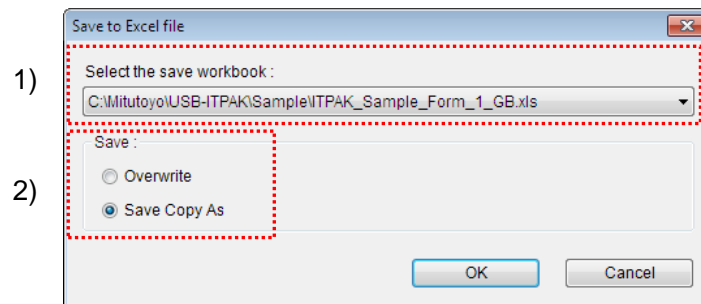
The data collection dialog box is displayed and the Excel inspection table file specified in the setting file is opened, so data collection starts.

TIP • For details about the data collection dialog box, refer to "6.14 Data Collection".

6.1.2 [Save (Excel file)] button

After data has been collected, the Excel file to which measurement data is input is saved.

NOTE • The [Save (Excel file)] button can be used only after data has been collected.



- 1) In the [Select the save workbook] field, select the file that is to be saved.

Select the file to be saved from the drop-down list.

- 2) Select the method for saving the file.

In the [Save] field, select either [Overwrite] or [Save Copy As].

- 3) Click the [OK] button to save the file.

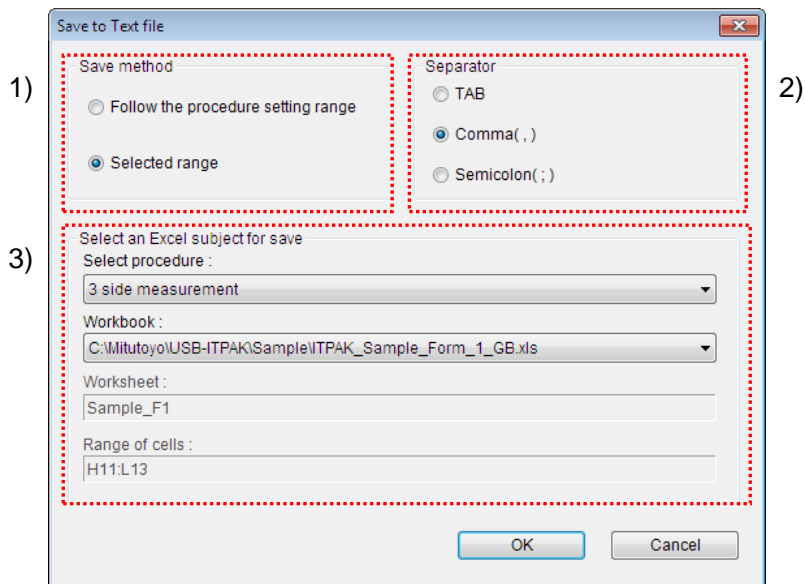
When [Save Copy As] is selected in the [Save] field, the [Save As] dialog box is displayed, so enter the file name and save the Excel file.

If multiple Excel workbooks are used in the setting file, perform steps 1) to 3) above for each file to be saved.

6.1.3 [Save (Text file)] button

The measurement data is saved to a text file after data has been collected.

NOTE • The [Save (Text file)] button can be used only after data has been collected.



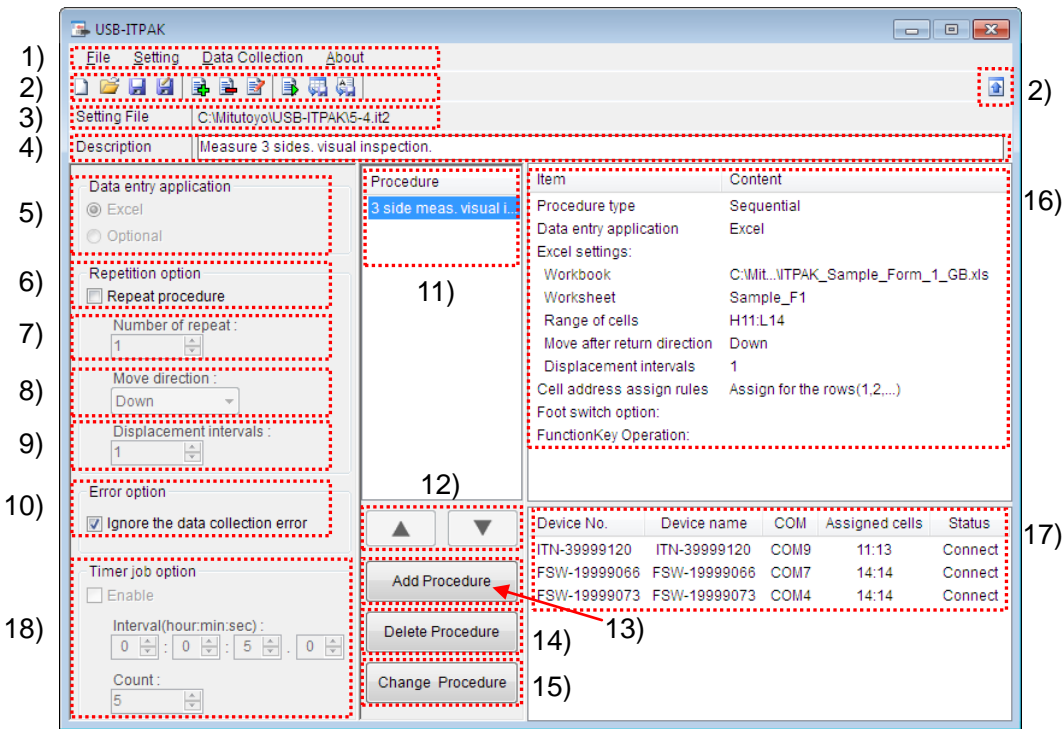
- 1) Select the desired method in the [Save method] field.
Select the method for specifying the range of data to be saved from the measurement data on the Excel worksheet.
 - [Follow the procedure setting range]
The range specified for [Range of cells (specify the A1 reference style)] on the [Add procedure] dialog box for the setting file is selected.
 - [Selected range]
Directly select the cell range on the displayed Excel worksheet.
- 2) Select the separator in the [Separator] field.
Select the character for separating Excel columns when saving Excel worksheet data to a text file. Select either [TAB], [Comma], or [Semicolon].
- 3) Specify the settings in the [Select an Excel subject for save] field.
 - Select the procedure to save in the [Select procedure] field.
 - Select the Excel workbook registered to the procedure to be saved, in the [Workbook] field.
- 4) Click the [OK] button to save the file.
The [Save As] dialog box is displayed, so enter the file name and click the [Save] button.

6.2 Main Dialog Box

If the [Display the Quick menu] option is disabled, the main dialog box is displayed when USB-ITPAK starts up.

The main dialog box is a window for operators creating setting files. All the functions of USB-ITPAK, from procedure setting to data collection, can be used from this dialog box.

TIP • For details on the [Display the Quick menu] option, refer to "6.5 Options".



1) Menu bar

The functions of USB-ITPAK can be accessed using the menu bar.
For details about how to use the menu bar, refer to "6.2.1 [File] menu" and subsequent sections.

2) Tool bar

The functions of USB-ITPAK can also be accessed using the tool bar.
For details about how to use the tool bar, refer to "6.2.1 [File] menu" and subsequent sections.

3) [Setting file] field

Displays the path name of the setting file that is currently opened.

4) [Description] field

Enter a description of the setting file in this field. This field can be left blank.

NOTE • Up to one hundred 1-byte or 2-byte characters can be entered in the [Description] field.

6. DIALOG BOX CONFIGURATIONS OF USB-ITPAK

5) [Data entry application] field

Select the application to which data is input in this field.

- [Excel]

Data is input to Excel.

- [Optional]

Data is input to an optional application (such as the Notepad or Word) that is active during data collection.

6) [Repetition option] field

If [Repeat procedure] is selected in this field, the procedure registered in step "11)" is performed multiple times during data collection.

7) [Number of repeat] field

This field can be specified only if [Repeat procedure] is selected.
Enter how many times to repeat the procedure.

8) [Move direction] field

This field can be specified only if [Repeat procedure] is selected.
When the procedure is repeated during data collection, the data entry cell is shifted at each execution. The cell movement direction at such time is selected in this field. Either [Right] or [Down] can be selected.

9) [Displacement intervals] field

This field can be specified only if [Repeat procedure] is selected.
When the procedure is repeated during data collection, the data entry cell is shifted at each execution. The cell displacement interval is selected in this field.

10) [Error option] field

If the following errors occur during data collection, select whether to ignore them.

	Error Message
1	The used device is wrong.
2	An error occurred during data reception. Device No. = [Device] Click Ignore to proceed anyway or Retry to try again.

TIP • For details about the error messages, refer to "8.4.7 Error messages of data collection dialog box" in "8.4 USB-ITPAK Error Messages".

11) [Procedure] field

This field lists the names of the procedures that have been created.
Multiple procedures can be registered in the setting file.

12) [▲][▼] field

The sequence of procedures can be changed by clicking these buttons after selecting procedures in the [Procedure] field.

13) [Add Procedure] button

This button is used to add a new procedure.
For the operation method, refer to "6.2.2 [Setting] menu".

14) [Delete Procedure] button

This button is used to delete the procedure selected in the [Procedure] field.
For the operation method, refer to "6.2.2 [Setting] menu".

15) [Change Procedure] button

This button is used to change the procedure selected in the [Procedure] field.
For the operation method, refer to "6.2.2 [Setting] menu".

16) Procedure details display field

This field displays the information of the procedure selected in the [Procedure] field.

17) Field for displaying detailed information of device used for data collection

This field displays the information of the device (USB-ITN, USB-FSW, U-WAVE, IT-016U) used for data collection in the procedure selected in the [Procedure] field.

NOTE

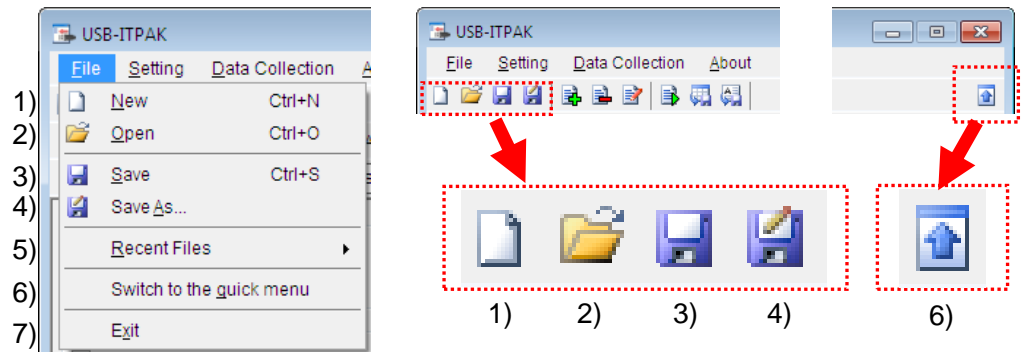
- If USB-FSW is used for character string data input, this is displayed in "17)".
- If USB-FSW is used for data requests or data cancellation, this is displayed in the [Foot switch option] of the "16)" field.
- When using IT-016U, also it will be recognized as ITN type. The Serial No. of IT-016U is represented starting with "8" as "ITN-8*****".

18) [Timer job option] field

If selecting this field, the automatic input of the measurement data is available in the specified interval. For details, refer to "6.15 Timer option setting".

6.2.1 [File] menu

The [File] menu is used to load and save setting files.



1) [New]

Creates a new setting file.

This operation can also be performed by clicking icon 1) on the tool bar.

2) [Open]

Loads a setting file that was saved.

This operation can also be performed by clicking icon 2) on the tool bar.

3) [Save]

Overwrite and saves the setting file.

This operation can also be performed by clicking icon 3) on the tool bar.

4) [Save As...]

Saves the setting file with a different name.

This operation can also be performed by clicking icon 4) on the tool bar.

5) [Recent Files]

When the setting file displayed in the sub-menu of this menu is selected, that setting file is loaded. The five files that have been loaded or saved the most recently are registered to the sub-menu.

6) [Switch to the quick menu]

Switches the dialog box to the Quick Menu.

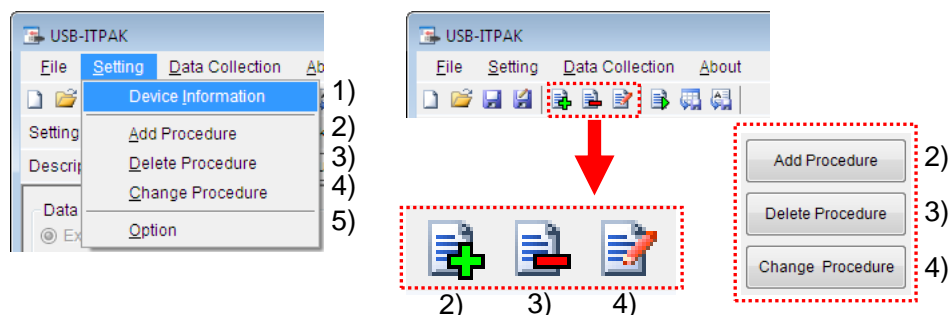
This operation can also be performed by clicking icon 6) on the tool bar.

7) [Exit]

Exits USB-ITPAK.

6.2.2 [Setting] menu

The [Setting] menu is used to display device information, add, delete, and change procedures, and also specify option settings related to the operation of USB-ITPAK.



- 1) [Device Information]
Displays the [Device information] dialog box.

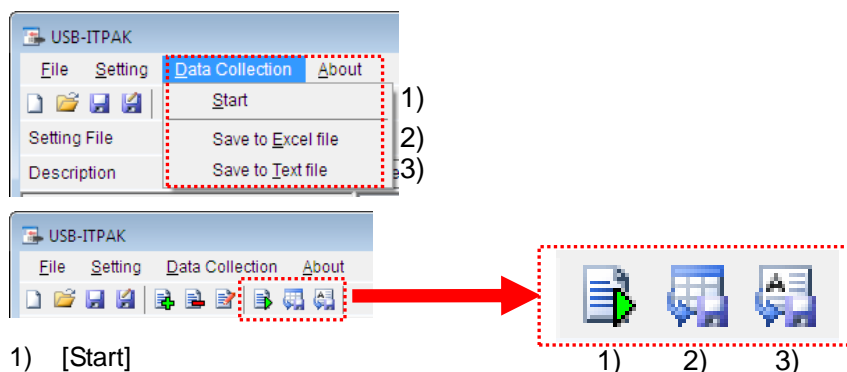
TIP • For details about the [Device information] dialog box, refer to "6.3 Device information".

- 2) [Add Procedure]
Adds a new procedure to the setting file that is opened.
This operation can also be performed by clicking icon 2) on the tool bar or button 2) on the main dialog box.
- 3) [Delete Procedure]
Deletes the procedure selected in the [Procedure] field on the main dialog box.
This operation can also be performed by clicking icon 3) on the tool bar or button 3) on the main dialog box.
- 4) [Change Procedure]
Changes the procedure that is selected in the [Procedure] field on the main dialog box.
This operation can also be performed by clicking icon 4) on the tool bar or button 4) on the main dialog box.
- 5) [Option]
Displays the [Option] dialog box.

TIP • For the option functions, refer to "6.5 Options".

6.2.3 Data Collection menu

The Data Collection menu on the menu bar is used to start data collection and save data after data collection.



1) [Start]

Collects data according to the setting file.

This operation can also be performed by clicking icon 1) on the tool bar.

2) [Save to Excel file]

Saves the Excel file to which the collected data was input.

This operation can also be performed by clicking icon 2) on the tool bar.

TIP • For how to save an Excel file, refer to "6.1.2 [Save (Excel file)] button]".

3) [Save to Text file]

Saves the collected data as a text file.

This operation can also be performed by clicking icon 3) on the tool bar.

TIP • For how to save a text file, refer to "6.1.3 [Save (Text file)] button]".

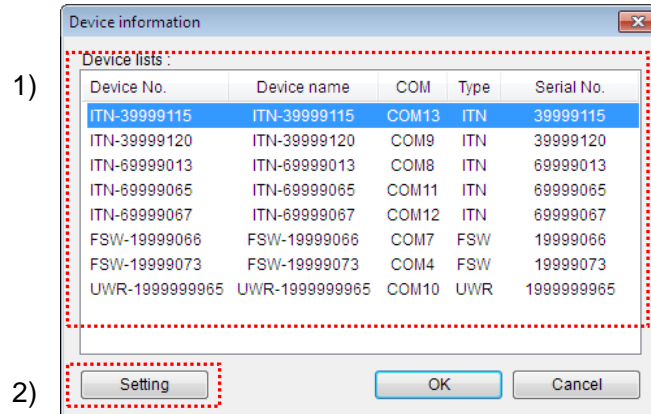
6.2.4 [About] menu

Displays the version information of USB-ITPAK.

6.3 Device Information

The [Device information] dialog box is displayed by selecting [Setting] and then [Device information] from the menu described in "6.2 Main Dialog Box".

This dialog box displays any of the USB-ITN, USB-FSW, U-WAVE-R, or IT-016U connected to the PC.



- 1) [Device lists] field

Displays all the USB-ITN, USB-FSW, U-WAVE-R and IT-016U units connected to the PC and to which the dedicated VCP driver has been installed.

- 2) [Setting] button

When a device is selected in the [Device lists] field and then the [Setting] button is clicked, the [Device information setting] dialog box is displayed.

TIP • For details about the [Device information setting] dialog box, refer to "6.4 Device Information Setting".

- 3) [OK] button

Applies the changes on the [Device information setting] dialog box and returns to the main dialog box.

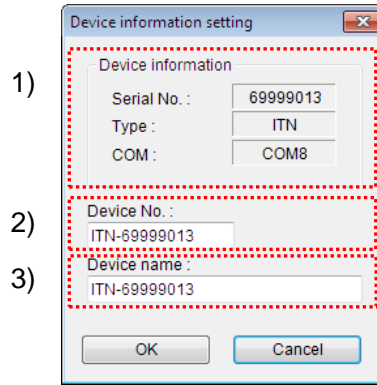
- 4) [Cancel] button

Clears the changes on the [Device information setting] dialog box and returns to the main dialog box.

6.4 Device Information Setting

Clicking the [Setting] button on the dialog box described in "6.3 Device Information" displays the [Device information setting] dialog box for the device that was selected in the [Device lists] field on the [Device information] dialog box.

The device information settings are specified on this dialog box.



1) [Device information] field

Displays the information of the device that was selected. The setting cannot be changed.

- [Serial No.]

Displays the lower 8 or 10 digits of the device number of the selected device.

Displays the device number of USB-ITN, USB-FSW or IT-016U in 8 digits and that of U-WAVE-R in 10 digits.

- [Type]

Displays the upper 3 alphabetic characters of the device No. of the selected device. [ITN] stands for USB-ITN / IT-016U, [FSW] stands for USB-FSW, and [UWR] stands for U-WAVE-R.

- [COM]

Displays the COM port number assigned to the device.

NOTE • The COM port number in the [COM] field is automatically assigned when the dedicated VCP driver is installed. The COM port number cannot be changed.

2) [Device No.] field

The device No. is information that identifies the USB-ITN, USB-FSW, U-WAVE-R or IT-016U unit. This information is registered to the procedure.

In the initial state, the device number recorded on the USB-ITN, USB-FSW, U-WAVE-R or IT-016U unit is displayed.

NOTE • Up to twenty 1-byte characters can be input.

NOTE • The device No. can be changed only when no procedures are registered in the [Procedure] field on the main dialog box.

IMPORTANT • When the device No. used in an existing setting file is changed, that setting file may become unusable, so be careful when changing the device No.

3) [Device name] field

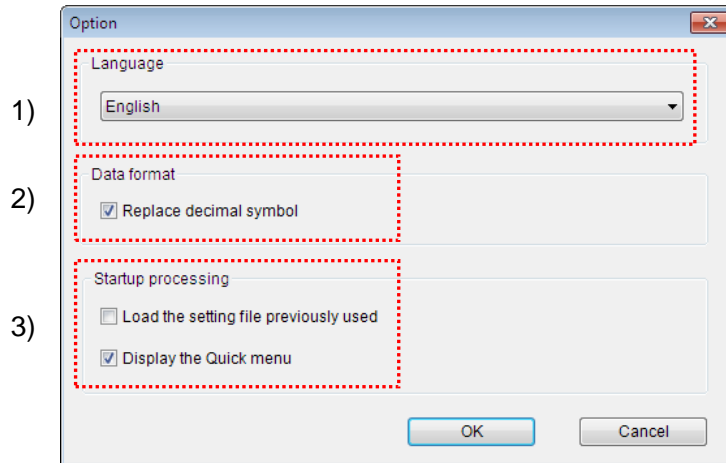
Inputting the name of the measuring tool that is connected to USB-ITN, U-WAVE or IT-016U as the device name makes it easy to check the procedure settings.

NOTE • Up to thirty-two 1-byte and 2-byte characters can be input.

6.5 Options

The [Option] dialog box is displayed by selecting [Setting] and then [Options] on the dialog box described in "6.2 Main Dialog Box".

Various settings related to USB-ITPAK operations are specified on this dialog box.



1) [Language] field

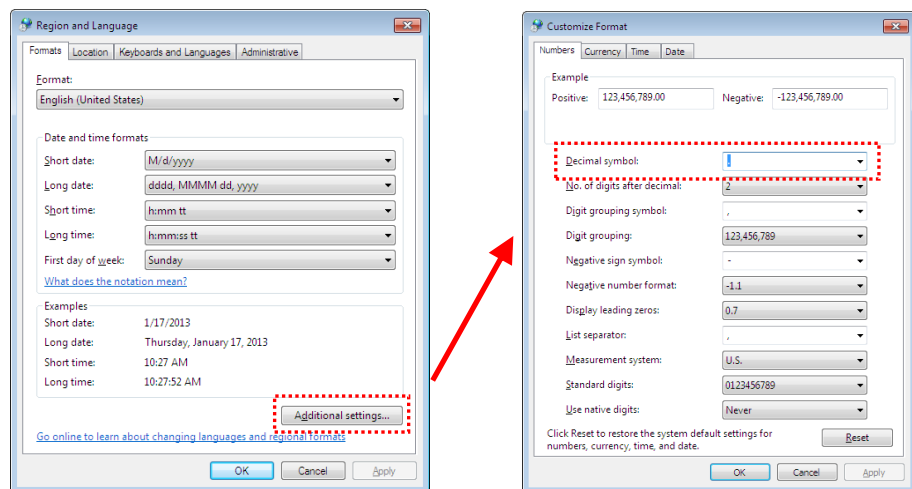
This field is used to select the language to be used in USB-ITPAK.

2) [Data format] field

If [Replace decimal symbol] is selected, USB-ITPAK uses the decimal symbol specified in Windows as the decimal symbol for measurement data.

If [Replace decimal symbol] is not selected, USB-ITPAK uses "." (period) as the decimal symbol for measurement data.

- TIP** • To check the decimal point symbol that is specified in Windows, select [Control Panel], [Clock, Language, and Region], [Region and Language], and then [Additional settings...], and look at the [Decimal symbol] field.



3) [Startup processing] field

This field is used to specify the settings for how USB-ITPAK behaves after it starts up.

- [Load the setting file previously used]

When [Load the setting file previously used] is selected, the setting file that was used last is automatically loaded when USB-ITPAK starts up.

- If the Quick Menu is set to be displayed, the setting file that was used last is used for data collection.
- If the main dialog box is set to be displayed, the main dialog box is displayed with the setting file that was used last open when USB-ITPAK starts up.

- [Display the Quick menu]

If [Display the Quick menu] is selected, the Quick Menu is displayed when USB-ITPAK starts up.

If it is not selected, the main dialog box is displayed when USB-ITPAK starts up.

6.6 Adding and Changing Procedures (Excel/Sequential or Batch)

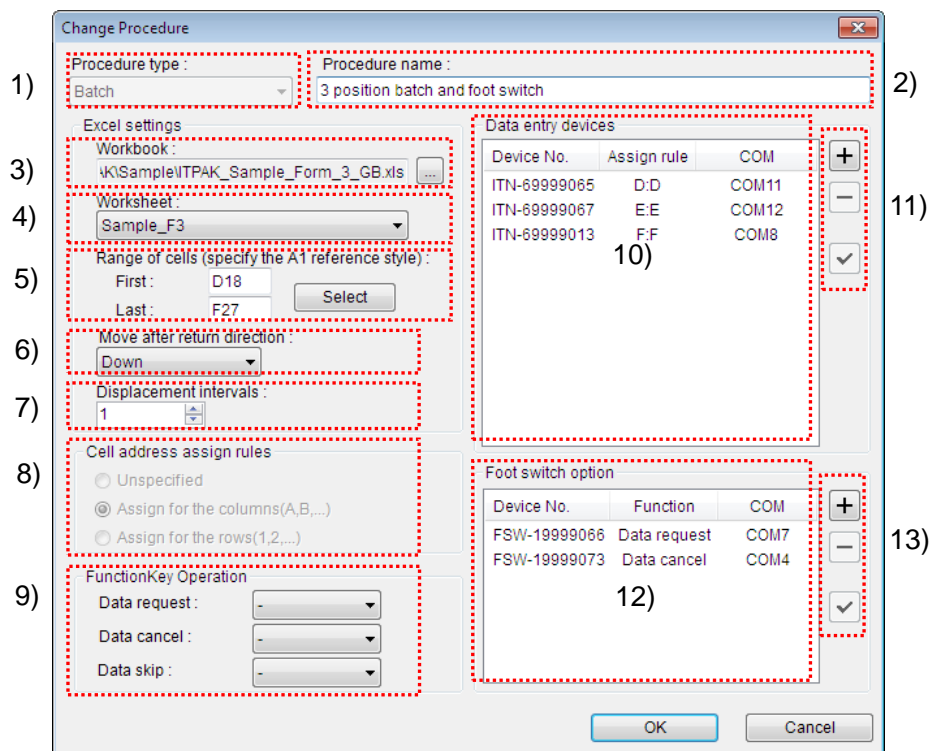
Clicking the [Add procedure] button on the main dialog box described in "6.2 Main Dialog Box" displays the [Add procedure] dialog box. Selecting a procedure in the [Procedure] filed and then clicking the [Change procedure] button displays the [Change procedure] dialog box.

On the [Add procedure] dialog box, new procedures can be created and added to the setting file. On the [Change procedure] dialog box, existing procedures can be changed.

The operation of the [Change procedure] dialog box is similar to the operation of the [Add procedure] dialog box.

This section explains the case when [Excel] is selected in the [Data entry application] field on the main dialog box described in "6.2 Main Dialog Box" and that [Sequential] or [Batch] is selected in the [Procedure type] field on that dialog box.

- TIP**
- If [Excel] is selected in the [Data entry application] field on the main dialog box described in "6.2 Main Dialog Box" and [Individual] is selected in the [Procedure type] field on that dialog box, refer to "6.10 Adding and Changing Procedures (Excel/Individual)".
 - If [Optional] is selected in the [Data entry application] field on the main dialog box described in "6.2 Main Dialog Box", refer to "6.12 Adding and Changing Procedures (Optional)".



-
- 1) [Procedure type] field

Select either [Sequential], [Batch], or [Individual] as the type of data collection procedure.

NOTE • If [Individual] is selected, the [Add procedure] dialog box switches to a dialog box dedicated to individual measurement.

TIP • For details about the procedure types, refer to "CHAPTER 1 BASIC KNOWLEDGE".

- 2) [Procedure name] field

Enter the name of the procedure to be created. Entering the procedure name is required.

NOTE • Up to thirty-two 1-byte and 2-byte characters can be input.

- 3) [Workbook] field

Enter the workbook name of the Excel file to which the measured data is to be input. The file can be selected from the [Open] dialog box by clicking the [...] button.

- 4) [Worksheet] field

Select the name of the sheet to which data is to be input from the drop-down list.

- 5) [Range of cells (specify the A1 reference style)] field

Specify the range of cells in Excel to which the collected data is to be input, in the A1 format.

Besides directly entering the cell numbers, the cell range can also be selected by using the [Select] button and inputting data on the Excel dialog box. This operation is explained in "6.6.1 Selection of data entry cell range in Excel".

IMPORTANT • When using the repeat function on the main dialog box, specify the cell range to be input at the first execution.

- 6) [Move after return direction] field

Specify the movement direction of the Excel cell after data input ([Right] or [Down]). This operation is explained in "6.6.2 Cell movement direction & displacement interval".

- 7) [Displacement intervals] field

Specify the interval of Excel cell movement after data input. This operation is explained in "6.6.2 Cell movement direction & displacement interval".

NOTE • A value between 1 and 100 can be specified for [Displacement intervals].

- 8) [Cell address assign rules] field

Assign the cells to which data is to be input from the device to columns (vertical) or rows (horizontal) on the Excel worksheet. Select according to the position of the measurement item. This operation is explained in "6.6.3 Cell address assign rules".

9) [FunctionKey Operation] field

The [Data request], [Data cancel], and [Data skip] functions can be assigned to the function keys (F1 to F8) of the PC.

Select the function key to which a function is to be assigned from the drop-down list.

IMPORTANT

- The function key operation cannot be set if [Unspecified] is selected for the [Cell address assign rules] field.
 - The [Data request], [Data cancel], and [Data skip] functions cannot be set in combination to the same function key.
-

10) [Data entry devices] field

Displays the information of the data entry device assigned in Excel.

11) Buttons in [Data entry device] field

- [+] button: Adds a data entry device in the [Data entry devices] field.
 - [-] button: Deletes the data entry device selected in the [Data entry devices] field.
 - [✓] button: Changes the settings of the data entry device selected in the [Data entry devices] field.
-

TIP

- For details about the data entry device settings, refer to "6.7 Data Entry Device Settings (Excel/Sequential or Batch)".
-

12) [Foot switch option] field

Displays the information of the USB-FSW unit registered in the foot switch option.

NOTE

- If the USB-FSW unit is to be used for inputting character string data, it is handled as a data entry device. For details, refer to "6.8 Character String Data Settings".
-

13) Buttons in [Foot switch option] field

- [+] button: Adds a USB-FSW unit in the [Foot switch option] field.
 - [-] button: Deletes the USB-FSW unit selected in the [Foot switch option] field.
 - [✓] button: Changes the settings of the USB-FSW unit selected in the [Foot switch option] field.
-

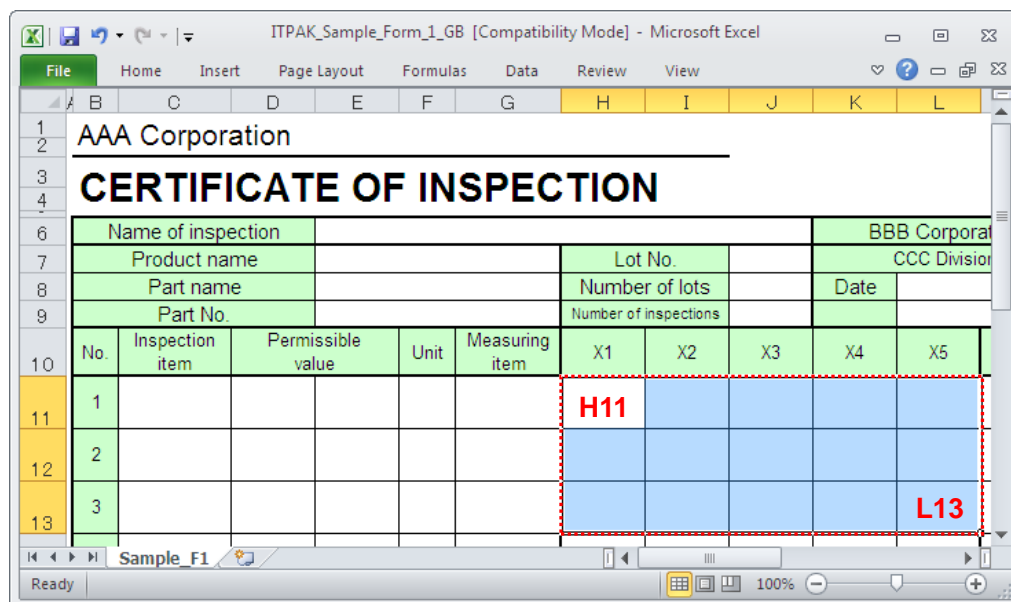
TIP

- For details about the foot switch option settings, refer to "6.9 Foot switch option settings".
-

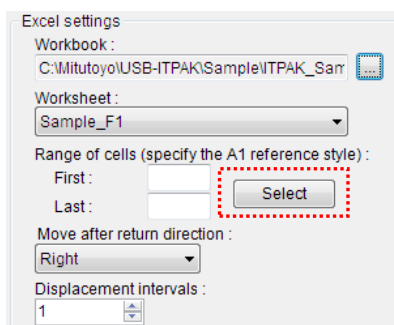
6.6.1 Selection of data entry cell range in Excel

Regarding the input method for the [Range of cells (specify the A1 reference style)] field, besides direct input, the range of data entry cells using the [Select] button and the Excel dialog box can be selected.

- 1) On the Excel dialog box, specify the range of cells to which data is to be input.



- 2) Click the [Select] button on the [Add procedure] dialog box.



To specify the area indicated by the bold lines in the above inspection table as the input cell range, enter:

First: H11

Last: L13

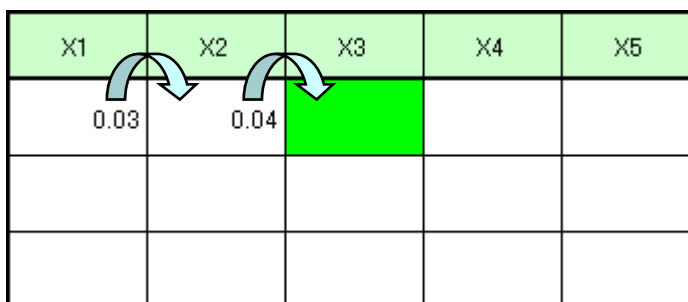
6.6.2 Cell movement direction & cell displacement interval

This section explains how to specify the cell movement direction and cell displacement interval, and the operation during data collection.

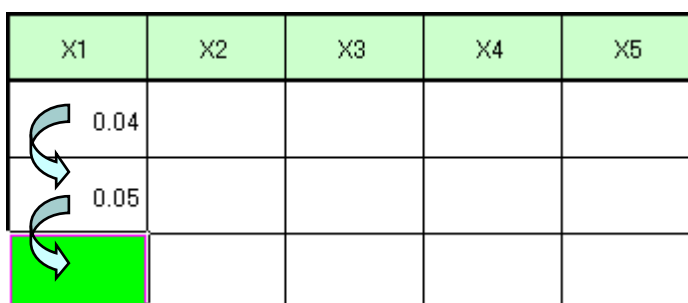
1) Cell movement direction

Select the direction in which the Excel data entry cell moves after data input in the [Move after return direction] field.

- If [Right] is selected:



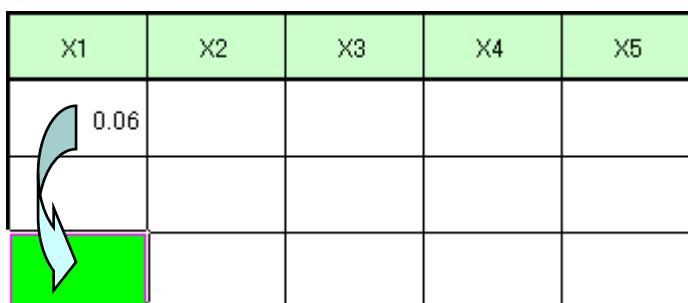
- If [Down] is selected:



2) Cell displacement interval

- Select the displacement interval of the Excel data entry cell after data input in the [Cell displacement interval] field.

Example: If [Down] is selected in the [Move after return direction] field and "2" is specified in the [Displacement intervals] field, the cell for the next data entry moves two cells down.



-
- During sequential measurement, if the cells in the current row or column are filled in the specified range, data input to the current row or column ends and the data entry cell moves to the next row or column.

Example: If a cell range of 4 rows x 5 columns is selected in the [Range of cells (specify the A1 reference style)] field, [Down] is selected in the [Move after return direction] field, and "2" is specified in the [Displacement intervals] field, data entry in the first column ends when the third row has been input, and the cell for the next data entry moves to the second column.

X1	X2	X3	X4	X5
0.061				
0.062				

6.6.3 Cell address assign rules

The cells to which data is to be input from a device are assigned to columns (vertical) or rows (horizontal) on the Excel worksheet. Select according to the position of the measurement item.

1) [Unspecified]

No device is assigned to Excel cells.

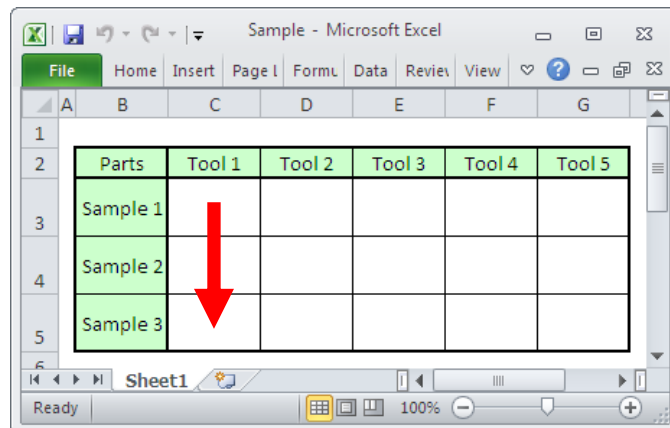
When data is input from the device registered in the procedure during data collection, the data is written to the cell that is currently active in the order of input, regardless of the cell position.

- NOTE**
- If [Batch] is selected in the [Procedure type] field, [Unspecified] cannot be selected.
 - If [Unspecified] is selected, the sequence of data input from the data input device cannot be specified, so function key operation and foot switch option cannot be used.

2) [Assign for the columns (A,B,...)]

Assigns one device per column of a worksheet.

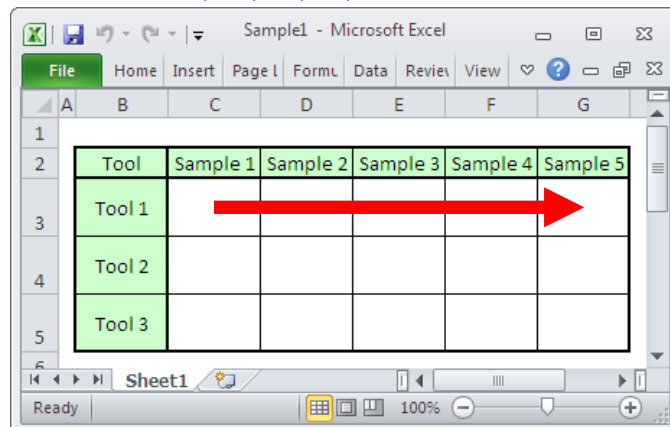
Example: The following figure shows the case when Tool 1 is assigned to [Column C], Tool 2 to [Column D], Tool 3 to [Column E], Tool 4 to [Column F], and Tool 5 to [Column G]. The data input from Tool 1 is input to cells C3, C4, and C5.



3) [Assign for the rows (1, 2,...)]

Assigns one device per row of a worksheet.

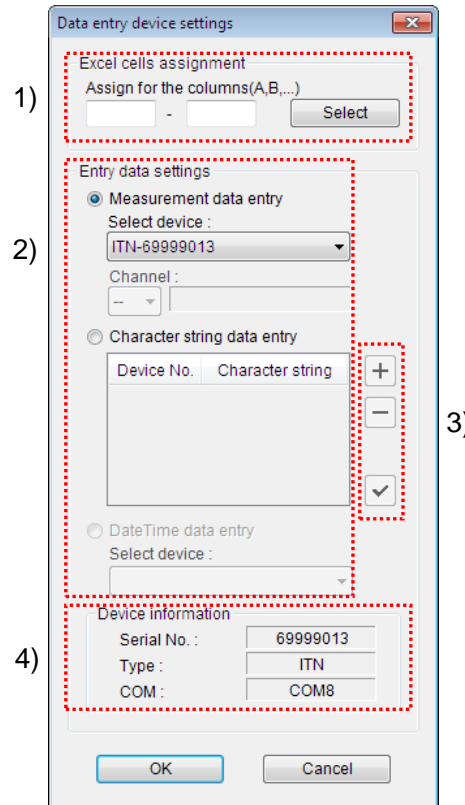
Example: The following figure shows the case when Tool 1 is assigned to [Row 3], Tool 2 to [Row 4], and Tool 3 to [Row 5]. The data input from Tool 1 is written to cells C3, D3, E3, F3, and G3.



6.7 Data Entry Device Settings (Excel/Sequential or Batch)

Clicking the [+] button in the [Data entry devices] field on the dialog box described in "6.6 Adding and Changing Procedures (Excel/Sequential or Batch)" displays the [Data entry device settings (Excel/Sequential or Batch)] dialog box.

On this dialog box, the Excel range to be assigned as the data entry destination and the device whose data is to be input can be selected.



- 1) [Excel cells assignment] field

Input the row numbers or column numbers of the Excel cells to which the data entry device is to be assigned.

This operation is explained in "6.7.1 [Excel cells assignment] field input".

- 2) [Entry data settings] field

Select the device whose data is to be input in the range specified in the [Excel cells assignment] field.

Select either [Measurement data entry] or [Character string data entry].

- [Measurement data entry]

Input the measurement data from USB-ITN, U-WAVE or IT-016U. Select the device from the drop-down list in the [Select device] field.

When selecting U-WAVE (UWR), select the channel of U-WAVE-T to be used from the [Channel:] field.

NOTE • Before starting up U-WAVEPAK for channel check, exit USB-ITPAK.

6. DIALOG BOX CONFIGURATIONS OF USB-ITPAK

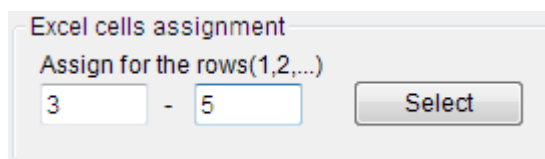
- [Character string data entry]
Input the character string data from USB-FSW. Click the [+] button in the [Character string data entry] field and specify the character string data.
 - [DateTime data entry]
This field is available when one or more data entry devices have been set for [Data entry devices] in advance.
In the [Select device:] field, select the data entry device to add the date and time.
For details, refer to "6.7.2 Data entry device setting for date and time".
- 3) Buttons in [Character string data entry] field
- [+] button: Adds a USB-FSW unit in the [Character string data entry] field.
 - [-] button: Deletes the USB-FSW unit selected in the [Character string data entry] field.
 - [✓] button: Changes the settings of the USB-FSW unit selected in the [Character string data entry] field.
-

TIP • For the character string data settings, refer to "6.8 Character String Data Settings".

- 4) [Device information] field
- The [Device information] field displays the information of the device selected in the [Entry data settings] field.

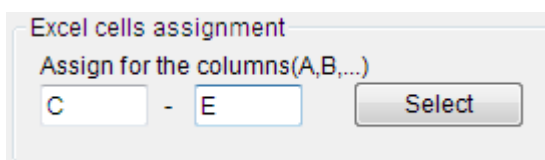
6.7.1 [Excel cells assignment] field input

- 1) If the [Excel cells assignment] field displays [Assign for the rows (1, 2,...)], input the row numbers (1, 2,...) in Excel in the A1 format.



Excel cells assignment
Assign for the rows(1,2,...)
3 - 5 Select

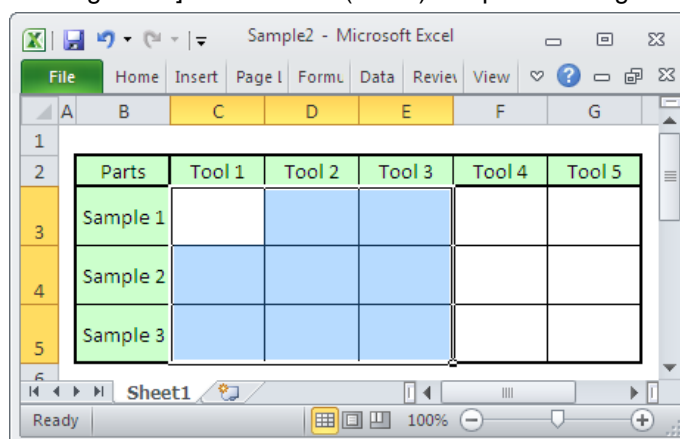
- 2) If the [Excel cells assignment] field displays [Assign for the columns (A,B,...)], input the column numbers (A, B,...) in Excel in the A1 format.



Excel cells assignment
Assign for the columns(A,B,...)
C - E Select

You can also perform input by specifying the range in Excel and clicking the [Select] button in the [Excel cells assignment] field. This operation is explained below.

If you want to specify Tool 1 from [Column C] (or [Row 3]) to [Column E] (or [Row 5]), specify the range as shown in the figure below and then click the [Select] button on the [Data entry device settings] dialog box. As a result, "C" (or "3") is input in the left side of the [Excel cells assignment] field and "E" (or "5") is input in the right side of this field.



-
- IMPORTANT**
- When the [Data entry device settings] dialog box is displayed, the Excel range specification used in the procedure is changed once to the range that was input in [Range of cells (specify the A1 reference style)] in the [Excel settings] field of the [Add/change procedure] dialog box. For Excel cell assignment, be sure to specify the range in Excel after the [Data entry device settings] dialog box is displayed.
-

6.7.2 Data entry device setting for date and time

When the setting for the date and time data input is performed for the measuring tool registered for the measuring data input, the date and time data can be input at the time when the data of the measuring tool is input.

NOTE • For details about the measurement procedures in which the date and time data can be input, refer to the following table.

Procedure type	Cell address assign rules	Availability
Sequential	• Unspecified	—
	• Assign for the columns(A,B,...)	✓
	• Assign for the rows(1,2,...)	✓
Batch	• Unspecified	—
	• Assign for the columns(A,B,...)	✓
	• Assign for the rows(1,2,...)	✓
Individual		—

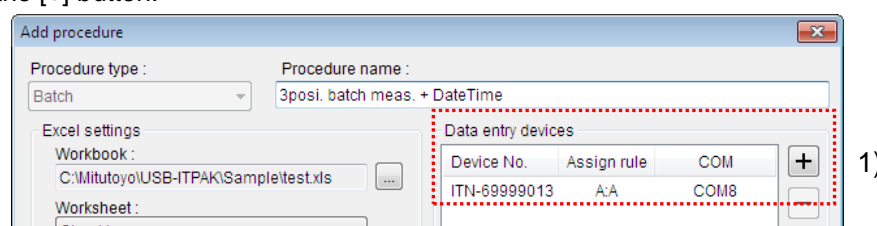
- When selecting [Sequential] for [Procedure type] in the [Change Procedure] dialog box, a date and time data can be input for each data entry device.
- When selecting [Sequential] for [Procedure type] and [Unspecified] for [Cell address assign rules] in the [Change Procedure] dialog box, the setting for the date and time data input is not available.
- When selecting [Batch] for [Procedure type] in the [Change Procedure] dialog box, a date and time data can be input for one of the data entry devices registered for the procedure.
- When selecting [Individual] for [Procedure type] in the [Change Procedure] dialog box, the setting for the date and time data input is not available.

The following describes the procedure of the date and time data input.

- 1) Switch to the [Data entry device settings] dialog box to select the date and time input settings.

Set one or more data entry devices for [Data entry devices] in advance.

Click the [+] button.



2) Select [DateTime data entry] in the [Entry data settings] field.

The information on the device registered for the measuring data input and the information on the Excel cell assignment will be displayed in the [Select device:] field.

Example:

ITN-89999013[A:A]

(1) (2)

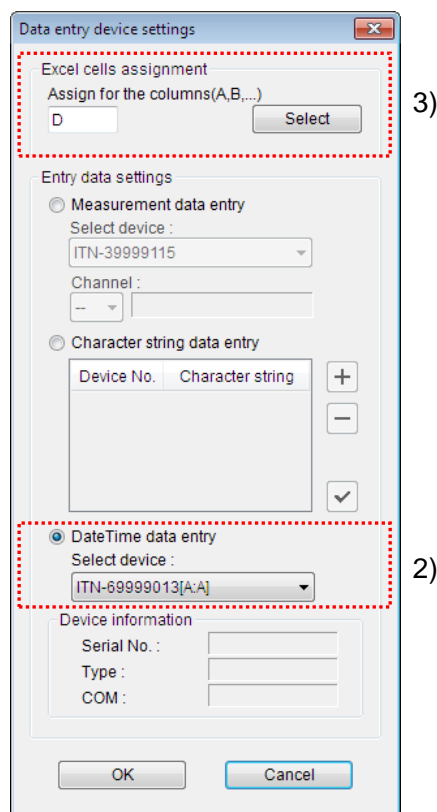
(1) : Device information

(2) : Information on the Excel cell assignment

IMPORTANT • When no data entry device can be assigned for the date and time data input, the [DateTime data entry] field is not available.

3) Input the range to assign the date and time in the [Excel cells assignment] field.

In the screenshot shown below, "D" has been input in the entry field to assign the date and time to the [D] column.



Click the [OK] button if you change any settings.

6. DIALOG BOX CONFIGURATIONS OF USB-ITPAK

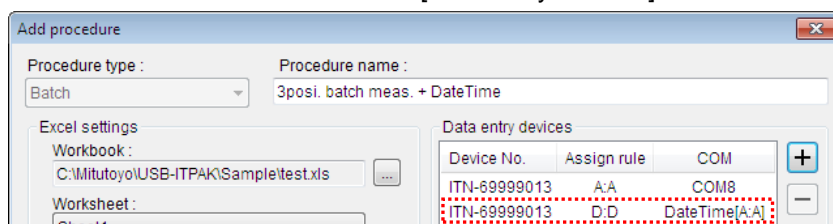
- IMPORTANT** • When selecting [DateTime data entry], only the starting cell position can be input in the [Excel cells assignment] field.

For the cell range for the date and time data input, the total number of the rows or columns specified for the selected data entry device will be applied based on the starting cell position.

Example:

When specifying the date and time data input to the cell starting at the column "C" for the data entry device assigned to the Excel cells at the columns "A:B", "C:D" will be automatically input for [Excel cells assignment] for the date and time data input.

- 4) The date and time has been added in the [Data entry devices] field.



4)

For the device information in the [Data entry devices] field in the [Change Procedure] dialog box, the information on the Excel cell range to which the date and time data is input and the data entry device information assigned for the date and time data input will be displayed.

Example:

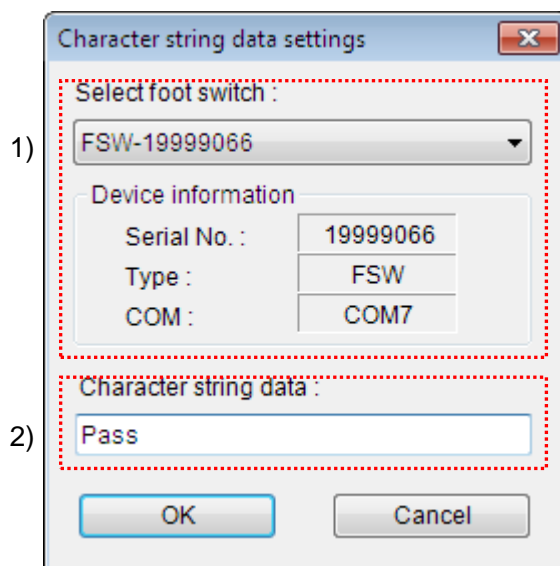
ITN-69999013 D:D date and time [A:A]
(1) (2) (3) (4)

- (1): Data entry device information assigned for the date and time data input
- (2): Information on the Excel cell assignment for the date and time data input
- (3): Character string indicating the date and time data input
- (4): Information on the Excel cell assignment for (1)

6.8 Character String Data Settings

Selecting [Character string data entry] in the [Entry data settings] field on the dialog box shown in "6.7 Data Entry Device Settings (Excel/Sequential or Batch)" and clicking the [+] button displays the [Character string data settings] dialog box.

On this dialog box, the USB-FSW unit used for inputting character string data can be selected and the character string to be input can be input.



- 1) [Select foot switch] field

Select the USB-FSW unit used for inputting character string data from the drop-down list. The information of the selected device is displayed in the [Device information] field.

- 2) [Character string data] field

Input the character string to be input to Excel when the foot switch is pressed.

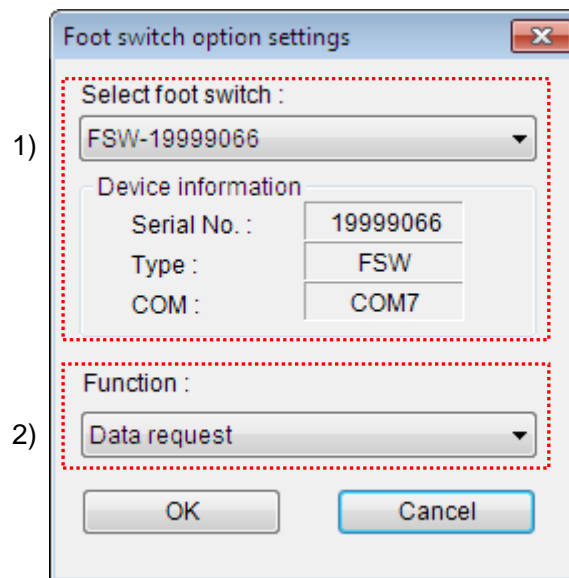
NOTE • Up to thirty-two 1-byte and 2-byte characters can be input.

IMPORTANT • Only 1-byte characters can be input to an optional application (other than Excel).

6.9 Foot Switch Option Settings

Clicking the [+] button in the [Foot switch option] field on the dialog box described in "6.6 Adding and Changing Procedures (Excel/Sequential or Batch)" displays the [Foot switch options settings] dialog box.

On this dialog box, the USB-FSW unit for which the foot switch option is to be set and the function to be set can be selected.



1) [Select foot switch] field

Select the USB-FSW unit to which a function is to be assigned from the drop-down list. The information of the selected device is displayed in the [Device information] field.

2) [Function] field

Select the function to be executed when the foot switch is pressed from the drop-down list.

The [Data request], [Data cancel], or [Data skip] function can be assigned.

IMPORTANT • If data is input to an optional application (other than Excel), only the [Data request] function can be assigned to the USB-FSW unit, not the [Data cancel] and [Data skip] functions.

6.10 Adding and Changing Procedures (Excel/Individual)

Clicking the [Add procedure] button on the main dialog box described in "6.2 Main Dialog Box" displays the [Add procedure] dialog box. Selecting a procedure in the [Procedure] filed and then clicking the [Change procedure] button displays the [Change procedure] dialog box.

On the [Add procedure] dialog box, new procedures can be created and added to the setting file. On the [Change procedure] dialog box, existing procedures can be changed.

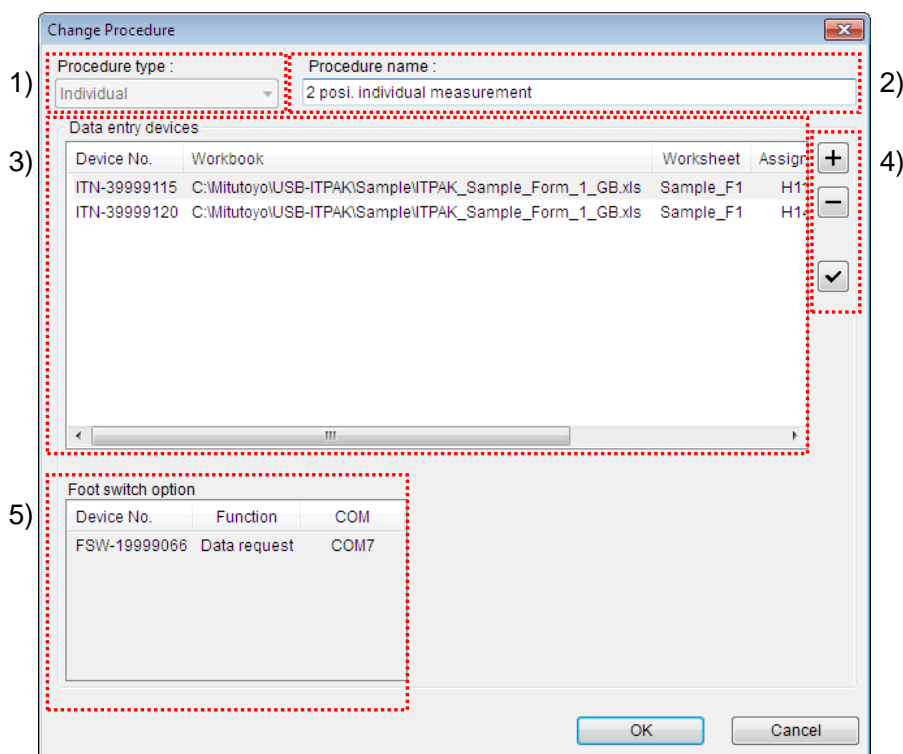
The operation of the [Change procedure] dialog box is similar to the operation of the [Add procedure] dialog box.

This section explains the case when [Excel] is selected in the [Data entry application] field on the main dialog box in "6.2 Main Dialog Box" and [Individual] is selected in the [Procedure type] field on that dialog box.

IMPORTANT • In the case of individual measurement, multiple procedures cannot be added.

TIP • If [Excel] is selected in the [Data entry application] field on the main dialog box described in "6.2 Main Dialog Box" and [Sequential] or [Batch] is selected in the [Procedure type] field on that dialog box, refer to "6.6 Adding and Changing Procedures (Excel/Sequential or Batch)".

• If [Optional] is selected in the [Data entry application] field on the main dialog box described in "6.2 Main Dialog Box", refer to "6.12 Adding and Changing Procedures (Optional)".



1) [Procedure type] field

Select either [Sequential], [Batch], or [Individual] as the type of data collection procedure.

NOTE • If [Sequential] or [Batch] is selected, the [Add procedure] dialog box switches to the dedicated dialog box for the sequential or batch type.

TIP • For the [Add/change procedure] dialog box for sequential measurement or batch measurement, refer to "6.6 Adding and Changing Procedures (Excel/Sequential or Batch)".

• For details about the procedure types, refer to "CHAPTER 1 BASIC KNOWLEDGE".

2) [Procedure name] field

Enter the name of the procedure to be created. Entering the procedure name is required.

NOTE • Up to 32 1-byte and 2-byte characters can be input.

3) [Data entry devices] field

This field displays the information of the registered data entry device.

4) Buttons in [Data entry devices] field

- [+] button: Adds a data entry device in the [Data entry devices] field.
 - [-] button: Deletes the data entry device selected in the [Data entry devices] field.
 - [✓] button: Changes the settings of the data entry device selected in the [Data entry devices] field.
-

TIP • For details about the data entry device settings, refer to "6.11 Data Entry Device Settings (Excel/Individual)".

5) [Foot switch option] field

This field displays the information of the USB-FSW unit assigned to the USB-ITN, U-WAVE or IT-016U unit selected in the [Data entry devices] field in step "3)".

6.11 Data Entry Device Settings (Excel/Individual)

Clicking the [+] button in the [Data entry devices] field on the dialog box described in "6.10 Adding and Changing Procedures (Excel/Individual)" displays the [Data entry device settings (Excel/Individual)] dialog box.

On this dialog box, the device used for inputting data can be selected, and the settings for the Excel file that will serve as the data input destination can be specified.

1) [Entry data settings] field

2) [Character string data] field

3) [Workbook] field

4) [Worksheet] field

5) [Range of cells (specify the A1 reference style)] field

6) [Move after return direction] field

7) [Displacement intervals] field

8) [Foot switch option] table

9) [Foot switch option] table

1) [Entry data settings] field

Select the device used for inputting data.

Select either [Measurement data entry] or [Character string data entry].

- If [Measurement data entry] is selected:

Measurement data will be input from USB-ITN, U-WAVE or IT-016U. Select the device from the drop-down list in the [Select device] field.

When selecting U-WAVE (UWR), select the channel of U-WAVE-T to be used from the [Channel:] field.

NOTE • Before starting up U-WAVEPAK for channel check, exit USB-ITPAK.

- If [Character string data entry] is selected:

Character string data will be input from the USB-FSW unit. Select the device from the drop-down list in the [Select foot switch] field. Also input in the [Character string data] field the character string to be input to Excel when the foot switch is pressed.

NOTE • Up to thirty-two 1-byte and 2-byte characters can be input.

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2) [Device information] field

This field displays the information of the device selected in the [Entry data settings] field.

3) [Workbook] field

Enter the workbook of the Excel file to which the measured data is to be input. Clicking the [...] button allows you to select a file from the [Open] dialog box.

4) [Worksheet] field

Select the name of the worksheet to which data is to be input from the drop-down list.

5) [Range of cells (specify the A1 reference style)] field

Input the range of cells in Excel to which the collected data is to be input, in the A1 format.

Besides directly inputting the cell numbers, the cell range can also be selected by using the [Select] button and specifying the range on the Excel dialog box.

TIP • For the operation to select the cell range to which data is to be input by using the [Select] button and using the Excel dialog box, refer to "6.6.1 Selection of data entry cell range on Excel".

6) [Move after return direction] field

Specify the movement direction of the Excel cell after data input ([right] or [down]).

7) [Displacement intervals] field

Specify the interval of Excel cell movement after data input.

NOTE • A value between 1 and 100 can be specified for [Displacement intervals].

TIP • For details about the relationship between the settings for the cell movement direction and displacement interval and the operation during data collection, refer to "6.6.2 Cell movement direction & cell displacement interval".

8) [Foot switch option] field

This field displays the information of the USB-FSW unit registered to foot switch option.

NOTE • If the USB-FSW unit is used for inputting character string data, it is handled as a data entry device.

9) Buttons in [Foot switch option] field

- [+] button: Adds a USB-FSW unit in the [Foot switch option] field.
 - [-] button: Deletes the USB-FSW unit selected in the [Foot switch option] field.
 - [✓] button: Changes the settings of the USB-FSW unit selected in the [Foot switch option] field.
-

TIP • For details about the foot switch option settings, refer to "6.9 Foot Switch Option Settings".

6.12 Adding and Changing Procedures (Optional)

Clicking the [Add procedure] button on the main dialog box described in "6.2 Main Dialog Box" displays the [Add procedure] dialog box. Selecting a procedure in the [Procedure] field and then clicking the [Change Procedure] button displays the [Change procedure] dialog box.

On the [Add procedure] dialog box, new procedures can be created and added to the setting file. On the [Change procedure] dialog box, existing procedures can be changed.

The operation of the [Change procedure] dialog box is similar to the operation of the [Add procedure] dialog box.

This section explains the case when [Optional] is selected in the [Data entry application] field on the main dialog box described in "6.2 Main Dialog Box".

IMPORTANT • In the case of input to an optional application, multiple procedures cannot be added.

TIP • If [Excel] is selected in the [Data entry application] field on the main dialog box in "6.2 Main Dialog Box", refer to "6.6 Adding and Changing Procedures (Excel/Sequential or Batch)" and "6.10 Adding and Changing Procedures (Excel/Individual)".

The screenshot shows the 'Add procedure' dialog box with the following fields and controls:

- 1) Procedure type: Sequential
- 2) Procedure name: Optional data input
- 3) Data settings: Control Code: Enter
- 4) Data format: Numeric form
- 9) ☐ Add the date and time data
- 10) Date and Time
- 11) Separator: Space
- 5) Data entry devices table:

Device No.	COM
ITN-39999115	COM13
- 6) +, -, ✓ buttons for Data entry devices
- 7) Foot switch option table:

Device No.	Function	COM
FSW-19999066	Data request	COM7
- 8) +, -, ✓ buttons for Foot switch option
- OK and Cancel buttons at the bottom.

- 1) [Procedure type] field

Select either [Sequential], [Batch], or [Individual] as the type of data collection procedure.

IMPORTANT • If [Individual] is selected, the foot switch option cannot be used.

TIP • For details about the procedure types, refer to "CHAPTER 1 BASIC KNOWLEDGE".

- 2) [Procedure name] field

Enter the name of the procedure to be created. Entering the procedure name is required.

NOTE • Up to thirty-two 1-byte and 2-byte characters can be input.

- 3) [Control Code] in [Data settings] field

Select the control code to be added after numeric data input.

Select the control code from [Unspecified], [Enter], [Up], [Down], [Right], [Left], or [Tab].

TIP • If using "Notepad" as the optional application, line return can be effected after numeric data input by selecting [Enter] as the control code.

IMPORTANT • The function of the control code differs according to the application to be used. Select the control code after checking the functions of the various control codes in the application to be used.

- 4) [Data format] in [Data settings] field

Select the format of the data to be input to the application.

Select the data format from among [Numeric form], [Command form], and [COM +Command form].

Example: If the COM number is 13 and the measurement data is 32.14 mm, the value input to the optional application is as follows.

- [Numeric form]

Only the measurement data is input.

Example: "32.14"

- [Command form]

The channel number and measurement data are input.

Example: "01A+00032.14"

Example: "DT10001+00000032.14M"

- [COM+Command form]

The COM number (3 digits), channel number (fixed to 1), and measurement data

are input.

Example: "01301A+00032.14"

Example: "013DT10001+00000032.14M"

5) [Data entry devices] field

This field displays the information of the registered data entry device.

6) Buttons in [Data entry devices] field

- [+] button: Adds a data entry device in the [Data entry devices] field.
- [-] button: Deletes the data entry device selected in the [Data entry devices] field.
- [✓] button: Changes the settings of the data entry device selected in the [Data entry devices] field.

TIP • For details about the data entry device settings, refer to "6.13 Data Entry Device Settings (Optional)".

7) [Foot switch option] field

This field displays the information of the USB-FSW unit registered to foot switch option.

8) Buttons in [Foot switch option] field

- [+] button: Adds a USB-FSW unit in the [Foot switch option] field.
- [-] button: Deletes the USB-FSW unit selected in the [Foot switch option] field.
- [✓] button: Changes the settings of the USB-FSW unit selected in the [Foot switch option] field.

TIP • For details about the foot switch option settings, refer to "6.9 Foot Switch Option Settings".

9) [Add the date and time data] field

The measurement data collection with date and time is available when the date and time data is set to the measurement data.

Select [Add the date and time data] when adding the date and time data.

Items 10) and 11) will be activated for selection.

TIP • For the procedure type of date and time data input, [Sequential], [Batch] and [Individual] are available to a desired application.

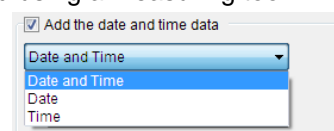
10) Select [Date and Time].

Select the format of the date and time data added to the measurement data to be input to an application.

The following describes the available formats of the date and time data. In the example used in this explanation, 32.14 mm was measured using a measuring tool.

- [Date and Time]

The date and time will be added.



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Example: 32.14

2013/01/23 12:34:56

- [Date]

Only the date will be added.

Example: 32.14

2013/01/23

- [Time]

Only the time will be added.

Example: 32.14

12:34:56

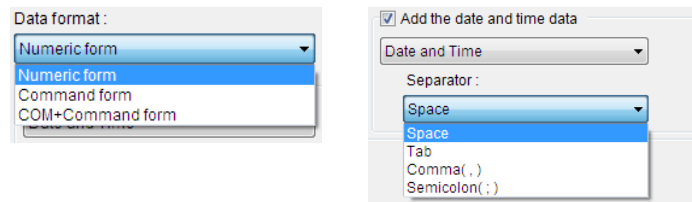
11) Select [Separator].

Select [Space], [Tab], [Comma (,)] or [Semicolon (;)] for the separator between the measurement data and the date and time data.

NOTE • If [Add the date and time data] is selected and the following are selected:

[Numeric form] for [Data format]

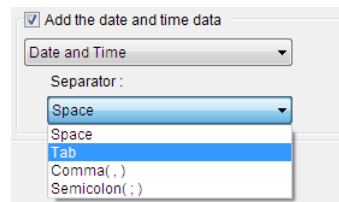
[Space], [Comma (,)] or [Semicolon (;)] for [Separator]



When selecting [Excel] for an application to input data, and the measurement data to be input is a negative value (the minus-sign ("-") is added to the top), the following error message is displayed in Excel: "The formula you typed contains an error."

When selecting [Excel] for an application to input data, perform the following remedies.

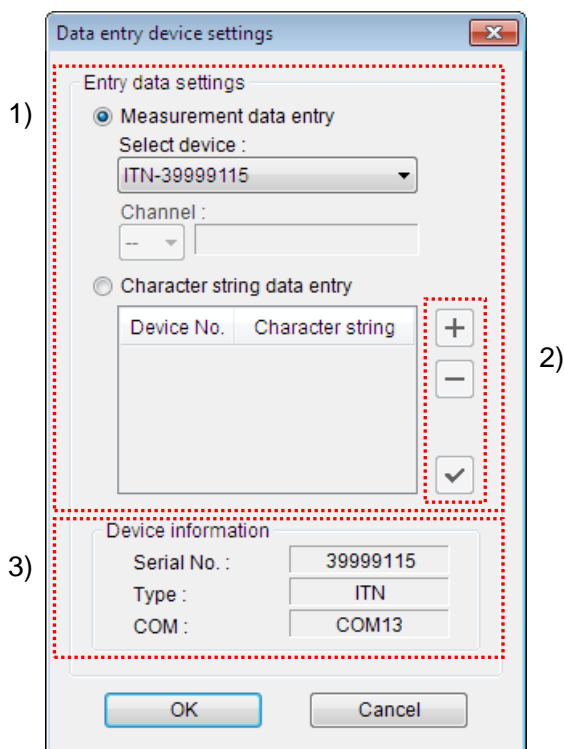
- Select [Tab] for [Separator].
- In advance, select "Text" for "Format Cells" in Excel.



6.13 Data Entry Device Settings (Optional)

Clicking the [+] button in the [Data entry devices] field of the dialog box described in "6.12 Adding and Changing Procedures (Optional)" displays the [Data entry device settings] dialog box.

On this dialog box, the device used for inputting data can be selected.



1) [Entry data settings] field

Select the device used for inputting data to the optional application.

Select either [Measurement data entry] or [Character string data entry].

- [Measurement data entry]

The measurement data is input from USB-ITN, U-WAVE or IT-016U. Select the device from the drop-down list in the [Select device] field.

NOTE • The Serial No. of IT-016U is represented starting with "8" as "ITN-8*****".

When selecting U-WAVE (UWR), select the channel of U-WAVE-T to be used from the [Channel:] field.

NOTE • Before starting up U-WAVEPAK for channel check, exit USB-ITPAK.

- [Character string data entry]

The character string data is input from USB-FSW. Click the [+] button in the [Character string data entry] field and specify the character string data.

2) Buttons in [Character string data entry] field

- [+] button: Adds a USB-FSW unit in the [Character string data entry] field.

6. DIALOG BOX CONFIGURATIONS OF USB-ITPAK

- [-] button: Deletes the USB-FSW unit selected in the [Character string data entry] field.
 - [✓] button: Changes the settings of the USB-FSW unit selected in the [Character string data entry] field.
-

TIP • For the character string data settings, refer to "6.8 Character String Data Settings".

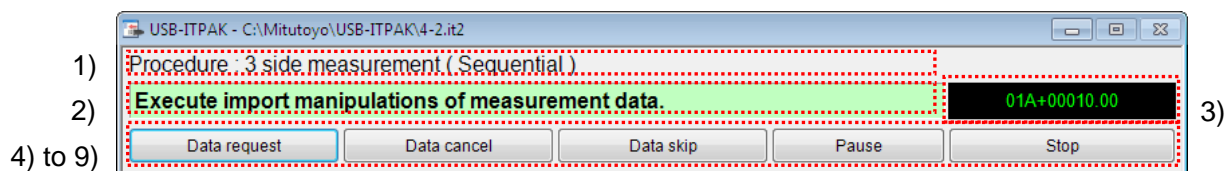
3) [Device information] field

The [Device information] field displays the information of the device selected in the [Entry data settings] field.

6.14 Data Collection

Clicking the [Data collection] button on the Quick Menu described in "6.1 Quick Menu" displays the data collection dialog box. Alternatively, selecting the Data Collection menu and then [Start] from the dialog box described in "6.2 Main Dialog Box", or clicking the [Data collection] button on the tool bar also displays the data collection dialog box.

This dialog box is used to input data from a measuring tool to an application.



1) [Procedure] field

This field displays the procedure currently used to collect data.

2) [Guidance message] field

Displays the following guidance messages for the operator.

- [Execute import manipulations of measurement data]

Input measurement data in one of the following ways.

(1) Press the DATA switch on the measuring tool.

(2) In the case of a USB-ITN, U-WAVE or IT-016U unit that has a DATA switch, press the DATA switch.

(3) Click the [Data request] button on the data collection dialog box.

(4) If the [Data request] function is assigned to the foot switch, press the foot switch.

(5) If the [Data request] function is assigned to a function key, press that function key.

- [Please execute the foot switch operation.]

Input the character string data by pressing the foot switch connected to the USB-FSW unit to which character string data input has been assigned.

- [Execute data entry operation.]

Input measurement data or character string data by using the USB-ITN, USB-FSW, U-WAVE or IT-016U unit.

- [The import of all pieces of measurement data has been completed.]

Data collection has been completed. Click the [Exit] button and save the measurement data.

3) [Data display] field

This field displays the data input from the device in the transmission command format.

- 4) [Data request] button

Collects data.

NOTE • The [Data request] button does not support data input for individual measurement.

- 5) [Data cancel] button

Cancels the data that was input.

NOTE • The [Data cancel] button does not support data input for individual measurement.

- 6) [Data skip] button

Skips to the next data without inputting the current data.

NOTE • The [Data skip] button does not support data input for individual measurement.

- 7) [Pause] button

Pauses data collection.

For the operation of this button, refer to "6.14.1 [Pause/Resume] button".

- 8) [Resume] button

Resumes data collection that had been paused.

For the operation of this button, refer to "6.14.1 [Pause/Resume] button".

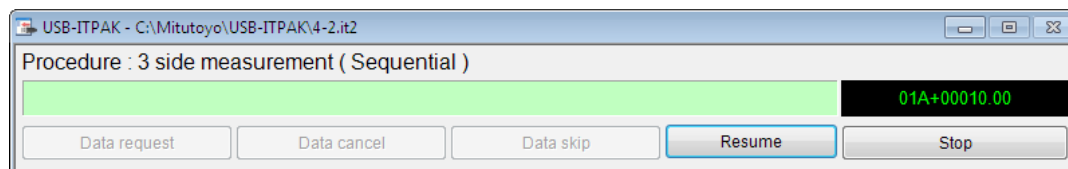
- 9) [Exit] button

Exits data collection.

6.14.1 [Pause/Resume] button

- 1) Clicking the [Pause] button pauses data collection.

When the [Pause] button is displayed as the [Resume] button, as shown below, data collection is paused.



In the paused state, the following operations are possible.

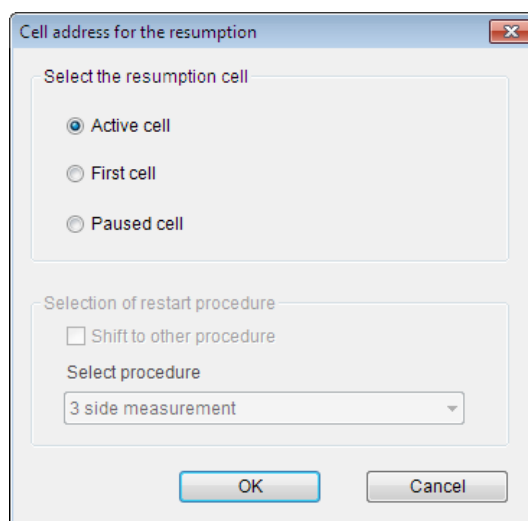
- Specify the start cell from which to resume data collection.
- Perform worksheet editing, such as character string input.

- 2) To resume data collection, click the [Resume] button.

IMPORTANT

- Before returning to data collection with USB-ITPAK by clicking the [Resume] button, be sure to thoroughly complete operations in Excel. If data collection with USB-ITPAK is resumed while operations in Excel remain uncompleted, such as input to a cell being in progress or a message being displayed, USB-ITPAK may not operate normally.

Click the [Resume] button to display the [Cell address for the resumption] dialog box as shown below. Next, select either one from the [Select the resumption cell] field, and click the [OK] button.



If the paused setting file consists of multiple procedures, the [Selection of restart procedure] field on the [Cell address for the resumption] dialog box is active, so it is possible to resume from another procedure.

To resume from another procedure, select [Shift to other procedure] and from the drop-down list in the [Select procedure] field, select the procedure for data collection resumption.

The resumption cell position is the first cell if collection is resumed from another procedure.

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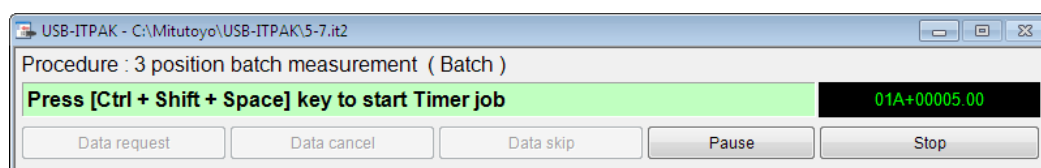
NOTE • If the auto data collection using the timer job option is paused, it will be required to resume the timer job after the operation shown above. For details, refer to "6.14.2 Resuming operation (For the timer job option)".

6.14.2 Resuming operation (For the timer job option)

If the auto data collection using the timer job option is paused, it will be required to resume the timer job.

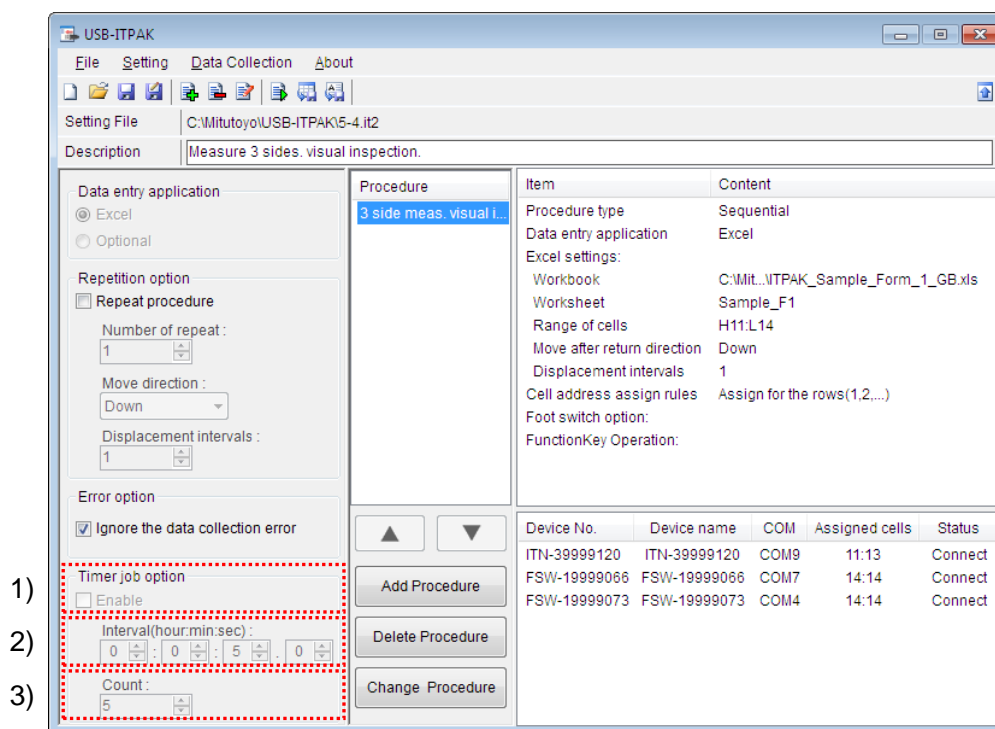
1) After the operation "6.14.1 [Pause/Resume] button", the dialog box shown below will be displayed.

When pressing the keys [Ctrl], [Shift] and [Space] at the same time, the timer job will resume.



6.15 Timer Job Option Setting

The automatic input of the measurement data is available in the specified interval.



1) [Timer job option] - [Enable] field

If selecting [Enable], items 2) and 3) will be activated for selection.

This field is available only with the batch measurement.

NOTE • When the sequential measurement procedure is added, timer job option setting will not be available.

2) [Interval (hour: min: sec):]

Specify the interval for data request.

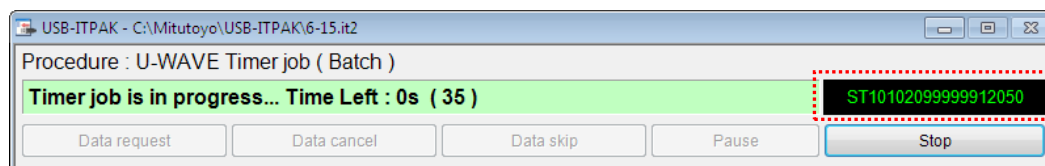
A value between 0.0 seconds and 24 hours (0:0:0.0 - 24:0:0.0) can be specified for [Interval].

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- NOTE** • For the data collection, the time [T1] to load the measurement data will surely occur. Therefore, if the value specified for the interval [T2] is smaller than [T1], the actual data collection interval [T3] may exceed the specified value. [T1] varies according to the type and total number of data entry devices or measuring tools. [T1] per unit is 0.3 seconds when using USB-ITN / IT-016U and 0.1 seconds when using U-WAVE-T. However, 0.5 seconds is included in [T1] with U-WAVE-T, regardless of the number of devices.

Data entry device	Total number	[T1]	[T2]	[T3]	
USB-ITN / IT-016U	1	0.3 sec.	<0.5 sec.	0.5 sec.	The interval is the specified value.
	2	0.6 sec.	>0.5 sec.	0.6 sec.	The interval exceeds the specified value.
	3	0.9 sec.	>0.5 sec.	0.9 sec.	
U-WAVE-T	1	0.6 sec.	=0.6 sec.	0.6 sec.	The interval is the specified value.
	2	0.7 sec.	>0.6 sec.	0.7 sec.	The interval exceeds the specified value.
	3	0.8 sec.	>0.6 sec.	0.8 sec.	

- If [Interval] is less than "0.6 sec" when using U-WAVE-T, the measurement data may be collected without data input even when the values for measuring tools have changed.



3) [Count:] field

Specify the number of time for data request.
The upper limit of specified value is 60000.

- NOTE** • When selecting [Excel] for an application to input data, [Count] cannot be selected.

MEMO

7

COMMUNICATION COMMAND SPECIFICATIONS

7.1 Overview

This chapter explains the VCP communication command interface between USB-ITN, USB-FSW or IT-016U and the application software for the input and output of measurement data.

NOTE • For details about the communication command specification for U-WAVE, refer to the U-WAVEPAK User's Manual.

7.1.1 API of VCP communication

When using USB-ITN, USB-FSW or IT-016U with application software other than USB-ITPAK, communication can be done with the same operation (API function calls) as the serial communication ports (COM) operating with the Windows standard driver.

Generally, to communicate by using a serial communication port (COM), the RS-232C communication parameters (communication speed, flow control, etc.) must be set, but, for the virtual serial port (VCP) communication used by USB-ITN, USB-FSW and IT-016U, the communication protocol does not use RS-232C communication parameters, and therefore communication is possible without any RS-232C communication parameter settings (or with arbitrary values).

7.1.2 Common specifications of communication commands

All commands use the ASCII code.

7.1.3 Types of communication commands

The types of communication commands are listed in the table below.

(Term)

Device: USB-ITN, USB-FSW or IT-016U

(Legend)

Direction: Down: Command transmitted from the software to the device

Up: Command transmitted from the device to the software

ITN: Y: Command used by USB-ITN / IT-016U

N: Command not used by USB-ITN / IT-016U

FSW: Y: Command used by USB-FSW

N: Command not used by USB-FSW

No.	Direction	Code	Command Name	ITN	FSW
1	Down	V	Device information request command	Y	Y
2	Up	1	Device information command	Y	Y
3	Down	1	Measurement data request command	Y	N
4	Up	0	Measurement data command	Y	N
5	Up	8	Foot switch signal command	N	Y
6	Up	9	Status command	Y	N

7.2 Format of Communication Commands

The following tables list the types of communication commands.

7.2.1 Device information request command (V) (down)

This command is valid for both USB-ITN, USB-FSW and IT-016U.

This request command is for the software to read the information of the device.

When the software sends this command to the device, the device returns the "device information command" (1).

Item	Value ASCII [Hex]	Bytes	Description
Command code	V	1	Device information request command
Terminator	CR [0x0D]	1	CR (carriage return)
Total		2	

7.2.2 Device information command (1) (up)

This command is valid for both USB-ITN, USB-FSW and IT-016U.

This response command is for the software to read the information of the device.

When the software sends the "device information request command (V)" to the device, the device returns this command.

Item	Value ASCII [Hex]	Bytes	Description
Command code	1	1	Device information command
Type	ITN FSW	3	Device types ITN = USB-ITN / IT-016U FSW = USB-FSW
Serial No.	00000000 to 99999999	8	Serial No. of device
Terminator	CR [0x0D]	1	CR (carriage return)
Total		13	

7.2.3 Measurement data request command (1) (down)

This command is valid for USB-ITN / IT-016U.

This request command is for the software to read the measurement data from USB-ITN / IT-016U. When the software sends this command to USB-ITN / IT-016U, USB-ITN / IT-016U inputs the measurement data from a measuring tool with Digimatic output and returns "measurement data command" (0).

Item	Value ASCII [Hex]	Bytes	Description
Command code	1	1	Measurement data request command
Terminator	CR [0x0D]	1	CR (carriage return)
Total		2	

7.2.4 Measurement data command (0) (up)

This command is valid for USB-ITN / IT-016U.

This command is used by USB-ITN / IT-016U to notify the software of measurement data. When the software sends "measurement data request command (1)" to USB-ITN / IT-016U, USB-ITN / IT-016U inputs the measurement data from a measuring tool with Digimatic output and returns this command.

Also, when the measuring tool makes a request, such as when the DATA button of the measuring tool is pressed, measurement data is input from the measuring tool and this command is sent to the software.

NOTE • If an error occurs when the measurement data is being input from a measuring tool that has Digimatic output, the USB-ITN / IT-016U unit sends the "status command" (9) instead of the "measurement data command" (0).

Item	Value ASCII [Hex]	Bytes	Description
Command code	0	1	Measurement data command
Channel	1	1	Channel (fixed to 1)
Measurement data type	A	1	Normal data (fixed to A)
Sign	+/-	1	"+" if the measurement data is 0
Measurement data	.0000000 to 99999999	8	A period (.) is used as the decimal point character. Values are zero-supplied (displayed right-aligned, and padded with 0s if there are unused leading digits). If there are no digits past the decimal point, no decimal point character is used in the right-most digit.
Terminator	CR [0x0D]	1	CR (carriage return)
Total		13	

7.2.5 Foot switch signal command (8) (up)

This command is valid for USB-FSW.

This command is for the USB-FSW unit to notify the software of the foot switch signal.

Upon detecting that the foot switch signal is ON, the USB-FSW unit sends this command to the software.

Item	Value ASCII [Hex]	Bytes	Description
Command code	8	1	Foot switch signal command
Trigger type	0	1	0 = Unspecified
Terminator	CR [0x0D]	1	CR (carriage return)
Total		3	

7. COMMUNICATION COMMAND SPECIFICATIONS

7.2.6 Status command (9) (up)

This command is valid for USB-ITN / IT-016U.

This command is for the USB-ITN / IT-016U unit to notify the software of its state.

Upon detecting the occurrence of a status to be reported, the USB-ITN / IT-016U unit sends this command to the software.

Item	Value ASCII [Hex]	Bytes	Description
Command code	9	1	Status command
Channel	1	1	Channel (fixed to 1)
Status	(Refer to table below.)	1	(Refer to table below.)
Terminator	CR [0x0D]	1	CR (carriage return)
Total		4	

The following table lists the status values.

Value ASCII	Explanation
1	The measurement data could not be received within the stipulated time (2 s) from the measuring tool with Digimatic output. Examples of possible causes: <ul style="list-style-type: none">• The measuring tool is turned off.• The cable of the USB-ITN / IT-016U unit is not connected to the measuring tool.
2	The Digimatic communication data loaded from the measuring tool with Digimatic output was data not matching the Digimatic communication specifications. Examples of possible causes: <ul style="list-style-type: none">• Influence of noise• Fault in the communication circuits of the measuring tool or the USB-ITN / IT-016U unit
3	The Digimatic communication clock (CK) signal loaded from the measuring tool with Digimatic output was data not matching the Digimatic communication specifications. Examples of possible causes: <ul style="list-style-type: none">• Disconnected CK signal of Digimatic communication cable• Fault in the communication circuits of the measuring tool or the USB-ITN / IT-016U unit
4	The Digimatic communication data (DATA) signal loaded from the measuring tool with Digimatic output was data not matching the Digimatic communication specifications. Examples of possible causes: <ul style="list-style-type: none">• Disconnected DATA signal of Digimatic communication cable• Fault in the communication circuits of the measuring tool or the USB-ITN / IT-016U unit
8	During reception of a measurement data request command from the software, the USB-ITN / IT-016U unit that received the request was in a busy state. Examples of possible causes: <ul style="list-style-type: none">• A measurement data request command was received during Digimatic communication processing.
9	The device detected an error other than those defined above.

NOTE • If a command received from the software is illegal, the USB-ITN / IT-016U unit ignores that command and does not send a response command.

MEMO

8

APPENDIX

8.1 Product Specifications

8.1.1 Configuration of USB-ITPAK

	Name	Q'ty	Remarks
1	USB-ITPAK Program Disk	1 set	<ul style="list-style-type: none"> • Provided on CD • Includes dedicated VCP driver • Includes USB-ITPAK User's Manual
2	USB Dongle	1	<ul style="list-style-type: none"> • For program protection • Connect to USB port of PC when using software • Supported USB versions are USB 2.0 full speed and USB 1.1
3	USB-ITPAK Installation Manual	1 set	<ul style="list-style-type: none"> • Provided in paper form

8.1.2 Main specifications of USB-ITPAK

Item	Specifications
Maximum number of USB-ITN, USB-FSW, U-WAVE, IT-016U units that can be connected *1	Windows 2000 / Windows XP : Within 100. Windows Vista / Windows 7 / Windows 8/8.1: Within 20.
Number of data input devices that can be registered to USB-ITPAK (USB-ITN, USB-FSW, U-WAVE, IT-016U)	Within 400.
Data request (sequential)	Data request to 1 USB-ITN, U-WAVE, IT-016U unit
Data request (batch)	Batch data request to multiple USB-ITN, U-WAVE, IT-016U units
Data cancel (sequential, batch)	Cancellation of measurement data that was input
Data skip (sequential, batch)	Skipping of data input that was to be executed next and movement to the next data
Character string input through USB-FSW	Input of arbitrary character string set beforehand, through USB-FSW operation

*1: The maximum number of units that can be connected may be lower depending on the PC or USB hub that is used. When using a USB hub, using a hub that has USB authentication is recommended. The loading time per unit is 0.2 to 0.3 seconds. However, this varies according to the measuring tool that is connected and the measuring environment.

8.2 Supplementary Explanation of Use

8.2.1 Using setting files on another PC

1) Moving a device and setting file

When copying a setting file of USB-ITPAK (extension: itp, itp2) to another PC for use on that PC, also copy the Excel file to which that setting file is registered to the PC at the same time.

Since the setting file is registered including the folder name of the Excel file, copy the Excel file using the same path name (drive name + folder name) that was saved on the copy source PC.

2) Moving the setting file only for use with another device

When using another device (USB-ITN, USB-FSW, U-WAVE, and/or IT-016U) on the copy destination PC, the setting file cannot be used as is by performing only operation 1) above.

This is because the device No. registered to the procedure in the setting file differs between the copy source PC and the copy destination PC.

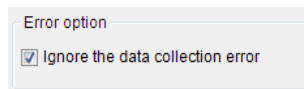
In this case, the solution is to make the device No. of the copy destination PC the same as the device No. of the copy source PC. When this is done, the setting file that was copied can be used as is.

TIP • For how to change the device No., refer to "6.3 Device Information" and section "6.4 Device Information Setting".

8.2.2 Operation when data request to measuring tool times out

If the measuring tool to which USB-ITPAK has sent a data request does not respond within about 2 seconds, USB-ITPAK stops data input from the measuring tool.

The following operations are performed according to the setting of [Ignore the data collection error] in the [Error option] field on the main dialog box.



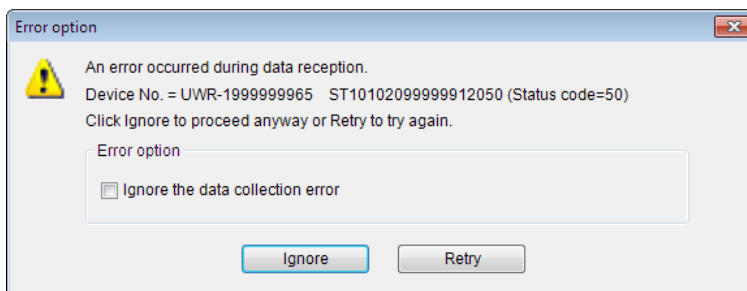
1) If selected:

No error message is displayed when a data collection error occurs.

If the data input application is Excel, the active cell changes to the next cell.

2) If not selected:

The following error message is displayed when a data collection error occurs.



Check the measuring tool connected to the USB-ITN, U-WAVE, IT-016U unit with the [Device No.] shown in the error message.

When ignoring the future error, mark the check box.

Click the [Ignore] button:

If the data input application is Excel, the active cell changes to the next cell.

Click the [Retry] button:

No processing is done for the application and a data request is sent to the measuring tool again.

8.2.3 Sound output during data input

A sound can be output during data input by creating an Excel macro.

TIP • For details about macros, refer to the Excel user's manual.

8.2.4 Precautions for the measurement when using U-WAVE

When using U-WAVE, the availability for "Data request" or "Data cancel" varies according to "measurement mode (button driven, event driven)". The following table describes the association of the measurement modes and their availability.

TIP • For details about the "measurement mode (button driven, event driven)" and "data cancel", refer to the U-WAVEPAK User's Manual.

1) Data entry application: Table when using Excel

Procedure type	Operation		U-WAVE	
			Button driven	Event driven
Sequential	DATA switch (U-WAVE-T)	Data request	✓ ^(*1)	—
		Data cancel	✓ ^(*2)	—
	Foot switch (via USB-FSW)	Data request	—	✓
		Data cancel	✓	✓
	Data collection dialog box or a function key	Data request	—	✓
		Data cancel	✓	✓
Batch	DATA switch (U-WAVE-T)	Data request	—	—
		Data cancel	—	—
	Foot switch (via USB-FSW)	Data request	—	✓
		Data cancel	✓	✓
	Data collection dialog box or a function key	Data request	—	✓
		Data cancel	✓	✓
Individual	DATA switch (U-WAVE-T)	Data request	✓	—
		Data cancel	✓ ^(*3)	—
	Foot switch (via USB-FSW)	Data request	—	✓
		Data cancel	✓	✓
	Data collection dialog box or a function key	Data request	—	—
		Data cancel	—	—

(*1) Except when [Unspecified] is selected for [Cell address assign rules].

(*2) Data cancel with the DATA switch operation on U-WAVE-T registered for the procedure during measurement job is available.

When more than one procedure is combined for measurement, the data cancel operation on U-WAVE-T skipping other procedures is not available.

For example, when a measurement job is composed of the procedures "A" and "B", the data cancel for the procedure "A" is not available using U-WAVE-T registered only for the procedure "B".

(*3) Data cancel is available per data input timing of the measuring tools connected to U-WAVE-T.

2) Data entry application: Table for Optional

Procedure type	Operation		U-WAVE	
			Button driven	Event driven
Sequential	DATA switch (U-WAVE-T)	Data request	✓	—
		Data cancel	—	—
	Foot switch (via USB-FSW)	Data request	—	✓
		Data cancel	—	—
	Data collection dialog box	Data request	—	✓
		Data cancel	—	—
Batch	DATA switch (U-WAVE-T)	Data request	—	—
		Data cancel	—	—
	Foot switch (via USB-FSW)	Data request	—	✓
		Data cancel	—	—
	Data collection dialog box	Data request	—	✓
		Data cancel	—	—
Individual	DATA switch (U-WAVE-T)	Data request	✓	—
		Data cancel	—	—
	Foot switch (via USB-FSW)	Data request	—	—
		Data cancel	—	—
	Data collection dialog box	Data request	—	—
		Data cancel	—	—

8.2.5 To resume the Excel data collection previously paused

For an Excel test chart, the data collection can be resumed on the cell position where the collection has been previously paused in the procedures described below.

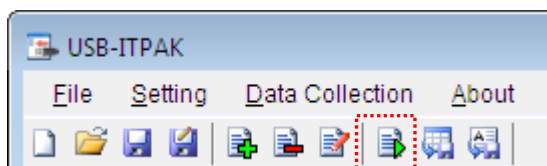
1) Open [Setting File].

From the menu of the main dialog box, select [File] and then [Open], or open [Setting file] from [Recent files].

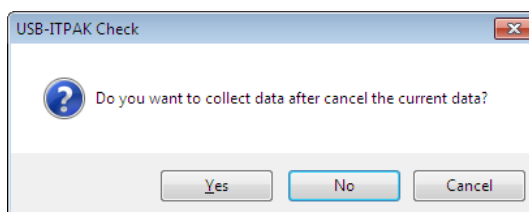
2) Open the data collection dialog box.

IMPORTANT • In USB-ITPAK, following data collection, the Excel file to which the data was input is saved through overwriting under the existing file name. To use the original Excel file later, back it up beforehand.

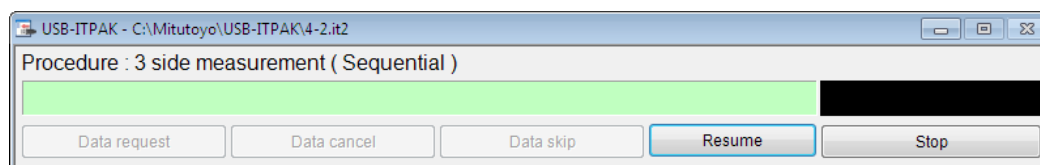
From the menu of the main dialog box, select [Data Collection] and then [Start], or click the icon shown below.



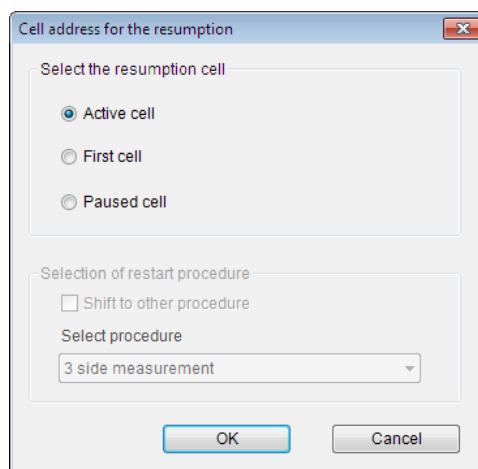
Click [No] for the message [Do you want to collect data after cancel the current data?] displayed before the data collection starts.



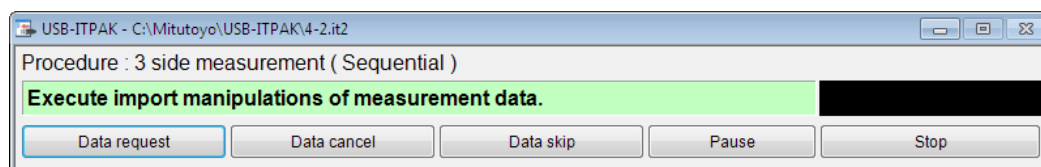
The paused data collection dialog box will be displayed. Click [Resume].



Click the [Resume] button to display the [Cell address for the resumption] dialog box as shown below. After selecting the cell position to resume the data collection of the Excel file, select [Active cell] in the [Select the resumption cell] field and then click [OK].



The data collection dialog box will be displayed and data collection will be available starting from the specified cell position.



-
- TIP** • When the timer job option is enabled, start the timer job by pressing the keys [Ctrl], [Shift] and [Space] at the same time after the resuming operation.
-

8.3 Troubleshooting

Countermeasures for any of USB-ITN, USB-FSW, U-WAVE, IT-016U, or USB-ITPAK is explained below. If the implementation of these countermeasures does not result in normal operation, report the following information to the distributor or the sales office where the unit was purchased.

- 1) Serial number of USB-ITN, USB-FSW, U-WAVE, IT-016U and USB dongle
- 2) Version of USB-ITPAK
- 3) Name and model number of PC
- 4) Version of used OS and Excel
- 5) If using USB hub, name and model number of USB hub
- 6) Device information and connection configuration of other USB devices connected to PC

8.3.1 Problems related to installing VCP driver

The [The specified location does not contain information about your hardware.] message is displayed.

Two drivers can be used with USB-ITN, USB-FSW and IT-016U: the HID driver and VCP driver.

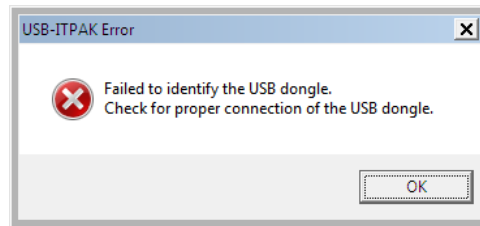
If the HID driver is selected due to a problem with the plug & play facility of the OS, the VCP driver is not recognized. In this case, select again the folder according to the device in the "Drivers" folder on the supplied CD. The VCP driver can be selected and installed.

8.3.2 Problems related to starting up USB-ITPAK

1. A security warning message is displayed at USB-ITPAK startup.

To avoid this warning message, enable the operation of "itpak.exe" of USB-ITPAK in the security software.

2. At USB-ITPAK startup, the [Failed to identify the USB dongle.] message is displayed.

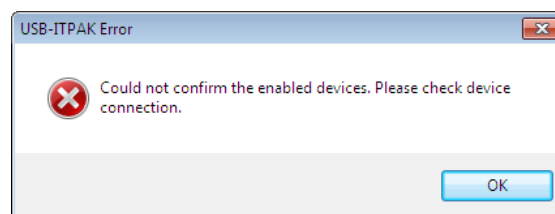


The supplied USB dongle must be connected to the PC in order to start up USB-ITPAK.

Connect the USB dongle, and then restart USB-ITPAK.

-
- NOTE** • USB-ITPAK operates only when the version of USB dongle is the same or higher than that of USB-ITPAK. For detailed information, refer to "1.2. System Configuration".
-

3. At USB-ITPAK startup, the message [Could not confirm the enabled devices.] is displayed.



If USB-ITPAK does not recognize any connected USB-ITN, USB-FSW, U-WAVE, or IT-016U, it displays this error message.

USB-ITPAK also does not recognize USB-ITN, USB-FSW or IT-016U units connected to the PC if no VCP driver has been installed.

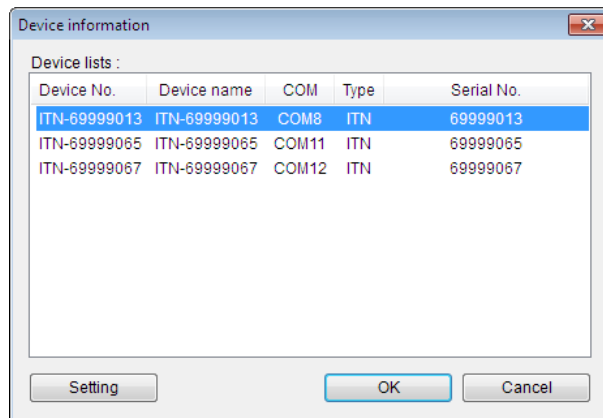
-
- TIP** • For details about installing the VCP driver, refer to "2.2 Installing and Uninstalling the VCP Driver".
- If this error message is displayed even though the VCP driver has been installed, refer to "8.3.3 Problems related to connecting USB-ITN, USB-FSW or IT-016U".
 - For details about the U-WAVE, refer to the instruction manuals supplied with U-WAVE.
-

8.3.3 Problems related to connecting USB-ITN,USB-FSW,U-WAVE, and/or IT-016U

1. The connected USB-ITN, USB-FSW, U-WAVE, and/or IT-016U cannot be correctly recognized.

1) Check the device connections in USB-ITPAK.

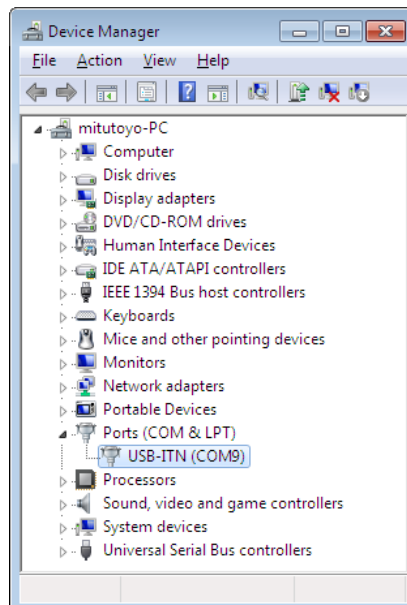
The connection status of the devices recognized by USB-ITPAK can be checked on the [Device information] dialog box displayed by selecting [Setting] and then [Device Information] from the menu on the main dialog box.



If the device is correctly recognized, review the procedure settings.

2) Check the USB devices in Windows Device Manager.

If the connected device is not displayed on the [Device information] dialog box shown in "1)" above, start up the Windows Device Manager to display the connection status of the USB devices.



- If USB-ITN, USB-FSW, U-WAVE, and/or IT-016U are/is not recognized, disconnect the device from the PC and then reconnect it, and check whether the device connection is recognized.

Once the device connection is recovered, start up USB-ITPAK and proceed with the operation.

- If the USB hub to which the device is connected is not recognized, disconnect the USB hub from the PC and then reconnect it, and check whether the USB hub connection is recognized.

Once the USB hub connection is recovered, check the connection of the USB-ITN, USB-FSW, U-WAVE, and/or IT-016U unit.

NOTE • If multiple USB hubs are connected, Windows might not recognize the USB hub. Using a USB hub that has USB authentication is recommended.

2. When Windows returns from standby or hibernation, USB-ITN, USB-FSW, U-WAVE, and/or IT-016U are/is not recognized.

USB-ITN, USB-FSW, U-WAVE, IT-016U and USB dongle support the suspend (sleep mode, standby mode) function. However, the operation is not guaranteed for all PCs and USB hubs.

If the operation of the suspend function encounters a problem in the environment that is used, set the power management of the PC so that the PC does not enter the suspended mode during operation.

TIP • For the power management settings, refer to the user's manual of Windows.

8.3.4 Problems related to data collection

1. Data cannot be input from the measuring tool.

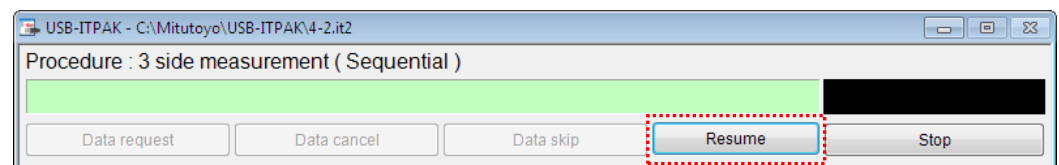
- 1) Check if the power of the measuring tool is not off.

If the power of the measuring tool is off, resume work after switching it on.

- 2) Check the connection status of the measuring tool used for data collection.

Check the connection status of the device in accordance with "8.3.3 Problems related to connecting USB-ITN, USB-FSW, U-WAVE, and/or IT-016U".

- 3) Check the data collection dialog box to confirm that collection is not paused.



If this button displays [Resume], collection is paused. In this case, click the [Resume] button to resume collection.

-
- 4) If the [Data entry application] setting is [Optional], check whether the application to which the measurement data is to be input on the PC screen is active.

If the data entry application is not active, select that application and make it active.

- 5) If the [Data entry application] setting is [Optional], check the Japanese kana-kanji conversion mode.

If the Japanese kana-kanji conversion mode is not [Direct Input], select [Direct Input].

2. Data is not input to the specified cell.

Return to the main dialog box and check the data entry cell settings.

3. The processing speed declines as the number of connected units increases.

Processing takes longer as the number of connected units increases.

Examples:

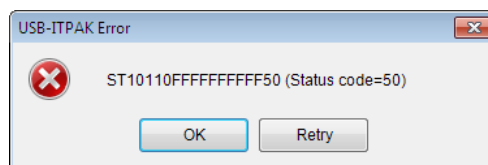
- PC and Windows startup time
- USB-ITPAK startup time
- USB-ITPAK's batch measurement data collection time
- USB-ITPAK's switching time from the main dialog box to the data collection dialog box

Use of 20 units or less is recommended.

8.3.5 Problems related to the U-WAVE connection

1. Warning message displayed when selecting a channel

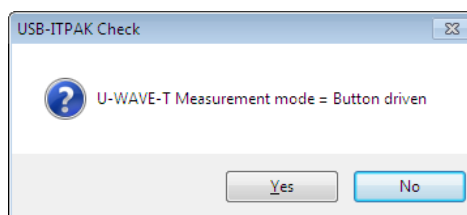
If a channel number not registered to U-WAVE-R is selected when creating a procedure, the dialog box shown below will be displayed. Select the channel number of U-WAVE-T registered to U-WAVE-R.



NOTE • Before starting up U-WAVEPAK for channel check, exit USB-ITPAK.

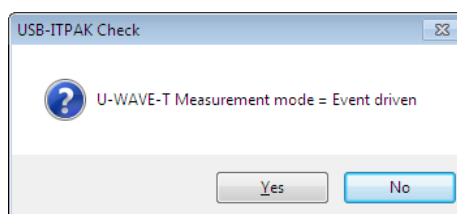
In addition, when selecting the channel of U-WAVE-T in the button driven mode while creating a procedure for the batch measurement, the dialog box shown below will be displayed.

If the procedure does not include the data input with the DATA switch operation on U-WAVE-T or the measuring tools, select the channel of U-WAVE-T in the event driven mode or change the measurement mode of U-WAVE-T registered to the selected channel to the event driven mode using U-WAVEPAK after the procedure creation.



In addition, when selecting the channel of U-WAVE-T in the event driven mode while creating a procedure for the individual measurement, the dialog box shown below will be displayed.

If the procedure does not include the data request operation, select the channel of U-WAVE-T in the event driven mode or change the measurement mode of U-WAVE-T registered to the selected channel to the button driven mode using U-WAVEPAK after the procedure creation.



NOTE • Before starting up U-WAVEPAK to change the measurement mode (button driven, event driven) of U-WAVE-T, exit USB-ITPAK.

8.4 USB-ITPAK Error Messages

The contents of the main error messages of USB-ITPAK and their solutions are described below.

8.4.1 Error messages common to all dialog boxes

	Error Message	Error Timing	Error Contents	Solution
1	Failed to identify the USB dongle. Check for proper connection of the USB dongle.	At USB-ITPAK startup	The USB dongle is not connected to the USB port of the PC.	After connecting the USB dongle, restart USB-ITPAK.
2		Throughout USB-ITPAK execution	The USB dongle might be disconnected.	Check if the USB dongle is correctly connected, and resume operation.
3	Could not confirm the enabled devices. Please check device connection.	At USB-ITPAK startup	No USB-ITN, USB-FSW, U-WAVE-R, or IT-016U unit is connected.	After connecting the USB device to be used, restart USB-ITPAK.
4	U-WAVE-R of factory-default state was found.	At USB-ITPAK startup	The connected U-WAVE-R is in the default status.	Set up U-WAVE-R using U-WAVEPAK.
5	ST***** (Status code = ??)	Throughout USB-ITPAK execution	The status packet of U-WAVE has been received.	Check the status code.
6	TI***** (U-WAVE-T disconnected)	Throughout USB-ITPAK execution	U-WAVE-T is not connected to the specified channel.	Check the connections of U-WAVE-T.

NOTE • For details about the status codes of U-WAVE, refer to the U-WAVEPAK User's Manual.

8.4.2 Error message of main dialog box

	Error Message	Error Timing	Error Contents	Solution
1	File [file] does not exist. Verify that the correct file name was given.	When a setting file is opened by selecting [File] and then [Open]	The selected setting file cannot be found.	Check whether the setting file to be used does exist.
2	Failed to find the setting file.	When a setting file is opened by selecting [File] and then [Recent Files]		
3	Could not control Excel. Please check Excel condition.	When a setting file is opened by selecting [File] and then [Open] or [File] and then [Recent Files]	This error occurs when Excel cannot be controlled from USB-ITPAK.	Check the status of Excel displayed on the error dialog box. Example: <ul style="list-style-type: none"> • If the cursor on the Excel worksheet to be used is in the edit state, release it. • If the Excel setting dialog box is open, close it.
4	Failed to find the specified Excel file. Workbook = [Workbook]	When a setting file is opened by selecting [File] and then [Open] or [File] and then [Recent Files]	The Excel file registered to the setting file is not found.	Check whether the Excel file does exist.
5	Failed to find the specified Worksheet. Workbook = [Workbook] Worksheet = [Worksheet]	When a setting file is opened by selecting [File] and then [Open] or [File] and then [Recent Files]	The worksheet registered to the setting file is not found.	Check whether the worksheet does exist.

	Error Message	Error Timing	Error Contents	Solution
6	Device used in the procedure is not connected. Connect the device to restart the USB-ITPAK or change the device to use.	When a setting file is opened by selecting [File] and then [Open] or [File] and then [Recent Files]	The device to be used in the procedure is not connected. Among the procedures displayed at the center of the main dialog box, the device of the procedure displayed in red characters is not connected.	Apply one of the following actions. <ul style="list-style-type: none"> • After connecting the unconnected device, restart USB-ITPAK. • Select the procedure displayed in red characters on the main dialog box, click the [Change procedure] button, and change the assignment of the device.
7	Device used in the procedure is not connected. Connect the device to restart the USB-ITPAK.	When data collection is started by selecting [Data collection] and then [Start]		
8	An invalid procedure has been set.	When a setting file is opened by selecting [File] and then [Open] or [File] and then [Recent Files]	The information registered to the setting file might have been damaged.	Newly create a procedure.

8.4.3 Error messages of [Device information setting] dialog box

	Error Message	Error Timing	Error Contents	Solution
1	The specified device No. has already been used.	When the [OK] button is clicked	The specified device No. has already been used for another device.	Enter a device No. that has not been used.

8.4.4 Error messages of [Add/change procedure] dialog box

	Error Message	Error Timing	Error Contents	Solution
1	Could not control Excel. Please check Excel condition. Workbook = [Workbook] Worksheet = [Worksheet]	When [Workbook] is selected by clicking the [...] button in the [Excel settings] field When the [Select] button in the [Excel settings] field is clicked When the [+] button in the [Data entry device settings] field is clicked	This error occurs when Excel cannot be controlled from USB-ITPAK.	Check the Excel status displayed on the error dialog box. Example: <ul style="list-style-type: none"> • If the cursor on the Excel sheet to be used is in the edit state, release it. • If the Excel setting dialog box is open, close it.
2	The specified Key has already been used.	When a function key in the [Function key operation] field is selected	The selected function key has already been assigned to another function.	Change the function key selection for function assignment.
3	Device can not be registered anymore.	When the [+] button in the [Data entry devices] field is clicked	The maximum number of devices that can be registered has been exceeded.	Make the number of registered devices 400 or less.
4	No configurable device is connected. When the device is added, connect the device to restart the USB-ITPAK.	When the [+] button in the [Data entry devices] field is clicked	A configurable USB-ITN, U-WAVE, and/or IT-016U are/is not connected, or all USB-ITN, U-WAVE and IT-016U units are already registered.	When adding a USB-ITN, USB-FSW, U-WAVE, and/or IT-016U unit, after saving the created setting file, connect the device and restart USB-ITPAK.
5	Selected device is not connected. Connect the device to restart the USB-ITPAK or change the device to use.	When the [√] button in the [Data entry devices] field is clicked	The selected device is not connected.	Execute one of the following. <ul style="list-style-type: none"> • Connect the selected device and restart USB-ITPAK. • Delete the unconnected device by clicking the [-] button, and assign another device by clicking the [+] button.
6	No configurable foot-switch device is connected. When the footswitch device is added, connect the device to restart the USB-ITPAK.	When the [+] button in the [Foot switch option] field is clicked	A configurable USB-FSW is not connected, or all USB-FSW units are already registered.	To add a USB-FSW unit, after saving the created setting file, connect the device and restart USB-ITPAK.

	Error Message	Error Timing	Error Contents	Solution
7	Specify the Excel file.	When the [OK] button is clicked	No Excel file has been specified in [Workbook] in the [Excel settings] field.	Click the [...] button and select the Excel file.
8	Specify the data entry cell range.	When the [OK] button is clicked	The [Range of cells] has not been specified.	In the [Start] and [Last] fields in [Range of cells], enter the cell range in the A1 format.
9	Set USB-IT devices.	When the [OK] button is clicked	The [Data entry device] field has not been set.	Click the [+] button in the [Data entry devices] field and set the data entry device.
10	Set the procedure name.	When the [OK] button is clicked	The [Procedure name] field has not been set.	Enter the procedure name in the [Procedure name] field.
11	The entered procedure name has already been registered.	When the [OK] button is clicked	The entered procedure name is used by another procedure.	Enter another procedure name.
12	First cell address is illegal. Check the entered cell address.	When the [OK] button is clicked	The address entered in [Start] in the [Range of cells] field is incorrect.	Enter the correct cell address in the A1 format.
13	Last cell address is illegal. Check the entered cell address.	When the [OK] button is clicked	The address entered in [Last] in the [Range of cells] field is incorrect.	Enter the correct cell address in the A1 format.
14	Cell range provided is illegal. Check the entered cell address.	When the [OK] button is clicked	The data entry device assignment is not included in [Range of cells] in the [Excel settings] field.	Execute one of the following. <ul style="list-style-type: none"> • Change the assignment of data entry device. • Change [Displacement intervals] in the [Excel settings] field.

8.4.5 Error messages of [Data entry device settings] dialog box

	Error Message	Error Timing	Error Contents	Solution
1	No configurable foot-switch device is connected. When the footswitch device is added, connect the device to restart the USB-ITPAK.	When the [+] button of [Character string data entry] in the [Entry device settings] field is clicked	A configurable USB-FSW is not connected, or all USB-FSW units are already registered.	To add a USB-FSW unit, after saving the created setting file, connect the device and restart USB-ITPAK.
2	Specify the data entry cell range.	When the [OK] button is clicked	The [Excel cells assignment] field has not been entered.	Enter the [Excel cells assignment] field in the A1 format.
3	Beyond the data entry cell range is assigned. Perform setting again.	When the [OK] button is clicked	A value that is outside the data entry range was entered in the [Excel cells assignment] field.	Enter the row numbers or column numbers that are within the cell range specified for [Range of cells] in the [Excel settings] field on the [Add procedure] dialog box into the [Excel cells assignment] field.
4	Specify the character string data entry device.	When the [OK] button is clicked	While [Character string data entry] in the [Entry data settings] field is in a selected state, the character string data entry device has not been set.	Click the [+] button in the [Entry data settings] field and set the character string data entry device.
5	Specify the channel.	When the [OK] button is clicked	[Measurement data entry] is selected and [UWR] is selected for [Select device:] in the [Entry data settings] field, but the channel of U-WAVE-T is not selected for the [Channel:] field.	Specify the value in the [Channel:] field.

8.4.6 Error messages of [Character string data settings] dialog box

	Error Message	Error Timing	Error Contents	Solution
1	Specify the character string data.	When the [OK] button is clicked	Data is not entered in the [Character string data] field.	Enter the desired character string in the [Character string data] field.

8.4.7 Error messages of data collection dialog box

	Error Message	Error Timing	Error Contents	Solution
1	The used device is wrong.	When data is input from a device	Data was input from a device that differs from the device set in the procedure of the setting file.	Input data from the correct device.
2	An error occurred during data reception. Device No. = [Device] Click Ignore to proceed anyway or Retry to try again.	Refer to "8.2.2 Operation when data request to measuring tool times out".		
3	Could not confirm the enabled devices. [COM No.] Please check device connection.	When a data request is issued from the PC	Communication with USB-ITN, USB-FSW, U-WAVE-R, and/or IT-016U are/is not possible.	Check the connection status of the USB-ITN, USB-FSW, U-WAVE-R, and/or IT-016U unit corresponding to [COM No.].
4	The selected cell is not a target cell to enter data. Select the cell again.	When the [Resume] button is clicked when data collection is paused, and [Active cell] in the [Select the resumption cell] field on the next dialog box is selected	The selected cell is not within the range of data entry cells.	Select cells in the cell range for data input.
5	Failed to character string data entry. Check the character string data.	When character string data is input	If the selection in the [Data entry application] is [Optional], character string data cannot be input.	Check the character string data that has been set.
6	Failed to character string data entry. Check the excel condition and character string data.	When character string data is input	Character string data input to Excel is not possible.	Check the Excel status and the character string data that has been set.

7	Could not control Excel. Please check Excel condition. Workbook = [Workbook] Worksheet = [Worksheet]	Throughout data collection	This error occurs when Excel cannot be controlled from USB-ITPAK.	Check the Excel status displayed on the error dialog box. Example: <ul style="list-style-type: none">• If the cursor on the Excel sheet to be used is in the edit state, release it.• If the Excel setting dialog box is open, close it.• Disable the autosave function of Excel.
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