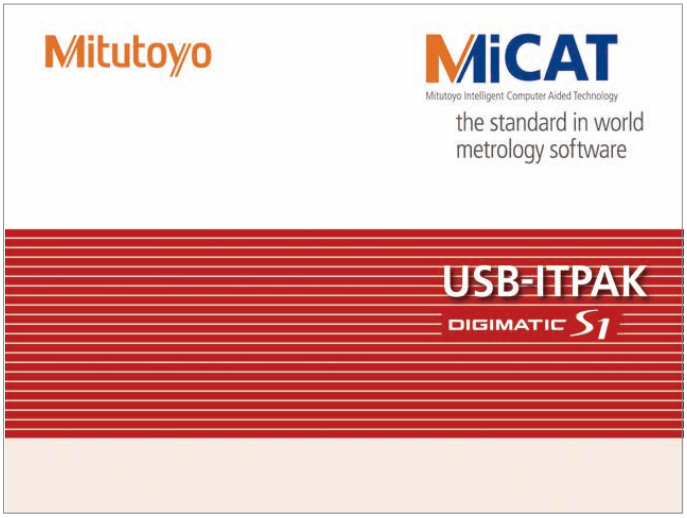
Mitutoyo

Measurement Data Collection Software

USB-ITPAK V3.0



User's Manual

- Instructions for use -

Read this document thoroughly before operating the product. After reading, retain it close at hand for future reference.
This English language version of the document contains the original instructions.

MiCAT
Mitutoyo Intelligent Computer Aided Technology
the standard in world metrology software

No. 99MAM030A
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■ Product names and model numbers covered in this document

Product name	Model number
Measurement data collection software	USB-ITPAK V3.0

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	Indicates concrete information about mandatory actions.
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Example: For details about xxx, see "1 Product Overview" on page 1.

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部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
本体	×	○	○	○	○	○
配件	○	○	○	○	○	○

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About the Dongle

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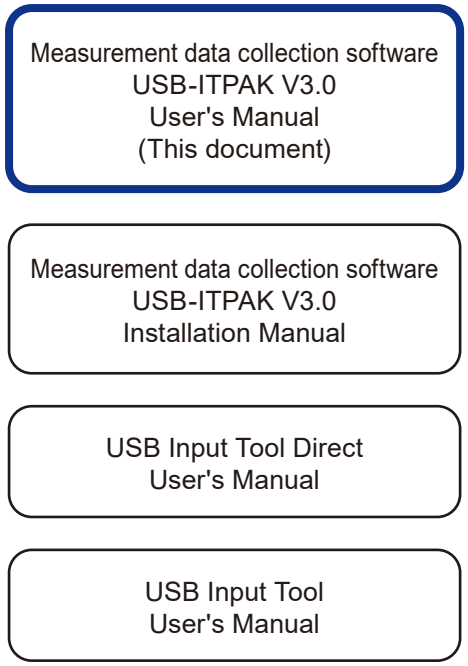


■ Intended readers and purpose of this document

● Intended readers

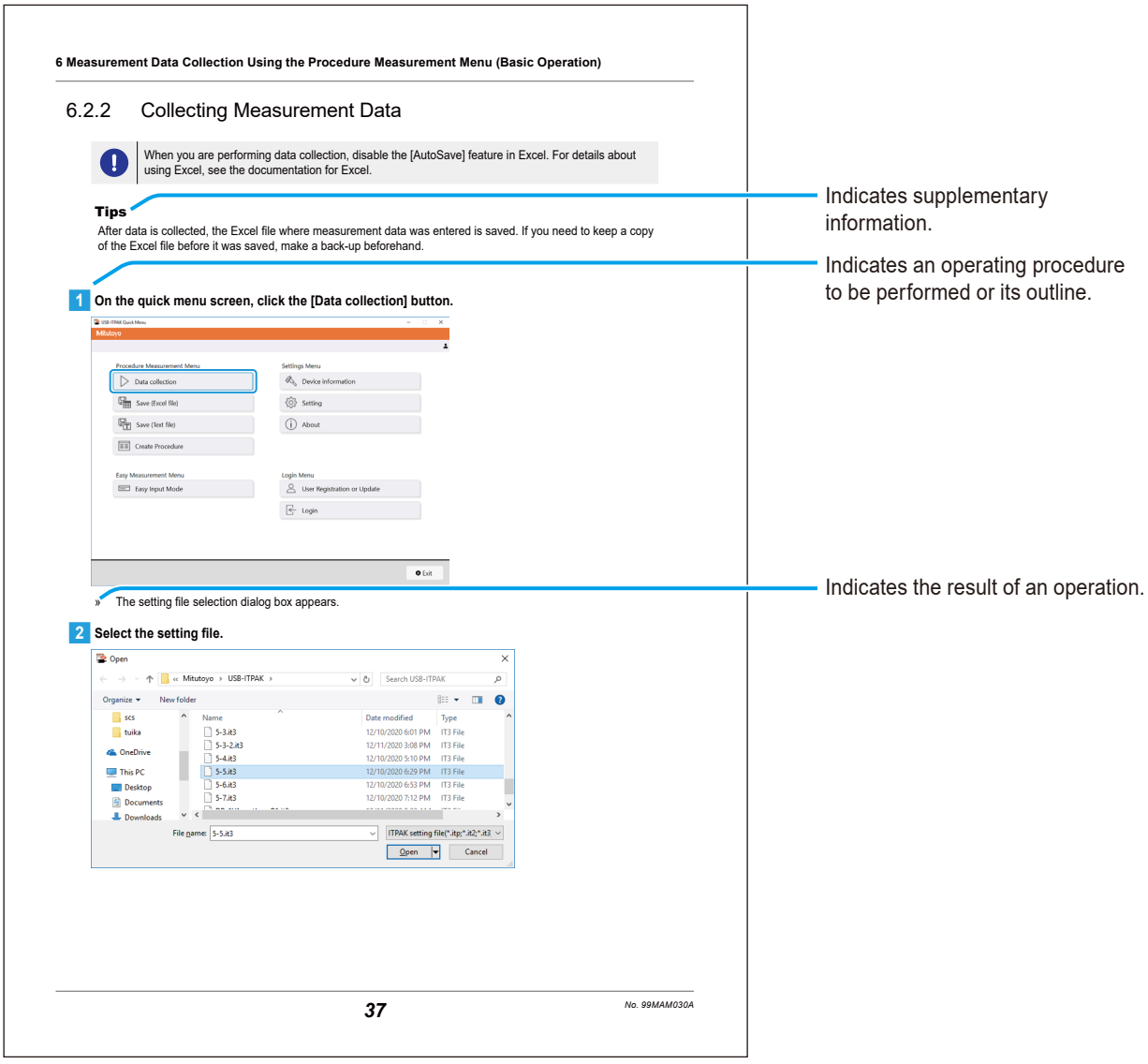
This document is intended for first-time users of this product.

The readers are assumed to have been familiar with basic operations on a PC and Windows.

● Purpose

The purpose of this document is to familiarize readers with the overview and usage procedures of this product.

■ How to read this document



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[ ]: Square brackets	Represent a menu name on the screen, screen name, dialog name, button, display item, tab name, or key on the keyboard. They also indicate an item to be purposely entered or selected by the customer.
1, 2, 3 1, 2, 3, ...	Indicates the order and the contents of tasks. (1: indicates main tasks, 1: indicates detailed tasks)

■ PC screens

This product runs on Windows operating systems.

In this document, the example screen shots of operation are taken on Windows 10.

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1 Product Overview

1.1 Overview

USB-ITPAK is software for inputting measurement data from a measuring tool with Digimatic output into Microsoft® Office Excel® (hereinafter "Excel"). Because measurement data is read in automatically following a pre-defined procedure, work such as filling in an inspection table can be accomplished more accurately and efficiently.

If you use the foot switch optional accessory (No. 937179T/12AAJ088), you can direct the measuring tool to output the measurement data or input arbitrary character string data such as "OK" or "Fail" with your foot.

Using a measuring tool that supports interactive communication (hereinafter "Digimatic S1 communication") makes the following operations possible:

- Setting all measuring tools to zero at once
- Collecting the information, such as the serial numbers of measuring tools.
- Linking measurement data to a measurer
- Configuring measuring tool settings, such as zero set, preset, and tolerance

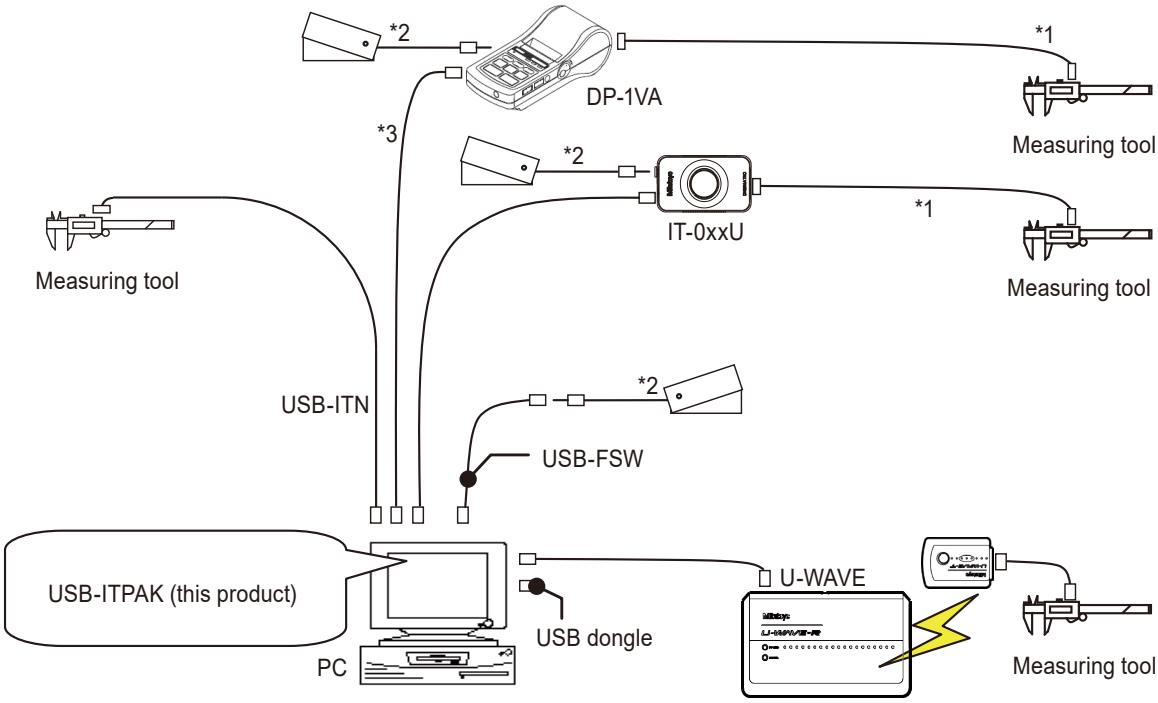
In addition to these functions, the USB-ITPAK quick entry mode allows you to enter measurement data into Excel without creating a measurement procedure beforehand.

The measurement data from the measuring tool or the character string data can be collected through the following devices:

- USB Input Tool Direct (hereinafter "USB-ITN")
- USB Input Tool IT-016U/IT-020U (hereinafter "IT-0xxU")
- U-WAVE
- Statistical Calculation Printer Digimatic Mini Processor DP-1VA LOGGER (hereinafter "DP-1VA")
- USB Foot Switch Adapter (hereinafter "USB-FSW")

1.2 System Configuration

An example system configuration is shown below. You can connect one or multiple devices, depending on your needs.



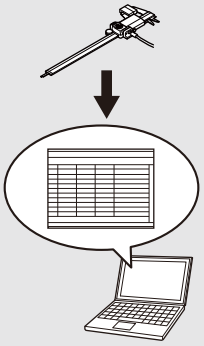
*1: Digimatic connecting cable
*2: Foot switch No. 937179T/12AAJ088
*3: Commercially-available USB cable (A to Micro B)

Tips

- Use a commercially-available USB hub if your PC does not have enough USB ports for all the devices you want to connect.
- For details about connecting and using a particular device, see the user's manual for that device.

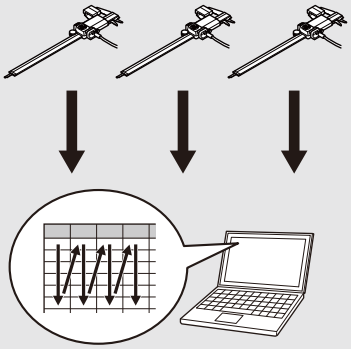
1.3 Contents by Purpose

Enter in the quick entry mode



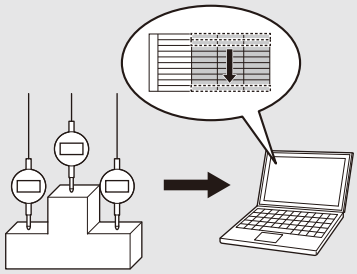
"5 Measurement Data Collection Using the Quick Entry Mode" (page 23)

Enter measurement data in a specified sequence (sequential measurement)



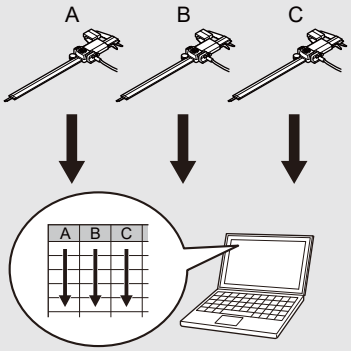
"6.2 Collecting Measurement Data in a Specified Sequence (Sequential Measurement)" (page 28)

Enter measurement data all at once (batch measurement)



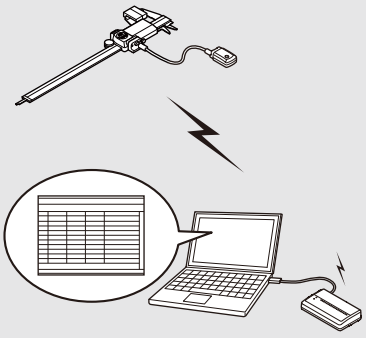
"6.3 Collecting Measurement Data All at Once (Batch Measurement)" (page 41)

Enter measurement data individually (individual measurement)



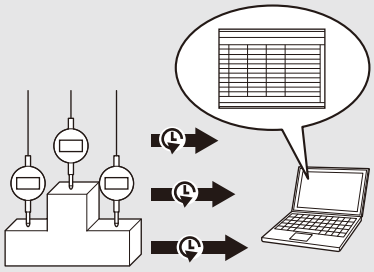
"6.4 Collecting Measurement Data at Random (Individual Measurement)" (page 55)

Enter measurement data wirelessly



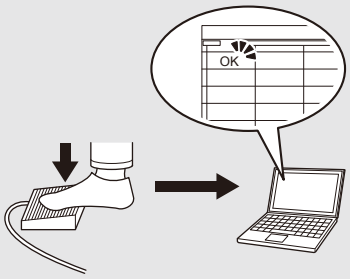
"6 Measurement Data Collection Using the Procedure Measurement Menu (Basic Operation)" (page 27)

Automatically enter measurement data periodically



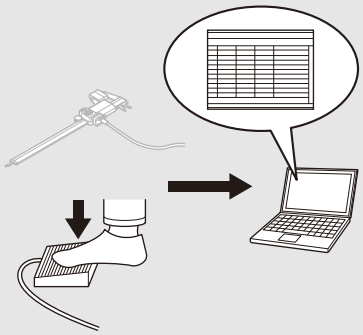
"7.7 Entering Measurement Data at Specified Time Intervals (Batch Measurement Only)" (page 130)

Enter a string with your foot



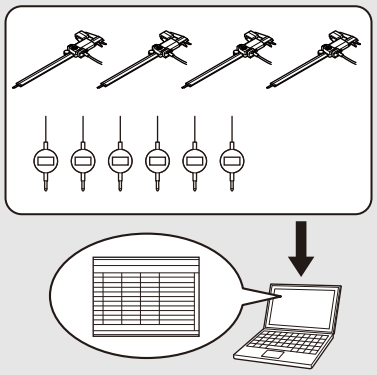
"7.2 Entering a Character String with the Foot Switch (Sequential Measurement/Individual Measurement Only)" (page 78)

Enter measurement data with your foot



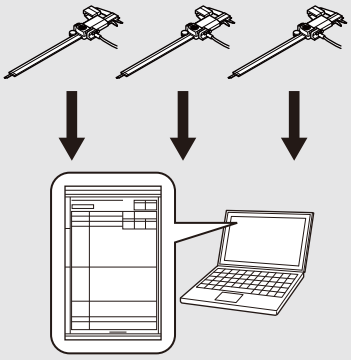
"7.1 Entering Measurement Data with the Foot Switch" (page 69)

Collect a large amount of data



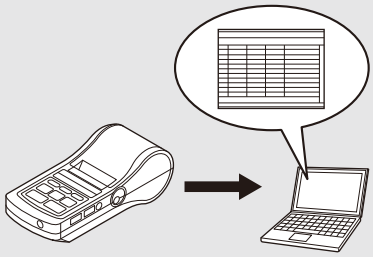
"7.4 Measuring by Combining and Repeating Procedures (Sequential Measurement/Batch Measurement Only)" (page 98)

Easily fill in an inspection certificate (Excel)



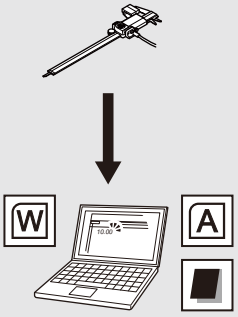
"6.2 Collecting Measurement Data in a Specified Sequence (Sequential Measurement)" (page 28)

Enter log data from DP-1VA LOGGER



"7.8 Entering DP-1VA Log Data (Sequential Measurement/Individual Measurement Only)" (page 138)

Enter data into an arbitrary application



"7.5 Entering Measurement Data into an Arbitrary Application" (page 108)

2 Preparations before Use

2.1 PC System Requirements

The required specifications for the PC running USB-ITPAK are as follows.

■ Hardware specifications

- Monitor (1024 × 768 or higher resolution, 256 colors or higher)
- 15 MB or more of free hard disk space*1
- USB ports*2 (a total of two or more for the supplied USB dongle and connection devices such as USB-ITN)

*1 Required when installing USB-ITPAK

*2 Commercial USB hubs can be used (hubs that are USB certified are recommended)

Tips

For hardware specifications other than the ones listed above, follow the required specifications of the OS running USB-ITPAK.

■ Software specifications

● OS

- Microsoft Windows 10 Pro/Enterprise (64-bit only)
  (including Windows 10 updates)

● Software operating environment

- .NET Framework 4.6 or later

● Applications

- Microsoft Excel (Excel 2010 or later)

Use the same language for the OS and USB-ITPAK. Operation on an OS with a different language is not guaranteed. For details about setting the USB-ITPAK language, see "8.5 [Option] Screen" (page 174).

2.2 Installing USB-ITPAK

Tips

To use USB-ITPAK, Microsoft Excel 2010 or later is required. Install Excel on the same PC as USB-ITPAK.
For information about compatible Windows versions and system requirements for a particular version of Excel, contact Microsoft.
Download USB-ITPAK V3.0 from Mitutoyo home page to obtain.
To use all the USB-ITPAK V3.0 functions, it is necessary to connect the dongle to the PC.
Purchase USB-ITPAK V3.0 (No. 06AGR543) to obtain the dongle.
Even if the dongle is not connected, [Easy Measurement Menu], [Settings Menu] and [Login Menu] functions are available.

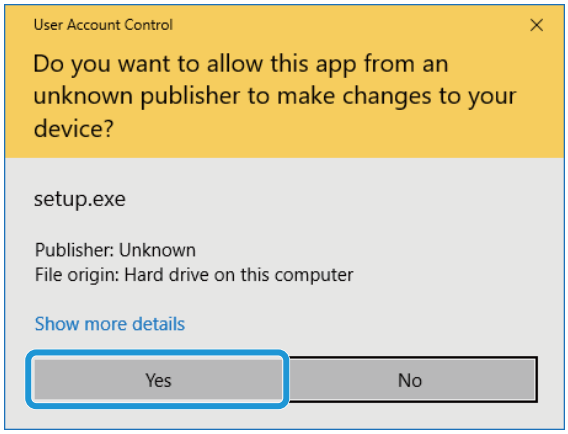
1 **Log in to the PC as an Administrator.**

2 **Download USB-ITPAK from the Mitutoyo website.**

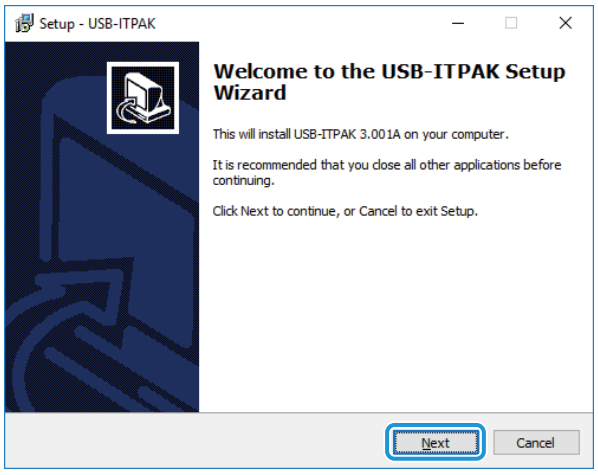
https://www.mitutoyo.co.jp/products/data-management/systems-and-softwares/create-inspection-softwares/

3 **In Windows Explorer, run "Setup.exe" in the "Setup" folder of the downloaded file.**

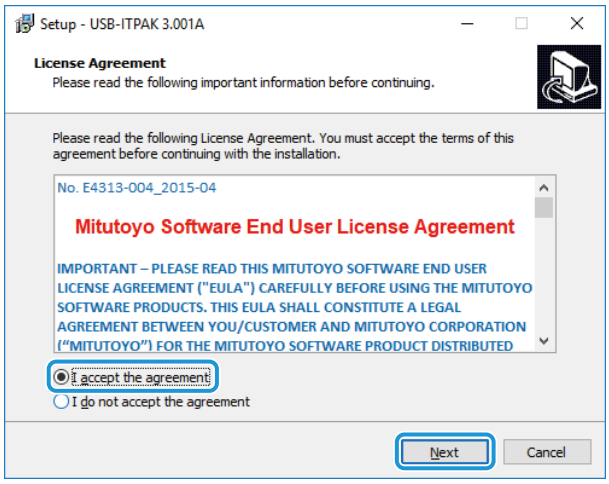
If the [User Account Control] warning message appears, click the [Yes] button.



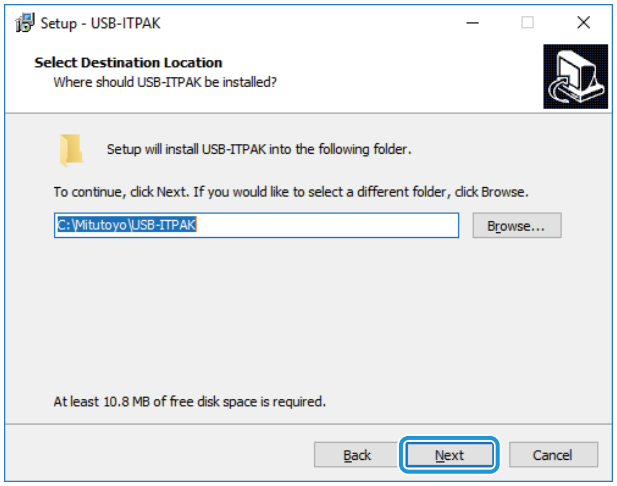
4 **Click the [Next] button.**



5 **Read the [License Agreement]. If you accept the agreement, select [I accept the agreement], and then click the [Next] button.**

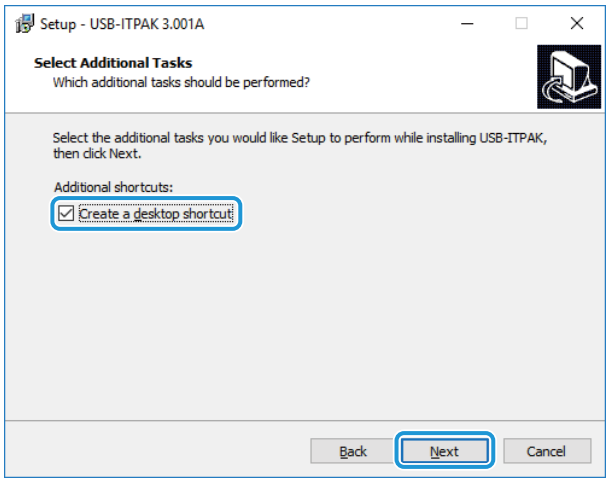


6 **Click the [Next] button.**



7 **Click the [Next] button.**

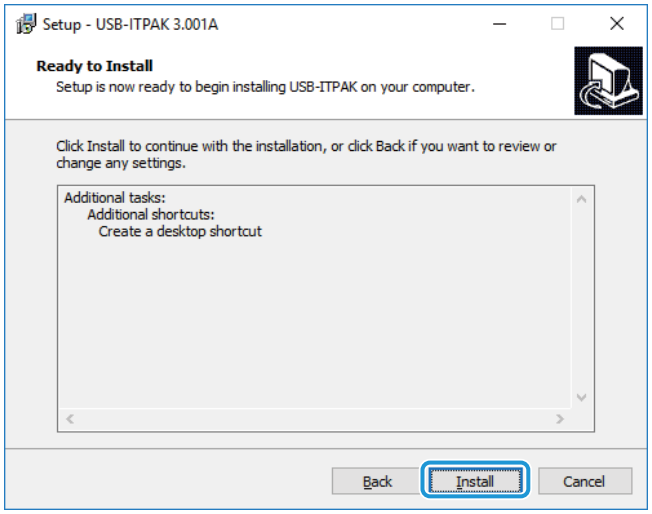
To create a USB-ITPAK shortcut on the desktop, select [Create a desktop shortcut].



8 Click the [Install] button.

Tips

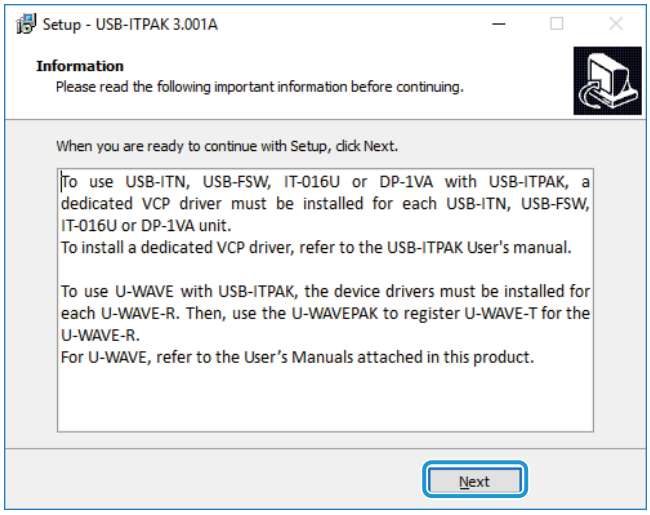
After USB-ITPAK is installed, a sample inspection table file is installed in the target installation folder under "Sample" folder. If a sample file with the same file name already exists, it will be overwritten. Make a backup of the file in another folder if necessary.



9 Read the cautions regarding the installation of various drivers, and then click the [Next] button.

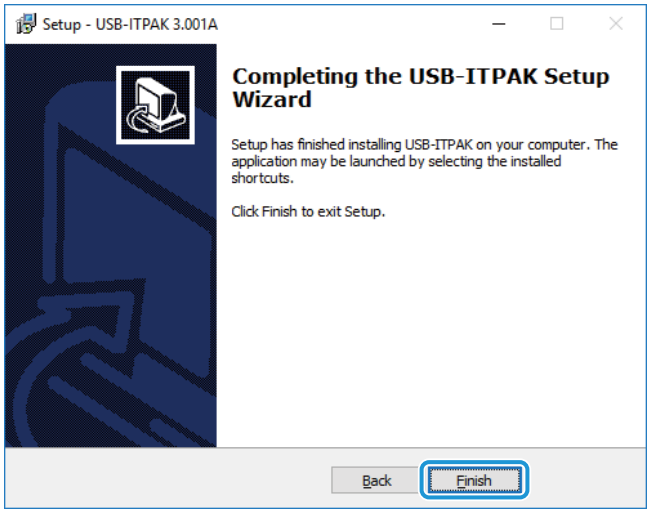
Tips

After USB-ITPAK is installed, a sample inspection table file is installed in the target installation folder under "Sample" folder. If a sample file with the same file name already exists, it will be overwritten. Make a backup of the file in another folder if necessary.



10 Click the [Finish] button.

This completes the installation of USB-ITPAK.
Proceed to "2.3 Installing the VCP Driver" (page 9), and install the VCP driver.



2.3 Installing the VCP Driver

The VCP driver is software that allows communication between the PC and the connected devices. Even for devices of the same type, the VCP driver must be installed for each device that is connected.

Tips

The VCP driver will be automatically installed if you connect the same type of device as one already connected.

● For U-WAVE users

If you will use U-WAVE-R by connecting it to the PC, you must install the driver included with U-WAVE-PAK. Do not install the VCP driver as explained here. Perform the following steps instead.

1 Install the driver included with U-WAVEPAK for each U-WAVE-R device.

2 Register the transmitter to be used with U-WAVE-R.

For details, see 📖 "U-WAVEPAK User's Manual".

1 Log in to the PC as an Administrator.

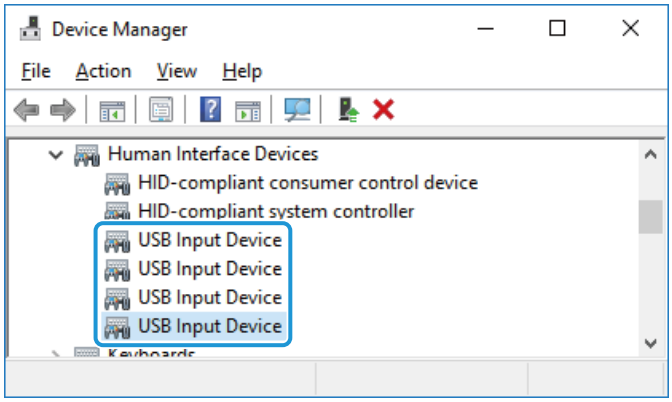
2 Connect the devices you will use to the PC.

For details about connecting a particular device, see the user's manual for that device. As an example, here we connect a USB-ITN device to the PC.

3 Check that the connected device is successfully recognized by the PC.

1 While holding the Windows logo key, press [X].

2 From the menu that is displayed, select and open [Device Manager].

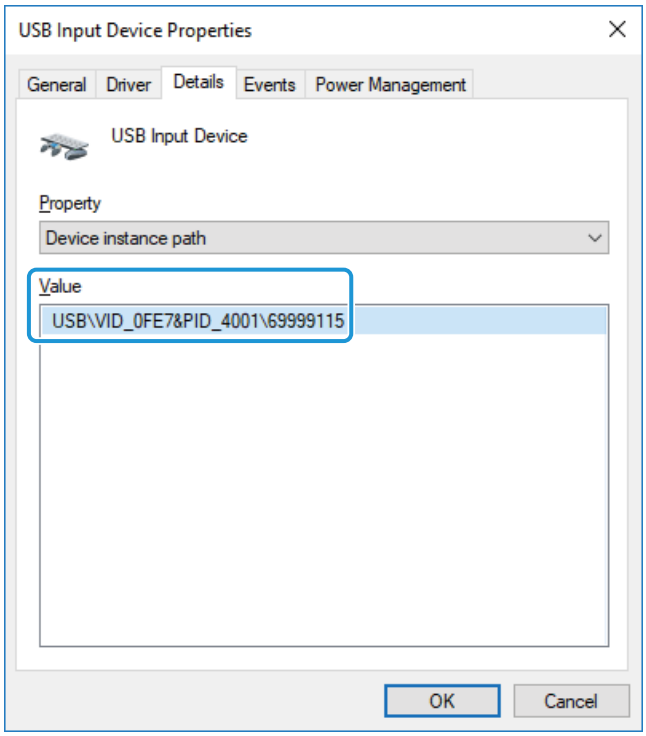


3 Disconnect and reconnect the device, and check that the number of [USB Input Device] decreases and increases by one.

Tips

If it is difficult to identify which device was disconnected, follow the steps below.

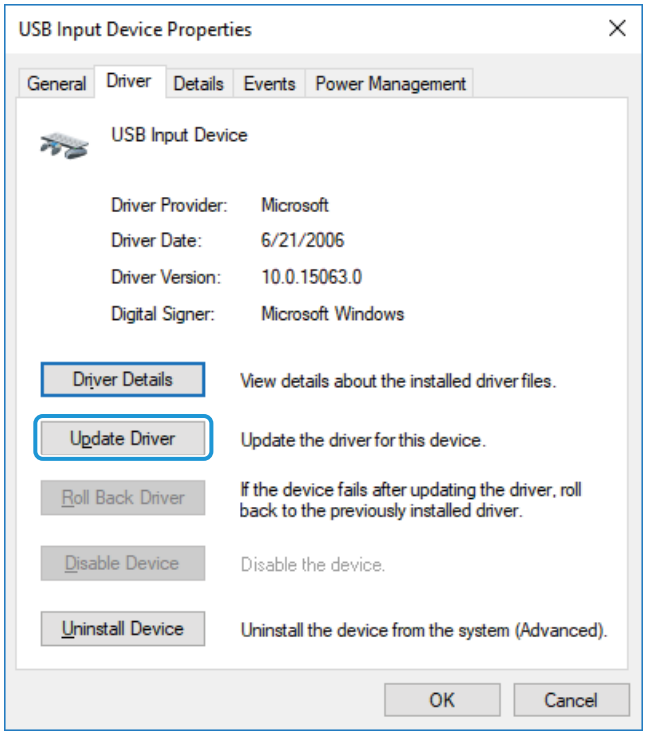
1. Right-click the connected [USB Input Device] to display a menu, and then click [Properties].
2. In the [Details] tab, select [Device Instance Path] under [Property].
3. In the [Value] field, check that the connected device matches one of the character strings that are displayed below (□□□□□□□□ is the serial number).



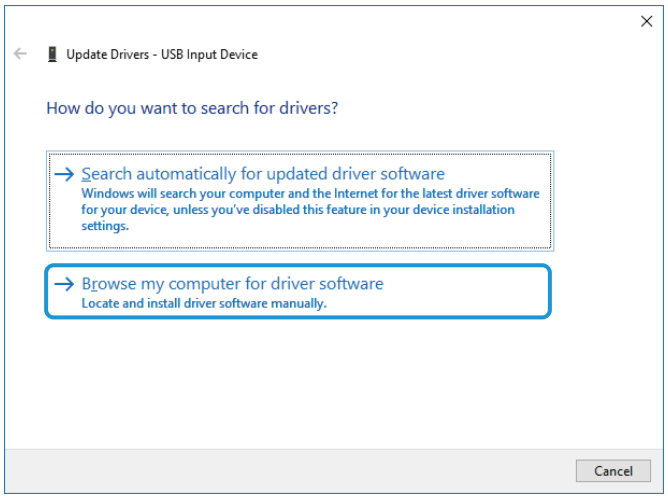
USB-ITN: USB\VID_0FE7&PID_4001\□□□□□□□□
USB-FSW: USB\VID_0FE7&PID_4002\□□□□□□□□
IT-0xxU: USB\VID_0FE7&PID_4001\8□□□□□□□
DP-1VA: USB\VID_0FE7&PID_400A\□□□□□□□□

4 Install the VCP driver.

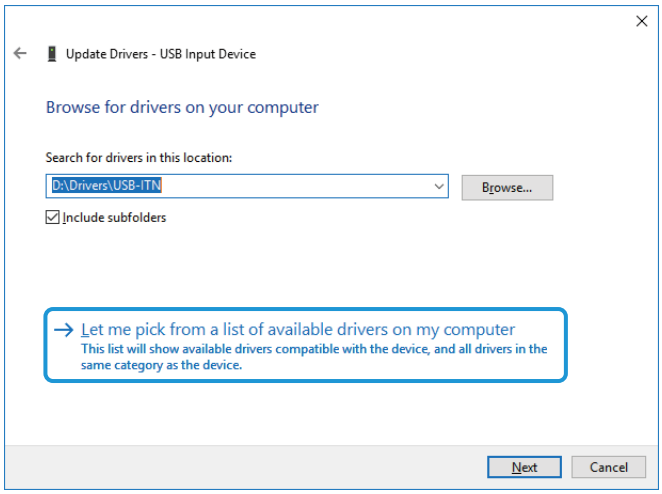
1. Right-click the connected [USB Input Device] to display a menu, and then click [Properties].
2. In the [Driver] tab, click the [Update Driver] button.



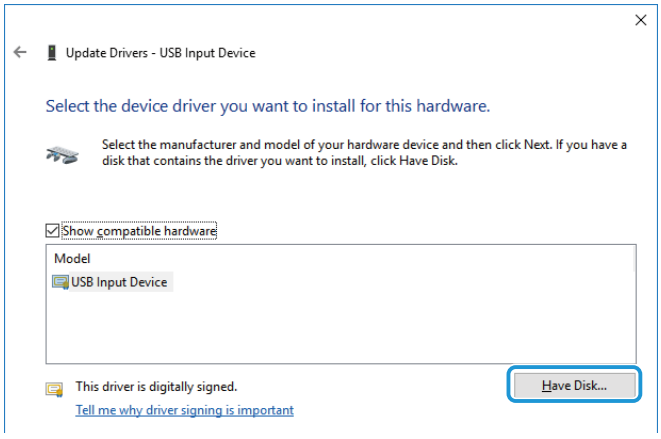
3 Select [Browse my computer for driver software].



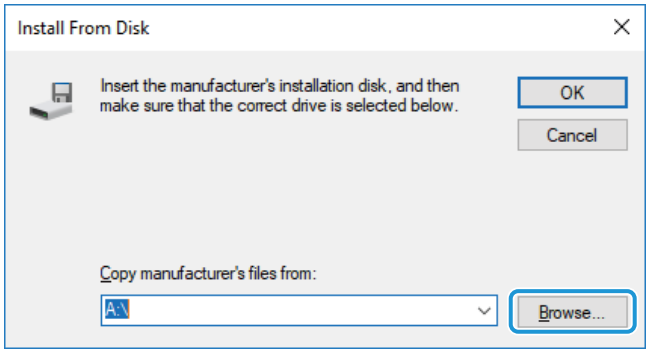
4 Select [Let me pick from a list of available drivers on my computer].



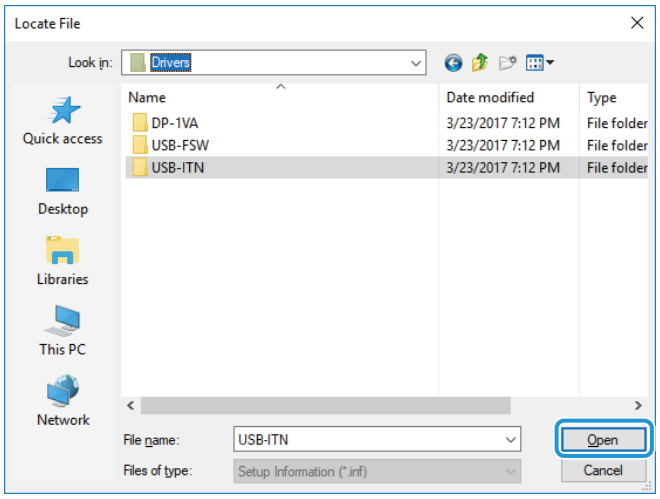
5 Click the [Have Disk] button.



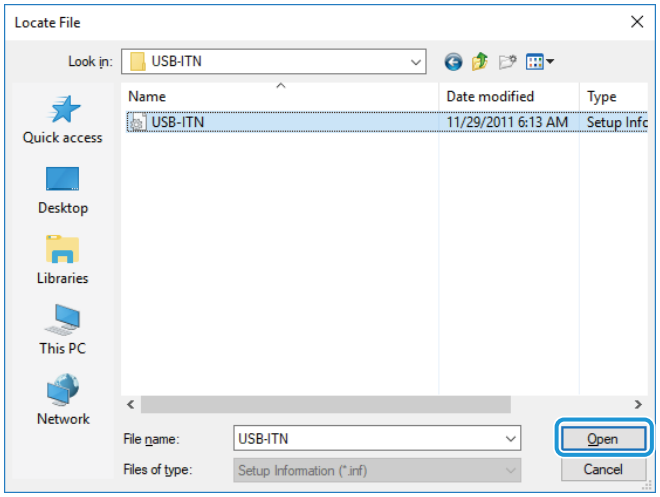
6 Click the [Browse] button.



7 Select a folder containing the connected device in the "Drivers" folder of the downloaded file.
As an example, here we select the [USB-ITN] folder. To install the VCP driver for use on IT-0xxU, select the [USB-ITN] folder.



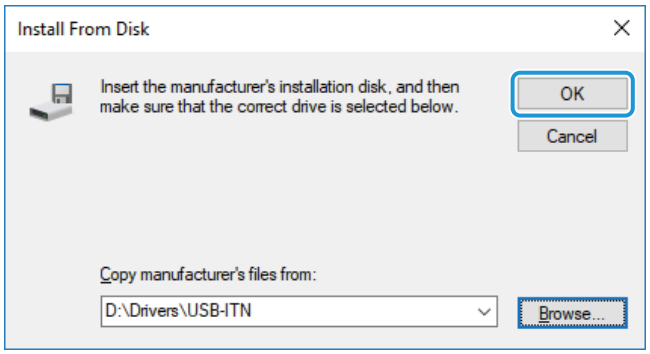
8 Select one of the files in the folder, and then click the [Open] button.



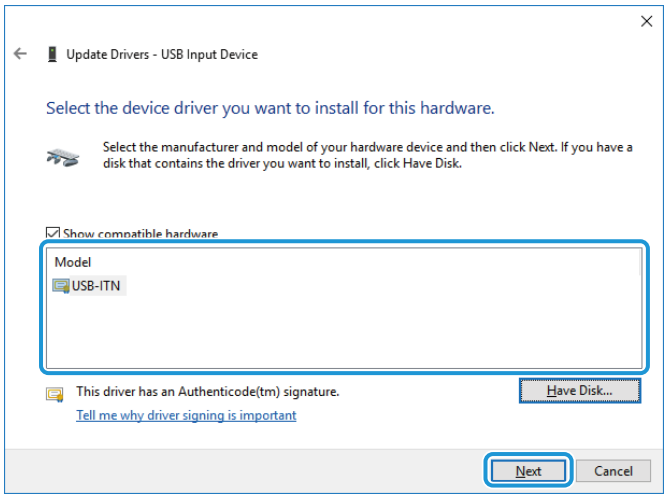
Tips

Regardless of which file is selected, the installer selects the appropriate file from the specified folder according to which device is connected.

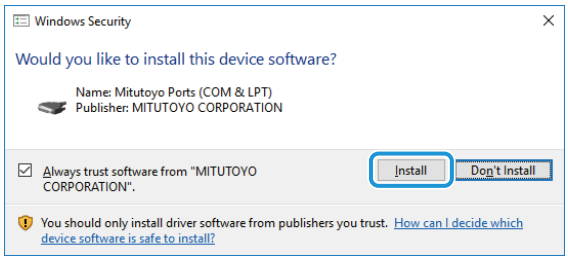
9 Click the [OK] button.



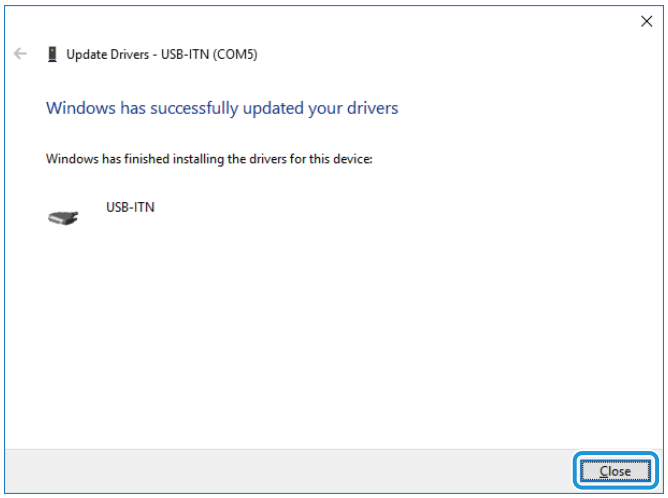
10 Check that [USB-ITN] is selected in the [Model] field, and then click the [Next] button.



11 Click the [Install] button.



12 Click the [Close] button.

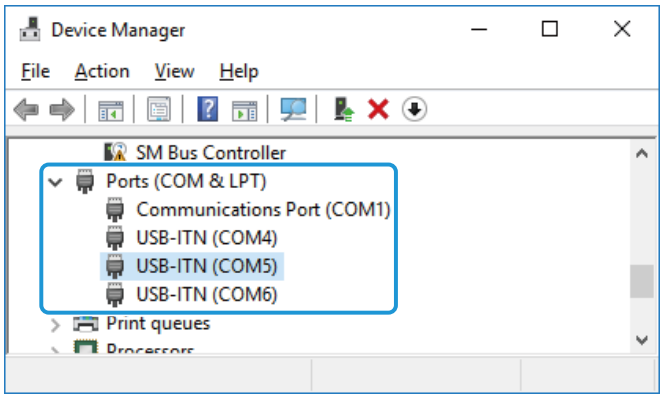


5 Check that the name of the connected device is displayed under [Ports (COM & LPT)] in the [Device Manager] screen.

If the installation was successful, the device name is displayed under [Ports (COM & LPT)]. As an example, here we can see that [USB-ITN (COMx)] is displayed. ([USB-ITN (COMx)] is also displayed if IT-0xxU is connected.)

Tips

The [x] in [COMx] is the COM port number. Unused numbers are automatically allocated.



2.4 Connecting the USB Dongle

Insert the USB dongle into a USB port on the PC when you are using USB-ITPAK.

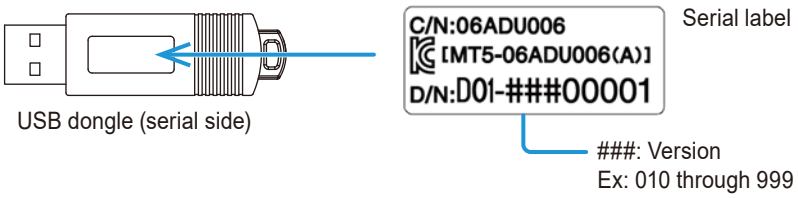
Tips

Even if the USB dongle is not connected to the PC, the measurement data collection in [Easy Input Mode] and [Settings Menu] are available.

■ USB dongle version and operating specifications

Some of the USB-ITPAK functions are available when the target version or later of USB dongle is connected to the PC. For example, some of the functions in USB-ITPAK version 3.0 are available when USB dongle version 3.0 or later is connected to the PC. If you are using a USB dongle other than the dongle supplied with USB-ITPAK, check the USB-ITPAK and USB dongle versions.

● Location of the USB dongle version label



Tips

You can check the USB-ITPAK version on the [Version information] screen.

MEMO

3 Starting and Exiting USB-ITPAK

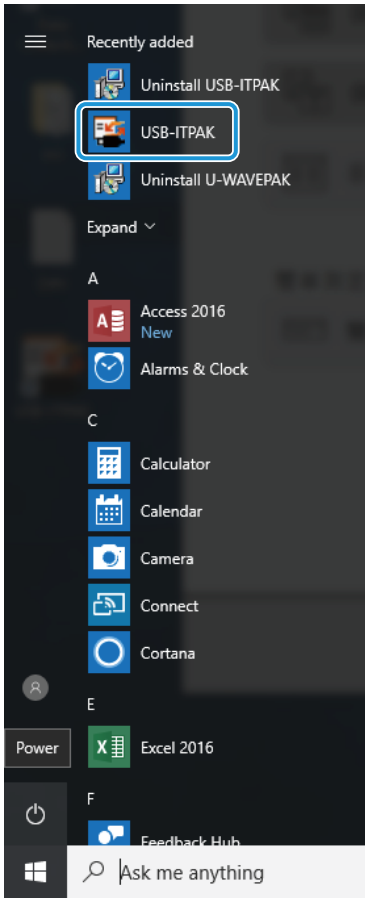
3.1 Starting USB-ITPAK

Before starting USB-ITPAK, check that the following conditions are met.

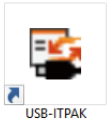
- The devices that will be used are connected.
  If the devices are connected after starting USB-ITPAK, they will not be recognized. Connect the devices that will be used in advance.
  For information on how to connect devices, see the manual supplied with each device.
- The VCP driver is installed.
  For details, see "2.3 Installing the VCP Driver" (page 9).
- U-WAVEPAK is not running.
  USB-ITPAK and U-WAVEPAK cannot be used simultaneously. When U-WAVEPAK is being used, exit it.

To collect data after creating a measurement procedure, connect an appropriate USB dongle to the PC. For details, see "2.4 Connecting the USB Dongle" (page 15).

1 From the Start menu, select [USB-ITPAK].



If a desktop shortcut has been created, USB-ITPAK can be started by double-clicking this icon.



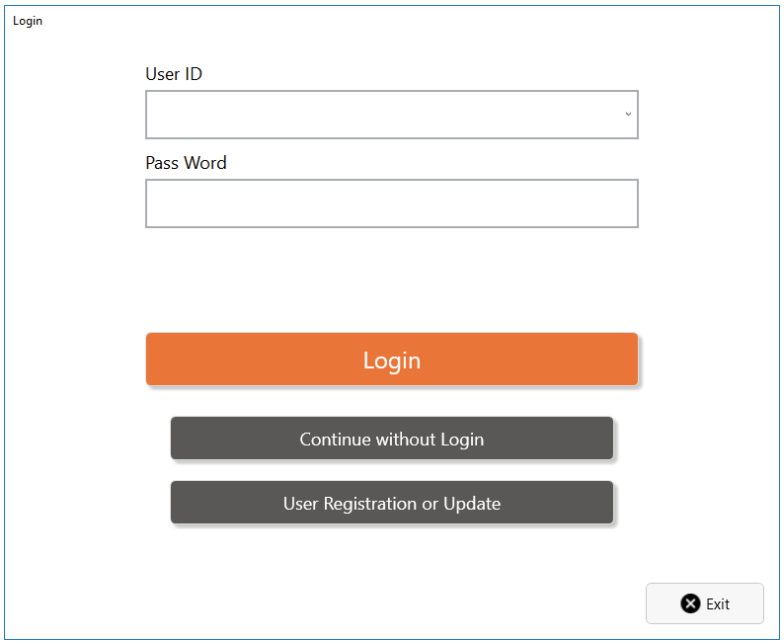
» When USB-ITPAK is started, either the [Login] screen or the [Quick Menu] screen will be displayed.

Tips

The [Login] screen appears only when [Enable the login function] is enabled on the [Option] screen.

■ [Login] screen

This screen is used to identify a measurement user. Enter the user ID and password and click the [Log-in] button.



Tips

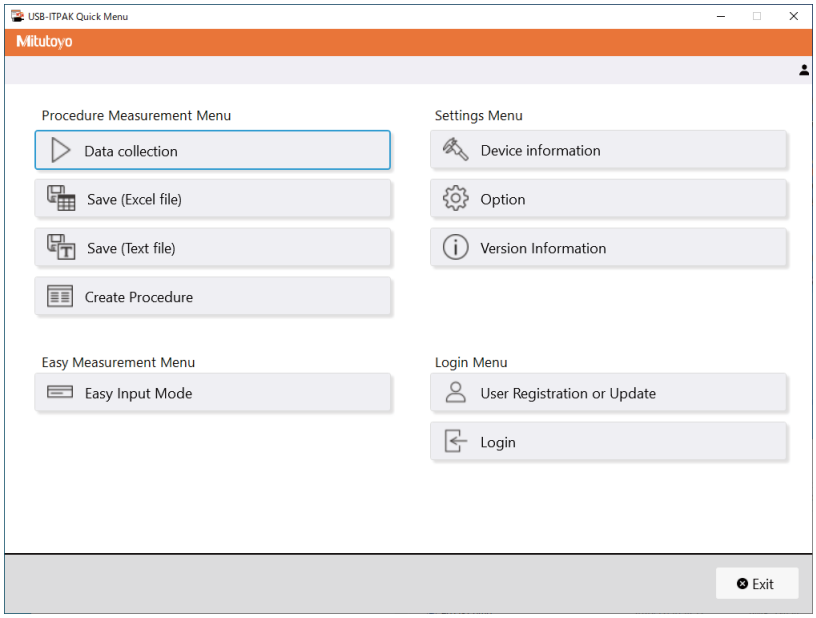
For using without login, click the [Start without login] button.

■ [Quick Menu] screen

This menu screen is used to call such screens as the data collection screen, create procedure screen, [Model information] screen, and [Select model] screen. The screen call buttons are available or unavailable depending on whether you are logged in or not and the USB dongle is connected or not.

Tips

In the function limited mode with no USB dongle connected, [Procedure Measurement Menu] is not available. [Easy Measurement Menu], [Settings Menu] and [Login Menu] are available.



3.2 Exiting USB-ITPAK

You can exit USB-ITPAK using one of the following operations:

- On the [Login] screen, click the [Exit] button.
- On the [Quick Menu] screen, click the [Exit] button.
- From the [File] menu on the create procedure screen, select [Exit].

Tips

Make sure that all data has been saved before exiting USB-ITPAK.

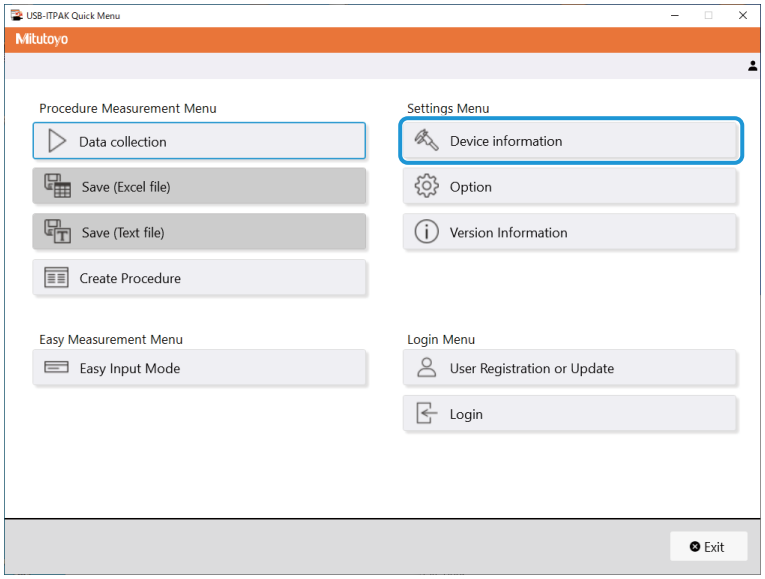
4 Checking the Device Information

Check the information about data entry devices and measuring tools.

1 Connect the devices you will use to the PC, and then start USB-ITPAK.

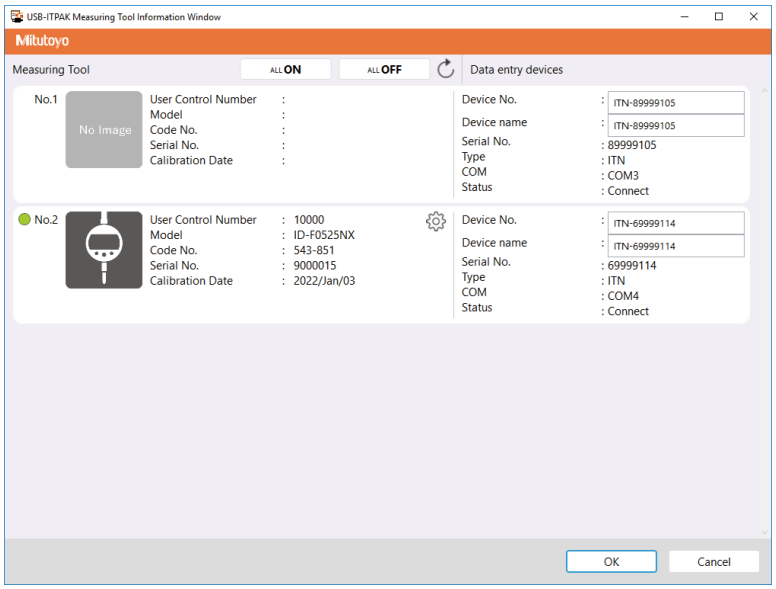
For details, see "3.1 Starting USB-ITPAK" (page 17).

2 On the [Quick Menu] screen, click the [Measuring Tool Information Window] button.



» The [Measuring Tool Information Window] screen will be displayed.

3 Check that the devices you will use are displayed.



Tips

When you click the refresh ( ) button, the connection status of the measuring tools is checked again, and the [Measuring Tool Information Window] screen is refreshed.

4 **Set the device No. and device name of each data entry device in [Device No.] and [Device name] as necessary.**

Tips

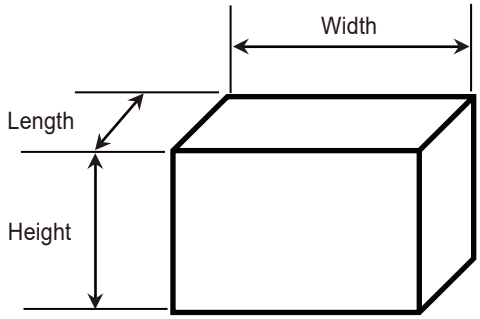
- Up to 20 single-byte alphanumeric characters and symbols can be entered in [Device No.].
- Up to 32 characters can be entered in [Device name].
- For a measuring tool that supports Digimatic S1 communication, you can click the setting mode (⚙) button to call the [Measuring tool setup mode] screen and configure the measuring tool information settings.

5 **Click the [OK] button.**

» The settings are saved, and the [Quick Menu] screen will be displayed.

5 Measurement Data Collection Using the Quick Entry Mode

Select a measuring tool to be used and collect data. In this example, you will measure the three sides of the following cuboid.



Tips

The quick entry mode does not require you to prepare a setting file that contains a measurement procedure or an Excel file that contains measurement data. Only specifying the number of measurement points collects measurement data and enters it into the Excel file worksheet. Measurement data entered into the Excel worksheet is automatically sorted for each measurement point after measurement. However, this automatic sorting of measurement data in the Excel sheet is not a guaranteed function because it cannot be performed correctly under certain conditions. For example, problems might occur when sorting similar data groups only.

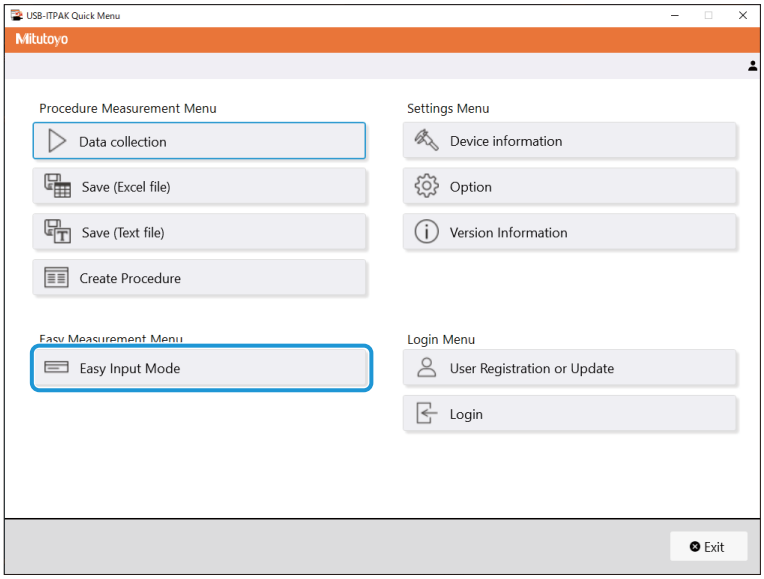
1 Connect the devices you will use to the PC, and then start USB-ITPAK.

For details, see "3.1 Starting USB-ITPAK" (page 17).

2 Check the information of the devices that are connected to the PC.

For details, see "4 Checking the Device Information" (page 21).

3 On the [Quick Menu] screen, click the [Easy Input Mode] button.



» The [Tool Selection Window] screen will be displayed.

4 Set the number of measurement items and the device you will use.

1 Set the number of measurement items.

As an example, enter "3" to measure the three sides of the cuboid.

2 Select a measuring tool you will use.

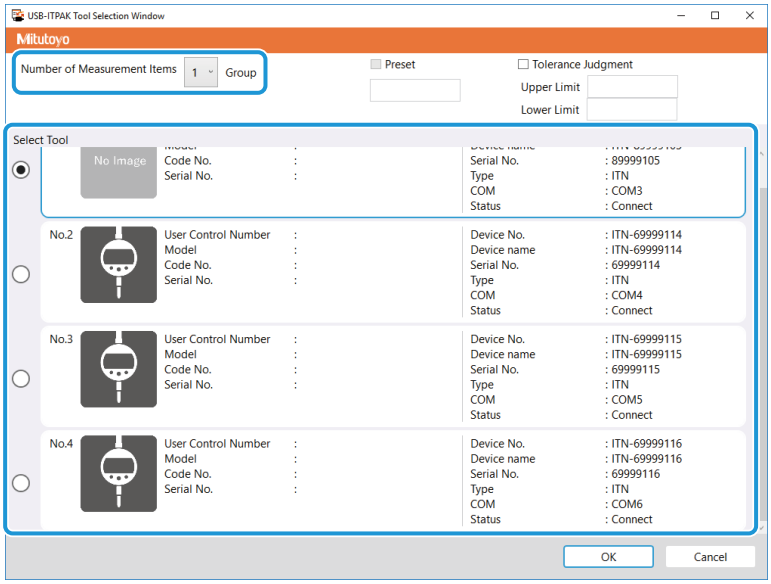
Tips

Only one measuring tool can be selected.

The measuring tool cannot be changed during the measurement.

To change the measuring tool, finish the measurement, and then reselect the measuring tool to use in the [Tool Selection Window].

When the connection of measuring tool has been changed, reenter into the quick entry mode, and select the measuring tool to use.



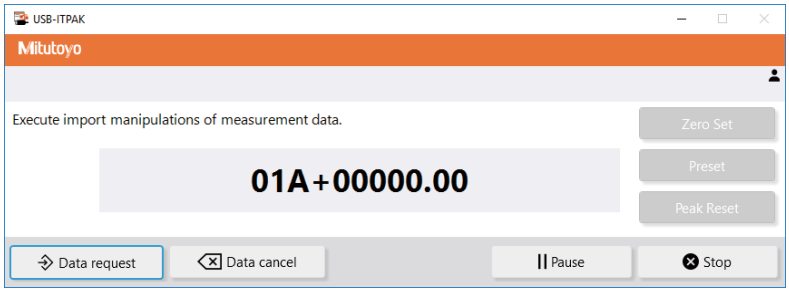
5 Set [Preset] or [Tolerance Judgment] as necessary.

Tips

- [Preset] is configurable when [Measurement Items] is set to "1" and a measuring tool that supports Digimatic S1 communication is selected.
- [Tolerance Judgment] is configurable when [Measurement Items] is set to "1".

6 Click the [OK] button.

» The data collection screen will be displayed.



7 Click the [ZERO], [PRESET], or [PEAK RESET] button to set zero point, preset, or peak reset as necessary.

Tips

- [ZERO], [PRESET], and [PEAK RESET] are configurable when a measuring tool that supports Digimatic S1 communication is selected on the [Tool Selection Window] screen.
- [ZERO], [PRESET], and [PEAK RESET] can be set even during measurement.
- Preset cannot be set when the measuring tool is in the Peak detection (TIR: runout width display) mode.
- Peak reset can be set when the measuring too in the Peak detection mode.

8 Apply the measuring tool to a measurement point and click the [Data request] button.

» The measurement data is entered into the Excel worksheet.

Tips

- Measurement data is entered into Column A in the Excel worksheet.
- To undo the entry, click the [Data cancel] button on the data collection screen.

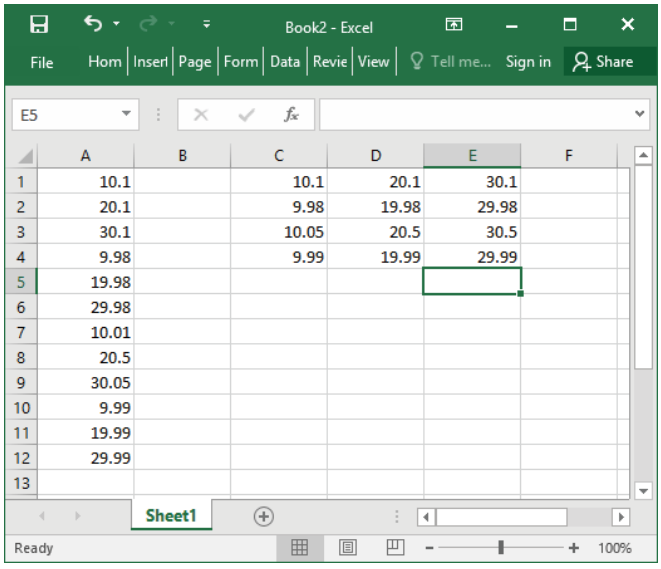
9 Repeat step 8.

Tips

- To pause measurement data collection, click the [Pause] button. When collection is paused, the measurement data that has been entered so far is sorted in Column C and subsequent columns according to the number of measurement items.
- To resume measurement data collection, click the [Resume] button.

10 When all the measurement is complete, click the [Exit] button.

» Entered data in the Excel worksheet is sorted in Column C and subsequent columns according to the number of measurement items.



	A	B	C	D	E	F
1	10.1		10.1	20.1	30.1	
2	20.1		9.98	19.98	29.98	
3	30.1		10.05	20.5	30.5	
4	9.98		9.99	19.99	29.99	
5	19.98					
6	29.98					
7	10.01					
8	20.5					
9	30.05					
10	9.99					
11	19.99					
12	29.99					
13						

» The data collection screen is closed, and the [Quick Menu] screen will be displayed.

MEMO

6 Measurement Data Collection Using the Procedure Measurement Menu (Basic Operation)

This chapter explains the basic measurement data collection method using the procedure measurement menu.

The procedure measurement menu registers settings necessary for data collection, such as the Excel file where measurement data will be entered and devices that are used, as "procedures". Registered procedures are saved as a "setting file" (extension: itp, it2), and you specify which setting file to use when collecting data.

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

6.1 General Precautions during Use

This section explains the precautions on how to use before explaining the basic measurement data collection method using the procedure measurement menu.

■ Handling Excel files registered to procedures

Measurement data collection using the procedure measurement menu enters data into Excel by using the workbook and worksheet names that are registered to procedures. Therefore, do not make the following changes to Excel files that are registered to procedures:

- Change the workbook or worksheet names
- Delete the workbook or worksheet
- Change the folder where the workbook is saved

■ Handling Excel files during data collection

Do not do the following while data is being collected:

- Exit Excel
- Close the Excel file that is registered to the procedure
- Change data on the Excel file that is registered to the procedure

■ Checking the operation of registered procedures

When using a setting file to which a procedure is registered (especially a file that has multiple procedures registered), we recommend checking the operation of the procedure in advance.

6.2 Collecting Measurement Data in a Specified Sequence (Sequential Measurement)

Sequential measurement is a method of taking in measurement data one piece at a time from one or multiple measuring tools following a preset procedure.

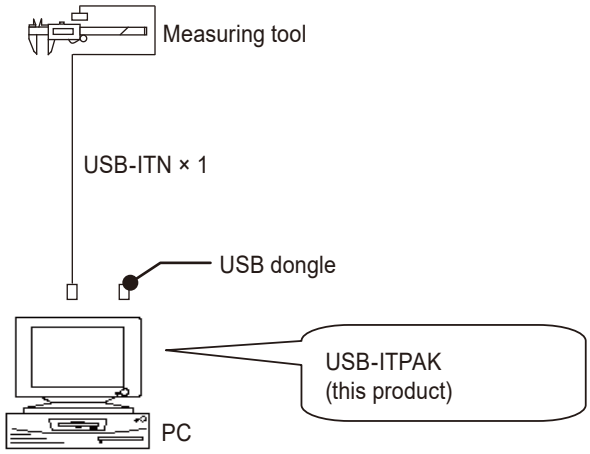
The following are examples of sequential measurement being used.

- Using one measuring tool, measure first the length and then the width in a preset sequence.
- Using multiple measuring tools, measure each point of measurement in sequence, such as first measuring the length with a caliper and then measuring the diameter with a micrometer.

This section explains how to create a setting file and the methods for collecting measurement data that are used for sequential measurement. To create the setting file, the methods for configuring the procedures are explained using the examples in "■ Connection example", "■ Measurement example", and "■ Measurement data entry example" below.

■ Connection example

One measuring tool is connected to USB-ITN.

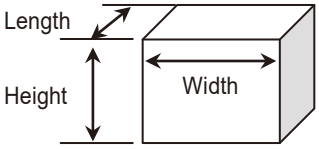


Tips

In addition to USB-ITN, the devices IT-0xxU, DP-1VA, and U-WAVE-R can also be used together.

■ Measurement example

Three sides of a rectangular object are measured in the order length → width → height.



■ Measurement data entry example

An example of an inspection table after data collection is complete 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

Measurement procedure: Sequentially measure the length, width, and height of the first workpiece, and then enter the measurement data into the first row (Length), second row (Width), and third row (Height) of column X1 of the Excel worksheet. Next, measure the remaining workpieces in the same way, up to a total of five workpieces.

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

6.2.1 Creating the Setting File

This section explains how to create a setting file that is used for sequential measurement. As an example, here we use the sample inspection table file (ITPAK_Sample_Form_1_GB.xls*) as the input destination for the measurement data. To use a file other than the sample file, create the file in advance, and then save it in any folder.

* One of the sample files that is saved in the "Sample" folder when USB-ITPAK is installed

- For U-WAVE users

  To use a U-WAVE-R device that is connected to the PC, you must enter the U-WAVE transmitter channel and device ID when configuring a procedure. Prepare this information in advance, such as by taking a note.

  Depending on the measurement mode that is used (button driven or event driven), the operational conditions for collecting or canceling measurement data may differ. When using the special order U-WAVEPAK (event driven use), check that the measurement mode is set according to your application. For details about operational conditions, see "11.1.3 Data Request and Data Cancel Operations when Using U-WAVE" (page 238).

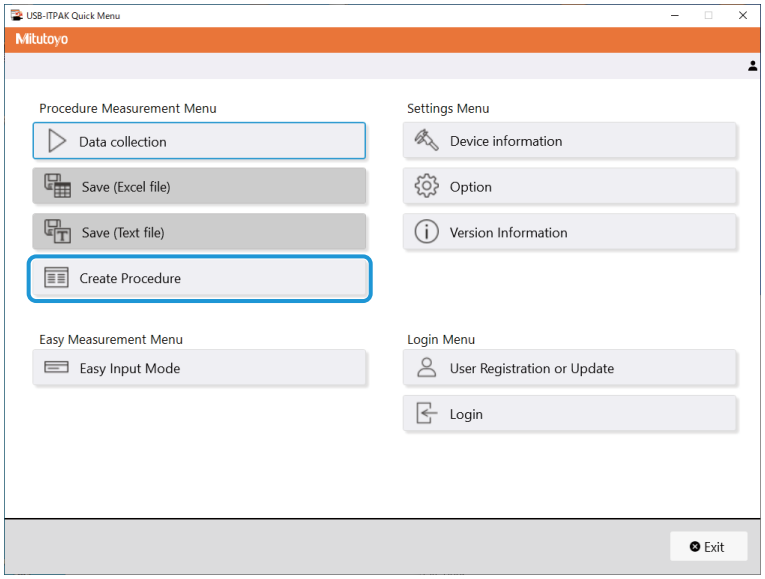
1 Connect the devices you will use to the PC, and then start USB-ITPAK.

For details, see "3.1 Starting USB-ITPAK" (page 17).

2 Check the information of the devices that are connected to the PC.

For details, see "4 Checking the Device Information" (page 21).

3 On the [Quick Menu] screen, click the [Create Procedure] button.



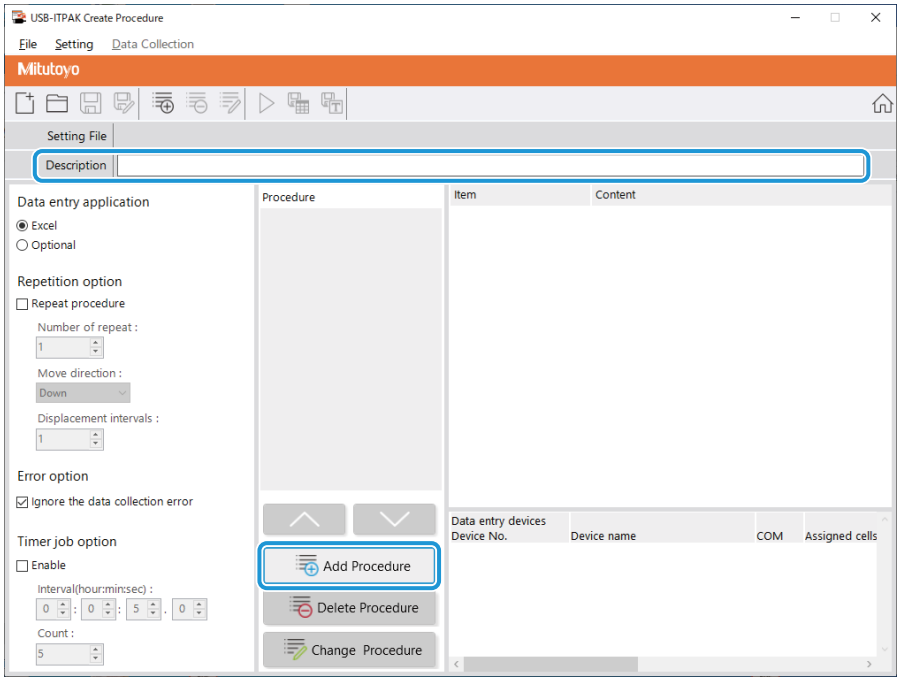
» The create procedure screen will be displayed.

Tips

The [Create Procedure] button is available when an appropriate USB dongle is connected to the PC.

4 Enter a description of the setting file you are creating in the [Description] field, and then click the [Add Procedure] button.

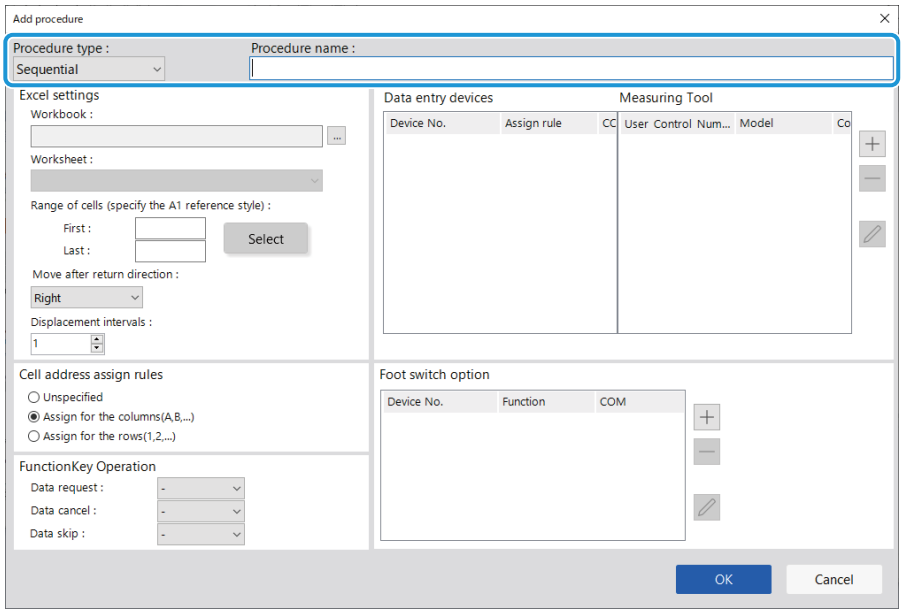
The [Description] field can be left blank.



» The [Add procedure] screen will be displayed.

5 Select [Sequential] in [Procedure type], and then enter a name in [Procedure name].

The procedure name is displayed in the [Procedure] field in the center of the create procedure screen. Enter a name that will be easy to recognize when checking. As an example, here we enter [3 side measurement].



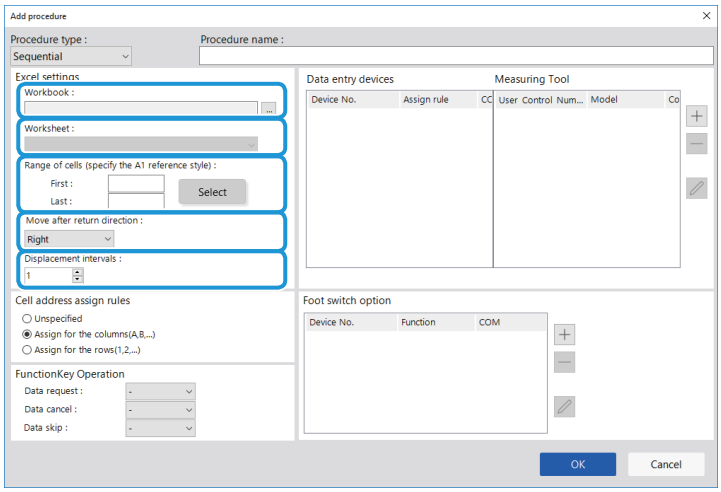
6 Configure each item in the [Excel settings] field.

1 In the [Workbook] field, select the file that measurement data will be entered into.

You can click the [...] button to select the file to use from the [Open] screen.

As an example, here we select the following sample file.

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



2 In the [Worksheet] field, select the worksheet that measurement data will be entered into.

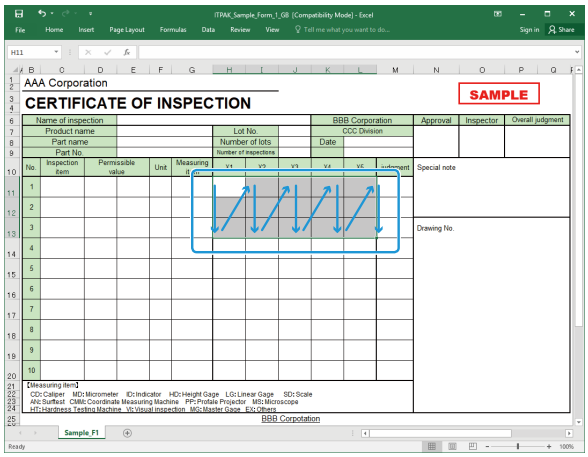
If you click the drop-down list, the names of the worksheets contained in the file that was selected in step 1 will be displayed.

As an example, here we select [Sample_F1].

3 In the [Range of cells (specify the A1 reference style)] fields, specify the range of cells in which to enter measurement data.

To specify the range indicated by the lines in the sample inspection table file (figure on the right) as the input cell range, enter the following:

[First]: H11
[Last]: L13



4 In the [Move after return direction] field, select the direction in which to enter the measurement data.

During measurement data collection, after measurement data is entered in the selected cell, the input cell moves in the direction that you specify here.

As an example, here we select [Down].

5 In the [Displacement intervals] field, specify the number of cells to move.

Specify the number of cells to move for step 4 .
Specifying [1] moves to the next cell. Specifying [2] moves to two cells away.

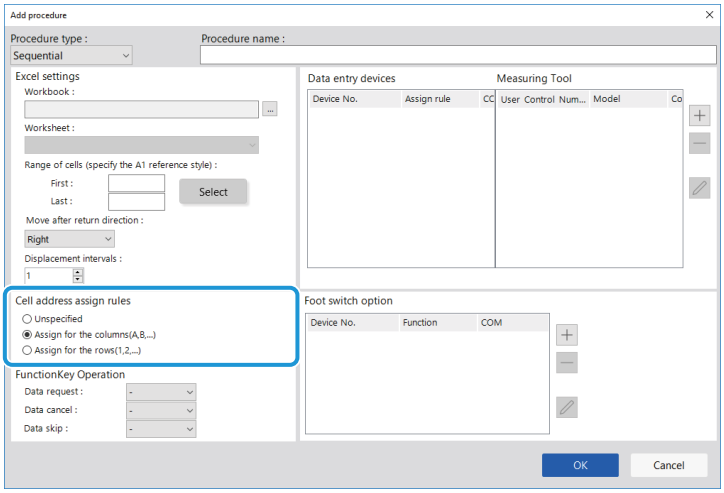
As an example, here we specify [1].

7 Specify the [Cell address assign rules] field.

Select whether to assign the columns (vertical) or the rows (horizontal) of the Excel worksheet to the data entry devices.

When the direction in which to enter the measurement data is vertical, select [Assign for the columns(A,B,...)]. When the direction in which to enter the measurement data is horizontal, select [Assign for the rows(1,2,...)].

As an example, here we select [Assign for the rows(1,2,...)].



Tips

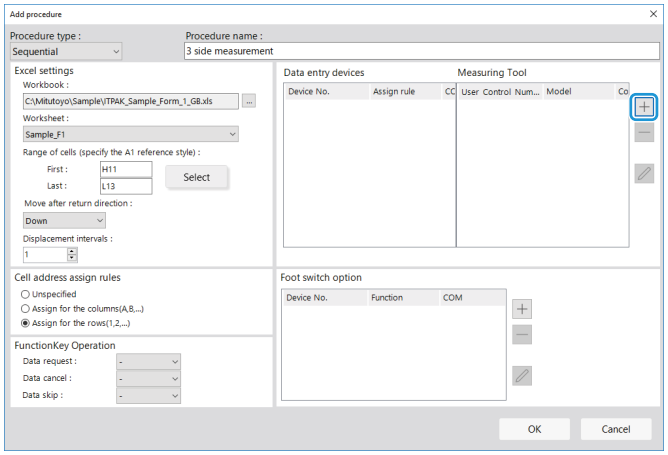
When [Unspecified] is selected, the columns (vertical) or the rows (horizontal) are not assigned to the devices, and data is entered into the cells in the order in which it is measured.

For details, see "■ About the [Cell address assign rules] setting" (page 185).

8 In the [Data entry devices] field, configure the information for the data entry devices.

1 In the [Data entry devices] field, click the [+] button.

» The [Data entry device settings] screen will be displayed.



2 In the [Excel cells assignment] field, specify the row numbers or the column numbers to assign the data entry device to.

To assign the data entry device to rows 11 through 13 in the sample inspection table file, enter [11] in the left field (start number) and [13] in the right field (end number).

3 In the [Entry data settings] field, select the type of data to enter.

There are two types of data that can be entered: measurement data (numeric data) entered by a measuring tool and character string data entered by pressing a foot switch.

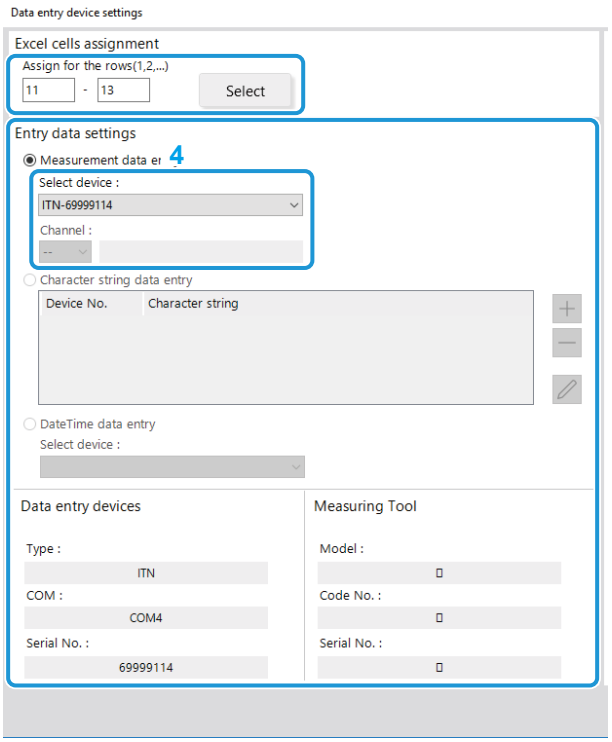
As an example, here we select [Measurement data entry].

For details about how to enter character string data by pressing the foot switch, see "7.2 Entering a Character String with the Foot Switch (Sequential Measurement/Individual Measurement Only)" (page 78).

4 In the [Select device] field, select which device to use for data entry.

If you click the drop-down list, the connected data entry devices will be displayed.

As an example, here we select the USB-ITN device.



If you select a U-WAVE-R device, you must also select which channel the device uses for transmission from the [Channel] drop-down list.

If you start U-WAVEPAK to confirm the channel, first exit USB-ITPAK.
In this case, you must perform the operations again from the first step.

Tips

- To perform preset for a measuring tool that supports Digimatic S1 communication during measurement data collection, set the target value in [Preset].
- To perform tolerance judgment during measurement data collection, set the upper and lower limits in [Upper tolerance] and [Lower tolerance].

5 Click the [OK] button.

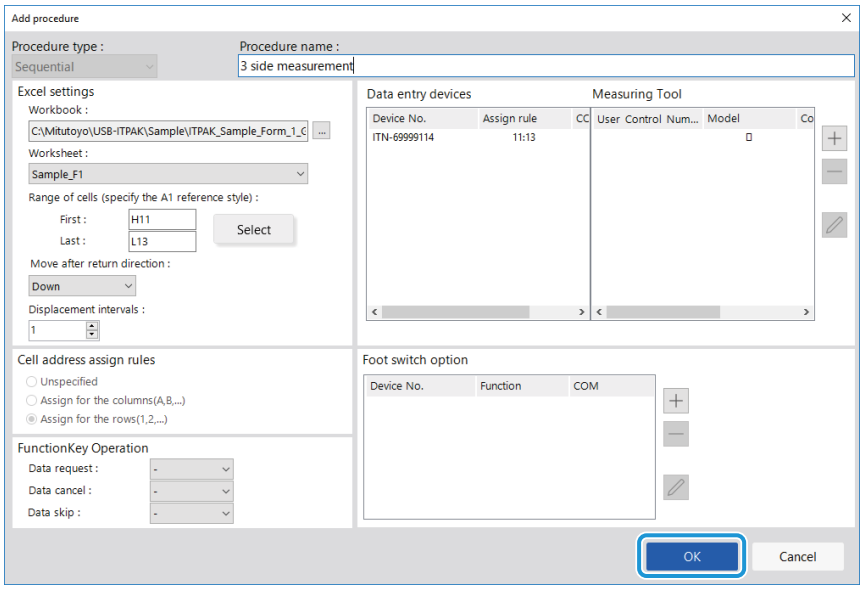
» The registered device information will be displayed in the [Data entry devices] field on the [Add procedure] screen.

Tips

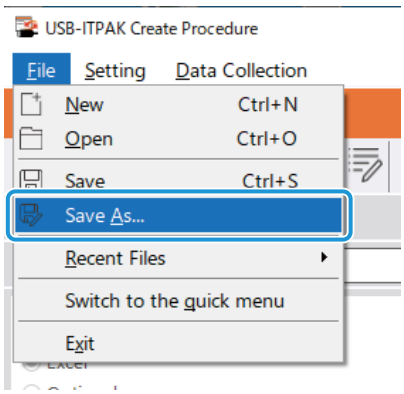
You can change or delete the registered device information.

For details, see "8.8 [Add procedure] Screen/[Change Procedure] Screen" (page 179).

9 Click the [OK] button.

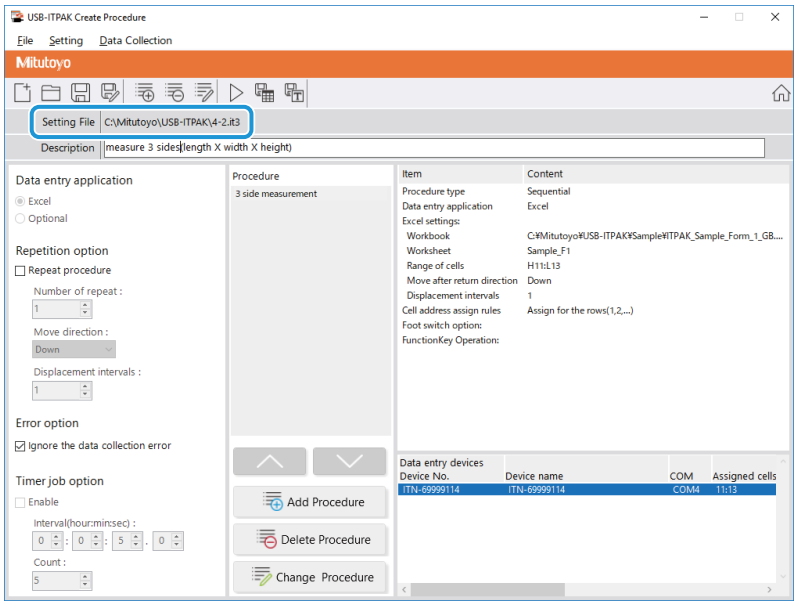


10 From the [File] menu on the create procedure screen, select [Save As].



11 Enter a file name and save the file.

» The full path for the file name will be displayed in the [Setting File] field on the create procedure screen.



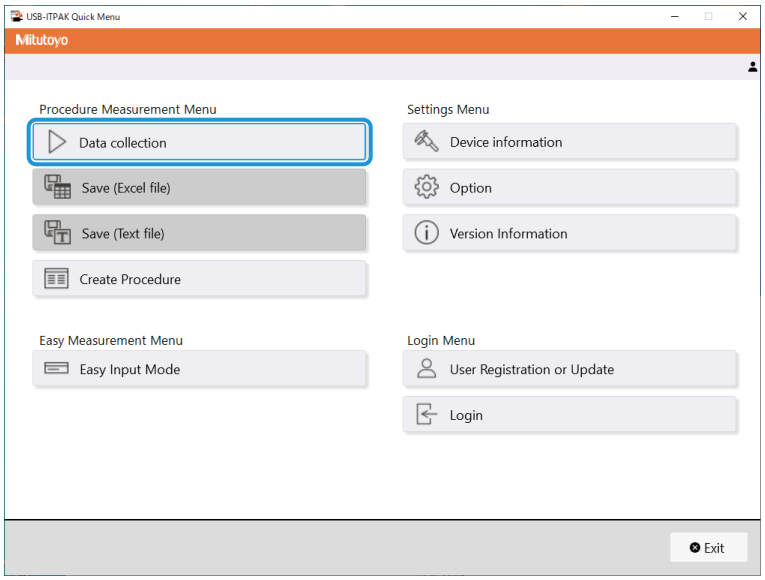
6.2.2 Collecting Measurement Data

When you are performing data collection, disable the [AutoSave] feature in Excel. For details about using Excel, see the documentation for Excel.

Tips

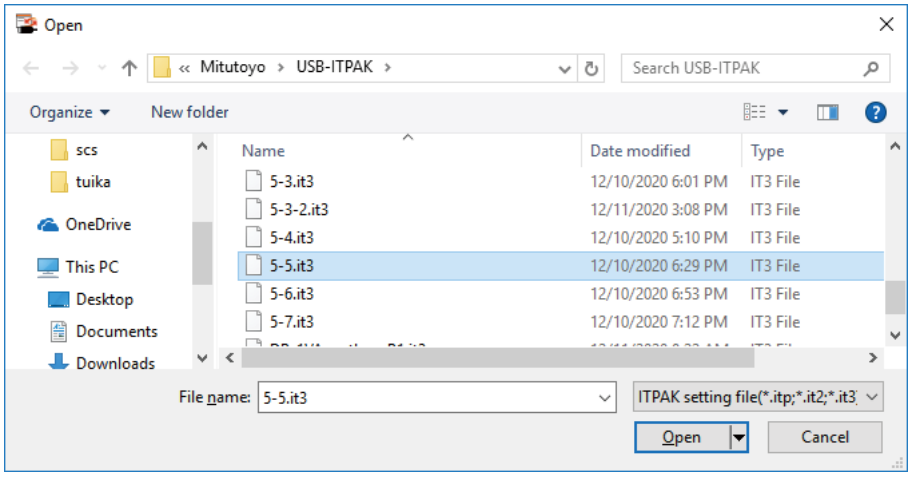
After data is collected, the Excel file where measurement data was entered is saved. If you need to keep a copy of the Excel file before it was saved, make a back-up beforehand.

1 **On the [Quick Menu] screen, click the [Data collection] button.**



» The setting file selection dialog box will be displayed.

2 **Select the setting file.**

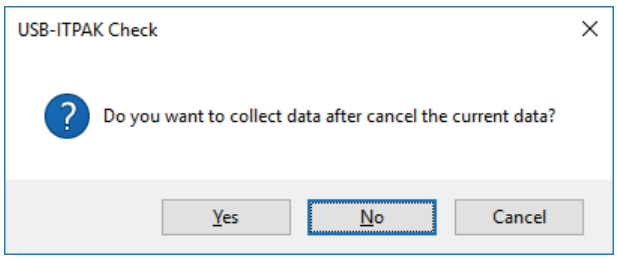


Tips

By selecting [Open] or [Recent Files] from the [File] menu on the create procedure screen, you can also select the setting file. If you selected the setting file on the create procedure screen, click the data collection start icon from the tool bar on the create procedure screen.

» The dialog box appears to prompt you to select the existing data handling method.

3 Select the existing data handling method.



[Yes]: The existing data in the Excel file where data will be entered is deleted, and cells where data will be entered are cleared.

[No]: The existing data in the Excel file where data will be entered remains.

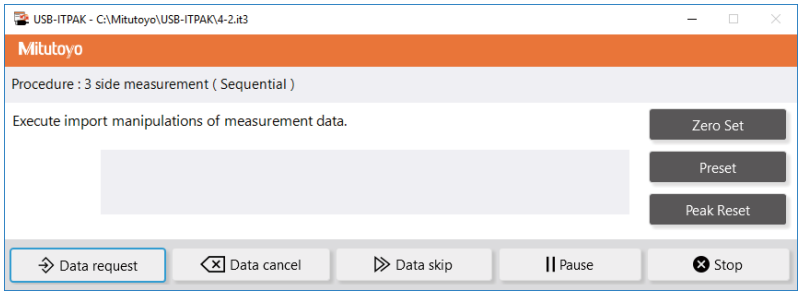
[Cancel]: The dialog box closes, and you return to the [Quick Menu] screen or the create procedure screen.

» If you click the [Yes] or [No] button, the data collection screen will be displayed.

Tips

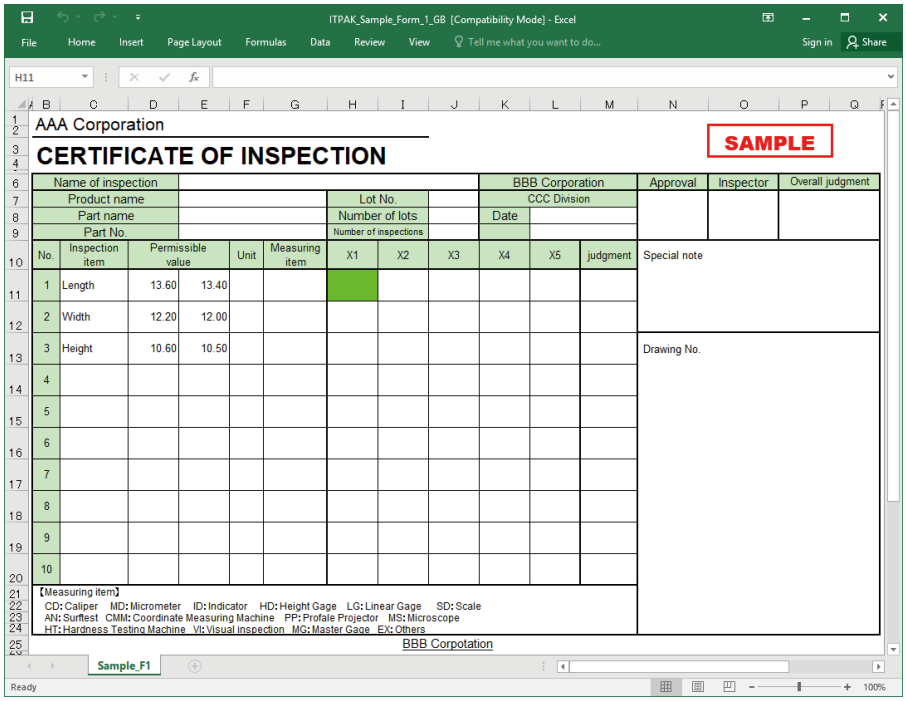
If you click [No], the data collection screen will be paused. In this case, backup the Excel file before resuming data collection. For details, see "■ Pausing/resuming operation when collecting data in Excel" (page 206).

4 Start the measurement data collection operation with one of the following operations:



- On the data collection screen, click the [Data request] button.
- Press the DATA switch on the measuring tool or the connection device (USB-ITN/IT-0xxU/DP-1VA/U-WAVE transmitter).

» Data will be entered according to the procedure that is saved in the setting file.
» During data collection, the next cell into which data is entered will be displayed in green.



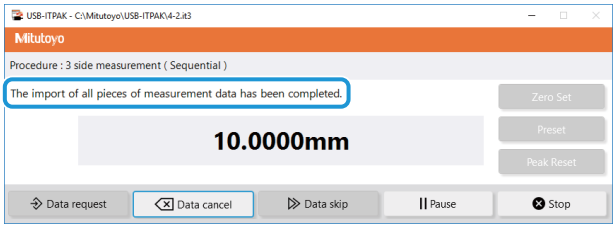
To undo the entry, click the [Data cancel] button on the data collection screen. The data in the input cell is deleted, and the green cell moves to the previous input cell.

To move to the next input cell without entering data, click the [Data skip] button on the data collection screen. The green cell moves to the next input cell.

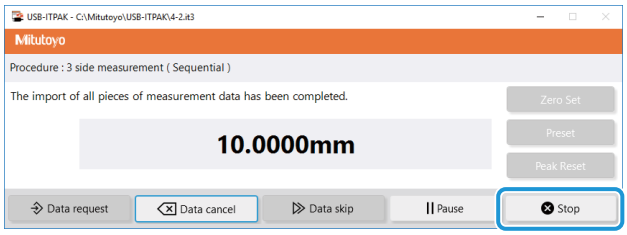
Tips

- Measurement data collection can also be started by operating the foot switch.
  For details, see "7.1 Entering Measurement Data with the Foot Switch" (page 69).
- You can also perform the data cancel operation by using the DATA switch on the U-WAVE transmitter.
  For details, see "U-WAVEPAK User's Manual" or "Special Order U-WAVEPAK (Event Driven Use) User's Manual".
- For U-WAVE, depending on the measurement mode that is used (button driven or event driven), the operational conditions for collecting measurement data or canceling may differ.
  For details, see "11.1.3 Data Request and Data Cancel Operations when Using U-WAVE" (page 238).

» When all the data has been entered, a completion message will be displayed on the data collection screen.



5 Click the [Stop] button.



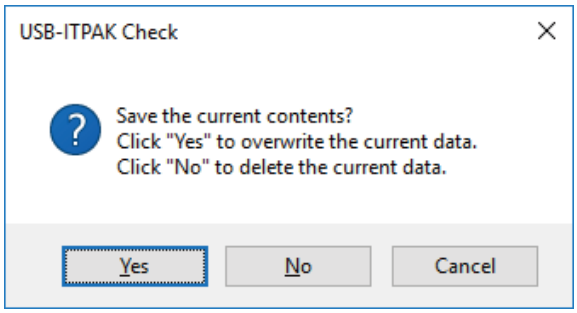
» A confirmation message will be displayed.

6 Click one of the following buttons:

[Yes]: The Excel file where measurement data was entered is saved, and the display switches to the [Quick Menu] screen or the create procedure screen.

[No]: The display switches to the [Quick Menu] screen or the create procedure screen without saving the Excel file where measurement data was entered.

[Cancel]: The confirmation message closes, and you return to the data collection screen.



6.3 Collecting Measurement Data All at Once (Batch Measurement)

Batch measurement is a method of taking in measurement data all at once from one or multiple measuring tools.

The following is an example of batch measurement being used.

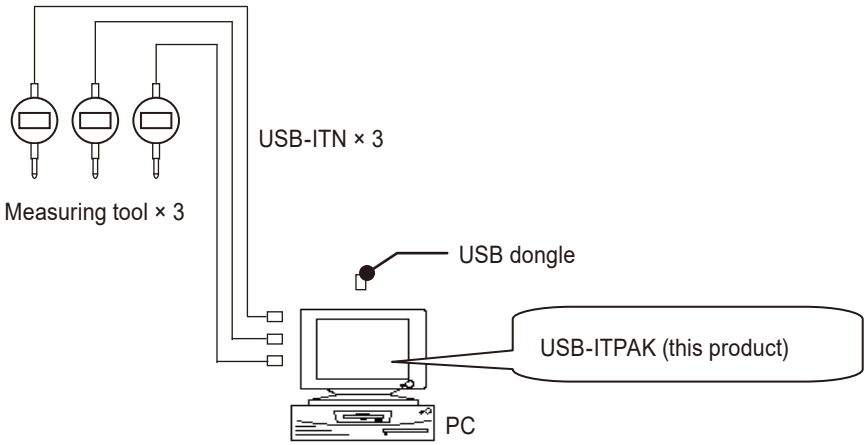
- Connect multiple measuring tools to a measuring jig, and set the workpiece in the measuring jig. Operate the PC or the foot switch, and collect all the measurement data at once from all the measuring tools that are connected.

This section explains how to create a setting file and the methods for collecting measurement data that are used for batch measurement. To create the setting file, the methods for configuring the procedures are explained using the examples in "■ Connection example", "■ Measurement example", and "■ Measurement data entry example" below.

Batch measurement sends a request for data output to all the measuring tools at once, but there will be some deviation in the measurement time of each measuring tool. Because of this, measurements cannot be taken while the measuring jig or the workpiece is being moved. Always perform measurements with everything fixed in place.

■ Connection example

Three indicators are connected to USB-ITN.

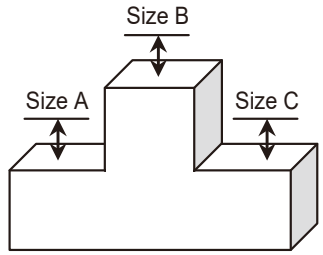


Tips

In addition to USB-ITN, the devices IT-0xxU, DP-1VA, and U-WAVE-R can also be used together.

■ Measurement example

The three indicators are used to measure three locations (Size A, Size B, Size C) all at once.



■ Measurement data entry example

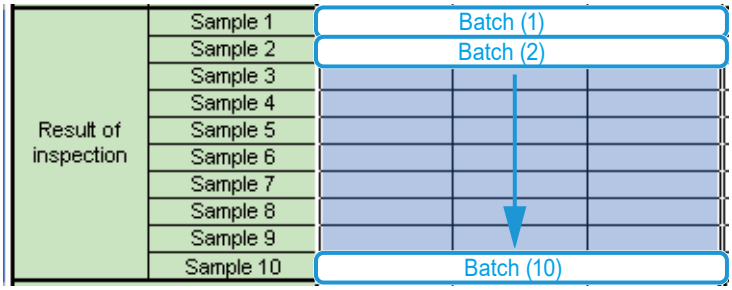
An example of an inspection table after data collection is complete is shown below.

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

Measurement procedure: Measure three locations on the first workpiece all together, and then enter the measurement data into columns "Size A", "Size B", and "Size C" in row Sample 1 of the Excel worksheet.

Next, measure three locations on the second workpiece all together, and enter the measurement data into columns "Size A", "Size B", and "Size C" in row Sample 2 of the Excel worksheet.

Repeat the measurement up to the 10th workpiece.



6.3.1 Creating the Setting File

This section explains how to create a setting file that is used for batch measurement. As an example, here we use the sample inspection table file (ITPAK_Sample_Form_3_GB.xls*) as the input destination for the measurement data. To use a file other than the sample file, create the file in advance, and then save it in any folder.

* One of the sample files that is saved in the "Sample" folder when USB-ITPAK is installed

- For U-WAVE users

  To use a U-WAVE-R device that is connected to the PC, you must enter the U-WAVE transmitter channel and device ID when configuring a procedure. Prepare this information in advance, such as by taking a note.

  To collect measurement data with a U-WAVE device, set the measurement mode to event driven mode of the special order U-WAVEPAK (event driven use). Event driven mode can only be used with the special order U-WAVEPAK (event driven use).

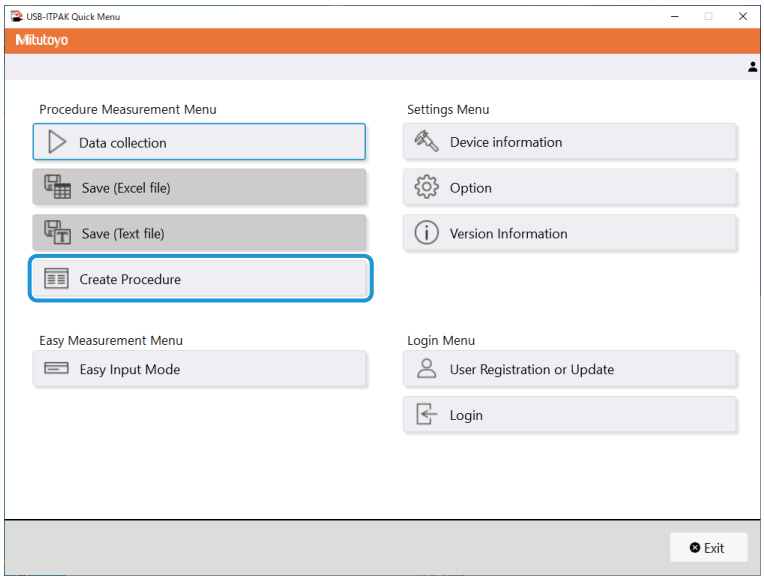
1 **Connect the devices you will use to the PC, and then start USB-ITPAK.**

For details, see "3.1 Starting USB-ITPAK" (page 17).

2 **Check the information of the devices that are connected to the PC.**

For details, see "4 Checking the Device Information" (page 21).

3 **On the [Quick Menu] screen, click the [Create Procedure] button.**



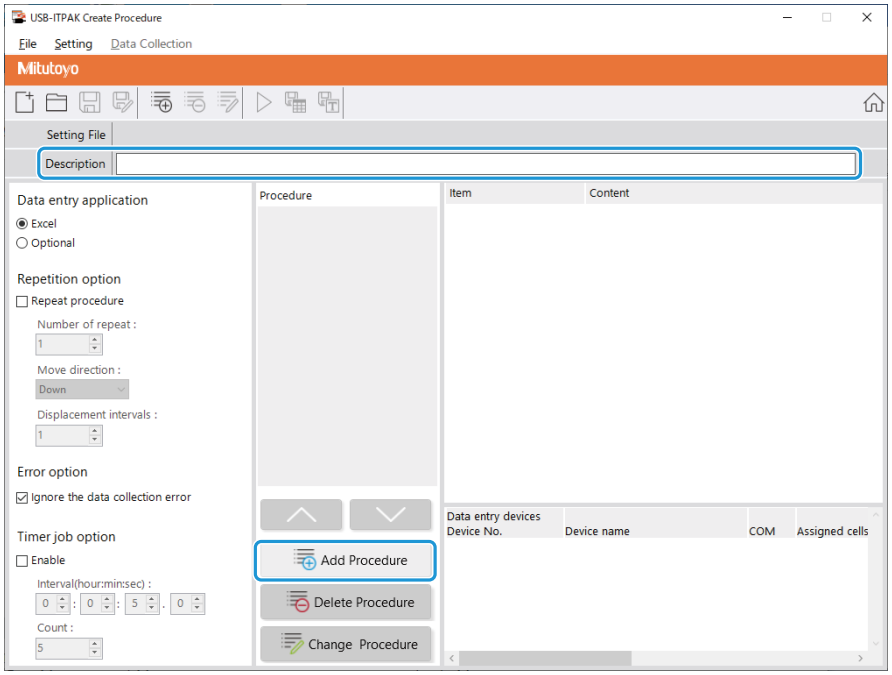
» The create procedure screen will be displayed.

Tips

The [Create Procedure] button is available when an appropriate USB dongle is connected to the PC.

4 Enter a description of the setting file you are creating in the [Description] field, and then click the [Add Procedure] button.

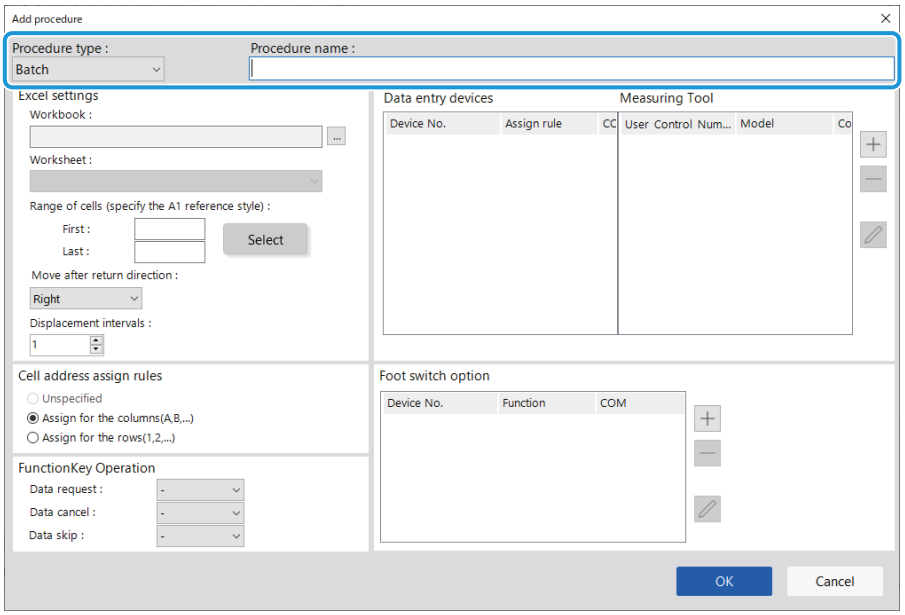
The [Description] field can be left blank.



» The [Add procedure] screen will be displayed.

5 Select [Batch] in [Procedure type], and then enter a name in [Procedure name].

The procedure name is displayed in the [Procedure] field in the center of the create procedure screen. Enter a name that will be easy to recognize when checking. As an example, here we enter [3 position batch measurement].



6 Configure each item in the [Excel settings] field.

1 In the [Workbook] field, select the file that measurement data will be entered into.

You can click the [...] button to select the file to use from the [Open] screen.

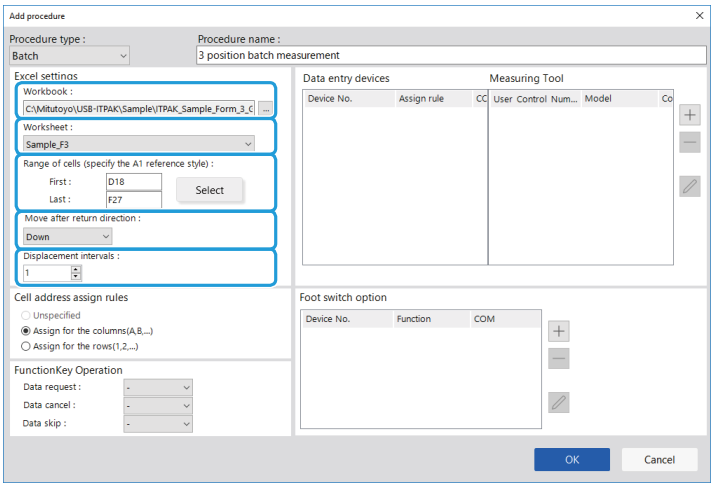
As an example, here we select the following sample file.

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

2 In the [Worksheet] field, select the worksheet that measurement data will be entered into.

If you click the drop-down list, the names of the worksheets contained in the file that was selected in step 1 will be displayed.

As an example, here we select [Sample_F3].



3 In the [Range of cells (specify the A1 reference style)] fields, specify the range of cells in which to enter measurement data.

To specify the range indicated by the lines in the sample inspection table file (figure on the right) as the input cell range, enter the following:

[First]: D18
[Last]: F27

4 In the [Move after return direction] field, select the direction in which to enter the measurement data.

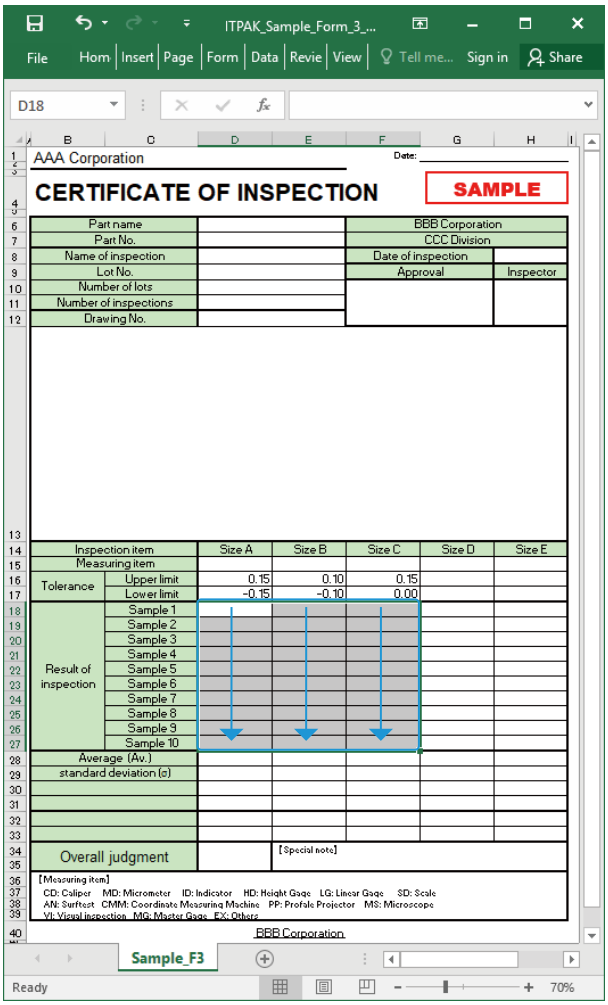
During measurement data collection, after measurement data is entered in the selected cell, the input cell moves in the direction that you specify here.

As an example, here we select [Down].

5 In the [Displacement intervals] field, specify the number of cells to move.

Specify the number of cells to move for step 4 .
Specifying [1] moves to the next cell.
Specifying [2] moves to two cells away.

As an example, here we specify [1].



5 In the [Displacement intervals] field, specify the number of cells to move.

Specify the number of cells to move for step 4 .
Specifying [1] moves to the next cell.
Specifying [2] moves to two cells away.

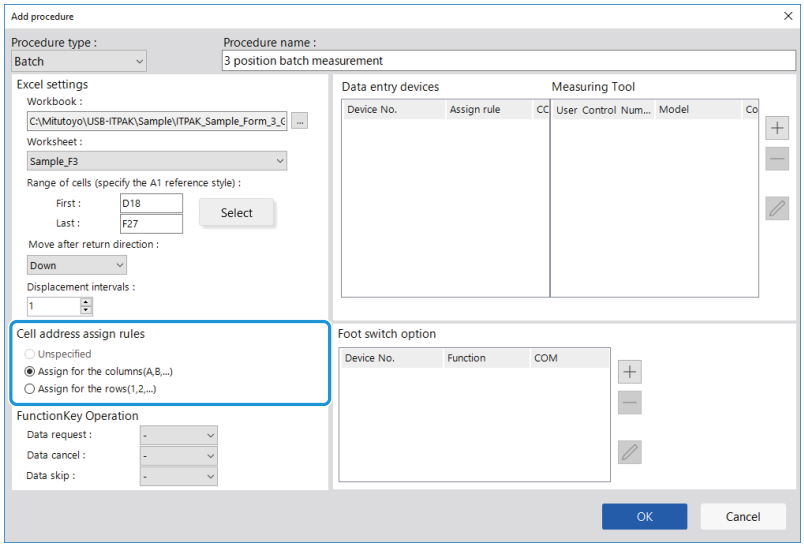
As an example, here we specify [1].

7 Specify the [Cell address assign rules] field.

Select whether to assign the columns (vertical) or the rows (horizontal) of the Excel worksheet to the data entry devices.

When the direction in which to enter the measurement data is vertical, select [Assign for the columns(A,B,...)]. When the direction in which to enter the measurement data is horizontal, select [Assign for the rows(1,2,...)].

As an example, here we select [Assign for the columns(A,B,...)].



Tips

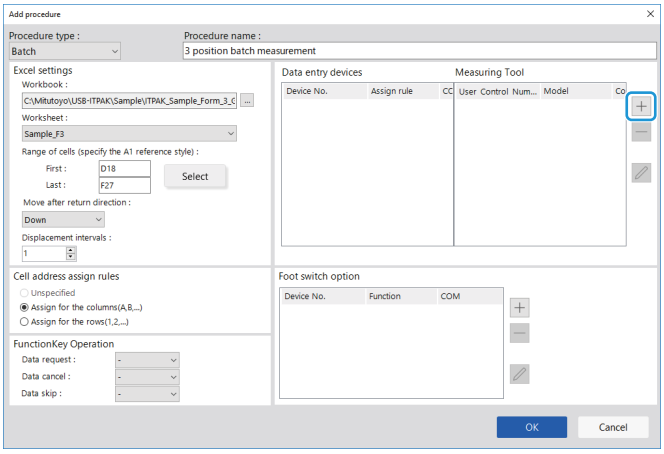
When [Unspecified] is selected, the columns (vertical) or the rows (horizontal) are not assigned to the devices, and data is entered into the cells in the order in which it is measured.

For details, see "■ About the [Cell address assign rules] setting" (page 185).

8 Configure the information for the first data entry device in the [Data entry devices] field.

1 In the [Data entry devices] field, click the [+] button.

» The [Data entry device settings] screen will be displayed.



2 In the [Excel cells assignment] field, specify the row numbers or the column numbers to assign the data entry device to.

To assign the first data entry device to the first column, D, in the sample inspection table file, enter [D] in the left field (start number) and [D] in the right field (end number).

3 In the [Entry data settings] field, select the type of data to enter.

There are two types of data that can be entered: measurement data (numeric data) entered by a measuring tool and character string data entered by pressing a foot switch.

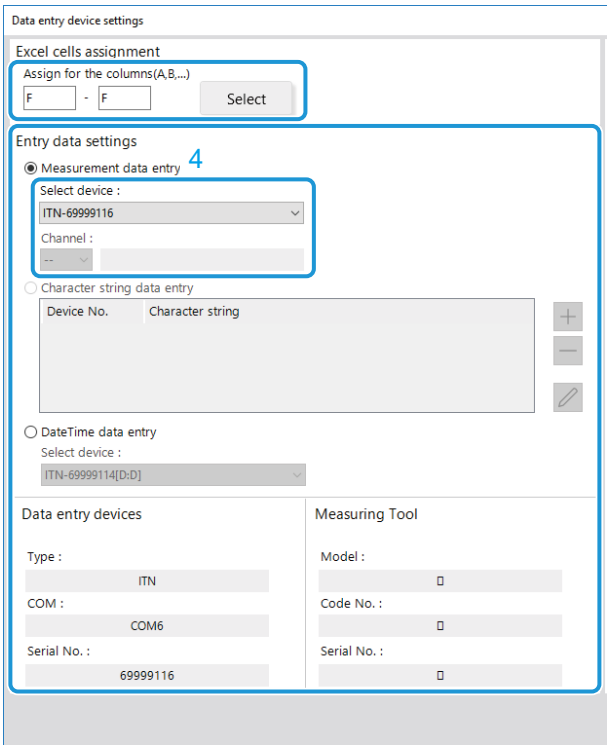
As an example, here we select [Measurement data entry].

For details about how to enter character string data by pressing a foot switch, see "7.2 Entering a Character String with the Foot Switch (Sequential Measurement/Individual Measurement Only)" (page 78).

4 In the [Select device] field, select which device to use for data entry.

If you click the drop-down list, the connected data entry devices will be displayed.

As an example, here we select the USB-ITN device.



If you select a U-WAVE-R device, you must also select which channel the device uses for transmission from the [Channel] drop-down list.

If you start U-WAVEPAK to confirm the channel, first exit USB-ITPAK. In this case, you must perform the operations again from the first step.

Tips

- To perform zero set, preset, or peak reset for a measuring tool that supports Digimatic S1 communication before measurement, select [Set device before measurement] and select the target operation option button.
- To perform preset for a measuring tool that supports Digimatic S1 communication during measurement data collection, set the target value in [Preset].
- To perform tolerance judgment during measurement data collection, set the upper and lower limits in [Upper tolerance] and [Lower tolerance].

5 Click the [OK] button.

» The registered device information will be displayed in the [Data entry devices] field on the [Add procedure] screen.

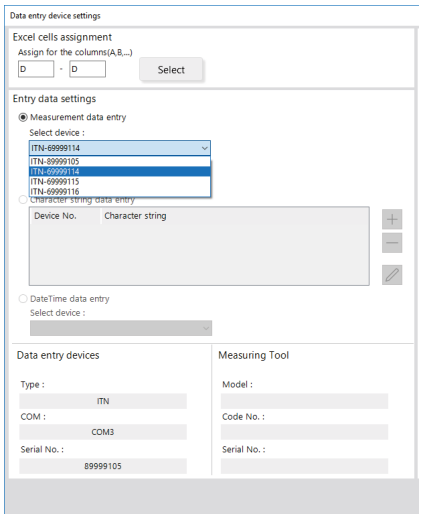
Tips

You can change or delete the registered device information.

For details, see "8.8 [Add procedure] Screen/[Change Procedure] Screen" (page 179).

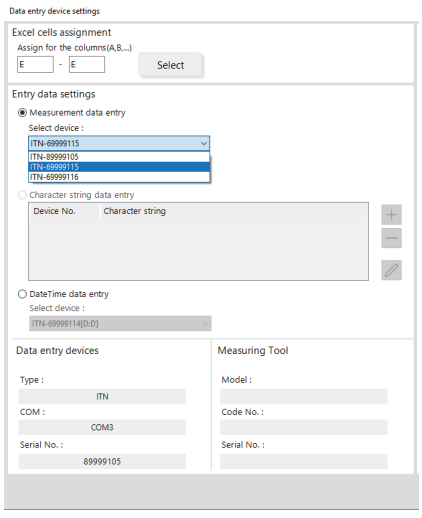
9 Repeat step 8 to configure the information for the second data entry device.

To assign the second data entry device to the second column, E, enter [E] in the [Excel cells assignment] fields.

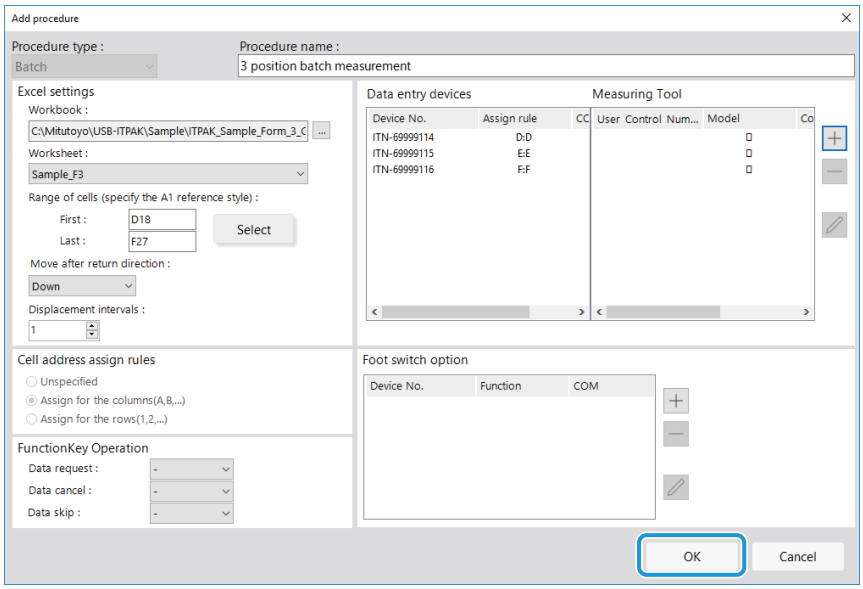


10 Repeat step 8 to configure the information for the third data entry device.

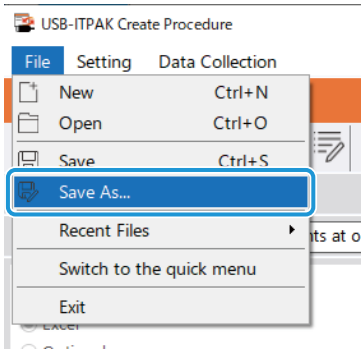
To assign the third data entry device to the third column, F, enter [F] in the [Excel cells assignment] fields.



11 Click the [OK] button.

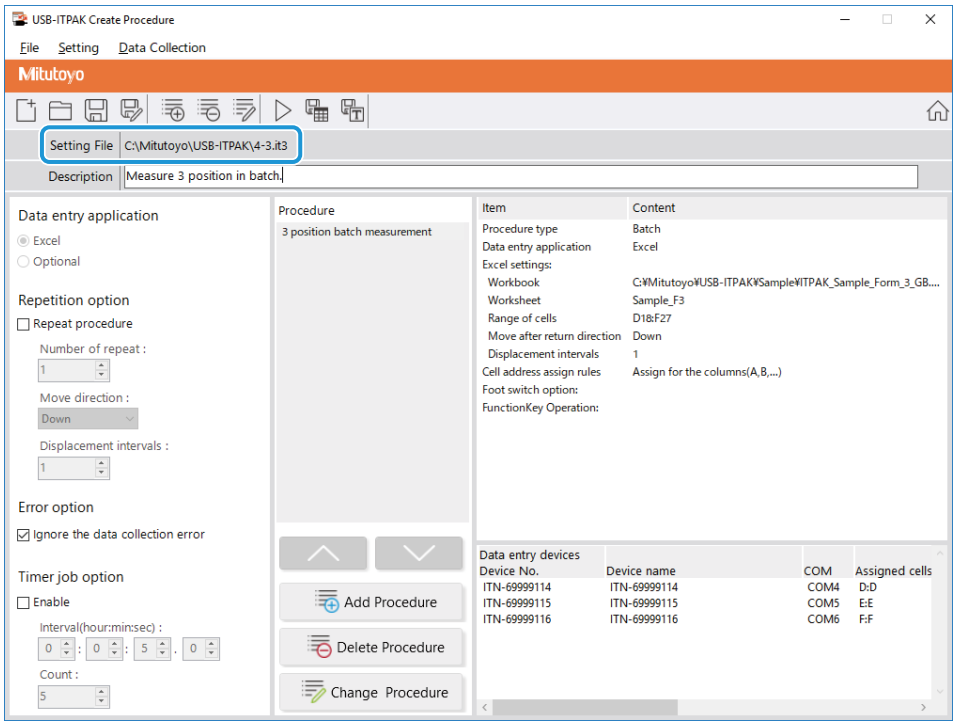


12 From the [File] menu on the create procedure screen, select [Save As].



13 Enter a file name and save the file.

» The full path for the file name will be displayed in the [Setting File] field on the create procedure screen.



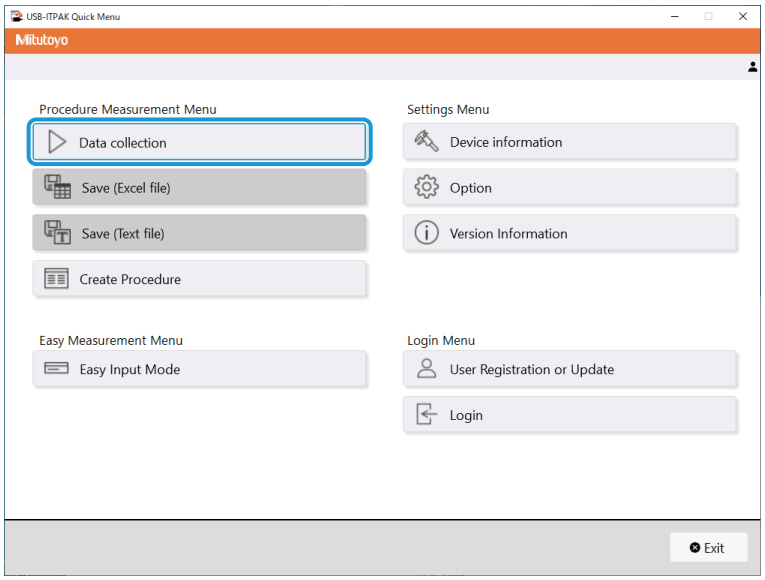
6.3.2 Collecting Measurement Data

When you are performing data collection, disable the [AutoSave] feature in Excel. For details about using Excel, see the documentation for Excel.

Tips

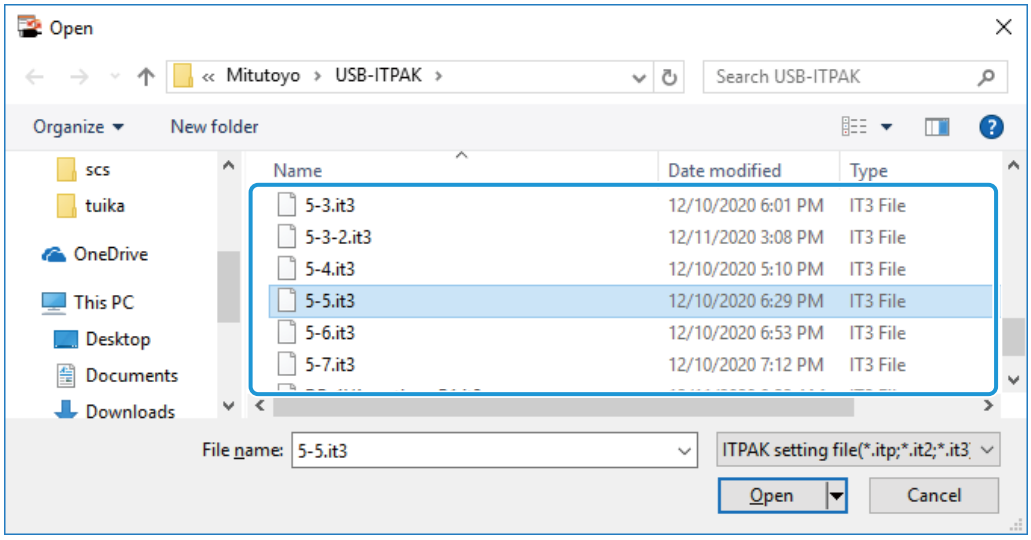
After data is collected, the Excel file where measurement data was entered is saved. If you need to keep a copy of the Excel file before it was saved, make a back-up beforehand.

1 **On the [Quick Menu] screen, click the [Data collection] button.**



» The setting file selection dialog box appears.

2 **Select the setting file.**

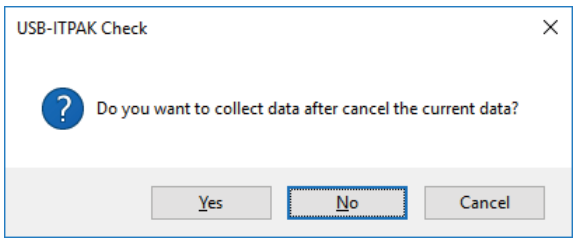


Tips

By selecting [Open] or [Recent Files] from the [File] menu on the create procedure screen, you can also select the setting file. If you selected the setting file on the create procedure screen, click the data collection start icon from the tool bar on the create procedure screen.

» The dialog box appears to prompt you to select the existing data handling method.

3 Select the existing data handling method.



[Yes]: The existing data in the Excel file where data will be entered is deleted, and cells where data will be entered are cleared.

[No]: The existing data in the Excel file where data will be entered remains.

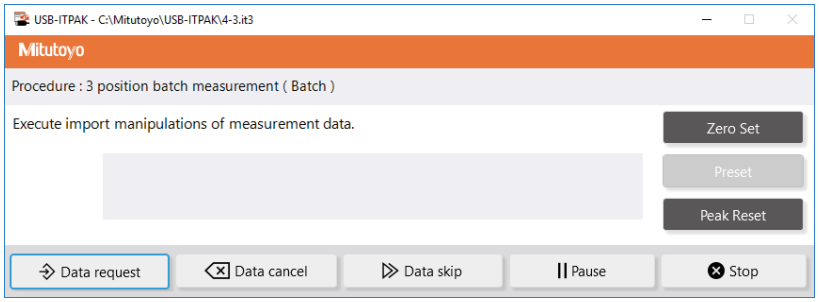
[Cancel]: The dialog box closes, and you return to the [Quick Menu] screen or the create procedure screen.

» If you click the [Yes] or [No] button, the data collection screen will be displayed.

Tips

If you click [No], the data collection screen will be paused. In this case, backup the Excel file before resuming data collection. For details, see "■ Pausing/resuming operation when collecting data in Excel" (page 206).

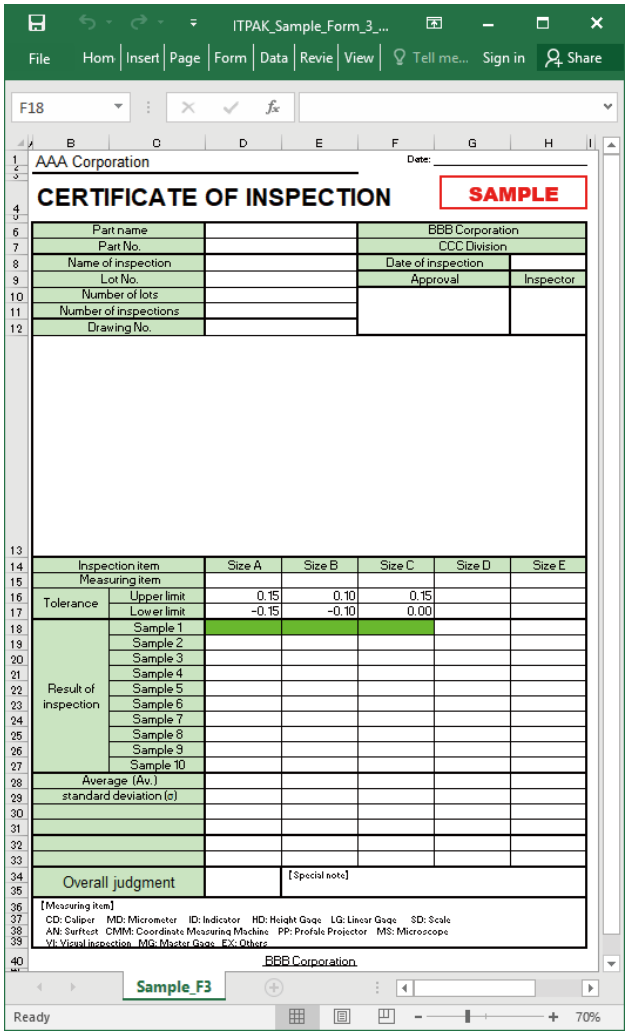
4 Start the collection operation for measurement data.



Start the collection operation by clicking the [Data request] button on the data collection screen.

» Data will be entered according to the procedure that is saved in the setting file.

» During data collection, the next cell into which data is entered will be displayed in green.



To undo the entry, click the [Data cancel] button on the data collection screen. The data in the input cell is deleted, and the green cell moves to the previous input cell.

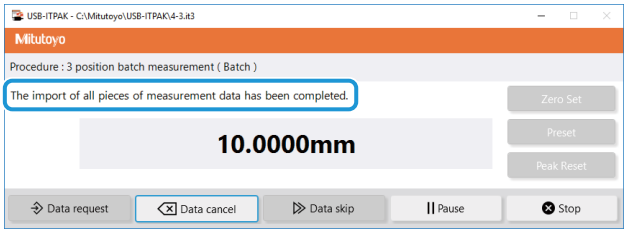
To move to the next input cell without entering data, click the [Data skip] button on the data collection screen. The green cell moves to the next input cell.

Tips

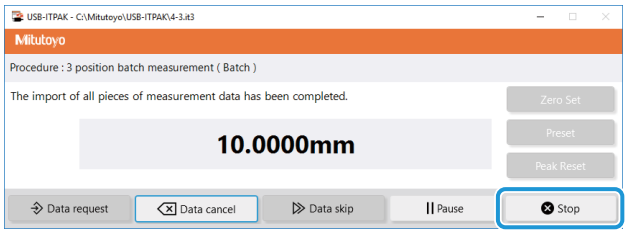
For a U-WAVE transmitter in event driven mode, if the value that is being displayed on the connected measuring tool does not change, measurement data will not be entered.

For details, see "Special Order U-WAVEPAK (Event Driven Use) User's Manual".

» When all the data has been entered, a completion message will be displayed on the data collection screen.



5 Click the [Stop] button.



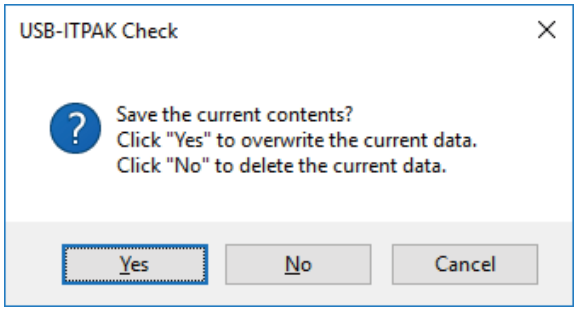
» A confirmation message will be displayed.

6 Click one of the following buttons:

[Yes]: The Excel file where measurement data was entered is saved, and the display switches to the [Quick Menu] screen or the create procedure screen.

[No]: The display switches to the [Quick Menu] screen or the create procedure screen without saving the Excel file where measurement data was entered.

[Cancel]: The confirmation message closes, and you return to the data collection screen.



6.4 Collecting Measurement Data at Random (Individual Measurement)

Individual measurement is a method for taking in measurement data from each measuring tool at random, following a procedure that was individually set for each device.

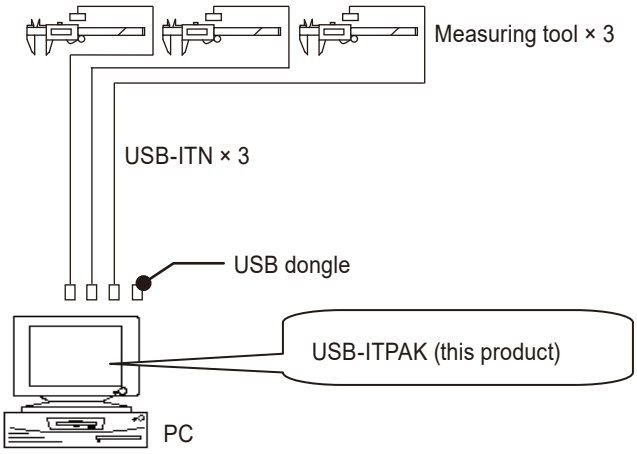
The following is an example of individual measurement being used.

- Collecting measurement data from three users who are each using their own measuring tool.

This section explains how to create a setting file and the methods for collecting measurement data that are used for individual measurement. To create the setting file, the methods for configuring the procedures are explained using the examples in "■ Connection example", "■ Measurement example", and "■ Measurement data entry example" below.

■ Connection example

Three measuring tools are connected to USB-ITN.

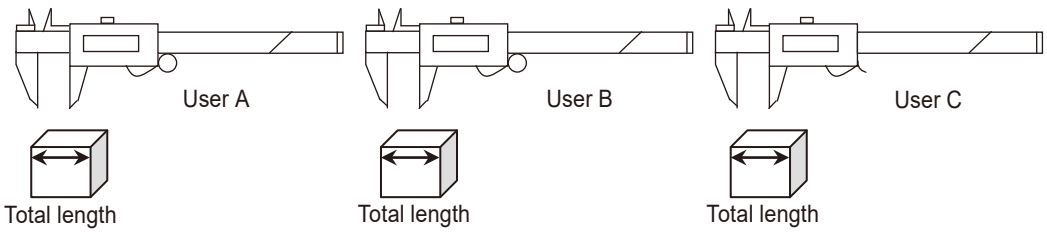


Tips

In addition to USB-ITN, the devices IT-0xxU, DP-1VA, and U-WAVE-R can also be used together.

■ Measurement example

Three users measure the width of the same workpiece.

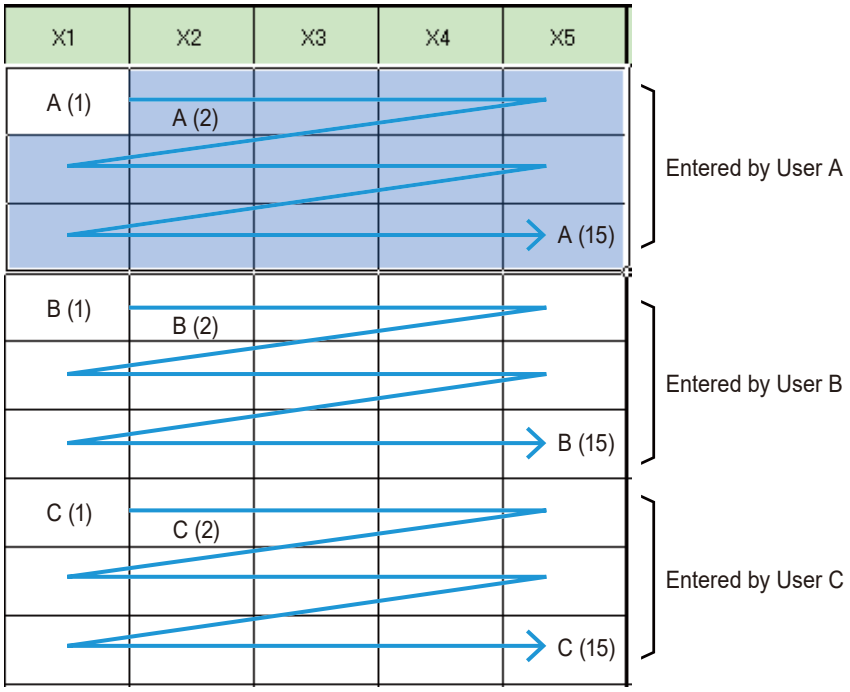


■ Measurement data entry example

An example of an inspection table after data collection is complete 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
10										

Measurement procedure: Users A, B, and C each measure the width of the first workpiece, and then enter each measurement data into the first row (User A), fourth row (User B), and seventh row (User C) of column X1 of the Excel worksheet. Next, the remaining workpieces are measured in the same way, with each user measuring a total of 15 workpieces.



6.4.1 Creating the Setting File

This section explains how to create a setting file that is used for individual measurement. As an example, here we use the sample inspection table file (ITPAK_Sample_Form_4_GB.xls*) as the input destination for the measurement data. To use a file other than the sample file, create the file in advance, and then save it in any folder.

* One of the sample files that is saved in the "Sample" folder when USB-ITPAK is installed

- For U-WAVE users

  To use a U-WAVE-R device that is connected to the PC, you must enter the U-WAVE transmitter channel and device ID when configuring a procedure. Prepare this information in advance, such as by taking a note.

  Depending on the measurement mode that is used (button driven or event driven), the operational conditions for collecting or canceling measurement data may differ. When using the special order U-WAVEPAK (event driven use), check that the measurement mode is set according to your application. For details about operational conditions, see "11.1.3 Data Request and Data Cancel Operations when Using U-WAVE" (page 238).

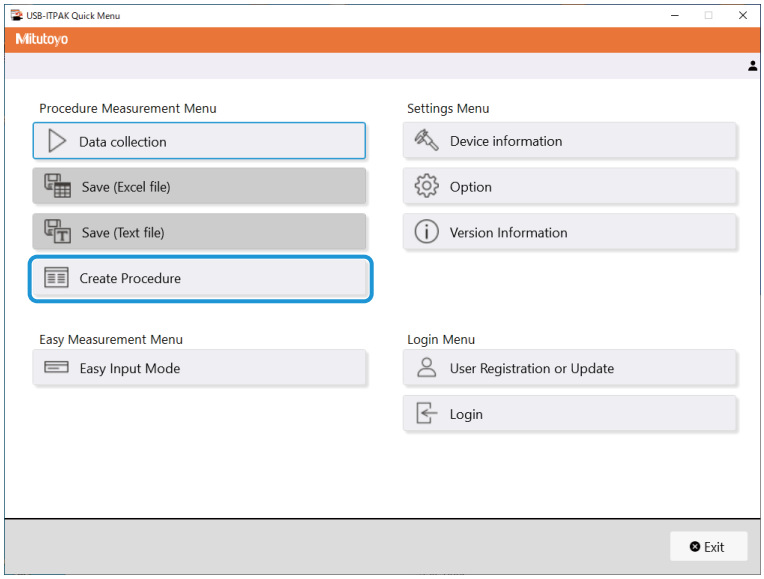
1 Connect the devices you will use to the PC, and then start USB-ITPAK.

For details, see "3.1 Starting USB-ITPAK" (page 17).

2 Check the information of the devices that are connected to the PC.

For details, see "4 Checking the Device Information" (page 21).

3 On the [Quick Menu] screen, click the [Create Procedure] button.



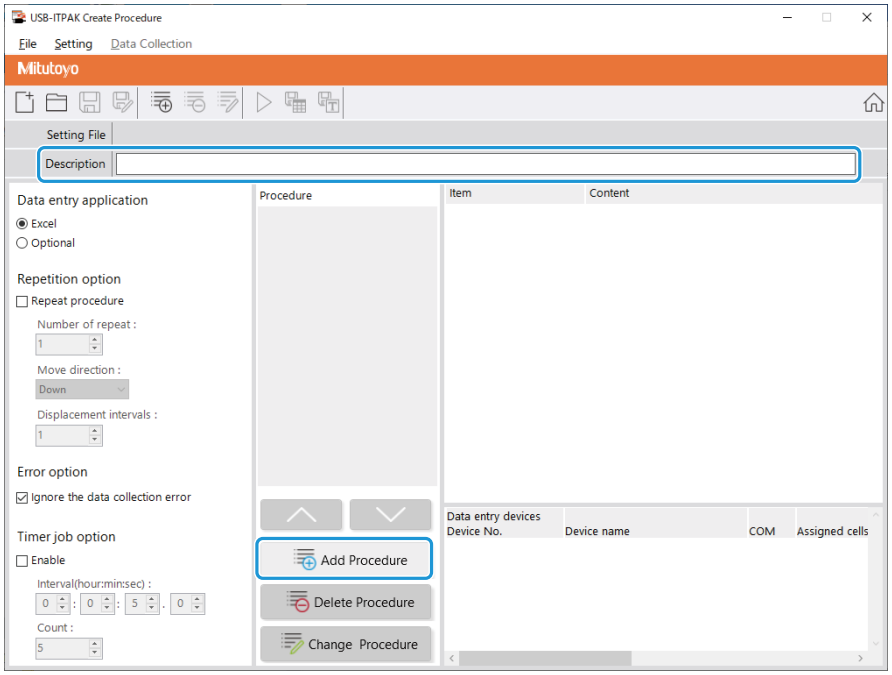
» The create procedure screen will be displayed.

Tips

The [Create Procedure] button is available when an appropriate USB dongle is connected to the PC.

4 Enter a description of the setting file you are creating in the [Description] field, and then click the [Add Procedure] button.

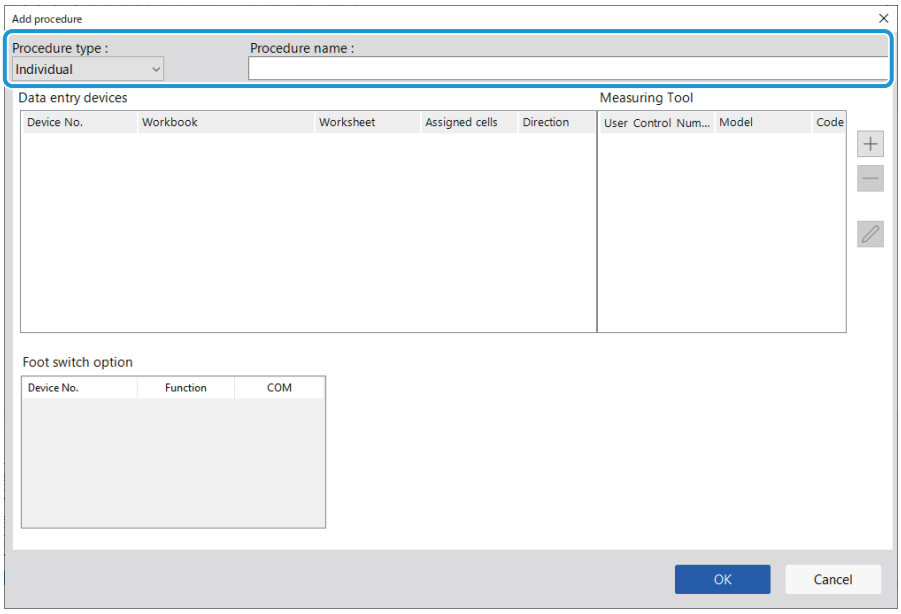
The [Description] field can be left blank.



» The [Add procedure] screen will be displayed.

5 Select [Individual] in [Procedure type], and then enter a name in [Procedure name].

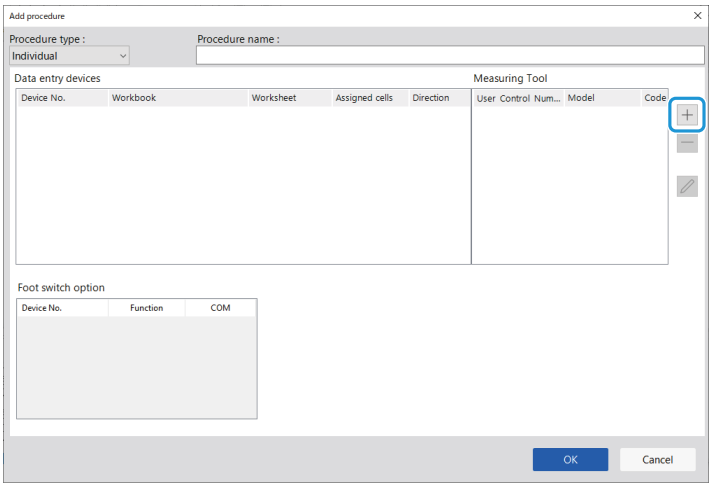
The procedure name is displayed in the [Procedure] field in the center of the create procedure screen. Enter a name that will be easy to recognize when checking. As an example, here we enter [3 posi. individual measurement].



6 Configure the information for the first data entry device in the [Data entry devices] field.

1 In the [Data entry devices] field, click the [+] button.

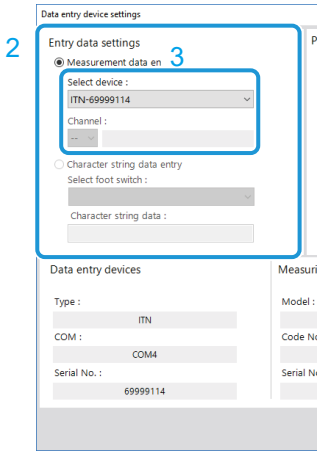
» The [Data entry device settings] screen will be displayed.



2 In the [Entry data settings] field, select the type of data to enter.

There are two types of data that can be entered: measurement data (numeric data) entered by a measuring tool and character string data entered by pressing a foot switch.

As an example, here we select [Measurement data entry].



For details about how to enter character string data by pressing a foot switch, see "7.2 Entering a Character String with the Foot Switch (Sequential Measurement/Individual Measurement Only)" (page 78).

3 In the [Select device] field, select which device to use for data entry.

If you click the drop-down list, the connected data entry devices will be displayed.

As an example, here we select the USB-ITN device.

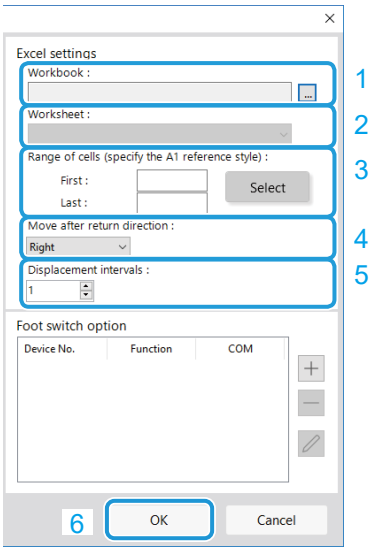
If you select a U-WAVE-R device, you must also select which channel the device uses for transmission from the [Channel] drop-down list.

If you start U-WAVEPAK to confirm the channel, first exit USB-ITPAK. In this case, you must perform the operations again from the first step.

Tips

- To perform preset for a measuring tool that supports Digimatic S1 communication during measurement data collection, set the target value in [Preset].
- To perform tolerance judgment during measurement data collection, set the upper and lower limits in [Upper tolerance] and [Lower tolerance].

7 Configure each item in the [Excel settings] field.



1 In the [Workbook] field, select the file that measurement data will be entered into.

You can click the [...] button to select the file to use from the [Open] screen.

As an example, here we select the following sample file.

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

2 In the [Worksheet] field, select the worksheet that measurement data will be entered into.

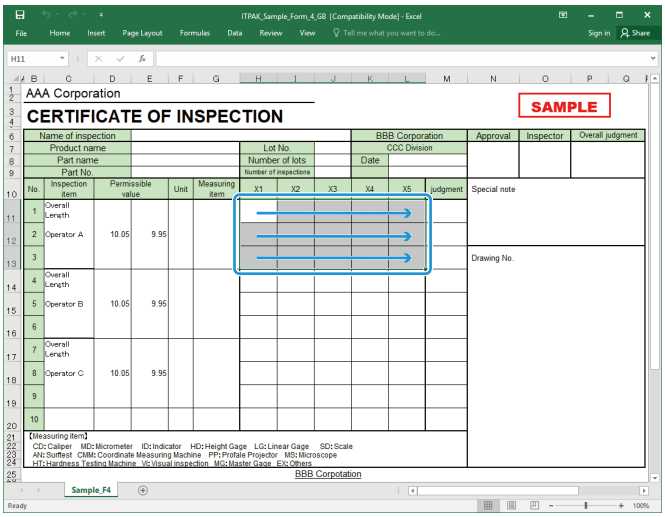
If you click the drop-down list, the names of the worksheets contained in the file that was selected in step 1 will be displayed.

As an example, here we select [Sample_F4].

3 In the [Range of cells (specify the A1 reference style)] fields, specify the range of cells in which to enter measurement data.

To specify the range indicated by the lines in the sample inspection table file (figure on the right) as the input cell range, enter the following:

[First]: H11
[Last]: L13



4 In the [Move after return direction] field, select the direction in which to enter the measurement data.

During measurement data collection, after measurement data is entered in the selected cell, the input cell moves in the direction that you specify here.

As an example, here we select [Right].

5 In the [Displacement intervals] field, specify the number of cells to move.

Specify the number of cells to move for step 4 .

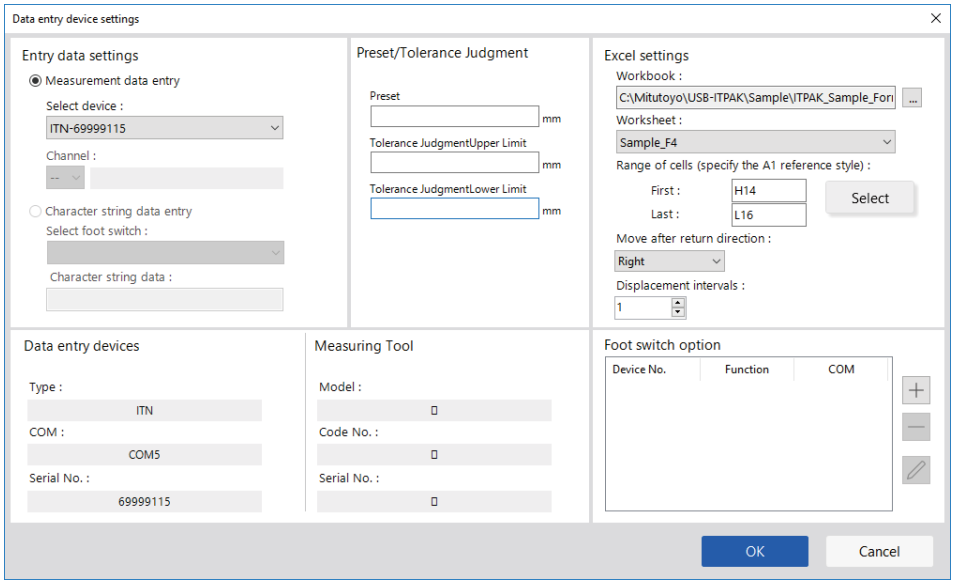
Specifying [1] moves to the next cell.
Specifying [2] moves to two cells away.

As an example, here we specify [1].

6 Click the [OK] button.

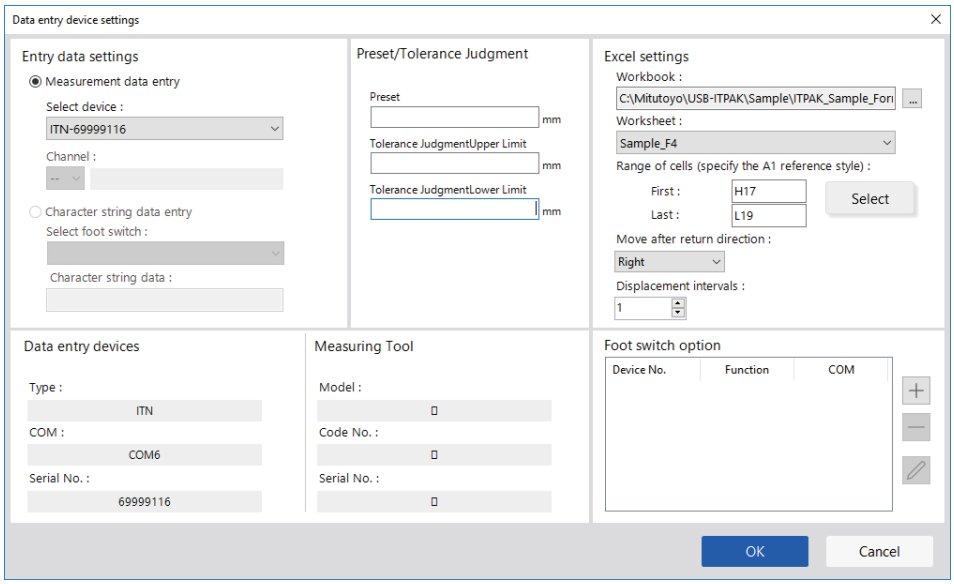
8 Repeat steps 6 through 7 to configure the information for the second data entry device.

In the [Range of cells (specify the A1 reference style)] fields, enter [H14] for [First] and [L16] for [Last].

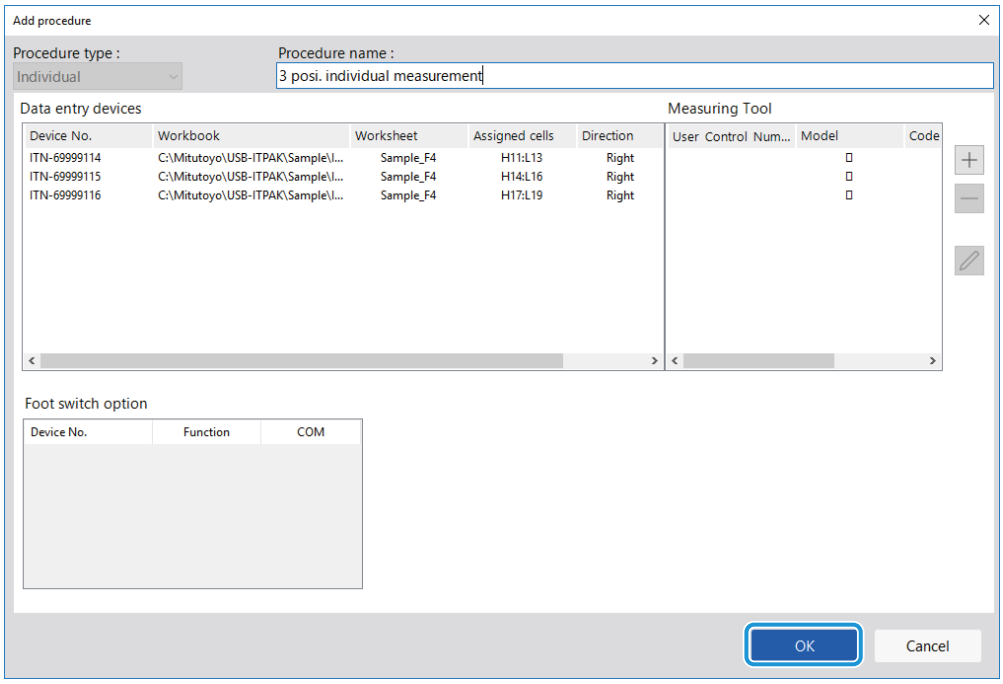


9 Repeat steps 6 through 7 to configure the information for the third data entry device.

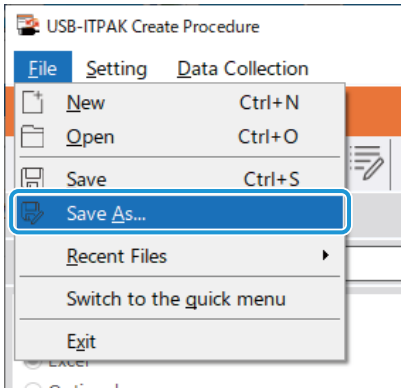
In the [Range of cells (specify the A1 reference style)] fields, enter [H17] for [First] and [L19] for [Last].



10 Click the [OK] button.

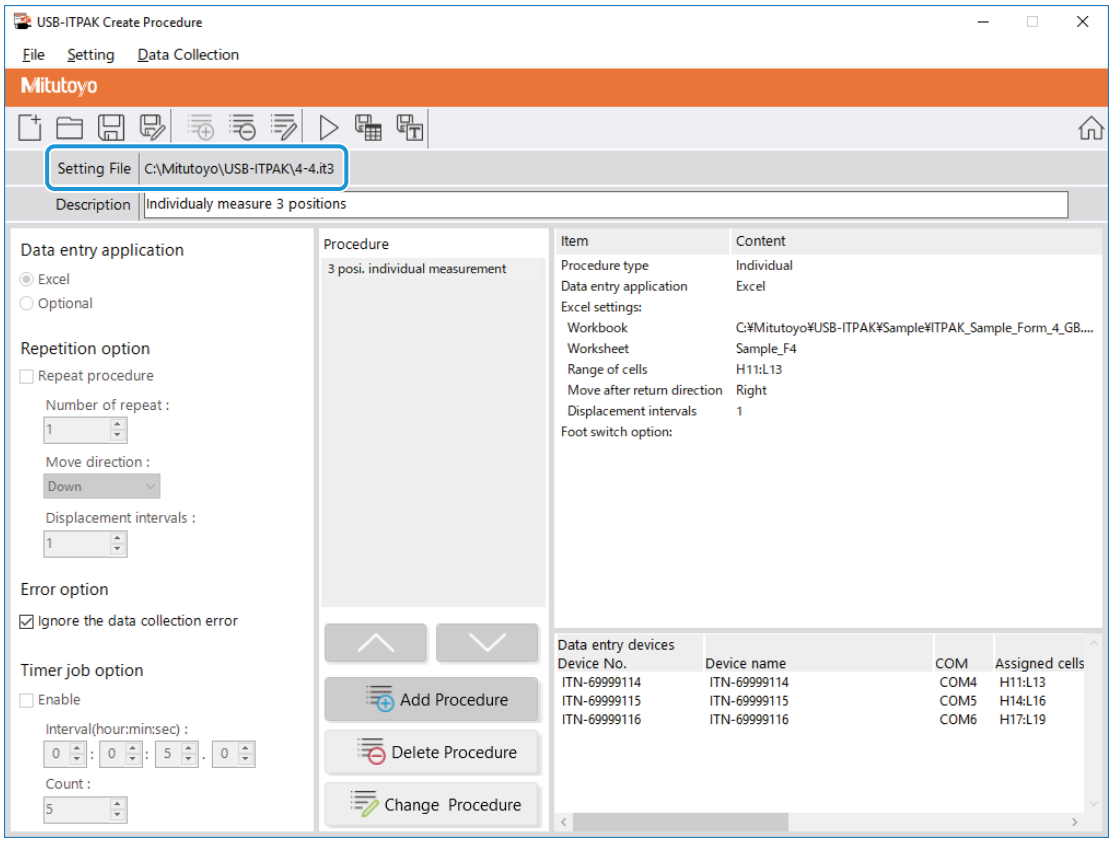


11 From the [File] menu on the create procedure screen, select [Save As].



12 Enter a file name and save the file.

» The full path for the file name will be displayed in the [Setting File] field on the create procedure screen.



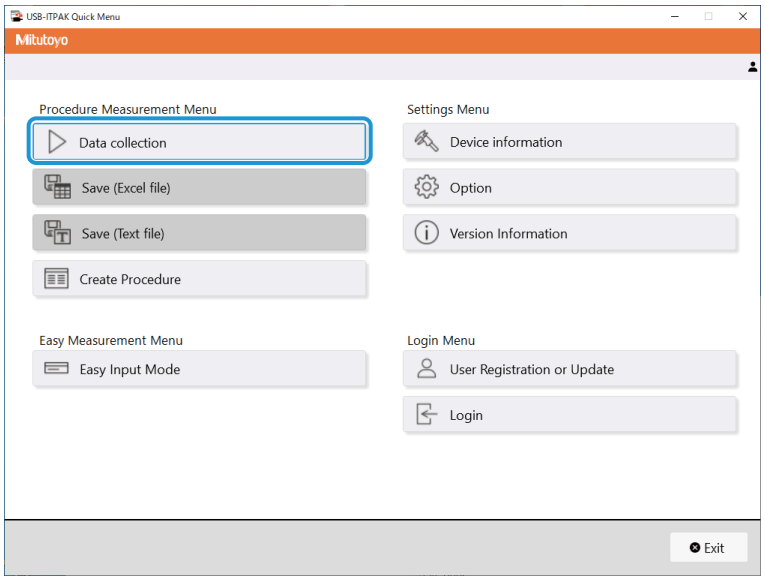
6.4.2 Collecting Measurement Data

When you are performing data collection, disable the [AutoSave] feature in Excel. For details about using Excel, see the documentation for Excel.

Tips

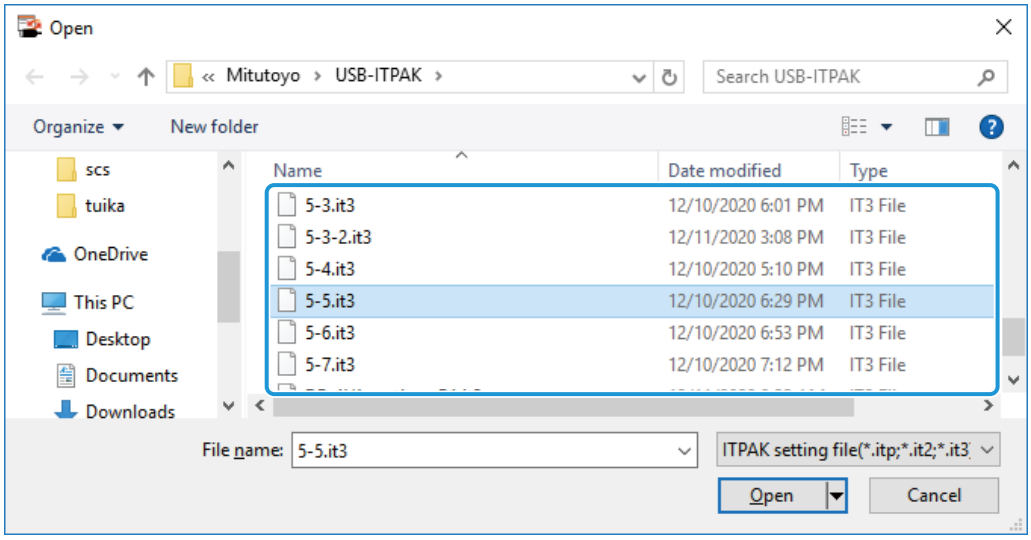
After data is collected, the Excel file where measurement data was entered is saved. If you need to keep a copy of the Excel file before it was saved, make a back-up beforehand.

1 **On the [Quick Menu] screen, click the [Data collection] button.**



» The setting file selection dialog box appears.

2 **Select the setting file.**

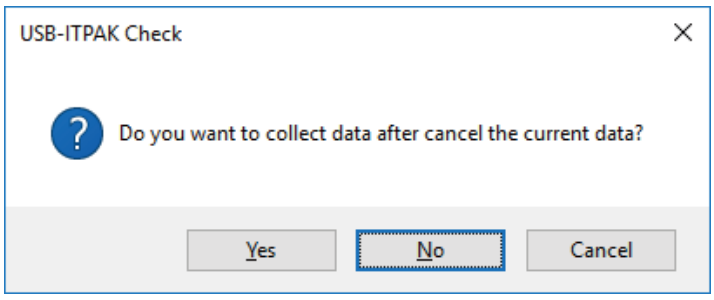


Tips

By selecting [Open] or [Recent Files] from the [File] menu on the create procedure screen, you can also select the setting file. If you selected the setting file on the create procedure screen, click the data collection start icon from the tool bar on the create procedure screen.

» The dialog box appears to prompt you to select the existing data handling method.

3 Select the existing data handling method.



[Yes]: The existing data in the Excel file where data will be entered is deleted, and cells where data will be entered are cleared.

[No]: The existing data in the Excel file where data will be entered remains.

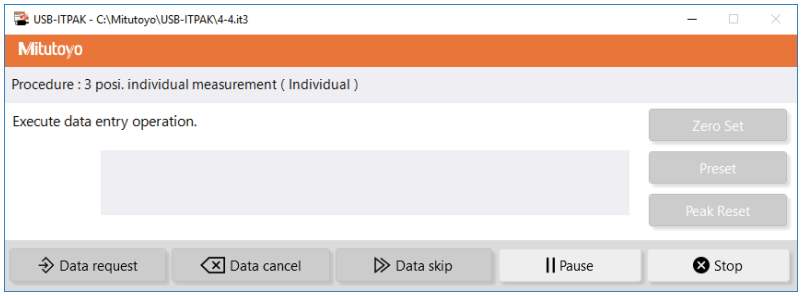
[Cancel]: The dialog box closes, and you return to the [Quick Menu] screen or the create procedure screen.

» If you click the [Yes] or [No] button, the data collection screen will be displayed.

Tips

If you click [No], the data collection screen will be paused. In this case, backup the Excel file before resuming data collection. For details, see "■ Pausing/resuming operation when collecting data in Excel" (page 206).

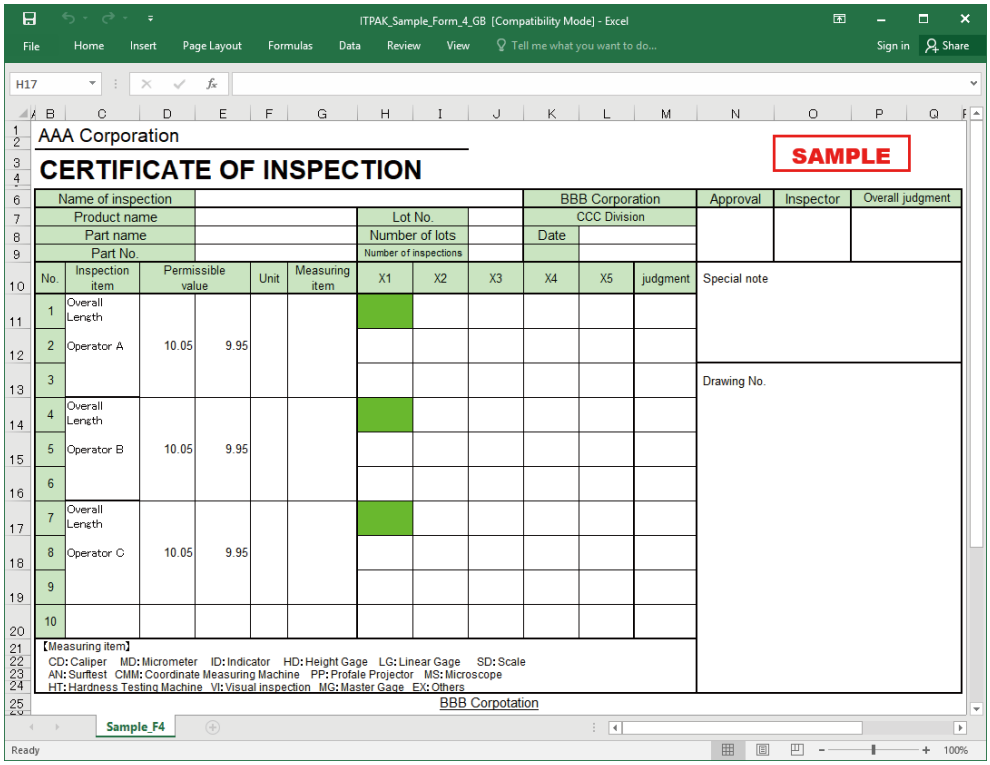
4 Start measurement data collection.



Start the collection operation by pressing the DATA switch on the measuring tool or the connection device (USB-ITN/IT-0xxU/DP-1VA/U-WAVE transmitter).

» Data will be entered according to the procedure that is saved in the setting file.

» During data collection, the next cell into which data is entered will be displayed in green.



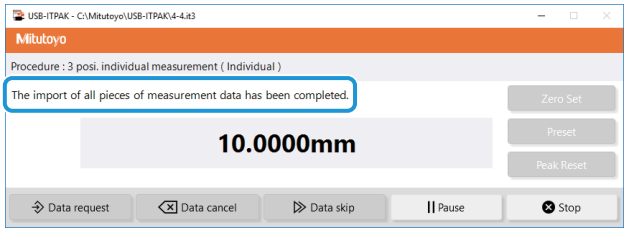
To undo the entry, click the [Data cancel] button on the data collection screen. The data in the input cell is deleted, and the green cell moves to the previous input cell.

To move to the next input cell without entering data, click the [Data skip] button on the data collection screen. The green cell moves to the next input cell.

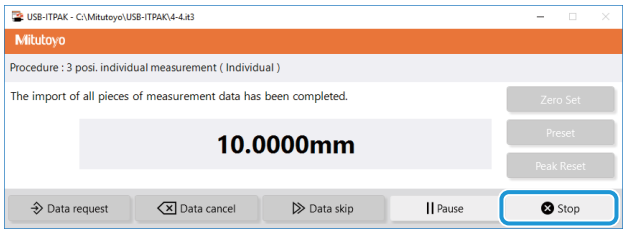
Tips

- Measurement data collection can also be started by operating the foot switch.
  For details, see "7.1 Entering Measurement Data with the Foot Switch" (page 69).
- You can also perform the data cancel operation by using the DATA switch on the U-WAVE transmitter.
  For details, see "U-WAVEPAK User's Manual" or "Special Order U-WAVEPAK (Event Driven Use) User's Manual".
- For U-WAVE, depending on the measurement mode that is used (button driven or event driven), the operational conditions for collecting measurement data or canceling may differ.
  For details, see "11.1.3 Data Request and Data Cancel Operations when Using U-WAVE" (page 238).

» When all the data has been entered, a completion message will be displayed on the data collection screen.



5 Click the [Stop] button.



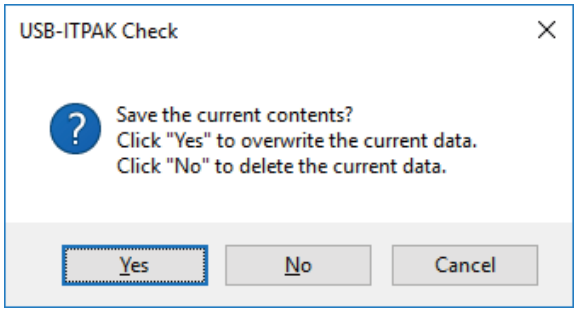
» A confirmation message will be displayed.

6 Click one of the following buttons:

[Yes]: The Excel file where measurement data was entered is saved, and the display switches to the [Quick Menu] screen or the create procedure screen.

[No]: The display switches to the [Quick Menu] screen or the create procedure screen without saving the Excel file where measurement data was entered.

[Cancel]: The confirmation message closes, and you return to the data collection screen.



MEMO

7 Measurement Data Collection Using the Procedure Measurement Menu (Advanced Operation)

This chapter explains advanced operations of USB-ITPAK, such as how to collect data by using the foot switch and how to combine multiple procedures to collect data.

7.1 Entering Measurement Data with the Foot Switch

When the foot switch optional accessory (No. 937179T/12AAJ088) is connected, you can perform the following operations with your foot:

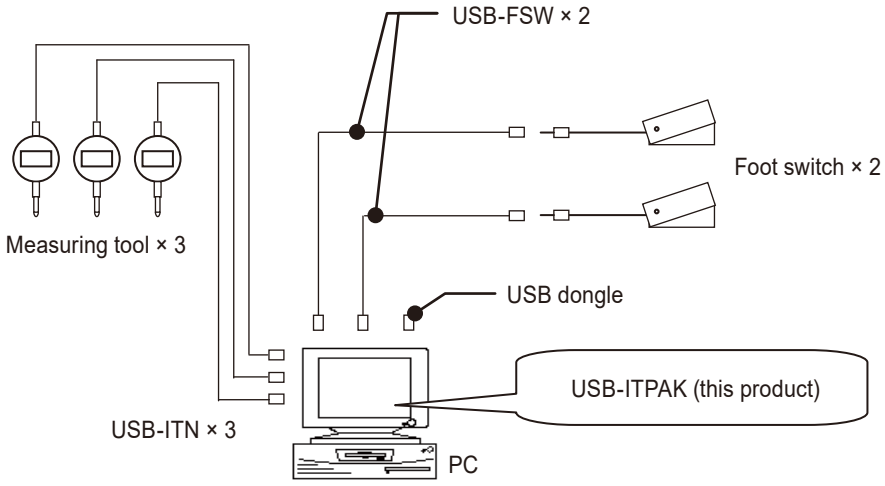
- Instruct a device to output measurement data (data request)
- Delete entered data (data cancel)
- Skip entering data and move to the next input cell (data skip)

To use the foot switch, you must first specify which function to assign to the foot switch.

To create the setting file in this section, the methods for configuring the procedures are explained using the examples in "■ Connection example", "■ Measurement example", and "■ Measurement data entry example" below.

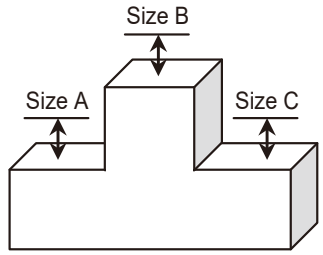
■ Connection example

Three indicators are connected to USB-ITN, and two foot switches are connected to USB-FSW. The data request and data cancel functions are assigned to the two foot switches.



■ Measurement example

The three indicators are used to measure three locations (Size A, Size B, Size C) all at once.



■ Measurement data entry example

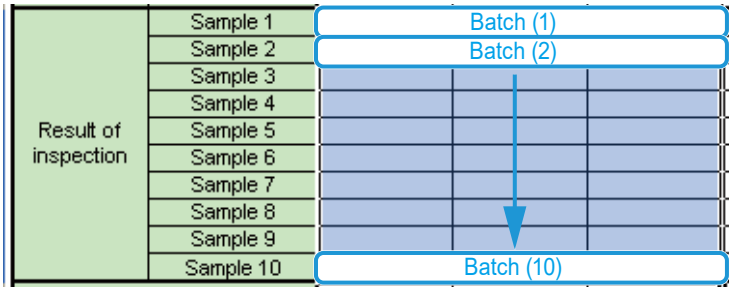
An example of an inspection table after data collection is complete is shown below.

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

Measurement procedure: Measure three locations on the first workpiece all together, and then enter the measurement data into columns "Size A", "Size B", and "Size C" in row Sample 1 of the Excel worksheet.

Next, measure three locations on the second workpiece all together, and enter the measurement data into columns "Size A", "Size B", and "Size C" in row Sample 2 of the Excel worksheet.

Repeat the measurement up to the 10th workpiece.



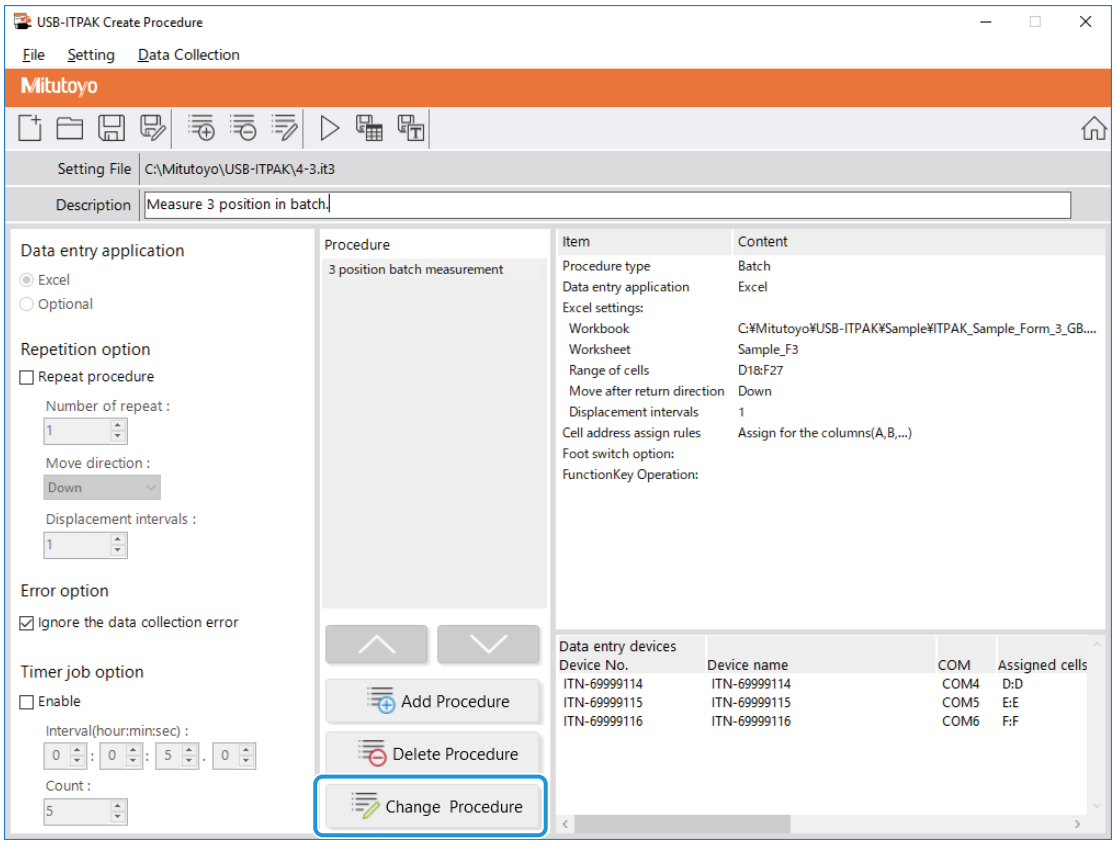
7.1.1 Creating the Setting File

1 Connect the devices you will use to the PC, and configure the items in USB-ITPAK.

For details, see the following:

- Sequential measurement: "6.2.1 Creating the Setting File" (page 30)
- Batch measurement: "6.3.1 Creating the Setting File" (page 43)
- Individual measurement: "6.4.1 Creating the Setting File" (page 57)

As an example, here we edit parts of the setting file created in "6.3.1 Creating the Setting File" (page 43). After you open the setting file, click the [Change Procedure] button on the following screen.



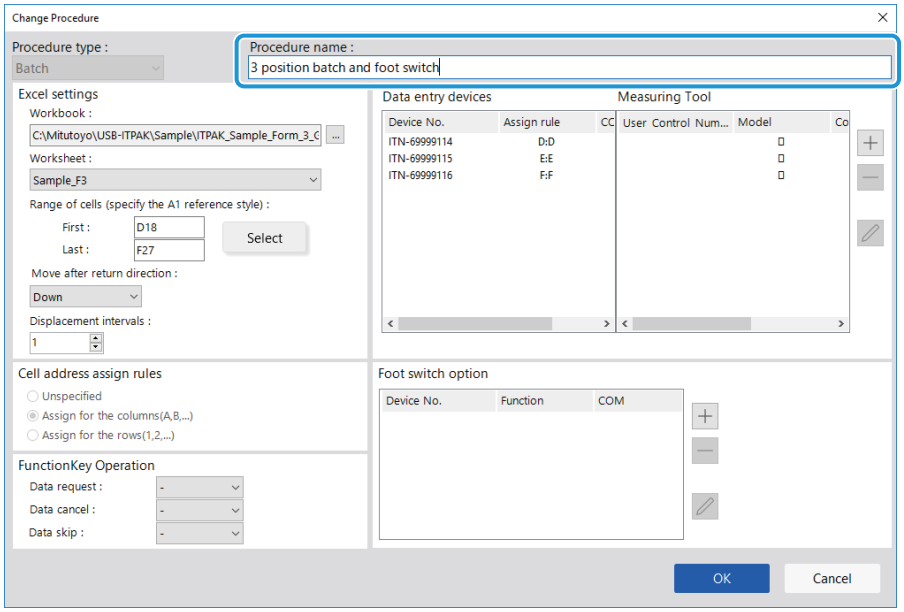
» The [Change Procedure] screen will be displayed.

Tips

To create a new setting file, enter a description of the setting file you are creating in the [Description] field, and then click the [Add Procedure] button.

2 Change [Procedure name].

As an example, here we enter [3 position batch and foot switch].



Tips

If you clicked the [Add Procedure] button in step 1, configure the items on the [Add procedure] screen.

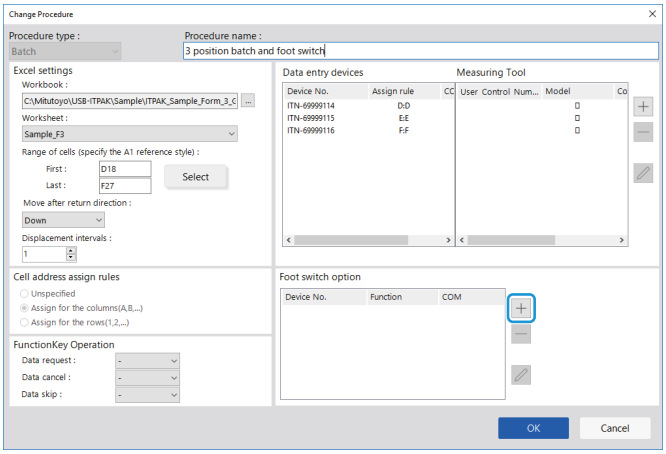
For details, see the following:

- Sequential measurement: "6.2.1 Creating the Setting File" (page 30)
- Batch measurement: "6.3.1 Creating the Setting File" (page 43)
- Individual measurement: "6.4.1 Creating the Setting File" (page 57)

3 Configure the information for the first foot switch under the [Foot switch option] field.

1 Under the [Foot switch option] field, click the [+] button.

» The [Foot switch option settings] screen will be displayed.



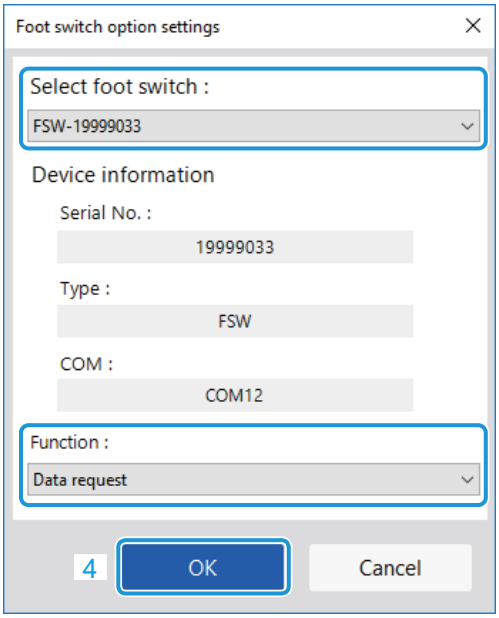
2 From the [Select foot switch] drop-down list, select which foot switch to use.

3 From the [Function] drop-down list, select which function to assign to the foot switch.

As an example, here we select [Data request].

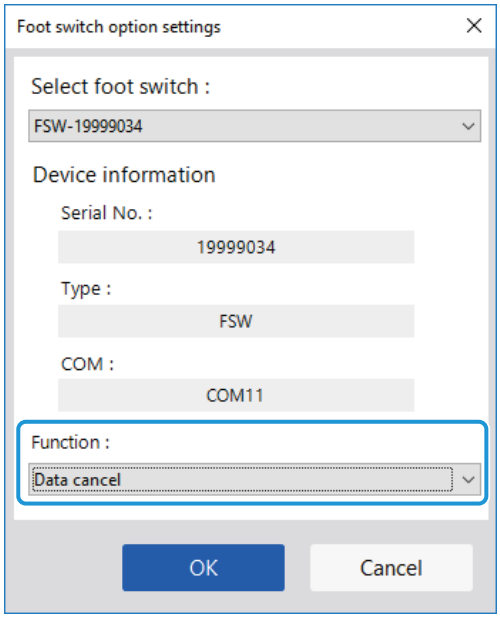
4 Click the [OK] button.

» The registered device information will be displayed under the [Foot switch option] field on the [Change Procedure] or [Add procedure] screen.

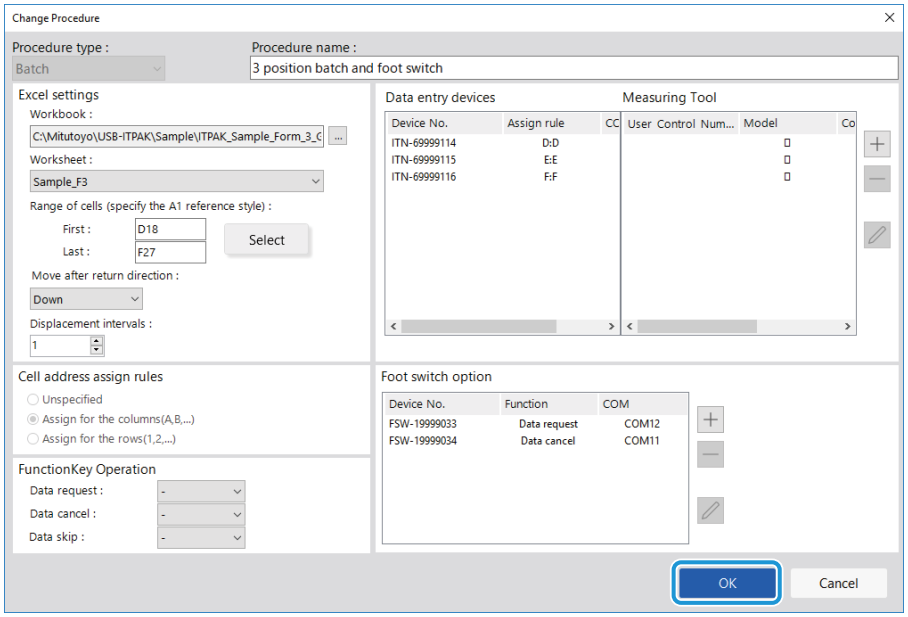


4 Repeat step 3 to configure the information for the second foot switch.

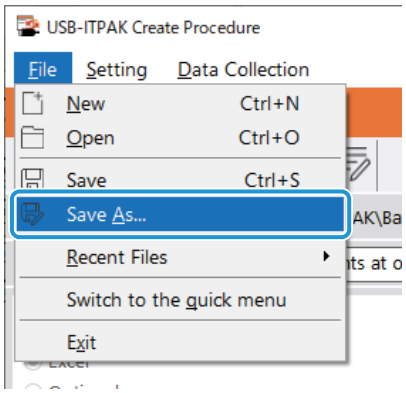
As an example, here we select [Data cancel] from the [Function] drop-down list.



5 Click the [OK] button.

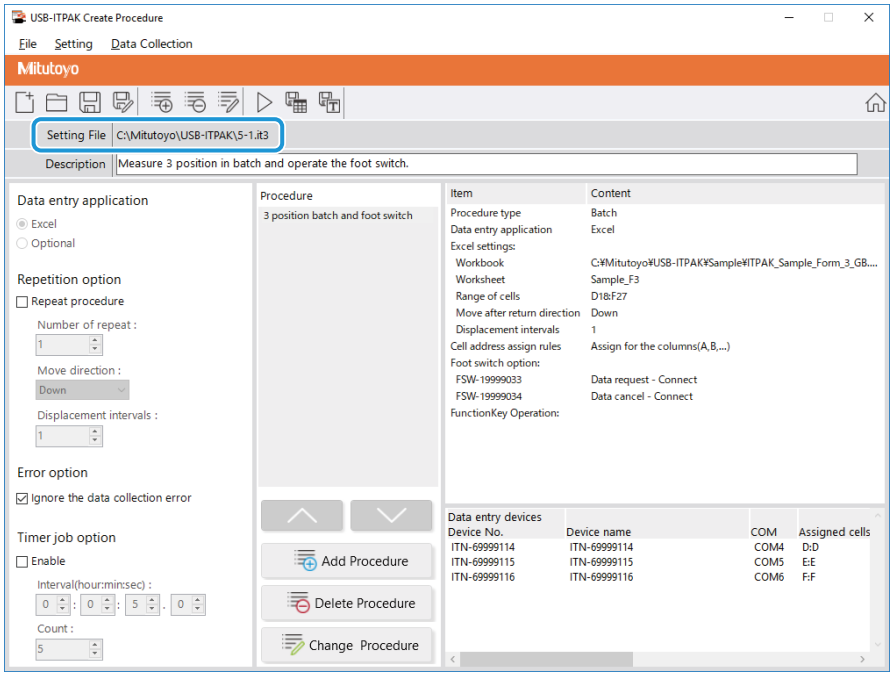


6 From the [File] menu on the create procedure screen, select [Save As].



7 Enter a file name and save the file.

» The full path for the file name will be displayed in the [Setting File] field on the create procedure screen.



7.1.2 Collecting Measurement Data

When you are performing data collection, disable the [AutoSave] feature in Excel. For details about using Excel, see the documentation for Excel.

Tips

After data is collected, the Excel file where measurement data was entered is saved. If you need to keep a copy of the Excel file before it was saved, make a back-up beforehand.

1 Open the setting file to use, and then open the data collection screen.

For details, see the following:

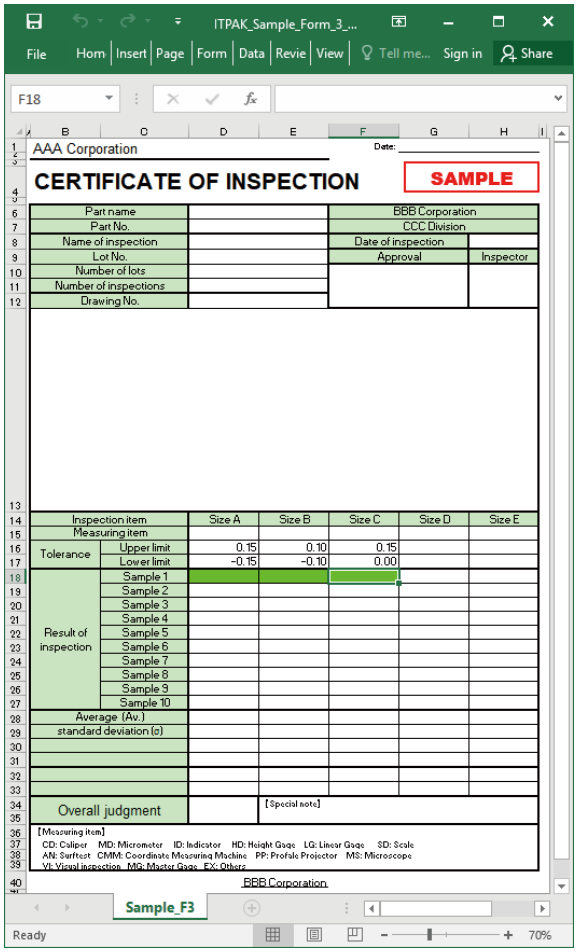
- Sequential measurement: "6.2.2 Collecting Measurement Data" (page 37)
- Batch measurement: "6.3.2 Collecting Measurement Data" (page 51)
- Individual measurement: "6.4.2 Collecting Measurement Data" (page 64)

2 Start the collection operation for measurement data.

Start the collection operation by pressing the foot switch to which the [Data request] function is assigned.

» Data will be entered according to the procedure that is saved in the setting file.

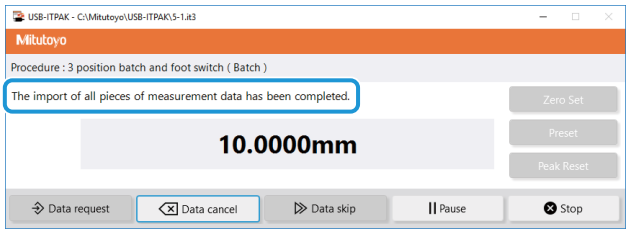
» During data collection, the next cell into which data is entered will be displayed in green.



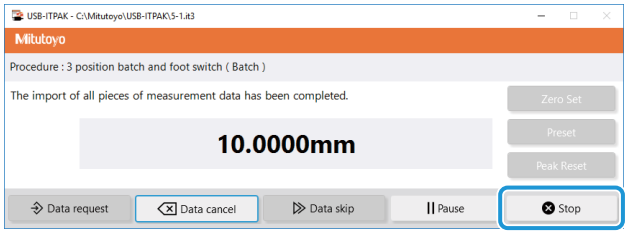
To undo the entry, press the foot switch to which the [Data cancel] function is assigned. The data in the input cell is deleted, and the green cell moves to the previous input cell.

To move to the next input cell without entering data, click the [Data skip] button on the data collection screen. The green cell moves to the next input cell.

» When all the data has been entered, a completion message will be displayed on the data collection screen.



3 Click the [Stop] button.



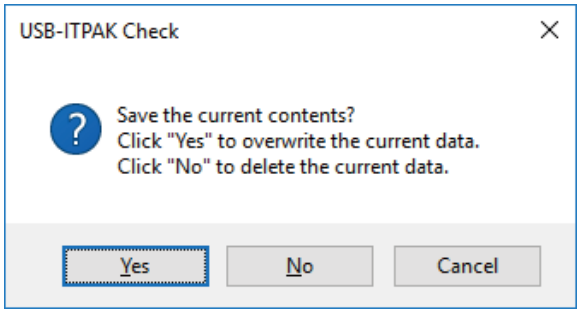
» A confirmation message will be displayed.

4 Click one of the following buttons:

[Yes]: The Excel file where measurement data was entered is saved, and the display switches to the [Quick Menu] screen or the create procedure screen.

[No]: The display switches to the [Quick Menu] screen or the create procedure screen without saving the Excel file where measurement data was entered.

[Cancel]: The confirmation message closes, and you return to the data collection screen.



7.2 Entering a Character String with the Foot Switch (Sequential Measurement/Individual Measurement Only)

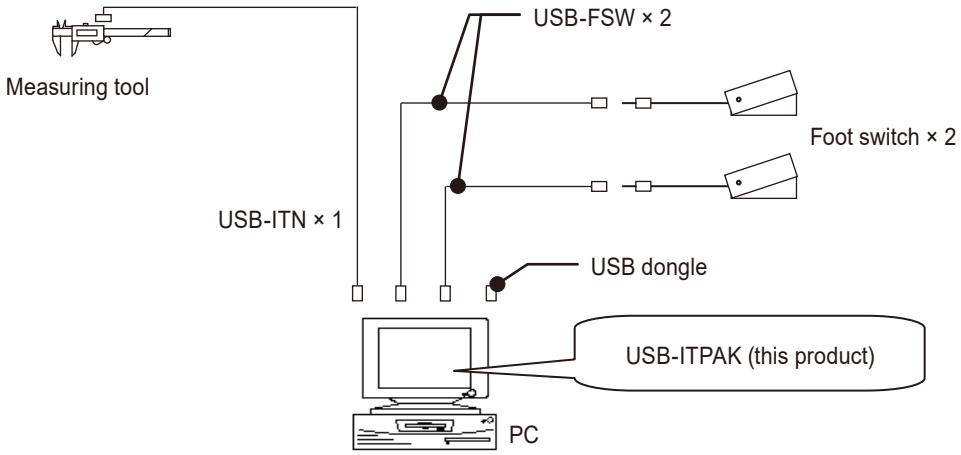
When the foot switch optional accessory (No. 937179T/12AAJ088) is connected, you can enter arbitrary character string data, such as "OK" or "Fail" with your foot. To use the foot switch, you must first specify what character string to assign to the foot switch. A character string can be entered with the foot switch in batch measurement or individual measurement.

To create the setting file in this section, the methods for configuring the procedures are explained using the examples in "■ Connection example", "■ Measurement example", and "■ Measurement data entry example" below.

■ Connection example

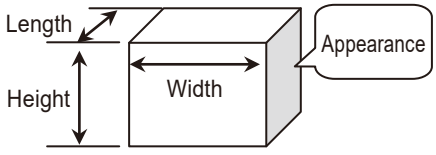
One caliper is connected to USB-ITN, and two foot switches are connected to USB-FSW.

The strings "OK" and "Fail" are assigned to the two foot switches.



■ Measurement example

Three sides of a rectangular object are measured in the order length → width → height, and the appearance is inspected visually.



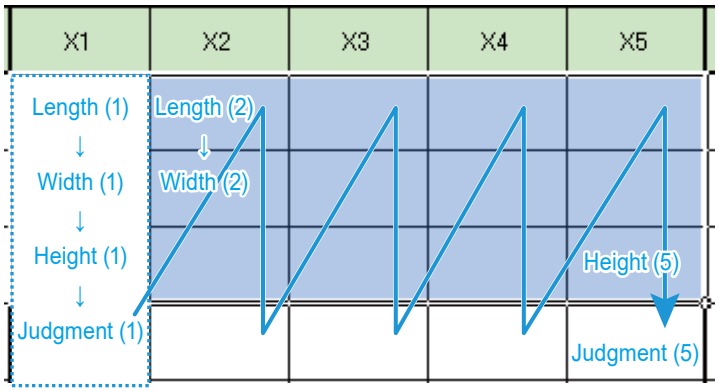
■ Measurement data entry example

An example of an inspection table after data collection is complete 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

Measurement procedure: Sequentially measure the length, width, and height of the first workpiece, and then enter the measurement data into the first row (Length), second row (Width), and third row (Height) of column X1 of the Excel worksheet. Then perform a visual inspection of the first workpiece, and enter the character string "OK" or "Fail" into the fourth row of column X1 (Visual) using the foot switch.

Next, measure the remaining workpieces in the same way, up to a total of five workpieces.



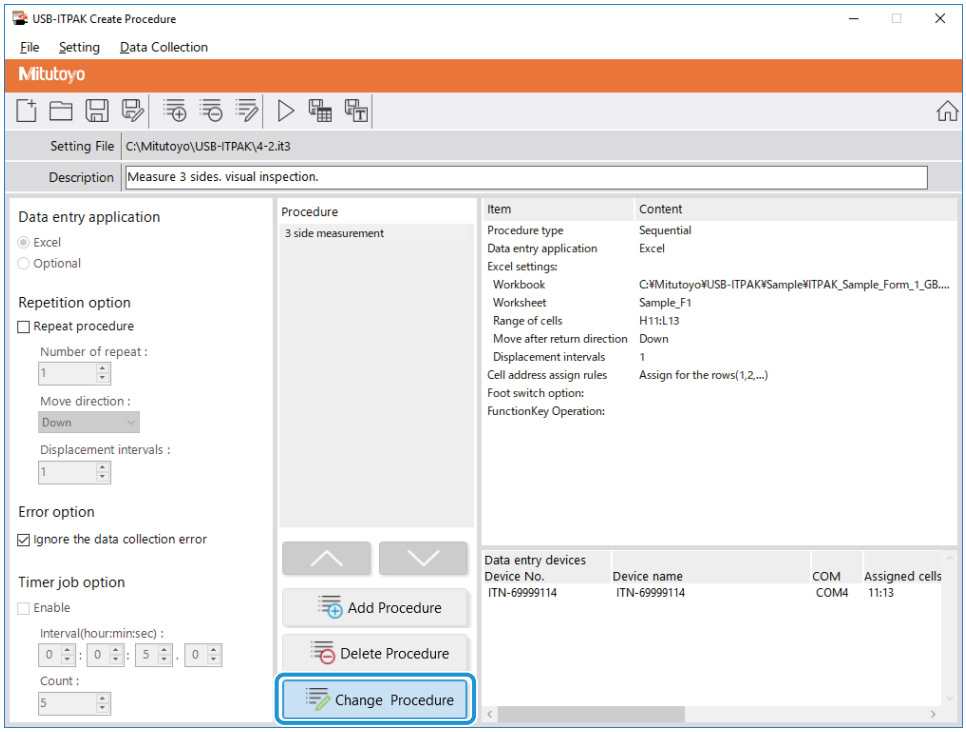
7.2.1 Creating the Setting File

1 Connect the devices you will use to the PC, and configure the items in USB-ITPAK.

For details, see the following:

- Sequential measurement: "6.2.1 Creating the Setting File" (page 30)
- Individual measurement: "6.4.1 Creating the Setting File" (page 57)

As an example, here we edit parts of the setting file created in "6.2.1 Creating the Setting File" (page 30). After you open the setting file, click the [Change Procedure] button on the following screen.



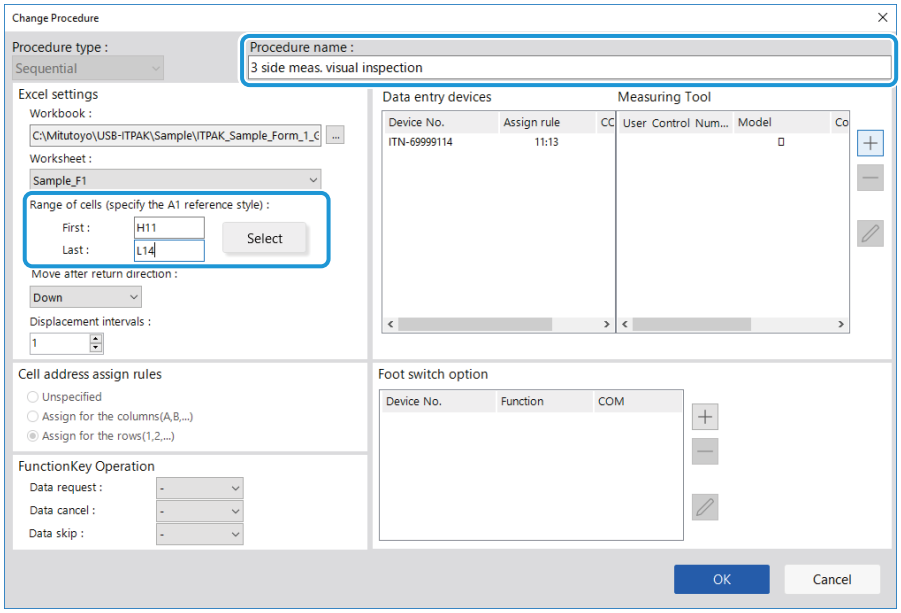
» The [Change Procedure] screen will be displayed.

Tips

To create a new setting file, enter a description of the setting file you are creating in the [Description] field, and then click the [Add Procedure] button.

2 Change [Procedure name] and the input range in the [Range of cells (specify the A1 reference style)] fields.

As an example, here we change these items to the contents below.



Tips

If you clicked the [Add Procedure] button in step 1, configure the items on the [Add procedure] screen.

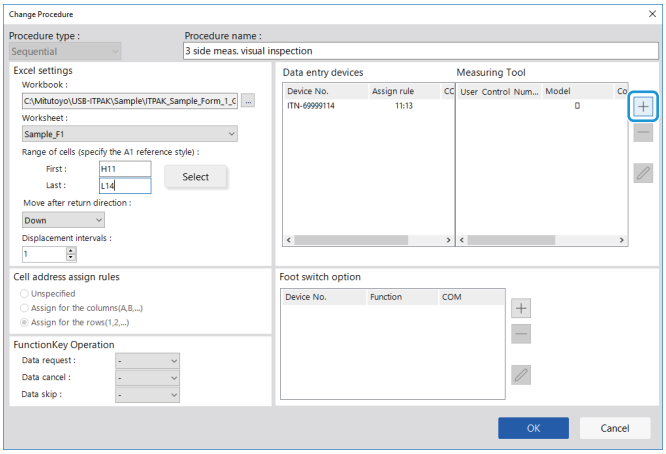
For details, see the following:

- Sequential measurement: "6.2.1 Creating the Setting File" (page 30)
- Individual measurement: "6.4.1 Creating the Setting File" (page 57)

3 Configure the information for the foot switch under the [Data entry devices] field.

1 In the [Data entry devices] field, click the [+] button.

» The [Data entry device settings] screen will be displayed.



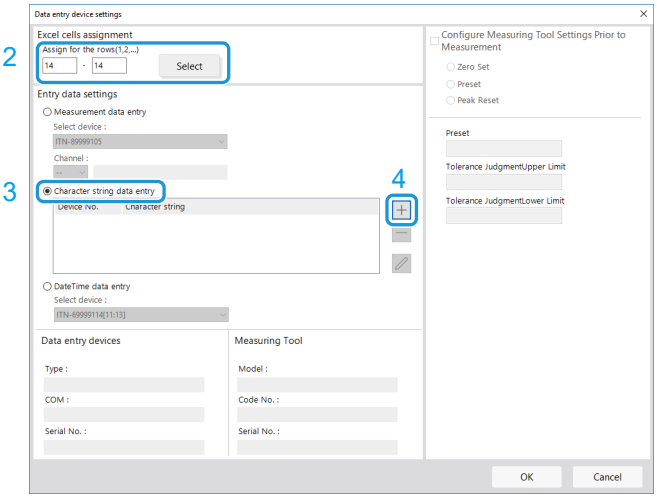
2 Under the [Excel cells assignment] field, specify the row numbers or the column numbers to assign the foot switch to.

In the sample inspection table file, the foot switch is assigned to row 14. Therefore, enter [14] in the left field (start number) and [14] in the right field (end number).

3 Under the [Entry data settings] field, select [Character string data entry].

4 Under the [Entry data settings] field, click the [+] button.

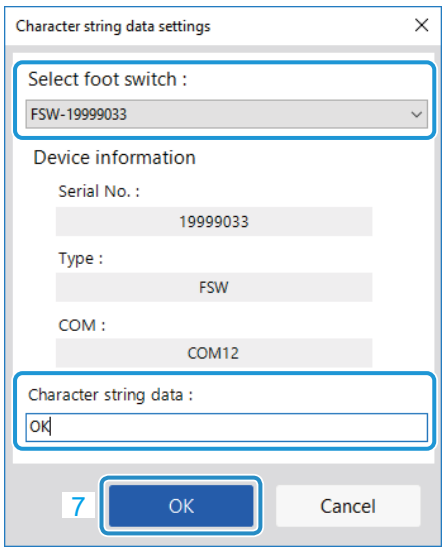
» The [Character string data settings] screen will be displayed.



5 From the [Select foot switch] drop-down list, select the first foot switch to use.

6 In the [Character string data] field, enter the character string data to assign to the foot switch.

As an example, here we enter [OK].



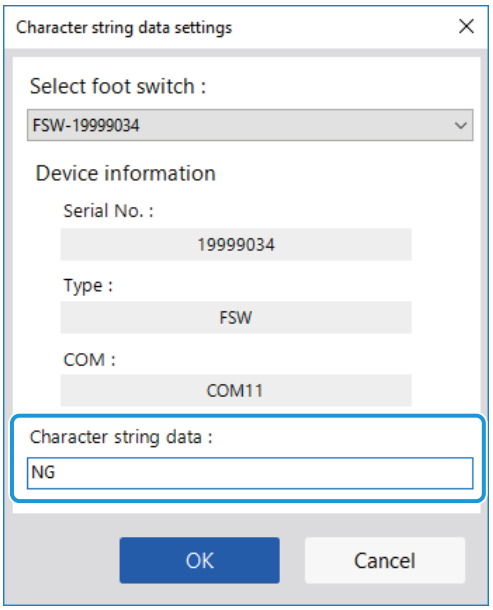
Tips

If [Optional] is selected under [Data entry application] on the create procedure screen, only ASCII characters (characters that can be entered directly from the keyboard, such as letters, numbers, and certain symbols) can be entered in the [Character string data] field.

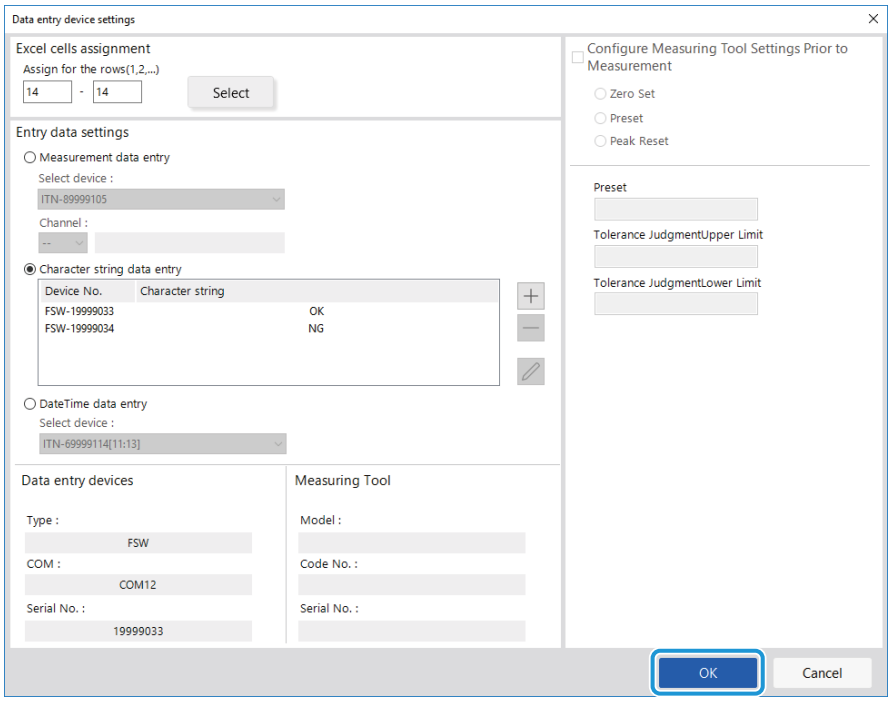
7 Click the [OK] button.

8 Repeat steps 4 through 7 to configure the information for the second foot switch.

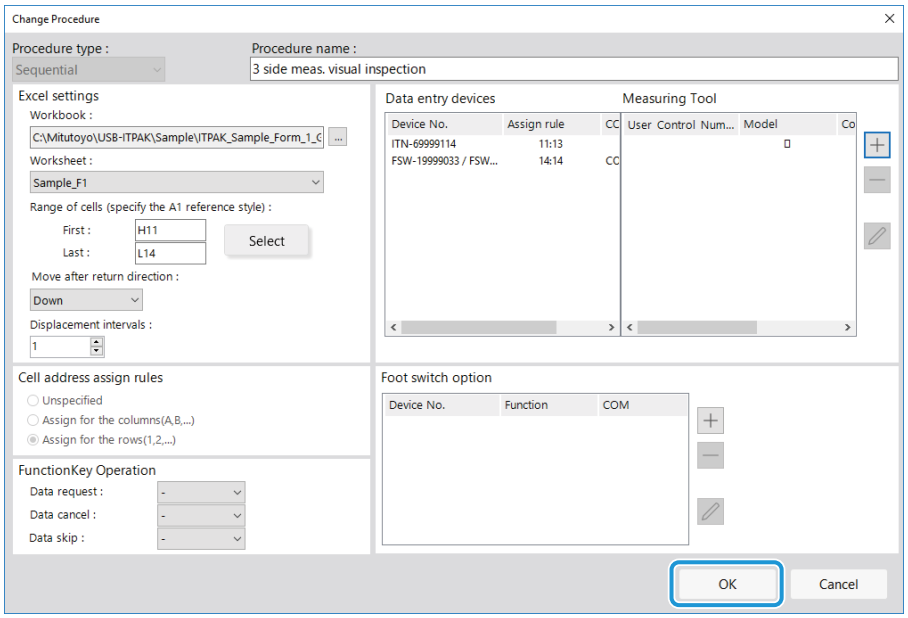
As an example, here we enter [NG] in the [Character string data] field.



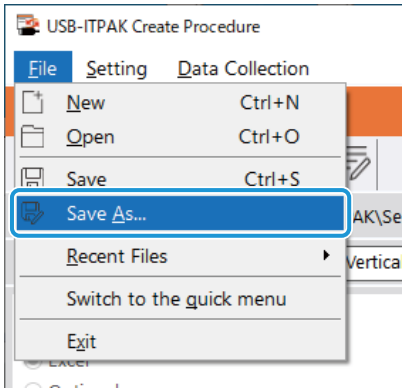
4 Click the [OK] button.



5 Click the [OK] button.

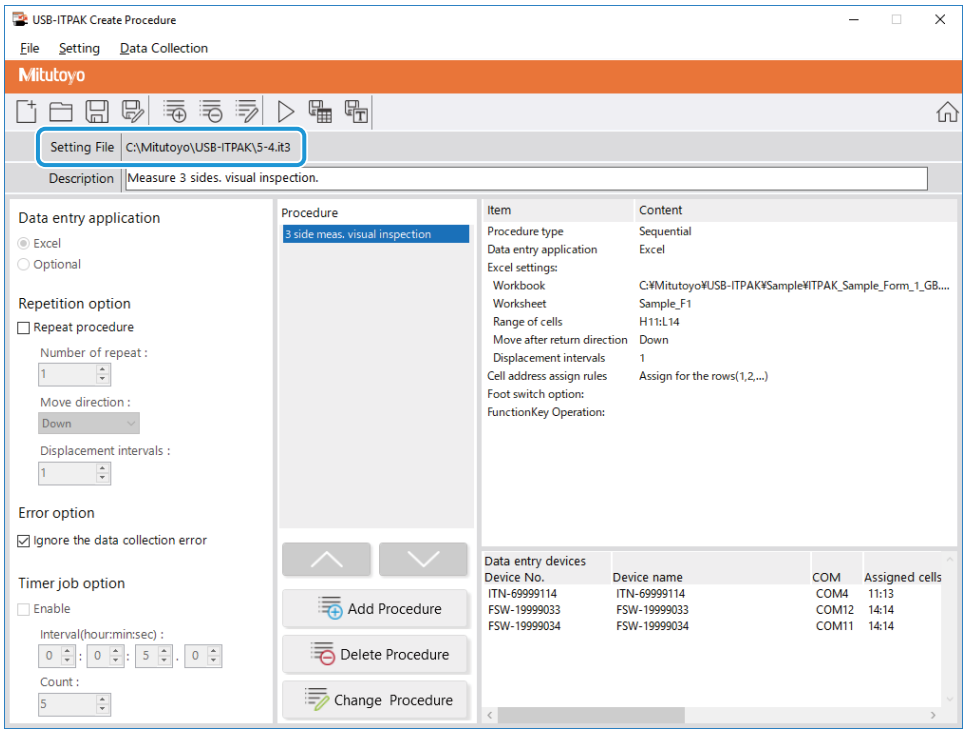


6 From the [File] menu on the create procedure screen, select [Save As].



7 Enter a file name and save the file.

» The full path for the file name will be displayed in the [Setting File] field on the create procedure screen.



7.2.2 Collecting Measurement Data

When you are performing data collection, disable the [AutoSave] feature in Excel. For details about using Excel, see the documentation for Excel.

Tips

After data is collected, the Excel file where measurement data was entered is saved. If you need to keep a copy of the Excel file before it was saved, make a back-up beforehand.

1 Open the setting file to use, and then open the data collection screen.

For details, see the following:

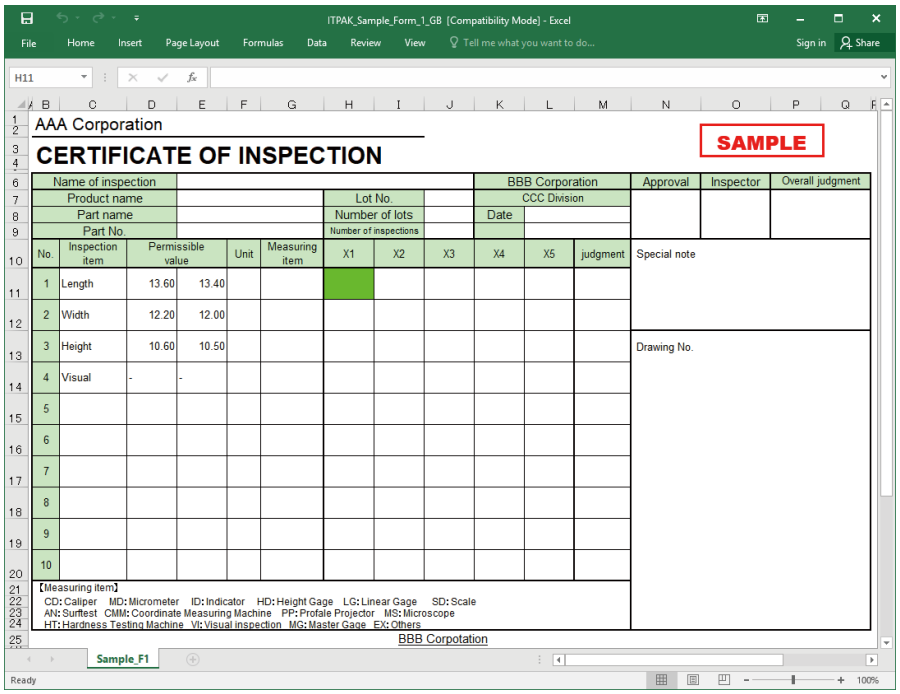
- Sequential measurement: "6.2.2 Collecting Measurement Data" (page 37)
- Individual measurement: "6.4.2 Collecting Measurement Data" (page 64)

2 Start measurement data collection with one of the following operations:

- On the data collection screen, click the [Data request] button.
- Press the DATA switch on the measuring tool or the connection device (USB-ITN/IT-0xxU/DP-1VA/U-WAVE transmitter).

» Data will be entered according to the procedure that is saved in the setting file.

» During data collection, the next cell into which data is entered will be displayed in green.



Tips

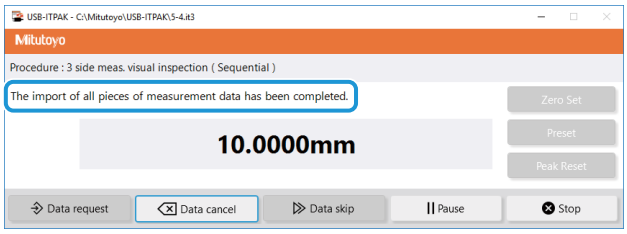
Measurement data collection can also be started by operating the foot switch. For details, see "7.1 Entering Measurement Data with the Foot Switch" (page 69)

In the sample inspection table file, the cells where the character string data will be entered are in row 14. To enter a character string, press the foot switch to which the character string that you want to enter is assigned.

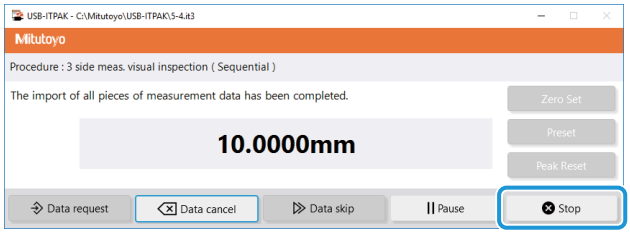
To undo the entry, click the [Data cancel] button on the data collection screen. The data in the input cell is deleted, and the green cell moves to the previous input cell.

To move to the next input cell without entering data, click the [Data skip] button on the data collection screen. The green cell moves to the next input cell.

» When all the data has been entered, a completion message will be displayed on the data collection screen.



3 Click the [Stop] button.



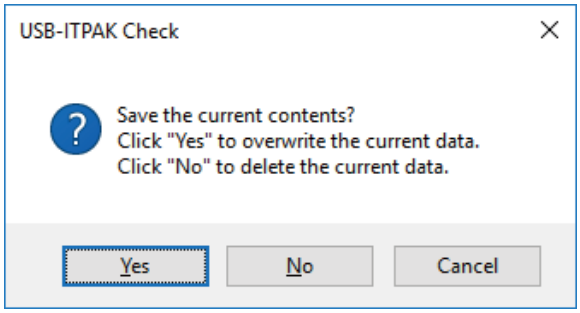
» A confirmation message will be displayed.

4 Click one of the following buttons:

[Yes]: The Excel file where measurement data was entered is saved, and the display switches to the [Quick Menu] screen or the create procedure screen.

[No]: The display switches to the [Quick Menu] screen or the create procedure screen without saving the Excel file where measurement data was entered.

[Cancel]: The confirmation message closes, and you return to the data collection screen.



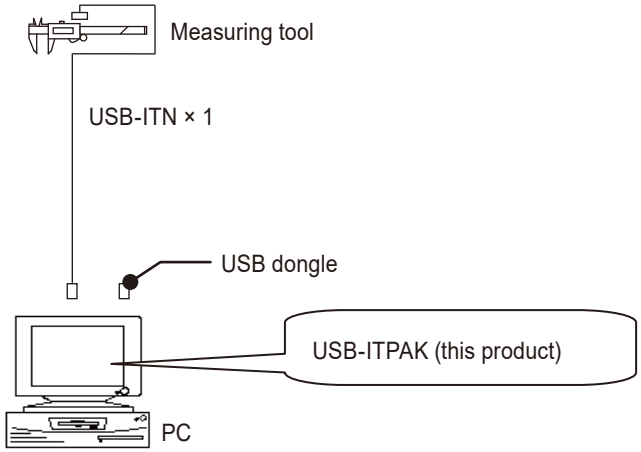
7.3 Measuring by Combining Two Procedures (Sequential Measurement/Batch Measurement Only)

In sequential measurement or batch measurement, you can specify data entry operation, which contains multiple procedures, in one setting file.

To create the setting file in this section, the methods for configuring the procedures are explained using the examples in "■ Connection example", "■ Measurement example", and "■ Measurement data entry example" below.

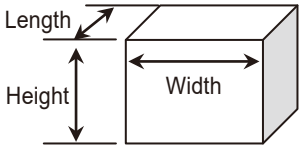
■ Connection example

One caliper is connected to USB-ITN.



■ Measurement example

Three sides of a rectangular object are measured in the order length → width → height.



■ Measurement data entry example

An example of an inspection table after data collection is complete 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

In this inspection table, there is measurement data for 10 workpieces, and the measurement data for each measurement item consists of two rows.

The measurement procedure consists of the following two procedures.

First measurement procedure: Sequentially measure the length, width, and height of the first workpiece, and then enter the measurement data into the first row (Length), third row (Width), and fifth row (Height) of column X1 (X6) of the Excel worksheet.

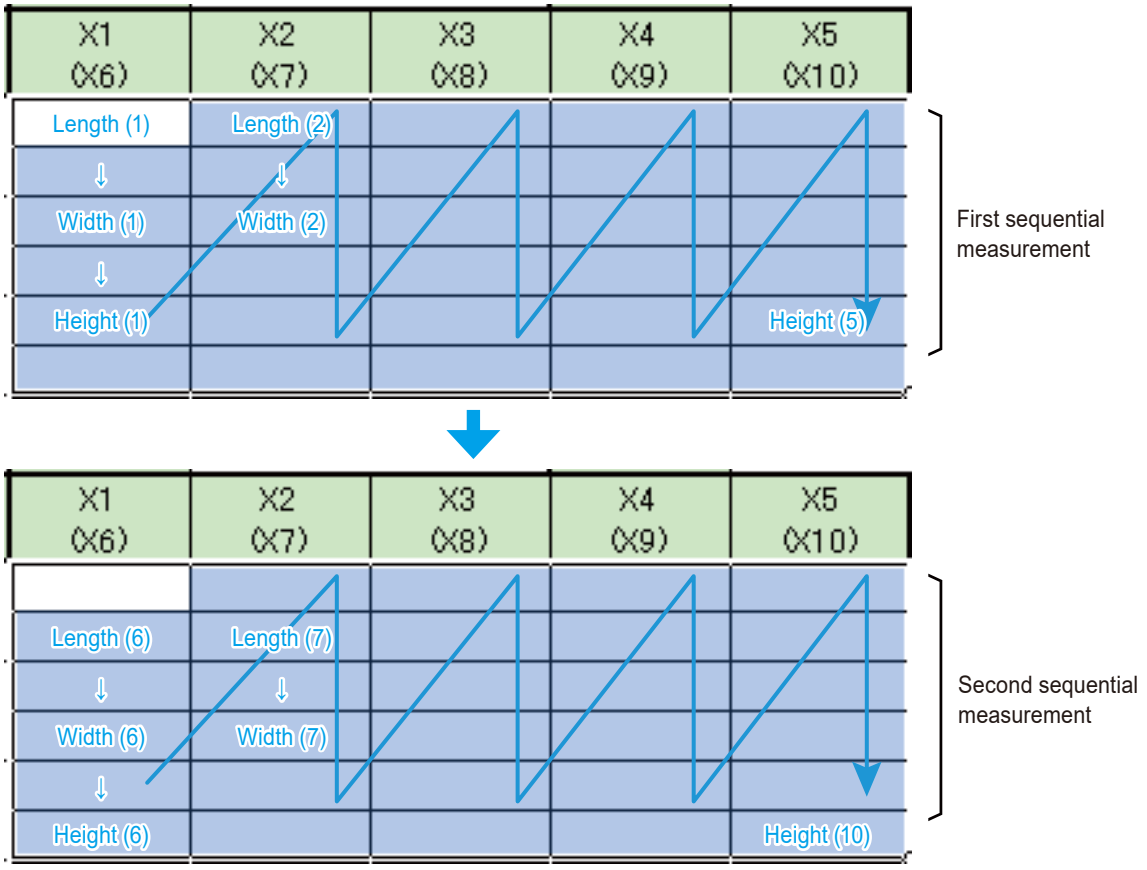
Next, sequentially measure the length, width, and height of the second workpiece, and then enter the measurement data into the first row (Length), third row (Width), and fifth row (Height) of column X2 (X7).

Repeat the measurement up to the fifth workpiece.

Second measurement procedure: Sequentially measure the length, width, and height of the sixth workpiece, and then enter the measurement data into the second row (Length), fourth row (Width), and sixth row (Height) of column X1 (X6) of the Excel worksheet.

Next, sequentially measure the length, width, and height of the seventh workpiece, and then enter the data into the second row (Length), fourth row (Width), and sixth row (Height) of column X2 (X7).

Repeat the measurement up to the 10th workpiece.



The first procedure and second procedure are created as separate procedure. By running these two procedures sequentially, the complete measurement procedure can be accomplished.

7.3.1 Creating the Setting File

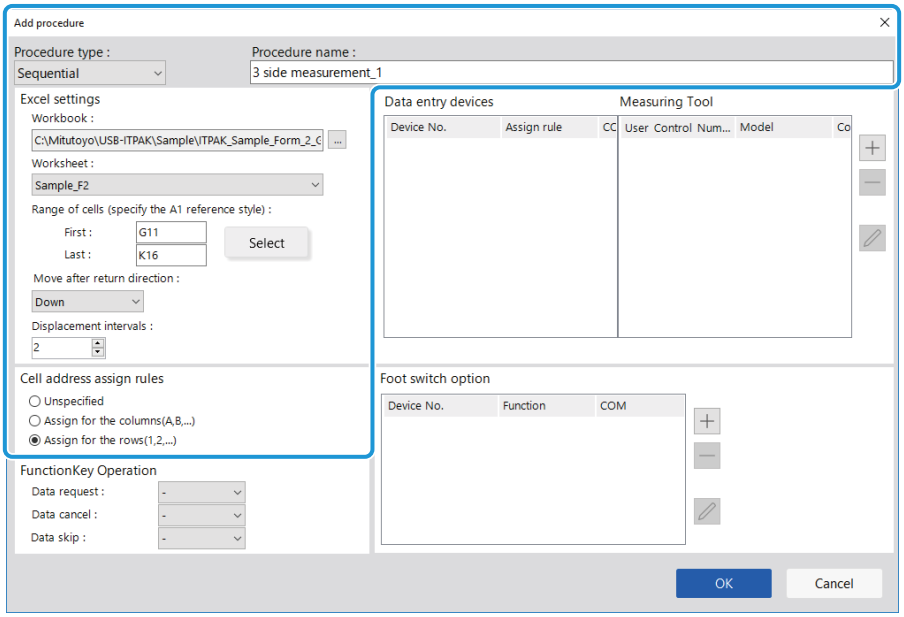
1 Connect the devices you will use to the PC, and configure the items on the [Add procedure] screen in USB-ITPAK.

For details, see the following:

- Sequential measurement: "6.2.1 Creating the Setting File" (page 30)
- Batch measurement: "6.3.1 Creating the Setting File" (page 43)

Create the first procedure.

As an example, here we use the sample inspection table file (ITPAK_Sample_Form_2_GB.xls) as the input destination for the measurement data, and we configure the items with the following contents.



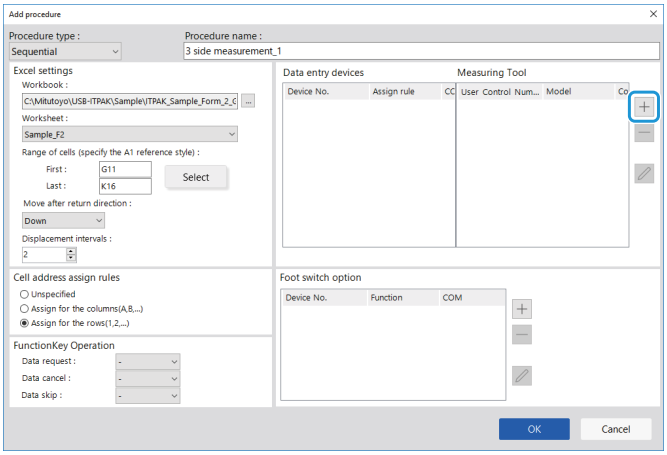
Tips

To use an existing setting file to perform measurement, proceed to the procedure in "7.3.2 Collecting Measurement Data" (page 96).

2 In the [Data entry devices] field, configure the information for the data entry devices.

1 In the [Data entry devices] field, click the [+] button.

» The [Data entry device settings] screen will be displayed.

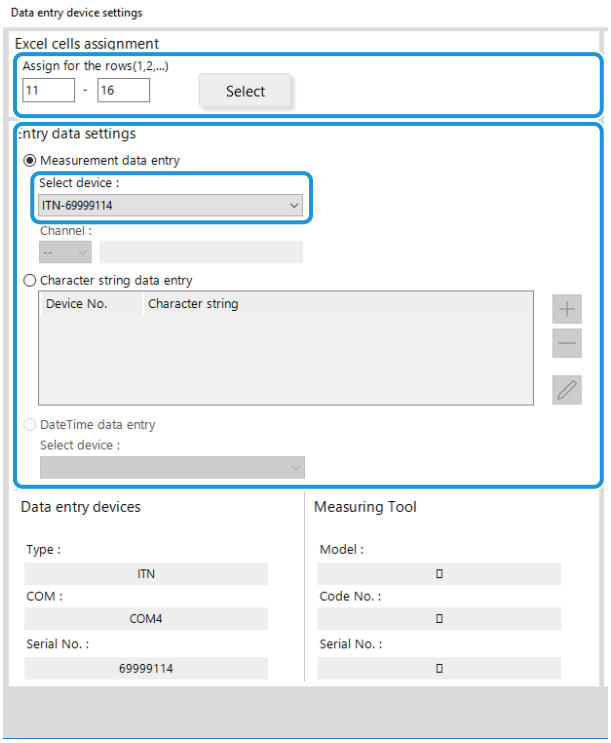


2 On the [Data entry device settings] screen, configure the items and then click the [OK] button.

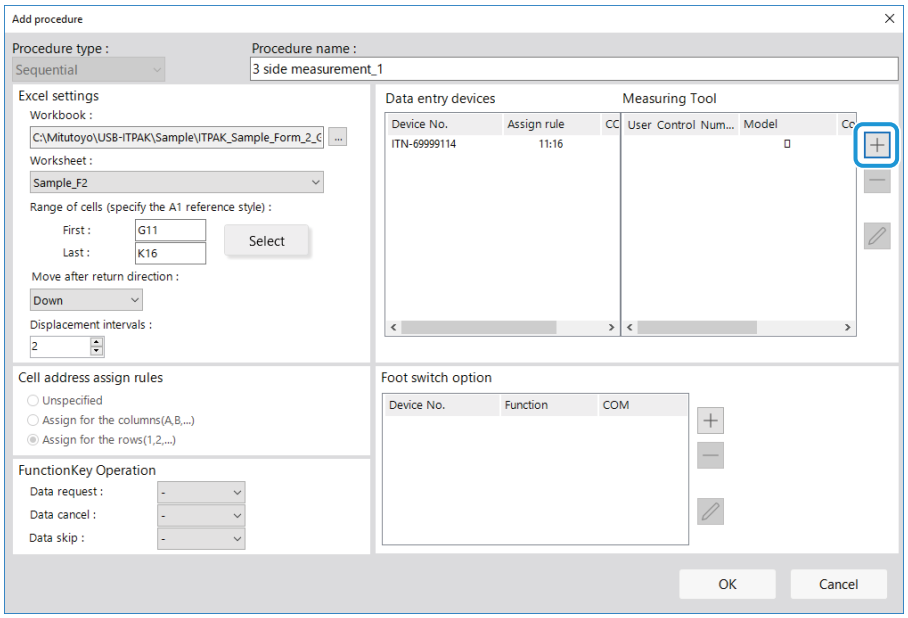
For details, see the following:

- Sequential measurement: "6.2.1 Creating the Setting File" (page 30)
- Batch measurement: "6.3.1 Creating the Setting File" (page 43)

As an example, here we configure the items with the contents on the right.



3 Click the [OK] button.

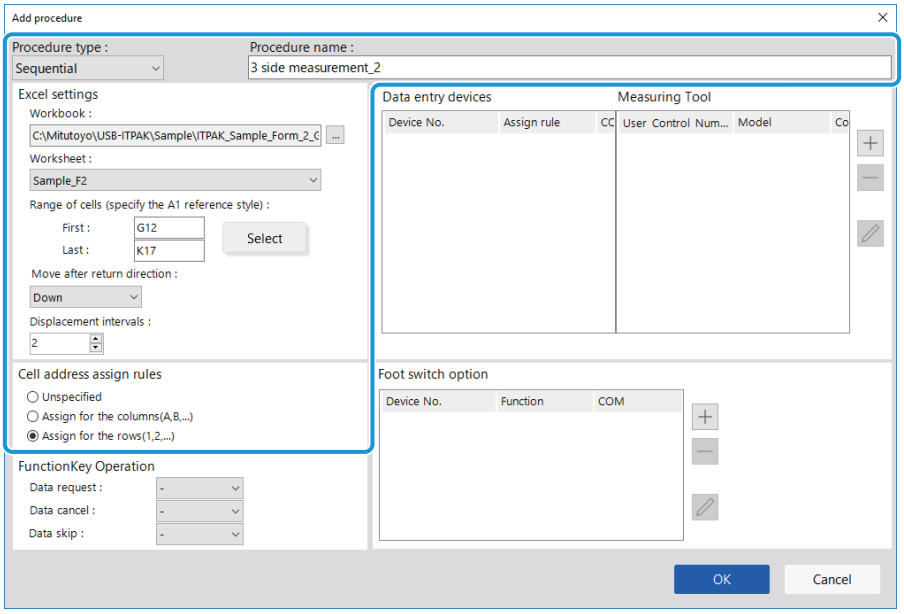


» This completes the creation of the first procedure.

4 On the create procedure screen, click the [Add Procedure] button, and then configure the items on the [Add procedure] screen.

Create the second procedure.

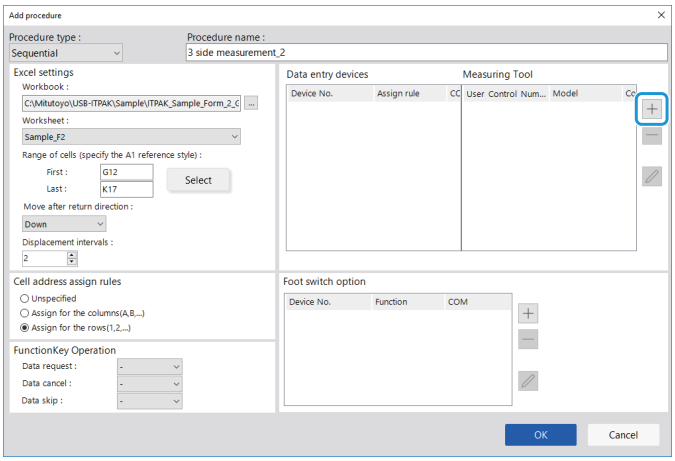
As an example, here we configure the items with the following contents.



5 In the [Data entry devices] field, configure the information for the data entry devices.

1 In the [Data entry devices] field, click the [+] button.

» The [Data entry device settings] screen will be displayed.

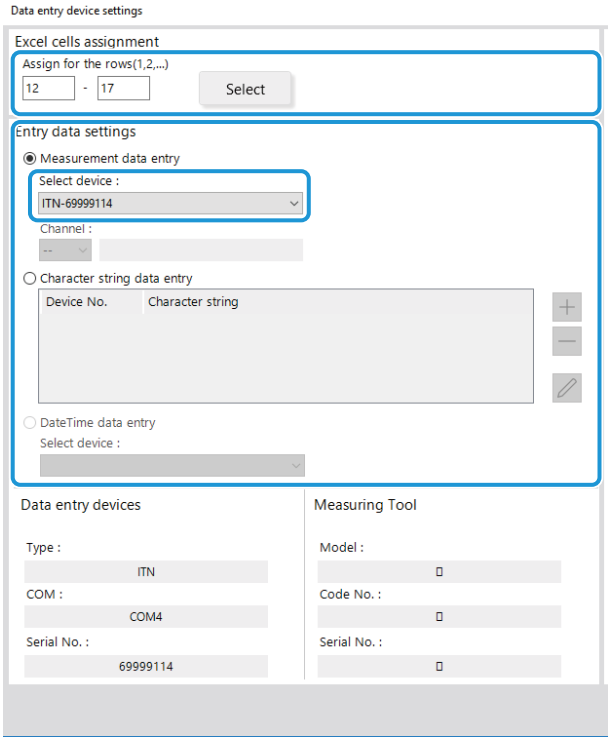


2 On the [Data entry device settings] screen, configure the items and then click the [OK] button.

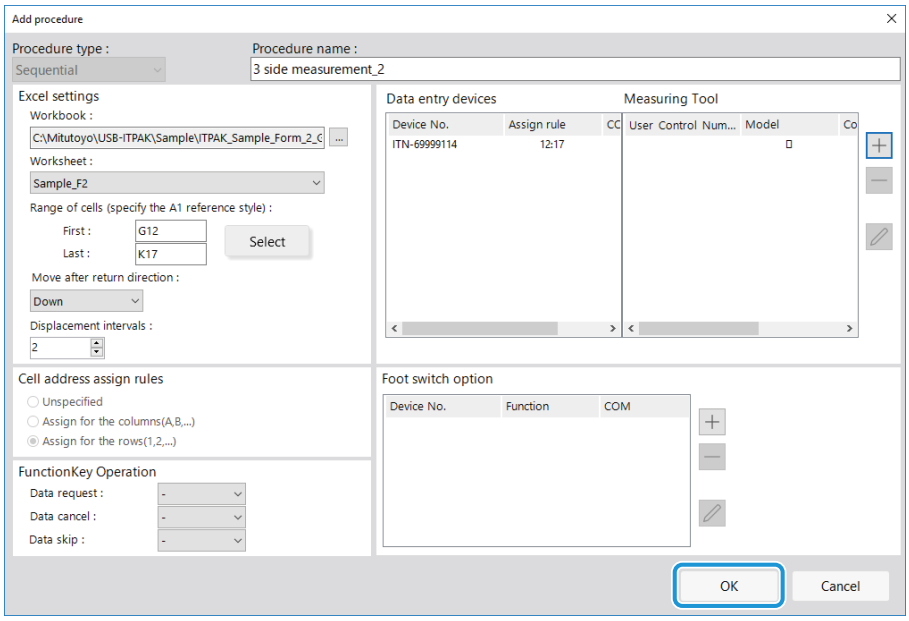
For details, see the following:

- Sequential measurement: "6.2.1 Creating the Setting File" (page 30)
- Batch measurement: "6.3.1 Creating the Setting File" (page 43)

As an example, here we configure the items with the contents on the right.

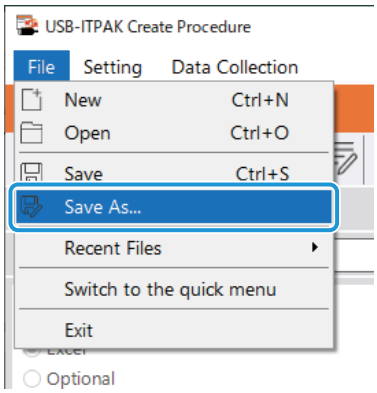


6 Click the [OK] button.



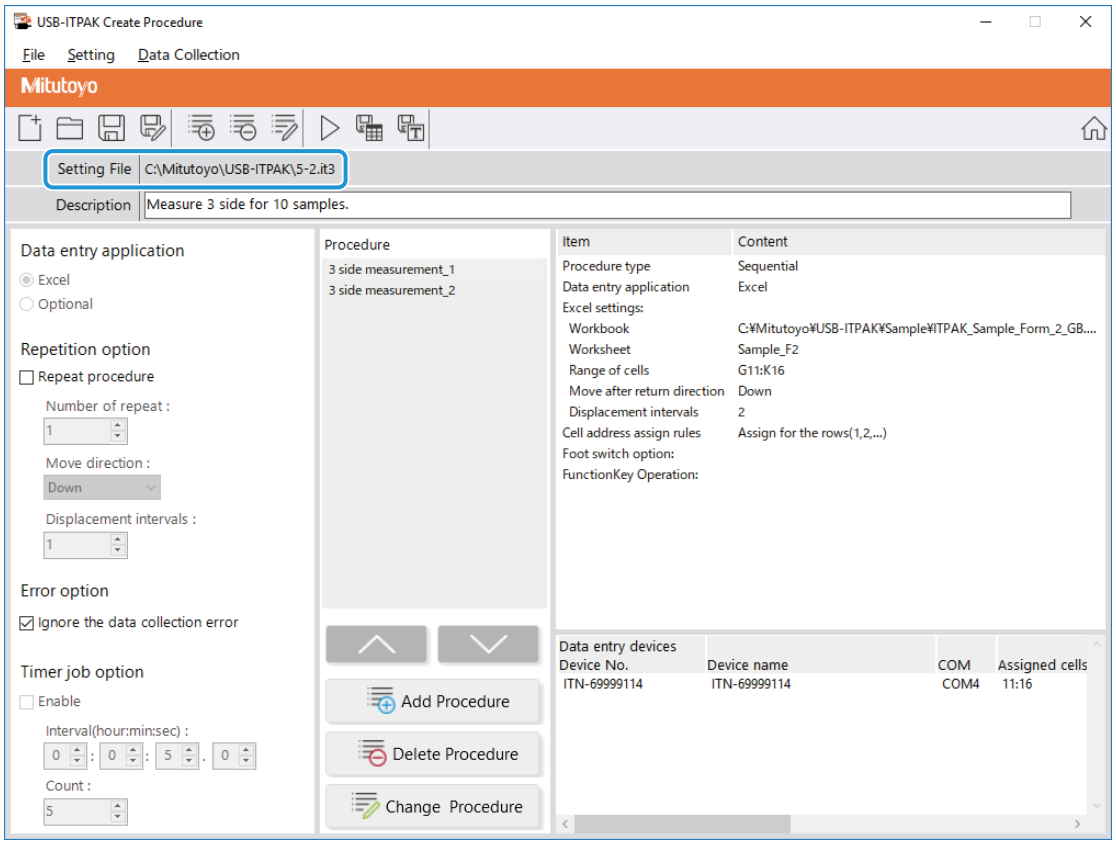
» This completes the creation of the second procedure.

7 From the [File] menu on the create procedure screen, select [Save As].



8 Enter a file name and save the file.

» The full path for the file name will be displayed in the [Setting File] field on the create procedure screen.



7.3.2 Collecting Measurement Data

When you are performing data collection, disable the [AutoSave] feature in Excel. For details about using Excel, see the documentation for Excel.

Tips

After data is collected, the Excel file where measurement data was entered is saved. If you need to keep a copy of the Excel file before it was saved, make a back-up beforehand.

1 Open the setting file to use, and then open the data collection screen.

For details, see the following:

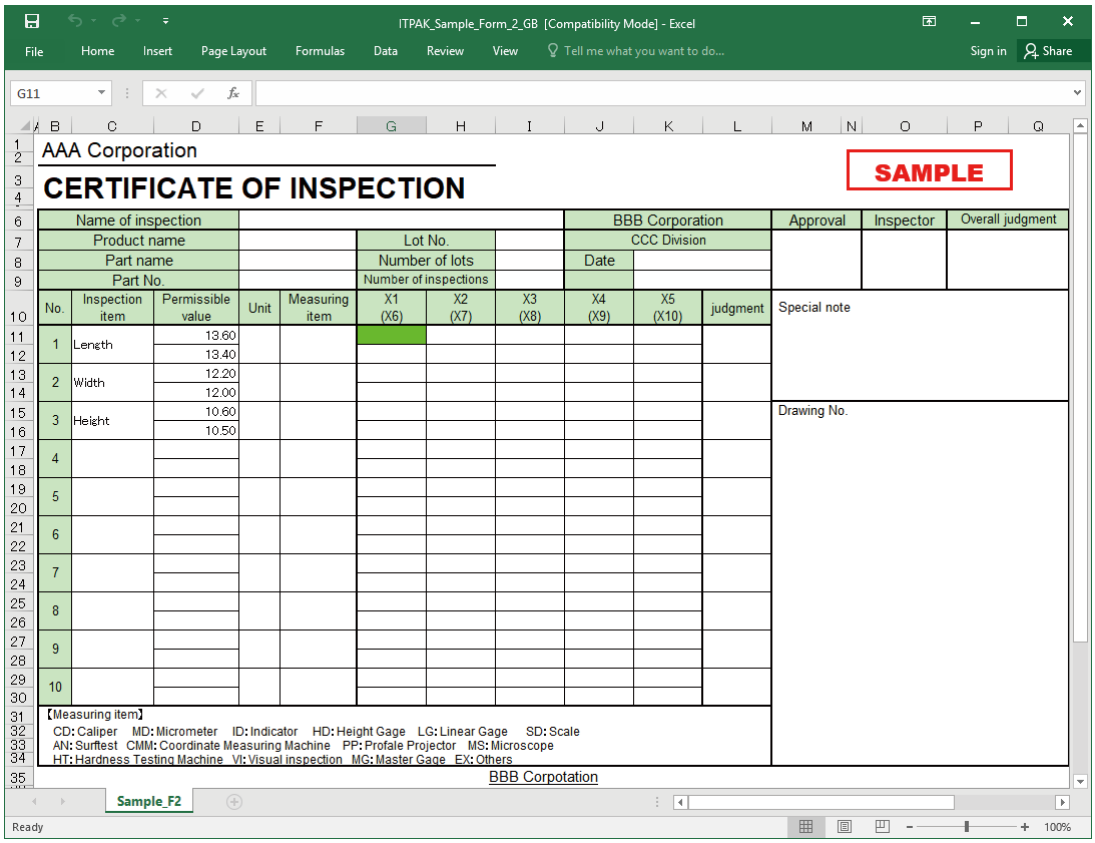
- Sequential measurement: "6.2.2 Collecting Measurement Data" (page 37)
- Batch measurement: "6.3.2 Collecting Measurement Data" (page 51)

2 Start measurement data collection with one of the following operations:

- On the data collection screen, click the [Data request] button.
- Press the DATA switch on the measuring tool or the connection device (USB-ITN/IT-0xxU/DP-1VA/U-WAVE transmitter) (sequential measurement only).

» Data will be entered according to the procedure that is saved in the setting file.

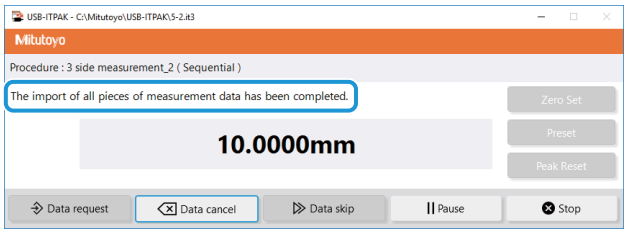
» During data collection, the next cell into which data is entered will be displayed in green.



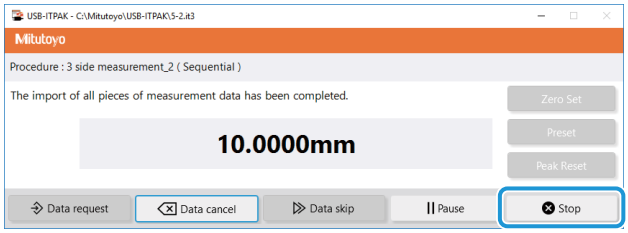
To undo the entry, click the [Data cancel] button on the data collection screen. The data in the input cell is deleted, and the green cell moves to the previous input cell.

To move to the next input cell without entering data, click the [Data skip] button on the data collection screen. The green cell moves to the next input cell.

» When all the data has been entered, a completion message will be displayed on the data collection screen.



3 Click the [Stop] button.



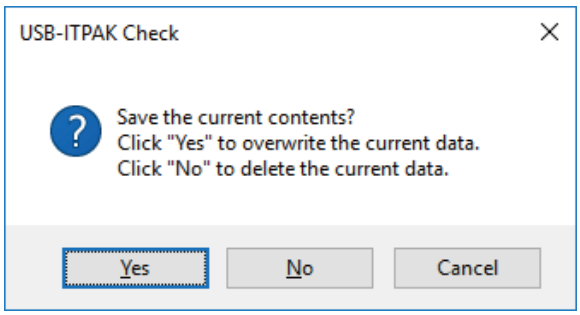
» A confirmation message will be displayed.

4 Click one of the following buttons:

[Yes]: The Excel file where measurement data was entered is saved, and the display switches to the [Quick Menu] screen or the create procedure screen.

[No]: The display switches to the [Quick Menu] screen or the create procedure screen without saving the Excel file where measurement data was entered.

[Cancel]: The confirmation message closes, and you return to the data collection screen.



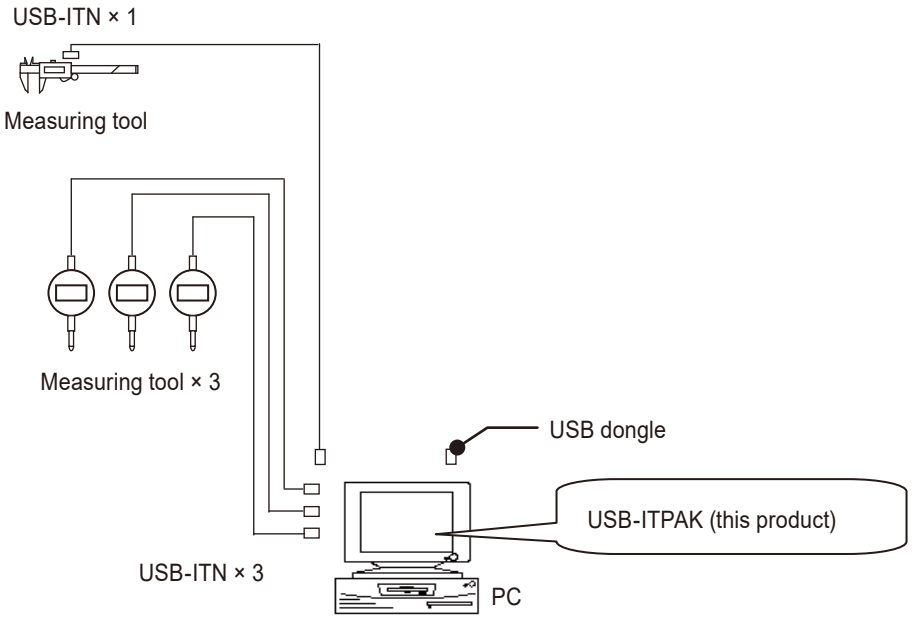
7.4 Measuring by Combining and Repeating Procedures (Sequential Measurement/Batch Measurement Only)

In sequential measurement or batch measurement, you can specify to repeat a measurement procedure in the setting file when a similar measurement is repeatedly used in multiple devices.

To create the setting file in this section, the methods for configuring the procedures are explained using the examples in "■ Connection example", "■ Measurement example", and "■ Measurement data entry example" below.

■ Connection example

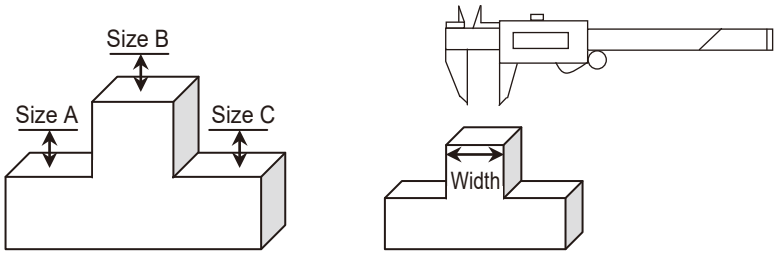
A measuring jig that uses three indicators and one caliper is connected to USB-ITN.



■ Measurement example

The three indicators are used to measure three locations (Size A, Size B, Size C) all at once.

Then, using the caliper, the width of the upper part of the workpiece is measured.



■ Measurement data entry example

An example of an inspection table after data collection is complete is shown below.

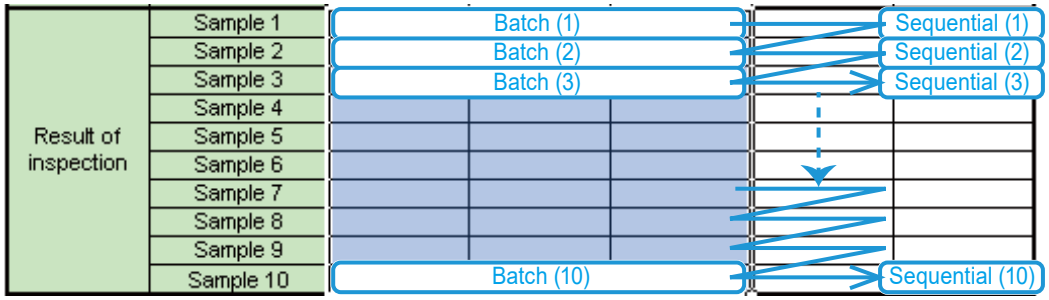
Inspection item		Size A	Size B	Size C	Size D	Size E
Measuring item						
Tolerance	Upper limit	5.150	10.100	5.150		13.550
	Lower limit	4.850	9.900	4.850		13.450
Result of inspection	Sample 1	5.054	10.023	5.070		13.502
	Sample 2	5.086	10.016	5.064		13.500
	Sample 3	5.093	10.000	5.056		13.511
	Sample 4	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

The measurement procedure consists of measuring 10 workpieces with the following two procedures.

First procedure: Measure the locations "Size A", "Size B", and "Size C" on the first workpiece with the measuring jig, and then enter the measurement data into the columns of row Sample 1 of the Excel worksheet.

Second procedure: Measure the location "Size E" with the caliper, and then enter the measurement data into column "Size E" of row Sample 1 of the Excel worksheet.

These procedures are repeated through the 10th workpiece, and the data is entered into the columns of rows Sample 2 through Sample 10 of the Excel worksheet.



To build a procedure like this one, create the first and second procedures as separate procedures, and then set these procedures to be run repeatedly 10 times. By running this procedure, the first and second procedures are run in succession to measure one workpiece. By repeating this 10 times, all workpieces will be measured.

7.4.1 Creating the Setting File

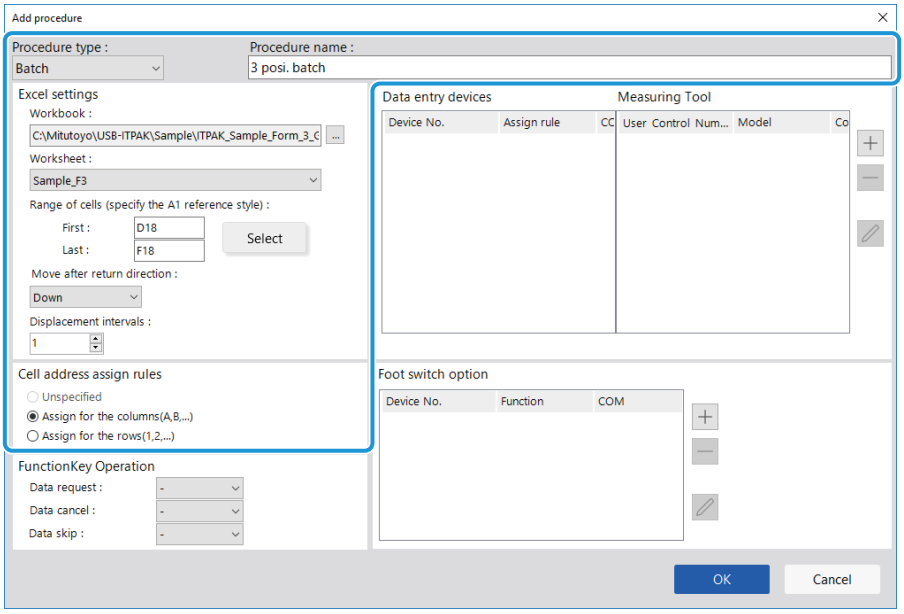
1 Connect the devices you will use to the PC, and configure the items on the [Add procedure] screen in USB-ITPAK.

For details, see the following:

- Sequential measurement: "6.2.1 Creating the Setting File" (page 30)
- Batch measurement: "6.3.1 Creating the Setting File" (page 43)

Create the first procedure.

As an example, here we use the sample inspection table file (ITPAK_Sample_Form_3_GB.xls) as the input destination for the measurement data, and we configure the items with the following contents.



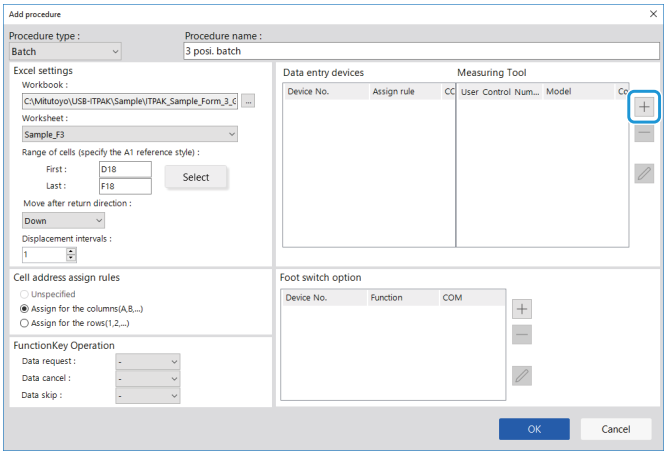
Tips

To use an existing setting file to perform measurement, proceed to the procedure in "7.4.2 Collecting Measurement Data" (page 106).

2 Configure the information for the first data entry device in the [Data entry devices] field.

1 In the [Data entry devices] field, click the [+] button.

» The [Data entry device settings] screen will be displayed.

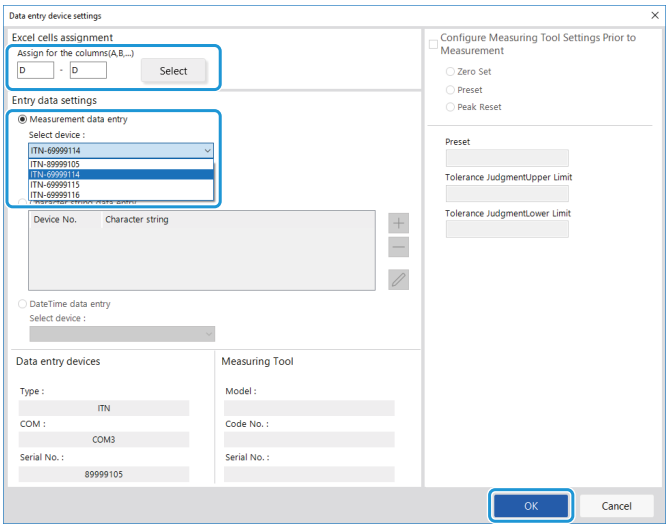


2 On the [Data entry device settings] screen, configure the items and then click the [OK] button.

For details, see the following:

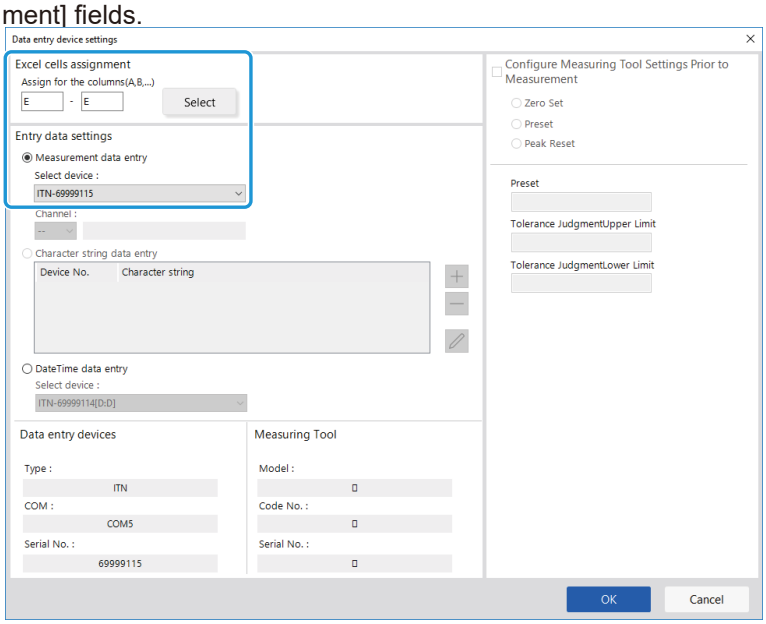
- Sequential measurement: 📖 "6.2.1 Creating the Setting File" (page 30)
- Batch measurement: 📖 "6.3.1 Creating the Setting File" (page 43)

As an example, here we configure the items with the contents on the right.



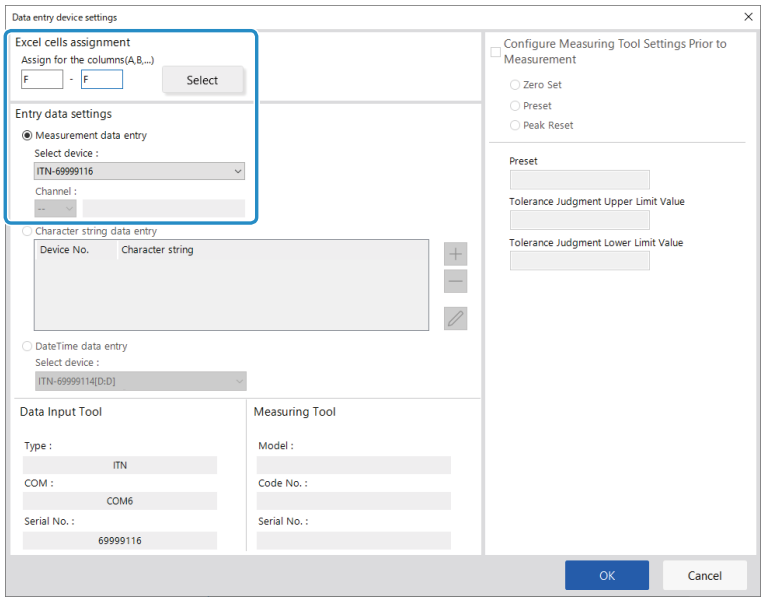
3 Repeat step 2 to configure the information for the second data entry device.

To assign the second data entry device to the second column, E, enter [E] in the [Excel cells assignment] fields.

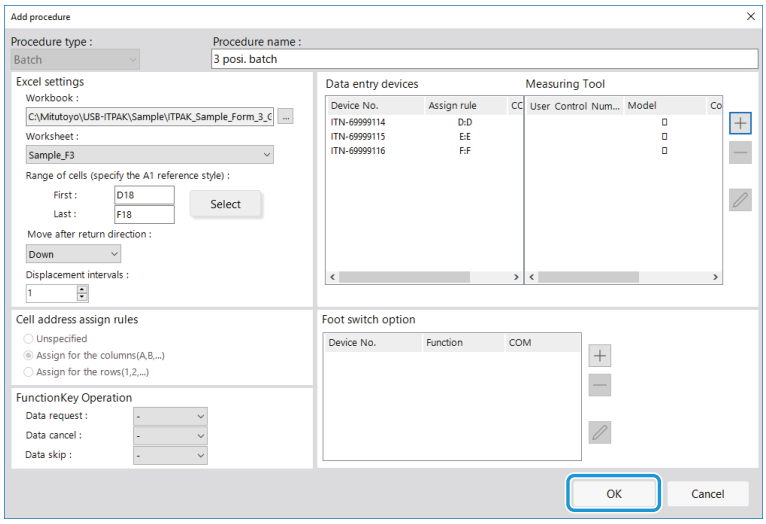


4 Repeat step 2 to configure the information for the third data entry device.

To assign the third data entry device to the third column, F, enter [F] in the [Excel cells assignment] fields.



5 Click the [OK] button.

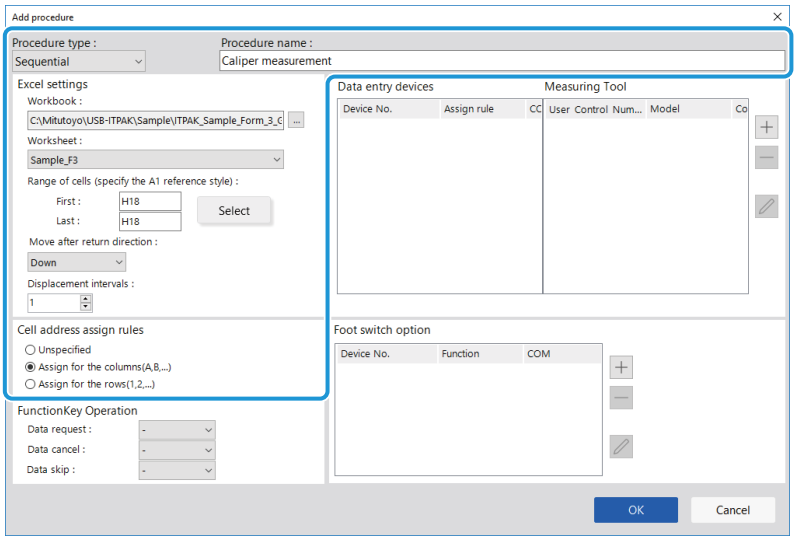


» This completes the creation of the first procedure.

6 On the create procedure screen, click the [Add Procedure] button, and then configure the items on the [Add procedure] screen.

Create the second procedure.

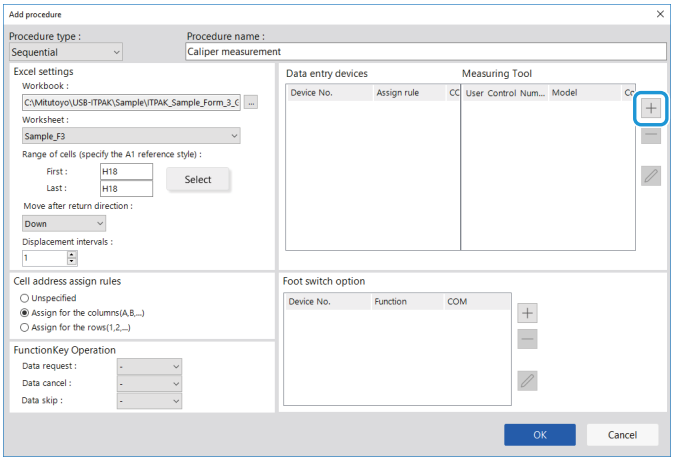
As an example, here we configure the items with the following contents.



7 In the [Data entry devices] field, configure the information for the data entry devices.

1 In the [Data entry devices] field, click the [+] button.

» The [Data entry device settings] screen will be displayed.

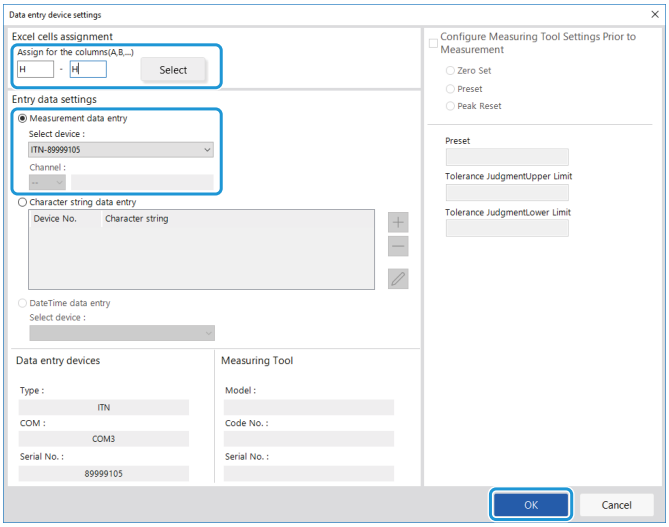


2 On the [Data entry device settings] screen, configure the items and then click the [OK] button.

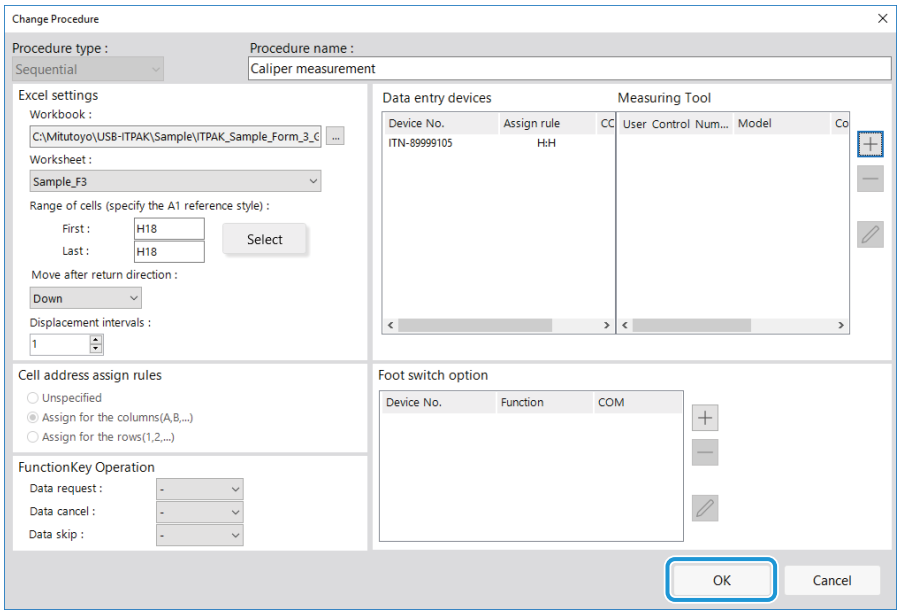
For details, see the following:

- Sequential measurement: "6.2.1 Creating the Setting File" (page 30)
- Batch measurement: "6.3.1 Creating the Setting File" (page 43)

As an example, here we configure the items with the contents on the right.



8 Click the [OK] button.



» This completes the creation of the second procedure.

9 Specify the [Repetition option] field.

1 Select [Repeat procedure].

2 In the [Number of repeat] field, specify the number of times to repeat the procedures that you created.

As an example, here we specify [10].

3 In the [Move direction] field, select the direction in which to enter the measurement data.

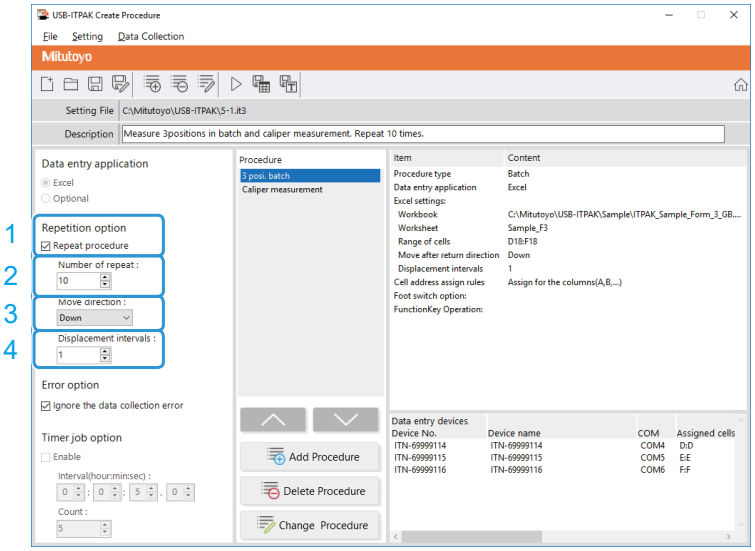
After the procedure that you created has finished, the input cell moves in the direction that you specify here.

As an example, here we select [Down].

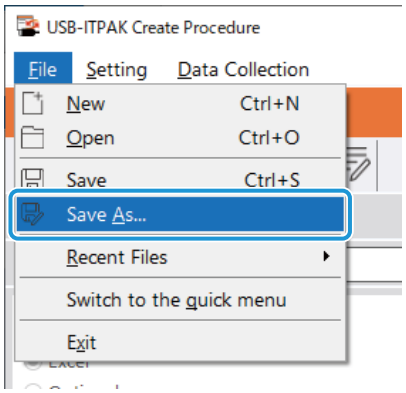
4 In the [Displacement intervals] field, specify the number of cells to move.

Specify the number of cells to move for step 3 .
Specifying [1] moves to the next cell.
Specifying [2] moves to two cells away.

As an example, here we specify [1].

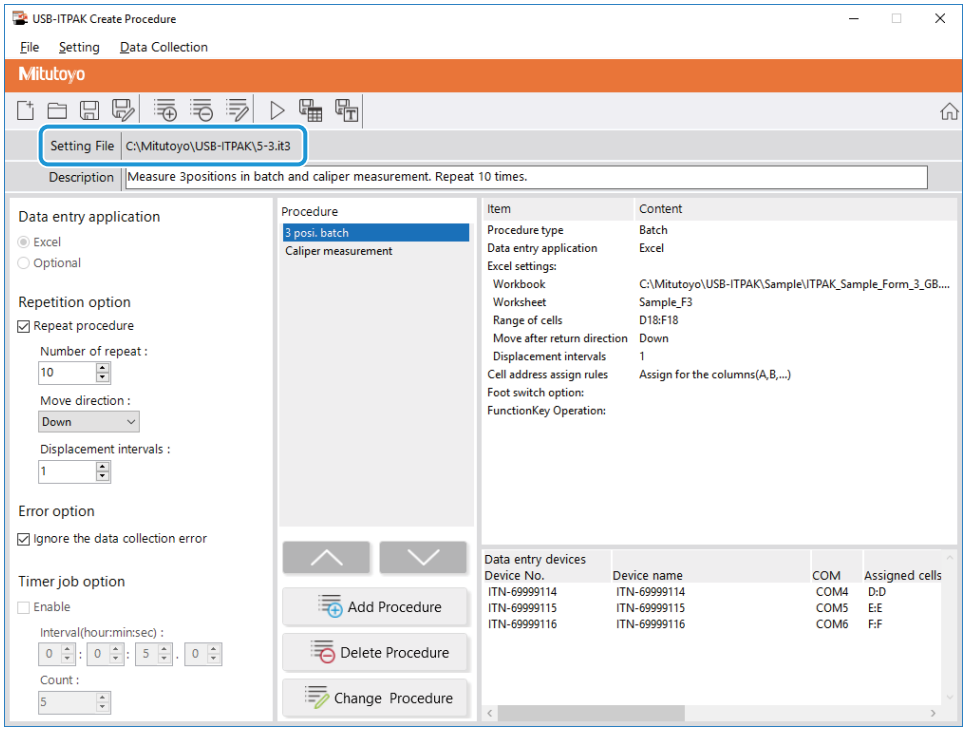


10 From the [File] menu on the create procedure screen, select [Save As].



11 Enter a file name and save the file.

» The full path for the file name will be displayed in the [Setting File] field on the create procedure screen.



7.4.2 Collecting Measurement Data

When you are performing data collection, disable the [AutoSave] feature in Excel. For details about using Excel, see the documentation for Excel.

Tips

After data is collected, the Excel file where measurement data was entered is saved. If you need to keep a copy of the Excel file before it was saved, make a back-up beforehand.

1 Open the setting file to use, and then open the data collection screen.

For details, see the following:

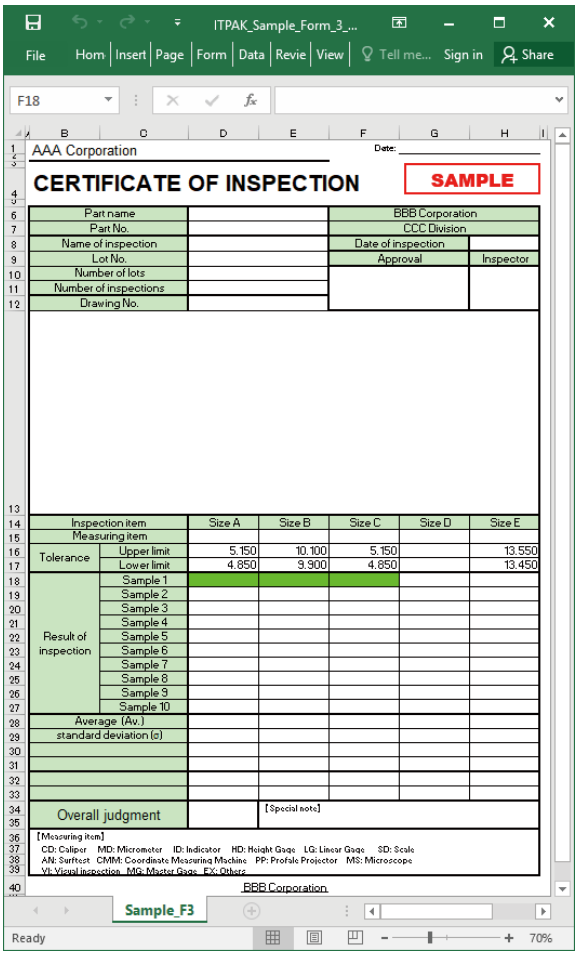
- Sequential measurement: "6.2.2 Collecting Measurement Data" (page 37)
- Batch measurement: "6.3.2 Collecting Measurement Data" (page 51)

2 Start measurement data collection with one of the following operations:

- On the data collection screen, click the [Data request] button.
- Press the DATA switch on the measuring tool or the connection device (USB-ITN/IT-0xxU/DP-1VA/U-WAVE transmitter) (sequential measurement only).

» Data will be entered according to the procedure that is saved in the setting file.

» During data collection, the next cell into which data is entered will be displayed in green.

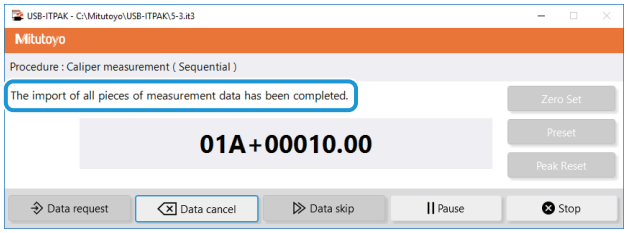


To undo the entry, click the [Data cancel] button on the data collection screen.

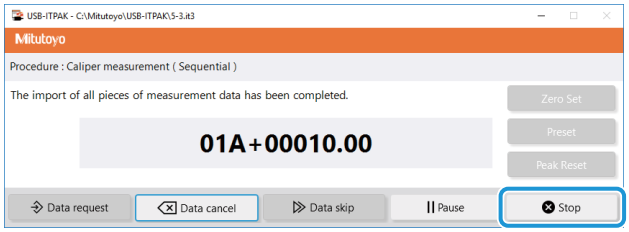
The data in the input cell is deleted, and the green cell moves to the previous input cell.

To move to the next input cell without entering data, click the [Data skip] button on the data collection screen. The green cell moves to the next input cell.

» When all the data has been entered, a completion message will be displayed on the data collection screen.



3 Click the [Stop] button.



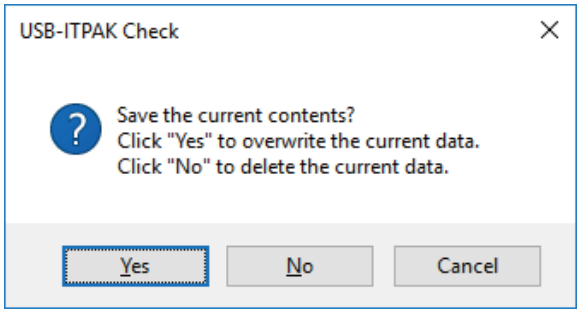
» A confirmation message will be displayed.

4 Click one of the following buttons:

[Yes]: The Excel file where measurement data was entered is saved, and the display switches to the [Quick Menu] screen or the create procedure screen.

[No]: The display switches to the [Quick Menu] screen or the create procedure screen without saving the Excel file where measurement data was entered.

[Cancel]: The confirmation message closes, and you return to the data collection screen.



7.5 Entering Measurement Data into an Arbitrary Application

You can enter measurement data into an arbitrary application as if you were entering it with a keyboard. The measurement data will be entered into the active application at the cursor location.

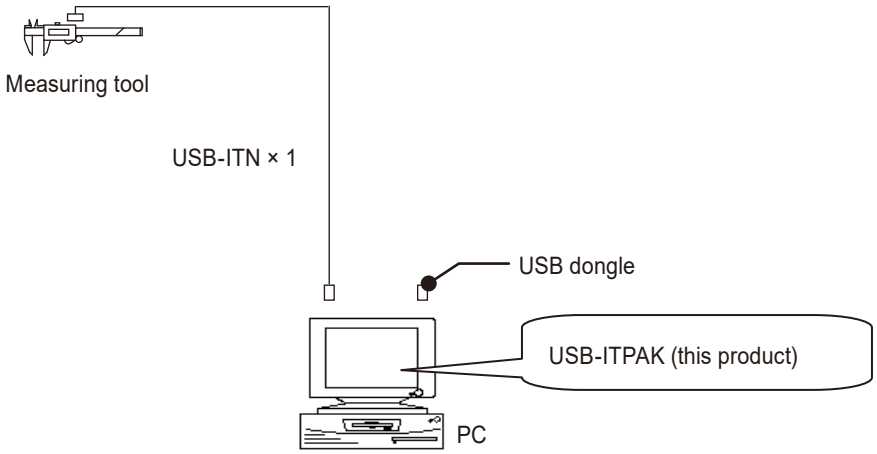
To create the setting file in this section, the methods for configuring the procedures are explained using the examples in "■ Connection example", "■ Measurement example", and "■ Measurement data entry example" below.

Tips

To use the foot switch optional accessory (No. 937179T/12AAJ088), you can assign only the [Data request] function to the foot switch. The [Data cancel] and [Data skip] functions cannot be used.

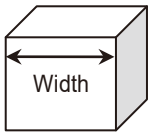
■ Connection example

One caliper is connected to USB-ITN.



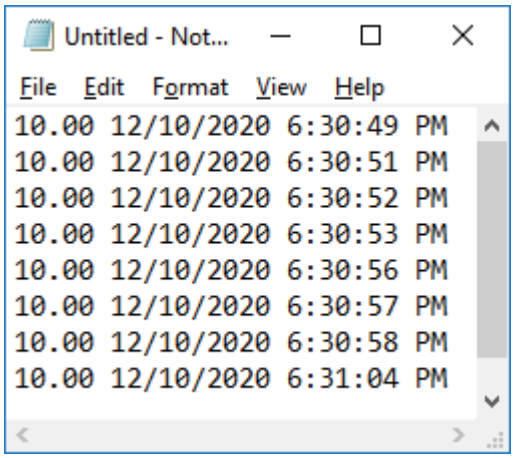
■ Measurement example

The width of a rectangular object is measured.



■ Measurement data entry example

The measurement data will be entered into Notepad, which is a standard application included with Windows. An example of the collected data is shown below.



A sequential measurement procedure is used to measure the width of the workpiece.

7.5.1 Creating the Setting File

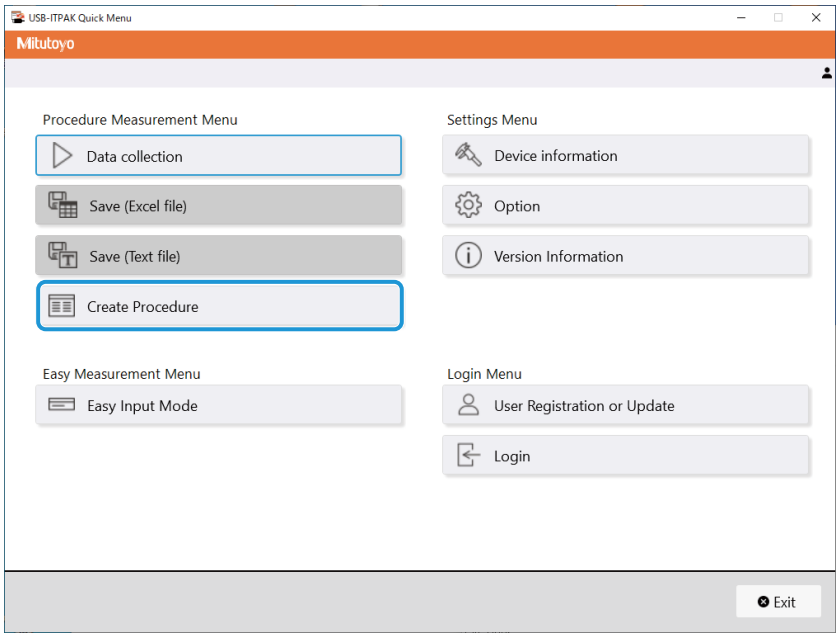
1 **Connect the devices you will use to the PC, and then start USB-ITPAK.**

For details, see "3.1 Starting USB-ITPAK" (page 17).

2 **Check the information of the devices that are connected to the PC.**

For details, see "4 Checking the Device Information" (page 21).

3 **On the [Quick Menu] screen, click the [Create Procedure] button.**



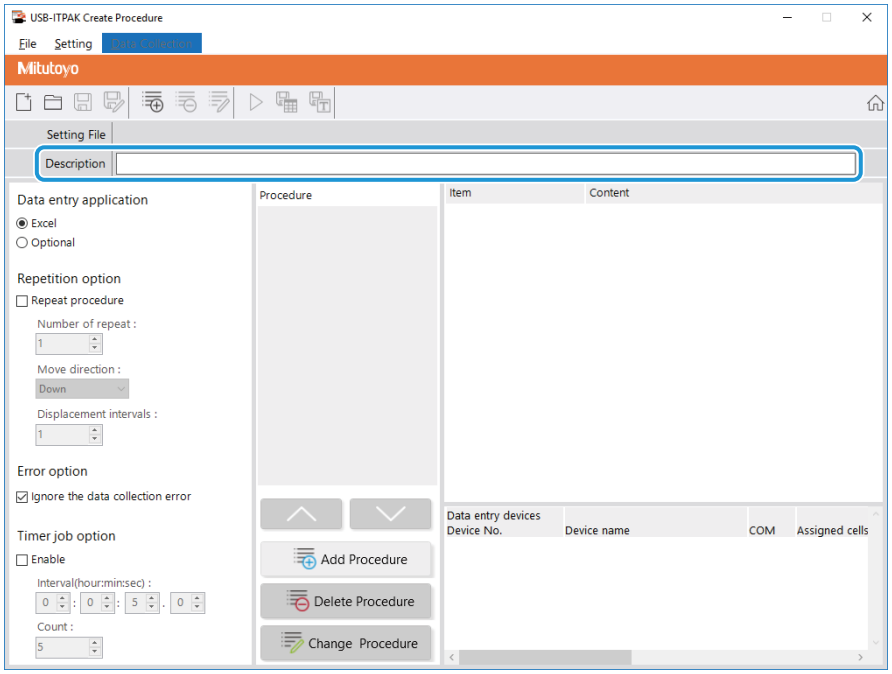
» The create procedure screen will be displayed.

Tips

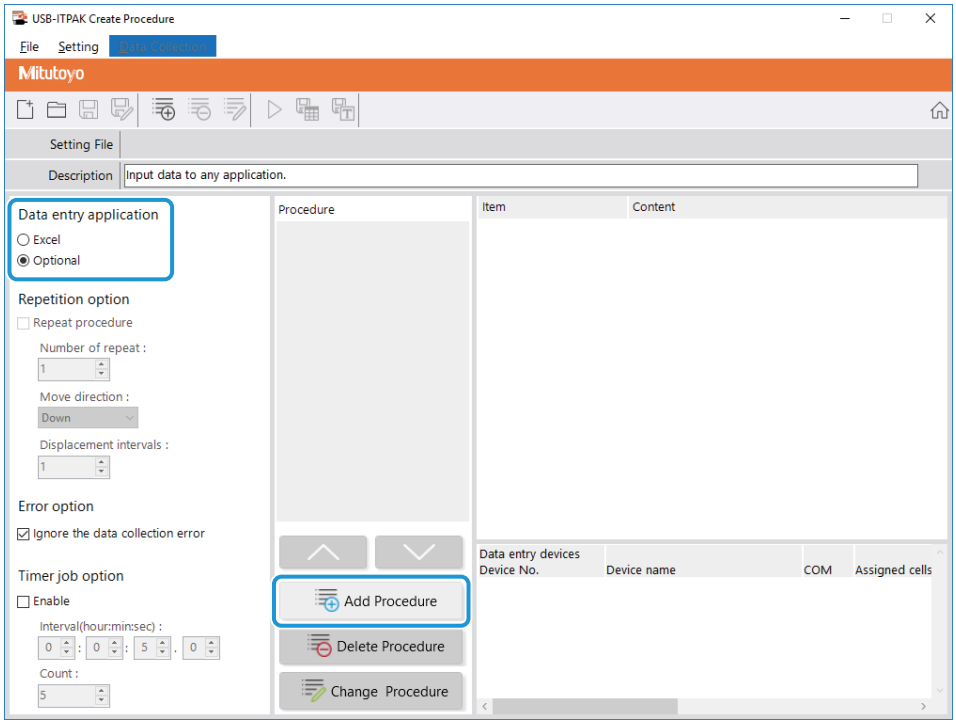
The [Create Procedure] button is available when an appropriate USB dongle is connected to the PC.

4 Enter a description of the setting file you are creating in the [Description] field.

The [Description] field can be left blank.



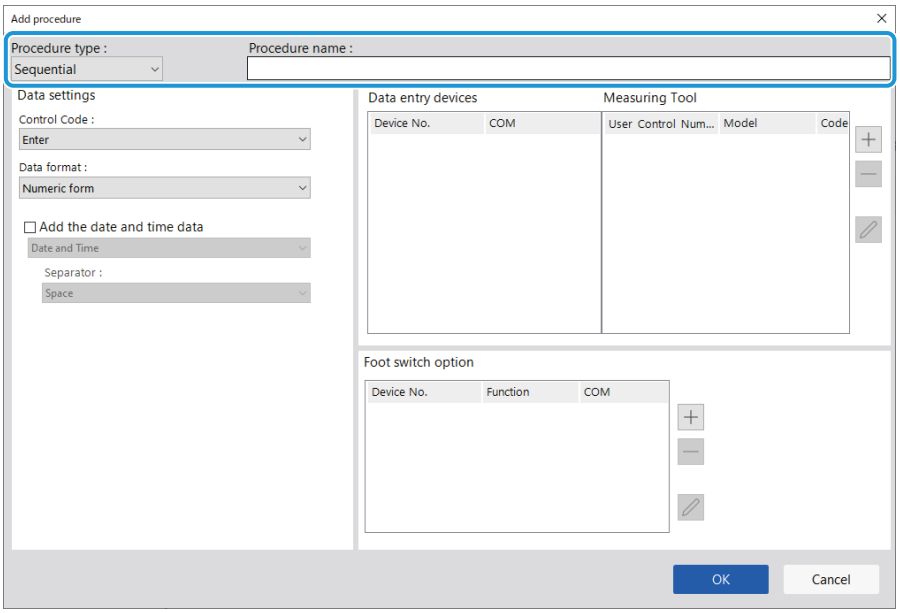
5 Select [Optional] under the [Data entry application] field, and then click the [Add Procedure] button.



» The [Add procedure] screen will be displayed.

6 Select [Sequential] in [Procedure type], and then enter a name in [Procedure name].

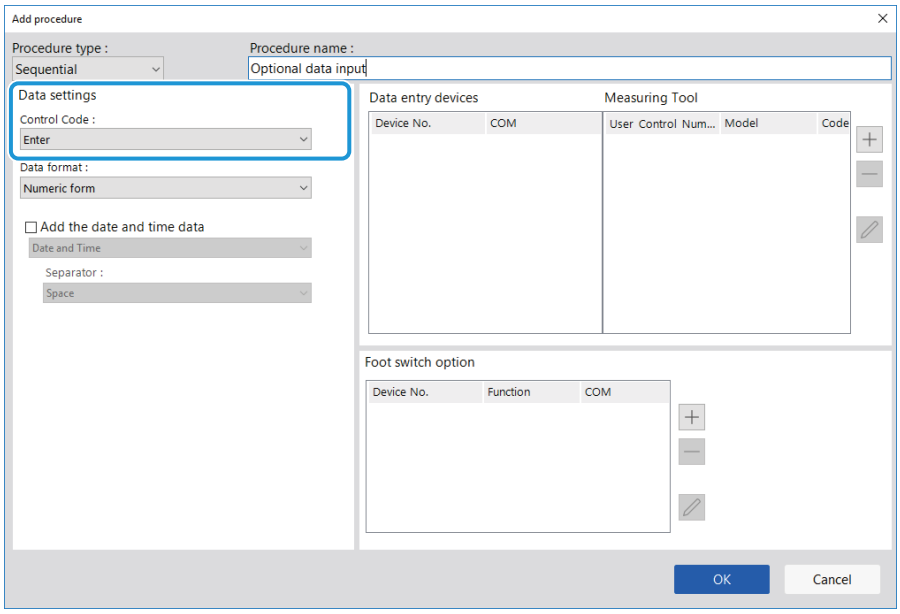
The procedure name is displayed in the [Procedure] field in the center of the create procedure screen. Enter a name that will be easy to recognize when checking. As an example, here we enter [Optional data input].



7 Specify the [Control Code] field.

Select [Unspecified], [Enter], [Up], [Down], [Right], [Left], or [Tab] as the code to add after data entry.

As an example, here we select [Enter].



8 Specify the [Data format] field.

Select the format in which data will be entered into the application.

You can select from the following data formats. For the purposes of explanation, the following is an example where the measuring tool on channel 1 of COM 13 has measured 32.14 mm.

- [Numeric form]:

  Only measurement data is entered.
  Example: [32.14]

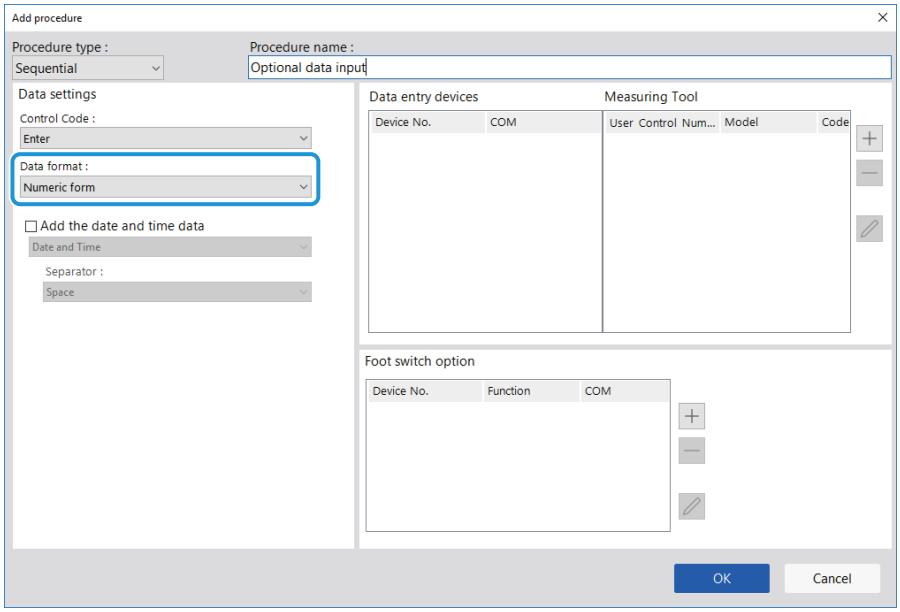
- [Command form]:

  The channel number and measurement data are entered.
  Example: [01A+00032.14]

- [COM No. + Command form]:

  The COM number (three digits), channel number, and measurement data are entered.
  Example: [01301A+00032.14]

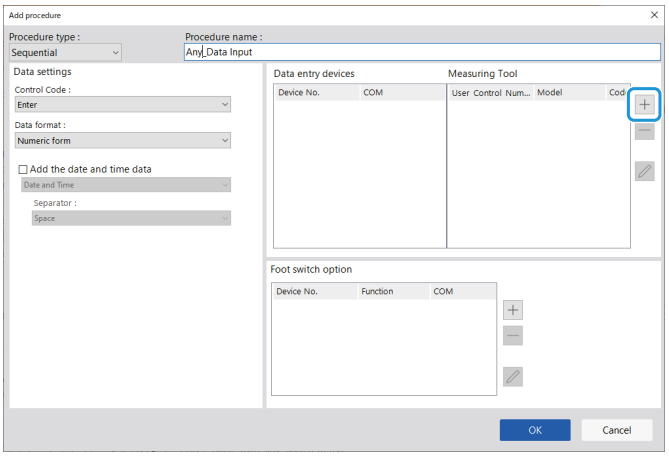
As an example, here we select [Numeric form].



9 In the [Data entry devices] field, configure the information for the data entry devices.

1 In the [Data entry devices] field, click the [+] button.

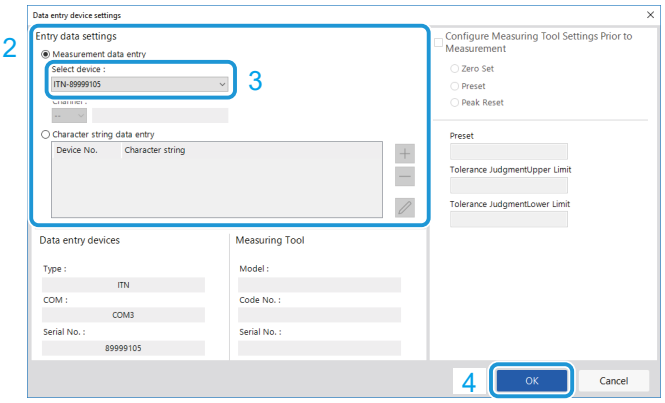
» The [Data entry device settings] screen will be displayed.



2 In the [Entry data settings] field, select the type of data to enter.

There are two types of data that can be entered: measurement data (numeric data) entered by a measuring tool and character string data entered by pressing a foot switch.

As an example, here we select [Measurement data entry].



For details about how to enter character string data by pressing a foot switch, see "7.2 Entering a Character String with the Foot Switch (Sequential Measurement/Individual Measurement Only)" (page 78).

3 In the [Select device] field, select which device to use for data entry.

If you click the drop-down list, the connected data entry devices will be displayed.

As an example, here we select the USB-ITN device.

If you select a U-WAVE-R device, you must also select which channel the device uses for transmission from the [Channel] drop-down list.

If you start U-WAVEPAK to confirm the channel, first exit USB-ITPAK. In this case, you must perform the operations again from the first step.

4 Click the [OK] button.

» The registered device information will be displayed in the [Data entry devices] field on the [Add procedure] screen.

Tips

You can change or delete the registered device information.

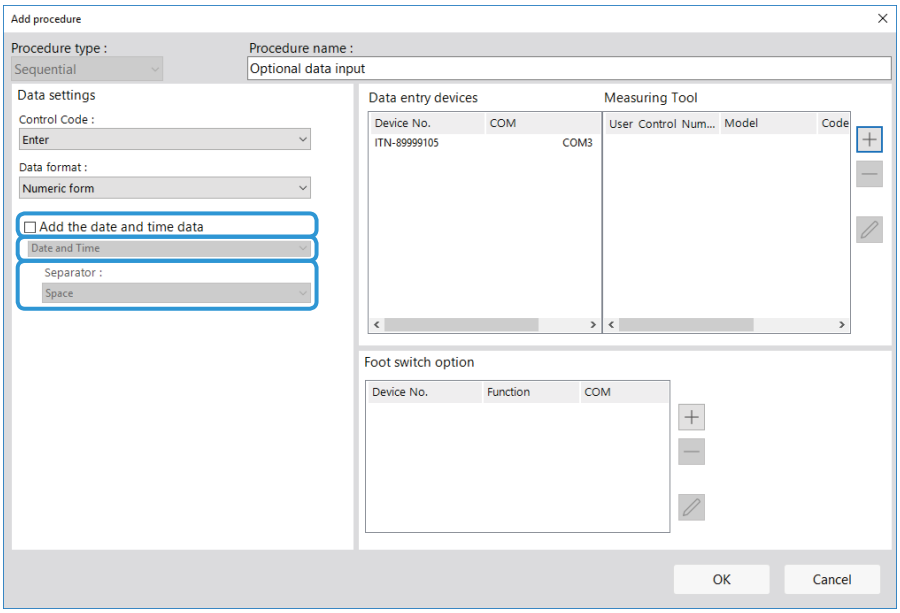
For details, see "8.8 [Add procedure] Screen/[Change Procedure] Screen" (page 179).

10 Configure the settings for entering date/time data.

When measurement data is read in, the date and time that the data was collected can be automatically entered. If you do not want to enter the date and time of collection, proceed to step 11.

As an example, here we set the date and time of collection to be entered.

1 Select [Add the date and time data].



2 From the drop-down list, select the format for the date and time.

You can select from the following date and time formats.

For the purposes of explanation, the following is an example where the measuring tool has measured 32.14 mm.

- [Date and Time]
  The date and time are added.
  Example: 32.14 01/23/2013 12:34:56
- [Date]
  Only the date is added.
  Example: 32.14 01/23/2013
- [Time]
  Only the time is added.
  Example: 32.14 12:34:56

As an example, here we select [Date and Time].

3 From the drop-down list, select the separation character format.

For the character that separates the measurement data and the date and time data, you can select from [Space], [Tab], [Comma (,)], or [Semicolon (;)].

As an example, here we select [Space].

Tips

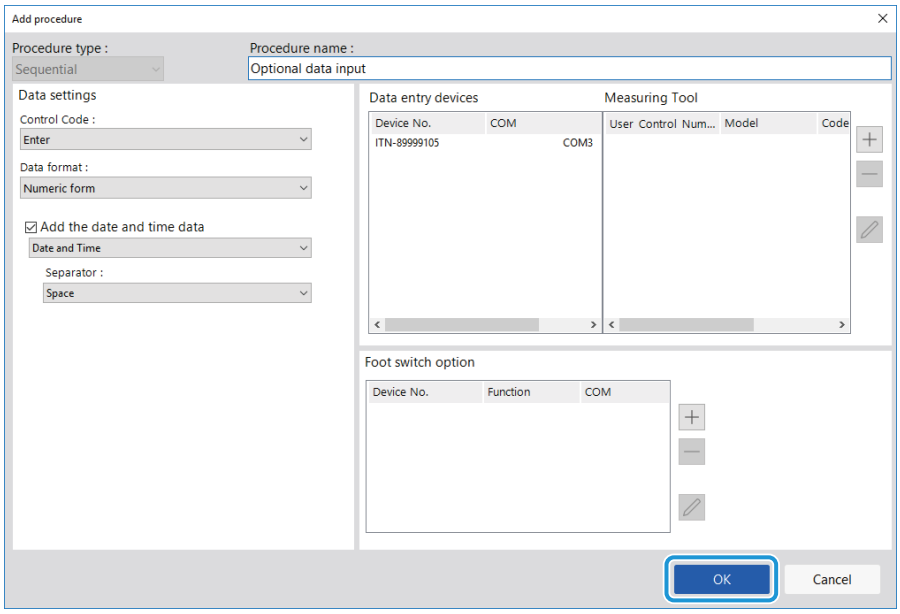
If you select [Numeric form] in the [Data format] field and one of the following in the [Separator] field, an error may be displayed in Excel when measurement data is entered.

- [Space]
- [Comma (,)]
- [Semicolon (;)]

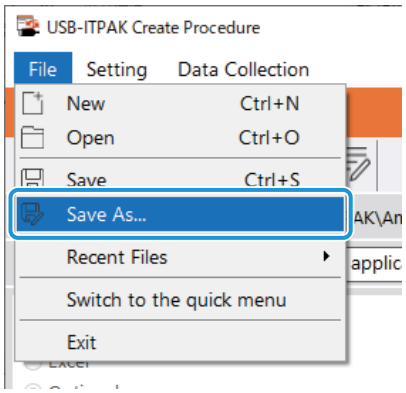
Also, if negative values (values that begin with a minus sign) are entered into Excel, Excel may display the error [The formula you typed contains an error.].
If this error is displayed, take the following actions.

- Select [Tab] for [Separator].
- Set the cell format in Excel to [Text] ahead of time.

11 Click the [OK] button.

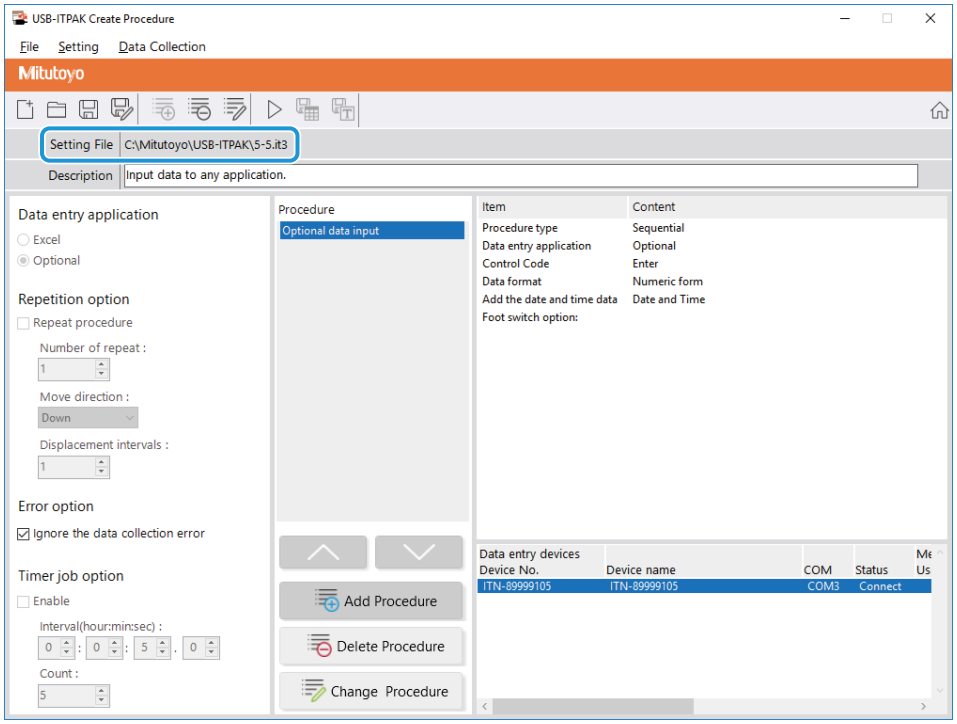


12 From the [File] menu on the create procedure screen, select [Save As].



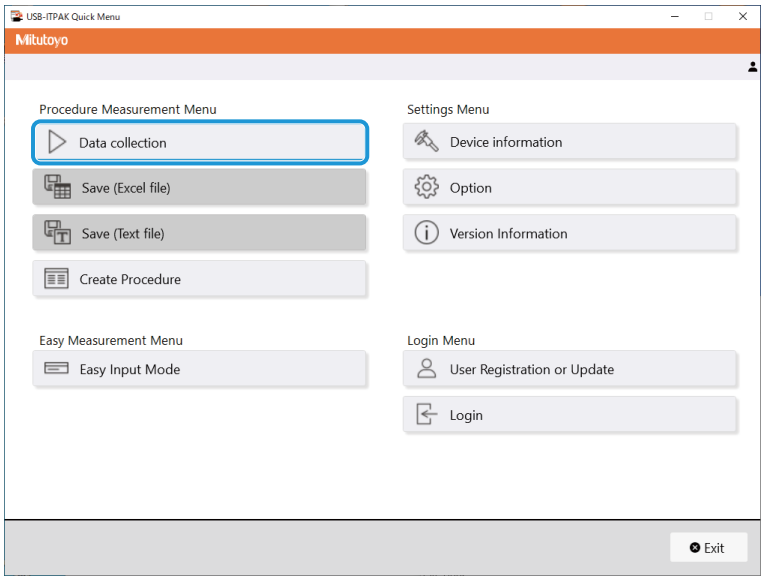
13 Enter a file name and save the file.

» The full path for the file name will be displayed in the [Setting File] field on the create procedure screen.



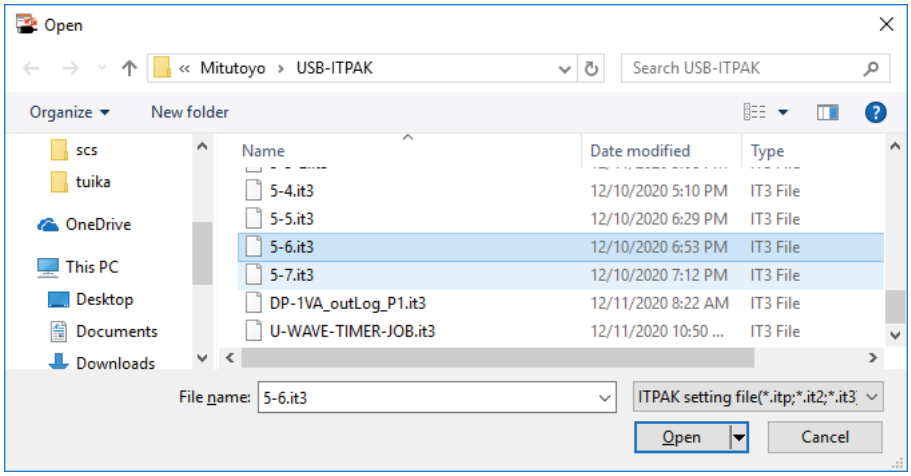
7.5.2 Collecting Measurement Data

1 **On the [Quick Menu] screen, click the [Data collection] button.**



» The setting file selection dialog box appears.

2 **Select the setting file.**

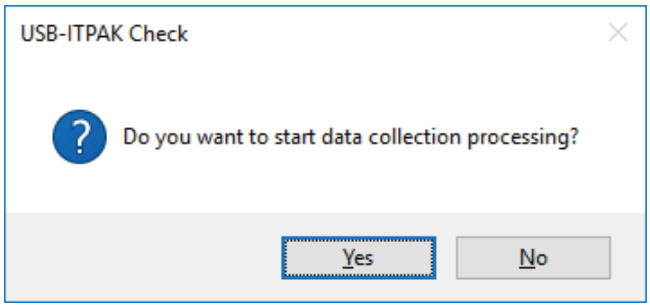


Tips

By selecting [Open] or [Recent Files] from the [File] menu on the create procedure screen, you can also select the setting file. If you selected the setting file on the create procedure screen, click the data collection start icon from the tool bar on the create procedure screen.

» The dialog box appears to prompt you to start handling data.

3 Select the existing data handling method.



[Yes]: Start the data handling process.

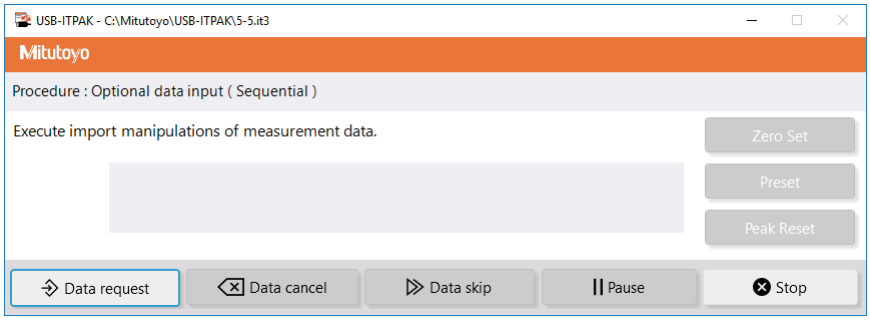
[No]: The dialog box closes, and you return to the [Quick Menu] screen or the create procedure screen.

» If you click the [Yes] button, the data collection screen will be displayed.

4 Open the application where measurement data will be entered.

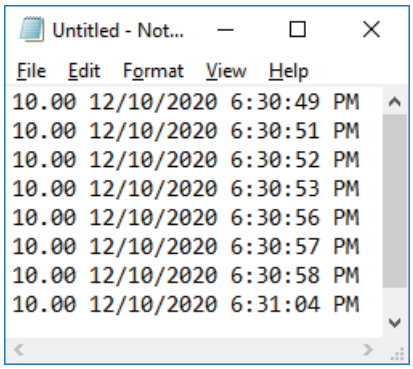
As an example, here we open Notepad, which is a standard application included with Windows, and place the cursor where we want to enter data.

5 Start measurement data collection with one of the following operations:



- On the data collection screen, click the [Data request] button.
- Press the DATA switch on the measuring tool or the connection device (USB-ITN/IT-0xxU/DP-1VA/U-WAVE transmitter).

» Data will be entered according to the procedure that is saved in the setting file.

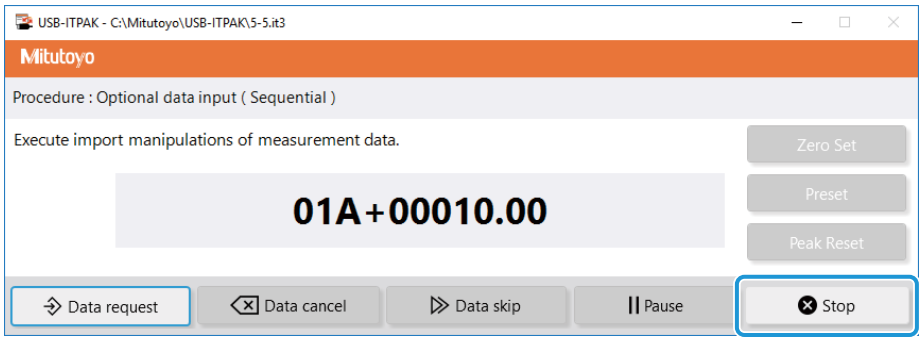


Tips

Measurement data collection can also be started by operating the foot switch.

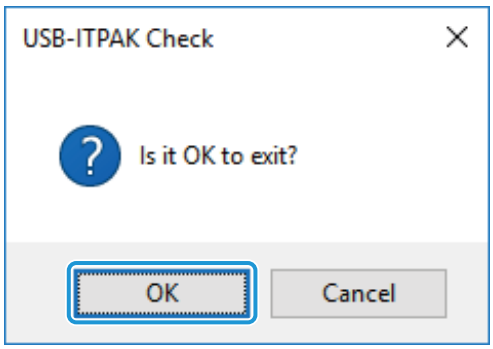
For details, see "7.1 Entering Measurement Data with the Foot Switch" (page 69).

6 Click the [Stop] button.



» A confirmation message will be displayed.

7 Click the [OK] button.



» The display switches to the [Quick Menu] screen or the create procedure screen.

Tips

After data collection is complete, save the file as necessary.

7.6 Entering the Collection Date and Time for Measurement Data (Sequential Measurement/Batch Measurement Only)

In sequential measurement or batch measurement, the data collection date and time can be automatically entered when measurement data is taken in. In this case, however, you must specify the date and time data entry settings on the target connection devices.

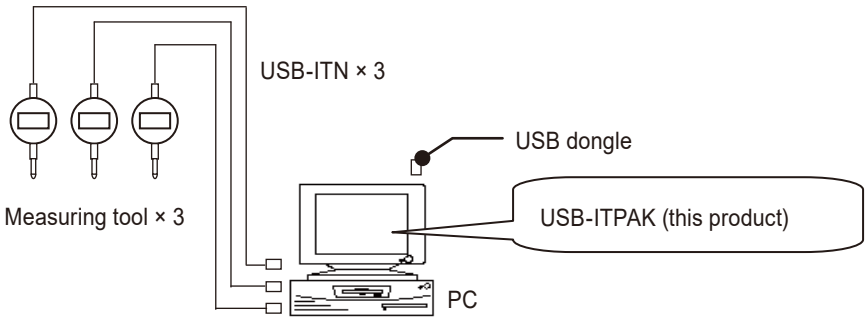
To create the setting file in this section, the methods for configuring the procedures are explained using the examples in "■ Connection example", "■ Measurement example", and "■ Measurement data entry example" below.

Tips

- With batch measurement, the date and time data can be assigned to only one device.
- For details about entering the date and time data into an arbitrary application, see "7.5 Entering Measurement Data into an Arbitrary Application" (page 108).

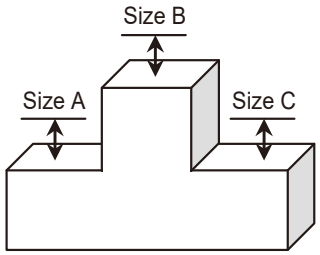
■ Connection example

Three indicators are connected to USB-ITN.



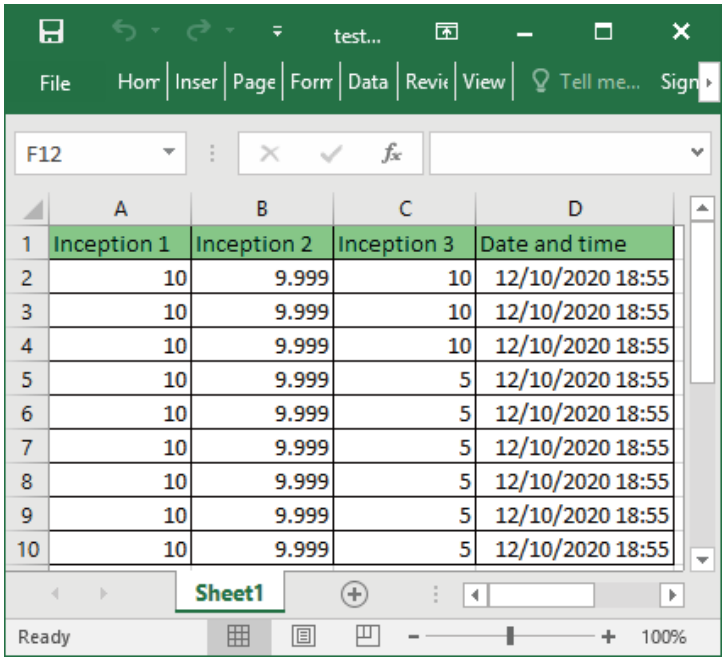
■ Measurement example

The three indicators are used to measure three locations (Size A, Size B, Size C) all at once.



■ Measurement data entry example

An example of an inspection table after data collection is complete is shown below.

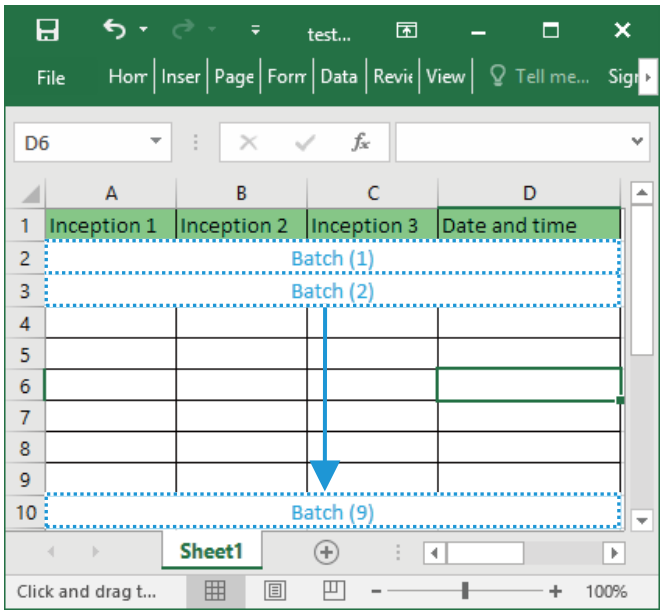


	A	B	C	D
1	Inception 1	Inception 2	Inception 3	Date and time
2	10	9.999	10	12/10/2020 18:55
3	10	9.999	10	12/10/2020 18:55
4	10	9.999	10	12/10/2020 18:55
5	10	9.999	5	12/10/2020 18:55
6	10	9.999	5	12/10/2020 18:55
7	10	9.999	5	12/10/2020 18:55
8	10	9.999	5	12/10/2020 18:55
9	10	9.999	5	12/10/2020 18:55
10	10	9.999	5	12/10/2020 18:55

Measurement procedure: Measure three locations on the workpiece all together, and then enter the measurement data into columns "Inspection 1", "Inspection 2", and "Inspection 3" and the date and time data in column "Date and time" of the Excel worksheet.

Next, measure three locations on the same workpiece all together, and then enter the measurement data into columns "Inspection 1", "Inspection 2", and "Inspection 3" and the date and time data into column "Date and time" in the next row of the Excel worksheet.

Repeat the measurement on the same workpiece.



	A	B	C	D
1	Inception 1	Inception 2	Inception 3	Date and time
2	Batch (1)			
3	Batch (2)			
4				
5				
6				
7				
8				
9				
10	Batch (9)			

7.6.1 Creating the Setting File

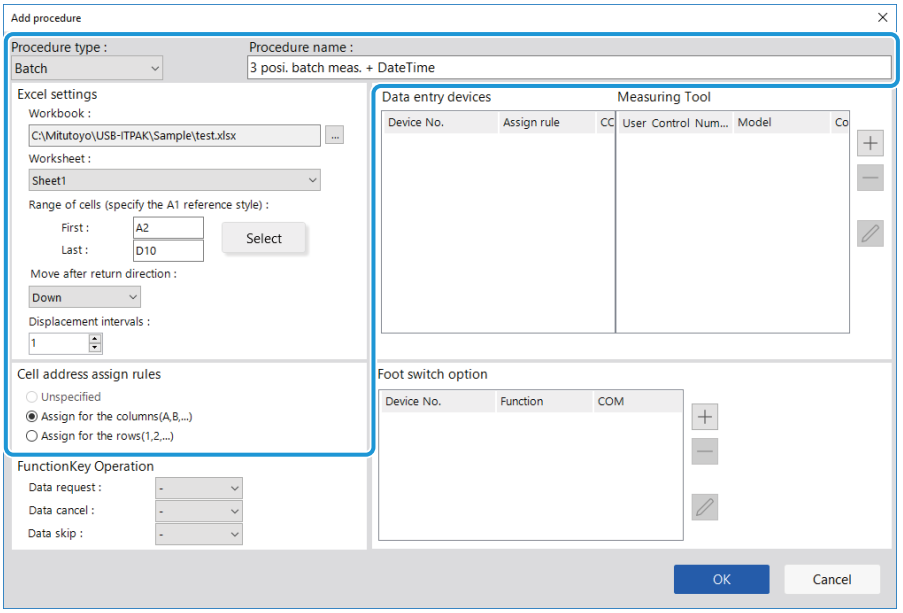
1 Connect the devices you will use to the PC, and configure the items on the [Add procedure] screen in USB-ITPAK.

For details, see the following:

- Sequential measurement: "6.2.1 Creating the Setting File" (page 30)
- Batch measurement: "6.3.1 Creating the Setting File" (page 43)

As an example, here we use the sample inspection table file (test.xls) as the input destination for the measurement data, and we configure the items with the following contents.

Under the [Cell address assign rules] field, select [Assign for the columns(A,B,...)] or [Assign for the rows(1,2,...)]. If you select [Unspecified], the date and time data entry settings cannot be configured.



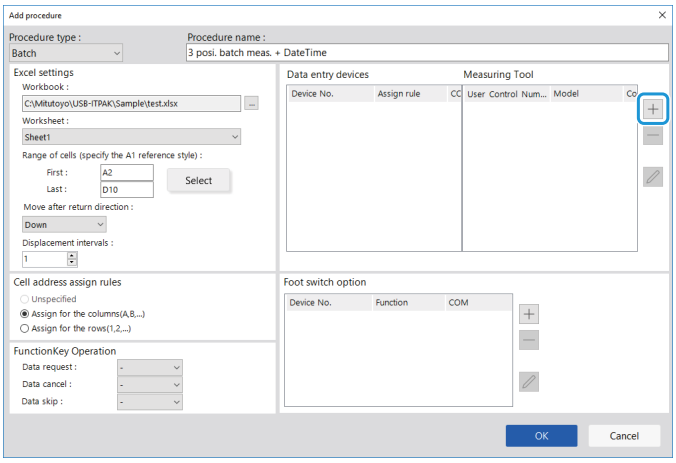
Tips

To use an existing setting file to perform measurement, proceed to the procedure in "7.6.2 Collecting Measurement Data" (page 128).

2 Configure the information for the first data entry device in the [Data entry devices] field.

1 In the [Data entry devices] field, click the [+] button.

» The [Data entry device settings] screen will be displayed.

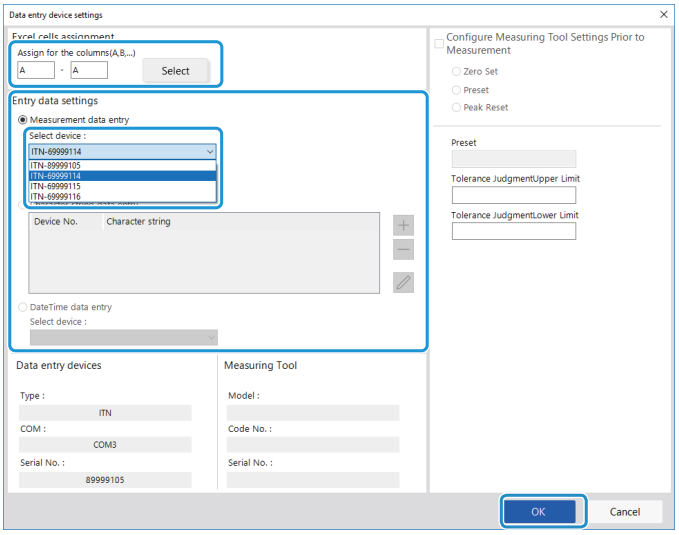


2 On the [Data entry device settings] screen, configure the items and then click the [OK] button.

For details, see the following:

- Sequential measurement: "6.2.1 Creating the Setting File" (page 30)
- Batch measurement: "6.3.1 Creating the Setting File" (page 43)

As an example, here we configure the items with the contents on the right.



3 Configure the settings for entering date and time data.

1 Under the [Data entry devices] field on the [Add procedure] screen, click the [+] button.

» The [Data entry device settings] screen will be displayed.

2 In the [Entry data settings] field, select [DateTime data entry].

3 In the [Select device] field, select which device to assign the date and time data to.

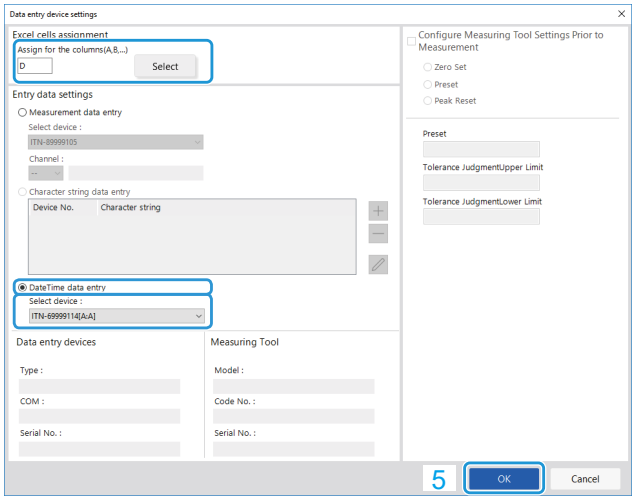
If you click the drop-down list, the connected data entry devices will be displayed.

As an example, here we select the USB-ITN device.

4 Under the [Excel cells assignment] field, specify the row numbers or the column numbers to assign the date and time data to.

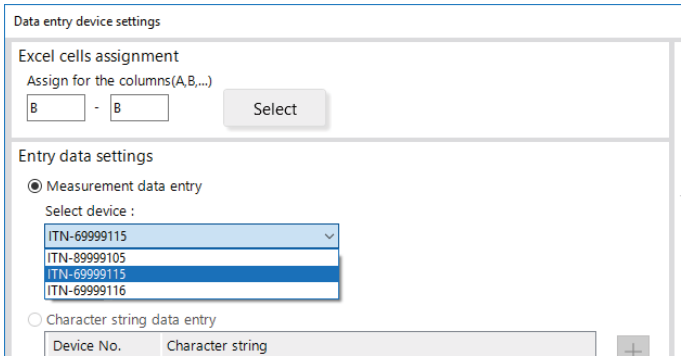
In the sample inspection table file, the date and time data is assigned to column D. Therefore, enter [D].

5 Click the [OK] button.



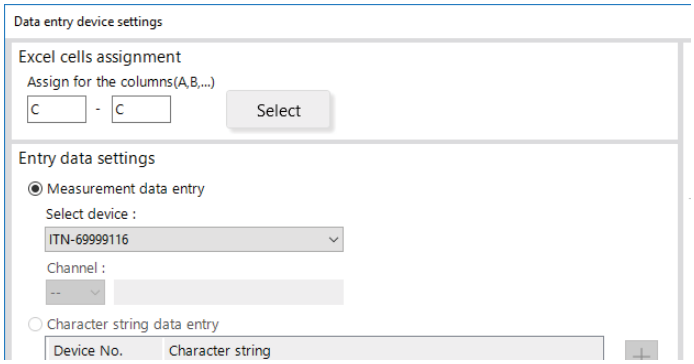
4 Repeat step 2 to configure the information for the second data entry device.

As an example, here we assign the second device to column [B].

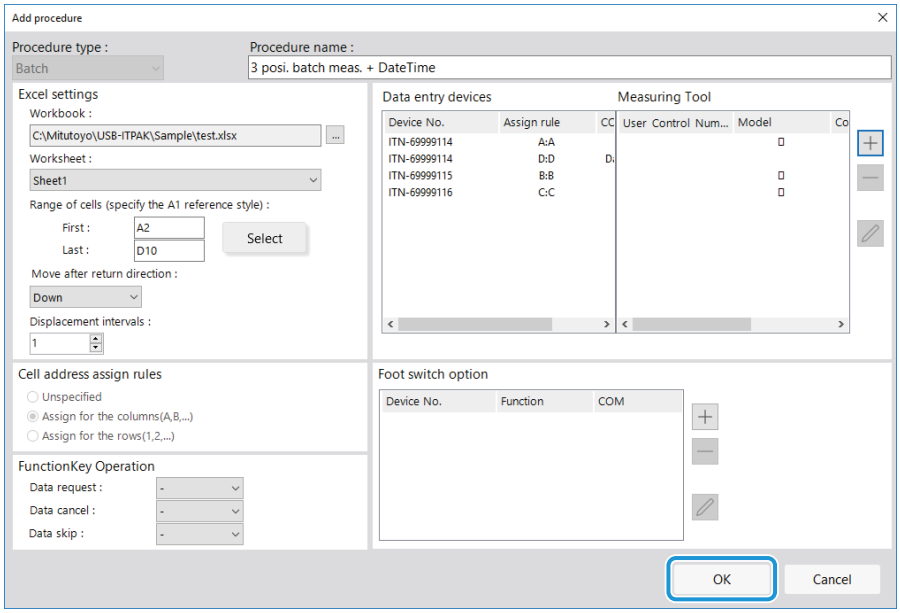


5 Repeat step 2 to configure the information for the third data entry device.

As an example, here we assign the third device to column [C].



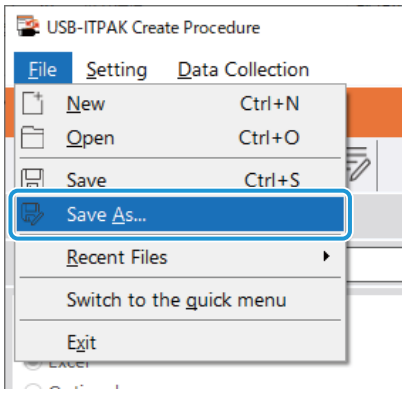
6 Click the [OK] button.



Tips

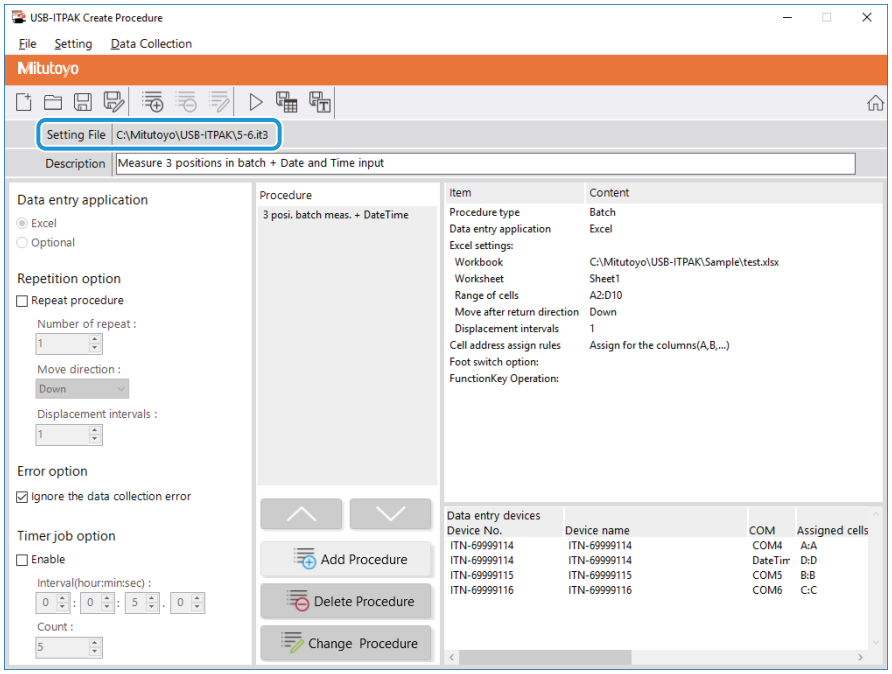
- Check that you have not mistakenly assigned the same Excel cells to multiple devices.
- If you delete a measurement data entry device from the [Data entry devices] field to which date and time data entry has been assigned, those date and time data entry settings will also be deleted.

7 From the [File] menu on the create procedure screen, select [Save As].



8 Enter a file name and save the file.

» The full path for the file name will be displayed in the [Setting File] field on the create procedure screen.



7.6.2 Collecting Measurement Data

When you are performing data collection, disable the [AutoSave] feature in Excel. For details about using Excel, see the documentation for Excel.

Tips

After data is collected, the Excel file where measurement data was entered is saved. If you need to keep a copy of the Excel file before it was saved, make a back-up beforehand.

1 Open the setting file to use, and then open the data collection screen.

For details, see the following:

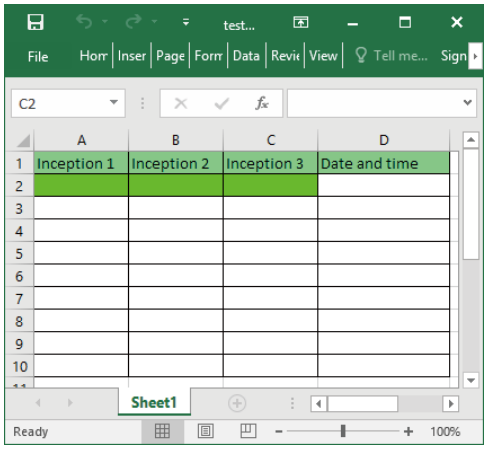
- Sequential measurement: "6.2.2 Collecting Measurement Data" (page 37)
- Batch measurement: "6.3.2 Collecting Measurement Data" (page 51)

2 Start measurement data collection with one of the following operations:

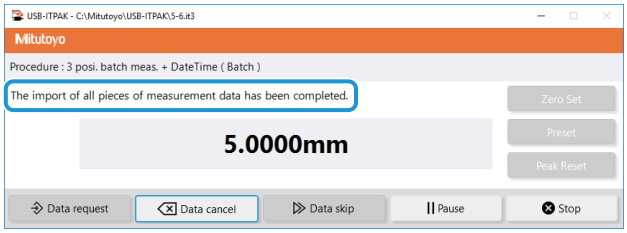
- On the data collection screen, click the [Data request] button.
- Press the DATA switch on the measuring tool or the connection device (USB-ITN/IT-0xxU/DP-1VA/U-WAVE transmitter) (sequential measurement only).

» Data and the date and time that the data was collected will be entered according to the procedure that is saved in the setting file.

» During data collection, the next cell into which data is entered will be displayed in green.

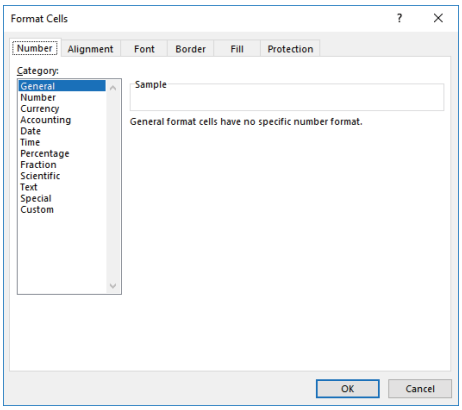


» When all the data has been entered, a completion message will be displayed on the data collection screen.

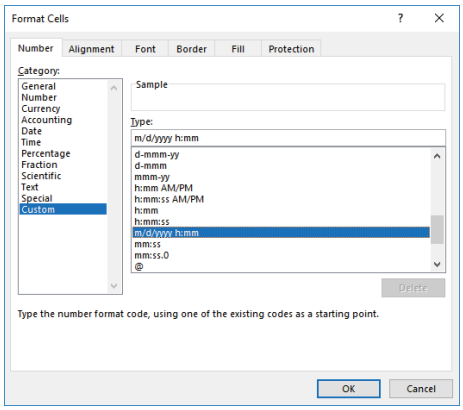


Tips

When date and time data is entered for cells where the cell format is set to [General] under [Category] of [Number], [Category] of the [Number] setting of the cell format of the cell where the date and time data was entered is changed to [Custom], with [m/d/yyyy h:mm] selected in [Type]. Therefore, if a value that is not date and time data, such as measurement data from a measuring tool, is entered into a cell where a date and time has been entered, the value displayed in the cell will not be formatted correctly.

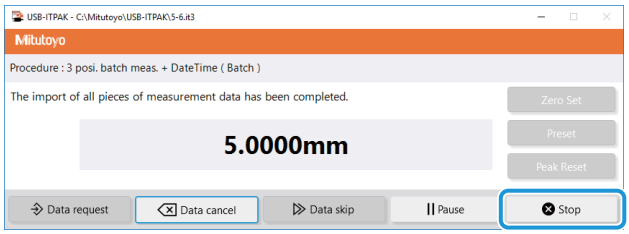


<Number format before date and time entry>



<Number format after date and time entry>

3 Click the [Stop] button.



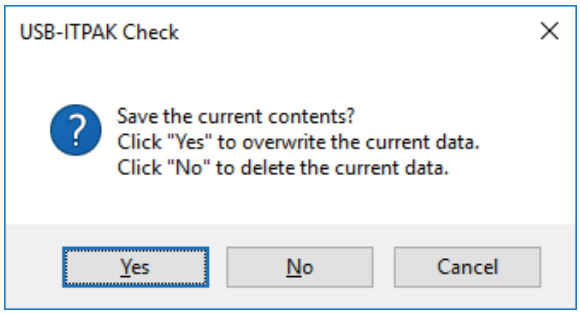
» A confirmation message will be displayed.

4 Click one of the following buttons:

[Yes]: The Excel file where measurement data was entered is saved, and the display switches to the [Quick Menu] screen or the create procedure screen.

[No]: The display switches to the [Quick Menu] screen or the create procedure screen without saving the Excel file where measurement data was entered.

[Cancel]: The confirmation message closes, and you return to the data collection screen.



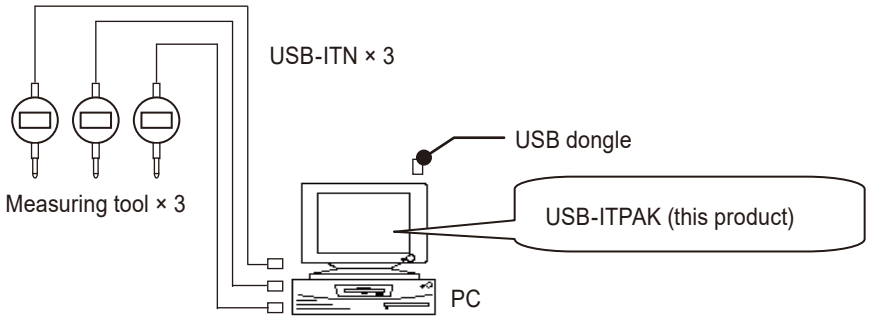
7.7 Entering Measurement Data at Specified Time Intervals (Batch Measurement Only)

In batch measurement, measurement data can be automatically entered at the specified time interval.

To create the setting file in this section, the methods for configuring the procedures are explained using the examples in "■ Connection example", "■ Measurement example", and "■ Measurement data entry example" below.

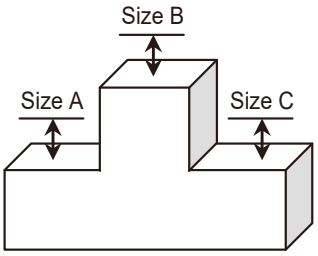
■ Connection example

Three indicators are connected to USB-ITN.



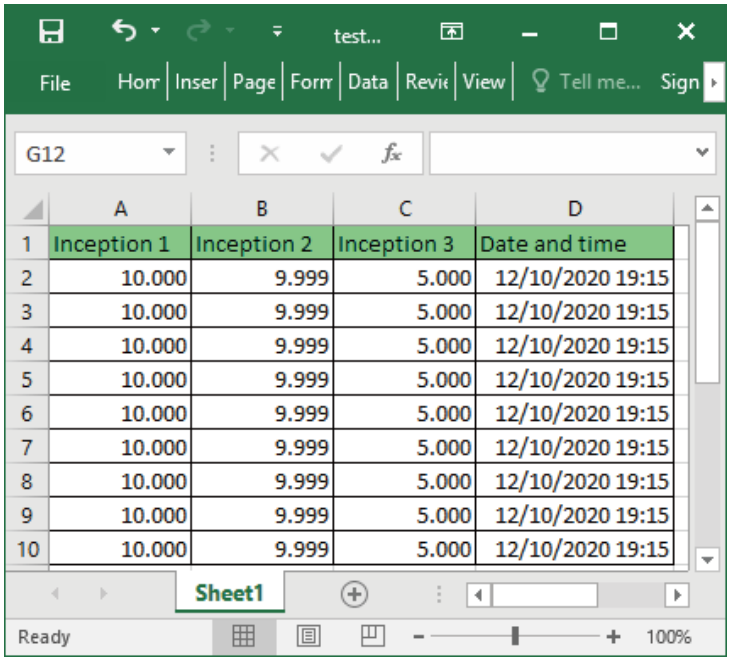
■ Measurement example

The three indicators are used to measure three locations (Size A, Size B, Size C) all at once.



■ Measurement data entry example

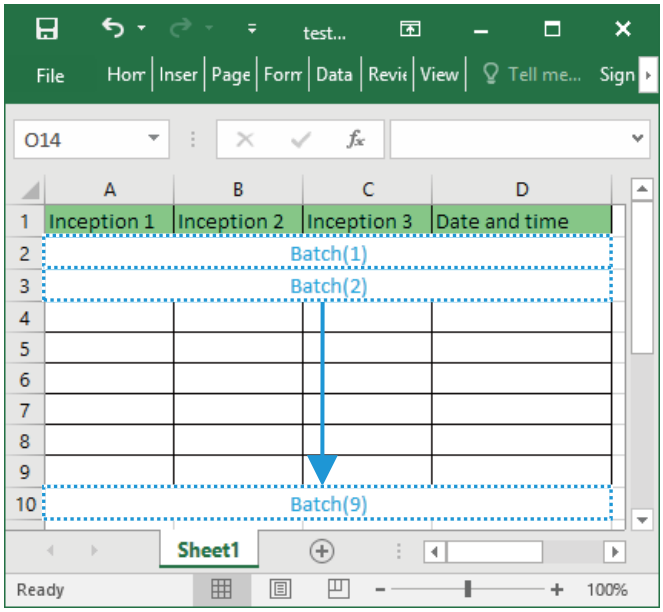
An example of an inspection table after data collection is complete is shown below.



Measurement procedure: Measure three locations on the workpiece all together, and then enter the measurement data into columns "Inception 1", "Inception 2", and "Inception 3" of the Excel worksheet.

Next, measure three locations on the same workpiece all together, and then enter the measurement data into columns "Inception 1", "Inception 2", and "Inception 3" in the next row of the Excel worksheet.

Repeat the measurement on the same workpiece. The data request will occur at a specified time interval.



7.7.1 Creating the Setting File

1 Connect the devices you will use to the PC, and configure the items in USB-ITPAK.

For details, see "6.3.1 Creating the Setting File" (page 43).

As an example, here we edit parts of the setting file created in "7.6 Entering the Collection Date and Time for Measurement Data (Sequential Measurement/Batch Measurement Only)" (page 121).

Open the created setting file.

Tips

To use an existing setting file to perform measurement, proceed to the procedure in "7.7.2 Collecting Measurement Data" (page 134).

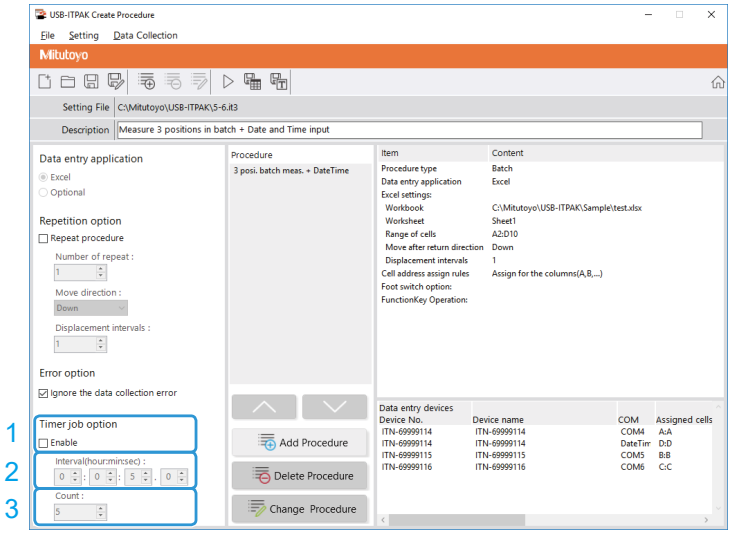
2 Configure the time interval settings.

1. Under the [Timer job option] field, select [Enable].
2. Under the [Interval] field, set the time interval for making the data request.

   The allowable interval is from 0.0 seconds to 24 hours (0:0:0.0 to 24:0:0.0).

   As an example, here we specify [5] seconds.
3. Under the [Count] field, set the number of times to make the data request.

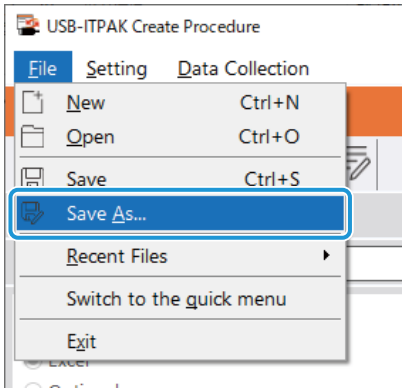
   The maximum number of times that can be set is 60,000.



Tips

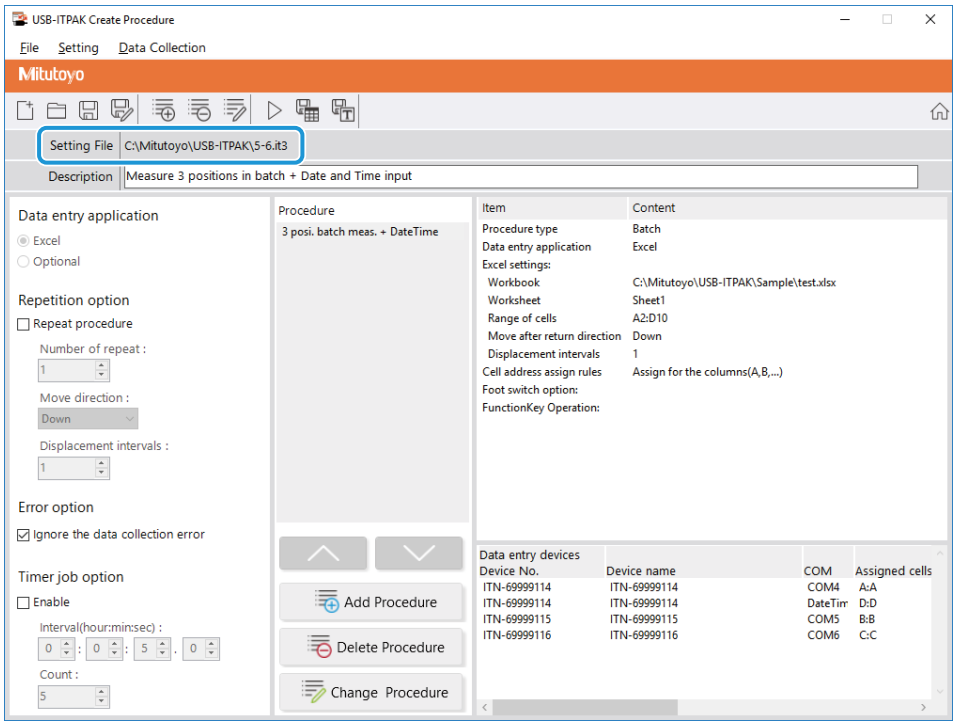
If [Excel] is set for [Data entry application], you cannot specify this setting. Data will be entered until the entry range specified in the procedure is filled.

3 From the [File] menu on the create procedure screen, select [Save As].



4 Enter a file name and save the file.

» The full path for the file name will be displayed in the [Setting File] field on the create procedure screen.



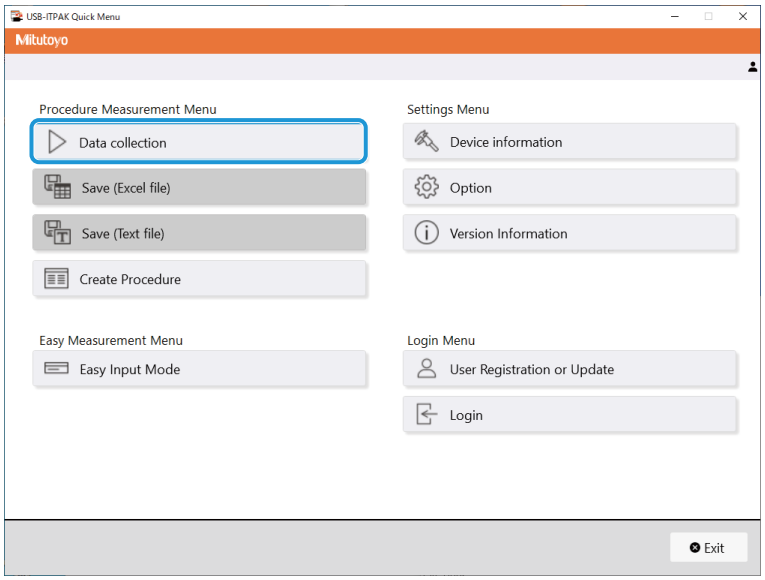
7.7.2 Collecting Measurement Data

When you are performing data collection, disable the [AutoSave] feature in Excel. For details about using Excel, see the documentation for Excel.

Tips

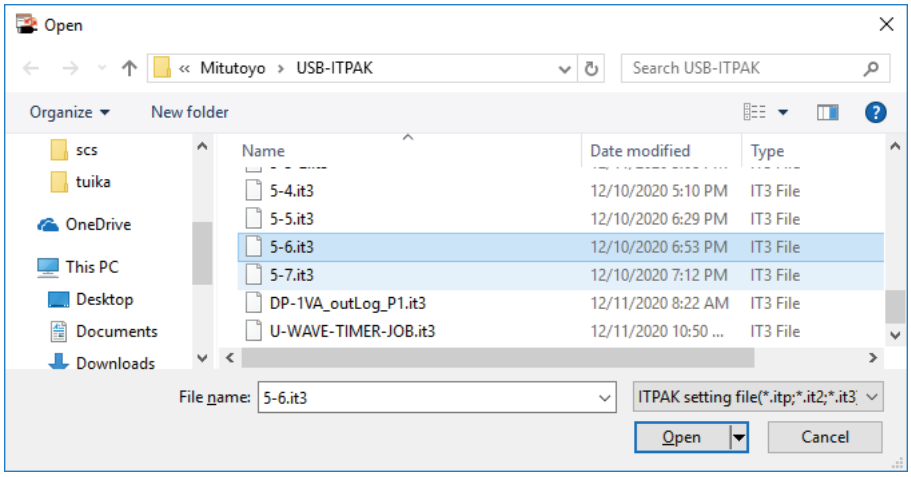
After data is collected, the Excel file where measurement data was entered is saved. If you need to keep a copy of the Excel file before it was saved, make a back-up beforehand.

1 **On the [Quick Menu] screen, click the [Data collection] button.**



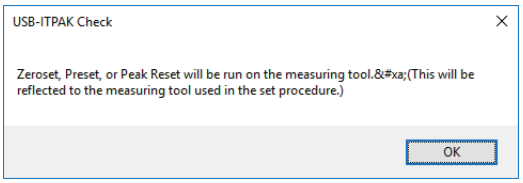
» The setting file selection dialog box appears.

2 **Select the setting file.**



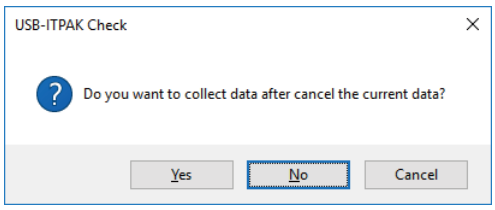
Tips

- By selecting [Open] or [Recent Files] from the [File] menu on the create procedure screen, you can also select the setting file. If you selected the setting file on the create procedure screen, click the data collection start icon from the tool bar on the create procedure screen.
- If a measuring tool that supports Digimatic S1 communication is specified, the following dialog box appears. To set zero point, preset, and peak reset on the measuring tool at once, click the [Yes] button.



» The dialog box appears to prompt you to select the existing data handling method.

3 Select the existing data handling method.



[Yes]: The existing data in the Excel file where data will be entered is deleted, and cells where data will be entered are cleared.

[No]: The existing data in the Excel file where data will be entered remains.

[Cancel]: The dialog box closes, and you return to the [Quick Menu] screen or the create procedure screen.

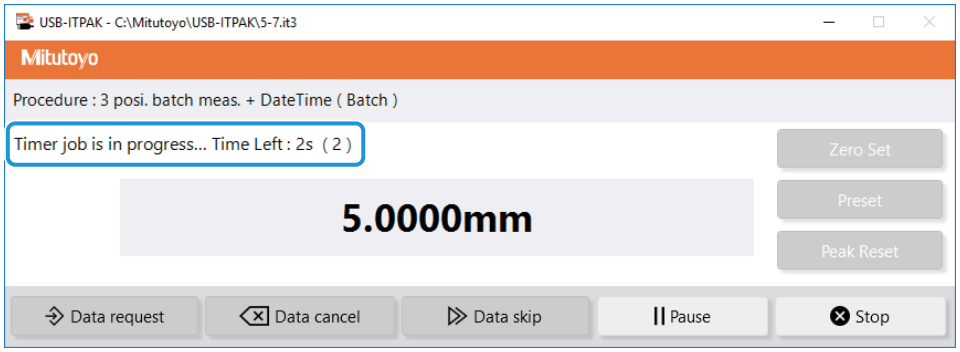
» If you click the [Yes] or [No] button, the data collection screen will be displayed.

Tips

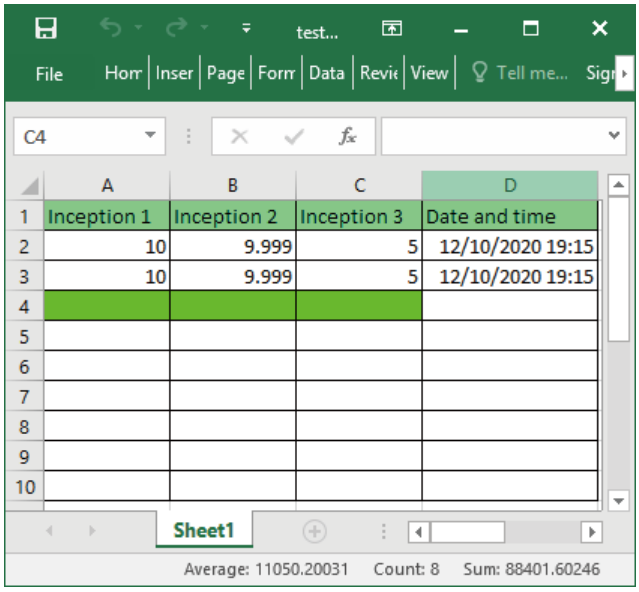
If you click [No], the data collection screen will be paused. In this case, backup the Excel file before resuming data collection. For details, see "■ Pausing/resuming operation when collecting data in Excel" (page 206).

» The time remaining (in seconds) until the next data request is made and the number of times data collection has been executed are displayed on the data collection screen.

For example, in the following screen shot [4s] indicates there are 4 seconds remaining, and [(3)] indicates execution has occurred three times.



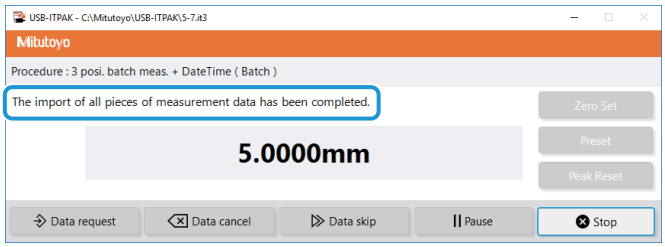
During data collection, the next cells into which data will be entered are displayed in green.



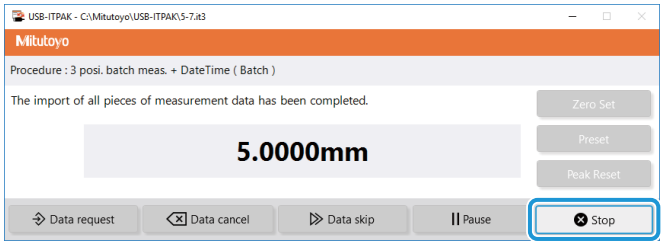
Tips

Because data is being collected automatically at the specified time interval, the collection operation cannot be started with the [Data request] button on the data collection screen or the DATA switch on a measuring tool.

» When all the data has been entered, a completion message will be displayed on the data collection screen.



4 Click the [Stop] button.



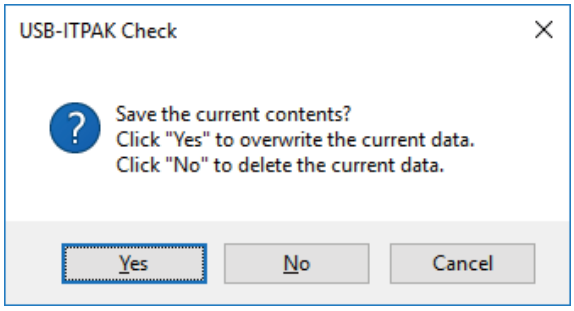
» A confirmation message will be displayed.

5 Click one of the following buttons:

[Yes]: The Excel file where measurement data was entered is saved, and the display switches to the [Quick Menu] screen or the create procedure screen.

[No]: The display switches to the [Quick Menu] screen or the create procedure screen without saving the Excel file where measurement data was entered.

[Cancel]: The confirmation message closes, and you return to the data collection screen.



7.8 Entering DP-1VA Log Data (Sequential Measurement/Individual Measurement Only)

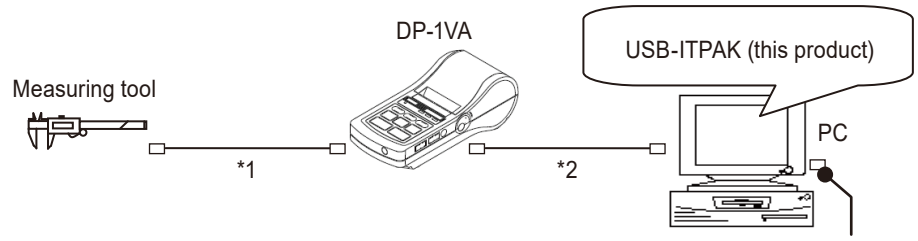
DP-1VA can save measurement data as log data in its internal memory.

This section explains how to enter the log data into the PC. To create the setting file, the methods for configuring the procedure are explained using the examples in "■ Connection example" and "■ Log data entry example" below.

For details about operating DP-1VA, see 📖 "DP-1VA LOGGER User's Manual".

■ Connection example

One measuring tool is connected to DP-1VA.

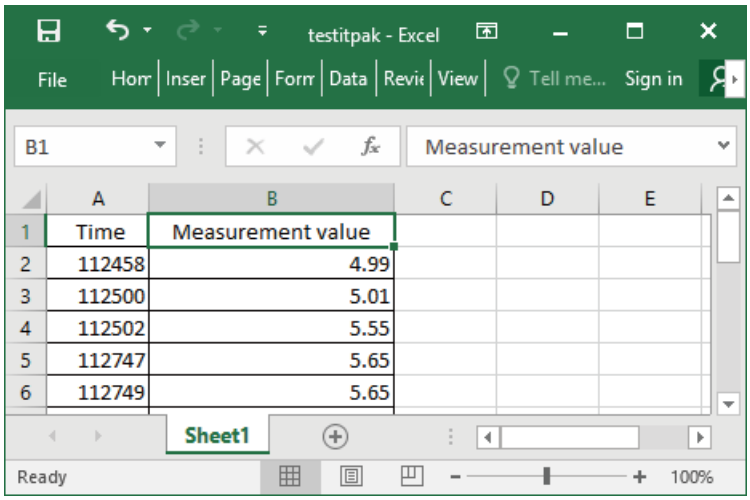


*1: Digimatic connecting cable
*2: Commercially-available USB cable (A to Micro B)

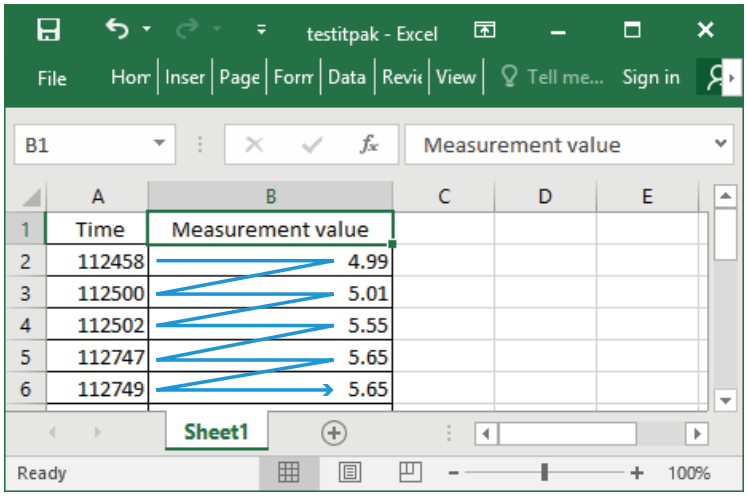
■ Log data entry example

Log data that corresponds to the output format specified by the DP-1VA parameter setting: [OUT LOG] can be entered by long pressing (pressing and holding for 1 second or more, then releasing) the DP-1VA [OUT LOG] button.

An example of an Excel file after the log data has been entered is shown below. (In this example, the parameter setting: [OUT LOG] (log output setting) is set to [1] (time/measurement value output).)

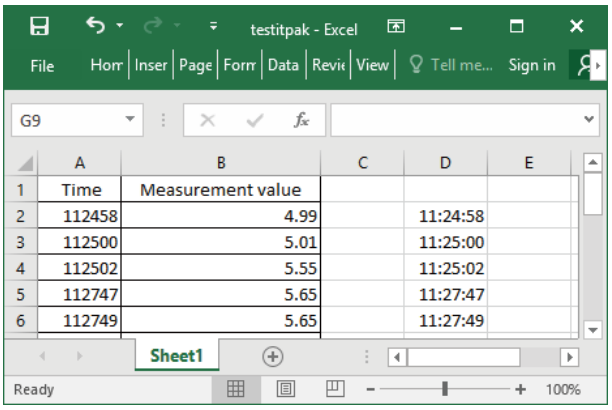


The time (time when measurement data was entered into DP-1VA) is entered in column A, and the measurement data is entered in column B.
Data is entered in the following order, according to the settings of the sequential procedure of USB-IT-PAK.



Tips

- Entry that does not include the time or that includes the date is also possible.
  For details, see "DP-1VA LOGGER User's Manual".
- The time is entered as an unformatted number as in "81947" (cell A2). In this case the number represents "8 o'clock 19 minutes 47 seconds". You can display a time value with the Excel TIME function. Use the function as necessary.
  Column D shows an example of using the TIME function.



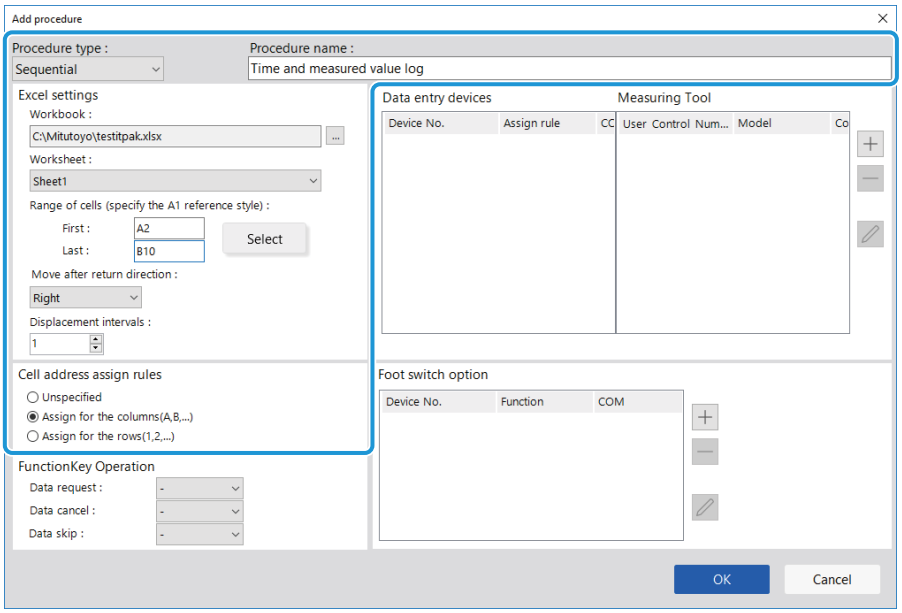
7.8.1 Creating the Setting File

1 Connect the devices you will use to the PC, and configure the items on the [Add procedure] screen in USB-ITPAK.

For details, see the following:

- Sequential measurement: "6.2.1 Creating the Setting File" (page 30)
- Individual measurement: "6.4.1 Creating the Setting File" (page 57)

As an example, here we configure the items with the following contents.



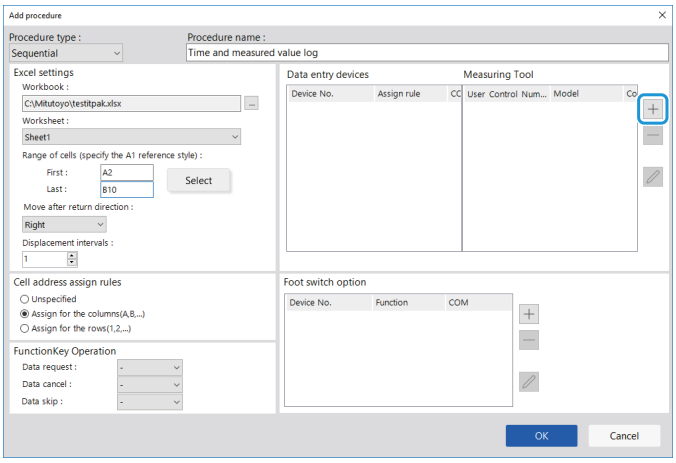
Tips

To use an existing setting file to perform measurement, proceed to the procedure in "7.8.2 Collecting Log Data" (page 144).

2 In the [Data entry devices] field, configure the information for the data entry devices.

1 In the [Data entry devices] field, click the [+] button.

» The [Data entry device settings] screen will be displayed.

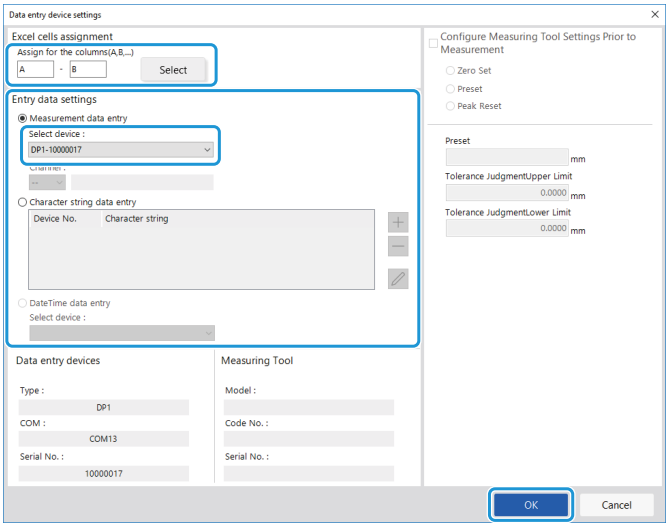


2 On the [Data entry device settings] screen, configure the items and then click the [OK] button.

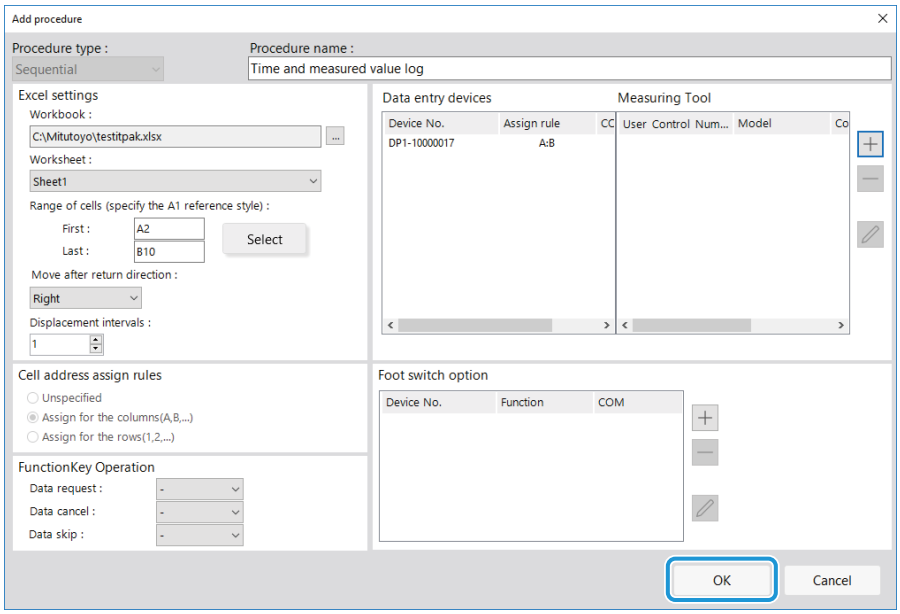
For details, see the following:

- Sequential measurement: "6.2.1 Creating the Setting File" (page 30)
- Individual measurement: "6.4.1 Creating the Setting File" (page 57)

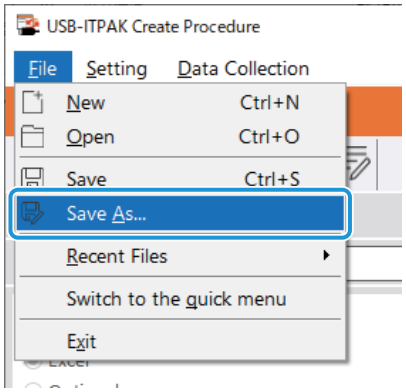
As an example, here we configure the items with the contents on the right.



3 Click the [OK] button.

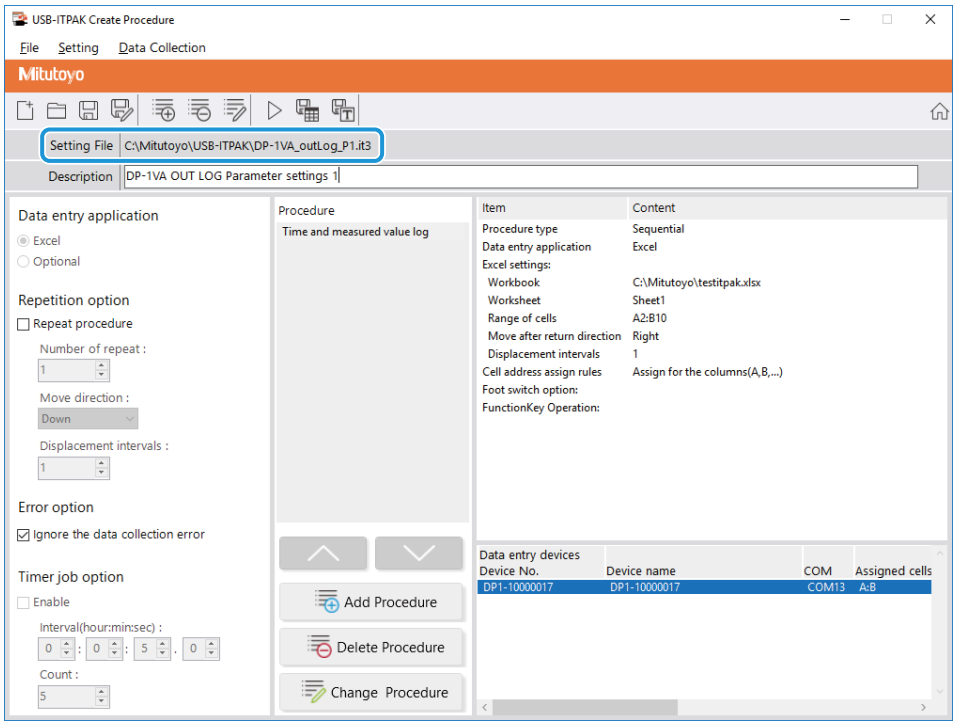


4 From the [File] menu on the create procedure screen, select [Save As].



5 Enter a file name and save the file.

» The full path for the file name will be displayed in the [Setting File] field on the create procedure screen.



7.8.2 Collecting Log Data

When you are performing data collection, disable the [AutoSave] feature in Excel. For details about using Excel, see the documentation for Excel.

Tips

After data is collected, the Excel file where measurement data was entered is saved. If you need to keep a copy of the Excel file before it was saved, make a back-up beforehand.

1 Open the setting file to use, and then open the data collection screen.

For details, see the following:

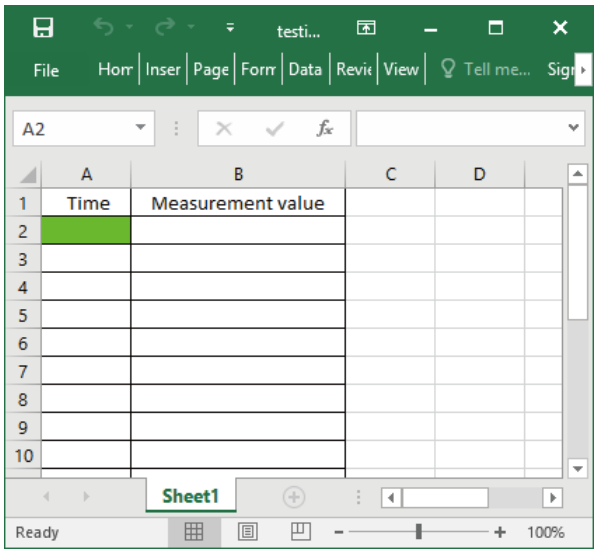
- Sequential measurement: "6.2.2 Collecting Measurement Data" (page 37)
- Individual measurement: "6.4.2 Collecting Measurement Data" (page 64)

2 Start the collection operation for log data.

Long press the DP-1VA [OUT LOG] button to start the collection operation.

» Data will be entered according to the procedure that is saved in the setting file.

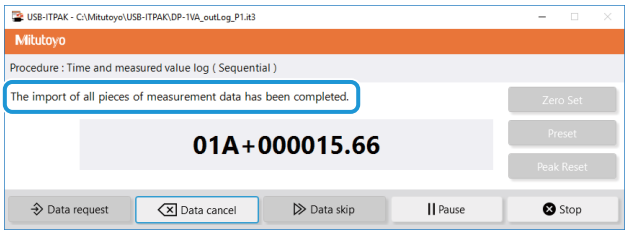
» During data collection, the next cell into which data is entered will be displayed in green.



Do not perform operations such as pressing the [Data request] button in USB-ITPAK while the log data is being collected. The log data collection operation will be stopped and may not finish correctly. If the collection operation is stopped, you must perform the following operations and then perform this procedure again from the beginning.

- Turn the power of DP-1VA off and then on again.
- Reopen the data collection screen.

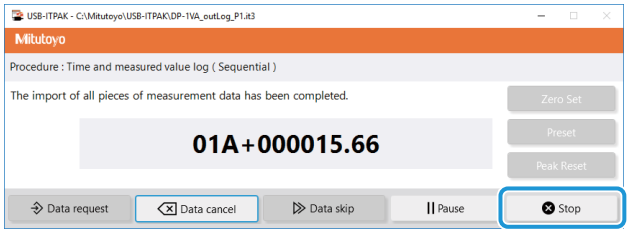
» When all the data has been entered, a completion message will be displayed on the data collection screen.



Tips

- If the DP-1VA log data does not completely fill the input cell range that is specified in USB-ITPAK, the completion message will not be displayed. Check the message that is printed by DP-1VA.
- If there is too much DP-1VA log data for the input cell range that is specified in USB-ITPAK, the completion message will be displayed when all the input cells are filled. To enter all the log data, update the input cell range.

3 Click the [Stop] button.



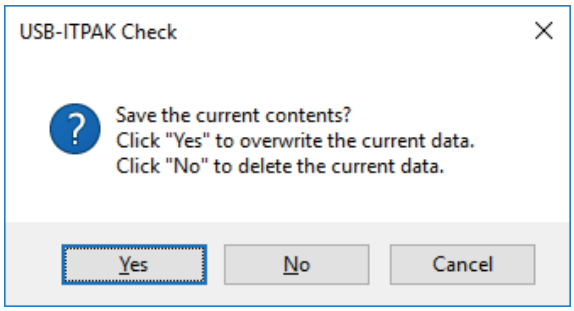
» A confirmation message will be displayed.

4 Click one of the following buttons:

[Yes]: The Excel file where measurement data was entered is saved, and the display switches to the [Quick Menu] screen or the create procedure screen.

[No]: The display switches to the [Quick Menu] screen or the create procedure screen without saving the Excel file where measurement data was entered.

[Cancel]: The confirmation message closes, and you return to the data collection screen.



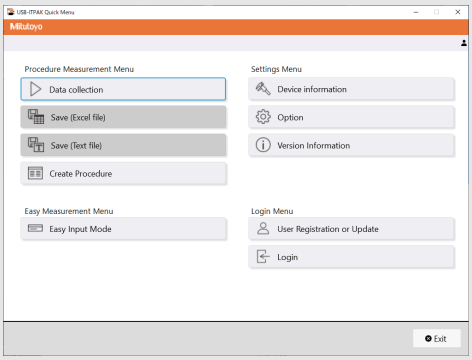
MEMO

8 USB-ITPAK Screen Structure

This chapter explains the layout and contents of each screen in USB-ITPAK.

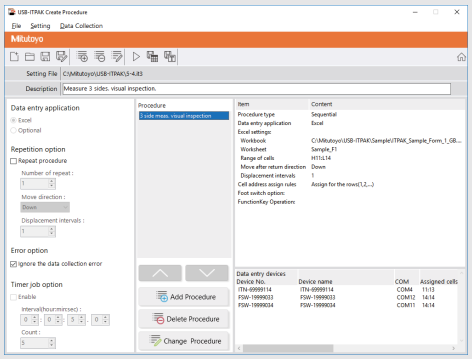
The USB-ITPAK screens are shown below.

[Quick Menu] screen



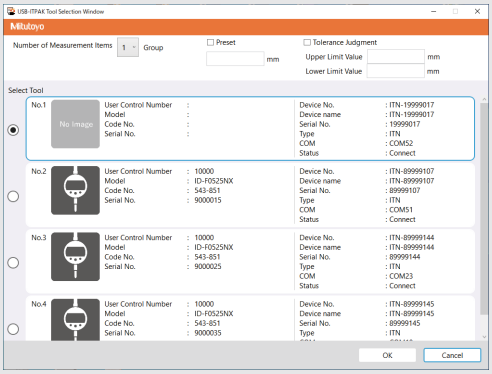
("8.1 [Quick Menu] screen" (page 150))

Create procedure screen



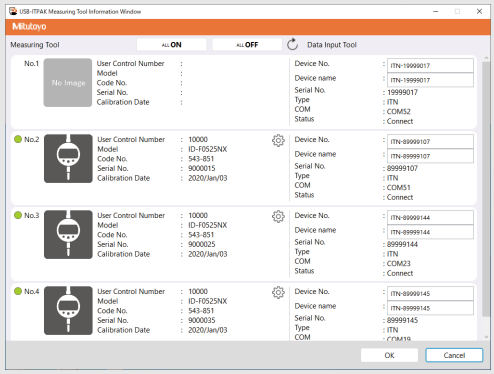
("8.2 Create Procedure Screen" (page 155))

[Tool Selection Window] screen



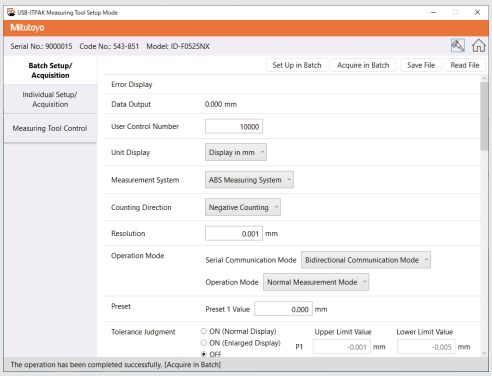
("8.3 [Tool Selection Window] Screen" (page 163))

[Measuring Tool Information Window] screen



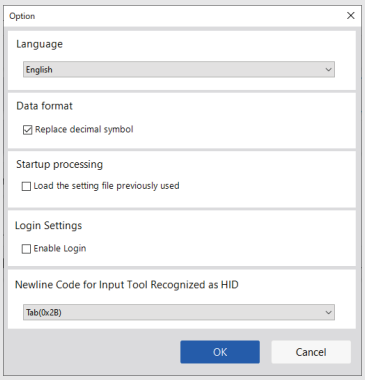
("8.4 [Device information] Screen" (page 165))

[Measuring Tool Setup Mode] screen



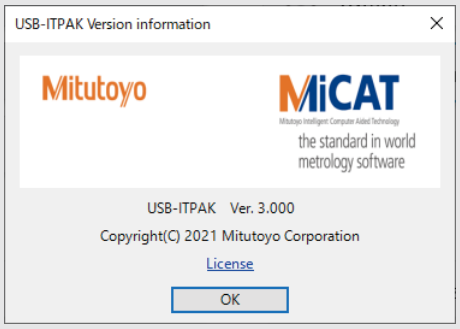
("8.4.1 [Measuring Tool Setup Mode] Screen" (page 167))

[Option] screen



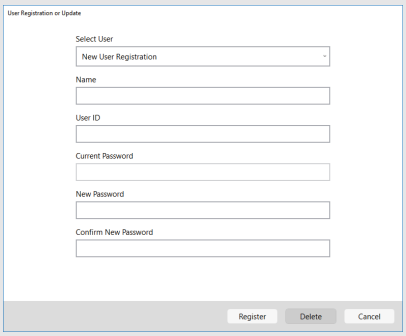
("8.5 [Option] Screen" (page 174))

[Version information] screen



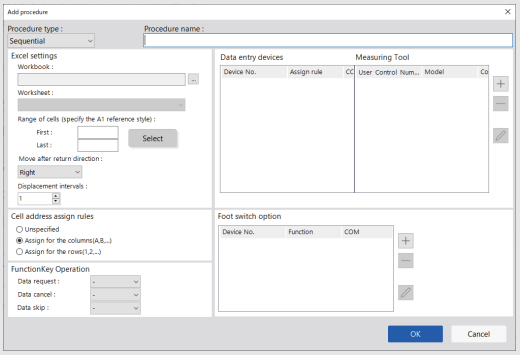
(📖 "8.6 [Version information] Screen" (page 176))

[User Registration or Update] screen



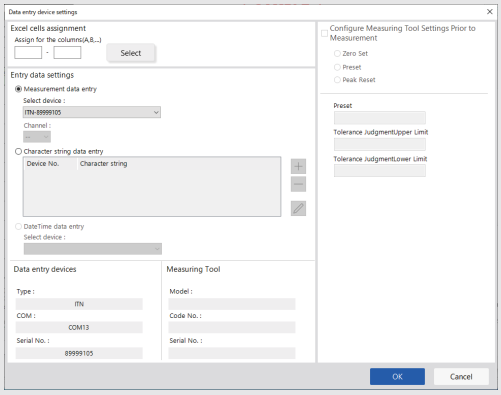
(📖 "8.7 [User Registration or Update] Screen" (page 177)"

[Add procedure] screen/[Change Procedure] screen (Excel (sequential measurement/batch measurement))



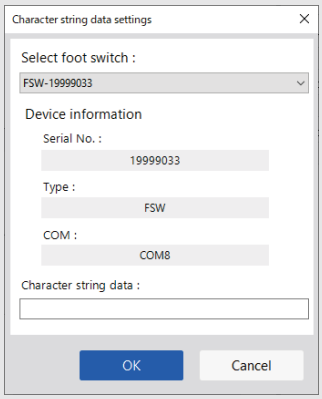
(📖 "8.8.1 Entering Data into Excel with Sequential Measurement or Batch Measurement" (page 179))

[Data entry device settings] screen (Excel (sequential measurement/batch measurement))



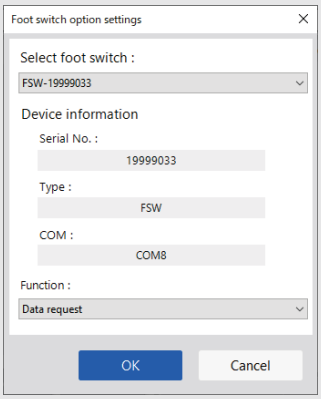
(📖 "8.9.1 Entering Data into Excel with Sequential Measurement or Batch Measurement" (page 190))

[Character string data settings] screen



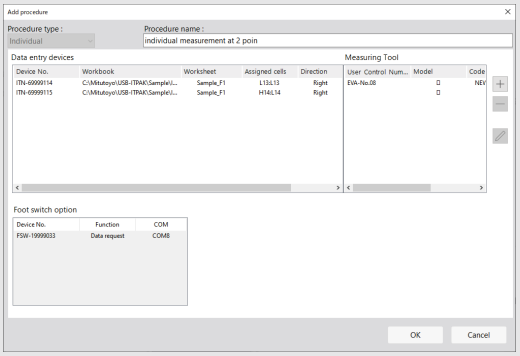
(📖 "8.10 [Character string data settings] Screen" (page 202))

[Foot switch option settings] screen



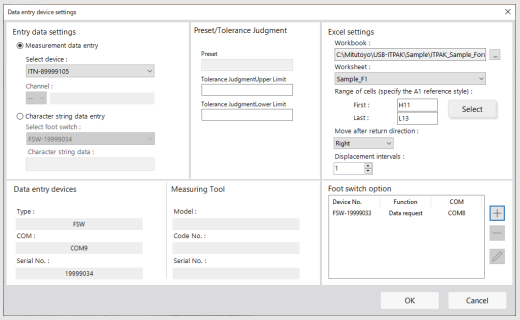
(📖 "8.11 [Foot switch option settings] Screen" (page 203))

[Add procedure] screen/[Change Procedure] screen (Excel (individual measurement))



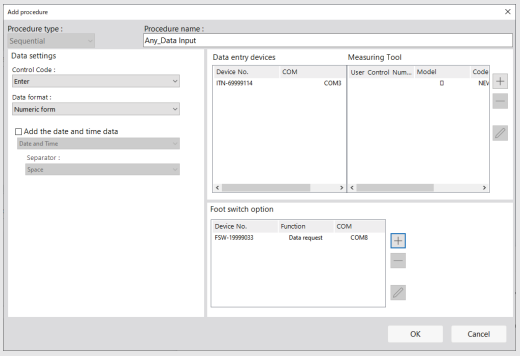
(📖 "8.8.2 Entering Data into Excel with Individual Measurement" (page 186))

[Data entry device settings] screen (Excel (individual measurement))



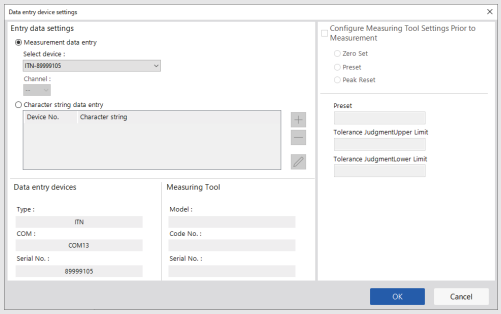
(📖 "8.9.2 Entering Data into Excel with Individual Measurement" (page 197))

[Add procedure] screen/[Change Procedure] screen (arbitrary application)



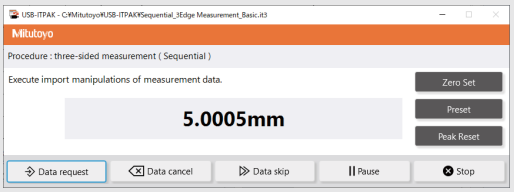
(📖 "8.8.3 Entering Data into an Arbitrary Application" (page 187))

[Data entry device settings] screen (arbitrary application)



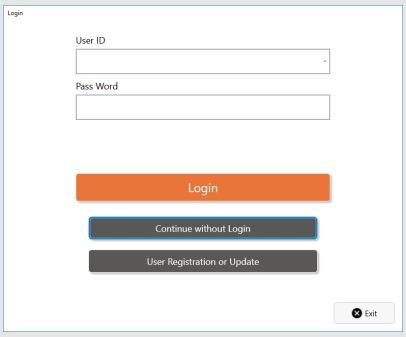
(📖 "8.9.3 Entering Data into an Arbitrary Application" (page 200))

Data collection screen



(📖 "8.12 Data Collection Screen" (page 204))

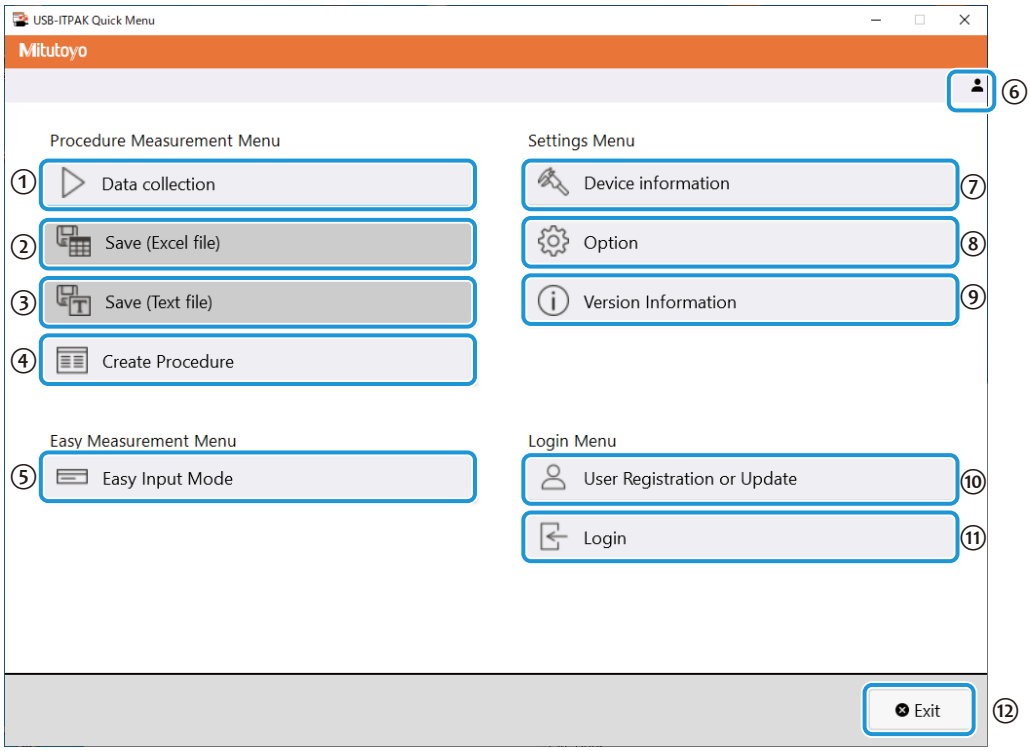
[Login] screen



(📖 "8.13 [Login] Screen" (page 209))

8.1 [Quick Menu] screen

This menu screen is for calling such screens as the data collection screen, create procedure screen, [Model information] screen, and [Select model] screen. The screen call buttons are available or unavailable depending on whether you are logged in or not or the USB dongle is connected or not.



No.	Name	Description of operation
①	[Data collection] button	After opening a setting file created beforehand, executes data collection according to the instructions displayed on the screen. For details, see 📖 "8.1.1 Operation of the [Data collection] Button" (page 152).
②	[Save (Excel file)] button	After data collection is complete by the operation of the [Data collection] button of [Quick Menu], saves the measurement data as an Excel file. For details, see 📖 "8.1.2 Operation of the [Save (Excel file)] Button" (page 153).
③	[Save (Text file)] button	After data collection is complete by the operation of the [Data collection] button of [Quick Menu], saves the measurement data as a text file. For details, see 📖 "8.1.3 Operation of the [Save (Text file)] Button" (page 154).
④	[Create Procedure] button	Displays the create procedure screen.
⑤	[Easy Input Mode] button	Selects the measuring tool to use, and collects data in the Excel. For details, see 📖 "5. Measurement Data Collection Using the Quick Entry Mode".
⑥	User ID	Displays the ID of the login user when the Login function is enabled in [Login settings] on the [Option] screen. For details, see 📖 "8.5 [Option] Screen" (page 174).
⑦	[Device information] button	Displays the [Measuring Tool Information Window] screen.

No.	Name	Description of operation
⑧	[Option] button	Displays the [Option] screen.
⑨	[About] button	Displays the [Version information] screen.
⑩	[User Registration or Update] button	Displays the [User Registration or Update] screen.
⑪	[Logout]/[Login] button	Displays the [Login] screen. The [Logout]/[Login] button is displayed when the Login function is enabled in [Login settings] on the [Option] screen. For details, see "8.5 [Option] Screen" (page 174). **Tips** • The [Logout] button is displayed when you are logged in. • Clicking the [Logout] button displays the logout completion dialog box.
⑫	[Exit] button	Exits USB-ITPAK.

Tips

The [Data collection], [Save (Excel file)], [Save (Text file)], and [Create Procedure] buttons are available when an appropriate USB dongle is connected to the PC. For details about a USB dongle, see "2.4 Connecting the USB Dongle" (page 15).

8.1.1 Operation of the [Data collection] Button

Opens a setting file created beforehand and then executes data collection according to the procedure in the setting file.

1 **Click the [Data collection] button.**

» The [Open] screen will be displayed.

2 **Open the setting file to use.**

Select a setting file (extension: itp, it2) from the list, and then click the [Open] button.

» The message [Do you want to collect data after cancel the current data?] will be displayed.

Tips

If [Load the setting file previously used] is selected under the [Startup processing] field in "8.5 [Option] Screen" (page 174), the setting file that was last used is automatically loaded when USB-ITPAK starts. If this option is enabled, proceed to step **3**.

3 **Click one of the following buttons:**

[Yes]: The input cells are cleared by deleting the measurement data that has been entered in the Excel file that is set as the output destination.

[No]: The measurement data that has been entered in the Excel file that is set as the output destination is left alone.

[Cancel]: The confirmation message closes, and you return to the [Quick Menu] screen.

» If you click the [Yes] or [No] button, the data collection screen will be displayed.

For details about the [Data collection] screen, see "8.12 Data Collection Screen" (page 204).

8.1.2 Operation of the [Save (Excel file)] Button

After data collection is complete by the operation of the [Data collection] button of [Quick Menu], save the measurement data as an Excel file.

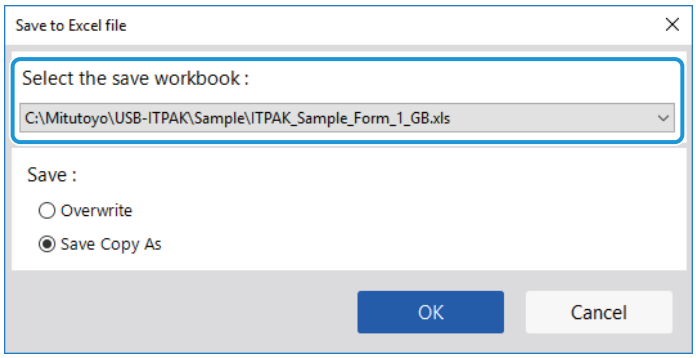
Tips

For returning to the [Quick Menu] after performing data collection from the [Create Procedure] screen, the [Save (Excel file)] button cannot be operated.

1 Click the [Save (Excel file)] button.

2 Select a file name from the [Select the save workbook] field.

From the drop-down list, select a file name for the Excel file to save.



3 Under the [Save] field, select [Overwrite] or [Save Copy As].

4 Click the [OK] button to save the file.

If you select [Save Copy As] under the [Save] field, the [Save As] screen will be displayed. Enter a file name, and then click the [Save] button.

If you are using multiple Excel workbooks with one setting file, repeat steps 1 through 3 for each file to save them.

8.1.3 Operation of the [Save (Text file)] Button

After data collection is complete by the operation of the [Data collection] button of [Quick Menu], save the measurement data as a text file.

Tips

For returning to the [Quick Menu] after performing data collection from the [Create Procedure] screen, the [Save (Text file)] button cannot be operated.

1 Click the [Save (Text file)] button.

2 Select an option under the [Save method] field.

Select the method for specifying the range of data to save from the measurement data on the Excel worksheet.

- [Follow the procedure setting range]
  The range set in the [Range of cells (specify the A1 reference style)] fields on the [Add procedure] screen of the setting file is selected.
- [Selected range]
  Directly select a range of cells on the displayed Excel file to set it.

3 Select an option under the [Separator] field.

Select a character to delimit Excel columns in the text file that is saved from the Excel worksheet data. Select from [TAB], [Comma], or [Semicolon].

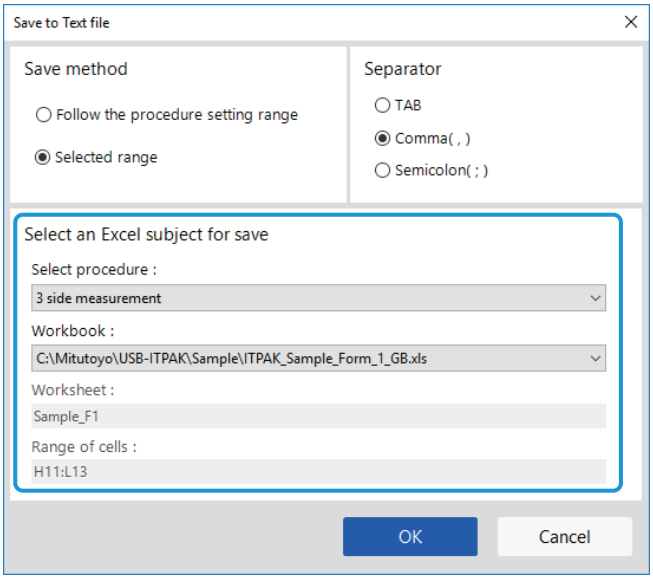
4 Select options under the [Select an Excel subject for save] field.

1 In the [Select procedure] field, select the procedure to save.

From the drop-down list, select the target procedure to save.

2 In the [Workbook] field, select the name of the Excel workbook.

From the drop-down list, select the Excel workbook name that is registered to the procedure to save.



5 Click the [OK] button.

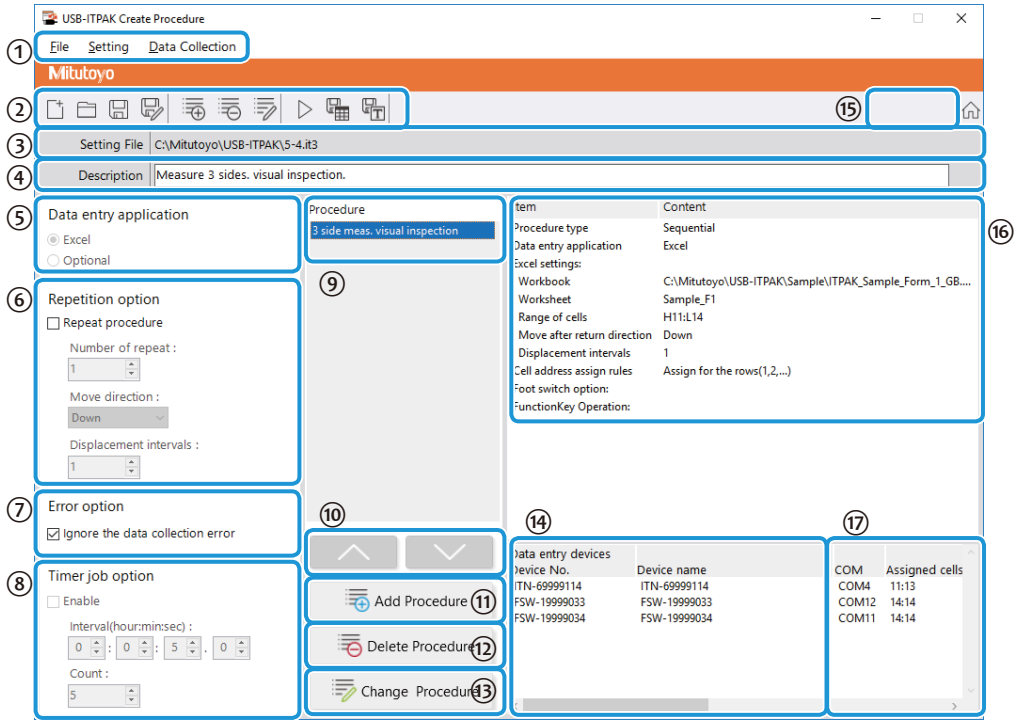
» The [Save As] screen will be displayed.

6 Enter a file name, and then click the [Save] button.

» The file will be saved.

8.2 Create Procedure Screen

This screen is for creating a setting file that contains a measurement procedure and collecting measurement data.



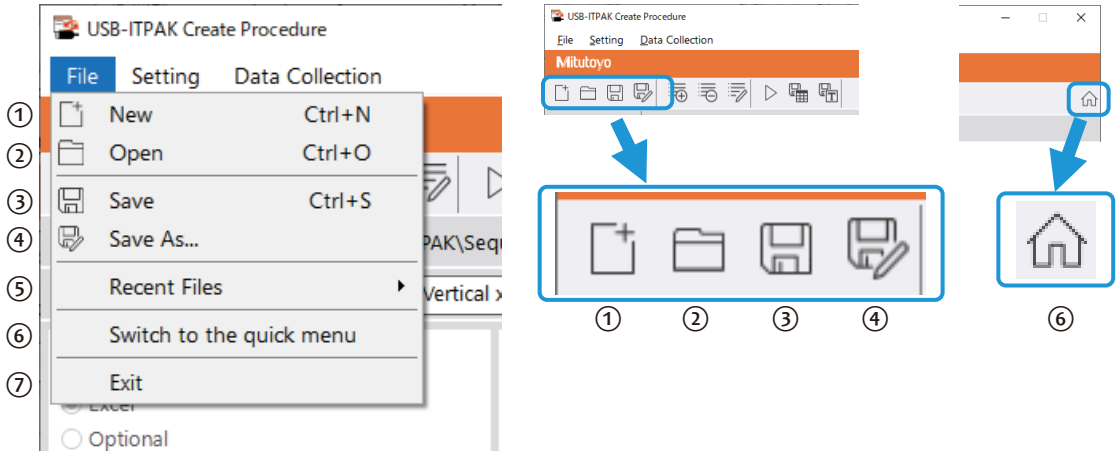
No.	Name	Function
①	Menu bar	Displays the create procedure screen functions in a menu bar. For details, see "8.2.1 [File] Menu" (page 158) to "8.2.3 [Data Collection] Menu" (page 160).
②	Tool bar	Displays the create procedure screen functions in a tool bar. For details, see "8.2.1 [File] Menu" (page 158) to "8.2.3 [Data Collection] Menu" (page 160).
③	[Setting File] field	Displays the path of the opened setting file.
④	[Description] field	Enters a description of the setting file. This field can be left blank. **Tips** Up to 100 characters can be entered.
⑤	[Data entry application] field	Select which application to enter data into. • [Excel] Enters data into Excel. • [Optional] Enters data into the application (such as Notepad or Word) that is active when data is collected.

No.	Name	Function
⑥	[Repetition option] field	Selects [Repeat procedure] and sets [Number of repeat], [Move direction], and [Displacement intervals] when running the procedure registered in the [Procedure] field multiple times during data collection. • [Number of repeat] Specifies the number of times to repeat the procedure that has been created. • [Move direction] Specifies in which direction to move the cell after data is entered ([Right] or [Down]). • [Displacement intervals] Specifies the number of cells to move after data is entered ([1] to [100]).
⑦	[Error option] field	Select [Ignore data collection errors] to ignore the following errors, which can occur during data collection. • The used device is wrong. • An error occurred during data reception. Device No. = [Device] Click [Ignore] to ignore the error and continue, or click [Retry] to try again. For details about error messages, see 📖 "10.2.8 Data Collection Screen" (page 235).
⑧	[Timer job option] field	Select [Enable] to automatically enter measurement data at the specified time interval. For details, see 📖 "8.2.4 [Timer job option] Field" (page 161).
⑨	[Procedure] field	Displays a list of procedure names of the procedures that have been created.
⑩	[▲][▼] buttons	Moves the procedure selected in the [Procedure] field up or down one line.
⑪	[Add Procedure] button	Creates a new procedure. For details, see 📖 "8.2.2 [Setting] Menu" (page 159).
⑫	[Delete Procedure] button	Deletes a procedure that has been created. For details, see 📖 "8.2.2 [Setting] Menu" (page 159).
⑬	[Change Procedure] button	Modifies a procedure. For details, see 📖 "8.2.2 [Setting] Menu" (page 159).

No.	Name	Function
⑭	[Data entry devices] field	Displays information about the devices to be used for data collection (USB-ITN, USB-FSW, U-WAVE-R, IT-0xxU, DP-1VA). The first three characters under [Device No.] and [Device name] will be displayed as identification information, according to the connected model as follows: • ITN: USB-ITN, IT-0xxU • DP1: DP-1VA • FSW: USB-FSW • UWR: U-WAVE-R **Tips** • If USB-FSW will be used for entering character string data, it will be displayed in the field for displaying detailed information about the devices to be used for data collection. • If USB-FSW will be used for requesting data or canceling data entry, it will be displayed under the [Foot switch option] field in the procedure details field. • [ITN] is displayed for IT-0xxU because it is treated as a model of USB-ITN device. For IT-0xxU, [8] is displayed as the first numeral of the numeric part, as in [ITN-8*******], so you can identify each model by the serial number following the identification information.
⑮	User ID	Displays the ID of the login user when the Login function is enabled in [Login settings] on the [Option] screen. For details, see "8.5 [Option] Screen" (page 174).
⑯	Procedure details field	Displays the settings of the procedure that is selected in the [Procedure] field.
⑰	[Measuring tool information] field	Displays [User Control Number], [Model], [Code No.], and [Serial No.] of the measuring tool.

8.2.1 [File] Menu

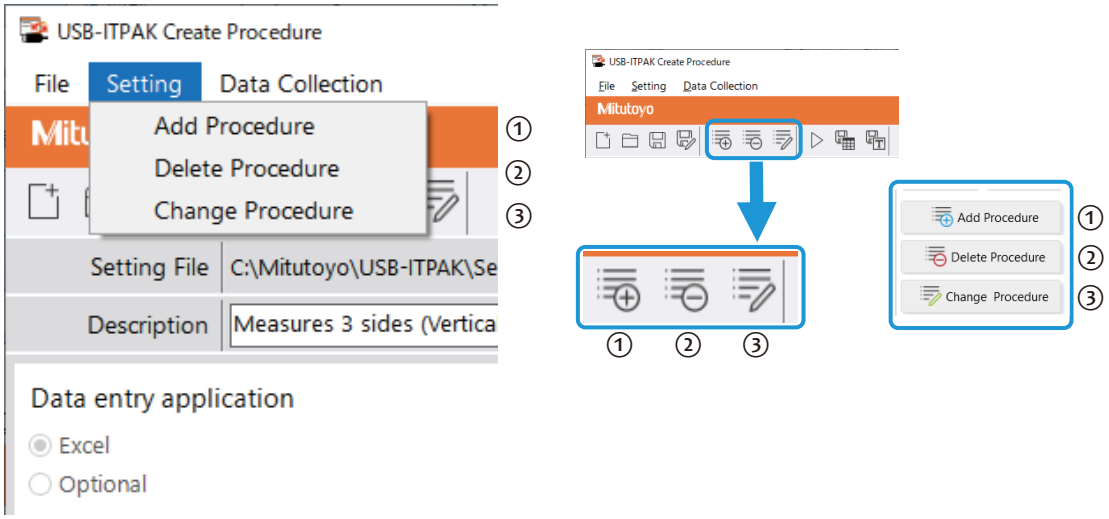
This menu is for opening and saving setting files.



No.	Name	Function
①	[New]	Creates a new setting file. This operation can also be performed by clicking icon ① on the tool bar.
②	[Open]	Opens a saved setting file. This operation can also be performed by clicking icon ② on the tool bar.
③	[Save]	Saves the setting file by overwriting the existing file. This operation can also be performed by clicking icon ③ on the tool bar.
④	[Save As]	Saves the setting file under a new name. This operation can also be performed by clicking icon ④ on the tool bar.
⑤	[Recent Files]	Opens a setting file by selecting it from the sub menu that is displayed. The sub menu displays the five most recently opened or saved setting files.
⑥	[Switch to the quick menu]	Switches the display from the create procedure screen to the [Quick Menu] screen. This operation can also be performed by clicking icon ⑥ on the tool bar.
⑦	[Exit]	Exits USB-ITPAK.

8.2.2 [Setting] Menu

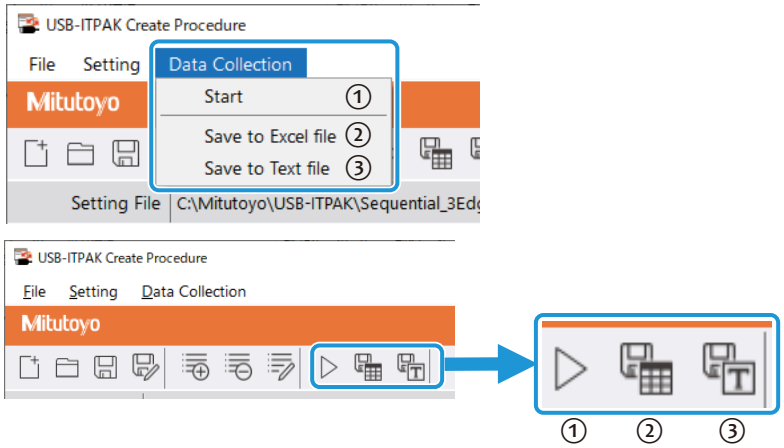
This menu is for adding/deleting/modifying procedures.



No.	Name	Function
①	[Add Procedure]	Creates a new procedure in the open setting file. This operation can also be performed by clicking icon ① on the tool bar or button ① on the create procedure screen.
②	[Delete Procedure]	Deletes the procedure that is selected in the [Procedure] field on the create procedure screen. This operation can also be performed by clicking icon ② on the tool bar or button ② on the create procedure screen.
③	[Change Procedure]	Modifies the procedure that is selected in the [Procedure] field on the create procedure screen. This operation can also be performed by clicking icon ③ on the tool bar or button ③ on the create procedure screen.

8.2.3 [Data Collection] Menu

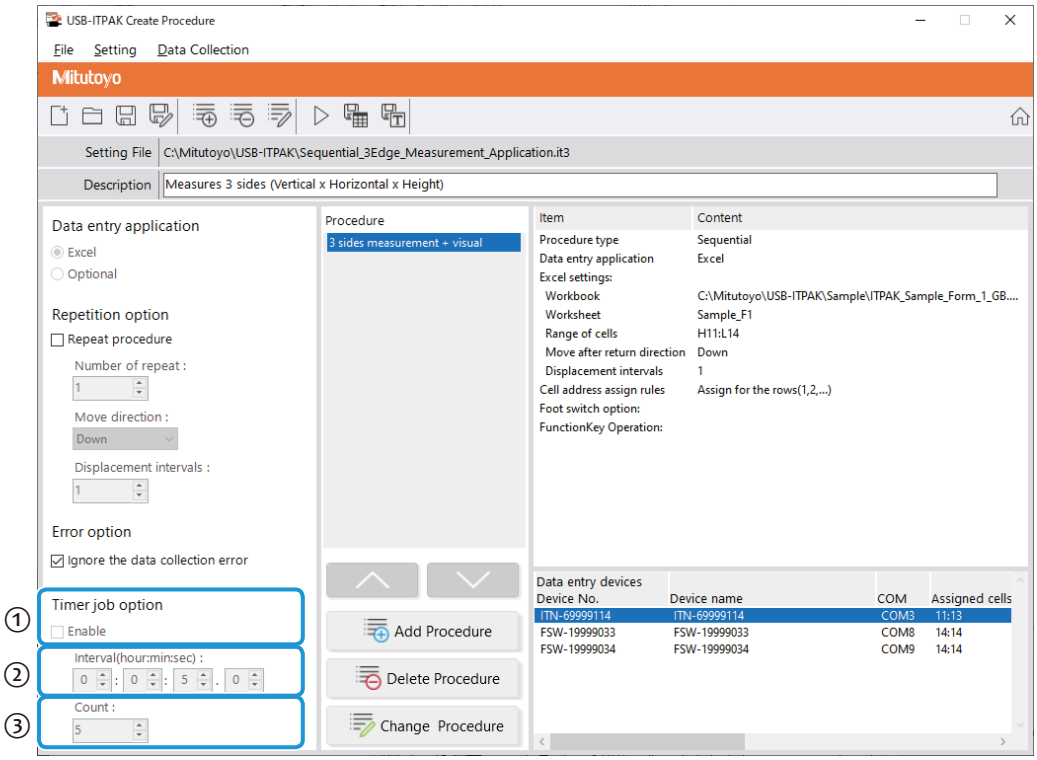
This menu is for starting data collection and saving after data collection is complete.



No.	Name	Function
①	[Start]	Starts the data collection operation. This operation can also be performed by clicking icon ① on the tool bar.
②	[Save to Excel file]	Saves the collected data as an Excel file. This operation can also be performed by clicking icon ② on the tool bar. For details, see "8.1.2 Operation of the [Save (Excel file)] Button" (page 153).
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. For details, see "8.1.3 Operation of the [Save (Text file)] Button" (page 154).

8.2.4 [Timer job option] Field

These settings are for automatically entering measurement data at a specified time interval. You can use this function with batch measurement.



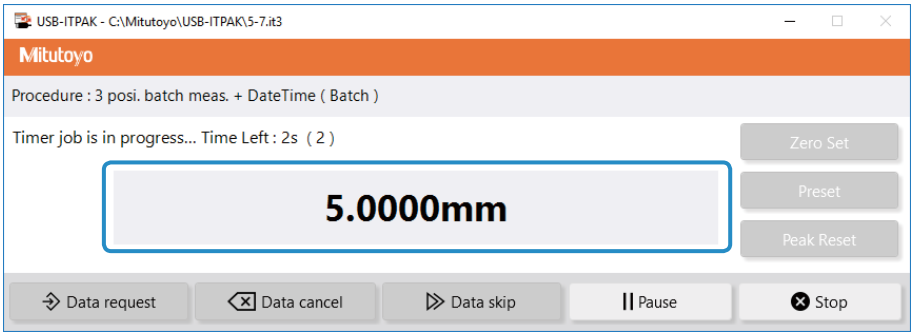
No.	Name	Function
①	[Enable] field	Specifies whether to enable this setting. If you select [Enable], the items ② through ③ can be set. This field can be selected only with batch measurement. **Tips** If you add a sequential measurement procedure, this setting will not be available.
②	[Interval(hour:min:sec)] field	Sets the time interval for making data requests. The allowable interval is from 0.0 seconds to 24 hours (0:0:0.0 to 24:0:0.0).
③	[Count] field	Sets the number of times to make data requests. The maximum number of times that can be set is 60,000. **Tips** If [Excel] is set for [Data entry application], you cannot specify this setting. Data will be entered until the entry range specified in the procedure is filled.

Tips

- During data collection, a certain amount of transmission time (T1) is required to read in the measurement data from the measuring tool. Therefore, if the time interval specified in the [Interval(hour:min:sec)] field (T2) is less than the transmission time (T1), the actual data collection time interval (T3) will differ from the specified interval. Note that the transmission time (T1) differs depending on the device that is used for data entry and the number of devices. For one device, the transmission time (T1) is about 0.3 seconds for USB-ITN or IT-0xxU, about 1 second for DP-1VA (when printing), and about 0.1 seconds for a U-WAVE transmitter. However, with a U-WAVE transmitter, 0.5 seconds is included in the transmission time (T1), regardless of the number of devices.

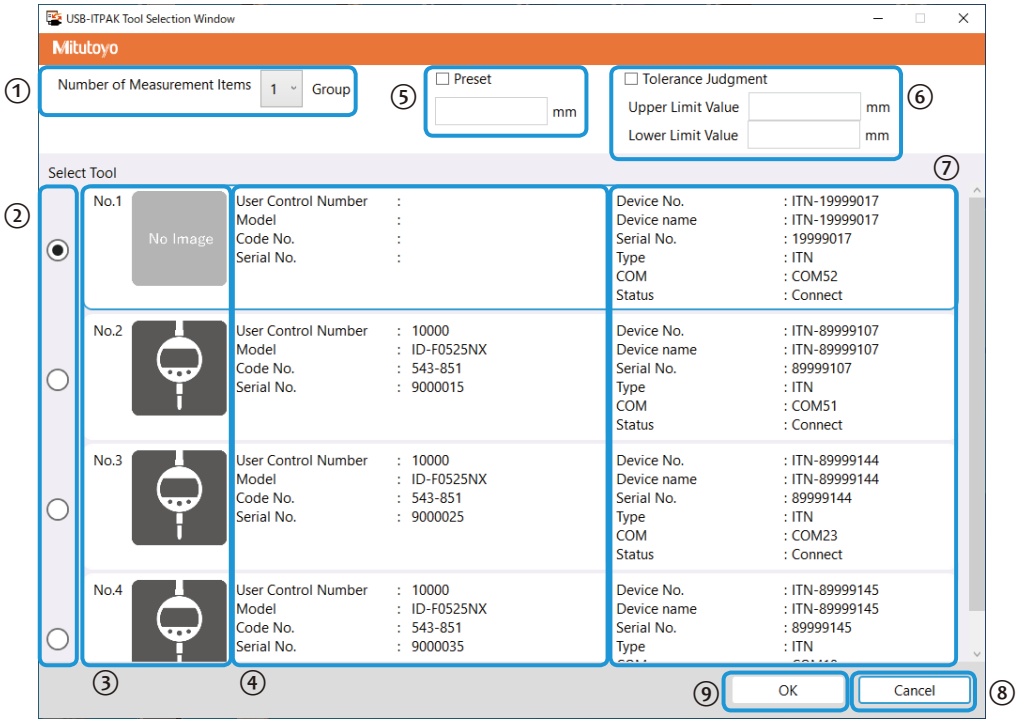
Data entry device	No. of devices	T1	T2	T3	
USB-ITN / IT-0xxU	1	0.3 s	< 0.5 s	0.5 s	Same as the specified interval
	2	0.6 s	> 0.5 s	0.6 s	Exceeds the specified interval
	3	0.9 s	> 0.5 s	0.9 s	
DP-1VA	1	1 s	> 0.5 s	1 s	Exceeds the specified interval
U-WAVE transmitter	1	0.6 s	= 0.6 s	0.6 s	Same as the specified interval
	2	0.7 s	> 0.6 s	0.7 s	Exceeds the specified interval
	3	0.8 s	> 0.6 s	0.8 s	

- With a U-WAVE transmitter, if the data collection time interval (T2) is less than 0.6 seconds, blank data might be entered even if the value in the measuring tool has changed.



8.3 [Tool Selection Window] Screen

Select the number of measurement items and a device you will use for measurement. On the [Quick Menu] screen, click the [Easy Input Mode] button to display this screen.

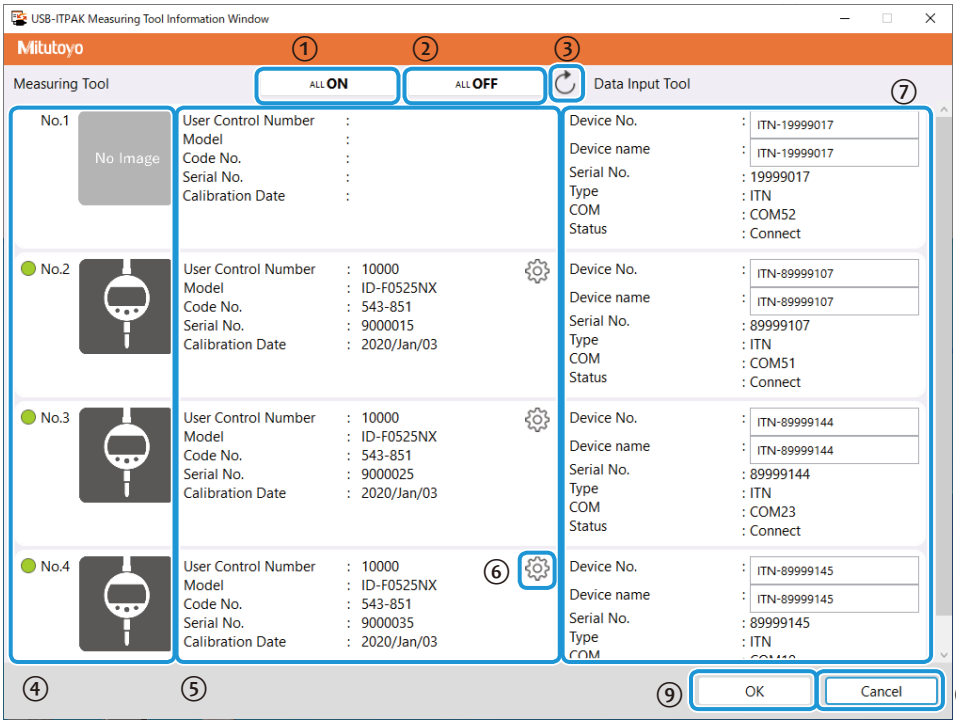


No.	Name	Function
①	[Number of Measurement Items] field	Sets the number of measurement points.
②	[Select Tool] field	Selects a measuring tool to use.
③	Measuring tool type	Displays the measuring tool type with one of the following icons: : Caliper : Height gauge : Micrometer : Dial gauge : No icon **Tips** For a measuring tool that does not support Digimatic S1 communication, "No Image" will be displayed as the measuring tool type.
④	Measuring tool information	Displays [User Control Number], [Model], [Code No.], and [Serial No.] of the measuring tool. **Tips** For a measuring tool that does not support Digimatic S1 communication, the measuring tool information will be blank.
⑤	[Preset] field	Select this checkbox to apply preset and set the preset value. **Tips** [Preset] is configurable when [Number of Measurement Items] is set to "1" and a measuring tool that supports Digimatic S1 communication is selected.

No.	Name	Function
⑥	[Tolerance Judgment] field	Select this checkbox to apply tolerance judgment and set the upper and lower limits. **Tips** [Tolerance Judgment] is configurable when [Number of Measurement Items] is set to "1".
⑦	Data entry device information	Displays [Device No.], [Device name], [Serial No.], [Type], and [COM] of the data entry device.
⑧	[Cancel] button	Returns to the [Quick Menu] screen.
⑨	[OK] button	Displays the data collection screen.

8.4 [Device information] Screen

This screen is for setting device information. On the [Quick Menu] screen, click the [Device information] button to display this screen.

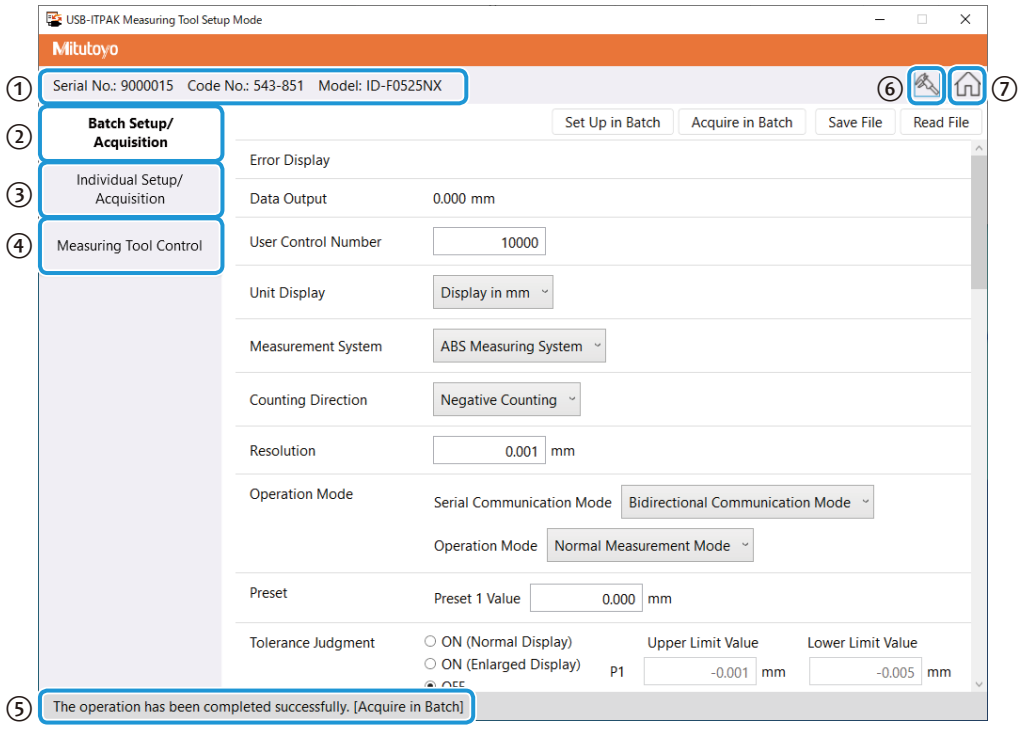


No.	Name	Function
①	[ALL ON] button	Turns on the measuring tool.
②	[ALL ON] button	Turns off the measuring tool.
③	Refresh button	Checks the connection status of the measuring tools again and refreshes the screen.
④	Measuring tool type	Displays the measuring tool type with one of the following icons: : Caliper : Height gauge : Micrometer : Indicator : No icon **Tips** For a measuring tool that does not support Digimatic S1 communication, "No Image" will be displayed as the measuring tool type.
⑤	Measuring tool information	Displays [User Control Number], [Model], [Code No.], [Serial No.], and [Calibration Date] of the measuring tool. **Tips** For a measuring tool that does not support Digimatic S1 communication, the measuring tool information will be blank.
⑥	Setting mode button	Displays the [Measuring Tool Setup Mode] screen. **Tips** The setting mode button appears for a measuring tool that supports Digimatic S1 communication.

No.	Name	Function
⑦	Data entry device information	• Displays [Device No.], [Device name], [Serial No.], [Type], and [COM] of the data entry device. • Up to 20 single-byte alphanumeric characters and symbols can be entered in [Device No.]. • Up to 32 characters can be entered in [Device name].
⑧	[Cancel] button	Discards the setting changes and returns to the [Quick Menu] screen.
⑨	[OK] button	Saves the setting changes and returns to the [Quick Menu] screen.

8.4.1 [Measuring Tool Setup Mode] Screen

This screen is for setting measuring tool information. Click the setting mode button on the [Measuring Tool Information Window] screen to display this screen.



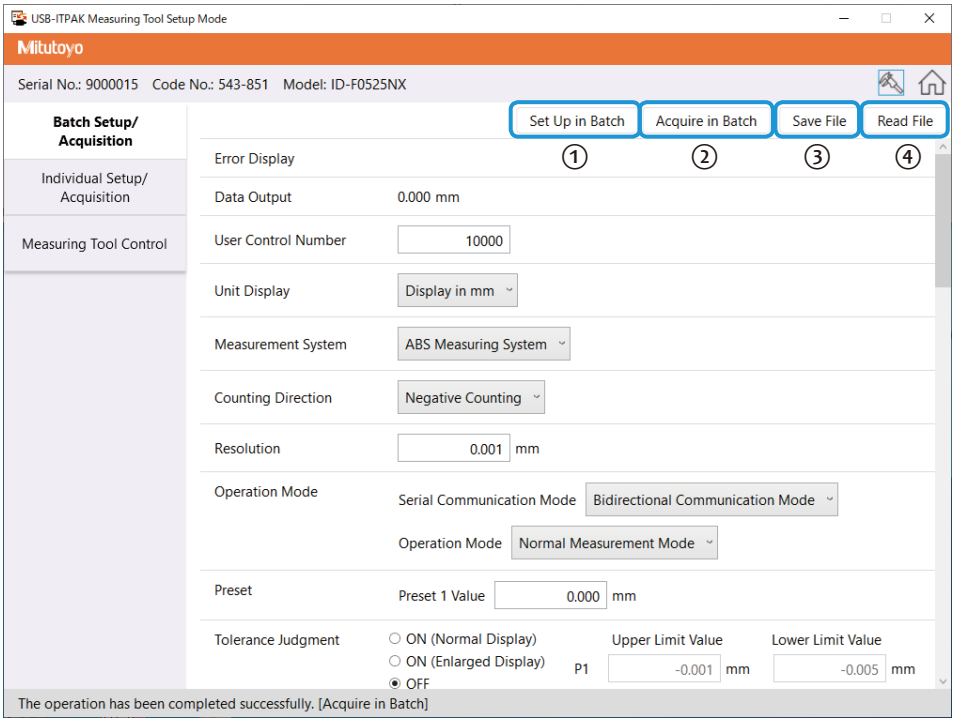
No.	Name	Function
①	Measuring tool information	Displays [Serial No.], [Code No.], and [Model] of the measuring tool. **Tips** If the following information is received from the measuring tool, the corresponding icon will be displayed: : Receiving error information : Receiving a voltage drop : Receiving a calibration timing alarm
②	[Batch Setup/Acquisition] tab	Sets or retrieves all measuring tool items at once. It is also used to save measuring tool setting information in a file or load it from a file. **Tips** For details about each item of the measuring tool, see the user's manual attached to the tool.
③	[Individual Setup/Acquisition] tab	Sets or retrieves measuring tool items individually. It is also used to send a command and receive the response result.
④	[Measuring Tool Control] tab	Sets the power control to the measuring tool.
⑤	Process status	Displays the process status.
⑥	Device selection button	Returns to the [Measuring Tool Information Window] screen.
⑦	Quick menu button	Displays the [Quick Menu] screen.

Tips

- On the [Measuring Tool Setup Mode] screen, "NACK" will be displayed in the field of the items that are not supported by the measuring tool.
- On the [Measuring Tool Setup Mode] screen, "Error" or "Input error" will be displayed in the field that has imperfect setup contents such as a format error.

■ [Batch Setup/Acquisition] tab

The [Batch Setup/Acquisition] tab is for setting or retrieving all measuring tool items at once. It is also used to save measuring tool setting information in a file or load it from a file.



No.	Name	Function
①	[Set Up in Batch] button	Sets all the displayed information to the measuring tool.
②	[Acquire in Batch] button	Retrieves and displays all the information set to the measuring tool.
③	[Save File] button	Saves the displayed information to a specific location.
④	[Read File] button	Loads and displays the information from a file.

● Setting items

No.	Name	Description
1	Error Display	Displays the display error.
2	Data Output	Displays the display value data output.
3	User Control Number	Displays the user management number. Up to 10 single-byte alpha-numeric characters and symbols can be specified.
4	Unit Display	Displays the display unit. It can also be selected.
5	Measurement System	Displays the display coordinate system. It can also be selected.
6	Counting Direction	Displays the counting direction. It can also be selected.

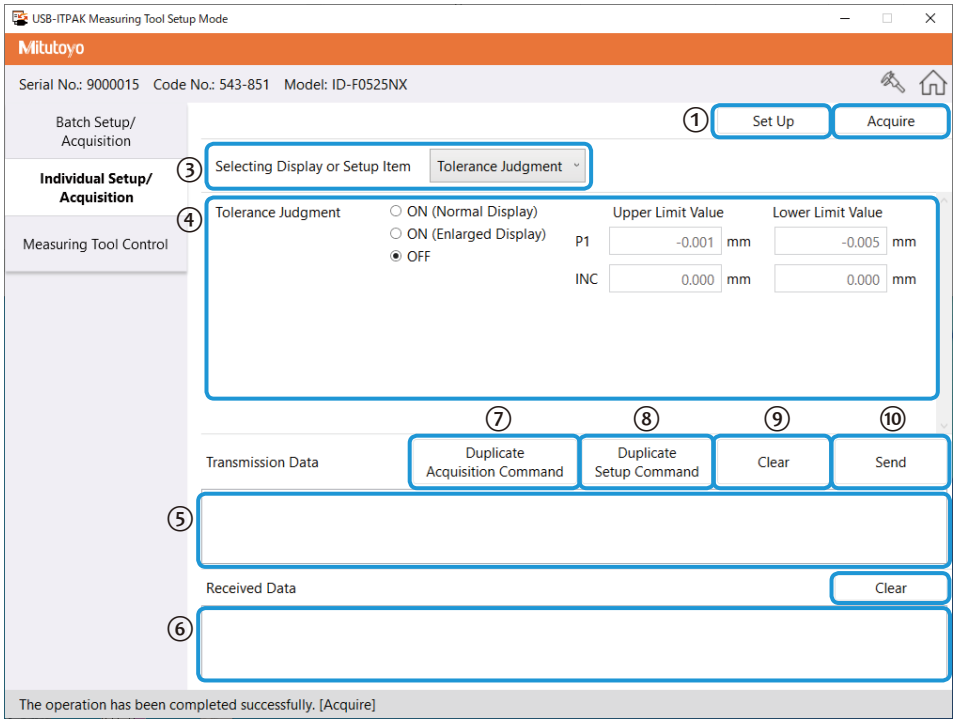
No.	Name	Description
7	Resolution	Displays the minimum display value. It can also be specified as up to an 8-digit number. **Tips** The resolution cannot be set unless it is the value supported by the measuring tool. Check with the measuring tool's User's Manual for the resolution.
8	Operation Mode	Displays the operating mode. It can also be selected. **Tips** When you click the [Select all] button, all the checkboxes are selected. Clicking the [Clear all] button clear all the checkboxes.
9	Preset 1 value	Displays the preset value. It can also be specified as up to an 8-digit number.
10	Tolerance Judgment	Displays the tolerance judgment setting. It can also be set. **Tips** [Arithmetic coefficient A] → [Calculation coefficient A] [Arithmetic coefficient C] → [Calculation coefficient C]
11	Upper Limit Value/Lower Limit Value	Displays the upper and lower limits for Preset 1. They can also be specified as up to an 8-digit number.
12	Upper Limit Value/Lower Limit Value	Displays the upper and lower limits for INC. They can also be specified as up to an 8-digit number.
13	Calculation	Displays the arithmetic function. It can also be set. **Tips** [Arithmetic coefficient A] → [Calculation coefficient A] [Arithmetic coefficient C] → [Calculation coefficient C]
14	Calculation coefficient A	Displays the arithmetic coefficient. It can also be specified as up to an 8-digit number.
15	Current Date	Displays the current date. It can also be set.
16	Calibration Warning Function	Displays the Calibration Timing Warning function ON/OFF. It can also be set.
17	Calibration Warning Displayed	Displays the calibration timing alarm.
18	Last Calibration Date	Displays the previous calibration date. It can also be set.
19	Prior Warning Date	Displays the advance warning date. It can also be set.
20	Next Calibration Date	Displays the next warning date. It can also be set.
21	Analog Bar Display	Displays the analog bar display ON/OFF. It can also be set. **Tips** When you select the [ON] option button, the analog bar display value can be set.
22	Analog Bar Graduation Value	Displays the analog bar display value. It can also be specified as up to an 8-digit number.
23	Auto-off Time	Displays the auto-off time ON/OFF. It can also be set. **Tips** When you select the [ON] option button, the auto-off time can be specified as a number between 0 and 127.

No.	Name	Description
24	Digimatic 1/2 Switching	Retrieves Digimatic setting status set to the measuring tool. Digimatic settings can also be set to the measuring tool.
25	Switch Function Select	Retrieves Switch Function Select information set to the measuring tool. Arbitrary Switch Function Select information can also be set to the measuring tool.
26	Display Hold	Displays the display hold ON/OFF. It can also be set.
27	Function Lock	Displays the Function Lock ON/OFF. It can also be set. **Tips** When you select the [ON] option button, the Function Lock item can be set.
28	Function Lock Item	Displays the Function Lock item. It can also be set. **Tips** When you click the [Select all] button, all the checkboxes are selected. Clicking the [Unselect all] button unselects all the checkboxes.
29	Parameter Lock	Displays the parameter lock ON/OFF. It can also be set. **Tips** When you select the [ON] option button, the parameter lock item can be set.
30	Parameter Lock Item	Displays the parameter lock item. It can also be set. **Tips** When you click the [Select all] button, all the checkboxes are selected. Clicking the [Unselect all] button unselects all the checkboxes.
31	Current Position Data Output	Displays the current position data output.
32	FW Version	Displays the firmware version.
33	Corporation Name	Displays the manufacturing company name.

■ [Individual Setup/Acquisition] tab

The [Individual Setup/Acquisition] tab is for setting or retrieving measuring tool items individually. It is also used to send a command and receive the response result.

If the [Individual Setup/Acquisition] tab was used to set measuring tool items individually, click the [Aquire] button or the [Batch load] button in the [Batch Setup/Acquisition] tab to retrieve the measuring tool setting information again.



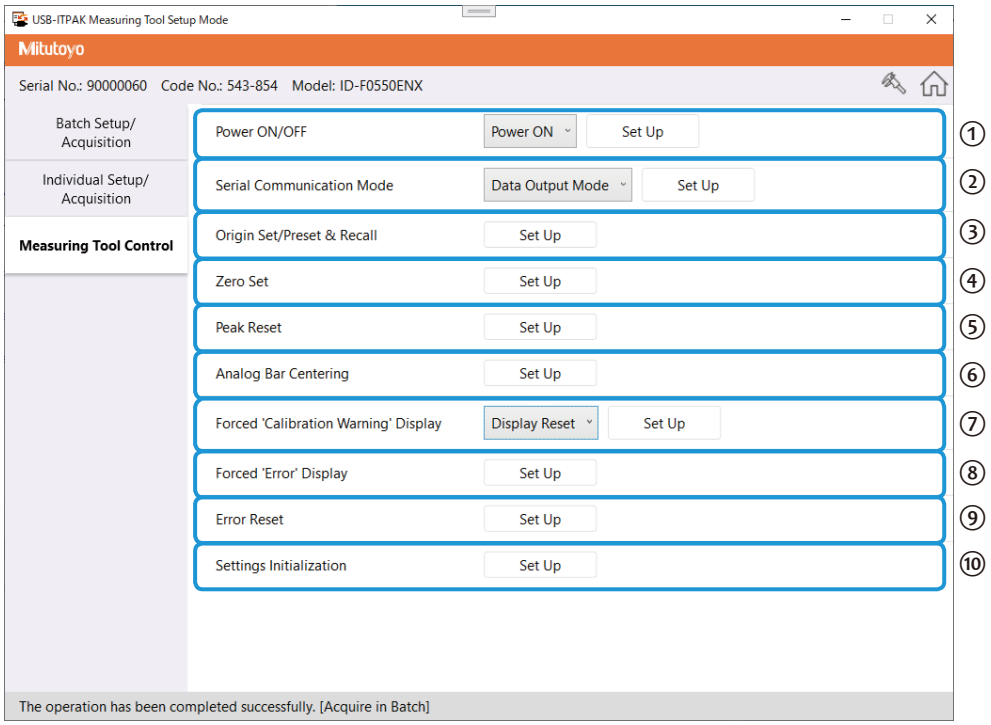
No.	Name	Function
①	[Set Up] button	Sets the displayed information to the measuring tool.
②	[Acquire] button	Retrieves and displays all the information set to the measuring tool.
③	[Selecting Display or Setup Item] field	Selects the setting items.
④	Setting items	Displays the setting items that are selected in the [Select Display or Setup Item] field. **Tips** The displayed items are the same as in the [Batch Setup/Acquisition] tab. For details, see "● Setting items" (page 168).
⑤	[Transmission Data] field	Enters a command to be sent to the measuring tool. **Tips** • Enter a send command in one line at a time. • To enter multiple send commands, separate them with line feeds.
⑥	[Received Data] field	Displays the response data from the measuring tool.
⑦	[Duplicate Acquisition Command] button	Displays the commands to retrieve the setting items that are selected in the [Select Display or Setup Item] field in the [Send data] field.

No.	Name	Function
⑧	[Duplicate Setup Command] button	Displays the commands to set the information in the setting items to the measuring tool in the [Transmission Data] field.
⑨	[Clear] button	Deletes the information in the [Transmission Data] field.
⑩	[Send] button	Sends the information in the [Transmission Data] field to the measuring tool.
⑪	[Clear] button	Deletes the information in the [Received Data] field.

■ [Measuring Tool Control] tab

The [Measuring Tool Control] tab is for setting the power control to the measuring tool.

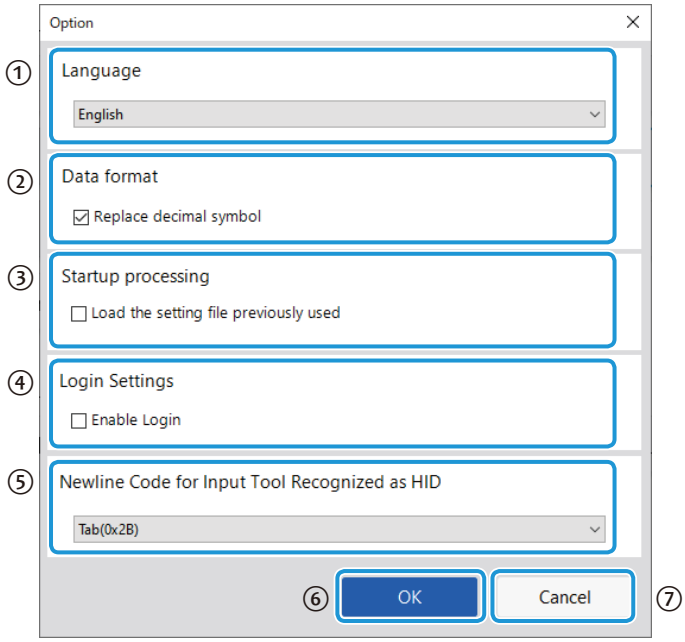
If the [Measuring Tool Control] tab was used to set a measuring tool, click the [Batch load] button in the [Batch Setup/Acquisition] tab or the [Acquire] button in the [Individual Setup/Acquisition] tab to retrieve the measuring tool setting information again.

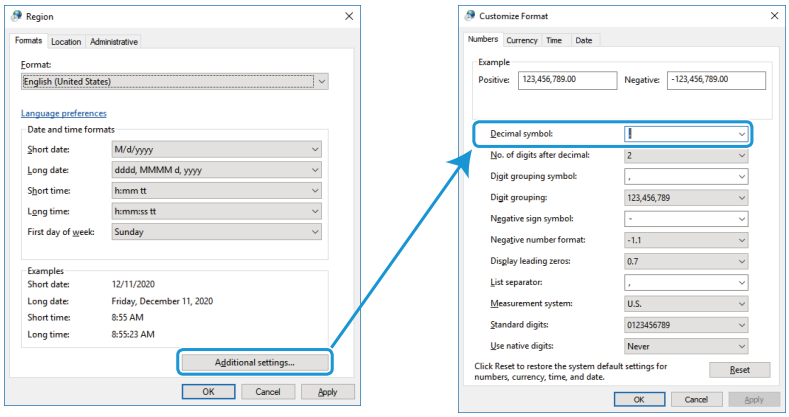


No.	Name	Function
①	[Power ON/OFF] field	Sends the power ON/OFF to the measuring tool.
②	[Serial Communication Mode] field	Sends the communication mode to the measuring tool.
③	[Origin Set/Preset & Recall] field	Sends the origin set/preset recall to the measuring tool.
④	[Zero Set] field	Sends the zero set to the measuring tool.
⑤	[Peak Reset] field	Sends the peak reset to the measuring tool.
⑥	[Analog Bar Centering] field	Sends the analog bar reset to the measuring tool.
⑦	[Forced 'Calibration Warning' Display] field	Sends the display reset/forcible display to the measuring tool.
⑧	[Forced 'Error' Display] field	Sends the forcible error display to the measuring tool.
⑨	[Error Reset] field	Sends the error reset to the measuring tool.
⑩	[Settings Initialization] field	Sends the setting initialization to the measuring tool.

8.5 [Option] Screen

This screen is for setting the operation of USB-ITPAK.

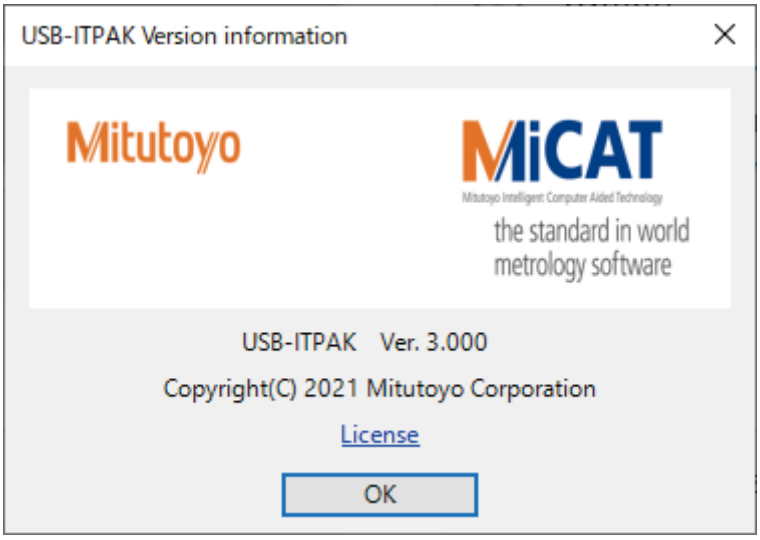


No.	Name	Function
①	[Language] field	Select the language to use for USB-ITPAK.
②	[Data format] field	Select [Replace decimal symbol] to use the decimal separator specified in Windows. By default, USB-ITPAK uses a period [.] as the decimal separator for measurement data. **Tips** The symbol that is set as the decimal separator in Windows can be confirmed in [Decimal symbol] on the [Customize Format] screen in [Control Panel] + [Clock, Language, and Region] + [Region and Language] + [Additional settings]. 

No.	Name	Function
③	[Startup processing] field	Sets the startup operation of USB-ITPAK. • [Load the setting file previously used] When you click the [Data collection] button on the [Quick Menu] screen, the setting file that was last used is loaded, and the data collection screen will be displayed. If you click the [Create Procedure] button on the [Quick Menu] screen, the create procedure screen will be displayed with the setting file that was last used opened.
④	[Login Settings] field	Select [Enable Login] to enable the Login function.
⑤	[Newline Code for Input Tool Recognized as HID] field	Select the key scan code used by USB-ITN in the HID mode.
⑥	[OK] button	Saves the setting changes.
⑦	[Cancel] button	Discards the setting changes.

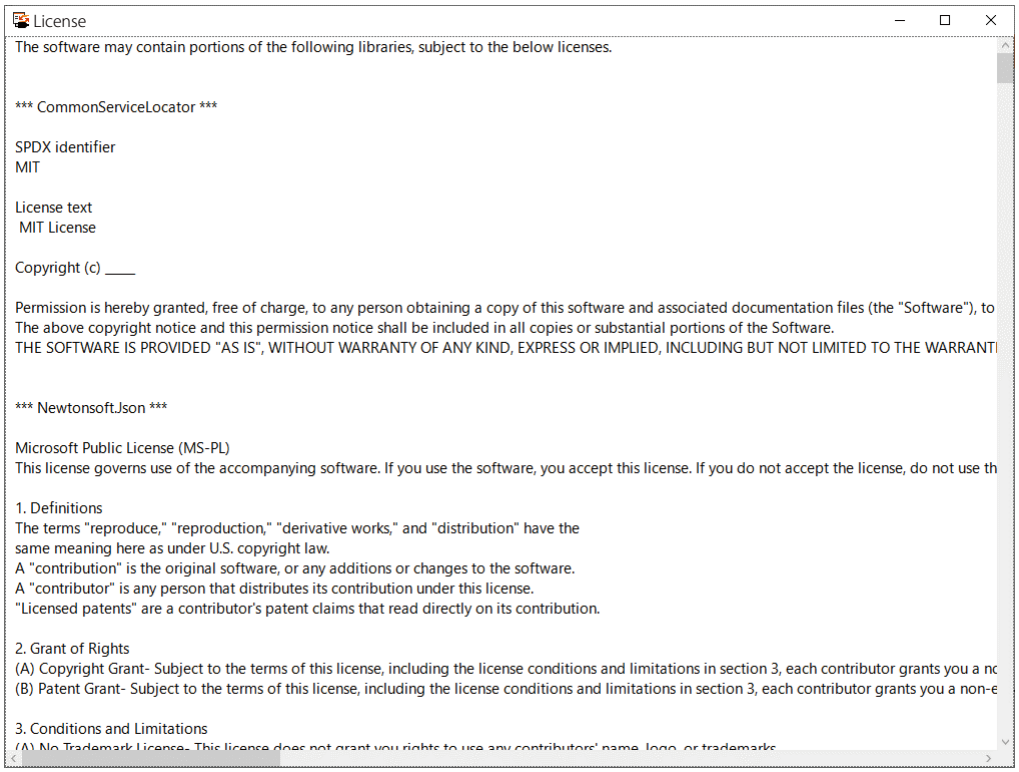
8.6 [Version information] Screen

This screen is for displaying version information about USB-ITPAK.



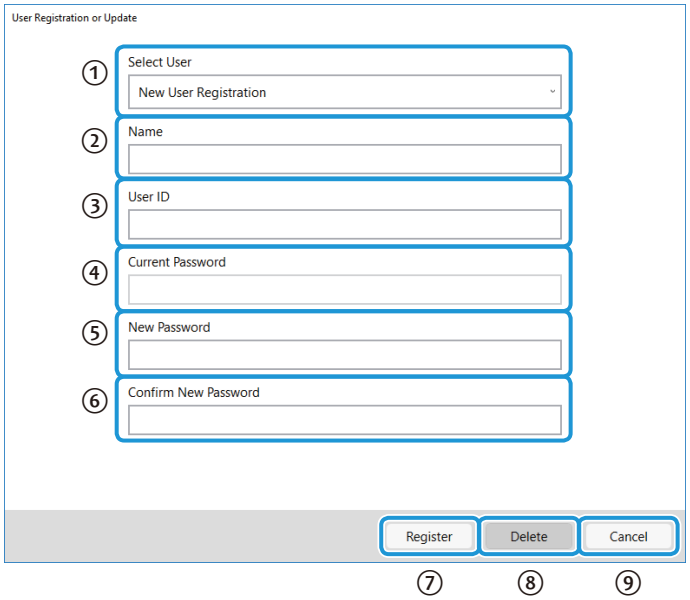
■ To display the [License] screen

Click [License] on the [Version information] screen.



8.7 [User Registration or Update] Screen

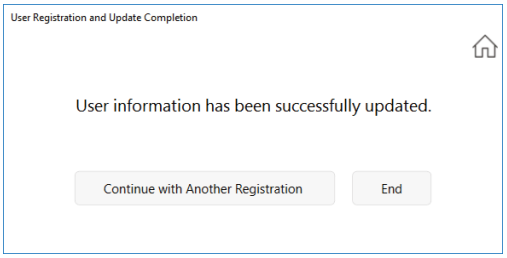
This screen is for registering users used in the Login function.



No.	Name	Function
①	[Select User] field	Select a user to update. To register a new user, select [New User Registration].
②	[Name] field	Sets a user name consisting of up to 32 characters.
③	[User ID] field	Sets a user ID consisting of 8 to 32 single-byte alphanumeric characters and symbols. **Tips** • An existing user ID cannot be specified. • To use an existing user ID, delete it first.
④	[Current Password] field	To change the password, enter the current password.
⑤	[New Password] field	Sets a new password string consisting of 8 to 32 single-byte alphanumeric characters and symbols. **Tips** The following character strings cannot be used for the password: • Character string already used as the password for the same user ID • Same character string as the current password
⑥	[Confirm New Password] field	Enters the same character string as in the [New Password] field.
⑦	[Register] button.	Registers the settings.
⑧	[Delete] button	Deletes the information of the user ID that is selected in the [Select User] field.
⑨	[Cancel] button	Discards the setting changes.

Tips

Clicking the [Register] or [Delete] button displays the [User Registration and Update Completion] dialog box.

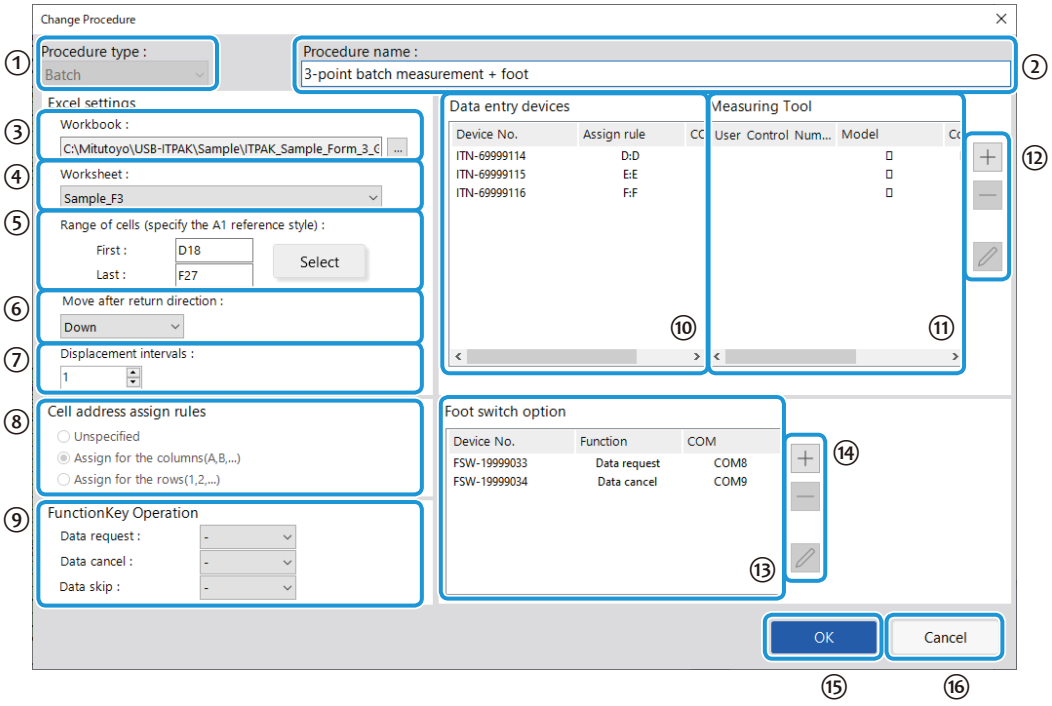


8.8 [Add procedure] Screen/[Change Procedure] Screen

The [Add procedure] screen is for creating a new procedure. The [Change Procedure] screen is for modifying a procedure that has been created.

On the create procedure screen, click the [Add Procedure] button to display the [Add procedure] screen. Or, select a procedure in the [Procedure] field and then click the [Change Procedure] button to display the [Change Procedure] screen.

8.8.1 Entering Data into Excel with Sequential Measurement or Batch Measurement



No.	Name	Function
①	[Procedure type] field	Select [Sequential], [Batch], or [Individual] as the procedure type for data collection. For details, see 📖 "6 Measurement Data Collection Using the Procedure Measurement Menu (Basic Operation)" (page 27).
②	[Procedure name] field	Enter the name for the procedure you are creating. The procedure name is displayed in the [Procedure] field in the center of the create procedure screen. Enter a name that will be easy to recognize when checking. **Tips** Up to 32 characters can be entered.
③	[Workbook] field	Select the destination file in which to enter measurement data. You can click the [...] button to select the file to use from the [Open] screen.

No.	Name	Function
④	[Worksheet] field	From the drop-down list, select the destination worksheet in which to enter measurement data.
⑤	[Range of cells (specify the A1 reference style)] field	Specifies the range of cells in which to enter measurement data in A1-style notation. You can directly enter the cell addresses, or you can select the range of cells in Excel. **Tips** • A1-style notation is a format for specifying a cell address by specifying the column with a letter and the row with a number. • If [Repeat procedure] is being used on the create procedure screen, specify the range of cells for data entry for the first procedure. For details about selecting the range of cells for data entry in Excel, see 📖 "■ Selecting a range of input cells in Excel" (page 182).
⑥	[Move after return direction] field	Specifies in which direction to move the cell after data is entered ([Right] or [Down]). For details, see 📖 "■ About the [Move after return direction] and [Displacement intervals] settings" (page 183).
⑦	[Displacement intervals] field	Specifies the number of cells to move after data is entered ([1] to [100]). For details, see 📖 "■ About the [Move after return direction] and [Displacement intervals] settings" (page 183).
⑧	[Cell address assign rules] field	Select whether to assign the columns (vertical) or the rows (horizontal) of the Excel worksheet to the data entry devices. For details, see 📖 "■ About the [Cell address assign rules] setting" (page 185).
⑨	[FunctionKey Operation] field	You can assign the [Data request] function, [Data cancel] function, and [Data skip] function to the function keys (F1 to F8) of the PC. From the drop-down lists, select the function key to assign to each function. **Tips** • If [Unspecified] is selected under the [Cell address assign rules] field, this setting is not available. • You cannot assign the [Data request] function, [Data cancel] function, and [Data skip] function to the same function key.
⑩	[Data entry devices] field	Displays information about the devices that will be used for entering measurement data and character string data.
⑪	[Measuring Too] field	Displays [User management No.], [Model], [Code No.], and [Serial No.] of the measuring tool.
⑫	Buttons for the [Data entry devices] field	[+]: Adds a data entry device to the [Data entry devices] field. [-]: Deletes the data entry device that is selected in the [Data entry devices] field. [✓]: Changes the settings for the data entry device that is selected in the [Data entry devices] field. For details, see 📖 "8.9 [Data entry device settings] Screen" (page 190).

No.	Name	Function
⑬	[Foot switch option] field	Displays information about the devices that will be used for foot switch operation. USB-FSW devices to which a data control function ([Data request], [Data cancel], [Data skip], [Zero set], [Preset], or [Peak reset]) is assigned are displayed. **Tips** If USB-FSW will be used for entering character string data, it will be displayed in ⑩. For details, see 📖 "8.10 [Character string data settings] Screen" (page 202).
⑭	Buttons for the [Foot switch option] field	[+]: Adds a USB-FSW device to the [Foot switch option] field. [-]: Deletes the USB-FSW device that is selected in the [Foot switch option] field. [✓]: Changes the settings of the USB-FSW device that is selected in the [Foot switch option] field. For details, see 📖 "8.11 [Foot switch option settings] Screen" (page 203).
⑮	[OK] button	Saves the setting changes.
⑯	[Cancel] button	Discards the setting changes.

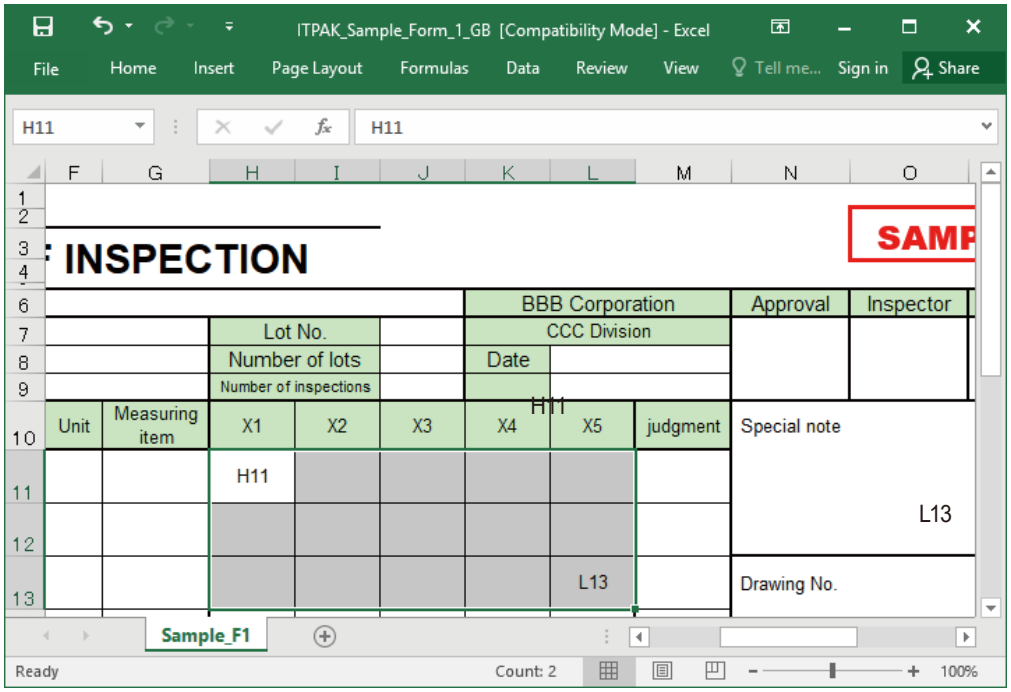
■ Selecting a range of input cells in Excel

To enter measurement data into Excel, you must specify the range of cells for data entry.

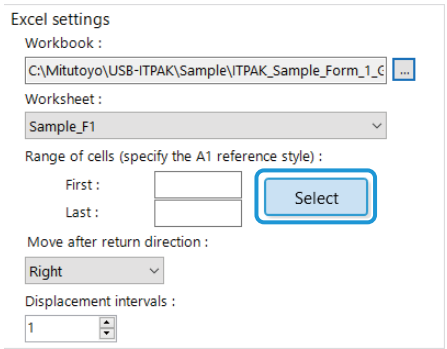
There are two methods for specifying the cell range: Directly enter the cell addresses, or select the range of cells in Excel.

As an example, here we explain the procedure for selecting the input range in Excel.

1 In Excel, select the range of cells to enter measurement data into.



2 In the [Range of cells (specify the A1 reference style)] field on the [Add procedure] screen or the [Change Procedure] screen, click the [Select] button.



The cell range that was selected in step 1 will be entered as follows:

[First]: H11
[Last]: L13

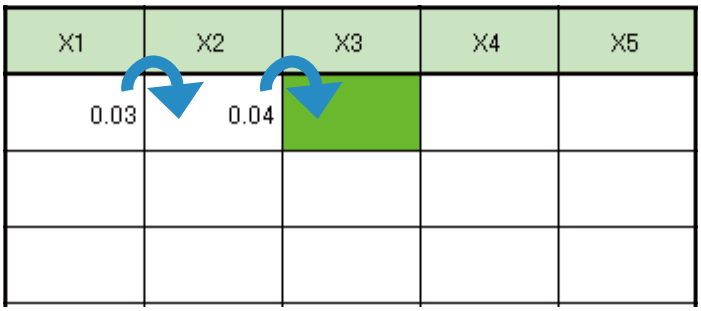
■ About the [Move after return direction] and [Displacement intervals] settings

This section explains the [Move after return direction] and [Displacement intervals] settings and their behavior during data collection.

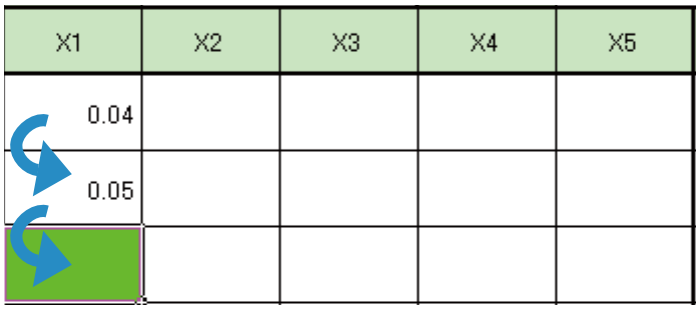
● [Move after return direction]

Specify in which direction to move the cell after data is entered.

- If [Right] is selected



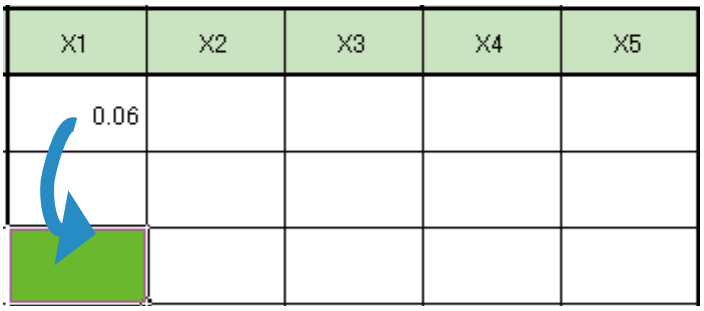
- If [Down] is selected



● [Displacement intervals]

- Specify the number of cells to move after data is entered.

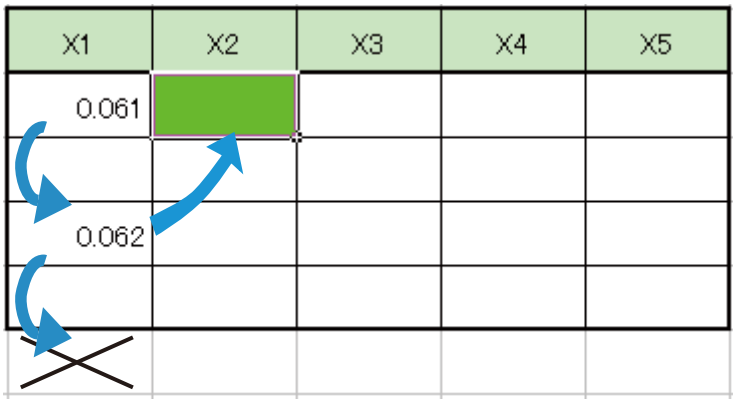
  Example: If the settings are configured as below, the cell for the next entry will be two cells down.
  - [Down] is set for [Move after return direction].
  - [2] is set for [Displacement intervals].



- For sequential measurement, when the input cell exceeds the input cell range during data collection, data entry finishes for the current row or column, and the input cell moves to the next row or column.

  Example: If the settings are configured as below, entry finishes for the first column at the third data entry, and entry moves to the second column.

  - The cell range in the [Range of cells (specify the A1 reference style)] fields is set to 4 rows × 5 columns.
  - [Down] is set for the [Move after return direction] field.
  - [2] is set for the [Displacement intervals] field.



■ About the [Cell address assign rules] setting

Select whether to assign the columns (vertical) or the rows (horizontal) of the Excel worksheet to the data entry devices.

● [Unspecified]

Do not assign a device to the Excel cells.

If data is entered from a device registered to the procedure during data collection, the data is written to the current input cell at that moment in the order it is entered, regardless of the cell position.

Tips

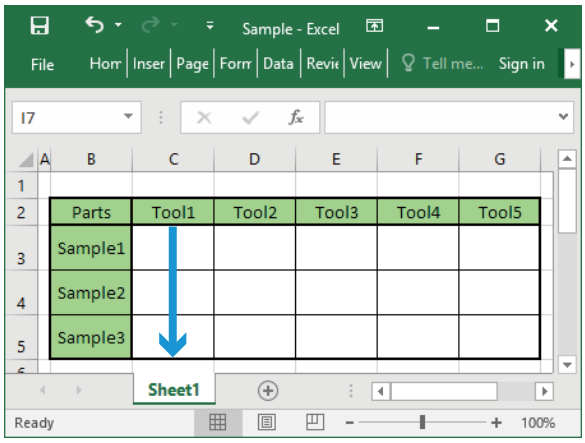
- If [Batch] is selected in the [Procedure type] filed, you cannot select [Unspecified].
- If you select [Unspecified], operations with the function keys or foot switches are not allowed because the order of data entry from data entry devices cannot be set.

● [Assign for the columns(A,B,...)]

Assign a device to each column in the Excel worksheet.

Example: The figure below shows an example where Tool 1 is assigned to column [C], Tool 2 is assigned to column [D], ..., and Tool 5 is assigned to column [G].

Data entered from Tool 1 is written to cells C3, C4, and C5.

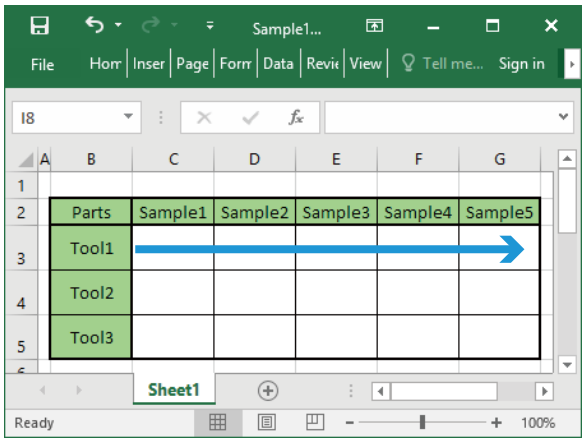


● [Assign for the rows(1,2,...)]

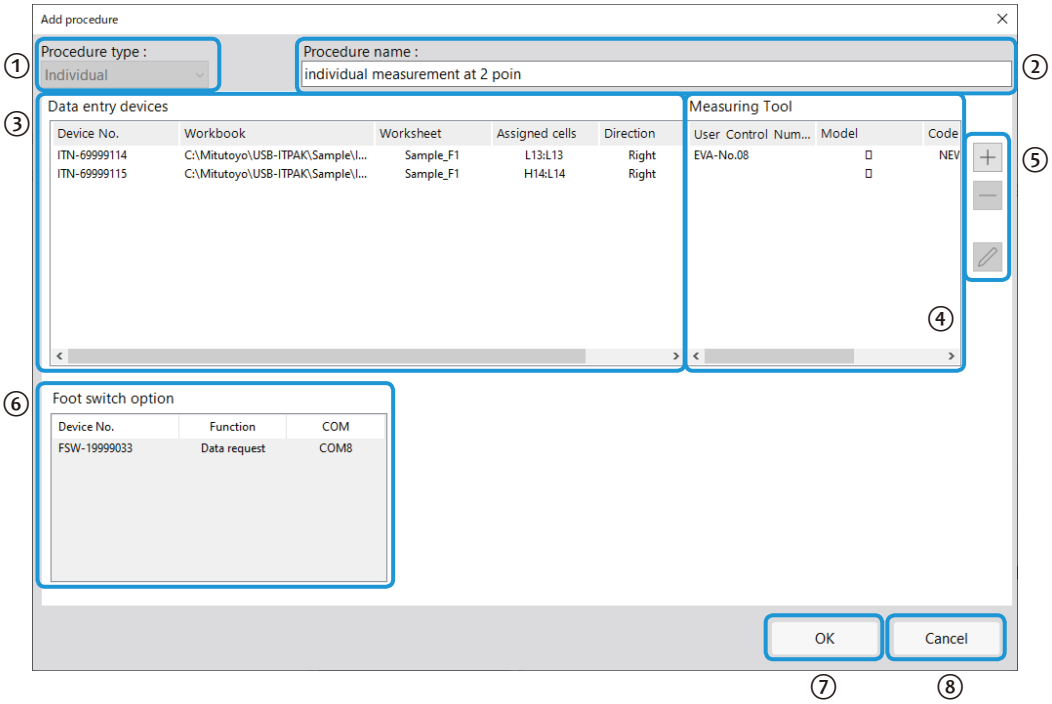
Assign a device to each row in the Excel worksheet.

Example: The figure below shows an example where Tool 1 is assigned to row [3], Tool 2 is assigned to row [4], and Tool 3 is assigned to row [5].

Data entered from Tool 1 is written to cells C3, D3, E3, F3, and G3.



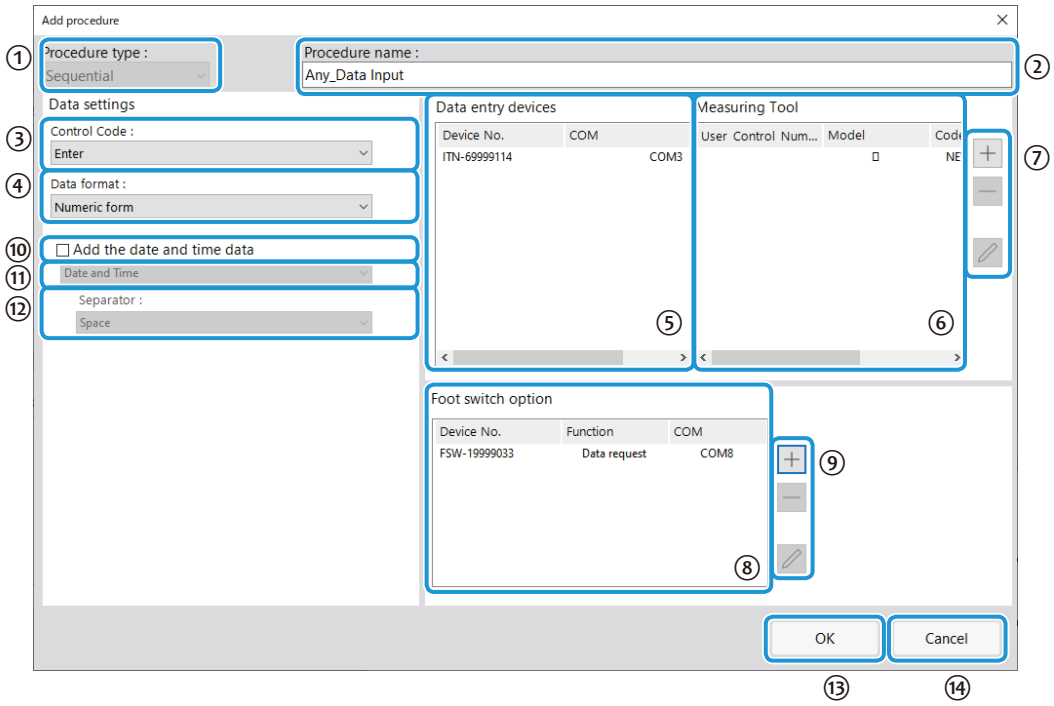
8.8.2 Entering Data into Excel with Individual Measurement



No.	Name	Function
①	[Procedure type] field	Select [Sequential], [Batch], or [Individual] as the procedure type for data collection. For details, see 📖 "6 Measurement Data Collection Using the Procedure Measurement Menu (Basic Operation)" (page 27).
②	[Procedure name] field	Enter the name for the procedure you are creating. The procedure name is displayed in the [Procedure] field in the center of the create procedure screen. Enter a name that will be easy to recognize when checking. **Tips** Up to 32 characters can be entered.
③	[Data entry devices] field	Displays information about the devices that will be used for entering measurement data and character string data.
④	[Measuring Tool] field	Displays [User management No.], [Model], [Code No.], and [Serial No.] of the measuring tool.
⑤	Buttons for the [Data entry devices] field	[+]: Adds a data entry device to the [Data entry devices] field. [-]: Deletes the data entry device that is selected in the [Data entry devices] field. [✓]: Changes the settings for the data entry device that is selected in the [Data entry devices] field. For details, see 📖 "8.9 [Data entry device settings] Screen" (page 190).

No.	Name	Function
⑥	[Foot switch option] field	Displays information about the devices that will be used for foot switch operation. USB-FSW devices to which a data control function ([Data request], [Data cancel], [Data skip], [Zero set], [Preset], or [Peak reset]) is assigned are displayed. **Tips** If USB-FSW will be used for entering character string data, it is treated as a data entry device. For details, see "8.10 [Character string data settings] Screen" (page 202).
⑦	[OK] button	Saves the setting changes.
⑧	[Cancel] button	Discards the setting changes.

8.8.3 Entering Data into an Arbitrary Application



No.	Name	Function
①	[Procedure type] field	Select [Sequential], [Batch], or [Individual] as the procedure type for data collection. For details, see "6 Measurement Data Collection Using the Procedure Measurement Menu (Basic Operation)" (page 27).
②	[Procedure name] field	Enter the name for the procedure you are creating. The procedure name is displayed in the [Procedure] field in the center of the create procedure screen. Enter a name that will be easy to recognize when checking. **Tips** Up to 32 characters can be entered.

No.	Name	Function
③	[Control Code] in the [Data settings] field	Select a control code to add after data is entered. As the control code, you can select from [Unspecified], [Enter], [Up], [Down], [Right], [Left], and [Tab]. **Tips** • If Notepad is used as the application in which to enter data and you select [Enter] as the control code, a new line will be entered after the numeric data. • The behavior of the control code differs depending on the application used. Check the behavior of the control code in the application beforehand, and then select a control code.
④	[Data format] in the [Data settings] field	Select the format in which data will be entered into the application. For the purposes of explanation, the following is an example where the measuring tool on channel 1 of COM 13 has measured 32.14 mm. [Numeric form]: Only measurement data is entered. Example: [32.14] [Command form]: The channel number and measurement data are entered. Example: [01A+00032.14] [COM+Command form]: The COM number (three digits), channel number, and measurement data are entered. Example: [01301A+00032.14]
⑤	[Data entry devices] field	Displays information about the devices that will be used for entering measurement data and character string data.
⑥	[Measuring Tool] field	Displays [User management No.], [Model], [Code No.], and [Serial No.] of the measuring tool.
⑦	Buttons for the [Data entry devices] field	[+]: Adds a data entry device to the [Data entry devices] field. [-]: Deletes the data entry device that is selected in the [Data entry devices] field. [✓]: Changes the settings for the data entry device that is selected in the [Data entry devices] field. For details, see "8.9 [Data entry device settings] Screen" (page 190).
⑧	[Foot switch option] field	Displays information about the devices that will be used for foot switch operation. USB-FSW devices to which a data control function ([Data request], [Data cancel], [Data skip], [Zero set], [Preset], or [Peak reset]) is assigned are displayed. **Tips** If USB-FSW will be used for entering character string data, it is treated as a data entry device. For details, see "8.10 [Character string data settings] Screen" (page 202).

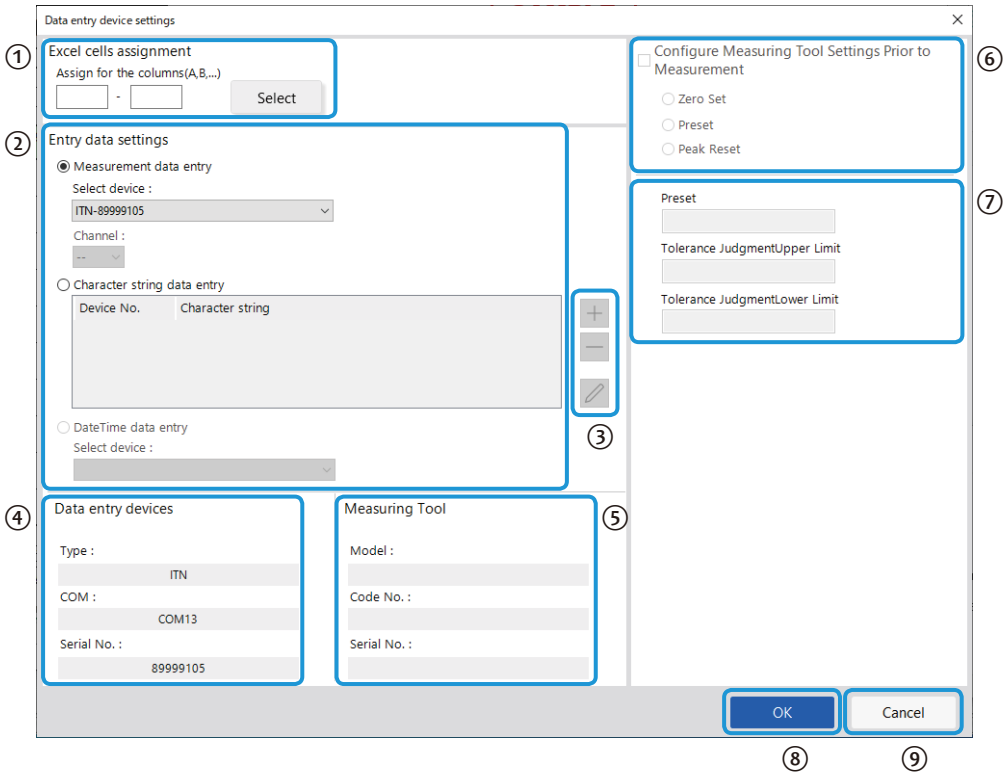
No.	Name	Function
⑨	Buttons for the [Foot switch option] field	[+]: Adds a USB-FSW device to the [Foot switch option] field. [-]: Deletes the USB-FSW device that is selected in the [Foot switch option] field. [✓]: Changes the settings of the USB-FSW device that is selected in the [Foot switch option] field. For details, see "8.11 [Foot switch option settings] Screen" (page 203).
⑩	[Add the date and time data] field	Specifies whether to add date and time data during data collection. If you select [Add the date and time data], the items ⑩ through ⑪ can be set.
⑪	Date and time data format	Select one of the following for the format of the date and time data. For the purposes of explanation, the following is an example where the measuring tool has measured 32.14 mm. [Date and Time]: The date and time are added. Example: 32.14 01/23/2013 12:34:56 [Date]: Only the date is added. Example: 32.14 01/23/2013 [Time] Only the time is added. Example: 32.14 12:34:56
⑫	[Separator]	For the character that separates the measurement data and the date and time data, you can select from [Space], [Tab], [Comma (,)], or [Semicolon (;)]. **Tips** If you select [Numeric form] in the [Data format] field and one of the following in the [Separator] field, an error may be displayed in Excel when measurement data is entered. • [Space] • [Comma (,)] • [Semicolon (;)] Also, if negative values (values that begin with a minus sign) are entered into Excel, Excel may display the error [The formula you typed contains an error.]. If this error is displayed, take the following actions. • Select [Tab] for [Separator]. • Set the cell format in Excel to [Text] ahead of time.
⑬	[OK] button	Saves the setting changes.
⑭	[Cancel] button	Discards the setting changes.

8.9 [Data entry device settings] Screen

This screen is for configuring settings for devices, etc. that enter measurement data or character string data.

Click the [+] button under the [Data entry devices] field on the [Add procedure] or [Change Procedure] screen to display this screen.

8.9.1 Entering Data into Excel with Sequential Measurement or Batch Measurement



No.	Name	Function
①	[Excel cells assignment] field	Enter the Excel row numbers or column numbers to assign the data entry device to. For details, see "■ About filling in the [Excel cells assignment] field" (page 193).

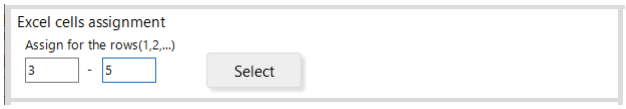
No.	Name	Function
②	[Entry data settings] field	Select [Measurement data entry] or [Character string data entry] according to the type of data to enter. [Measurement data entry]: Select this option to enter measurement data (numerical data) from a measuring tool. Select the data entry device (USB-ITN/IT-0xxU/DP-1VA/U-WAVE-R) to use from the [Select device] drop-down list. If you select a U-WAVE-R device, select which channel the device uses for transmission from the [Channel] drop-down list. **Tips** If you start U-WAVEPAK to confirm the channel, first exit USB-ITPAK. [Character string data entry]: Select this option to enter character string data by pressing a foot switch. If you click the [+] button in the [Character string data entry] field, the [Character string data settings] screen is displayed. For details, see 📖 "8.10 [Character string data settings] Screen" (page 202). [DateTime data entry]: Select this option to add date and time that the measurement data was collected. Select the data entry device (USB-ITN/IT-0xxU/DP-1VA/U-WAVE-R) to which to assign the date and time data from the [Select device] drop-down list. For details, see 📖 "■ About the settings for the date and time data entry device" (page 194).
③	Buttons for the [Character string data entry] field	[+]: Adds a USB-FSW device to the [Character string data entry] field. [-]: Deletes the USB-FSW device that is selected in the [Character string data entry] field. [✓]: Changes the settings for the USB-FSW device that is selected in the [Character string data entry] field. For details, see 📖 "8.10 [Character string data settings] Screen" (page 202).
④	[Data entry devices] field	Displays information about the device that is selected in the [Entry data settings] field.
⑤	[Measuring Tool] field	Displays [Model], [Code No.], and [Serial No.] of the measuring tool.
⑥	[Configure Measuring Tool Settings Prior to Measurement] field	Select this checkbox to perform zero set, preset, or peak reset for the measuring tool before measurement, and then select the target operation option button. **Tips** The [Configure Measuring Tool Settings Prior to Measurement] field is available when [Procedure type] is set to [Batch] and the [Measurement data entry] radio button in [Entry data settings] is selected a measuring tool that supports Digimatic S1 communication.

No.	Name	Function
⑦	[Preset/Tolerance Judgment] field	Specifies the preset value and tolerance (upper limit/lower limit) of the measuring tool as up to an 8-digit number. **Tips** • This field is available when the [Measurement data entry] option button in [Entry data settings] is selected for a measuring tool that supports Digimatic S1 communication. • [Tolerance Judgment Upper Limit] and [Tolerance Judgment Lower Limit] are available when the [Measurement data entry] option button in [Entry data settings] is selected.
⑧	[OK] button	Saves the setting changes.
⑨	[Cancel] button	Discards the setting changes.

■ About filling in the [Excel cells assignment] field

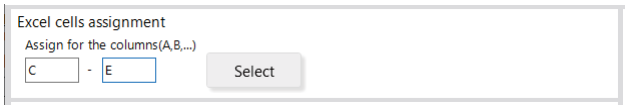
● If [Assign for the rows(1,2,...)] is displayed under the [Excel cells assignment] field

Enter the Excel row numbers (1, 2, ...) in A1-style notation.



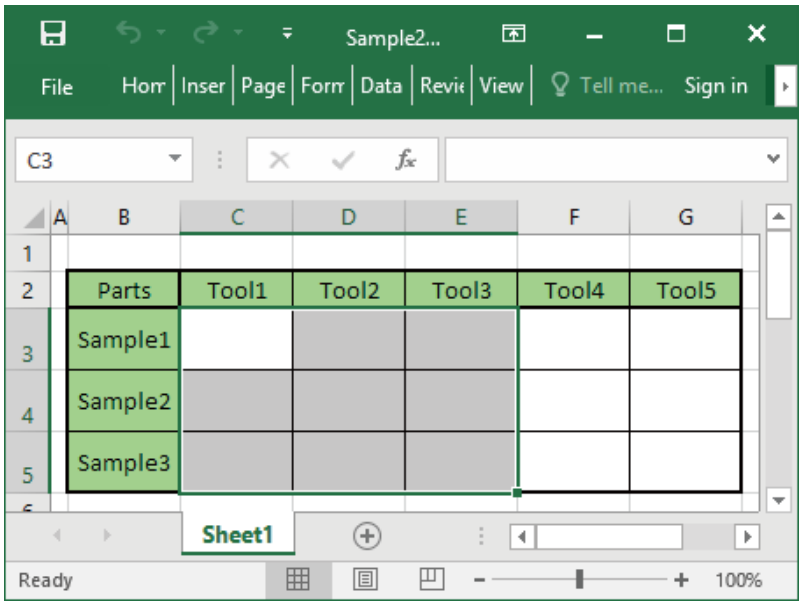
● If [Assign for the columns(A,B,...)] is displayed under the [Excel cells assignment] field

Enter the Excel column numbers (A, B, ...) in A1-style notation.



You can also enter this information by selecting a range in Excel and then clicking the [Select] button under the [Excel cells assignment] field.

For example, to set column [C] (or row [3]) to column [E] (or row [5]) to device 1, select the range as shown below and then click the [Select] button under the [Excel cells assignment] field. [C] (or [3]) will be entered in the left field and [E] (or [5]) will be entered in the right field under the [Excel cells assignment] field.



Tips

Select the cell range after the [Data entry device settings] screen has been displayed. If you specify the cell range before the screen is displayed, the specified range will not be reflected in the [Excel cells assignment] field.

■ About the settings for the date and time data entry device

If you configure the date and time entry settings for a measurement data entry device, the date and time that the data was collected can be automatically entered when measurement data is read in. The types of procedures and settings for which the date and time data can be entered are as follows.

[Procedure type]	[Cell address assign rules]	Supported
Sequential	Unspecified	—
	Assign for the columns(A,B,...)	✓ *1
	Assign for the rows(1,2,...)	✓ *1
Batch	Unspecified	—
	Assign for the columns(A,B,...)	✓ *2
	Assign for the rows(1,2,...)	✓ *2
Individual		—

Note: ✓ means supported; — means not supported

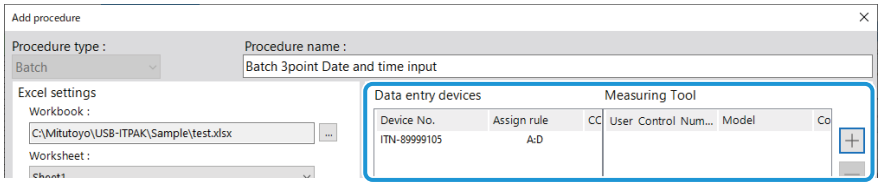
*1 The settings for date and time data entry can be specified for each data entry device.

*2 The settings for date and time data entry can be specified just one of the data entry devices.

The procedure for configuring the settings for date and time data entry is explained below.

Configure the data entry device to which the date and time data will be assigned beforehand.

1 Click the [+] button under the [Data entry devices] field on the [Add procedure] or [Change Procedure] screen.



» The [Data entry device settings] screen will be displayed.

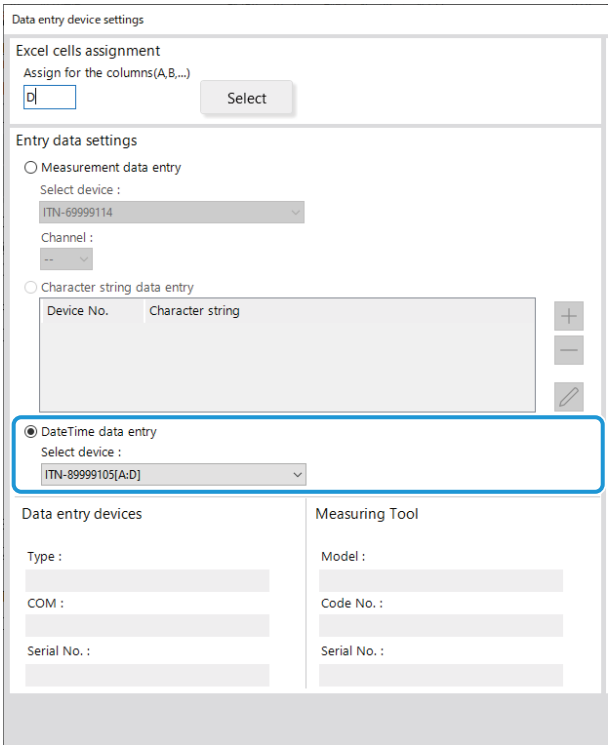
2 Configure the settings for entering date and time data.

1 In the [Entry data settings] field, select [DateTime data entry].

2 In the [Select device] field, select which device to assign the date and time data to.
From the drop-down list, select the device to assign.
In the device information that is displayed in the [Select device] field, the information for devices that are registered as measurement data entry devices and the cell assignment information for those devices are displayed.

Example:
ITN-89999013 [A:A]
① ②

①: Device information
②: Excel cells assignment



Tips

If the data entry device to assign the date and time data to is not configured, you cannot select [DateTime data entry].

3 Under the [Excel cells assignment] field, specify the row numbers or the column numbers to assign the data entry device to. As an example, here we enter [D] to assign the date and time data to column D.

Tips

If [DateTime data entry] is selected, only the start cell position can be entered in the [Excel cells assignment] field.
For the target cell range for date and time data entry, the range of the number of rows or columns in the cell range of the selected measurement data entry device is applied, based on the position of the start cell.

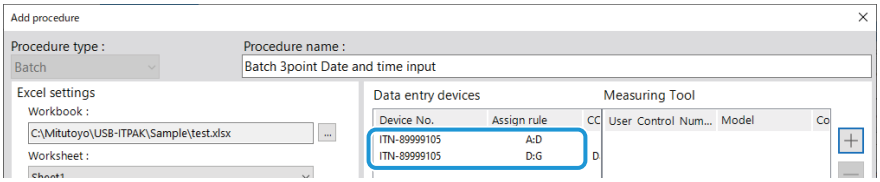
For example, for a measurement data entry device whose [Excel cells assignment] field is [A:B], if start cell [C] is specified for date and time data entry, the [Excel cells assignment] field for date and time data entry becomes [C:D].

4 Click the [OK] button.

» The information of the device to which date and time data is assigned will be displayed in the [Data entry devices] field on the [Add procedure] or [Change Procedure] screen.

Tips

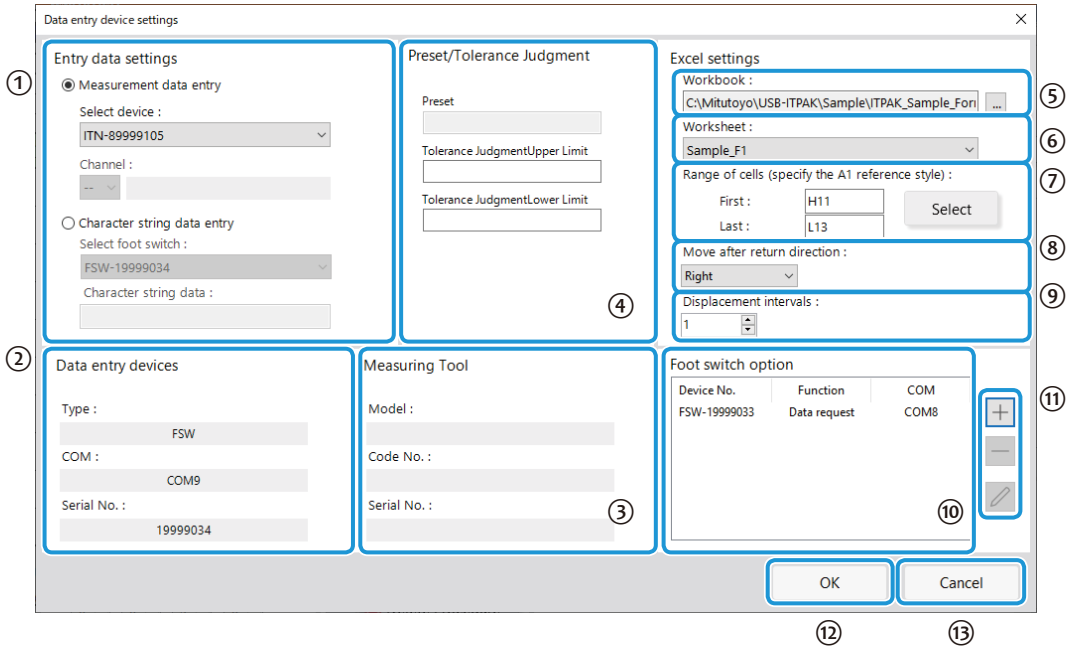
The example below shows how to look at the device information that is displayed in the [Data entry devices] field.



Example:
ITN-69999013 D:D DateTime [A:A]
① ② ③ ④

① : Measurement data entry device to which date and time data entry has been assigned
② : The row or column number of the cell into which date and time data will be entered
③ : A character string that indicates that date and time data entry is set
④ : The row or column number of the cell into which the measurement data from the device in ① will be entered

8.9.2 Entering Data into Excel with Individual Measurement

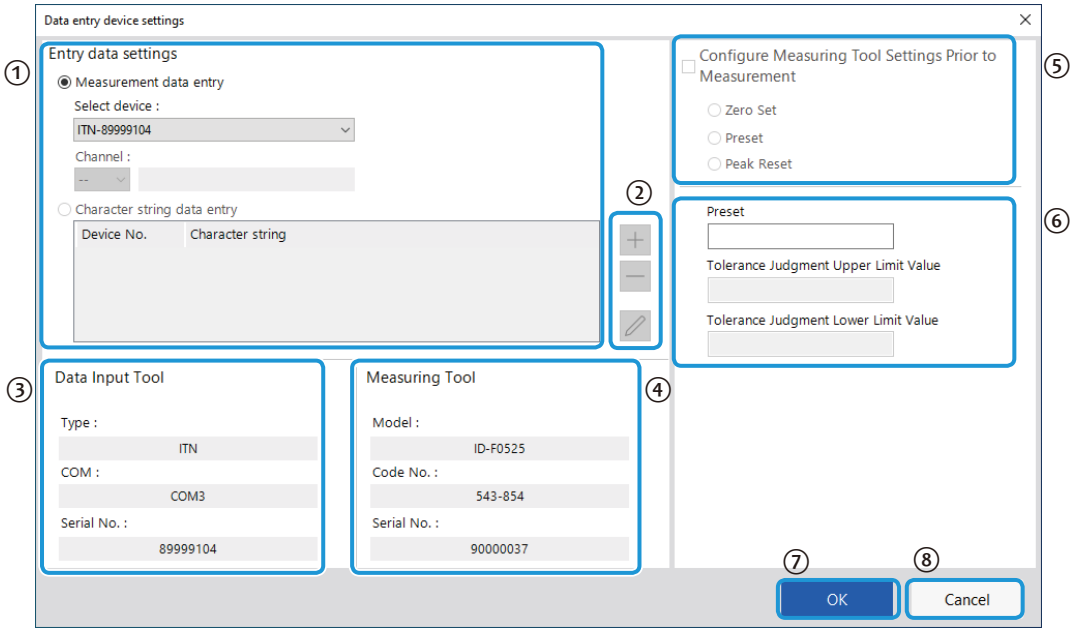


No.	Name	Function
①	[Entry data settings] field	Select [Measurement data entry] or [Character string data entry] according to the type of data to enter. [Measurement data entry]: Select this option to enter measurement data (numerical data) from a measuring tool. Select the data entry device (USB-ITN/IT-0xxU/DP-1VA/U-WAVE-R) to use from the [Select device] drop-down list. If you select a U-WAVE-R device, select which channel the device uses for transmission from the [Channel] drop-down list. **Tips** If you start U-WAVEPAK to confirm the channel, first exit USB-ITPAK. [Character string data entry]: Select this option to enter character string data by pressing a foot switch. Select the data entry device (USB-FSW) to use from the [Select foot switch] drop-down list. Also, enter the character string to enter when the foot switch is pressed in the [Character string data] field. **Tips** Up to 32 characters can be entered.
②	[Data entry devices] field	Displays information about the device that is selected in the [Entry data settings] field.
③	[Measuring Tool] field	Displays [Model], [Code No.], and [Serial No.] of the measuring tool.

No.	Name	Function
④	[Preset/Tolerance Judgment] field	Specify the preset value and tolerance (upper limit/lower limit) of the measuring tool as up to an 8-digit number. **Tips** • This field is available when the [Measurement data entry] option button in [Entry data settings] is selected for a measuring tool that supports Digimatic S1 communication. • [Tolerance Judgment Upper Limit] and [Tolerance Judgment Lower Limit] are available when the [Measurement data entry] option button in [Entry data settings] is selected.
⑤	[Workbook] field	Select the destination file in which to enter measurement data. You can click the [...] button to select the file to use from the [Open] screen.
⑥	[Worksheet] field	From the drop-down list, select the destination worksheet in which to enter measurement data.
⑦	[Range of cells (specify the A1 reference style)] field	Specifies the range of cells in which to enter measurement data in A1-style notation. You can directly enter the cell addresses, or you can select the range of cells in Excel. **Tips** A1-style notation is a format for specifying a cell address by specifying the column with a letter and the row with a number. For details about selecting the range of cells for data entry in Excel, see "■ Selecting a range of input cells in Excel" (page 182).
⑧	[Move after return direction] field	Specifies in which direction to move the cell after data is entered ([Right] or [Down]). For details, see "■ About the [Move after return direction] and [Displacement intervals] settings" (page 183).
⑨	[Displacement intervals] field	Specifies the number of cells to move after data is entered ([1] to [100]). For details, see "■ About the [Move after return direction] and [Displacement intervals] settings" (page 183).
⑩	[Foot switch option] field	Displays information about the devices that will be used for foot switch operation. USB-FSW devices to which a data control function ([Data request], [Data cancel], [Data skip], [Zero set], [Preset], or [Peak reset]) is assigned are displayed. **Tips** If USB-FSW will be used for entering character string data, it is treated as a data entry device. For details, see "8.10 [Character string data settings] Screen" (page 202).
⑪	Buttons for the [Foot switch option] field	[+]: Adds a USB-FSW device to the [Foot switch option] field. [-]: Deletes the USB-FSW device that is selected in the [Foot switch option] field. [✓]: Changes the settings of the USB-FSW device that is selected in the [Foot switch option] field. For details, see "8.11 [Foot switch option settings] Screen" (page 203).

No.	Name	Function
⑫	[OK] button	Saves the setting changes.
⑬	[Cancel] button	Discards the setting changes.

8.9.3 Entering Data into an Arbitrary Application



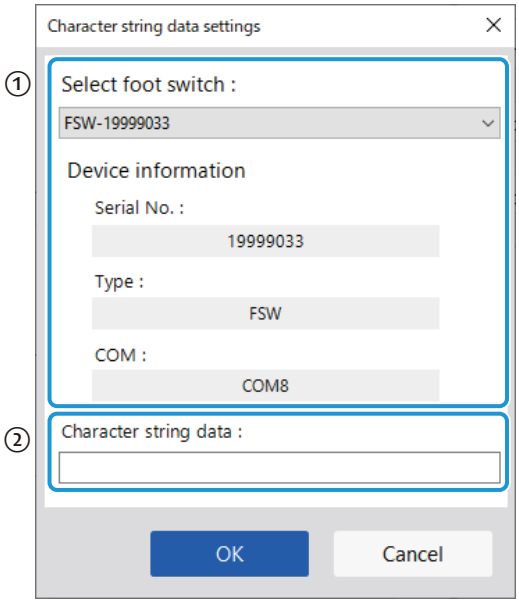
No.	Name	Function
①	[Entry data settings] field	Select [Measurement data entry] or [Character string data entry] according to the type of data to enter. [Measurement data entry]: Select this option to enter measurement data (numerical data) from a measuring tool. Select the data entry device (USB-ITN/IT-0xxU/DP-1VA/U-WAVE-R) to use from the [Select device] drop-down list. If you select a U-WAVE-R device, select which channel the device uses for transmission from the [Channel] drop-down list. **Tips** If you start U-WAVEPAK to confirm the channel, first exit USB-ITPAK. [Character string data entry]: Select this option to enter character string data by pressing a foot switch. If you click the [+] button in the [Character string data entry] field, the [Character string data settings] screen is displayed. For details, see 📖 "8.10 [Character string data settings] Screen" (page 202).
②	Buttons for the [Character string data entry] field	[+]: Adds a USB-FSW device to the [Character string data entry] field. [-]: Deletes the USB-FSW device that is selected in the [Character string data entry] field. [✓]: Changes the settings for the USB-FSW device that is selected in the [Character string data entry] field. For details, see 📖 "8.10 [Character string data settings] Screen" (page 202).
③	[Data entry devices] field	Displays information about the device that is selected in the [Entry data settings] field.
④	[Measuring Tool] field	Displays [Model], [Code No.], and [Serial No.] of the measuring tool.

No.	Name	Function
⑤	[Configure Measuring Tool Settings Prior to Measurement] field	Select this checkbox to perform zero set, preset, or peak reset for the measuring tool before measurement, and then select the target operation option button. **Tips** The [Configure Measuring Tool Settings Prior to Measurement] field is available when [Procedure type] is set to [Batch] and the [Measurement data entry] option button in [Entry data settings] is selected for a measuring tool that supports Digimatic S1 communication.
⑥	[Preset/Tolerance Judgment] field	Specify the preset value and tolerance (upper limit/lower limit) of the measuring tool as up to an 8-digit number. **Tips** • This field is available when the [Measurement data entry] option button in [Entry data settings] is selected for a measuring tool that supports Digimatic S1 communication. • [Tolerance Judgment Upper Limit] and [Tolerance Judgment Lower Limit] are available when the [Measurement data entry] option button in [Entry data settings] is selected.
⑦	[OK] button	Saves the setting changes.
⑧	[Cancel] button	Discards the setting changes.

8.10 [Character string data settings] Screen

This screen is for selecting which USB-FSW device to use to enter character string data and for setting the character string to enter.

Click the [+] button under the [Character string data entry] field on the [Data entry device settings] screen to display this screen.

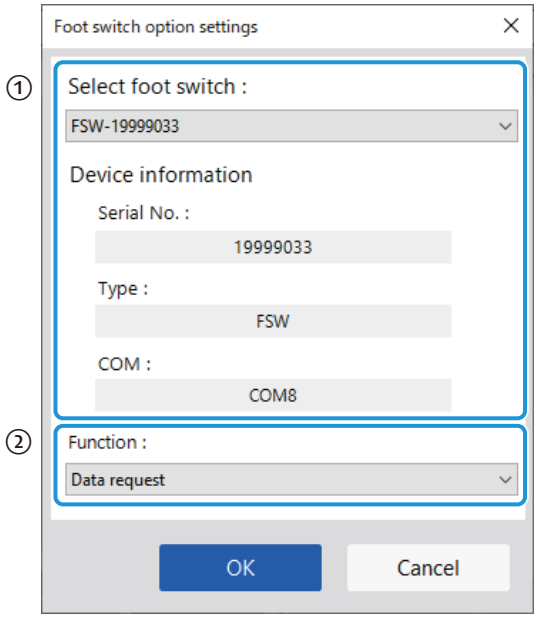


No.	Name	Function
①	[Select foot switch] field	From the drop-down list, select the USB-FSW device to use. Information about the selected device is displayed in the [Device information] field.
②	[Character string data] field	Enter the character string to enter when the foot switch is pressed. **Tips** • Up to 32 characters can be entered. • If you are entering data into an arbitrary application, only single-byte characters can be used.

8.11 [Foot switch option settings] Screen

This screen is for selecting which device to use for foot switch operations and for selecting which function to apply when the foot switch is pressed.

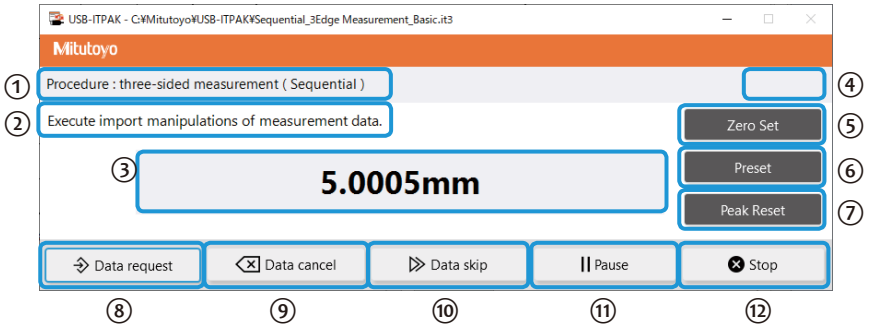
Click the [+] button under the [Foot switch option] field on the [Add procedure] or [Change Procedure] screen to display this screen.



No.	Name	Function
①	[Select foot switch] field	From the drop-down list, select the USB-FSW device to use. Information about the selected device is displayed in the [Device information] field.
②	[Function] field	Select which function to apply when the foot switch is pressed from the following options: • Data request • Data cancel • Data skip • Zero set • Preset • Peak reset **Tips** • [Zero set], [Preset], and [Peak Reset] are selectable when [Procedure type] is set to [Sequential] or [Individual] for a measuring tool that supports Digimatic S1 communication. • The [Function] field is not specifiable when [Procedure type] is set to [Batch] for a measuring tool that supports Digimatic S1 communication. • If you are entering data into an arbitrary application, only the [Data request] function can be assigned to the USB-FSW device.

8.12 Data Collection Screen

This screen is for performing operations related to data collection, such as reading in or deleting measurement data.



No.	Name	Function
①	[Procedure] field	Displays the procedure currently being used to collect data. **Tips** This field is not displayed in the quick entry mode.

No.	Name	Function
②	Information message field	Displays the following messages according to the state of operation. [Execute import manipulations of measurement data.] : This message is displayed when collecting data with sequential measurement or batch measurement. Start the data collection operation with one of the following methods: • Press the DATA switch on the measuring tool or the connection device (USB-ITN/IT-0xxU/DP-1VA/U-WAVE transmitter). • On the [Data collection] screen, click the [Data request] button. • Press the foot switch to which the [Data request] function is assigned. • Press the function key to which the [Data request] function is assigned. [Please execute the foot switch operation.] : To enter a character string, press the foot switch to which the character string that you want to enter is assigned. [Execute data entry operation.] : This message is displayed when collecting data with individual measurement. Start the data collection operation with one of the following methods: • Press the DATA switch on the measuring tool or the connection device (USB-ITN/IT-0xxU/DP-1VA/U-WAVE transmitter). • Press the foot switch to which the [Data request] function is assigned. • Press the function key to which the [Data request] function is assigned. [The import of all pieces of measurement data has been completed.] : Data collection has completed. Click the [Stop] button and save the measurement data.
③	Measurement data display	Displays the data received from the measuring tool. **Tips** • Data from a measuring tool that does not support Digimatic S1 communication is displayed in the communication command format. • If the upper and lower limits for tolerance judgment are set when a "batch" or "individual" procedure is created, the tolerance judgment result will be displayed in one of the following colors: Green: Tolerance judgment OK Red: Tolerance judgment NG Black: No tolerance judgment
④	User ID	Displays the ID of the login user when the Login function is enabled in [Login settings] on the [Option] screen. For details, see "8.5 [Option] Screen" (page 174).
⑤	[Zero Set] button	Resets the zero point of the measuring tool.

No.	Name	Function
⑥	[Preset] button	Resets the preset value of the measuring tool. **Tips** Preset cannot be set when the measuring tool is in the Peak detection (TIR: runout width display) mode.
⑦	[Peak Reset] button	Resets the peak value of the measuring tool. **Tips** Peak reset can be set when the measuring too in the Peak detection mode.
⑧	[Data request] button	Runs data collection. **Tips** This function cannot be used with individual measurement.
⑨	[Data cancel] button	Deletes the entered data. **Tips** This function cannot be used with individual measurement.
⑩	[Data skip] button	Skips the entry of the next piece of data. **Tips** • This function cannot be used with individual measurement. • This function cannot be used in the quick entry mode.
⑪	[Pause] button/[Resume] button	Pauses or resumes data collection. During data collection, the [Pause] button is displayed. While collection is paused, the [Resume] button is displayed. For details, see "■ Pausing/resuming operation when collecting data in Excel" (page 206).
⑫	[Stop] button	Stops data collection.

Tips

- The [Zero Set], [Preset], and [Peak Reset] buttons are valid only for a measuring tool that supports Digimatic S1 communication.
- If [Procedure type] is set to [Individual] for a measuring tool that supports Digimatic S1 communication, the [Zero Set], [Preset], and [Peak Reset] buttons can work only with the foot switch.

■ Pausing/resuming operation when collecting data in Excel

The procedure for pausing and resuming data collection is shown below.

Tips

To use a finished Excel file after pausing data collection, perform the following operations and then proceed to step 2.

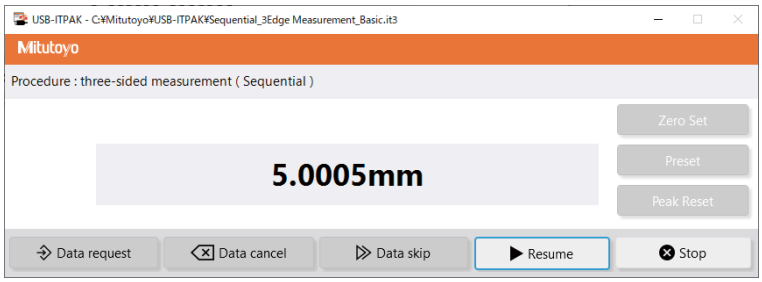
1. Open the setting file to use.
2. Open the data collection screen.
3. The message [Do you want to collect data after cancel the current data?] will be displayed. Click [No].

For details, see the following:

- Sequential measurement: "6.2.2 Collecting Measurement Data" (page 37)
- Batch measurement: "6.3.2 Collecting Measurement Data" (page 51)
- Individual measurement: "6.4.2 Collecting Measurement Data" (page 64)

1 **Click the [Pause] button.**

» Data collection will be paused.



While collection is paused, you can perform the following operations:

- Specify the start cell to use when data collection is resumed.
- Edit the worksheet, such as by entering text.

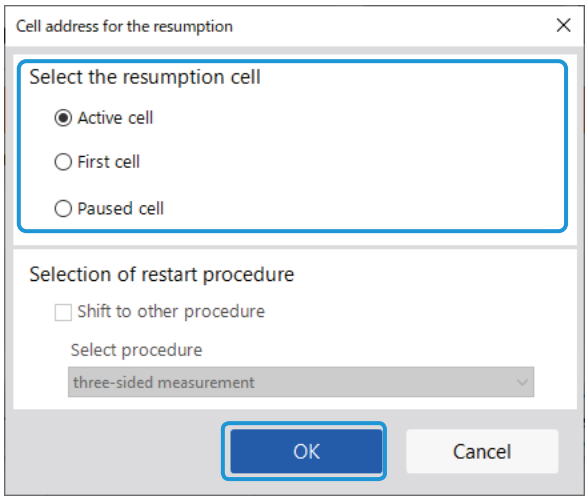
2 **To resume data collection, click the [Resume] button.**

» The [Cell address for the resumption] screen will be displayed.

Tips

If you were making edits in Excel, such as by entering text, finish the edit operations and then resume data collection. If you resume data collection without finishing the operations, USB-ITPAK may not operate correctly.

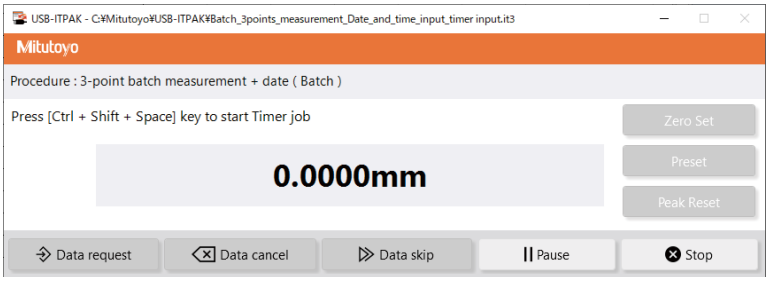
3 **Select one of the options under the [Select the resumption cell] field, and then click the [OK] button.**



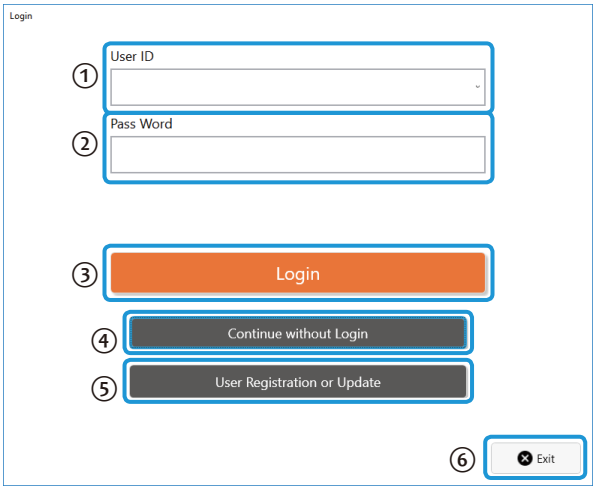
If the paused setting file contains multiple procedures, the settings under the [Selection of restart procedure] field will be available. To resume from another procedure, select [Shift to other procedure], and then select the procedure to resume from the [Select procedure] drop-down list. In this case, the start cell position when the procedure resumes will be the first cell.

Tips

If you pause a data collection operation that uses time intervals, the following screen is displayed. Press the [Ctrl], [Shift], and [Space] keys at the same time and resume data collection.



8.13 [Login] Screen



No.	Name	Function
①	User ID	Select the user ID. It can also be manually entered.
②	Pass Word	Enter the password.
③	[Login] button	Starts USB-ITPAK with the specified user ID.
④	[Continue without Login] button	Starts USB-ITPAK without a login using the user ID.
⑤	[User Registration or Update] button	Displays the [User Registration or Update] screen.

Tips

If you click the [Login] or [Continue without Login] button, the [Quick Menu] screen will be displayed.

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9 Specifications

9.1 Basic Specifications

Item	Remarks
The number of USB-ITN, USB-FSW, U-WAVE, IT-016U, IT-020U, and DP-1VA devices that can be connected*1	Up to 20 devices
The number of data entry devices (USB-ITN, USB-FSW, U-WAVE, IT-016U, IT-020U, DP-1VA) that can be registered to USB-ITPAK	Up to 400 devices
Data request (sequential)	Data request for one device (USB-ITN, U-WAVE, IT-016U, IT-020U, DP-1VA)
Data request (batch)	Batch data request for multiple devices (USB-ITN, U-WAVE, IT-016U, IT-020U, DP-1VA)
Data cancel (sequential, batch)	Deletion of measurement data that was entered
Data skip (sequential, batch)	Skip execution of the next data entry and move to the following piece of data
Character string entry by USB-FSW	Operate a USB-FSW device to enter a preset, arbitrary character string
CE marking/UKCA marking	EMC Directive/Electromagnetic Compatibility Regulations: EN61326-1 Immunity test requirement: Clause 6.2 Table 2 Emission limit: Class A RoHS Directive/The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations: EN IEC 63000

*1: Depending on the PC or the USB hub that is used, the maximum number of connections may actually be lower.
If you are using a USB hub, we recommend that you use a USB-certified hub.

9.2 Communication Command Specifications

This section explains the specifications of the VCP communication commands that are used for the input and output of measurement data between a USB-ITN, USB-FSW, IT-0xxU, or DP-1VA device and the application software.

For details about communication command specifications for U-WAVE, see 📖 "U-WAVEPAK User's Manual".

9.2.1 VCP Communication API

When using a USB-ITN, USB-FSW, IT-0xxU, or DP-1VA device with application software other than USB-ITPAK, communication is possible with the same operation (API function calls) as the serial communication port (COM) operating with the standard Windows driver.

In general, to communicate through a serial communication port (COM), you must configure the RS-232C communication parameters, such as the communication speed and flow control. However, the communication protocol for virtual serial port (VCP) communication that is used by USB-ITN, USB-FSW, IT-0xxU, and DP-1VA devices does not use RS-232C communication parameters. Therefore, communication is possible without configuring any RS-232C communication parameters or by setting arbitrary values.

9.2.2 Common Specifications for Communication Commands

- All of the commands use the ASCII character encoding.
- In VCP communication, the DATA switch or foot switch on a measuring tool is used or commands are entered from the PC to output measurement data, error codes, and foot switch signal.
- VCP communication retrieves only measurement data from a measuring tool through Mitutoyo's unique communication specifications.
- This communication allows you to retrieve the information, such as measurement data and serial number, from a measuring tool that supports Digimatic S1 communication and set the tool.

9.2.3 Types and Formats of Communication Commands

The types of communication commands are listed below. The following terms are used in this section.

Term		
Device	USB-ITN, USB-FSW, IT-016U, IT-020U, or DP-1VA	
Software	PC application such as USB-ITPAK	
Legend		
Direction	Down	Command sent from software to device
	Up	Command sent from device to software
ITN	Y	Command used by USB-ITN, IT-0xxU, and DP-1VA
	N	Command not used by USB-ITN, IT-0xxU, or DP-1VA
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	Down	Q	Information command	Y	N
8	Up	Q	Information command	Y	N
9	Down	P	Setting command	Y	N
10	Down	R	Information request command	Y	N
11	Up	R	Information command	Y	N
12	Down	S	Setting command	Y	N
13	Up	S	Information command	Y	N

The communication command formats are listed in the table below.

■ Device information request command (V) (down)

This command is valid for USB-ITN, USB-FSW, IT-0xxU, and DP-1VA.
This request command is for the software to read the device information.
When the software sends this command to the device, the device responds with "device information command" (1).

Item	ASCII value (base 16)	Bytes	Description
Command code	V	1	Device information request command
Terminator	CR [0x0D]	1	CR (carriage return)
Total		2	

■ Device information command (1) (up)

This command is valid for USB-ITN, USB-FSW, IT-0xxU, and DP-1VA.
This response command is for the software to read the device information.
When the software sends "device information request command (V)" to the device, the device responds with this command.

Item	ASCII value (base 16)	Bytes	Description
Command code	1	1	Device information command
Type	ITN FSW	3	Device type ITN = USB-ITN, IT-0xxU, DP-1VA FSW = USB-FSW
Serial No.	00000000 - 99999999	8	Device serial No.
Terminator	CR [0x0D]	1	CR (carriage return)
Total		13	

■ Measurement data request command (1) (down)

This command is valid for USB-ITN, IT-0xxU, and DP-1VA.
This request command is for the software to read the measurement data from the device.
When the software sends this command to the device, the device inputs the measurement data from a measuring tool with Digimatic output, and responds with "measurement data command" (0).

Item	ASCII value (base 16)	Bytes	Description
Command code	1	1	Measurement data request command
Terminator	CR [0x0D]	1	CR (carriage return)
Total		2	

■ Measurement data command (0) (up)

This command is valid for USB-ITN, IT-0xxU, and DP-1VA.

This command is for the device to notify the software of measurement data.

When the software sends "measurement data request command (1)" to the device, the device inputs the measurement data from a measuring tool with Digimatic output, and responds with this command.

Also, when there is a request from the measuring tool, such as when the DATA switch of the measuring tool is pressed, measurement data is input from the measuring tool, and this command is sent to the software.

Tips

If an error occurs during the processing of measurement data that was input from a measuring tool with Digimatic output, the device will send "status command" (9) instead of "measurement data command" (0).

Item	ASCII value (base 16)	Bytes	Description
Command code	0	1	Measurement data command
Channel	1	1	Channel (1 fixed)
Measurement data type	A	1	Normal data (A fixed)
Sign	+/-	1	'+' if the measurement data is 0
Measurement data	.0000000 - 99999999 or .00000000 - 999999999	8 or 9	A period [.] is used as the decimal point character. Values are zero-padded (numbers are displayed as right-justified and zeros are filled in for unused leading digit spaces). If there are no digits past the decimal point, the decimal point is not used at the rightmost digit space.
Terminator	CR [0x0D]	1	CR (carriage return)
Total		13 or 14	

Tips

- DP-1VA log data is input with "measurement data command" (0). Input the date, time, and measurement value of log data, as in the following example:

Date	December 8, 2017:	01A+20171208
Time	8 hrs, 1 min, 59 secs:	01A+0080159.
Measurement value	123.45 mm:	01A+000123.45

- Log data that corresponds to the output format specified by the DP-1VA parameter setting: [OUT LOG] can be entered by long pressing (pressing and holding for 1 second or more, then releasing) the DP-1VA [OUT LOG] button.
  Do not send the software's "measurement data request command" (1).
  For details about operating DP-1VA, see 📖 "DP-1VA LOGGER User's Manual".
- The output format of the log data, date, time, and measurement value, can be specified by the DP-1VA parameter setting: [OUT LOG]. When [OUT LOG] is [1] (time/measurement value output), the time and measurement value data are input in the following format:

  (Example 1) The input result of DP-1VA log data for one measurement:

01A+0080159.:	Time data of the first measurement from the log data
01A+000123.45:	Measurement value data of the first measurement from the log data

  (Example 2) The input results of DP-1VA log data for two measurements:

01A+0080159.:	Time data of the first measurement from the log data
01A+000123.45:	Measurement value data of the first measurement from the log data
01A+0082005.:	Time data of the second measurement from the log data
01A+000012.00:	Measurement value data of the second measurement from the log data

■ Foot switch signal command (8) (up)

This command is valid for USB-FSW.
This command is for a USB-FSW device to notify the software of foot switch signals.
When a USB-FSW device detects that the foot switch signal is ON, this command is sent to the software.

Item	ASCII value (base 16)	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	

■ Status command (9) (up)

This command is valid for USB-ITN, IT-0xxU, and DP-1VA.

This command is for the device to notify the software of its own status.

When the device detects a status occurrence that should be reported, this command is sent to the software.

Item	ASCII value (base 16)	Bytes	Description
Command code	9	1	Status command
Channel	1	1	Channel (1 fixed)
Status	(See below)	1	(See below)
Terminator	CR [0x0D]	1	CR (carriage return)
Total		4	

The status values are listed in the table below.

ASCII value	Description
1	Measurement data could not be received within the specified time (2 seconds) from a measuring tool with Digimatic output. Examples of possible causes: • The measuring tool is turned off. • The USB-ITN, IT-0xxU, or DP-1VA cable is not connected to the measuring tool.
2	The Digimatic communication data that was read in from a measuring tool with Digimatic output does not conform to the Digimatic communication specifications. Examples of possible causes: • Noise influences • Defect in the communication circuit of the measuring tool or the USB-ITN, IT-0xxU, or DP-1VA device
3	The Digimatic communication clock (CK) signal that was read in from the measuring tool with Digimatic output does not conform to the Digimatic communication specifications. Examples of possible causes: • Interruption of the CK signal of the Digimatic communication cable • Defect in the communication circuit of the measuring tool or the USB-ITN, IT-0xxU, or DP-1VA device
4	The Digimatic communication data (DATA) signal that was read in from the measuring tool with Digimatic output does not conform to the Digimatic communication specifications. Examples of possible causes: • Interruption of the DATA signal of the Digimatic communication cable • Defect in the communication circuit of the measuring tool or the USB-ITN, IT-0xxU, or DP-1VA device
8	When the measurement data request command was received from the software, the USB-ITN, IT-0xxU, or DP-1VA device that received the request was busy. Examples of possible causes: • A measurement data request command was received while the Digimatic communication was being processed.
9	The device detected an error other than those defined above.

Tips

If a command received from the software is invalid, the USB-ITN, IT-0xxU, or DP-1VA device will ignore that command and will not send a response command.

■ Information command (Q) (down)

This command is valid for USB-ITN, IT-0xxU, and DP-1VA that support Digimatic S1 communication.

This request command is for the software to read the measuring tool information.

When the software sends this command to the device, the device reads the information from the measuring tool and responds to the software with the information command (Q).

Item	ASCII value (base 16)	Bytes	Description
Command code	Q	1	Information command
Information command	01 to 7F	2	See "● Information command".
Terminator	CR [0x0D]	1	CR (carriage return)
Total		4	

● Information command

ASCII value (base 16)	Description	Response from the measuring tool	
		Bytes	Description
00	Company name	8	ASCII data (MITUTOYO)
01	Product serial number	n	ASCII data
02	Product code number	n	ASCII data
03	User management No.	n	ASCII data (up to 10 characters)
05	Previous calibration date	11	ASCII data (yyyy/mmm/dd)
06	Next calibration date	11	ASCII data (yyyy/mmm/dd)
07	Advance warning date	11	ASCII data (yyyy/mmm/dd)
08	Current date	11	ASCII data (yyyy/mmm/dd)
09	Calibration timing alarm	1	HEX data (0h: No alarm, 1h: Advance warning date, 2h: Calibration date)

ASCII value (base 16)	Description	Response from the measuring tool	
		Bytes	Description
0A	Display value data output	6	Bytes 1 to 4: Display data (8-digit BCD) Byte 5: Negative sign, unit, decimal point XX XX XXXXb Decimal point data: 0 to 7 Unit data: 00b (millimeters), 01b (inches), 10b (no unit) Negative sign data: 00b (+), 01b (-) Byte 6: Status flag XXXX X X X Xb 1: Battery voltage drop 1: Error display 1: Calibration timing alarm 1: Tolerance judgment NG
0C	Preset value	6	Same as "Display value data output"
0F	Operating mode	1	Flag mode xx01 xxxx: Data output mode xx10 xxxx: Digimatic S1 communication mode xxxx 0001: Normal measurement mode xxxx 0010: Switch custom mode xxxx 0100: Peak mode (current value display) xxxx 0101: Peak mode (TIR) xxxx 0110: Peak mode (Max) xxxx 0111: Peak mode (Min) xxxx 1000: Parameter setting mode
10	Display unit	1	Flag mode xxxx xx00: Millimeter display xxxx xx01: Inch display xxxx xx10: No unit display
11	Switch function select	3	Binary data Byte 1: F1 key 0: No function 1: Switching between inches and millimeters 2. Count direction switching 3. Analog bar scale switching 4. Analog bar centering Byte 2: F2 key 0: No function 1: Zero set (INC switching) 2: Preset recall Byte 3: F3 key 0: No function 1: Displayed value hold 2. Count direction switching 3. Analog bar scale switching 4. Analog bar centering
14	Communication error	0	-
15	FW version	n	ASCII data

ASCII value (base 16)	Description	Response from the measuring tool	
		Bytes	Description
3D	Product code	n	ASCII data

■ Information command (Q) (up)

This command is valid for USB-ITN, IT-0xxU, and DP-1VA that support Digimatic S1 communication.

This response command is for the software to read the measuring tool information.

When the software sends "information command (Q) (down)" to the device, the device responds with the information command (Q). If the device receives measuring tool error information, it sends the information command (Q) to the software.

Item	ASCII value (base 16)	Bytes	Description
Command code	Q	1	Information command
Information command	Depends on the command	#	See "● Information command" in "■ Information command (Q) (down)".
Terminator	CR [0x0D]	1	CR (carriage return)
Total		2+#	

■ Setting command (P) (down)

This command is valid for USB-ITN, IT-0xxU, and DP-1VA that support Digimatic S1 communication.

This command is for the software to set the measuring tool.

When the software sends this command to the device, the device sends the setting command to the measuring tool.

Item	ASCII value (base 16)	Bytes	Description
Command code	P	1	Setting command
Setting command	Depends on the command	#	See "● Setting command".
Terminator	CR [0x0D]	1	CR (carriage return)
Total		2+#	

● Setting command

ASCII value (base 16)	Description	Response from the measuring tool	
		Bytes	Description
83	User management No.	n	ASCII data (up to 10 characters)
85	Latest calibration date	11	ASCII data (yyyy/mmm/dd)
86	Next calibration date	11	ASCII data (yyyy/mmm/dd)
87	Advance warning date	11	ASCII data (yyyy/mmm/dd)
88	Current date	11	ASCII data (yyyy/mmm/dd)
8B	Origin set/Preset recall	0	* The display coordinate system is set to "ABS" at the same time.

ASCII value (base 16)	Description	Response from the measuring tool	
		Bytes	Description
8C	Preset 1 value	6	Bytes 1 to 4: Display data (8-digit BCD) Byte 5: Negative sign, unit, decimal point XX XX XXXXb Decimal point data: 0 to 7 Unit data: 00b (millimeters), 01b (inches), 10b (no unit) Negative sign data: 00b (+), 01b (-) Byte 6: Status flag XXXX X X X Xb 1: Battery voltage drop 1: Error display 1: Calibration timing alarm 1: Tolerance judgment NG
8D	Zero set	0	* The display coordinate system is set to "INC" at the same time.
8E	Peak reset	0	-
8F	Operating mode	1	Flag mode xx01 xxxx: Data output mode xx10 xxxx: Digimatic S1 communication mode xxxx 0001: Normal measurement mode xxxx 0010: Switch custom mode xxxx 0100: Peak mode (Current value display) xxxx 0101: Peak mode (TIR) xxxx 0110: Peak mode (Min) xxxx 0111: Peak mode (Max) xxxx 1000: Parameter setting mode
90	Display unit	1	Flag mode xxxx xx00: Millimeter display xxxx xx01: Inch display xxxx xx10: No unit display
91	Switch function select	3	Binary data Byte 1: F1 key 0: No function 1: Switching between inches and millimeters 2. Count direction switching 3. Analog bar scale switching 4. Analog bar centering Byte 2: F2 key 0: No function 1: Zero set (INC switching) 2: Preset recall Byte 3: F3 key 0: No function 1: Displayed value hold 2. Count direction switching 3. Analog bar scale switching 4. Analog bar centering

ASCII value (base 16)	Description	Response from the measuring tool	
		Bytes	Description
92	Power ON/OFF	1	Flag mode xxxx xx01: Switching from ON to OFF xxxx xx10: Switching from OFF to ON
93	Communication mode setting	1	Flag mode xxxx xx01: Data output mode xxxx xx10: Digimatic S1 communication mode
BC	Analog bar centering	0	-

■ Information request command (R) (down)

This command is valid for USB-ITN, IT-0xxU, and DP-1VA that support Digimatic S1 communication.

This request command is for the software to read the device information.

Item	ASCII value (base 16)	Bytes	Description
Command code	R	1	Information request command
Terminator	CR [0x0D]	1	CR (carriage return)
Total		2	

■ Information command (R) (up)

This command is valid for USB-ITN, IT-0xxU, and DP-1VA that support Digimatic S1 communication.

This response command is for the software to read the device information.

When the software sends "information request command (R) (down)" to the device, the device responds with the information command (R).

Item	ASCII value (base 16)	Bytes	Description
Command code	R	1	Information command
Information type	1	1	Setting of the key scan code used by the device in the HID mode 0: Enter (0x28) 1: Tab (0x2B)
Terminator	CR [0x0D]	1	CR (carriage return)
Total		3	

■ Setting command (S) (down)

This command is valid for USB-ITN, IT-0xxU, and DP-1VA that support Digimatic S1 communication.

This request command is for the software to set the device.

Item	ASCII value (base 16)	Bytes	Description
Command code	S	1	Setting command
Information type	0 or 1	1	Setting of the key scan code used by the device in the HID mode 0: Enter (0x28) 1: Tab (0x2B)
Terminator	CR [0x0D]	1	CR (carriage return)
Total		3	

■ Information command (S) (up)

This command is valid for USB-ITN, IT-0xxU, and DP-1VA that support Digimatic S1 communication.

This response command is for the software to set the device.

When the software sends "setting command (S) (down)" to the device, the device responds with the information command (S).

Item	ASCII value (base 16)	Bytes	Description
Command code	S	1	Information command
Information type	0 or 1	1	Setting of the key scan code used by the device in the HID mode 0: Enter (0x28) 1: Tab (0x2B)
Terminator	CR [0x0D]	1	CR (carriage return)
Total		3	

9.3 Log File

A measurement log file is created when measurement data is retrieved on the data collection screen, and it is saved when measurement data is saved. This section describes the measurement log file format.

Tips

- A measurement log file is saved in the same folder as a setting file used for measurement.
- If a measurement log file already exists, log data is recorded following the previous log data.
- The extension of a measurement log file is csv.

No.	Name	Description
1	Measurement time	The year, month, and day and the date and time of measurement are saved in the "YYYY/MM/DD HH:MM:SS.FFF" format.
2	MEASURED VALUE	The measured value is saved as an 8-digit single-byte number if the measuring device supports Digimatic S1 communication. Otherwise, it is saved in the communication command format.
3	Operation	The following operations performed during data collection are saved: • Measurement data collection: Click the [Data collection] button or press the measuring tool button. • Data cancel: Click the [Data cancel] button. • Data skip: Click the [Data skip] button. • Pause: Click the [Pause] button. • Resume: Click the [Resume] button. • Exit: Click the [Exit] button.
4	Measurer ID	The ID of the login user is saved. If no one is logged in, it will be blank.
5	Measuring tool serial No.	The serial number of the measuring tool is saved.
6	Measuring tool code No.	The code number of the measuring tool is saved.
7	Measuring tool model	The model of the measuring tool is saved.

9.4 Standard Accessories

The accessories of the purchased USB-ITPAK V3.0 (No.06AGR543) are as follows.

Name	Quan-tity	Remarks
USB dongle	1	• For removing restrictions of program • Connect to the PC USB port when using the software • USB versions are USB 2.0 full-speed or USB 1.1
USB-ITPAK Installation Manual	1 set	• Provided in print

10 Troubleshooting

This chapter explains what to do if a problem occurs while using USB-ITPAK. If a problem persists after you take the actions described here, contact the agent where you purchased the product or a Mitutoyo sales office with the following information.

- The serial number of your USB-ITN, USB-FSW, U-WAVE, IT-016U, IT-020U, or DP-1VA device, or USB dongle
- USB-ITPAK version
- The make and model number of your PC
- The OS and Excel versions
- The make and model number of your USB hub (if you are using one)
- The device information and connection setup of any other USB devices connected to your PC

10.1 When a Problem Occurs

Problem	Cause	Action
USB-ITPAK does not start.	• U-WAVEPAK is running.	• USB-ITPAK and U-WAVEPAK cannot be used simultaneously. Exit U-WAVEPAK, and then start USB-ITPAK.
	• [Run this program in compatibility mode for] is selected on the [USB-ITPAK Properties] screen.	• Right-click the USB-ITPAK shortcut icon on the desktop, and then select [Property] from the menu that is displayed to display the [USB-ITPAK Properties] screen. In the [Compatibility] tab, clear the [Run this program in compatibility mode for] check box.
There is a part that cannot select a menu.	• The USB dongle is not connected to the PC.	• Connect the USB dongle, and then restart USB-ITPAK. Purchase USB-ITPAK V3.0 (No. 06AGR543) to obtain the USB dongle.

Problem	Cause	Action
Measurement data cannot be entered.	• The measuring tool is turned off. • The connection device is not correctly recognized by the PC. • The data collection operation has been paused. • The application where measurement data will be entered is not active. • The Japanese kanji conversion mode is not set to [Direct Input].	• Turn on the power, and then continue work. • Check the connection of the device. • On the data collection screen, click the [Resume] button, and then continue work. • If [Optional] is selected in [Data entry application], the application for data entry must be active. If the application is not active, select the application to make it active. • If [Optional] is selected in [Data entry application], the Japanese kanji conversion mode must be set to [Direct Input]. If it is not set to [Direct Input], change the setting to [Direct Input].
Measurement data is not entered in the specified cell.	The wrong cell range is specified.	Check the cell range setting.
Processing speed is slow.	The number of connected devices has increased.	If the number of connected devices increases, the following processes begin to require more time. • The startup time of the PC or Windows • The startup time of USB-ITPAK • The time for data collection using batch measurement • The time it takes to switch from the create procedure screen to the data collection screen It is recommended that you use the software with 20 connected devices or fewer.

Problem	Cause	Action
When the PC wakes up from standby or hibernation mode, the connection device is not correctly recognized.	The device is being used with a USB hub or an expansion USB board.	If you are using the device with a USB hub or an expansion USB board, the device may not be correctly recognized depending on the PC model or BIOS settings. Disconnect the connection device, and then reconnect it. If the device is still not recognized after you reconnect it, restart the PC. **Tips** The connection device supports standby/hibernation mode, but its operation is not guaranteed for all PCs and USB hubs. If problems occur with standby/hibernation mode in your operating environment, disable standby/hibernation mode in your PC's power settings. For details about the power settings, see the instructions that are included with your PC.
A security warning is displayed when USB-ITPAK starts up.	Security software is blocking USB-ITPAK communication.	Add the USB-ITPAK executable file "itpak.exe" to your security software's exception list.

Problem	Cause	Action
A connected device is not correctly recognized.	• The device is not connected correctly.	• You can check the connection status on the [Device information] screen in USB-ITPAK. If the device is not displayed, disconnect it and then reconnect it, and check the connection status again. When checking the status, you must restart USB-ITPAK.
	• The USB hub to which the device is connected is not recognized.	• You can check the connection status in the [Device Manager] screen in Windows. If the USB hub is not recognized, disconnect it and then reconnect it, and check the connection status again.
	• The device or connecting cable may be damaged.	• Check the state of the device and connecting cable. If there is a malfunction, [UnKnown device] may be displayed in the Windows [Device Manager] screen. **Tips** If devices are connected through multiple USB hubs, Windows may not recognize the USB hubs. We recommend using USB hubs that are USB certified.

10.2 When an Error Message is Displayed

This section explains the contents and actions to take for the most common USB-ITPAK error messages.

10.2.1 General Error Messages

Error message	Cause	Action
Failed to identify the USB dongle. Check for proper connection of the USB dongle.	The USB dongle is not connected to the PC.	Connect the USB dongle, and then restart USB-ITPAK. **Tips** USB-ITPAK will run if the USB dongle version is the same or later than the USB-ITPAK version. For details, see "■ USB dongle version and operating specifications" (page 15).
	The USB dongle may not be connected.	Check that the USB dongle is properly connected, and continue with operation.
Could not confirm the enabled devices. Please check device connection.	No USB-ITN, USB-FSW, U-WAVE-R, IT-016U, IT-020U, or DP-1VA device is connected.	Connect a device to use, and then restart USB-ITPAK.
	The VCP driver has not been installed for USB-ITN, USB-FSW, IT-016U, IT-020U, or DP-1VA.	Install the VCP driver, and then restart USB-ITPAK.
U-WAVE-R of factory-default state was found.	A U-WAVE-R device in its factory-default state is connected.	Use U-WAVEPAK to set up the U-WAVE-R device.
ST********** (Status code = **)	A U-WAVE status packet was received.	The contents of the error and the action to take differ depending on the displayed status code. Take the appropriate action for the status code. For example, the status code [50] indicates that a channel number that is not registered to the U-WAVE-R device was specified, and therefore a registered channel number must be specified. For details about status codes, see "U-WAVEPAK User's Manual".
TI********** (U-WAVE-T disconnected)	The U-WAVE transmitter on the specified channel is disconnected.	Check the connection status of the U-WAVE transmitter.
The specified location does not contain information about your hardware.	The VCP driver to install was not found.	Select the folder for the connected device from the [Drivers] folder on the supplied CD. Select the VCP driver and you will be able to install it.

10.2.2 Create Procedure Screen

Error message	Cause	Action
Failed to find the setting file.	The selected setting file does not exist.	Check whether the setting file exists.
Could not control Excel. Please check Excel condition.	This error occurs when USB-IT-PAK cannot control Excel.	Check the condition of the Excel application into which measurement data should be entered. Example: • If a cell on the Excel worksheet being operated on is in edit mode, exit edit mode. • If a settings dialog is open in Excel, close the dialog.
Failed to find the specified Excel file. Workbook = [Workbook]	The Excel file that is registered in the setting file does not exist.	Check whether the Excel file exists.
Failed to find the specified Worksheet. Workbook = [Workbook] Worksheet = [Worksheet]	The worksheet that is registered in the setting file does not exist.	Check whether the worksheet exists.
Device used in the procedure is not connected. Connect the device to restart the USB-ITPAK or change the device to use.	A device used in the procedure is not connected.	If a device that is used in a procedure is not connected, the name of the procedure that is shown in the center of the create procedure screen is displayed in red. Do one of the following: • Connect the disconnected device, and then restart USB-IT-PAK. • Select the procedure that is displayed in red, click the [Change Procedure] button, and then change the device to use.
Device used in the procedure is not connected. Connect the device to restart the USB-ITPAK.		
An invalid procedure has been set.	The information that is registered in the setting file may have been corrupted.	Create the procedure again.

10.2.3 [Device Information] Screen

Error message	Cause	Action
The specified device No. has already been used.	The specified device No. is in use by another device.	Specify a device No. that is not in use.

10.2.4 [Measuring Tool Setup Mode] Screen

Error message	Cause	Action
Failed to transmit data to the measuring tool	This error occurs when USB-IT-PAK fails to send to the measuring tool.	• Check the connection of the measuring tool and input tool. • Check the state of the measuring tool (power, error occurrence, etc.).
Failed to receive data from the measuring tool	This error occurs when USB-IT-PAK fails to receive from the measuring tool.	
An error has occurred. Check the contents of the error. [Process name]	This error occurs when USB-IT-PAK fails to send to or receive from the measuring tool.	• Check the connection of the measuring tool and input tool. • If this error is displayed, check the settings of the measuring tool. • For details on each item of the measuring tool, refer to the manual supplied with each device.
Incorrect data received from the measuring tool	This error occurs when USB-IT-PAK receives unauthorized data from the measuring tool.	• Check the connection of the measuring tool and input tool. • Check the state of the measuring tool (power, error occurrence, etc.).
Failed to save file.	This error occurs when USB-IT-PAK encounters an error while saving a file.	Check if the target file is being used by another application.
Failed to read file.	This error occurs when USB-IT-PAK encounters an error while loading a file.	Make sure that the target file exists and is not corrupted.
An input error has occurred.	This error occurs when USB-IT-PAK encounters a format error in an item set on the screen.	• Check the setting of the item where the error occurred. • For details on each item of the measuring tool, refer to the manual supplied with each device.
A format error occurred when reading the file. [Name of the item where the error occurred]	This error occurs when USB-IT-PAK encounters an item setting error while loading a file.	
Error occurred in measuring instrument [code = Error number]	This error occurs when USB-IT-PAK encounters an error while communicating with the measuring tool. The error number (911 to 919) is displayed.	For details on the description of a displayed error number and its solution, see "■ Status command (9) (up)" (page 216) in "9.2.3 Types and Formats of Communication Commands".

10.2.5 [Add procedure] Screen/[Change Procedure] Screen

Error message	Cause	Action
Could not control Excel. Please check Excel condition. Workbook = [Workbook] Worksheet = [Worksheet]	This error occurs when USB-IT-PAK cannot control Excel.	Check the condition of the Excel application indicated in the error message. Example: • If a cell on the Excel worksheet being operated on is in edit mode, exit edit mode. • If a settings dialog is open in Excel, close the dialog.
The specified Key has already been used.	The selected function key has already been assigned to another function.	Select a different function key to assign.
Device can not be registered anymore.	The maximum number of devices that can be registered (400) has been exceeded.	Do not register more than 400 devices.
No configurable device is connected. When the device is added, connect the device to restart the USB-ITPAK.	No configurable USB-ITN, USB-FSW, U-WAVE, IT-016U, IT-020U, or DP-1VA device is connected, or all devices are registered.	To add a USB-ITN, USB-FSW, U-WAVE, IT-016U, IT-020U, or DP-1VA device, save the created setting file, connect the device, and then restart USB-ITPAK.
Selected device is not connected. Connect the device to restart the USB-ITPAK or change the device to use.	The selected device is not connected.	Do one of the following: • Connect the selected device, and then restart USB-ITPAK. • Delete the unconnected device with the [-] button, and then assign another device with the [+] button.
No configurable foot-switch device is connected. When the foot switch device is added, connect the device to restart the USB-ITPAK.	No configurable USB-FSW device is connected, or all devices are registered.	To add a USB-FSW device, save the created setting file, connect the device, and then restart USB-ITPAK.
Specify the Excel file.	No Excel file is specified in [Workbook] under the [Excel settings] field.	Specify the Excel file to use.
Specify the data entry cell range.	Nothing is specified in [Range of cells].	In the [First] and [Last] fields under [Range of cells], enter a cell range in A1-style notation.
Set device(s).	Nothing is set in the [Data entry devices] field.	Under the [Data entry devices] field, click the [+] button, and then set a data entry device.
Set the procedure name.	Nothing is set in the [Procedure name] field.	In the [Procedure name] field, enter a procedure name.
The entered procedure name has already been registered.	The procedure name that was entered is already in use by another procedure.	Enter a different procedure name.

Error message	Cause	Action
First cell address is illegal. Check the entered cell address.	An incorrect address was entered in [First] under the [Range of cells] field.	Enter a correct cell address in A1-style notation.
Last cell address is illegal. Check the entered cell address.	An incorrect address was entered in [Last] under the [Range of cells] field.	Enter a correct cell address in A1-style notation.
Cell range provided is illegal. Check the entered cell address.	The cell range assigned to the data entry device is not included in [Range of cells] under the [Excel settings] field.	Do one of the following: • Change the range of cells that is assigned to the data entry device. • Change [Displacement intervals] under the [Excel settings] field.

10.2.6 [Data entry device settings] Screen

Error message	Cause	Action
No configurable foot-switch device is connected. When the foot switch device is added, connect the device to restart the USB-ITPAK.	No configurable USB-FSW device is connected, or all devices are registered.	To add a USB-FSW device, save the created setting file, connect the device, and then restart USB-ITPAK.
Specify the data entry cell range.	Nothing is entered in the [Excel cells assignment] field.	Enter a value in the [Excel cells assignment] field in A1-style notation.
Beyond the data entry cell range is assigned. Perform setting again.	A value outside the data input range was entered in the [Excel cells assignment] field.	Enter a row number or column number in the [Excel cells assignment] field that is within the cell range entered in [Range of cells] under the [Excel settings] field on the [Add procedure] screen.
Specify the character string data entry device.	No device for character string data entry has been set.	Click the [+] button under the [Entry data settings] field, and then set a character string data entry device.
Specify the channel.	Nothing is selected in the [Channel] field.	If you have selected a U-WAVE-R device in the [Select device] field, you must also select which channel the device uses for transmission from the [Channel] drop-down list. Make a selection in the [Channel] field.
U-WAVE-T Measurement mode = Button driven	When a batch measurement procedure was being created, the channel of a U-WAVE transmitter in button-driven mode was selected.	Do one of the following: • Select the channel of a U-WAVE transmitter in event-driven mode. • After creating the procedure, change the measurement mode of the U-WAVE transmitter that is registered to the selected channel to event-driven mode.
U-WAVE-T Measurement mode = Event driven	When an individual measurement procedure was being created, the channel of a U-WAVE transmitter in event-driven mode was selected.	Do one of the following: • Select the channel of a U-WAVE transmitter in button-driven mode. • After creating the procedure, change the measurement mode of the U-WAVE transmitter that is registered to the selected channel to button-driven mode.

10.2.7 [Character string data settings] Screen

Error message	Cause	Action
Specify the character string data.	Nothing is entered in the [Character string data] field.	Enter something in the [Character string data] field.

10.2.8 Data Collection Screen

Error message	Cause	Action
The used device is wrong.	Data was entered from a device other than the device that is set in the procedure of the setting file.	Enter data from the correct device.
An error occurred during data reception. Device No. = [Device] Click Ignore to proceed anyway or Retry to try again.	A timeout error occurred during a data request operation.	If there is no response from the measuring tool about 2 seconds after a data request, USB-ITPAK cancels the data entry from the measuring tool. Check that the power of the measuring tool is on, and then click the [Retry] button to try the data request operation again. If you click the [Ignore] button and the data entry application is Excel, the data entry position moves to the next cell.
Could not confirm the enabled devices. [COM No.] Please check device connection.	Communication could not be made with a USB-ITN, USB-FSW, U-WAVE-R, IT-016U, IT-020U, or DP-1VA device.	Check the connection status of the USB-ITN, USB-FSW, U-WAVE-R, IT-016U, IT-020U, or DP-1VA device that is indicated by [COM No.].
The selected cell is not a target cell to enter data. Select the cell again.	The selected cell is not within the target cell range for data entry.	Select a cell that is within the target cell range for data entry.
Failed to character string data entry. Check the character string data.	This error occurs when an application other than Excel is the destination for character string data entry, and USB-ITPAK was unable to communicate with the application for some reason.	Check that the application for character string data entry is running, restart USB-ITPAK, and then run the data collection operation again.
Failed to character string data entry. Check the Excel condition and character string data.	This error occurs if Excel is the destination application for character string data entry, and USB-ITPAK was unable to communicate with Excel for some reason.	Check that Excel is running, restart USB-ITPAK, and then run the data collection operation again.

Error message	Cause	Action
Could not control Excel. Please check Excel condition. Workbook = [Workbook] Worksheet = [Worksheet]	This error occurs when USB-IT-PAK cannot control Excel.	Check the condition of the Excel application indicated in the error message. Example: • If a cell on the Excel worksheet being operated on is in edit mode, exit edit mode. • If a settings dialog is open in Excel, close the dialog. • Disable the automatic save feature in Excel.

11 Appendix

11.1 Usage Hints

11.1.1 Using a Setting File on Another PC

■ Using the same devices

Copy the following files to the other PC:

- Setting file
- The Excel file that is registered in the setting file

Note that the full path (drive name and folder name) of the Excel file is registered in the setting file. Therefore, you should copy the Excel file to the same location on the other PC.

■ Using different devices

The operation is basically the same as that described in "■ Using the same devices" (page 237).

However, because you will be using different devices, the devices Nos. that are registered in the setting file will need to be changed. Change the device Nos. on the copy destination PC to match those on the original PC beforehand. The copied setting file can then be used without modifications.

For details about changing device No., see 📖 "8.4 [Device information] Screen" (page 165).

11.1.2 Playing a Sound when Data is Entered

You can create an Excel macro that plays a sound when data is entered.

For details about macros, see the Excel documentation.

11.1.3 Data Request and Data Cancel Operations when Using U-WAVE

For U-WAVE, the conditions for the data request and data cancel operations differ depending on the measurement mode (button driven or event driven). The operation conditions for each mode are shown below.

For details about the measurement modes (button driven and event driven) and how to operate with each mode, see 📖 "U-WAVEPAK User's Manual".

■ When the data entry application is Excel

Procedure type	Operation		Measurement mode	
			Button driven	Event driven
Sequential	DATA switch (U-WAVE transmitter)	Data request	✓*1	—
		Data cancel	✓*2	—
	Foot switch (via USB-FSW)	Data request	—	✓
		Data cancel	✓	✓
	Data collection screen or function key	Data request	—	✓
		Data cancel	✓	✓
Batch	DATA switch (U-WAVE transmitter)	Data request	—	—
		Data cancel	—	—
	Foot switch (via USB-FSW)	Data request	—	✓
		Data cancel	✓	✓
	Data collection screen or function key	Data request	—	✓
		Data cancel	✓	✓
Individual	DATA switch (U-WAVE transmitter)	Data request	✓	—
		Data cancel	✓*3	—
	Foot switch (via USB-FSW)	Data request	—	✓
		Data cancel	✓	✓
	Data collection screen or function key	Data request	—	—
		Data cancel	—	—

Note: ✓ means compatible; — means not compatible

*1 Except when [Cell address assign rules] is [Unspecified].

*2 The data cancel operation during measurement processing is possible by using the DATA switch on the U-WAVE transmitter that is registered to the procedure.
For measurement where multiple procedures are combined, the data cancel operation of the U-WAVE transmitter cannot be done across multiple procedures.
For example, if measurement processing consists of procedure A and procedure B, a U-WAVE transmitter that is registered only to procedure B cannot be used to perform a data cancel operation in procedure A.

*3 Data cancel is possible for each data entry range of the measuring tool to which the U-WAVE transmitter is connected.

■ When the data entry application is not Excel

Procedure type	Operation		Measurement mode	
			Button driven	Event driven
Sequential	DATA switch (U-WAVE transmitter)	Data request	✓	—
		Data cancel	—	—
	Foot switch (via USB-FSW)	Data request	—	✓
		Data cancel	—	—
	Data collection screen	Data request	—	✓
		Data cancel	—	—
Batch	DATA switch (U-WAVE transmitter)	Data request	—	—
		Data cancel	—	—
	Foot switch (via USB-FSW)	Data request	—	✓
		Data cancel	—	—
	Data collection screen	Data request	—	✓
		Data cancel	—	—
Individual	DATA switch (U-WAVE transmitter)	Data request	✓	—
		Data cancel	—	—
	Foot switch (via USB-FSW)	Data request	—	—
		Data cancel	—	—
	Data collection screen	Data request	—	—
		Data cancel	—	—

Note: ✓ means compatible; — means not compatible

11.2 Uninstalling USB-ITPAK

1 **Log in to the PC as an Administrator.**

2 **Click the Windows Start button, and then select [All programs] → [USB-ITPAK] → [Uninstall USB-ITPAK].**

Tips

Press the X key while holding the Windows logo key to open the menu, and then select [Programs and Features] to open [Programs and Features]. From the list, select USB-ITPAK and click [Uninstall].

3 **When [Are you sure you want to completely remove USB-ITPAK and all of its components?] is displayed, click the [Yes] button.**

» [USB-ITPAK was successfully removed from your computer.] will be displayed.

4 **Click the [OK] button.**

This completes the uninstallation of USB-ITPAK.

11.3 Uninstalling the VCP Driver

1 **Log in to the PC as an Administrator.**

2 **Connect the device whose VCP driver you want to uninstall to the PC.**

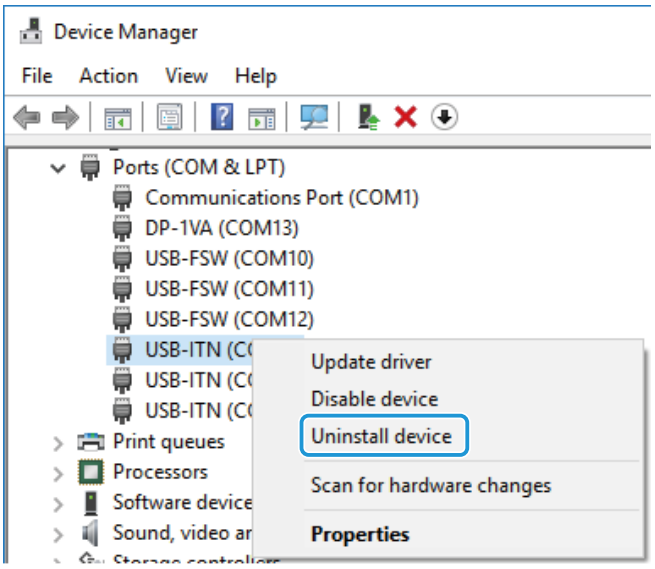
For details about connecting a particular device, see the user's manual for that device. As an example, here we connect a USB-ITN device to the PC.

3 **Open the [Device Manager] screen.**

1. While holding the Windows logo key, press [X].
2. From the menu that is displayed, select and open [Device Manager].

4 **From the device names that are displayed in [Ports (COM & LTP)], right-click the device whose VCP driver you want to uninstall and select [Uninstall device].**

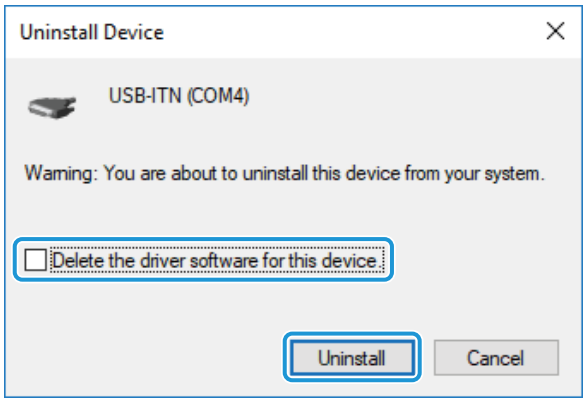
As an example, here we select [USB-ITN (COMx)]. (For IT-0xxU as well, select [USB-ITN (COMx)].)



Tips

The [x] in [COMx] is the COM port number. Unused numbers are automatically allocated.

5 **Select [Delete the driver software for this device.] and then click the [Uninstall] button.**



This completes the uninstallation of the VCP driver.

After uninstallation is complete, restart the OS or disconnect and reconnect the connection device. The connection device will be recognized as a USB human interface device, and the HID driver will be automatically installed.

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