

**Data Collection Software  
HORIBA LAQUA  
FD-70**

**Instruction Manual**

CODE:GZ0000276836D

# Preface

This manual describes the operation of the Data Collection Software, FD-70.

Be sure to read this manual before using the product to ensure proper and safe operation of the instrument. Also safely store the manual so it is readily available whenever necessary.

Product specifications and appearance, as well as the contents of this manual are subject to change without notice.

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- This software is designed for a connection between one Meter and one PC. Connecting multiple Meter or using hub network may not always guarantee the performance of this software.
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# 1 Introduction

## 1.1 Overall feature

This software can load measured data from pH/Water Quality Meters, F-70/DS-70 series, LAQUA-PH1100/PH1200/PH1300/PC1100/EC1100, and Portable pH/Water Quality Meters, D-70/ES-70/OM-70 series, LAQUAact-PH120/PH130/PC110/PD110/EC120/DO120 into your PC and save the data in MSD format or BME format or CSV format. Files of MSD format and BME format are the binary files that only open by this software.

## 1.2 Description of manual

- This manual describes operations and displays of Windows as in the following way.  
[        ]: indicates buttons and menus  
<       > : indicates titles of windows and dialog boxes
- The pH Meters, Electric Conductivity Meters, and Dissolved Oxygen Meters are collectively referred to as “Meter.”
- All of the instructions are based on Windows 8.1.

## 1.3 Cautions

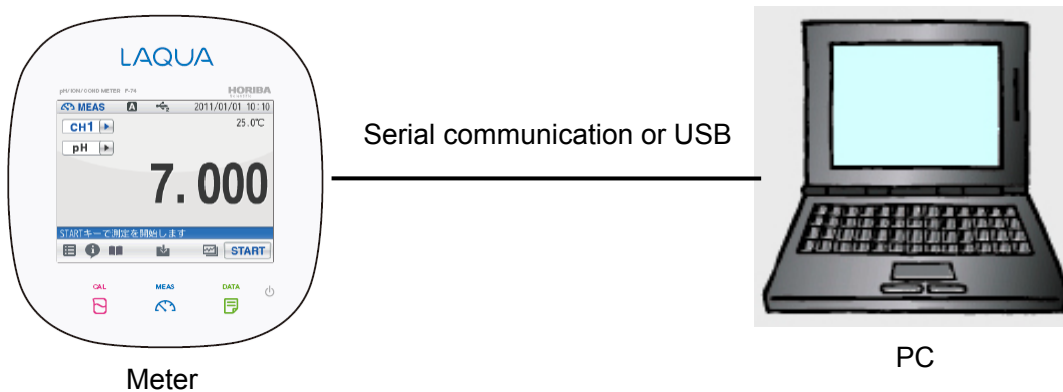
Be sure to read the following cautions before using this software.

- This software does not work correctly with tablet mode of Windows 10. Use this software with desktop mode.
- To exit from the software, click [End] or [x].
- This software performance cannot be guaranteed on every PC model.
- Communication must be started after the Meter is set to the measurement mode. For how to set the Meter to the measurement mode, refer to the manuals of each Meter.
- The installation of this software requires the administrative right of the PC.
- If using this software with other applications activated, this software may not always work properly.
- The files saved in this software (despite of those of CSV format) do not open by the normal procedure of opening (double-click or right-click and select [Open]). To open the files, start up this software, and move to the mode in which the files have been saved.
- The files of CSV format do not open by this software.

## 2 Software System

### 2.1 System configuration

The following figure explains the system configuration.



The following models can use only serial communication.

D-70 series, ES-71, OM-71, LAQUA-PH1100,  
LAQUAact-PH120/PH130/PC110/PD110/EC120/DO120

### 2.2 System component

Component	Description
Meter	F-71/72/73/74/74BW, DS-71/72 D-72/73/74/75, ES-71, OM-71 LAQUA-PH1100/1200/1300, LAQUA-PC1100, LAQUA-EC1100 LAQUAact-PH120/130, LAQUAact-PC110, LAQUAact-PD110, LAQUAact-EC120, LAQUAact-DO120
PC	Refer to "2.4 Necessary PC environment and recommended PC environment"
Serial cable	Optional for Meter (Part No. 3014030151)
USB cable	Optional for Meter (Part No. 3200373941)

## 2.3 Communication method

### ● Serial and USB communication

By connecting cables, real-time measurement (refer to “8 Measurement Mode”) are enabled as well as the data memorized in the Meter can be acquired by PC (refer to “9 Memory Data Mode”).

#### **Note**

- The serial communication and the USB communication cannot be used at the same time.
- The following models can use only serial communication.  
D-70 series, ES-71, OM-71, LAQUA-PH1100,  
LAQUAact-PH120/PH130/PC110/PD110/EC120/DO120

## 2.4 Necessary PC environment and recommended PC environment

The following shows the necessary PC environment and recommended PC environment for this software.

Necessary PC environment: The following PC environment is necessary to use this software.

Recommended PC environment: The following PC environment is recommended to use this software comfortably.

Component	Necessary PC environment	Recommended PC environment
Memory	32 bit: 1 GB or more 64 bit: 2 GB or more	
CPU	1 GHz or more	
Free space of HDD	5 GB or more	10 GB or more
OS	Windows 7, Windows 8 (8.1), and Windows 10	
Display	SUPER VGA (800 × 600) or more	
Connector	Serial connector (D-SUB 9 pin)	
	USB connector	

#### **Note**

When this software is used in the condition in which memory or the free space of hard disk is in short, the software may freeze during use and the data cannot be saved.

## 3 Software Configuration and Process

### 3.1 Software configuration

This software consists of three modes, measurement mode, memory data mode, and maintenance mode. One of those is selected on the Main window.

- **Measurement mode**

With the measurement mode, data measured by the Meter can be loaded in real time by serial communication or USB communication and displayed in graphic form. Data also can be saved in MSD format or CSV format.

- **Memory data mode**

With the memory data mode, data stored in Meter can be loaded. A graph can be made, and data also can be saved in BME format or CSV format.

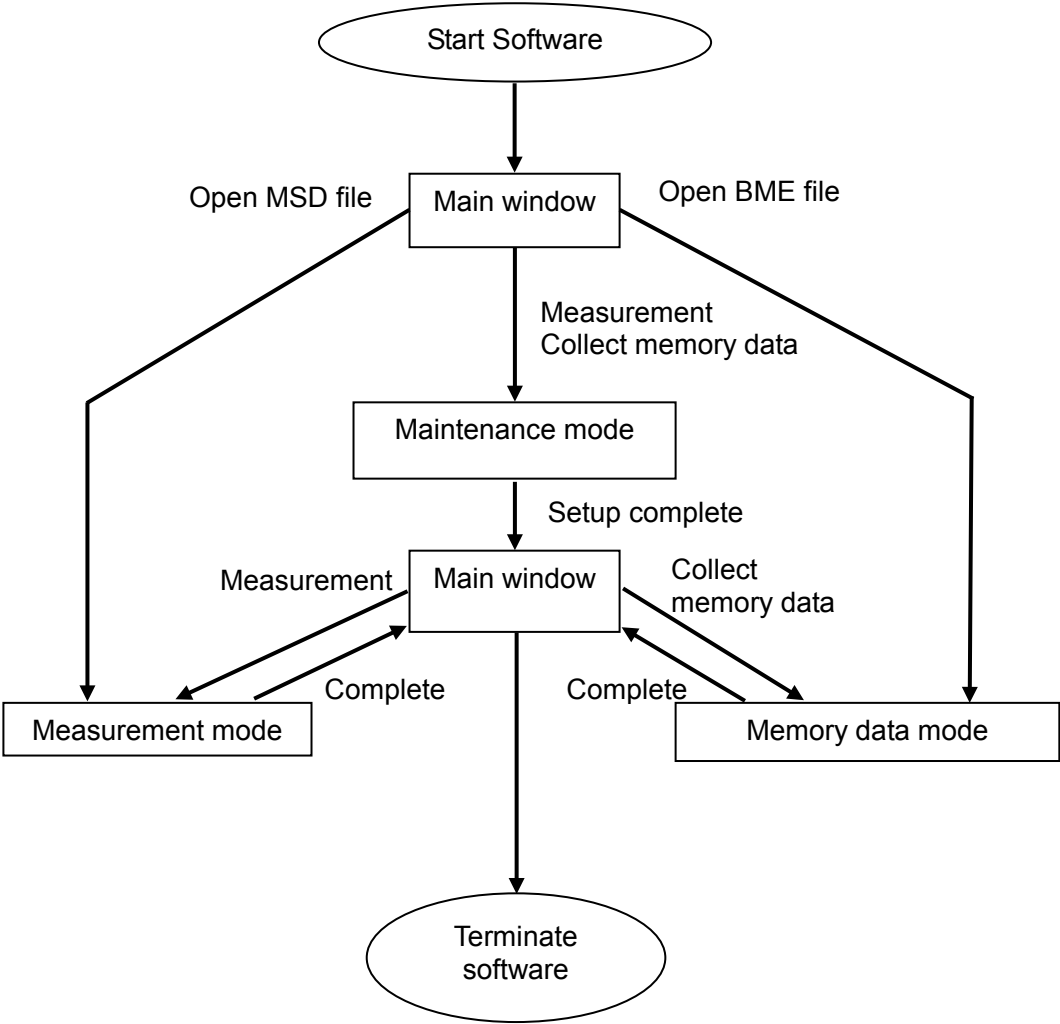
- **Maintenance mode**

With the maintenance mode, model of the Meter, name of the Meter, the details of the Meter, and communication method are set up. In case of doing measurement and data collection by serial communication or USB communication, the setting must be done in the maintenance mode.

The meter can be operated by inputting the communication commands in “Terminal” window.



### 3.2 Flow schematic



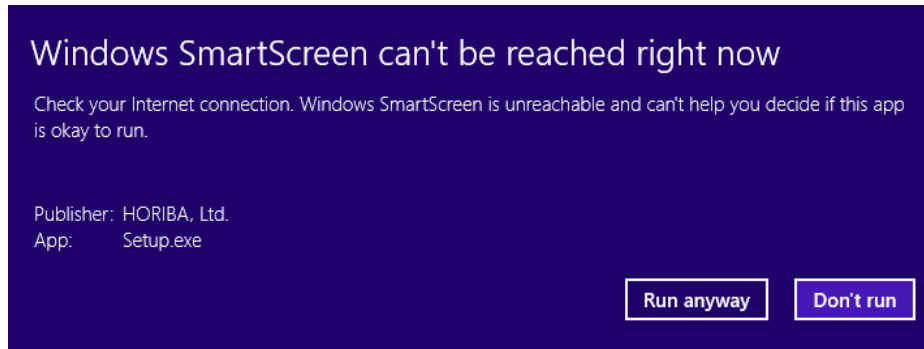
- The setting in the maintenance mode is needed before the first measurement or memory data collection after this software starts.
- A data file can be opened after the loading of instruction information in the maintenance mode.
- When opening the file of the different type from instrument information, a data is not displayed correctly.

## 4 Preparation

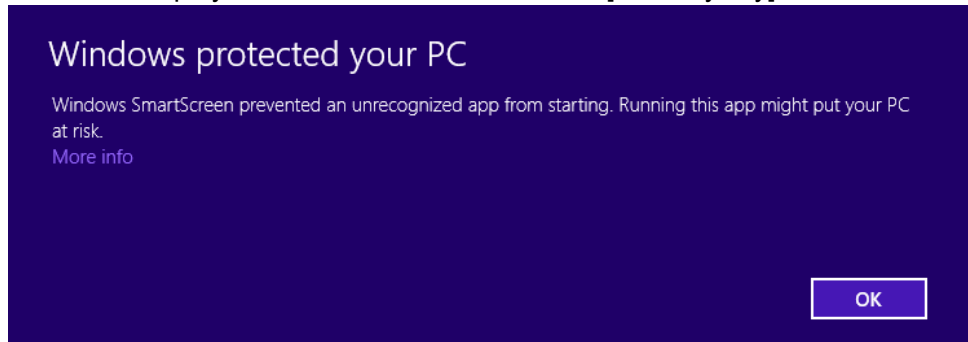
### 4.1 Installation and uninstallation

#### Note

- The operator to install this software should be the Administrator of the PC.
- When installing this software by using Internet Explorer, the window shown below is displayed after stating on Window 8 (8.1) or Windows 10. This is caused by the function of Windows that is the SmartScreen filter to prevent installation of malicious software. Confirm that “HORIBA, Ltd.” is displayed in Publisher, and then click [Run anyway] to install this software.

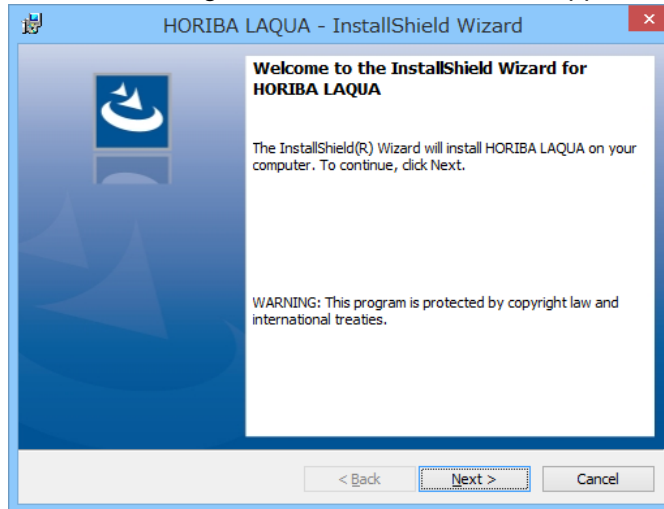


- When the window shown below is displayed, click [More info] and confirm that “HORIBA, Ltd.” is displayed in Publisher, and then click [Run anyway] to install this software.

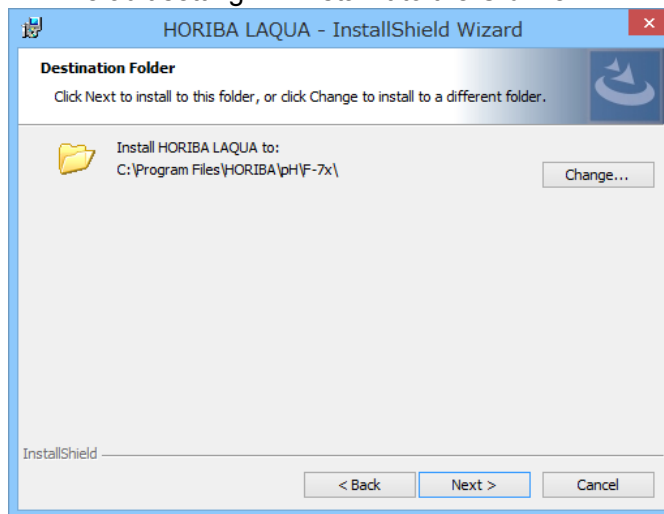


- **Installation**

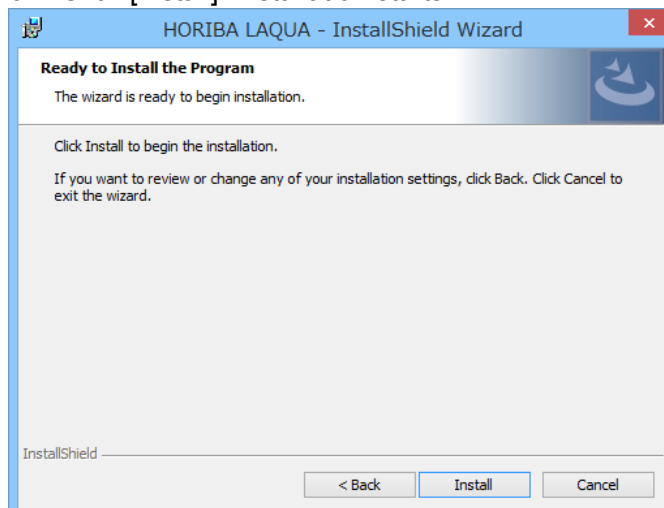
1. Right-click the downloaded file displays a submenu. Click [Extract All].
2. Extract all files on the optional folder.
3. Double click “setup.exe” file, the file is then loaded.
4. After loading, the window shown below appears. Then, click [Next].



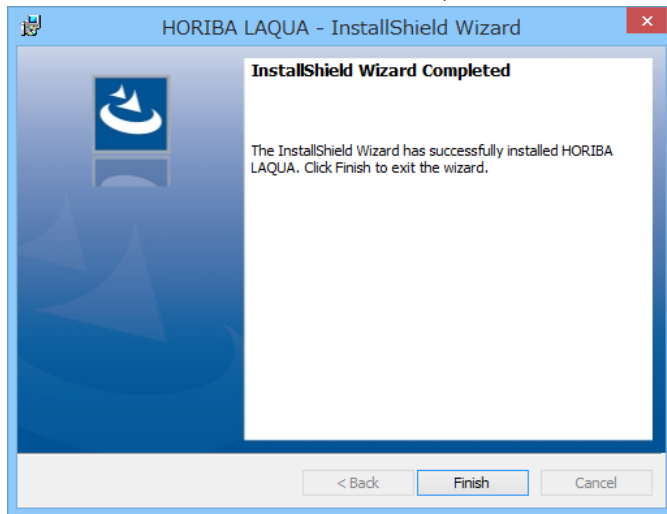
5. Select the folder you want to install the software, and click [Next]. Default setting will install it to the C drive.



6. Click [Install]. Installation starts.

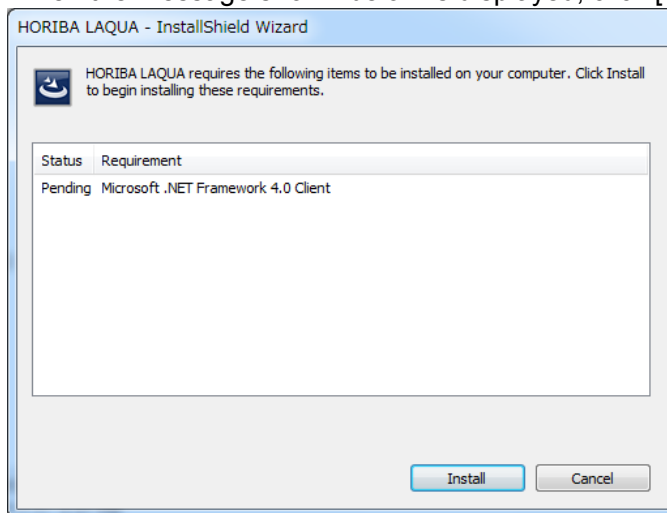


7. When setting is completed, the window shown below appears. Click [Finish] to complete the installation. A shortcut icon, "HORIBA LAQUA" is made on the desktop.



### **HINT**

When the message shown below is displayed, click [Install].



- **Uninstallation**

Select this software from the list of installed programs in the Control Panel of Windows and uninstall it.

You can uninstall this software by starting an installer again after installing this software.

## 4.2 Connecting meter with PC

### 4.2.1 Preparation

1. Prepare the Meter and cable.
2. Confirm that the Meter is not powered yet, and start the connection.

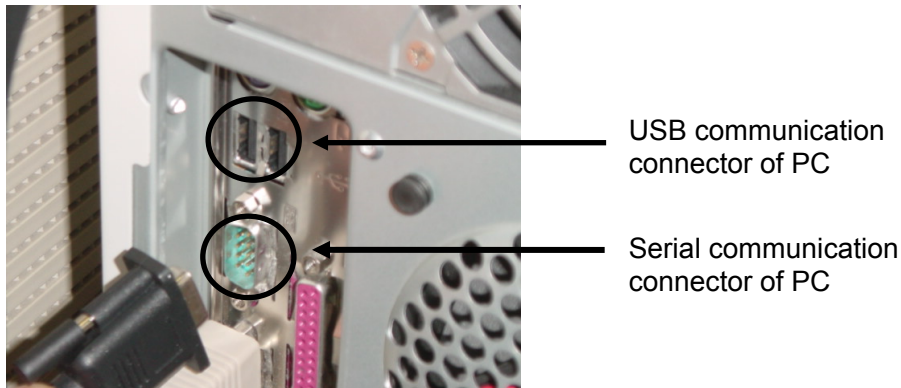
For cables, refer to “2.2 System component.”

### 4.2.2 Connection for serial communication

Connect the serial cable to the serial communication connector of the Meter and PC. For the serial communication connector of the Meter, refer to the instruction manual of the Meter.

### 4.2.3 Connection to USB communication

Connect the USB cable to USB communication connector of the Meter and PC. For the USB communication connector of the Meter, refer to the instruction manual of the Meter.



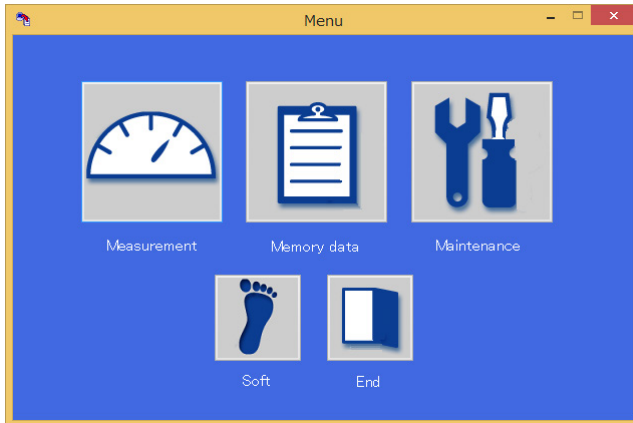
#### **Note**

The cable connection of Meter to PC should be performed with the power of Meter OFF. Connection with the power ON may damage the Meter and PC. Starting up the PC with the Meter connected to PC and with the power of Meter ON may cause PC malfunction. When this should occur, either disconnect the power cable or remove the battery of the Meter.

## 5 Start-up and End of Software

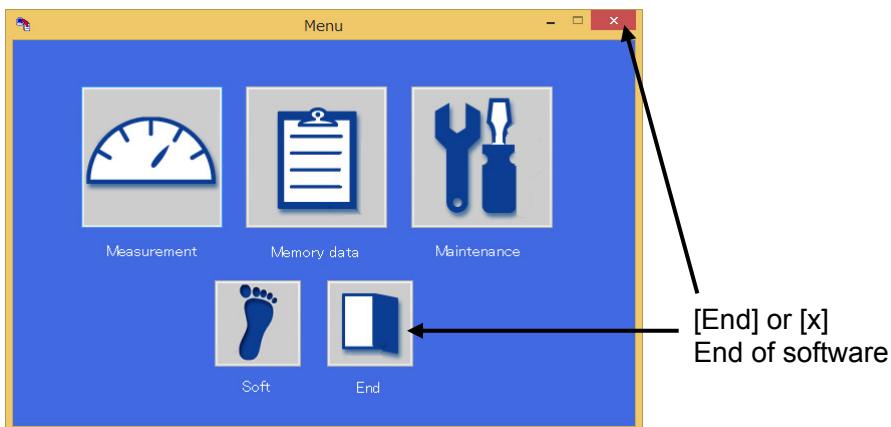
### 5.1 Start-up the software

Double click the shortcut icon [HORIBA LAQUA] on the desktop. The software starts-up. When the start-up is normally processed, the Main window shown below is displayed.



### 5.2 End of the software

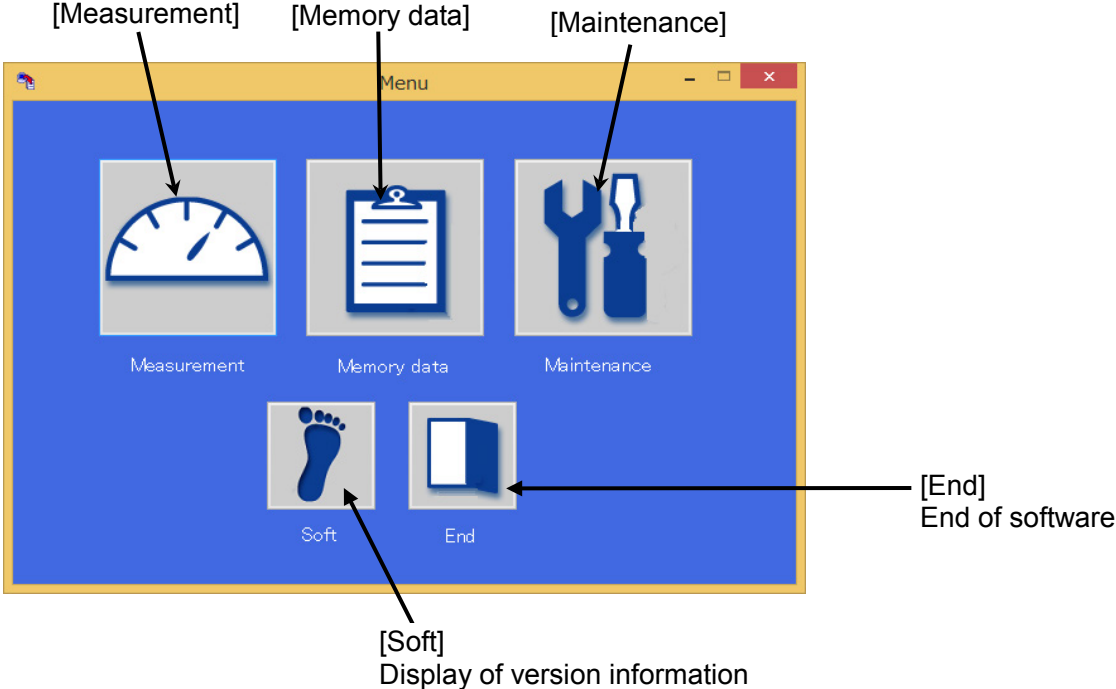
Click [End] at the lower right or [x] of the Main window quits the software.



For the Main window, refer to "5.3 Main window".

### 5.3 Main window

This software consists of three modes, measurement mode, memory data mode, and maintenance mode.



#### **Version Information**

Clicking [Soft] shows version information of this software.  
Clicking [Close] or [x] returns to the previous window.

## 6 Simple Example

### 6.1 pH measurement with F-74

The following describes how to perform a measurement using the F-74.

#### **Conditions**

Carry out the pH measurement as set in the meter with the F-74.

Auto hold setting: OFF

Communication method: USB communication

#### **Procedures**

1. Prepare the F-74, PC, and USB cable. (Refer to “2.2 System component.”)
2. Check that the power of the F-74 is turned OFF and connect the cable. (Refer to “4.2 Connecting meter with PC.”)
3. Turn ON the power of the F-74.
4. Set up in the maintenance mode and get the instrument serial number (referred to as S/N in the rest of this document). (Refer to “7 Maintenance Mode.”)
5. Enter the measurement mode, click [Device settings], and check [1Channel pH] in the <Measurement parameter>. (Refer to “8.2 Measurement settings.”)
6. Next, select [2 (seconds)] in [Interval setting(s)] and select [NO-hold setting] in Hold type setting. (Refer to “8.2 Measurement settings.”)
7. After completion of measurement settings, start the measurement by clicking [Start] and end the measurement by clicking [Stop]. (Refer to “8.3 Measurement.”)



## 7 Maintenance Mode

Set up the Meter and communication method. Set up in this maintenance mode before measurement or data collection.

### 7.1 Basic window

You can operate the Meter with communication commands. The list of communication commands can be downloaded from our website.

Select communication method.

Select the port connected from the port list (only for RS-232C).

Get Instrument model, instrument S/N and program No. from the Meter.

Input name of the Meter (if needed).

Input the detail information of the Meter (if needed).

### 7.2 Setting procedure of the meter

1. Select the communication method from RS-232C or USB.  
When selecting RS-232C, select the correct serial port according to your PC.
2. Set the Meter to the measurement mode.
3. Click [Device information input] to get the instrument model, instrument S/N and program No.
4. Input the instrument name and detail if needed.
5. Click [OK].

## 8 Measurement Mode

In the measurement mode, data being measured by a Meter can be loaded, a graph can be displayed, and measured data can be saved in MSD format or CSV format.

### 8.1 Basic window

The screenshot shows the 'Measurement' software window. It features a top toolbar with icons for 'Device setting', 'Screen display', 'Print', and 'Open file'. The main display area is divided into several sections:

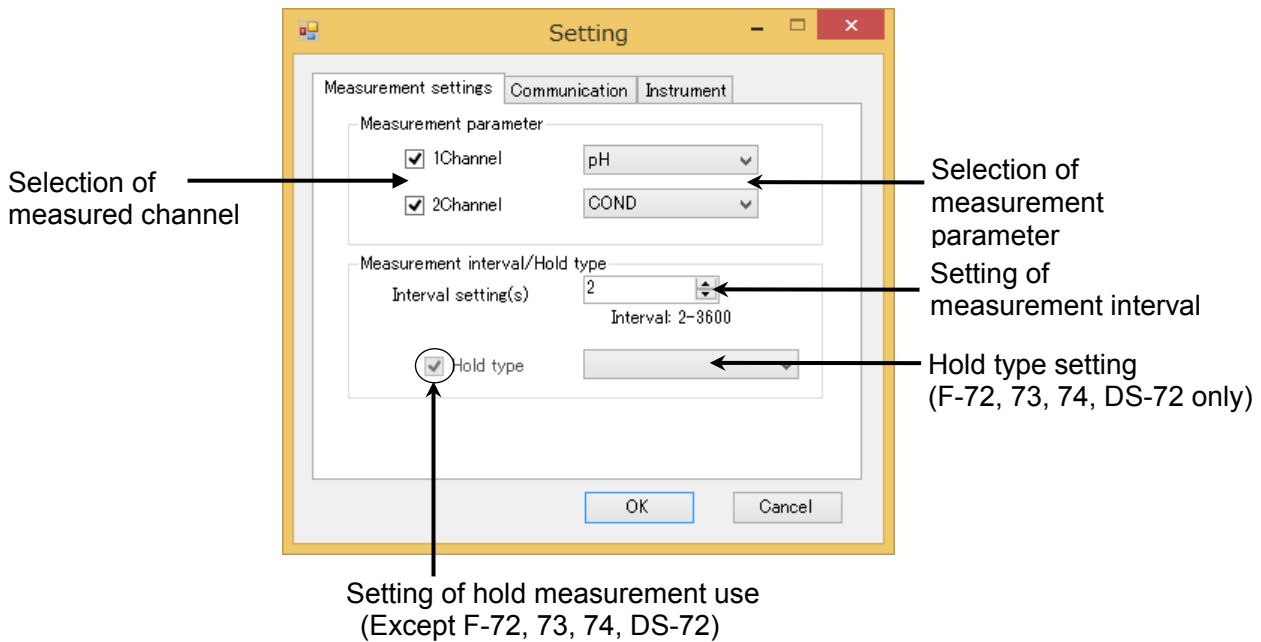
- Measurement value:** Shows two channels: CH1 (pH) with a value of 6.590 and CH2 (COND) with a value of 0.00. The unit for COND is  $\mu\text{S}/\text{cm}$ . The date and time are 2011/01/20 13:21:15.
- Graph:** A line graph showing the measurement history for pH and COND over time. The x-axis is 'Real time' and the y-axis is 'COND/ $\mu\text{S}/\text{cm}$ '. The graph shows a stable horizontal line for both parameters.
- Measurement Information:** A detailed log of the current measurement, including:
  - Meas. mode: pH (for CH1) and COND (for CH2)
  - Channel: 1 and 2
  - Inst. model: F74g
  - Inst. S/N: TEST9876
  - Hold type: Actual value
  - Date time: 2011/01/20 13:21:15
  - User: \*GUEST\*
  - Sample name: 6.590
  - Result: 6.590 (pH) and 0.00  $\mu\text{S}/\text{cm}$  (COND)
  - Temperature: 25.0C MTC
  - Meas. state: Actual value
  - Cal. User: \*GUEST\*
  - Date time: 2011/01/14 23:25:40
  - Cell Const.: 0.993 X 1.0cm<sup>-1</sup>

Annotations and callouts provide further details:

- [Device setting]** Refer to "8.2 Measurement settings"
- [Screen display]** Select the window to display in the basic window
- [Print]** [Device setting]
- <Graph>** Displayed at measurement end
- [Open file]**
- [Start]** Start measurement
- [Stop]** Stop measurement
- [Binary]** The measured data can be saved by MSD format.
- [Text]** The measured data can be saved by CSV format.
- <Measurement value>** Displayed at intervals of second set at "interval setting".
- <Measurement information>** Displayed at measurement end

## 8.2 Measurement settings

Measurement settings must be done before starting measurement. Click [Device settings] in measurement mode, then the dialog box for selection appears.



### 8.2.1 Measurement parameter

Select measurement channel and item.  
The selectable items depend on the connected Meter model.

### 8.2.2 Measurement interval

- When the Hold setting is ON:  
The recommended setting is 2.  
If the set interval is longer than the holding period, the measurement result is displayed after a lapse of the set interval.  
When the connected Meter is LAQUAact-PH120/PH130/PC110/PD110/EC120/DO120, the recommended setting is 4.
- When the Hold setting is OFF:  
The setting interval (data acquisition interval) can be set from 2 to 3600 seconds.  
When the connected Meter is LAQUAact-PH120/PH130/PC110/PD110/EC120/DO120, the setting interval can be set from 4 to 3600 seconds.

#### **Note**

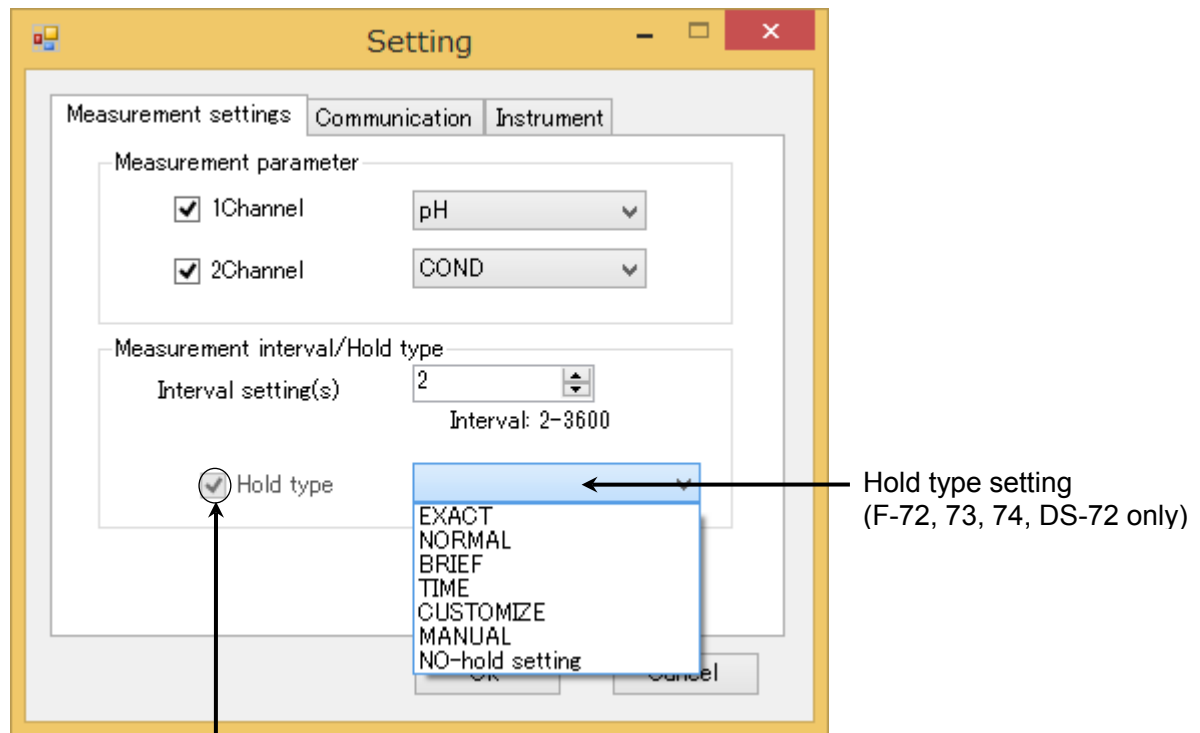
- For the measurement interval, input integers of 2 or 4 to 3600.
- The actual measurement interval can be delayed in several seconds depending on the communication condition.

### 8.2.3 Hold type

With AutoHold setting, the stability of the measuring value is automatically judged and the value is held and displayed. The setting of AutoHold is different per model. For AutoHold condition, refer to the instruction manual for each Meter.

#### Hold type setting (F-72, F-73, F-74, DS-72)

Hold condition can be selected from “EXACT,” “NORMAL,” “BRIEF,” “TIME,” “CUSTOMIZE,” “MANUAL,” and “NO-hold setting.” Refer to the instruction manual of the connected Meter for the details of the hold types.



Setting of hold measurement use  
(Except F-72, 73, 74, DS-72)

#### **Note**

- The setting of measurement conditions using this software is reflected in the settings of measurement instrument.
- The AutoHold setting is carried out by this software.

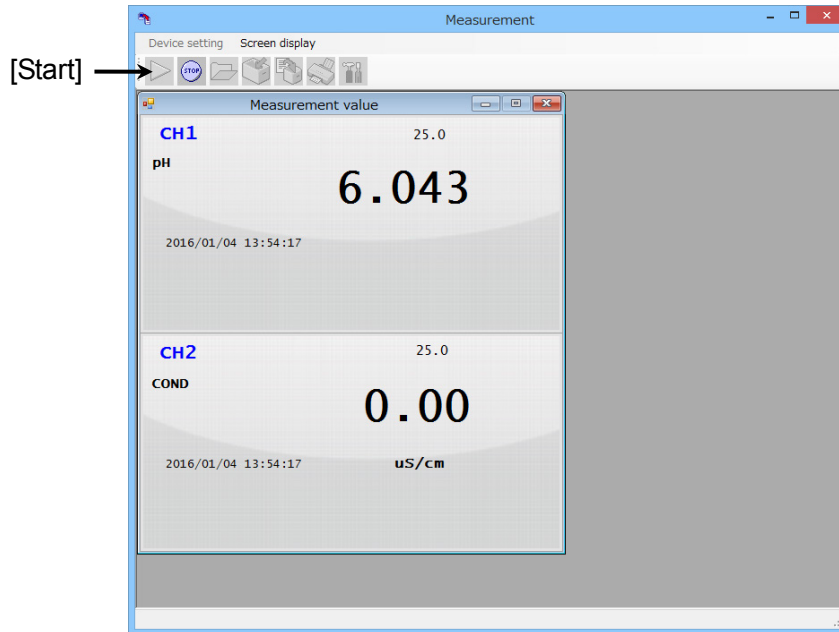
#### Hold type setting (except F-72, 73, 74, DS-72)

The check box in front of Hold type can be selected when these models, for which the Hold type cannot be selected, is used. When checking this box, the AutoHold measurement is performed by using the hold type set in the connected meter.

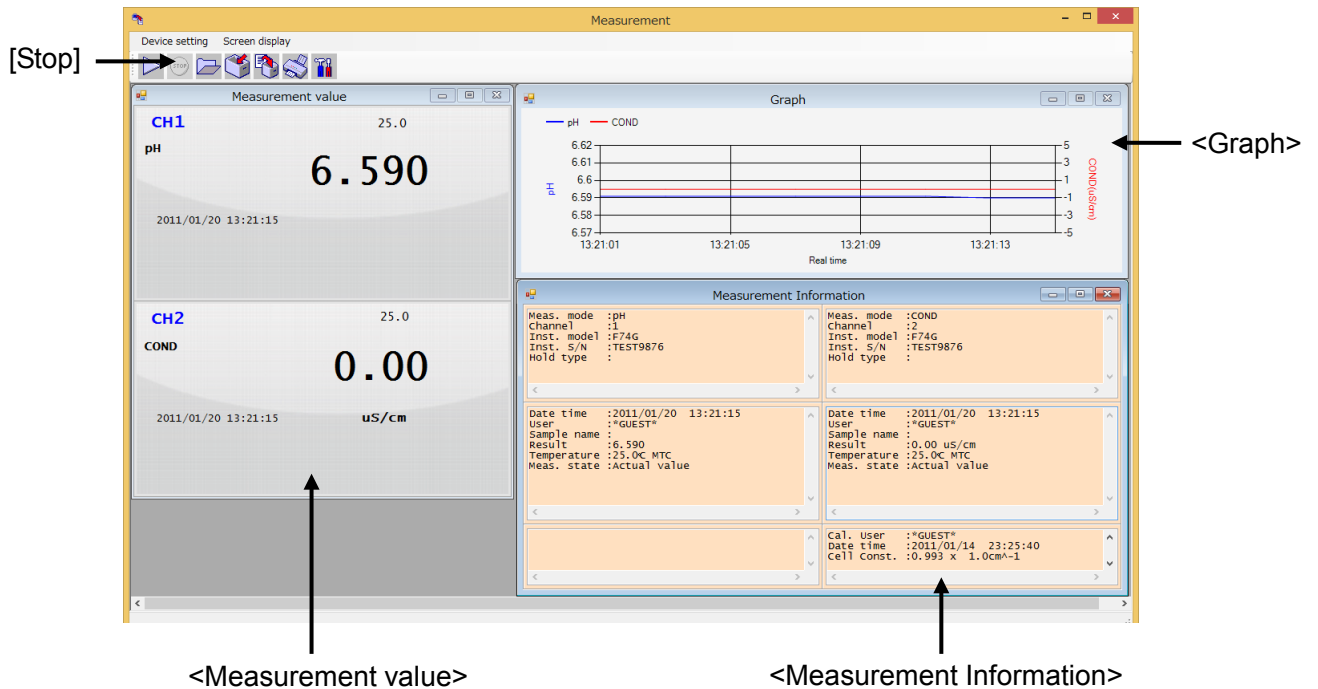
## 8.3 Measurement

### 8.3.1 Measurement start and stop

1. When clicking [Start], measurement starts.  
<Measurement value> is displayed on the basic window of the measurement mode.



2. When clicking [Stop], measurement stops.  
<Measurement information> and <Graph> are displayed on the screen. Measurement information shows the latest data.



### 8.3.2 Measurement information

- **Item displayed**

The items displayed on <Measurement information> are shown the measurement result, the settings, the calibration records. Right-click to change the font of the measurement information.

### 8.3.3 Trend graph

In the screen of <Graph>, the measurement data can be displayed as a graph. For X axis, either elapse time or data acquisition time can be set. Double-click of on the screen enables the following setting.

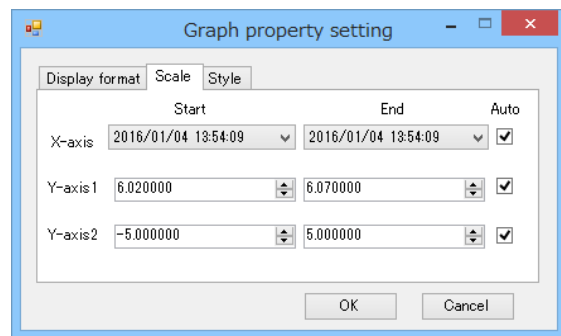
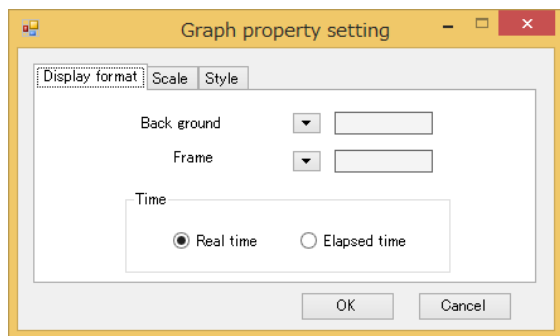
- **Display format**

Graph format can be set. The setting items are as follows.

- Graph background color
- X-axis setting  
Select whether the X-axis should be real time or elapsed time. Display time format can also be selected.

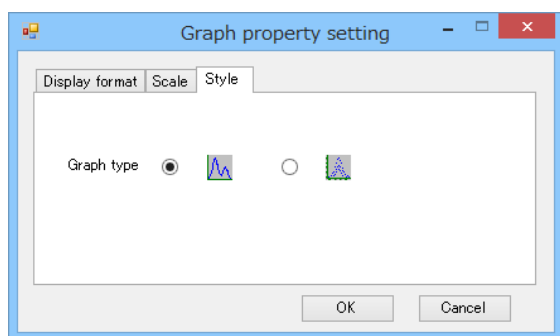
- **Scale**

X-axis scale can only be set as current time. The setting by time is reflected to the elapsed time graph.



- **Style**

Graph display format and line type can be selected.



## 8.4 Saving data

- **MSD format**

With MSD format, details of the last measured data and the graph can be saved. Click [Binary] and input a file name to save the data. Files of MSD format can be opened only in the measurement mode.

- **CSV format**

With CSV format, a list of the measured data can be saved. Click [Text] and input a file name to save the data.

## 8.5 Open files

Click [Open] and select a MSD format file.

**Note**

This software does not open the files of CSV format.

## 8.6 Printing report

Click [Print] to print the report. The format cannot be changed. A graph can be printed by changing the format of graph in advance.

- **Printer**

**Printer models**

Windows-compliance printers must be used.

**Appearance of printing**

The appearance of printed materials may be different depending on the resolution of the printer, performance and fonts.

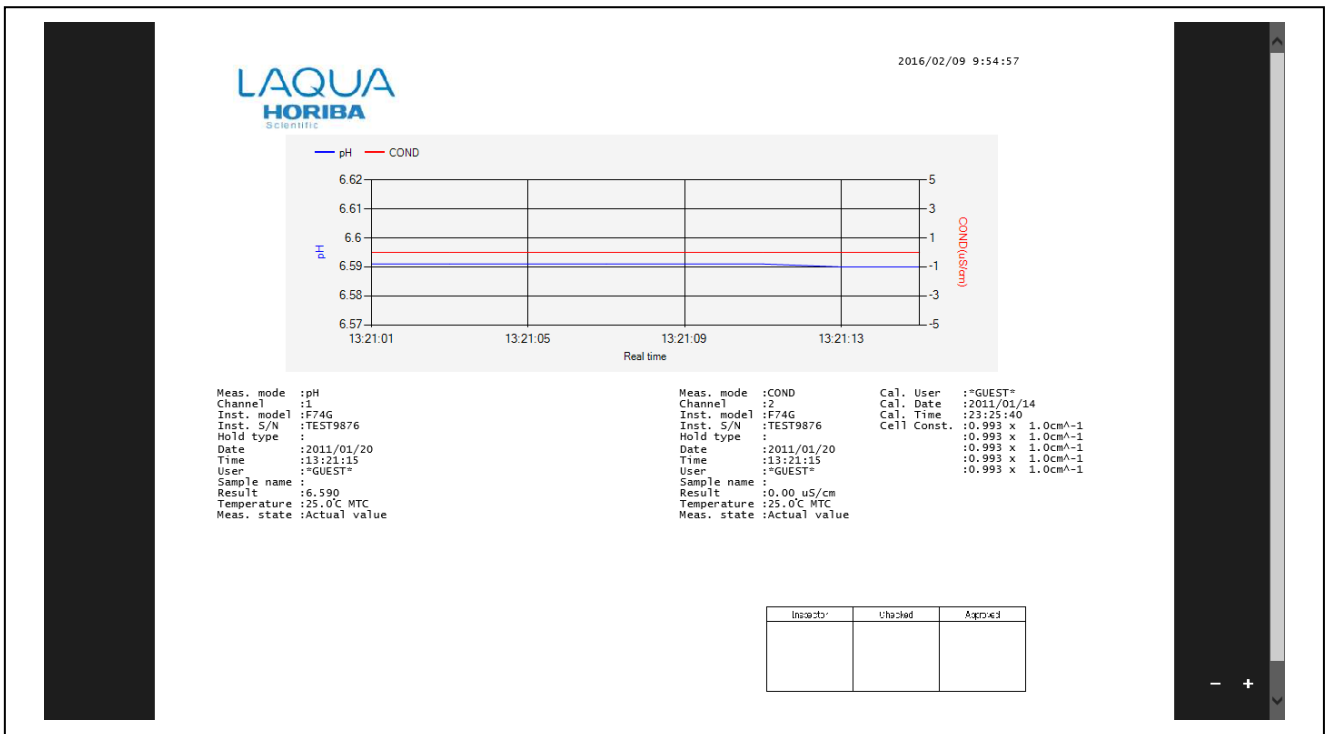
**Color printer**

Color printing is feasible.

**Note**

This software does not guarantee the performance in all printers.

## For example of print



## 8.7 Notes about measurement mode

- When the AutoHold setting is OFF, there is no limit in the measurement time. However, the maximum number of saved data is 65000. The number of saved data may change by the PC condition. Especially, when the measurement more than the PC capacity is performed, the software may freeze to prevent the data saving, or the OS may stop. Note this risk in the continuous measurement for a long time. When the measurement is considered to take long, it is recommended to set a longer measurement interval.
- During the measurement, do not perform any operation other than stopping the measurement.
- Measurement may stop when PC shifts to a sleep mode during the measurement. It is recommended to set the sleep mode to off during the measurement mode.
- MSD format files that are saved with measurement mode can be opened only in measurement mode.
- In the measurement with this software, measurement with interval memory cannot be done. For measurement with this software, the setting of interval memory of the Meter is turned off.
- The mV measurement has two types: absolute mV (mV\_ABS) and relative mV (mV\_REL). The type of the mV measurement executed with this software is always absolute. Even if the Meter is set to the absolute mV measurement mode, the type will be changed to relative mV when the mV measurement is executed with the software.



## 9 Memory Data Mode

With the memory data mode, you can collect data stored in the Meter. You can also save the data in BME format or convert the data to CSV format. Creating graphs or printing can be done in this mode.

### 9.1 Basic window

The screenshot shows the 'Memory data' window. At the top, there are buttons for [Clear], [Data collection], [End], [Graph], and [Device setting]. On the left side, there are buttons for [Print] and [Open file]. The main area is divided into two panes: 'Measured data' and 'Measurement Information'.

**Measured data table:**

Date time	Meas. mode	Result	Unit	Temp	Sample name
2016/01/04 14:02:52	pH	6.336		25.0	
2016/01/04 14:02:52	OOND	191.0	mS/cm	25.0	
2016/01/04 14:03:05	pH	6.303		25.0	
2016/01/04 14:03:05	OOND	191.0	mS/cm	25.0	
2016/01/04 14:03:17	pH	6.283		25.0	
2016/01/04 14:03:17	OOND	191.1	mS/cm	25.0	
2016/01/04 14:03:19	pH	6.283		25.0	
2016/01/04 14:03:19	OOND	191.1	mS/cm	25.0	
2016/01/04 14:03:30	pH	6.074		25.0	
2016/01/04 14:03:30	OOND	191.1	mS/cm	25.0	

**Measurement Information panel:**

```

Meas. mode :pH
Channel   :1
Inst. model :F74
Inst. S/N  :RM0JL72K

Date time :2016/01/04 14:02:52
User      :GUEST*
Sample name :
Result    :6.336
Temperature :25.0C MTC
Meas. state :Hold
    
```

Labels and arrows in the image indicate the following:

- [Print] points to the print icon in the toolbar.
- [Open file] points to the file icon in the toolbar.
- [Binary] The measured data can be saved by MSD format. (points to the 'Measured data' table)
- [Text] The measured data can be saved by CSV format. (points to the 'Measured data' table)
- [Clear] points to the 'Clear' button.
- [Data collection] points to the 'Data collection' button.
- [End] points to the 'End' button.
- [Graph] points to the 'Graph' button.
- [Device setting] points to the 'Device setting' button.
- <Measured data> points to the 'Measured data' table.
- <Measurement information> points to the 'Measurement Information' panel.

### 9.2 Collecting data

Clicking [Data collection] to read all the data stored in the Meter. Collected data are displayed on <Measured data>.

Clicking [End] to cancel read of the data stored in the Meter. Only read data are displayed on <Measured data>.

### 9.3 <Measured data>

<Measured data> contains data time, measurement mode, result, unit, temperature and sample name in a list. The width of each column can be changed by dragging and moving the border line of each column.

Right-clicking <Measured data> displays a submenu, allowing such options as parameter selection, data deletion, data print and data saving.

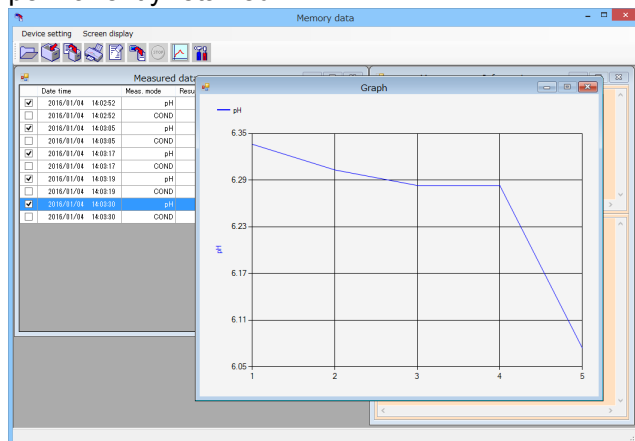
### 9.4 Detail measurement information

When you select data from <Measured data>, the details are displayed on <Measurement information>. This window consists of four fields, "Measurement result", "Measurement settings", "Meter information", and "Calibration result." Right-click to change the font of the measurement information.

### 9.5 Creating a graph

Selecting the data to be displayed in a graph by the checkbox at the left end of <Measured data>, and click [Graph] to create a graph.

The numerical value of X-axis is a natural number allocated in order of the selected data, and the newer the data becomes the larger its value becomes. Right-click the graph allows you to change the graph format, the spectrum lines and the color. The setting of graphs is permanently retained.



#### Note

- Selection of more than 2 data can only create a graph.
- When a different measurement mode or different unit item is included in the selected data, graph cannot be created.

### 9.6 Printing

#### Printing graph

Graph can be printed out. Create a graph and click [Print].

#### Printing details

Select the data on the list of <Measured data>, and right-click the data, then click [Data print].

#### Printing list

The information on <Measured data> can be printed out. Right-click <Measured data> and select [Data print].

#### Note

- In [Data print], the ratio of each column width is the same with that on <Measured data>.
- In [Data print], it may not cover all the information in the paper if the font size is enlarged.

## 9.7 Saving data

- **BME format**

By BME format, the data list and detailed information can be saved. The data can be saved by click [Binary]. The files of BME format can open only at memory data mode.

**Note**

Since the files of BME format contain the printout preview as information, saving the files will create a file even when it contains no data.

- **CSV format (detailed information)**

The detailed information for the selected data can be saved as the file of CSV format. Click [Text] can save the file.

**Note**

When there is no data, the file cannot be saved as CSV format.

- **CSV format (data list)**

The data list can be saved in CSV format. Right-click <Measured data> and select [Save data].

**Note**

The title information for each column is included in the saved file. Even when no data is in the list, a file will be created by the saving operation.

## 9.8 Open files

Click [Open] and select a BME format file. Both the data list and the detailed information are displayed.

## 9.9 Deleting unnecessary data

In order to delete unnecessary data, click the data lines. Then, right-click the line and select [Delete].

## 9.10 Cautions in memory data mode

- During the data collection, perform no operation other than stopping the data collection.
- When repeating the data collection, the collected data displayed on <Measured data> is cleared every time.
- The data collection may stop when PC shifts to a sleep mode during collecting data. It is recommended to set to the sleep mode off during the data collection.

## 10 Contact Information

In contacting your local agency, confirm and identify the following points.

- Date when the problem occurs
- Model name of the Meter you use
- Instrument S/N of the Meter
- Version number of this software
- Operation when the problem occurred
- PC environment (CPU, memory, hard disc free space, OS)
- Description of the problem

# **HORIBA** Advanced Techno

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<http://www.horiba-adt.jp>

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For any questions regarding this product, please contact your local agency, or inquire from the following website.

[http://global.horiba.com/contact\\_e/index.htm](http://global.horiba.com/contact_e/index.htm)

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