User's Manual

FieldMate

Calibration Management for Liquid Analyzers

IM 01R01A07-01EN

YOKOGAWA
Yokogawa Electric Corporation

IM 01R01A07-01EN
1st Edition

Calibration Management for Liquid Analyzers

IM 01R01A07-01EN 1st Edition

CONTENTS

A Foreword

Thank you for purchasing FieldMate. This document describes about “Calibration Management for Liquid Analyzers” of FieldMate. To ensure correct use, read this document thoroughly before starting operation. After reading this document, keep it in a convenient location for quick reference. It is useful when a question arises during operation.
FieldMate supports “Calibration Management for Liquid Analyzers” from R3.04.00 or later.

Refer to the User’s Manual “FieldMate Versatile Device Management Wizard (IM 01R01A01-01E)” about installation procedure, common functions and operations of FieldMate.
In addition, refer to the User’s Manual about FLXA402 4-Wire Converter “FLXA402” and SENCOM Smart adapter “SA11” in advance to understand their functions and operations.

Title	IM No.
FLXA402 4-Wire Converter Operation of Converter	IM 12A01F01-03EN

Note

- The contents of this manual are subject to change without prior notice as a result of improvements in the software’s performance and functions. Display contents illustrated in this manual may differ slightly from what actually appears on your screen.
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● 1st Edition is published on November 2018.

A-1 Symbol Marks in the User's Manual

The symbol marks appearing in the user's manual have the following meanings.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

IMPORTANT

Indicates that operating the hardware or software in this manner may damage it or lead to system failure.

NOTE

Draws attention to information essential for understanding the operation and features.

B Overview

The function of “Calibration Management for Liquid Analyzers” provides device-dedicated MMI for 4-Wire Converter “FLXA402” and SENCOM™ Smart Adapter “SA11”, and supports following functions.

■ Local display function

Local display function supports the graphical user interface and user-friendly operation to display Measurement value and calibration history and to manage parameter settings for 4-Wire Converter “FLXA402”

IMPORTANT

To use this function, FLXA402 need to support the communication device which is Bluetooth, Modbus RTU (RS-485) or Ethernet Modbus TCP/IP.

IMPORTANT

To use the Local display function, FieldMate needs the online periodical communication with FLXA402. If PC cannot supply enough electricity to its communication device, Local display function does not work correctly. Please confirm the following conditions before using this function.

・The ”Sleep” setting in “Power Options” of Windows is disabled.

・PC’s battery should be enough charged in advance if it does not connected with AC power supply.

■ Direct access function with SA11

FieldMate supports the direct access function with SENCOM™ Smart adapter “SA11” to realize the sensor calibration and parameter setting management at the outside of the field.

IMPORTANT

FieldMate need the Bluetooth I/F Box “IB100” to communicate with SA11 directly.

IMPORTANT

To use Direct access function. FieldMate needs the online periodical communication with SA11. If PC cannot supply enough electricity to its communication device, Local display function does not work correctly. Please confirm the following conditions before using this function.

・The ”Sleep” setting in “Power Options” of Windows is disabled.

・PC’s battery should be enough charged in advance if it does not connected with AC power supply.

IMPORTANT

IB100 will change its status to “Sleep” automatically if it continues not to receive communication packets from FieldMate after defined period. Please confirm that the lamp in front of IB100 is blinking periodically (it shows that IB100 is “Active”) before starting to FieldMate communication with SA11. If its status is “sleep”, please reconnect the cable between IB100 and SA11 to start the IB100.

B-1 Description

The following lists important terms before describing the features.

- **Device**

  In this manual, “Device” means both of Converters and Sensors.

- **Converter**

  In this manual, “Converter” means FLXA402.

- **Sensor**

  In this document, “Sensor” means Analog sensors (pH, SC, ISC, DO), SA11s(pH) and DO70Gs. FieldMate supports Local display functions for Analog sensors and DO70Gs via the Converter. FieldMate supports both of Local display functions and Direct communication for SA11s.

- **Database Device**

  This indicates logical device in database.

- **Registering to Database**

  This means that actual device is registered to database as Database device.

- **Device Maintenance Info**

  This refers to device information stored in the database. In addition to information on the actual device, this includes maintenance memos, related documents, operation logs, or device parameters.

- **FieldMate Main window**

  FieldMate Main Window is the home window of the functions “Calibration Management for Liquid Analyzers”.
  Display the connected FLXA402 and Sensors status lists on the “TOP window”, display the device lists of registered on database, display each of device maintenance info and parameter settings on “Device Navigator” and display the operation history on “History”.

C FieldMate Startup for “Calibration Management for Liquid Analyzers”

This part describes FieldMate startup for “Calibration Management for Liquid Analyzers”.

C-1 FieldMate Startup Window

● Start Window

FieldMate Startup Window is the first gate to commence FieldMate defined field work.

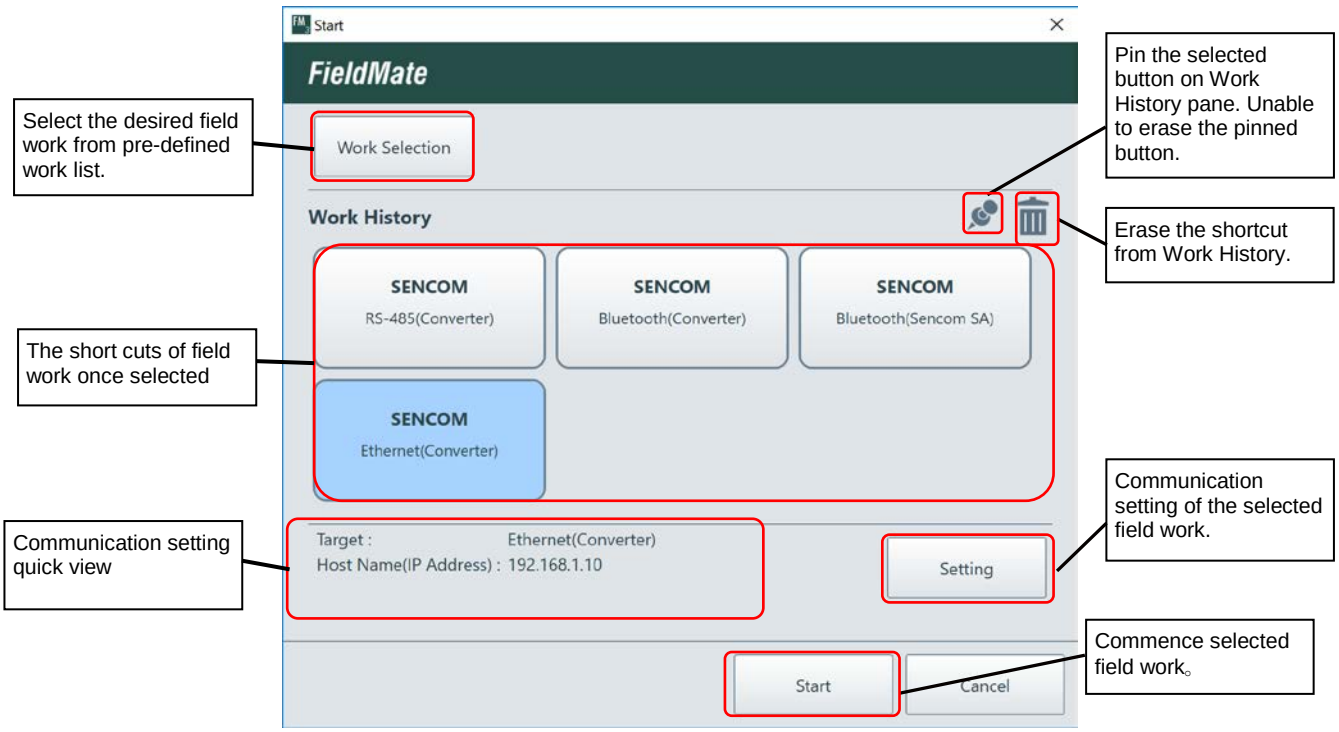


Figure C-1-1 Start Window

● Work Selection Window

Comprehensive maintenance work menus are pre-defined in FieldMate, the desired work menu is selectable on this window.
Select “Setting and Calibration of analyzer” to communicate with FLXA402 and SA11, and then select “Next” button.

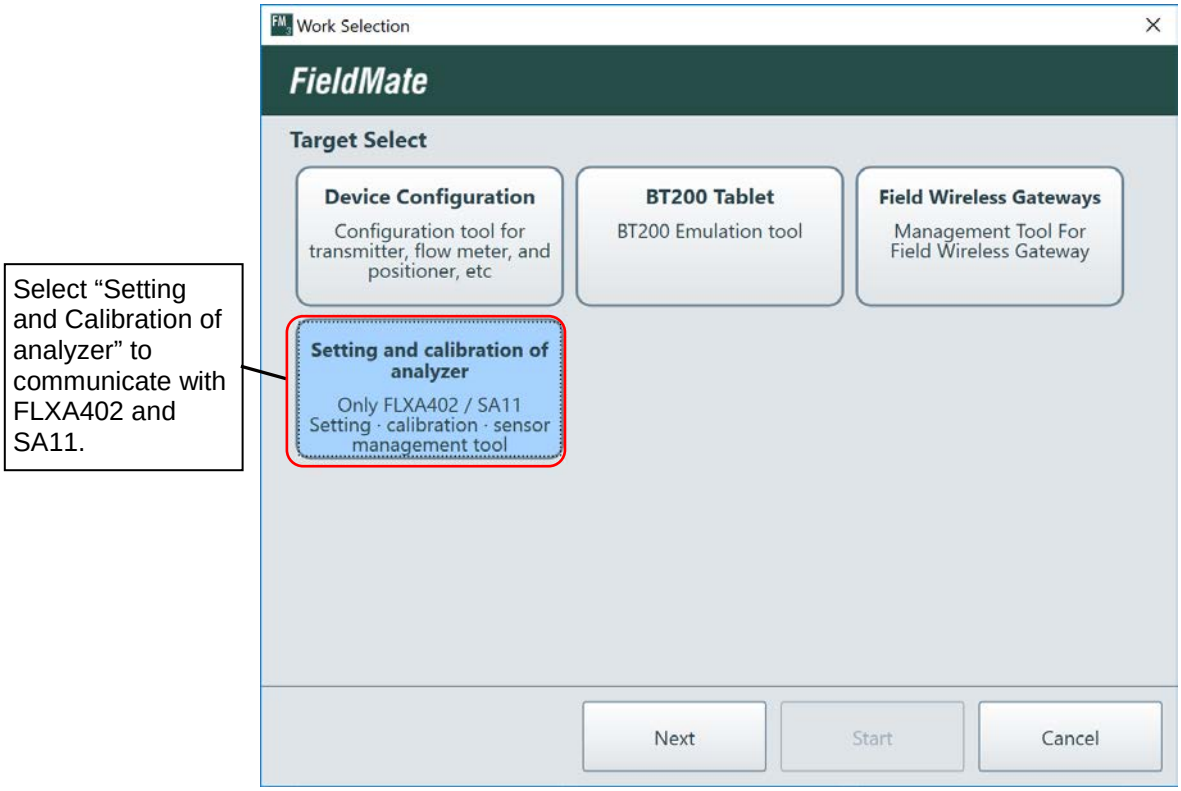


Figure C-1-2 Work Selection Window

● Communication Selection Window

This window is to select the communication protocol for FLXA402 and SA11.
It will be displayed after selecting “Setting and Calibration of analyzer” on the Work Selection Window. The detail information about each of communication settings will be explained later sections.

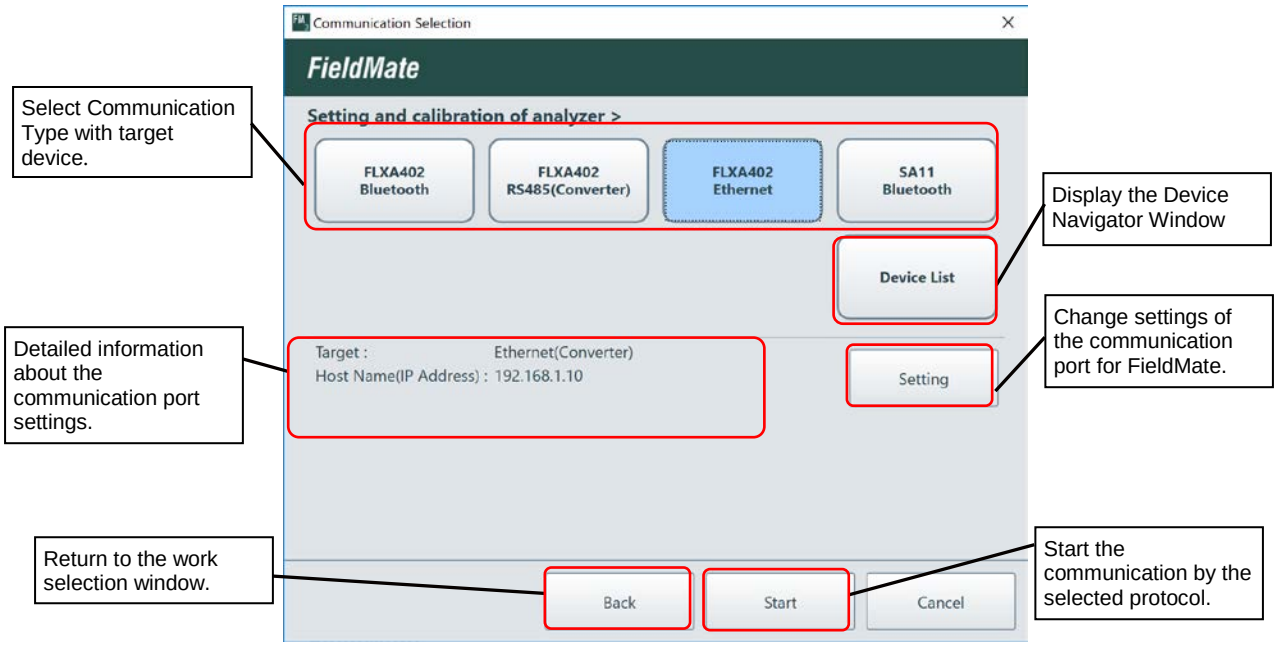


Figure C-1-3 Communication Selection Window

● Login Window

This window is for the user certification.

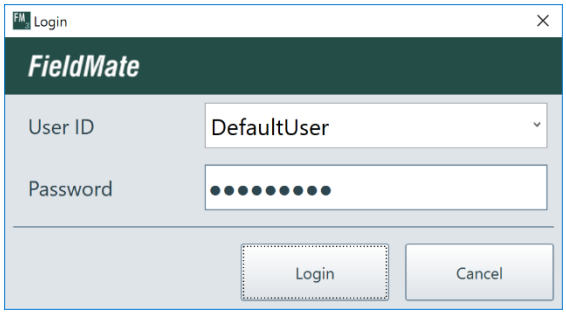


Figure C-1-4 Login Window

Enter “User ID” and “Password” of the login user. *
Default
User ID: DefaultUser
Password: Default password

*: This dialog is not displayed if you have not added users with the user management function

● Communication Settings

◆ FLXA402 Bluetooth settings

● Startup

・ Start from Login window->Setting and Calibration of analyzer-> FLXA402 Bluetooth ->Setting

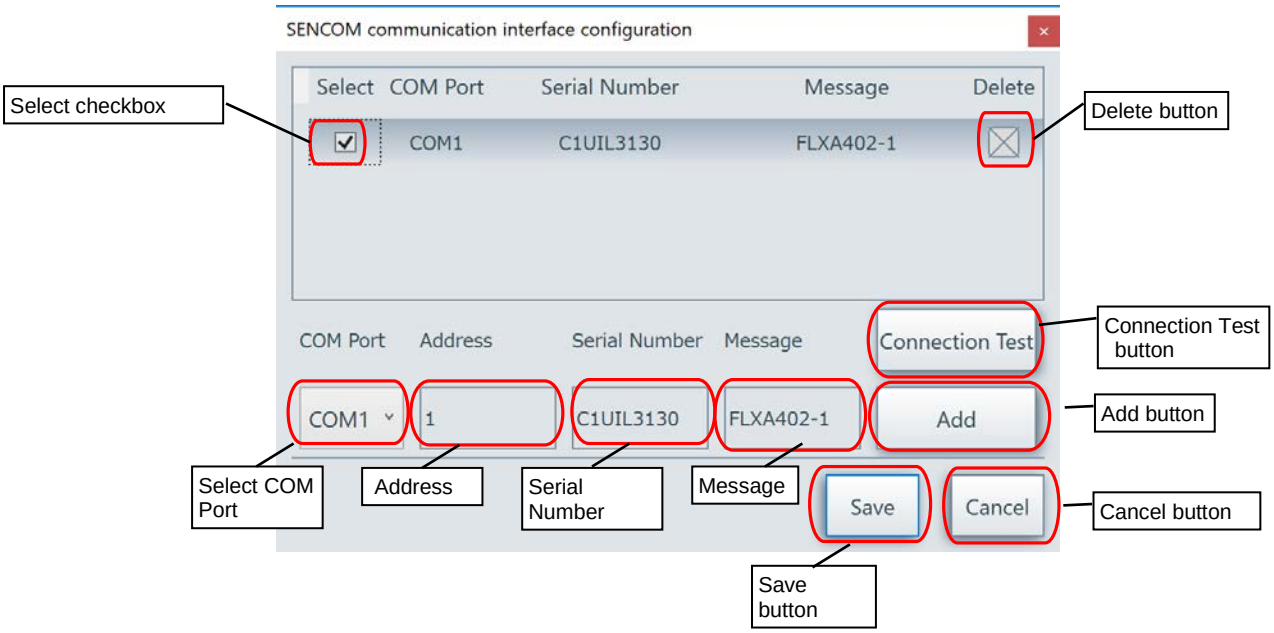


Figure C-1-5 FLXA402 Bluetooth settings

Table C-1-1 Display items of FLXA402 Bluetooth settings

Items	Detail
Select COM Port	All COM Port detected by PC are displayed. Select the COM Port to communicate with FLXA402.
Address	Enter the Address of FLXA402. In case of Bluetooth communcation, this address is always 1, and no need to change the ID.
Serial Number	Display the Serial Number of FLXA402 if the Connection Test is succeeded.
Message	Enter the message.
Connecton Test button	Start the Connection Test to confirm the commnication by selected COM Port.
Add button	Add new COM Port information to the list after succeeded Connection Test.
Delete button	Delete the registered COM Port information from the list.
Select checkbox	Select communication device.
Save button	Save the current settings and close the window.
Cancel button	Close the window without save.

The procedure to add new device.

1. Select COM port connected the FLXA402.
2. Select “Connection Test button”.
3. Confirm the Test result.
   A) Success: Check the serial Number if the number is the target FLXA402 or not.
   B) Failure: Check the communication settings.
4. If need, add the message.
5. Select “Add” button, and the COM Port setting is added into the list.
6. Select the checkbox of the COM Port setting.
7. After that, select “Save” button, and close the window.

TIPS

If you communicate with FLXA402 by Bluetooth, you need to do the Bluetooth paring between FLXA402 and FieldMate PC in advance. About the Bluetooth paring procedure, refer to “5.3 Bluetooth pairing” in “FLXA402 4-Wire Converter Operation of Converter (IM 12A01F01-03EN)”

◆ FLXA402 RS485 Settings

● Startup

・ Start from Login window->Setting and Calibration of analyzer-> FLXA402 RS485

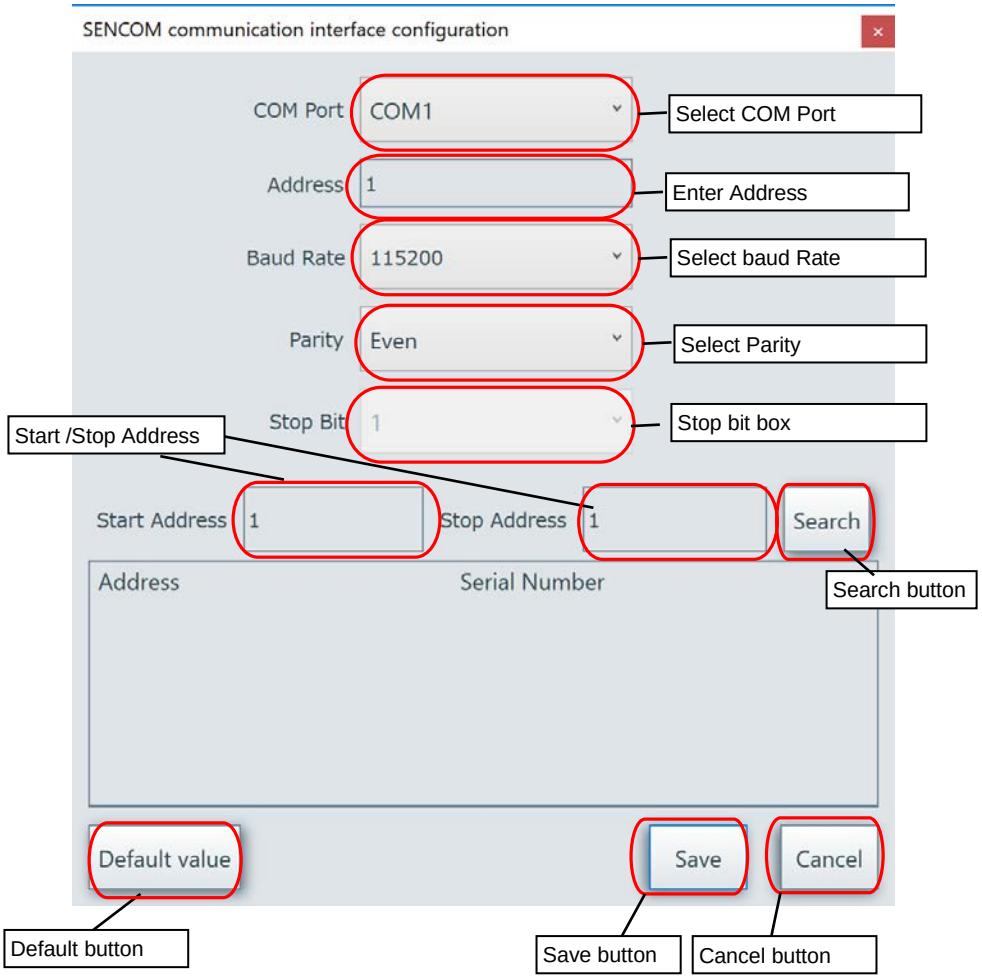


Figure C-1-6 FLXA402 RS485 Settings

Table C-1-2 Display items of FLXA402 RS485 Settings

Items	Detail
Select COM Port	All COM Port detected by PC are displayed. Select the COM Port to communicate with FLXA402.
Enter Address	Enter the FLXA402’s Address.
Select Baud rate	Select Baud rate of FLXA402.
Select Parity	Selext Parity of FLXA402.
Stop bit	Suitable stop bit is selected automatically.
Start/Stop Address	Set the address search range.
Search button	Search the FLXA402 accoeding to the Start/Stop Address settings.
Default button	All settings back to defalt.
Save button	Save the current settings and close the window.
Cancel button	Close the window without save.

(Case 1: The address of FLXA402 is known.)

1. Set the following communication settings.
   COM Port, Address, Baud rate and Parity
2. Select “Save” button.

(Case2: The address of FLXA402 is unknown.)

3. Set the following communication settings.
   COM Port, Baud rate, Parity, Start Address and Stop Address.
4. Select “Search” button.
5. Check the search result.
   A) Success:
      - ■ Detected serial number is the same as the Target FLXA402, Set the detected address and select “Save” button.
      - ■ Detected serial number is different from the Target FLXA402, Search again.
   B) Failure: Confirm the communication settings again.

TIPS

FieldMate PC may need to USB-RS485 converter’s driver to communicate with it. About the driver’s installation, refer the user’s manual of the USB-RS-485 converter.

TIPS

To use the “Local Display Functions” of FieldMate comfortably, “Baud rate” setting is recommended to 115200bps. (Default setting is 9600bps). About Baud rate setting, refer to ”4.6.1 MODBUS Setting” in FLXA402 4-Wire Converter Operation of Converter (IM 12A01F01-03EN)

◆ FLXA402 Ethernet Settings

● Startup

・Start from Login window->Setting and Calibration of analyzer-> FLXA402 Ethernet ->Setting

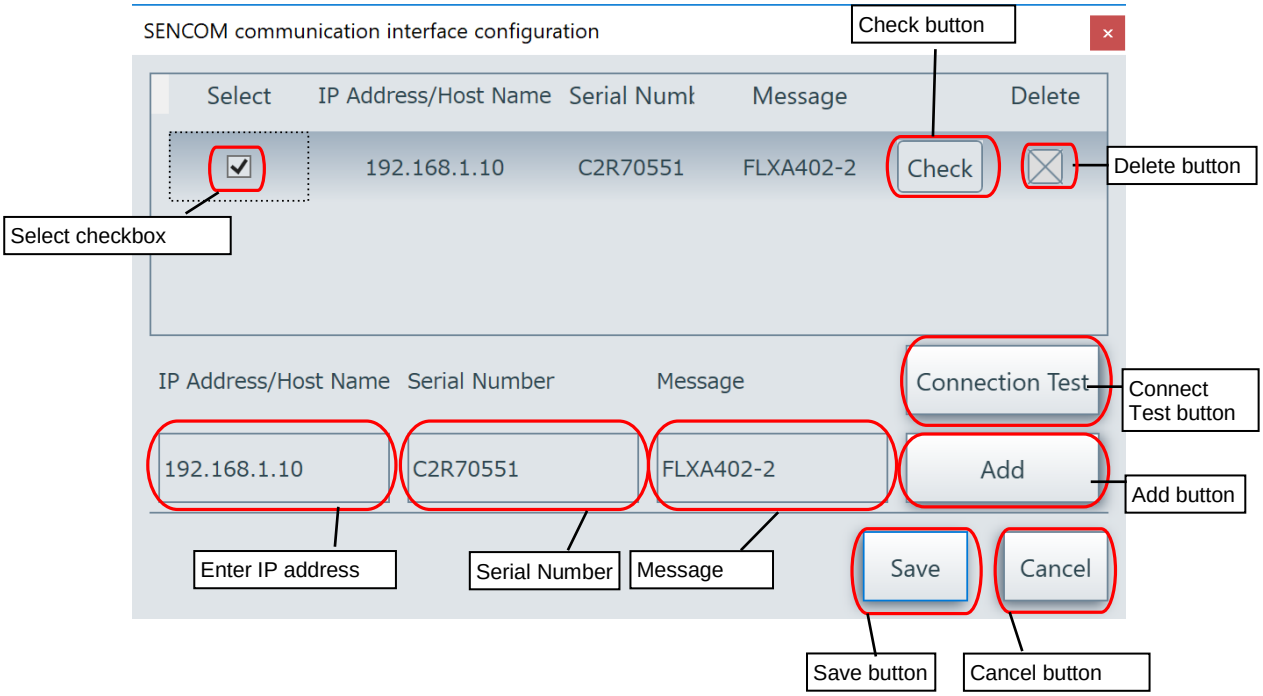


Figure C-1-7 FLXA402 Ethernet Settings

Table C-1-3 Display items of FLXA402 Ethernet Settings

Items	Detail
Enter IP address	Enter the IP address of FLXA402.
Serial Number	Display the Serial Number of FLXA402 if the Connection Test is succeeded.
Message	Enter the message.
Connecton Test button	Start the Connection Test to confirm the commnication to Entered IP Address.
Add button	Add new IP Address to the list after succeeded Connection Test.
Delete button	Delete the registered IP Address information from the list.
Select checkbox	Select communication device.
Check button	Start the Connection Test to confirm the commnication to selected Entered IP Address.
Save button	Save the current settings and close the window.
Cancel button	Close the window without save.

The procedure to add new device.

1. Enter the IP Address of FLXA402
2. Select “Connection Test button”.
3. Confirm the Test result.
   A) Success: Check the serial Number if the number is the target FLXA402 or not.
   B) Failure: Check the communication settings.
4. If need, add the message.
5. Select “Add” button, and the IP address is added into the list.
6. Select the checkbox of the IP address setting.
7. After that, select “Save” button, and close the window.

TIPS

To communicate with FLXA402 via Ethernet, please set up the Ethernet settings of FieldMate PC in advance.

◆ SA11 Bluetooth Settings

● Startup

・Start from Login window->Setting and Calibration of analyzer-> SA11 Bluetooth ->Setting

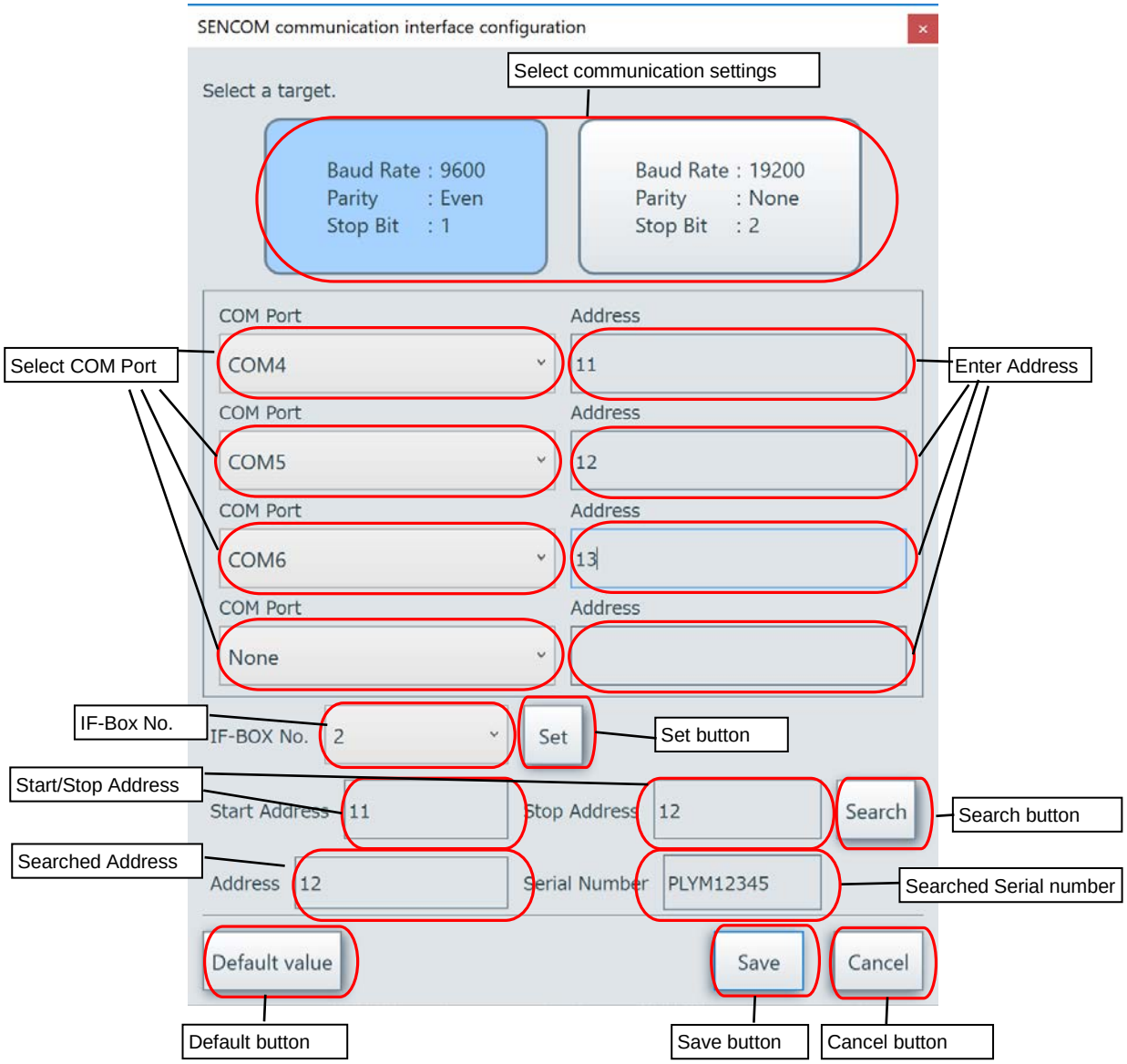


Figure C-1-8 SA11 Bluetooth Settings

Table C-1-4 Display items of SA11 Bluetooth Settings

Items	Detail
Select communication Settings	Select communication Settings for SA11.
Select COM Port	All COM Port detected by PC are displayed. Select the COM Port to communicate with SA11.
Enter Address	Enter the SA11’s Address.
Set IF-Box No.	Set IF-Box No.
Set button	Searched address is copyed to selected IF-Box No. as the SA11’s Address.
Start/Stop Address	Set the address search range.
Search button	Search the SA11 accoeding to the Start/Stop Address settings.
Searched Address	Display the detected Address of SA11.
Searched Serial Number	Display the detected Serial Number of SA11.
Default button	All settings back to defalt.
Save button	Save the current settings and close the window.
Cancel button	Close the window without save.

The procedure to add new device.

(Case 1: The address of SA11 is known.)

1. Set the following communication settings.
   Communication settings, COM port, Address.
2. Select “Save” button.

(Case 2: The address of SA11 is unknown.)

1. Set the following communication settings.
   Communication settings, COM port, IF-Box No., Start Address and Stop Address.
2. Select “Search” button.
3. Check the search result.
4. Check the search result.
   A) Success: Select “Set” button, and then select “Save” button.
   B) Failure: Confirm the communication settings again.

TIPS

If you communicate with SA11 by Bluetooth via BT100, you need to do the Bluetooth paring between IB100 and FieldMate PC in advance. About the Bluetooth paring procedure with IB100, refer to “4-4 Installation of Bluetooth Adapter” in “Model IB100 Interface Box (IM 12B06J09-01E-E)”

D Local Display functions

D-1 Local Display functions

● Local Display functions

Local Display functions support the operations which are displaying measurement values, setting parameters and displaying operation history on the device-dedicated windows by the remote communication with FLXA402.

The functions will be used in case of operating the calibration and setting at work bench before installing the device to the field, and in case of operating the calibration and settings at the field after installing the device there.

To use the functions, FieldMate need to communicate with FLXA402. FLXA402 supports the following 3 protocols, Bluetooth, Modbus RTU (RS-485) and Ethernet Modbus TCP/IP. Communication protocol depends on the FLXA402 options. Please confirm it in advance.

SEE ALSO

- About FLXA402 options, refer to FLXA402 4-Wire Converter (GS 12A01F01-01EN).
- About communication settings of FLXA402, refer to “4.6 Advanced settings” in FLXA402 4-Wire Converter Operation of Converter (IM 12A01F01-03EN).

D-1-1 Bluetooth communication

FieldMate communicates with FLXA402 via Bluetooth.
Please prepare the FLXA402 with Bluetooth option and the FieldMate installed into the PC supported Bluetooth.
In addition, you need to do the Bluetooth paring between FLXA402 and FieldMate's PC in advance.
The image of communication between FieldMate and FLXA402 are as follow.

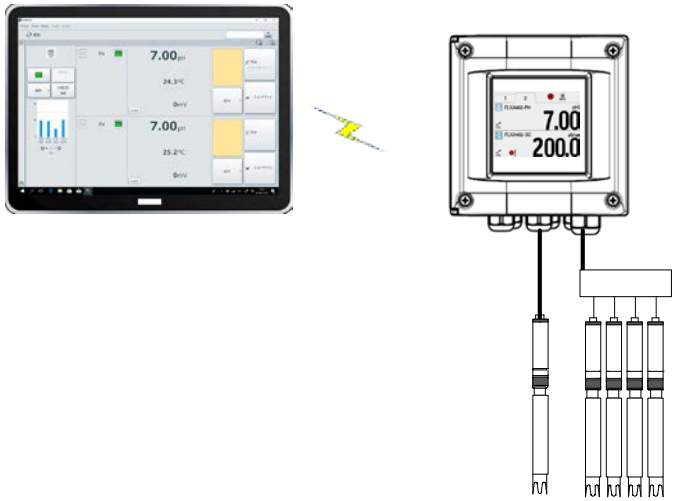


Figure D-1-1 Image of FieldMate communication with FLXA402 (Bluetooth)

D-1-2 Ethernet communication

FieldMate communicates with FLXA402 via Ethernet.
Please prepare the FLXA402 with Ethernet Modbus TCP/IP option.
The image of communication between FieldMate and FLXA402 are as follow.

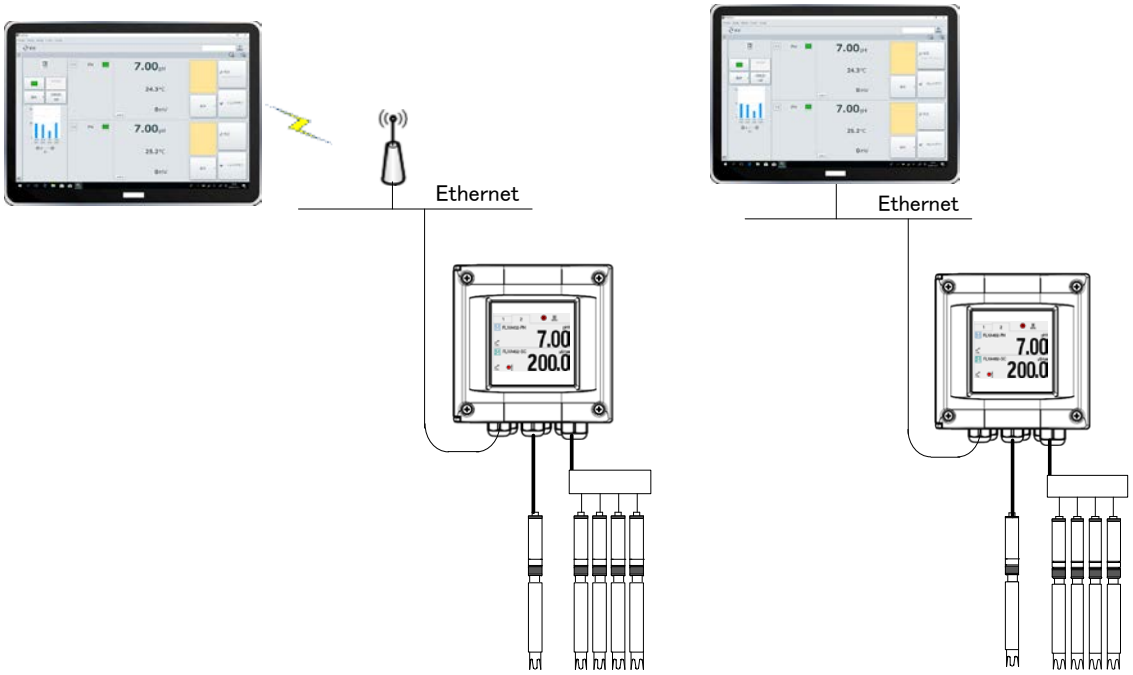


Figure D-1-2 Image of FieldMate communication with FLXA402 (Ethernet)

D-1-3 RS-485 communication

FieldMate communicates with FLXA402 via RS-485.
Please prepare the FLXA402 with Modbus RTU (RS-485) option.
The image of communication between FieldMate and FLXA402 are as follow.

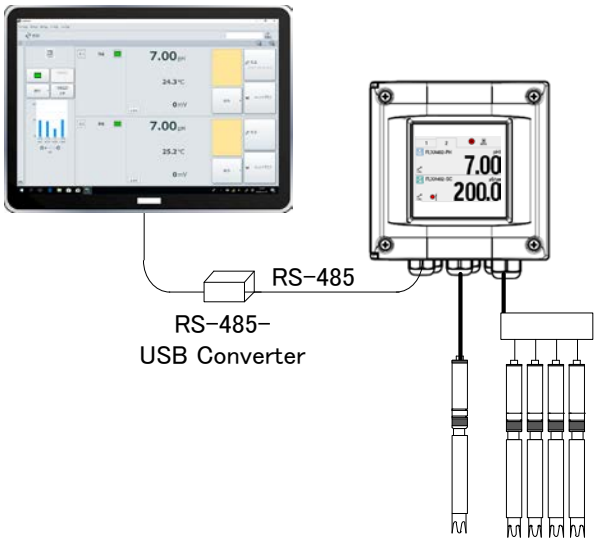


Figure D-1-3 Image of FieldMate communication with FLXA402 (RS-485)

D-2 Top Window for Local Display

Top Window for Local Display functions consists of “Converter display area” and “Sensor display area”. The number of sensors displayed on Top Window can be switched “1 Sensor display”->”2 Sensors display”->”4 Sensors display” ->”8 Sensors display” by selecting “+”,”-“ button. (Display image might be different from following image examples depending on PC’s screen resolution.)

Figure D-2-1 The image of Top window (Local Display)

Figure D-2-2 The configuration of Top Window (Local display)

D-3 Converter status display

"Converter status display" has following functions.

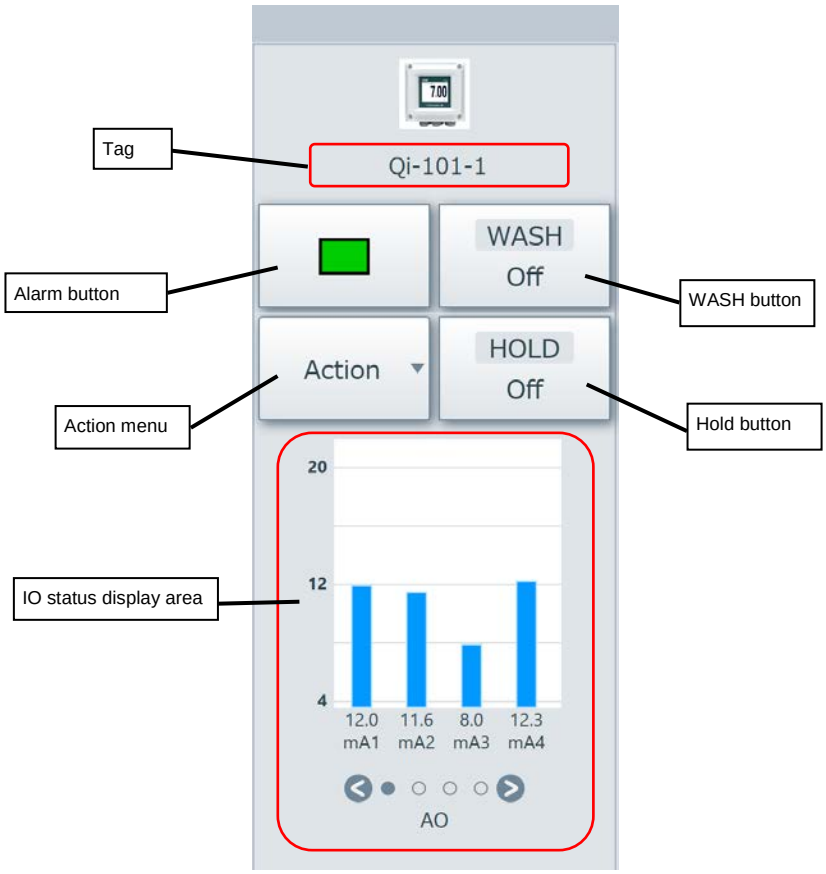


Figure D-3-1 The Image of "Converter status display"

Table D-3-1 The items of "Converter status display"

Items	The outline of the function
Tag	Display converter's Tag (up to 12 characters). "Local display "displays the characters which set the Tag at "Sensor1-1"as the converter's Tag.
Alarm button	Display the current Converter's Alarm status by icon. Select Alarm button, and Alarm Window is displayed.
WASH button	Display the current Wash status by icon. Select WASH button, and WASH Window is displayed.
Hold button	Display the current Hold status by icon. Select Hold button, and Hold Window is displayed.
IO status display area	Display the current AO, Contact output, AI and Contact input status. This area does not support IO status operations. the user can switch the IO status page by selecting < and > button.
Action menu	Action menu shows the command list for converter operations. The user can operate the sensors by selecting each of command in the menu.

D-3-1 Alarm

■ Alarm button

Alarm button displays the alarm status of the device by icons. “Normal” status (No error) is also displayed by icon.
Select Alarm button, and Alarm Window is displayed.
There are 2 types of Alarm icons display, NE107 and Legacy. If the setting of “Alarm NE107” = ON in the converter, the icons of NE107 are displayed. On the other hand, the setting of “Alarm NE107” = OFF, the Legacy icons are displayed.

Table D-3-2 Alarm status and displayed Alarm Icons.

Alarm status	Alarm NE107=ON (NE107 Display)	Alarm NE107=OFF (Legacy Display)
Normal		
Maintenace required		
Function check		
Out of specifiction		
Falure		

■ Alarm Window

Alarm Window displays the Alarm list occurred into the Converter and the Sensors. If the Converter's Alarm button is selected, the Converter's alarm list is displayed. If the Sensor's Alarm button is selected, the Sensor's alarm list is displayed.

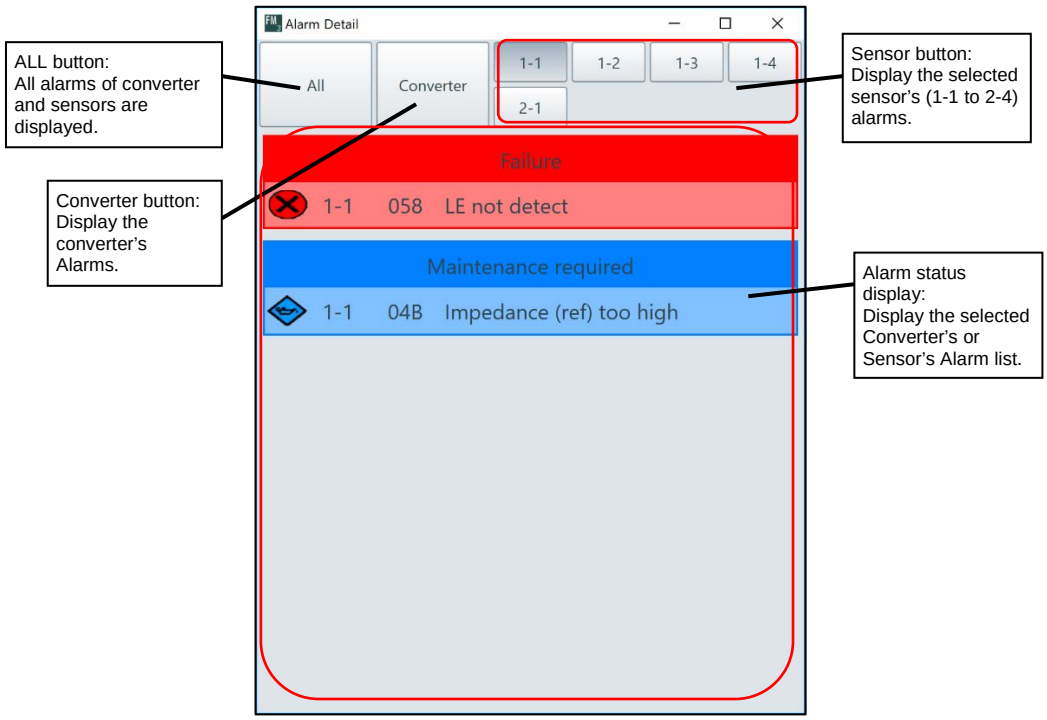


Figure D-3-2 Alarm Window

If No Alarm occurred in the selected Converter Sensors and Sensors, "Working Properly" is displayed. Alarm status display is categorized by Alarm levels. If Alarm NE107=ON, displayed by NE107, else by Legacy.

■ Alarm Detail Display

If select the each of displayed alarm, its detail information and Remedy are displayed. If select its detail information again, the detail information is closed and back to normal display.

Figure D-3-3 Image of Detail of Alarm Detail Display

● Special Alarm detail display

Alarm detail display of “Expiry time exceeded 1” to “Expiry time exceeded 4” have a button “S1” to “S4” to clear it. If select the button, the Alarm is cleared.

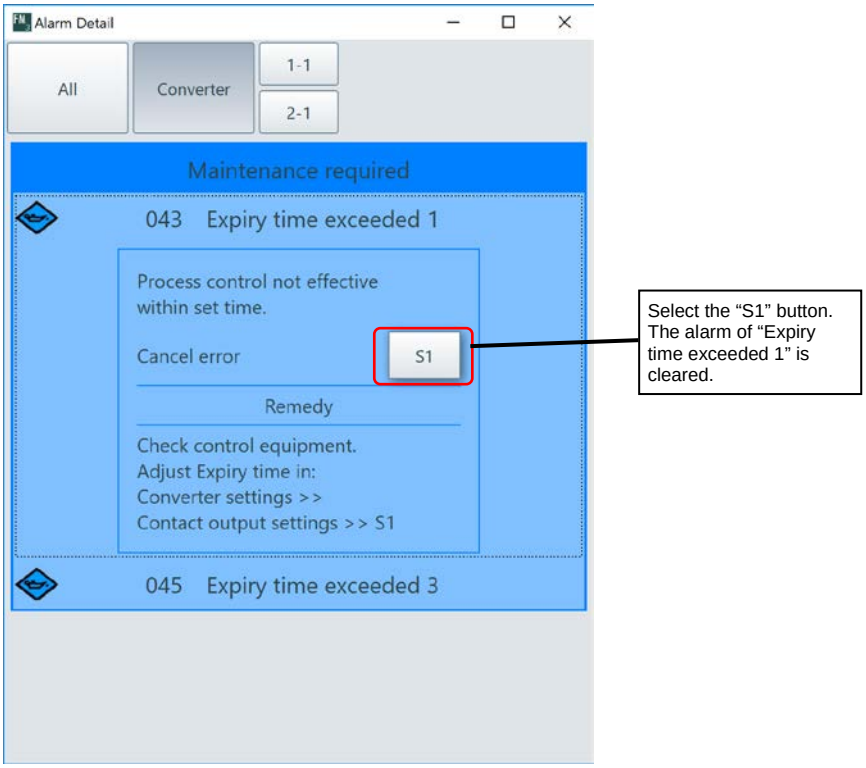


Figure D-3-4 Example of Special Alarm detail display (Expiry time exceeded 1)

● Sensor Error number

Sensor Error number consist of 3 digits number(YXX). The first digit Y means sensor connection number, next 2 digits XX means error number(HEX).
The detail meaning of sensor connection number Y is as follows.

0:Sensor 1-1, 1:Sensor 1-2, 2:Sensor 1-3, 3:Sensor 1-4
4:Sensor 2-1, 5:Sensor 2-2, 6:Sensor 2-3, 7:Sensor 2-4

SEE ALSO

About “Error number” of Converter and Sensors, refer to “3. Error” in FLXA402 4-Wire Converter Modbus communication (TI 12A01F01-62EN)”

D-3-2 Manual WASH

■ WASH button

The current WASH status of device is displayed by 3 icons, “WASH”, “Recovery”, “Off”. If S1, S2 or S3 is “WASH” status, it is displayed “WASH”. If one of their status is “Recovery”, it is displayed “Recovery”. If all of them are “Off” it is displayed “OFF”. Select this button, and WASH Window is displayed.

SEE ALSO

About “Wash” function, refer to “4.4.3 Wash” in “FLXA402 4-Wire Converter Operation of Converter (IM 12A01F01-03EN)”

■ Manual WASH Window

This window is to operate manual WASH.

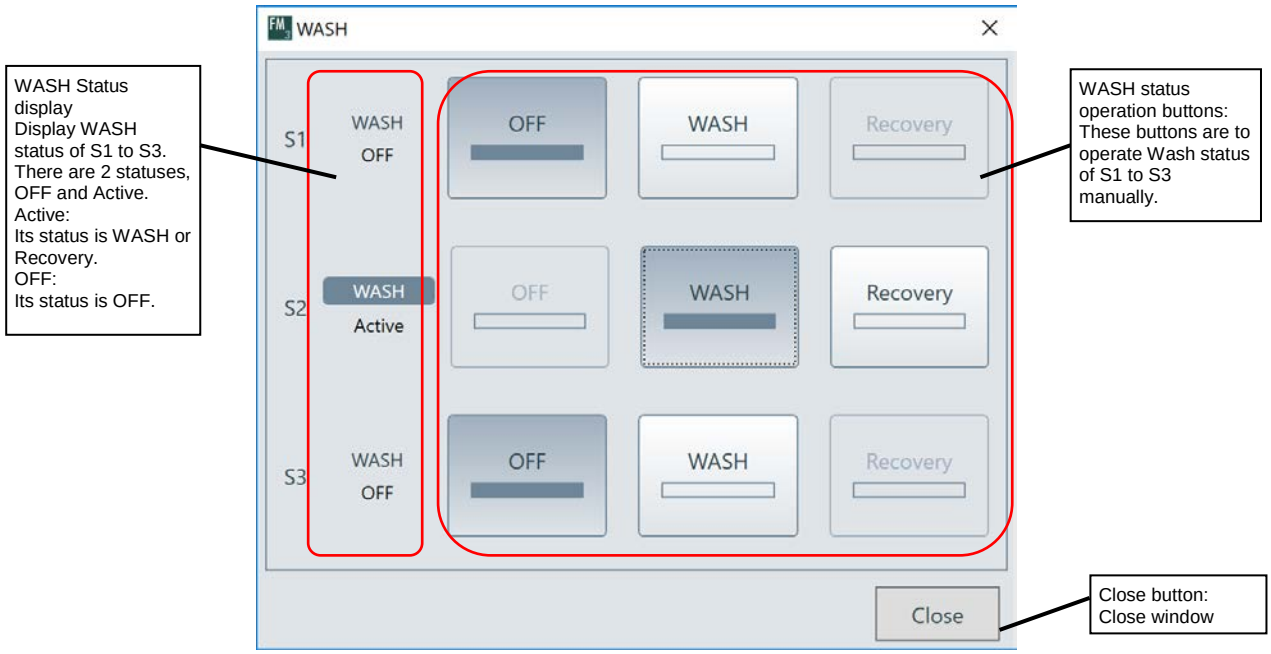


Figure D-3-5 Manual WASH Window

If related “contact output” setting (S1 to S3) is “WASH”, the buttons are only displayed on the On the Manual WASH Window. If there are no settings “WASH”, this window will be empty. In addition, when Converter’s relay module is “None”, this window will be empty, too.
By selecting the status button which want to move, the user can change the WASH status.

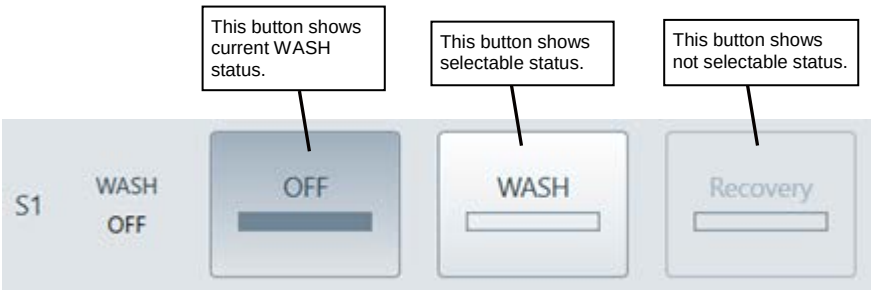


Figure D-3-6 Button statues and Manual Wash Operations.

TIPS

During the WASH status, “Recovery” button is only available. During Recovery status, “Off” button is only available. During Off status, “WASH” button is only available.

On the converter, more than 2 “WASH" cannot be executed at the same time. If a WASH cycle had already started, another Wash request won’t be accepted.

D-3-3 Hold

■ Hold button

The current Hold status of device is displayed 2 icons, “Active” and “Off”. If one of their status (mA1 to mA4) is Active, it is displayed “Active”. If all of them are “OFF”, it is displayed “OFF”.
Select this button, and Hold manual operation window is displayed.

SEE ALSO

About Hold function, refer to “4.3.3 Hold” in “FLXA402 4-Wire Converter Operation of Converter (IM 12A01F01-03EN)”.

■ Hold manual operation window

This window is to operate manual Hold of mA1 to mA4.

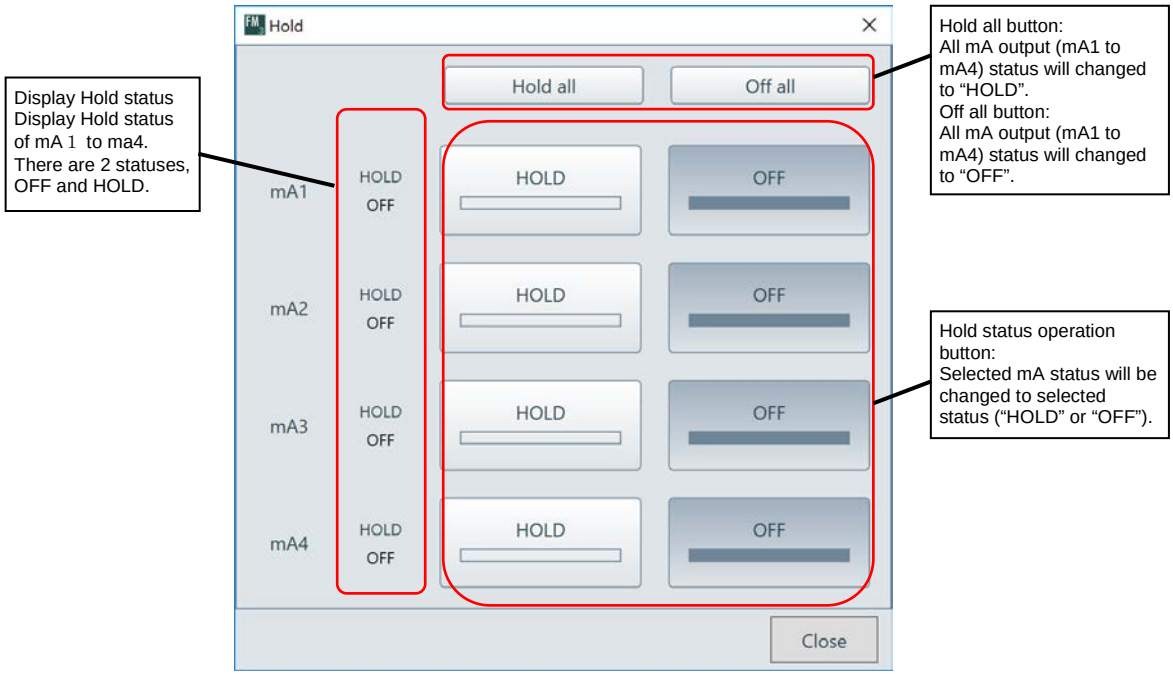


Figure D-3-7 Manual Hold operation Windows

Select HOLD or OFF button of mA output which you want to change to move, and its HOLD status will be changed. If the user selects “Hold all” button, all mA output will be changed to “HOLD”. If the user selects “Off all”, all mA output will be changed to “OFF”.

TIPS

If Converter’s Analog module is “Advanced”, Hold status of mA1 to mA4 are displayed on this window. If Converter’s Analog module is “Basic”, Hold status of mA1 and mA2 are only displayed on it.

D-3-4 IO Status display

■ IO status display area

This area is to display the converter's IO (AO, Contact Output, AI and Contact Input) status.
By selecting the buttons ( ), the user can switch the display items as follows.

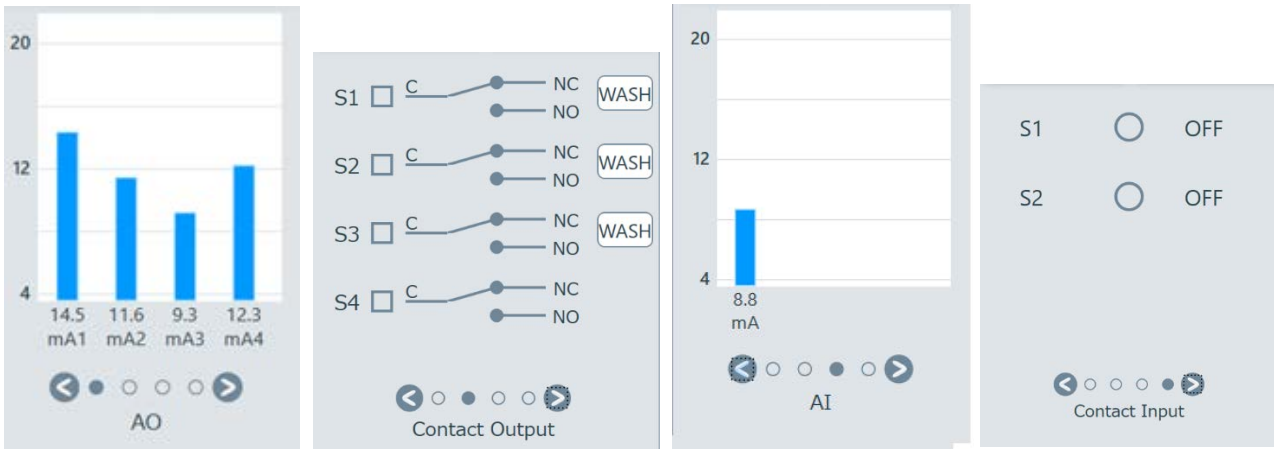


Figure D-3-8 IO status display area (AO->Contact Output->AI-> Contact Input)

SEE ALSO

About IO functions of Converter, refer to "4. Setting Converter" in "FLXA402 4-Wire Converter Operation of Converter (IM 12A01F01-03EN)".

● IO configuration of Converter and display items

IO status display items are changed as follows depending on the Converter's IO configuration.

Table D-3-3 IO configuration of Converter and display items

Analog module Type	Relay Module	AO	Contact Output	AI	Contact Input
Basic	None	2	Not displayed	Not displayed	1
Basic	Exist	2	4	Not displayed	1
Advanced	None	4	Not displayed	1	2
Advanced	Exist	4	4	1	2

■ AO Display

Display the current AO status of Converter.

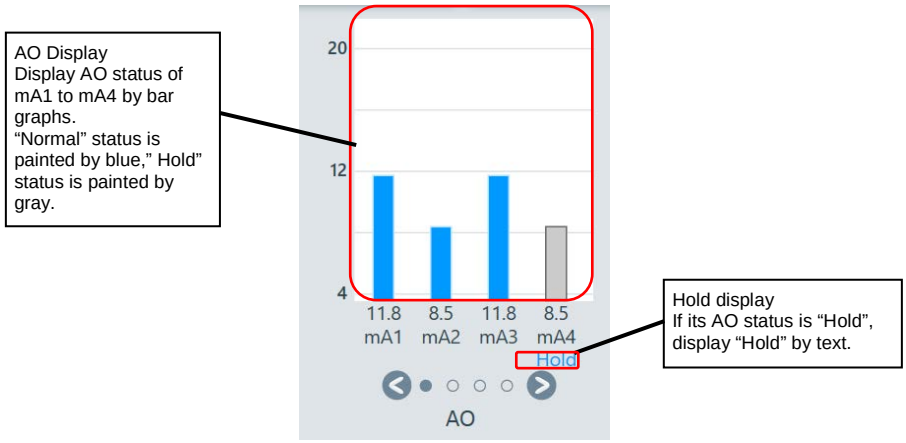


Figure D-3-9 AO Display

■ Contact Output Display

Display the current Contact Output status of Converter. ▣ means ON, □ means OFF.

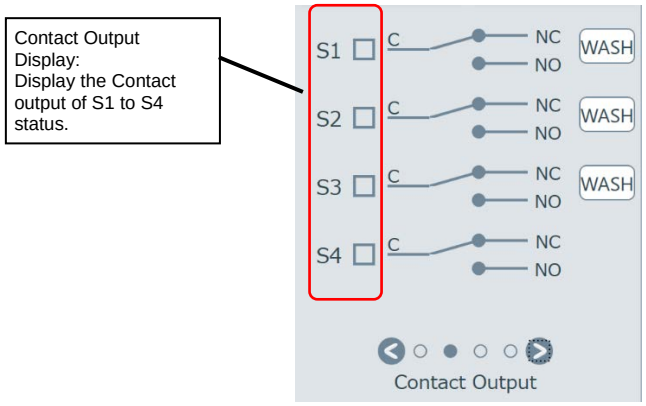


Figure D-3-10 Contact Output Display

■ AI Display

Display the current AI status of Converter.

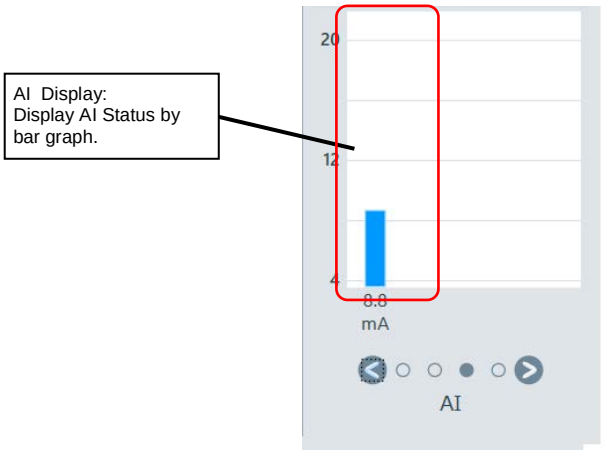


Figure D-3-11 AI Display

■ Contact Input Display

Display the current Contact Input status of Converter. ● means ON, ○ means OFF.

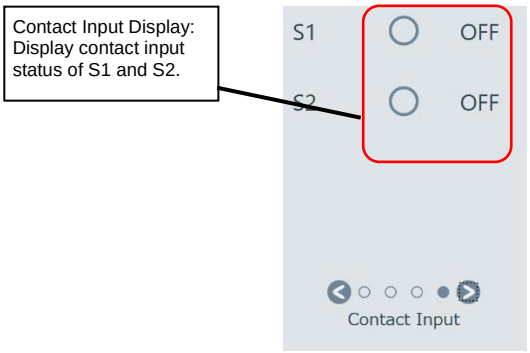


Figure D-3-12 Contact Input Display

D-4 Action Menu

Action menu shows the command list for converter operation. The user can operate the converter by selecting each of command in the menu. The command list is as follows.

Table D-4-1 The list of command in the Action Menu for Converter

Command	Outline of function
Squawk	Request to blink the HMI's backlight of Converter from FieldMate.
Logbook	Execute Logbook Window and display the converter's Logbook.
Alarm Detail	Display the Alarm window.
Upload All Data to FieldMate	Upload the All setting parameters of converter and sensors, and save them into the FieldMate database.
Converter Setting	Display and set the parameters of the Converter.
TEST Mode	Execute the IO test and Error simulation for the converter.
Date/Time Setting	Set the converter's date and time.
Product Information	Display the converter's Product Information (Serial No., Software Revision, and so on).
Adjust Panel	Request to display Adjust Panel on the Converter's HMI from FieldMate.
Password Setting	Set the Execute password and Commissioning password into the converter.
Disconnect Converter	Disconnect the Converter's communication.

D-4-1 Squawk (Backlight blinking)

Request to blink the HMI's backlight of Converter from FieldMate.

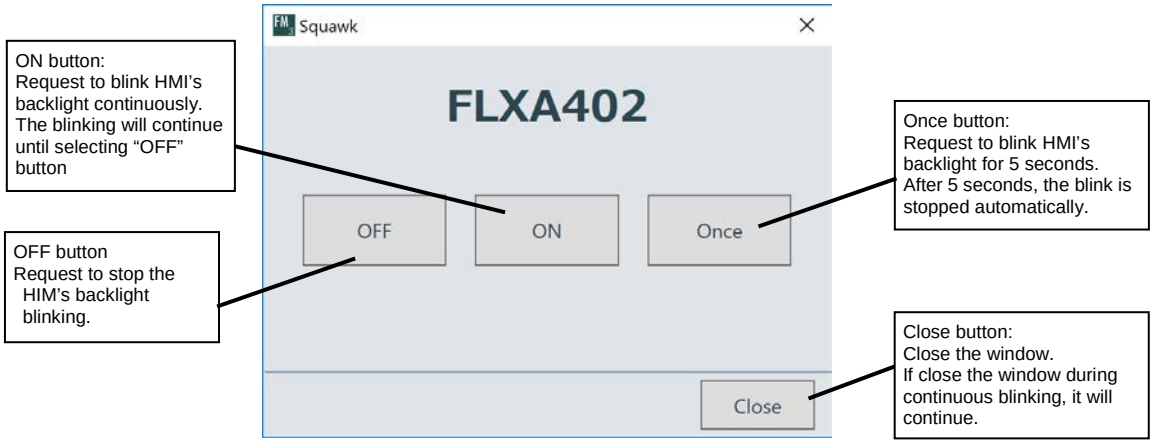


Figure D-4-1 Squawk (Backlight blinking) Windows

NOTE

When the converter's settings of "Backlight blink = Disable", HMI's backlight won't blink even if FieldMate requests backlight blinking from this window.

D-4-2 Logbook

Display the information into the Logbooks. When Logbook window is executed by Action menu for converter, All Logbooks (Converter and all Sensors) are displayed at first.

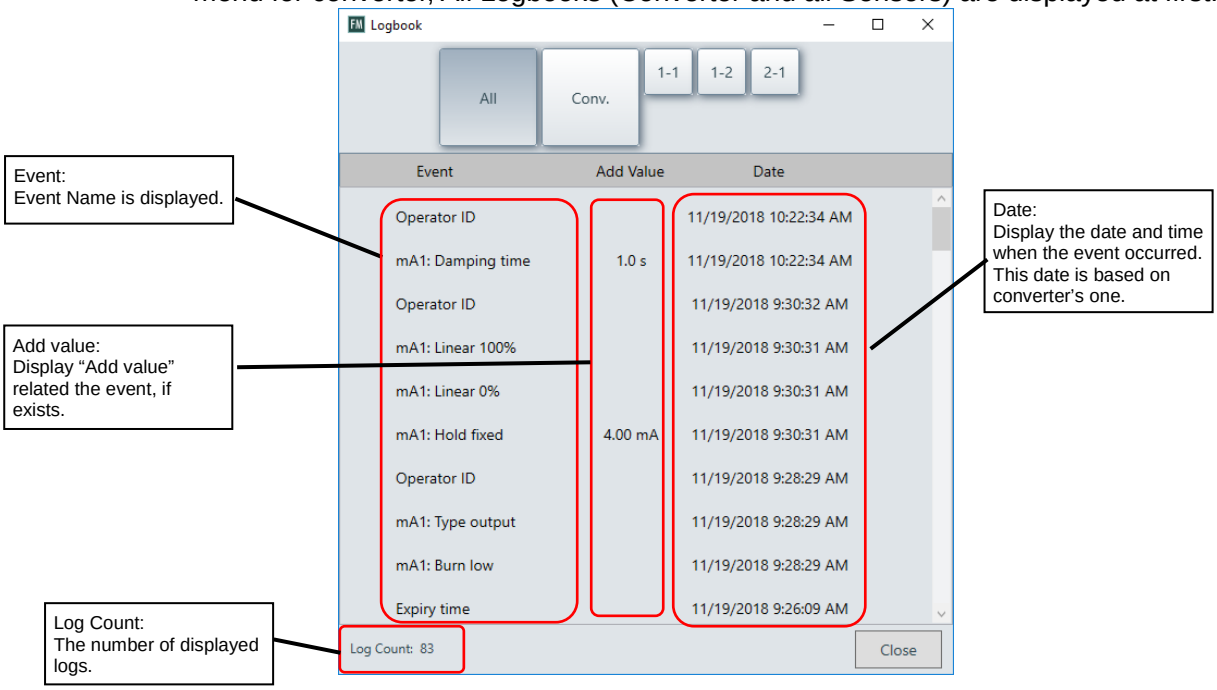


Figure D-4-2 Logbook Window

Table D-4-2 The button list of Logbook window

Button name	Functions
ALL	All Logbooks are displayed about converter and Sensor 1-1 to 2-4.
Conv.	Display converter’s Logbook.
1-1～2-4	Selected sensor’s Logbook is displayed. (The buttons of sensors not existed are not displayed on the window.)
Close	Close window.

NOTE

If each category of “Logbook settings” of converter are “Off”, those events won’t be displayed on the Logbook window. If you want to display them, change their settings to “On” in advance.

SEE ALSO

- About the events saved into the Logbook, refer to “FLXA402 4-Wire Converter Operation of Converter (IM 12A01F01-03EN)”.
- About the “Logbook settings”, refer to “4.8 Logbook settings” in “FLXA402 4-Wire Converter Operation of Converter (IM 12A01F01-03EN)”.

TIPS

If Logbook window is executed by Action menu for sensors, its sensor's Logbook is displayed at first.

D-4-3 Alarm Detail

Display the Alarm window. This action selected "Alarm Detail "command is the same as selecting the converter's Alarm button.

D-4-4 Upload All Data to FieldMate

Upload the All setting parameters of converter and sensors, and save them into the FieldMate database.

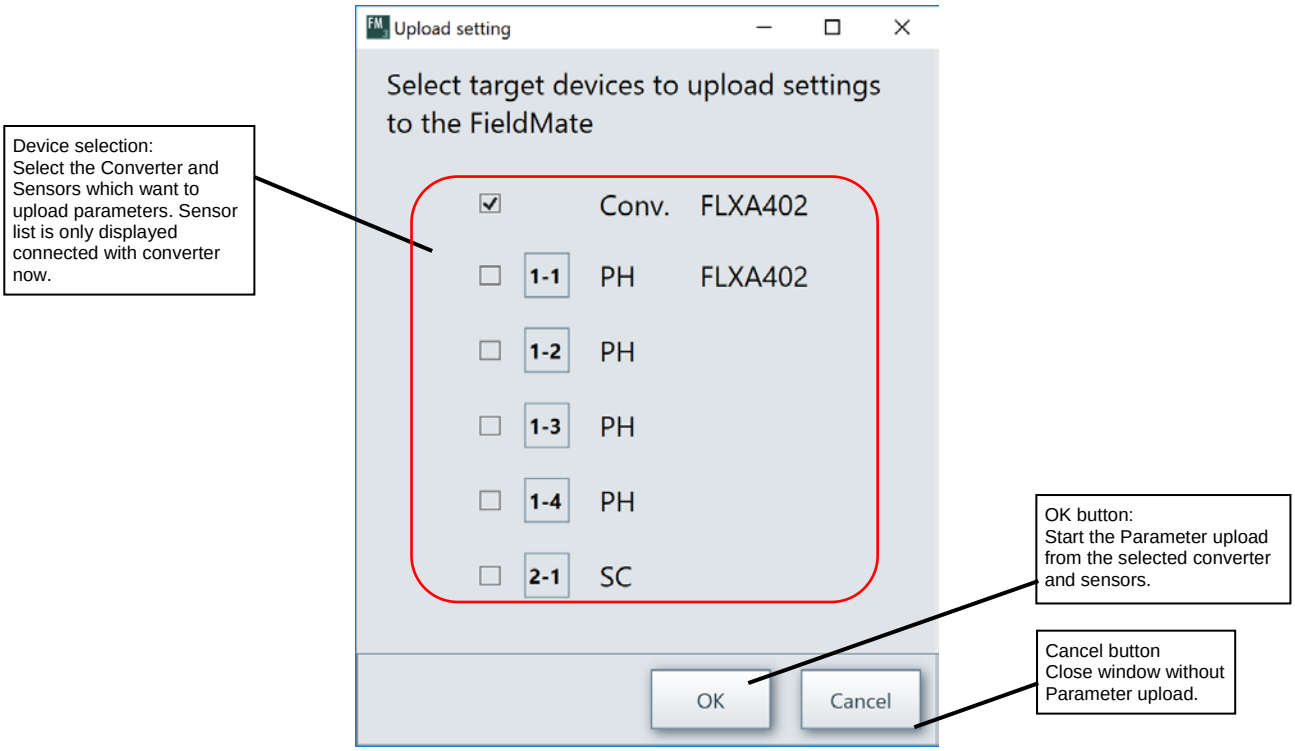


Figure D-4-3 Upload All Data Windows

During uploading the parameters, the progress bar is displayed. After finishing the uploading, the progress bar is closed and show the message box to announce it. The saved parameters can be displayed at the "SENCOM Parameter" in the Device Management Info.

TIPS

If this command is executed from Action Menu for sensors, it will only upload the selected sensor's parameters.

D-4-5 Converter setting

Display and set the converter's Parameters. If select this menu, the converter's parameters are uploaded to the FieldMate via communication, and displayed on the converter setting Window.

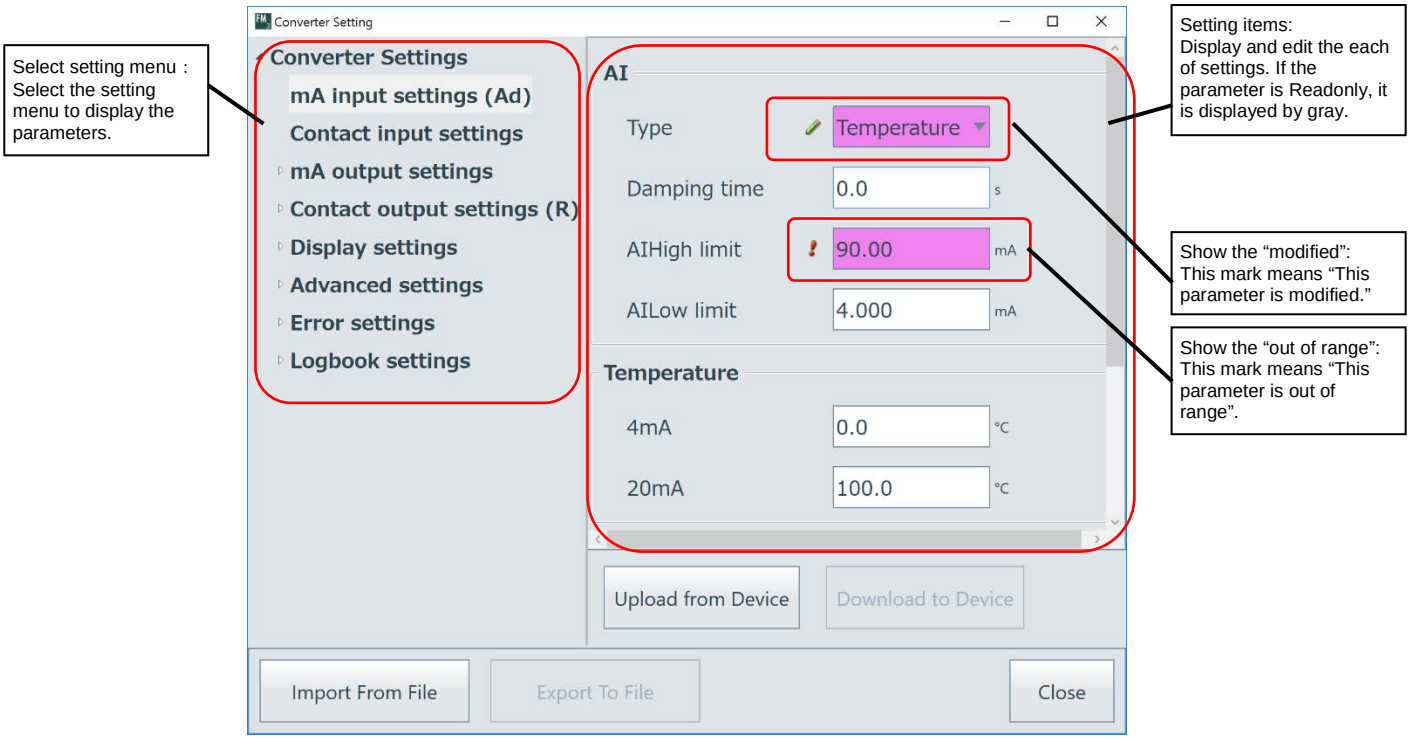


Figure D-4-4 Converter setting window

Table D-4-3 The button list of Converter setting window

Button name	Functions
Upload from Device	Upload current setting parameters from the converter to FieldMate.
Download to Device	Commit the edited parameters and download to the converter. If a parameter which is out of range exists, this button is disabled.
Import From File	Import the parameter file which exported from Converter setting window, and display the parameters.
Export To File	Export the parameters displayed this window to the file. If a parameter which is out of range exists, this button is disabled. The exported parameters file can import to Converter setting window of another FieldMate.
Close	Close window.

● The list of Converter setting Menu

Table D-4-4 The list of Converter Setting Menu

Menu		Setting items		Remarks	Refer to *1
Category 1	Category 2	Index	Items		
mA input settings (Ad) >		AI	Type		4.1
			Damping time		
			AI upper limit		
			AI lower limit		
		Temperature	4mA		
			20mA		
		Pressure	4mA		
			20mA		
			Pressure Comp. *		
Contact input settings >		Contact input1	Contact input Type		4.2
			Contact input Wash		
			Contact input change range		
		Contact input2	(Same as" Contact input1")		
mA output settings >	mA1 >	mA1(output)	mA1		4.3
			Process parameter slot		
			Process parameter		
			Output setup		
			Linear 0%		
			Linear 100%		
			Sub linear 0%		
			Sub linear 100%		
			Burn		
			Damping time		
			Table >	Graphical Setting for AO Table	
		mA1(simulate)	Simulation %		
		mA1(Configure Hold)	Last or Fixed		
			Fixed value mA		
			Hold during calibration		
	mA2 >	(Same as "mA1")			
	mA3 (Ad) >	(Same as "mA1")			
	mA4 (Ad) >	(Same as "mA1")			
Contact output settings (R)>	S1 >	S1 (Output)	S1		4.4
		S1 (Alarm)	Process parameter slot		
			Process parameter		
			Setpoint		
			Direction		
			Hysteresis		
			Delay time		
			Expiry time		
		S1 (Wash)	Interval time		
			Wash time		
			Recovery time		
			Manual wash		
			Impedance 2 Wash		
			Continuous wash		
		S1 (Fail)	Process parameter slot		
			Setting		
		S1 (USP)	Process parameter slot		

		S1 (Hold)	mA output		
		S1 (Simulate)	Simulate		
	S2 (R) >	(Same as S1)			
	S3 (R) >	(Same as S1)			
	S4 (R) >	S4 (Output)	S4		
		S4 (Alarm)	Process parameter slot		
			Process parameter		
			Setpoint		
			Direction		
			Hysteresis		
			Delay time		
			Expiry time		
		S4 (Fail)	Process parameter slot		
			Setting		
		S4 (Simulate)	Simulate		
Display settings	Display 1-1		Process parameter slot		4.5
			1st line		
			2nd line		
			3rd line		
			Display name		
			Additional text 1		
			Additional text 2		
			Additional text 3		
			Favorite Calibration		
			Conductivity Unit		
			Resistivity Unit		
	Display 1-2		(Same as Display 1-1)		
	Display 1-3		(Same as Display 1-1)		
	Display 1-4		(Same as Display 1-1)		
	Display 2-1		(Same as Display 1-1)		
	Display 2-2		(Same as Display 1-1)		
	Display 2-3		(Same as Display 1-1)		
	Display 2-4		(Same as Display 1-1)		
	Script	Script unit	Script unit strings 1 ・・・・ Script unit strings 8	*2	
		Script number decimal	Script number decimal places 1 ・・・・ Script number decimal places 8		
	Trend	Trend	X-axis: Timing		
		Trend 1	Process parameter slot		
			Process parameter		
			Low limit		
			High limit		
		Trend 2	(Same as Trend1)		
		・・・・			
		Trend 8	(Same as Trend1)		
	Others		Auto Return		
			Backlight saver		
			MONITOR Display		
		Backlight flash	Backlight flash		
			Backlight flash behavior		

Advanced settings	MODBUS setting >	Sensor Address setting (S)	Address CH1-1		4.6
			・・・・		
			Address CH2-4		
		RS485	MODBUS Address		
			Baud rate		
			Parity		
	HART setting >		Loop Current Mode		
			Network address		
			PV	ReadOnly	
			SV		
			TV		
			QV		
	Ethernet setting >		DHCP enable		
			IP Address		
			Subnet mask		
			Default gateway		
	Others setting >		Temperature		
			Pressure unit		
			Date format		
Error settings	System alarm setting			*3	4.7
	PH alarm setting				
	SC alarm setting				
	ISC alarm setting				
	DO alarm setting				
Logbook settings	Converter Setting			*4	4.8
	Sensor Setting				

*1:“Refer to” means reference section No. in “FLXA402 4-Wire Converter Operation of Converter (IM 12A01F01-03EN)”.

*2: Latest revision of Converter does not support Script. DO NOT configure “Script”.

*3: About “Error Settings”, refer to “4.7 Error Settings” in “FLXA402 4-Wire Converter Operation of Converter (IM 12A01F01-03EN)”.

*4: About “Logbook Settings, refer to “4.8 Logbook Settings” in “FLXA402 4-Wire Converter Operation of Converter (IM 12A01F01-03EN)”.

● The meaning of Parameter-symbols

Some parameters have symbols on the right side, such as (A). This symbol means that the setting limitations such as “not displayed” and “read only” depending on hardware configurations of converter and sensors. Parameter-symbol list and meanings are as follows.

Table D-4-5 Parameter-symbol list

Symbol	Parameter Description
(S)	For SENCOM SA
(A)	For Analog sensor module
(R)	For Relay module
(Ad)	For IO(Advanced)
(RS)	For RS-485
(B)	For Bluetooth
(E)	For Ethernet
(*)	Valid with DO70G module

NOTE

During calibration or editing the settings in the converter, Converter settings uploading and downloading in the FieldMate are not available to avoid operation conflict. Please operate again after finishing those operation in the converter.

D-4-6 Test Mode

Test Mode window is to execute the IO test and Error simulation for the converter. Select the Tabs “Output”, “Input” and “Error” to test each of the functions.

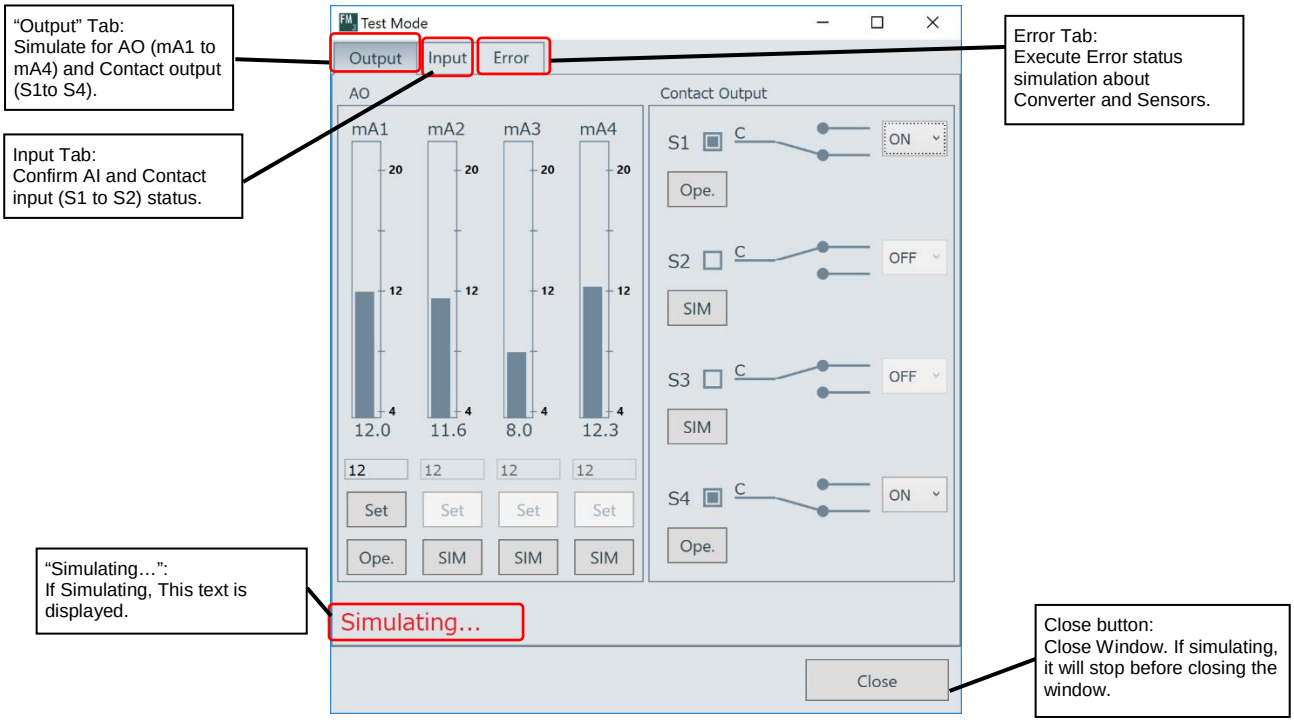


Figure D-4-5 Test Mode Window

■Output Test

Simulate for AO (mA1 to 4) and Contact Output (S1 to 4).

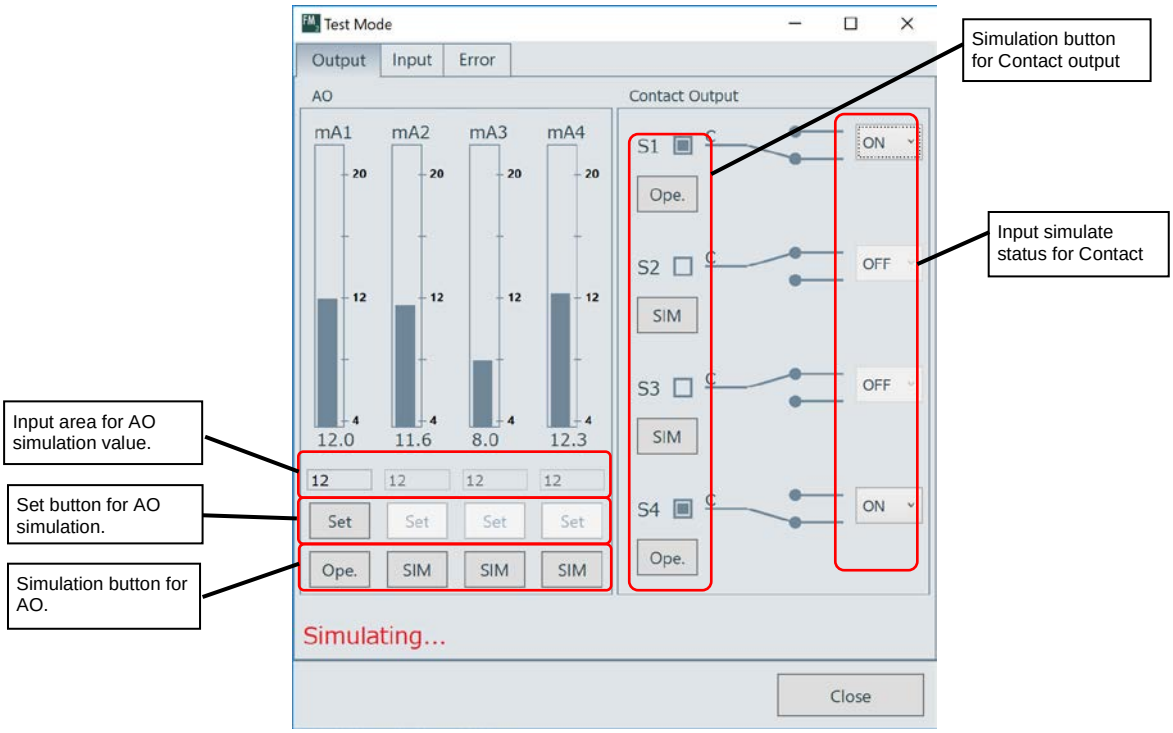


Figure D-4-6 Test Mode Window (Output)

Table D-4-6 The functions of Test Mode Window (Output)

Button Name	Functions
Simulation button for AO	Start and finish the AO simulation for mA1 to mA4. If select “SIM button, its simulation is started, and button name is changed to “Ope.”. If select “Ope.” button, its simulation is finished, and button name is changed to “Ope.”.
Input area for AO simulation value.	Set the simulation mA output level by % range. Its range is-2.5 to 112.5%. This area is only available at “Simulating”.
Set button for AO simulation.	To update AO simulation level. If select the “Set” button, its mA output simulation level is changed. This button is only available at “Simulating”.
Simulation button for Contact output	Start and finish the Contact output simulation for S1 to S4.Button status display is the same as Simulation button for AO.
Input simulate status for Contact output.	Change the ON/OFF status of Contact output. This area is only available at “Simulating”.

TIPS

- If Converter’s Analog module is “BASIC”, only mA1 and mA2 are displayed.
- If Converter’s relay module is “None”, Contact Output is not displayed.

■Input Test

Confirm AI and Contact Input (S1 to S2) status. This window does not support any operation.

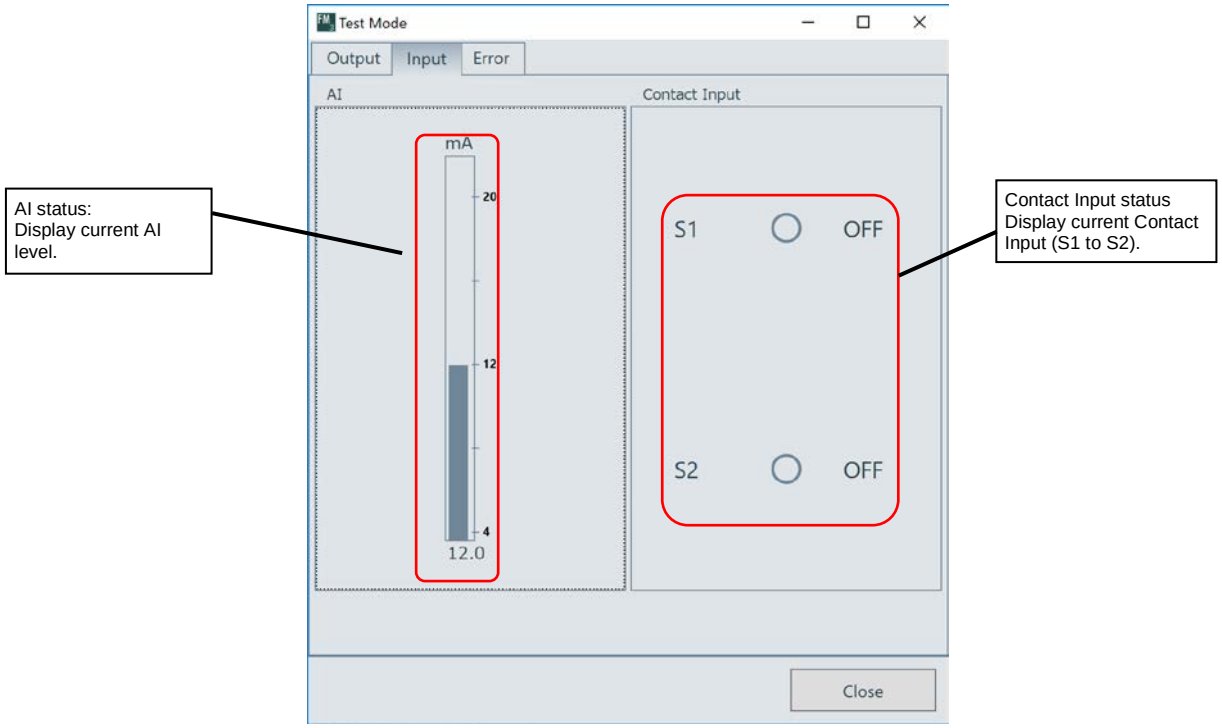


Figure D-4-7 Test Mode Window (Input)

TIPS

If Converter's Analog module setting is "BASIC", AI is not displayed and Contact Input is only S1 is displayed.

■Error Test

Start and stop the Error simulation of Converter and Sensors.

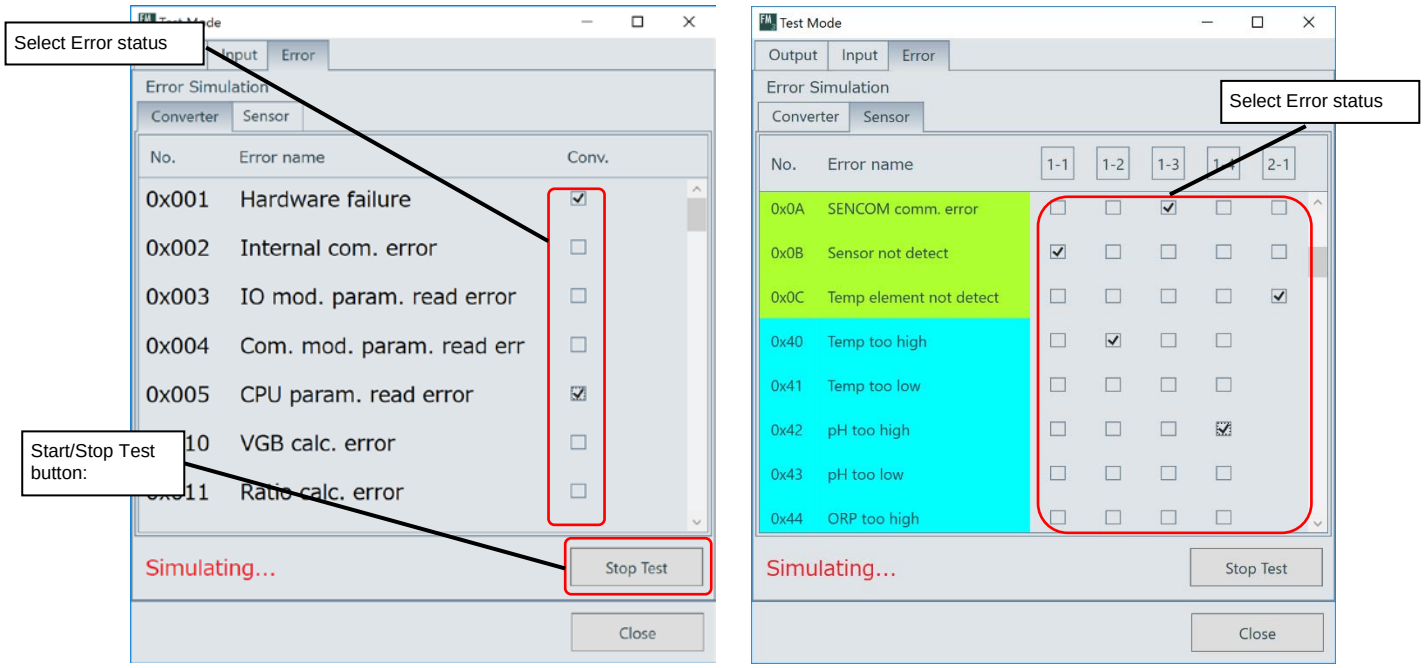


Figure D-4-8 Test Mode Window (Error, Left: Converter, Right: Sensors)

Table D-4-7 The functions of Test Mode Window (Error)

Button Name	Functions
Start/Stop Test button	Start and Stop the Error simulation of Converter and Sensors. When the window is opened, this button is “Start Test”. Select “Start Test”, Error simulation is started, and “Simulating…”is displayed. In addition, the button name is changed to “Stop Test”. Select “Stop Test”, Error simulation is stopped, and “Simulating…”is erased. In addition, the button name is changed to “Start Test”.
Select Error status	Simulate “Error on” and “Error off” by selecting each errors of checkboxes. These checkboxes are only available at “Simulating”. Each errors of Alarm level depend on their Error settings in Converter.

TIPS

- About the Error list of detecting on the Converter and Sensors, refer to “3. Error “in “FLXA402 4-Wire Converter Modbus communication (TI 12A01F01-62EN)”.
- About Error settings of Converter, refer to “4.7 Error Settings” in “FLXA402 4-Wire Converter Operation of Converter (IM 12A01F01-03EN)”. When the Error set “OFF” at the Error settings in the Converter, its error dose not occurred even if the related checkbox is selected in the Test Mode.

D-4-7 Date/Time setting

Set the date and time to the Converter.

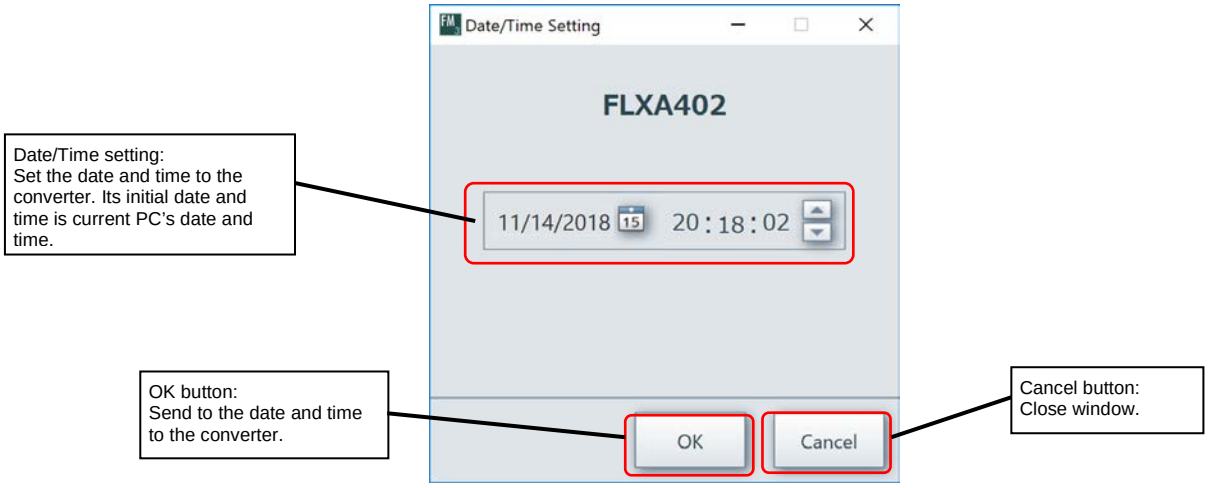


Figure D-4-9 Date/Time setting window

D-4-8 Product Information

Display the converter's Product Information (Serial No., Software Revision, and so on).

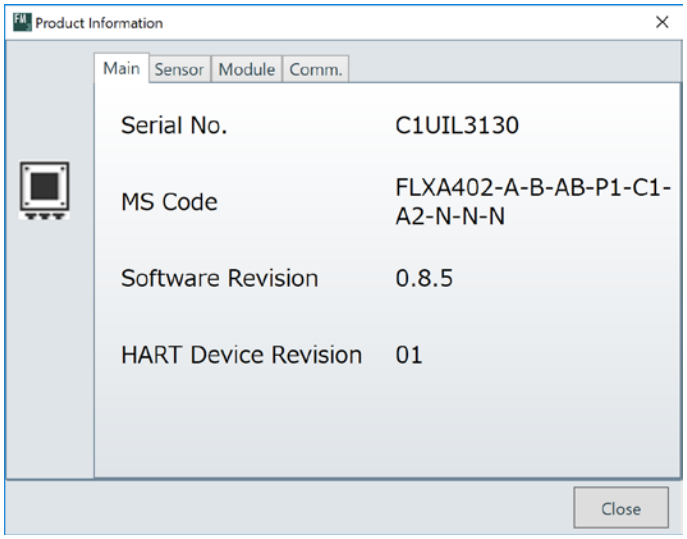


Figure D-4-10 Product Information window

Table D-4-8 Display items of Product Information Window (Converter)

Tab	Items	Detail
Main	Serial No.	Serial No. of Converter
	MS Code	MS code of Converter (The first 48 characters are displayed.)
	Software Revision	Software (Firmware) Revision of Converter
	HART Device Revision	HART Device Revision of Converter
Sensor	SENCOM SA 1-1	Serial No. of SENCOM SA1-1
	…	
	SENCOM SA 2-4	Serial No. of SENCOM SA2-4
	DO70G	Serial No. of DO70G
Module	Housing	Internal Serial No. of Housing
	First sensor module	Internal Serial No. of 1st Analog sensor module
	Second sensor module	Internal Serial No. of 2nd Analog sensor module
	IO module	Internal Serial No. of Analog module
	COM. module (Ethernet)	Internal Serial No. of RS485 module of Ethernet module
Comm.	IP address	IP address of Ethernet
	Subnet mask	Subnet mask of Ethernet
	MAC address	MAC address of Ethernet
	Device Name	Device Name of Bluetooth

D-4-9 Adjust Panel

Request to display “Touch Panel” to the Converter’s HMI and Adjust “Brightness “ of the Converter’s HMI.

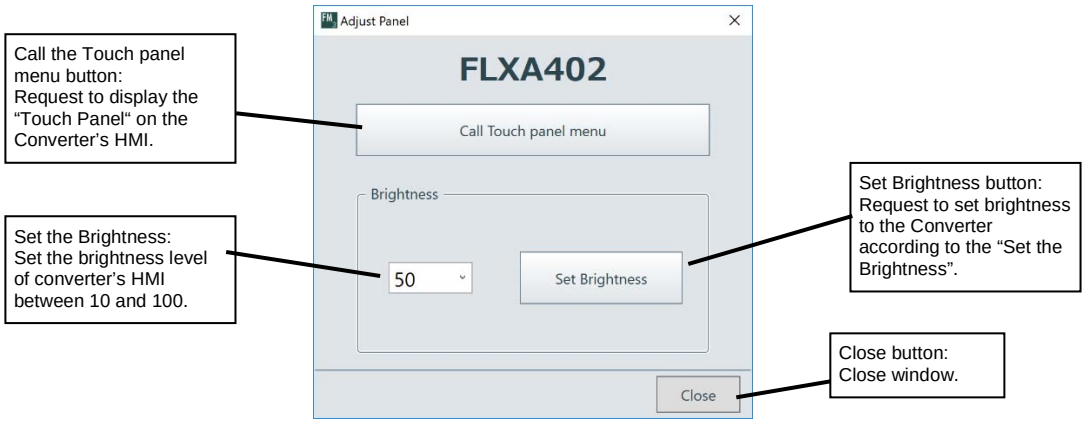


Figure D-4-11 Adjust Panel Window

TIPS

This window is to recover the HMI’s display troubles because HMI’ s brightness setting is 0 (in this case, displayed characters cannot read) or Touch panel adjustment setting is accidentally broken.

D-4-10 Password Setting

Set the Password limitation for the settings and operations for the Converter and Sensors There are 2 types password, “Commissioning” and “Execute”. The users can set both password at once. The password should be half-width alphanumeric up to 12 characters. If no character set in the text box, its password will be expired. Only “Execute” password is not allowed.

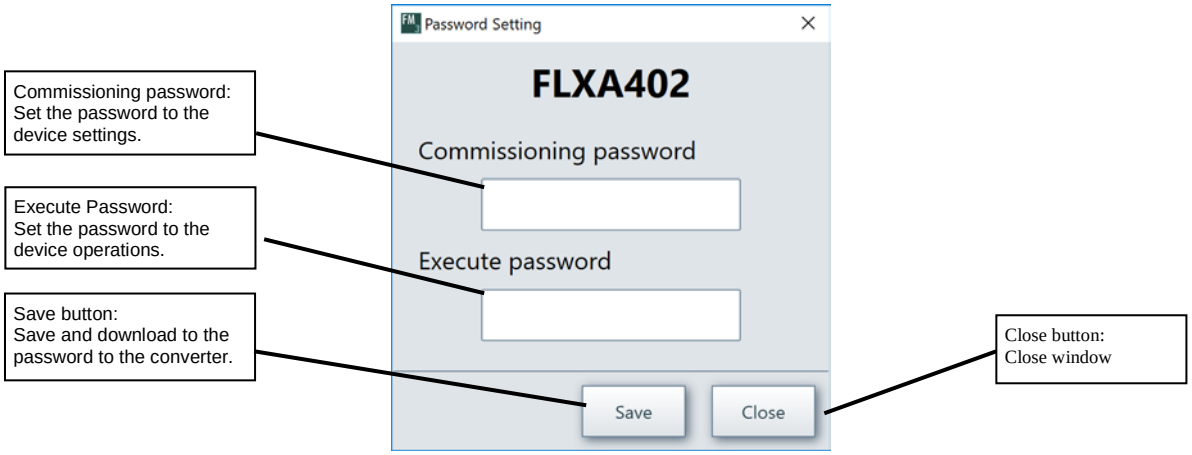


Figure D-4-12 Password Setting window

Table D-4-9 The functions which set the password limitations

Execute Password	Commissioning Password
Calibration WASH Hold Test Mode	Converter setting Sensor setting Adjust Panel Password setting

■Confirming password

The window is displayed to check the password when the selected command has password limitation.

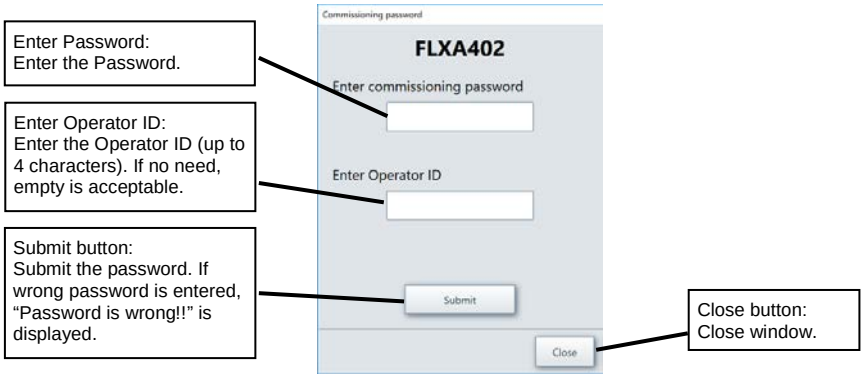


Figure D-4-13 Confirming Password window

D-4-11 Disconnect Converter

Select “Disconnect converter” command, current communication with the converter is disconnected. After disconnecting the communication, periodical display updating is stopped, and following image is displayed on the Top Window.

■Top Window display after disconnected converter

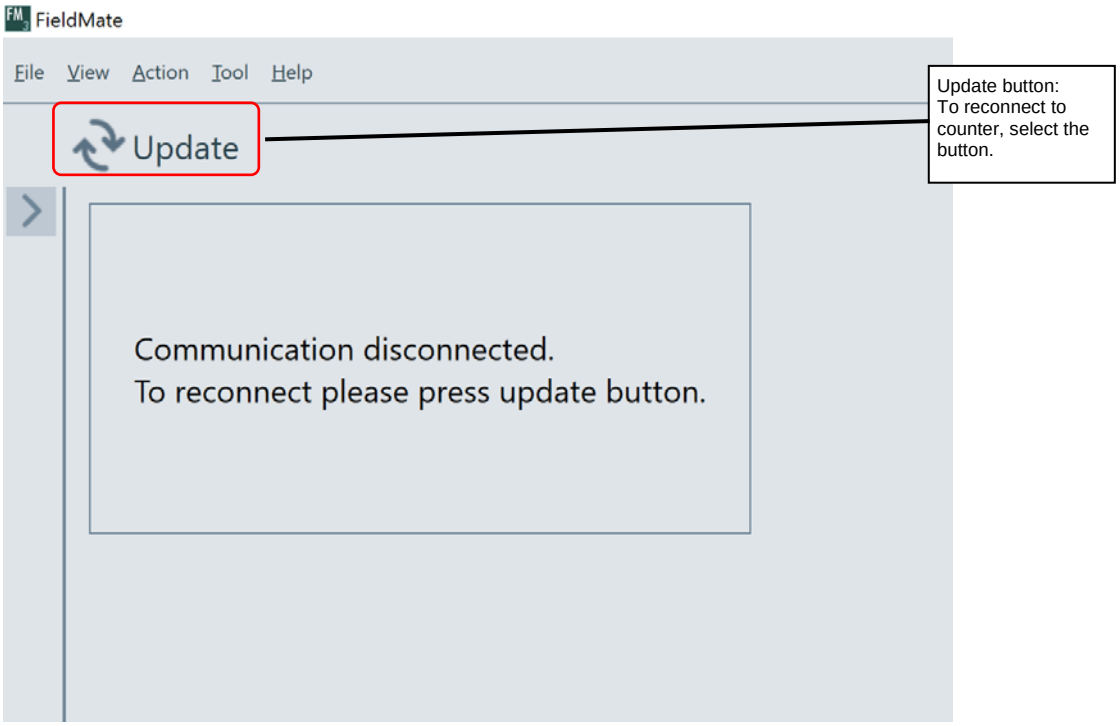


Figure D-4-14 Top Window display after disconnected converter

D-5 Sensor display area

Sensor display area shows as following functions.

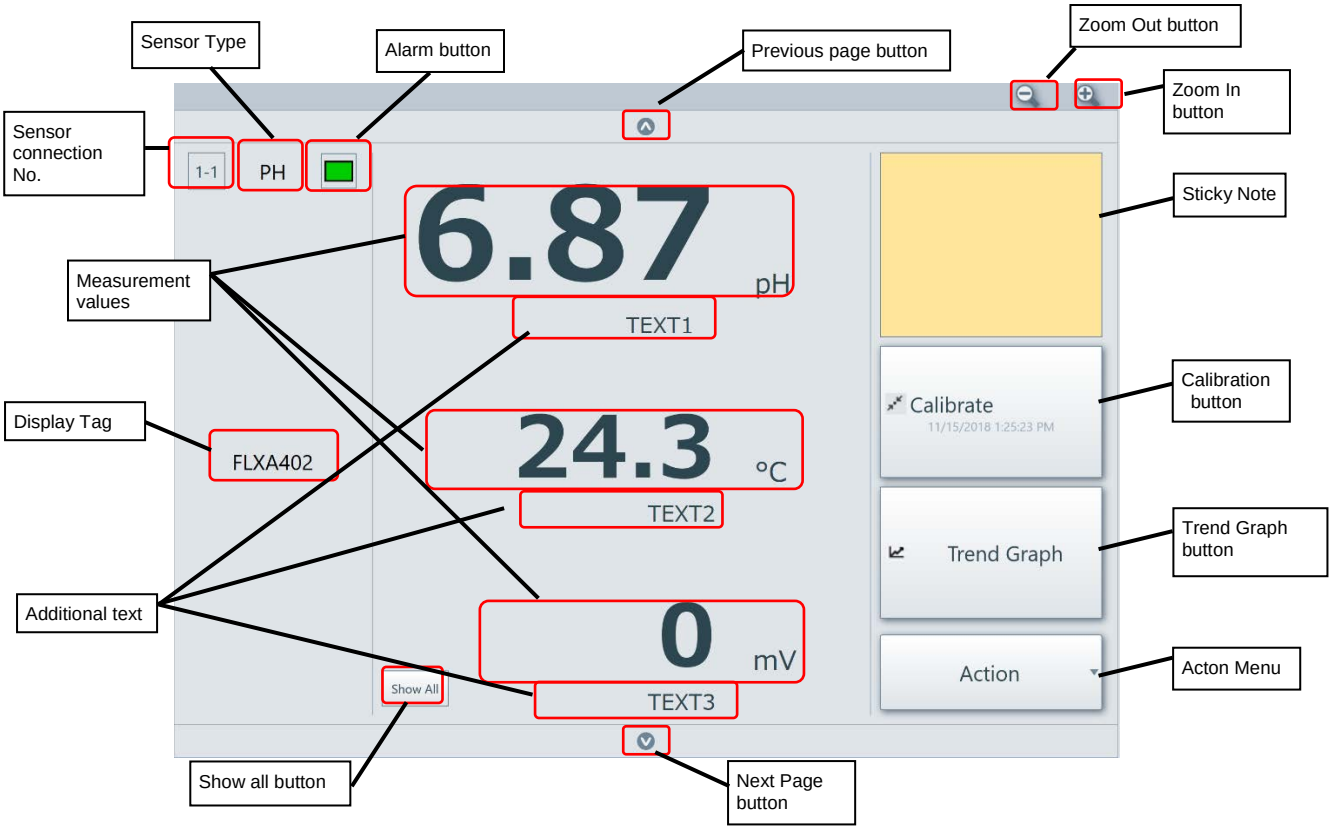


Figure D-5-1 Sensor display area

Table D-5-1 The display items of “Sensor display area”

Items	Details
Sensor connection No.	Display the sensor connection No.(1-1 to 2-4) selected as the display item. “C” is displayed when “ Conveter” is selected as the display item.
Sensor type	Display the sensor type (pH, SC, ISC, DO and DO70G). If FieldMate cannot receive the sensor type from SENCOM SA, “NONE” is displayed.
Alarm button	Display the Sensor’s Alarm status. If the selected item is “Conveter”,this item is hidden. Select Alarm button, and Alarm Window is displayed.
Display Tag	Display the Tag according to the converter’s Display settings.
Measurement Values	Display the 1st to 3rd Measuremet Value accrding to the Converter’s display settings. If its setting is “Empty”, “----“ is displayed.
Additional Text	Display the 1st to 3rd Additional Text accrding to the Converter’s display settings.
Show All button	Display the Sensor Detail Window.
Sticky Note	Display and Edit“Memo”for the displayed sensor.

Calibration button	Start the Displayed Sensor's calibration. The Last calibrated date is displayed on this button (except 8 sensors display). If the selected item is "Conveter",this item is not available.
Trend Graph button	Display the 1st to 3rd Measuremet Value's trend graph.
Acton Menu	Action menu shows the command list for sensor operations. The user can operate the sensors by selecting each of command in the menu. If the selected item is "Conveter",this item is not available.
Previous button	Display the next sensor's information.
Next button	Display the privous sensor's information.
ZoomIn button	Increace the number of sensor's displayed their information on the Top window at once.(8 Sensors ->4 Sensors->2 Sensors->1 Sensor)
ZoomOut button	Decreace the number of sensor's displayed their information on the Top window at once.(1 Sensor->2 Sensors->4 Sensors->8 Sensors)

The display items are changed as following table depending on the number of the sensors displayed their information on the Top window at once.

Table D-5-2 The Display items list and number of sensors on the Top Window

	1 Sensor	2 Sensors	4 Sensors	8 Sensors
Sensor connection No.	○	○	○	○
Sensor type	○	○	○	○
Alarm button	○	○	○	○
Display Tag	○	○	○	○
Measurement Values	3	3	3	1
Additional Text	○	○	○	－
Show All button	○	○	○	－ *1
Sticky Note	○	○	○	○
Calibration button	○	○	○	○
Trend Graph button	○	○	○	－ *1
Acton Menu	○	○	○	○
Previous button	○	－	－	－
Next button	○	－	－	－
ZoomIn button	○	○	○	○
ZoomOut button	○	○	○	○

○:Available,－:Not Available

*1: This function can call from Action Menu.

TIPS

About sensor display settings, refer to "4.5 Display settings" in "FLXA402 4-Wire Converter Operation of Converter (IM 12A01F01-03EN)".

D-5-1 Sensor Detail

Sensor Detail Window displays detail measurement values which are not displayed on the Top Window. Select “Show All” button, and display this window.

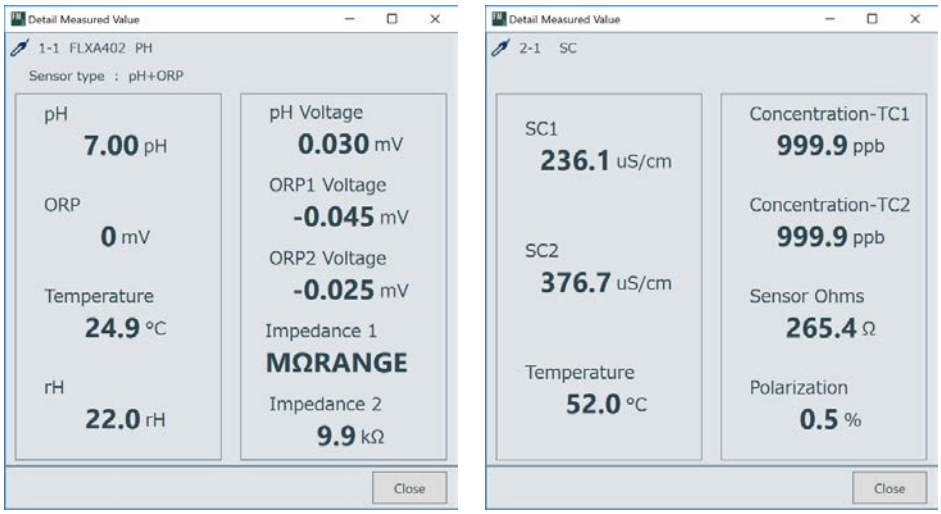


Figure D-5-2 Image of Sensor Detail Window (Left: pH Sensor (pH+ORP), Right: SC Sensor)

Table D-5-3 Display items list of Sensor Detail Window (pH Sensor)

Items	pH	ORP	pH+ORP
pH	○	–	○
ORP	–	○	○
Temperature	○	○	○
rH	–	–	○
pH Voltage	○	–	○
ORP1 Voltage	–	○	○
ORP2 Voltage	–	○	○
Impedance1	○	○	○
Impedance2	○	○	○

Table D-5-4 Display items list of Sensor Detail Window (SC/ISC Sensor)

Items	SC	ISC
SC1	○	○
SC2	○	○
Temperature	○	○
Concentration-TC1	○	○
Concentration-TC2	○	○
Sensor Ohms	○	○
Polarization	○	–

Table D-5-5 Display items list of Sensor Detail Window (DO Sensor)

Items	Galvanic	Polarographic	DO70G
DO	○	○	○
Temperature	○	○	○
Sensor Current	○	○	—
Polarization	—	○	—
Available KOH	○	○	—
Press.(Process)	○	○	—

SEE ALSO

- About pH sensor's Sensor Detail Window, refer to "2.1 Detail" in "FLXA402 4-Wire Converter Operation of pH/ORP (IM 12A01F02-01EN)".
- About SC sensor's Sensor Detail Window, refer to "2.1 Detail" in "FLXA402 4-Wire Converter Operation of SC (IM 12A01F03-01EN)".
- About ISC sensor's Sensor Detail Window, refer to "2.1 Detail" in "FLXA402 4-Wire Converter Operation of ISC (IM 12A01F04-01EN)".
- About DO sensor's Sensor Detail Window, refer to "2.1 Detail" in "FLXA402 4-Wire Converter Operation of DO (IM 12A01F05-01EN)".

D-5-2 Trend Graph

Trend Graph Window displays the 1st to 3rd Measurement Value's trend graph. The trend graph will be updated periodically.

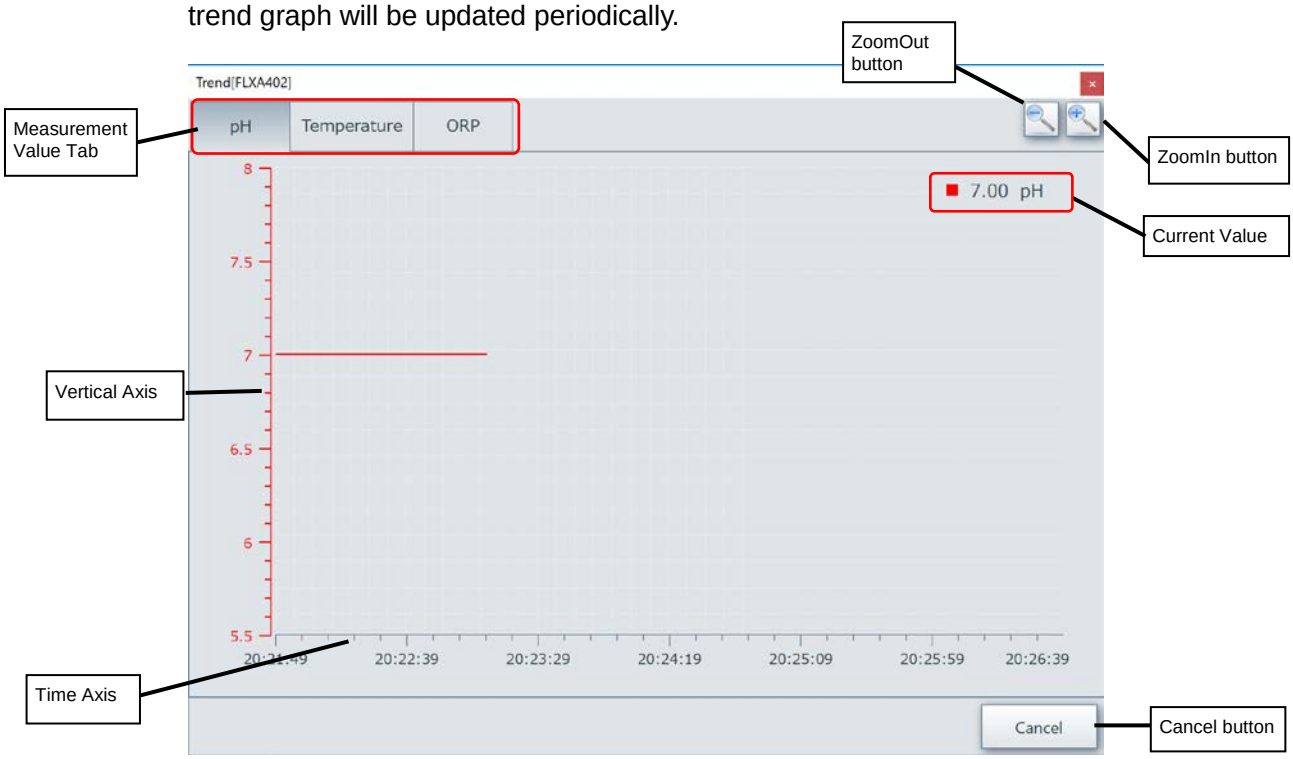


Figure D-5-3 Trend Graph Window

Table D-5-6 Display items for Trend graph window

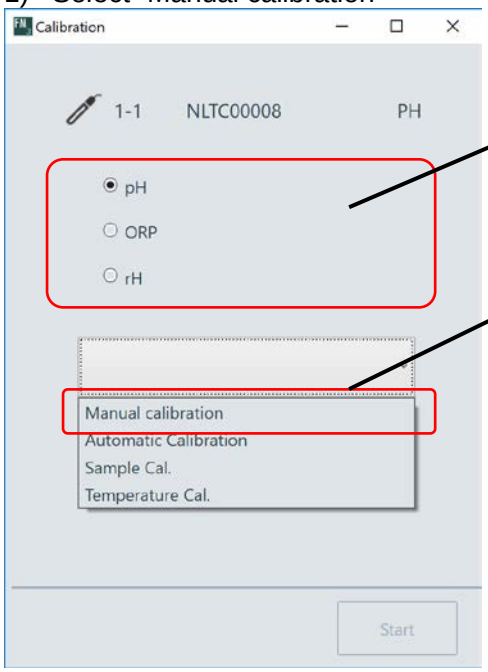
Items	Details
Measurement Value Tab	1st to 3rd Measurement Value are assigned to the each tab. A tab displays a Trend Graph. The user can switch the Trend Graph by selecting the Tab. If the measurement value setting is "empty", its Trend Graph is not assigned.
Vertical Axis	Vertical Axis of measurement Value. This scale is Auto-scale.
Time Axis	Time Axis of the Trend Graph. Its range is changed automatically(5min->15min->30min->1hour->2hour->4hour->8hour).This trend is displayed up to 8 hours.
Current Value	Display the current measurement value.
ZoomIn button	Zoom-in the Time Axis of Trend graph
ZoomOut button	Zoom-out the Time Axis of Trend graph
Cancel button	Close the window.

D-5-3 Calibration

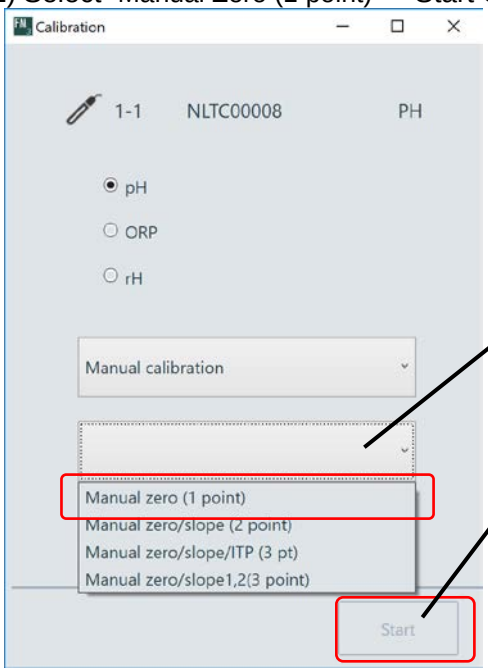
Display the Calibration Window according to its sensor type.
Calibration is performed stepwise according to the displayed guide on the windows. In this section, the document describes about “Manual 1 point Calibration”,” Automatic 1 point Calibration”,” Sample Calibration” for pH sensor and “Manual 1 point Calibration” for SC sensor. Another calibration are also the similar procedures. And the users can calibrate easily according to displayed guide.

■Procedure of “Manual 1 point Calibration” for pH sensor

1) Select “Manual calibration”

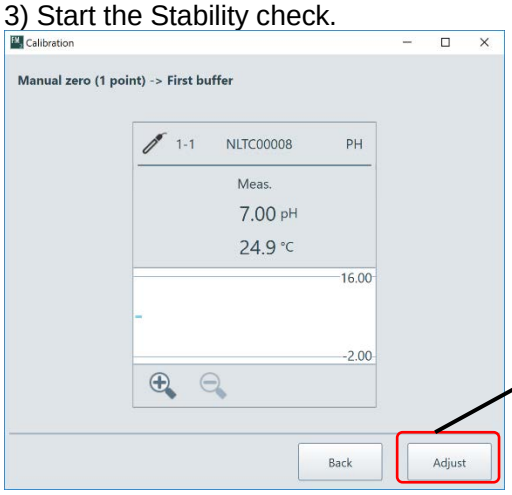


2) Select “Manual Zero (1 point)”-> Start Cal.

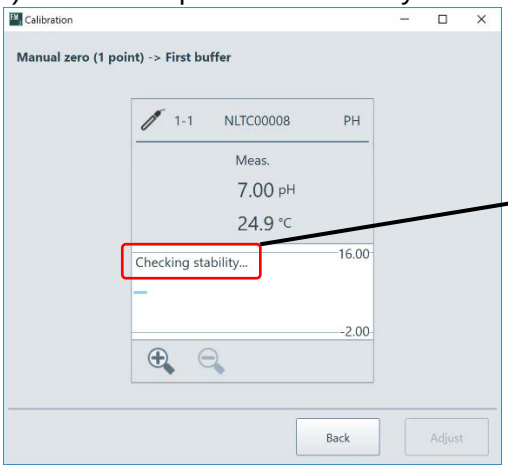


*1 If Sensor type is pH, it is always pH.
If Sensor type is ORP it is always ORP.
If Sensor type is pH+ORP, it is selectable.

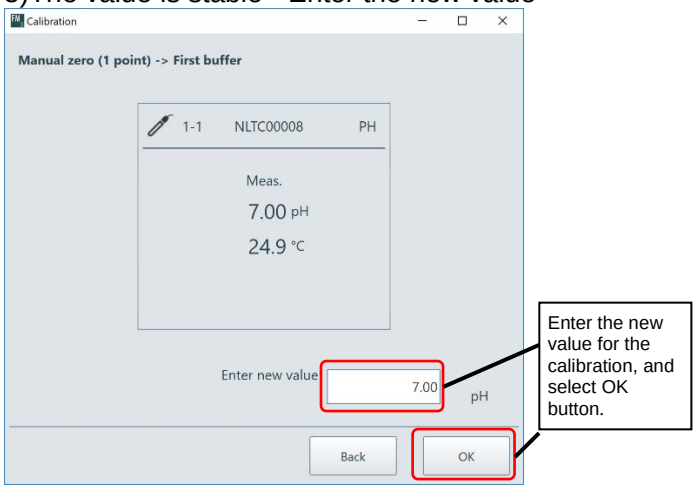
3) Start the Stability check.



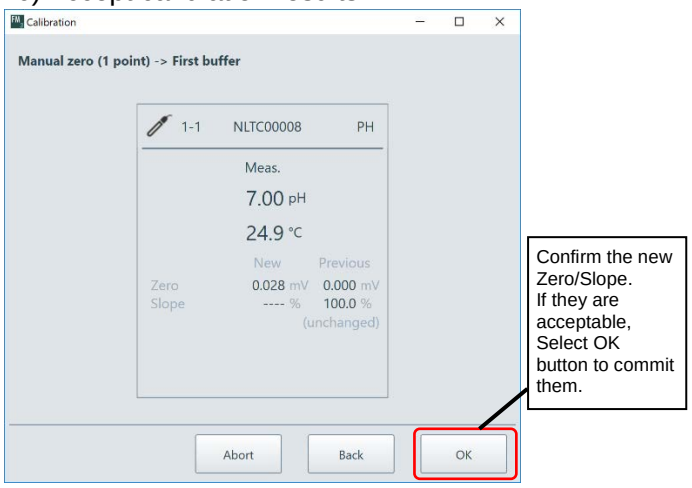
4) Wait for the pH value’s Stability.



5)The value is stable->Enter the new value



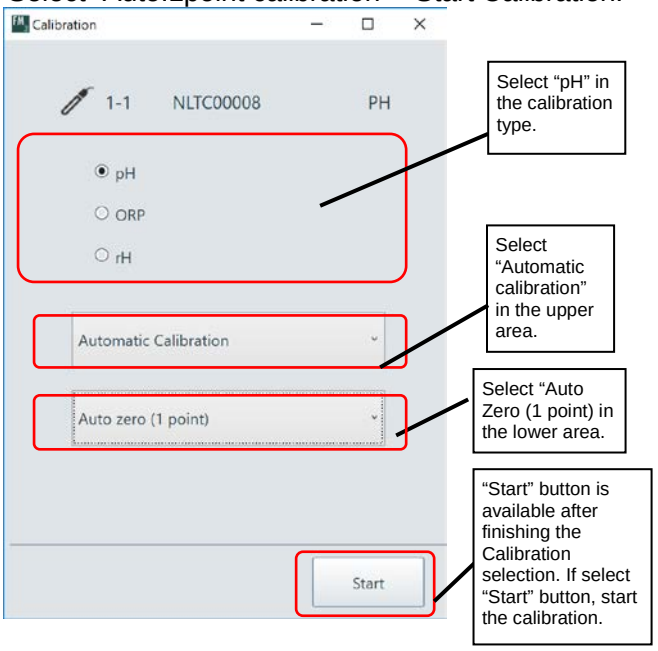
6) Accept calibration results.



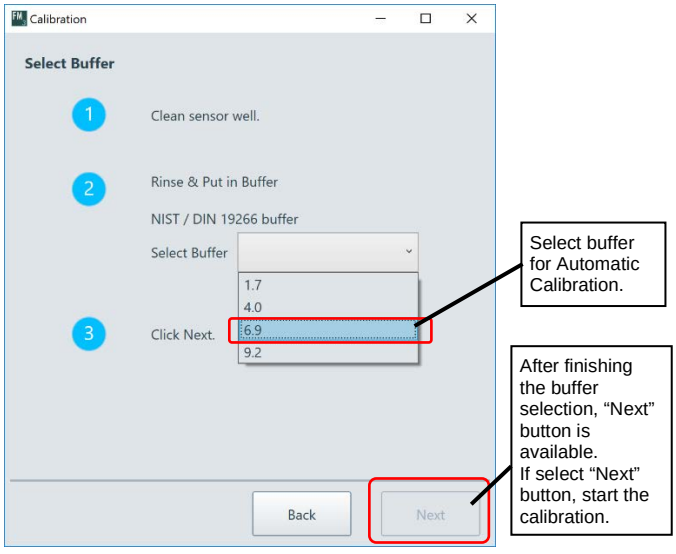
7) Check the sensor replacement.

■Procedure of “Automatic 1 point Calibration” for pH sensor

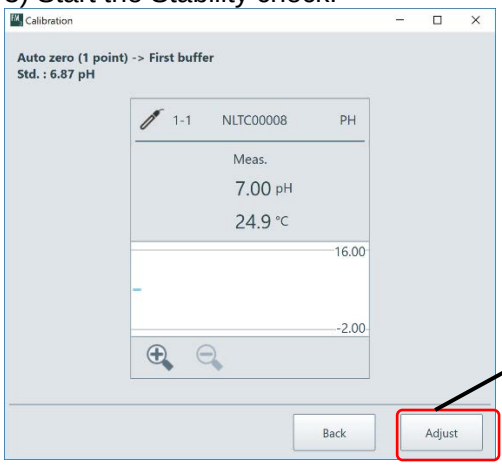
1) Select “Auto.1point calibration”->Start Calibration.



2) Select buffer.

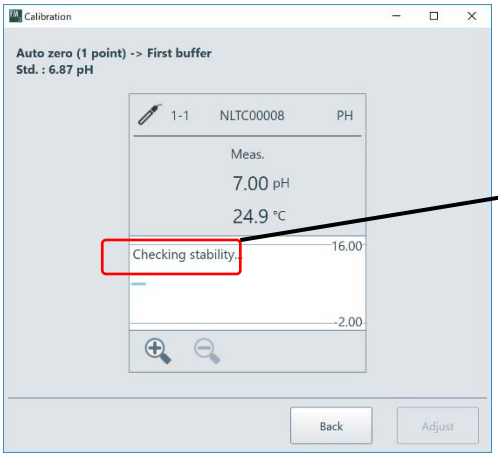


3) Start the Stability check.



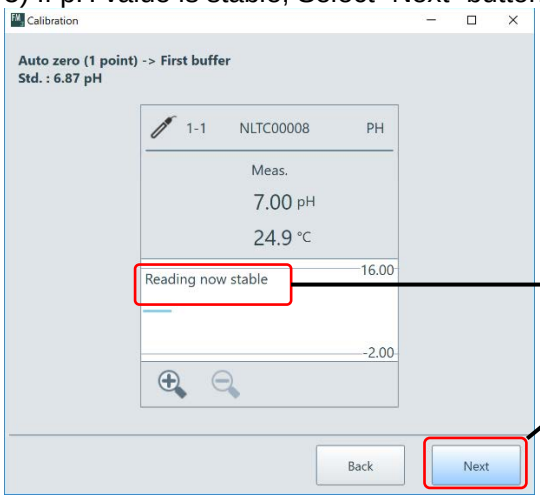
Select “Adjust” button, and start the stability check.

4) Wait for the pH value’s Stability.



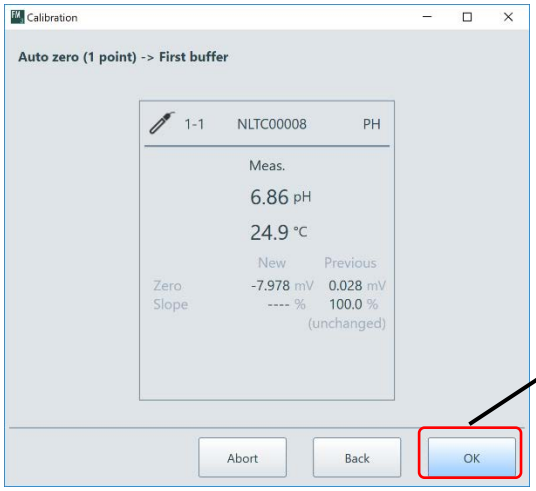
Wait for the pH value’s Stability. If its value is stable, move to next status automatically.

5) If pH value is stable, Select “Next” button.



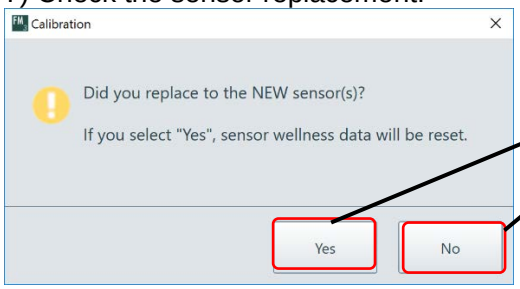
If pH value is stable, “Next” button is enabled. Confirm the value, and then select “Next” button.

6) Accept calibration results.



Confirm the new Zero/Slope. If they are acceptable, Select OK button to commit them.

7) Check the sensor replacement.



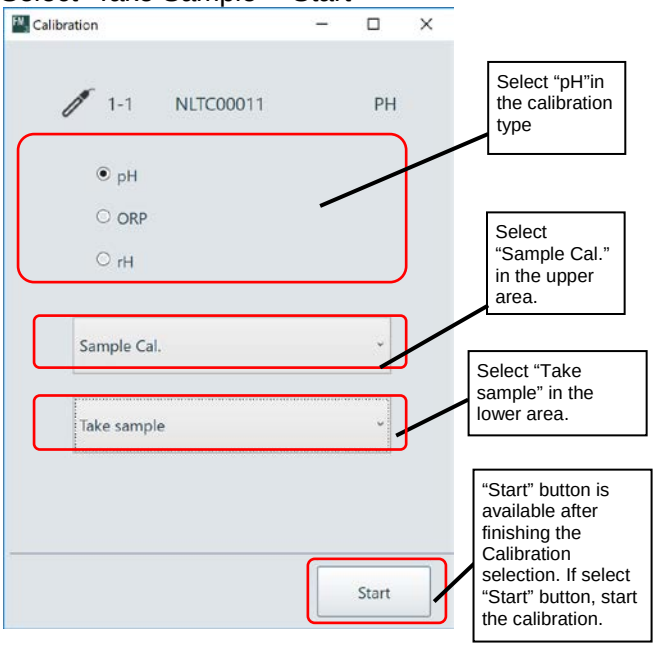
If the sensor is replaced before calibration, Select “Yes”, else “No”.
If select “Yes”, sensor wellness will be reset.

■Procedure of “Sample Calibration” for pH sensor

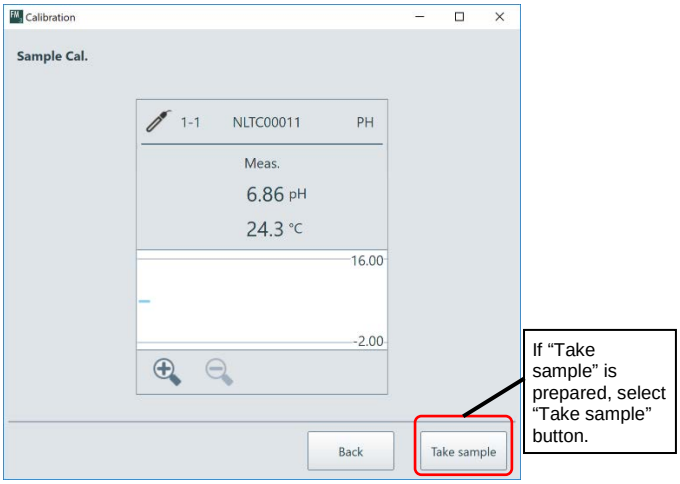
Sample Calibration consists of 2 phases, “Take sample” and “Sample Calibration”.

●Take sample

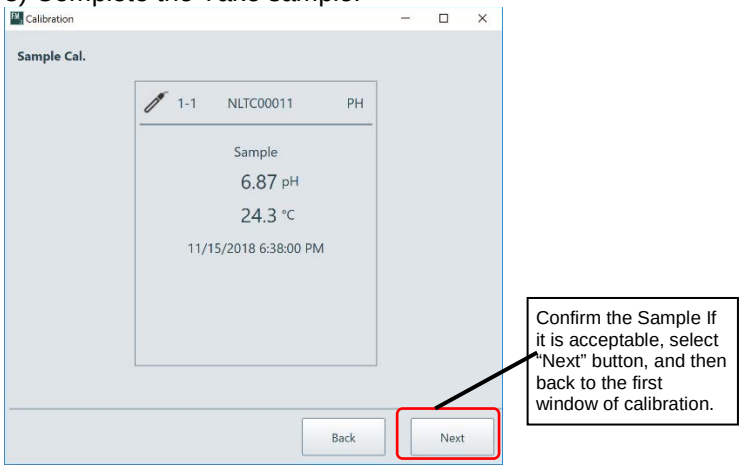
1)Select “Take Sample”->Start



2) Take sample

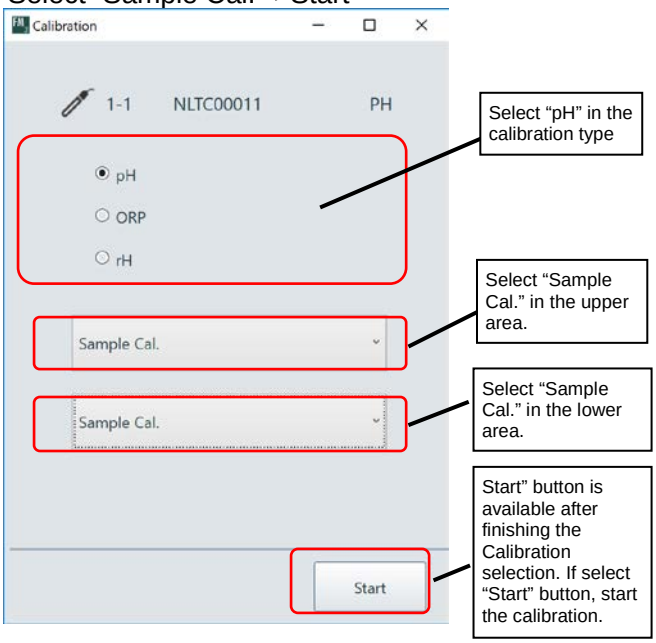


3) Complete the Take sample.

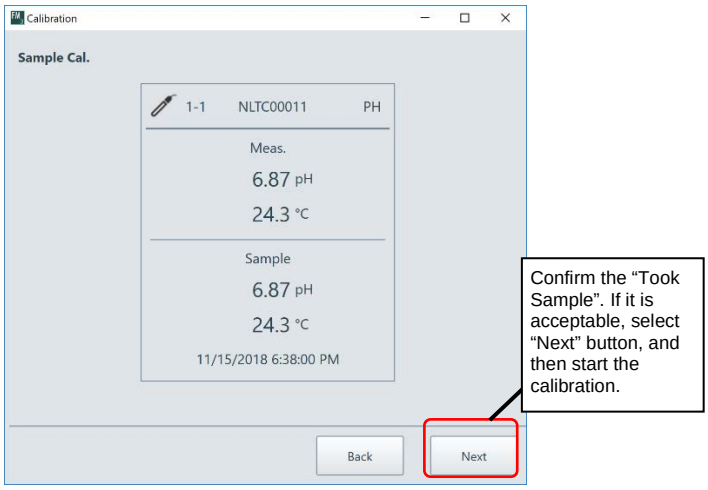


●Sample Calibration

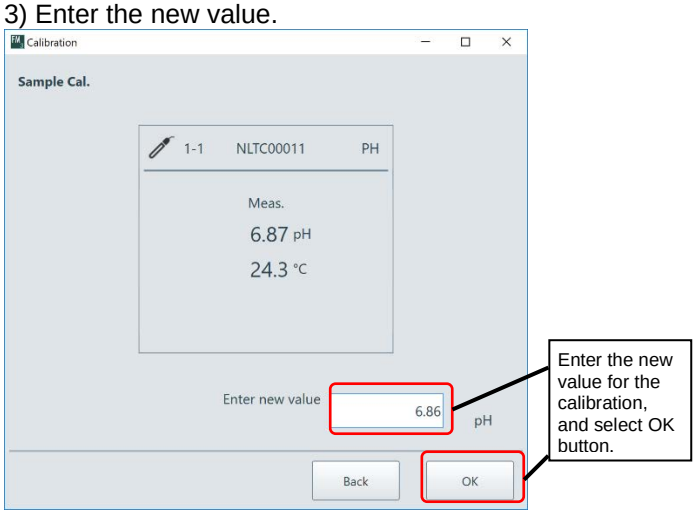
1) Select “Sample Cal.”->Start



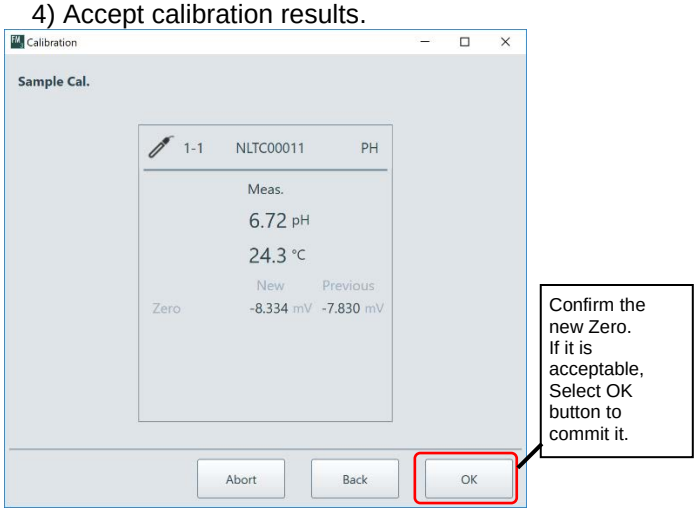
2) Confirm “Took sample”



3) Enter the new value.

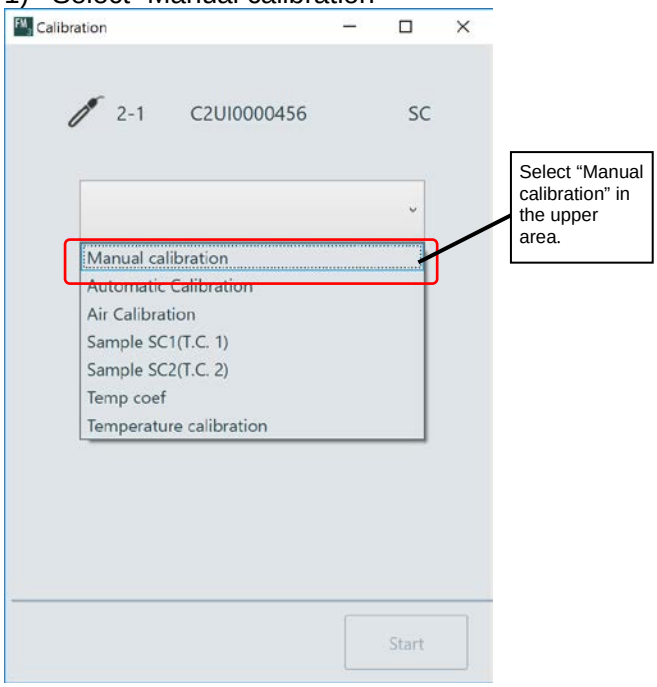


4) Accept calibration results.

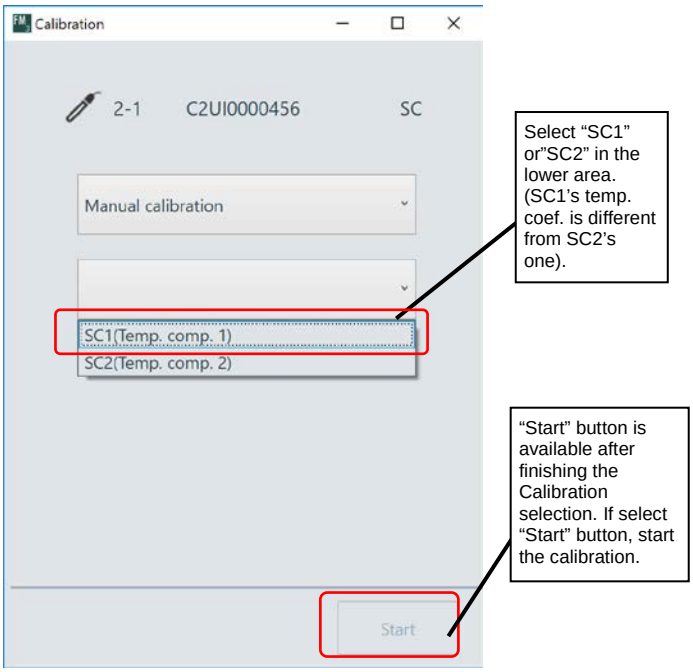


■Procedure of “Manual 1 point Calibration” for SC sensor

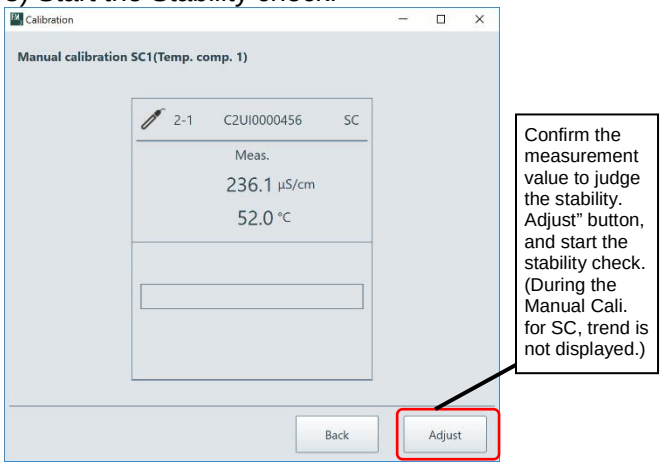
1) Select “Manual calibration”



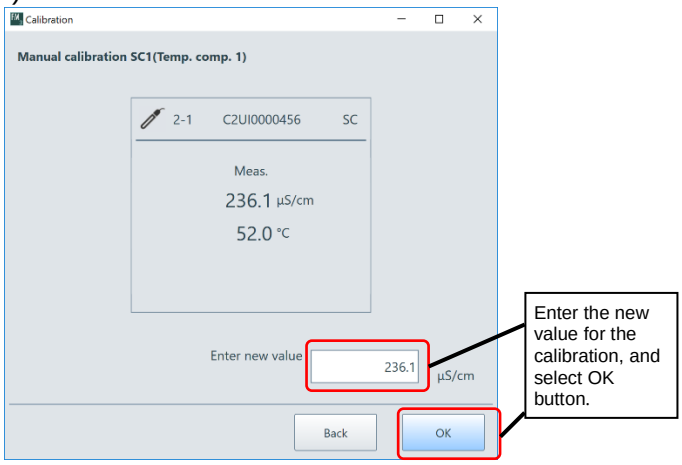
2) Select “SC1(Temp. Comp. 1)”-> Start Cal.



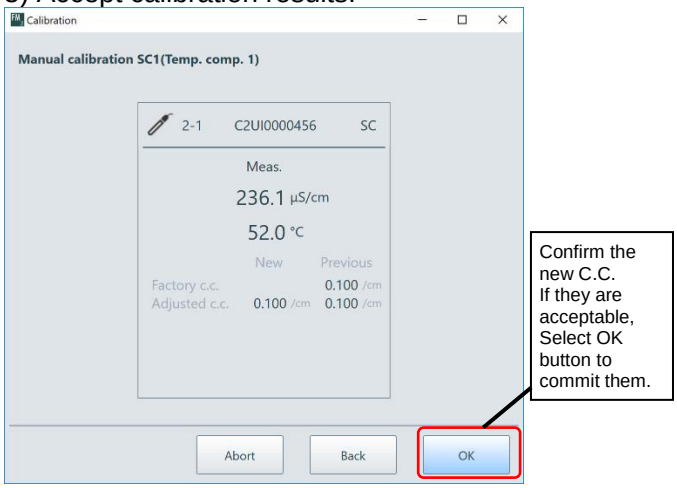
3) Start the Stability check.



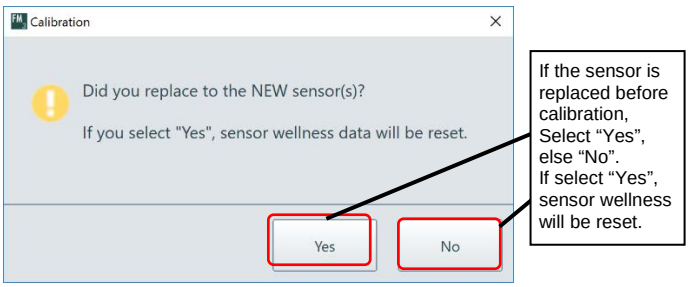
4) The value is stable->Enter the new value



5) Accept calibration results.



6) Check the sensor replacement.



SEE ALSO

- About pH sensor of Calibration, refer to "4.Calibration pH/ORP" in "FLXA402 4-Wire Converter Operation of pH/ORP (IM 12A01F02-01EN)".
- About SC sensor of Calibration, refer to "4. Calibration of SC (Conductivity) " in " FLXA402 4-Wire Converter Operation of SC (IM 12A01F03-01EN)".
- About ISC sensor of Calibration, refer to "4. Calibration of ISC (Inductive Conductivity) " in " FLXA402 4-Wire Converter Operation of ISC (IM 12A01F04-01EN)".
- About DO sensor of Calibration, refer to "4. Calibration DO" in" FLXA402 4-Wire Converter Operation of DO (IM 12A01F05-01EN)".

IMPORTANT

During the Local Display Functions, displayed data might stop updating because of unstable communication with Converter. Usually, Converter's alarm status icon is updated periodically, but in this unstable situation, Alarm icon is not display any more. In this case, select "Update" button on the upper left of Top Window, and FieldMate will try to reconnect with Converter to recover the communication.

■The Calibration Types list

Table D-5-7 The Calibration types list for pH Sensor (pH)

1st Item	2nd Item	Trend Graph on Calibration Window
Manual calibration	Manual zero (1 point)	Available
	Manual zero/slope (2 point)	
	Manual zero/slope/ITP (3 point)	
	Manual zero/slope1, 2 (3 point)	
Automatic Calibration	Auto zero (1 point)	Available
	Auto zero/slope (2 point)	
	Auto zero/slope/ITP (3 point)	
	Auto zero/slope1, 2 (3 point)	
Sample Cal.	Take sample	Available
	Sample Cal.	
Temperature Cal.	Temp offset (Fixed)	Not Available

Table D-5-8 The Calibration types list for pH Sensor (ORP/rH)

1st Item	2nd Item	Trend Graph on Calibration Window
Manual calibration	Manual zero (1 point)	Available
	Manual zero/slope (2 point)	
Sample Cal.	Take sample	Available
	Sample Cal.	
Temperature Cal.	Temp offset (Fixed)	Not Available

Table D-5-9 The Calibration types list for SC and ISC Sensor

1st Item	2nd Item	Trend Graph on Calibration Window
Manual calibration	SC1	Not Available
	SC2	
Automatic Calibration	C.C.	Not Available
Air Calibration	Air adjust offset	Not Available
Sample SC1(T.C. 1)	Take sample	Available
	Sample Cal.	
Sample SC2(T.C. 2)	Take sample	Available
	Sample Cal.	
Temp coef	SC1(Temp. comp. 1) (displayed only in case of Temp.Coef =T.C.1)	Not Available
	SC2(Temp. comp. 2) (displayed only in case of Temp.Coef =T.C.2)	
Temperature calibration	Temp offset (Fixed)	Not Available

Table D-5-10 The Calibration types list for DO Sensor

1st Item	2nd Item	Trend Graph on Calibration Window
Air Calibration	0%	Available
	100%	
	0%-100%	
	100%-0%	
Water Calibration	0%	Available
	100%	
	0%-100%	
	100%-0%	
Manual Slop Cal.	Slop (Fixed)	Available
Manual Offset Cal.	Zero (Fixed)	Not Available
Temperature calibration	Temp offset (Fixed)	Not Available

Table D-5-11 The Calibration types list for DO70G Sensor

1st Item	2nd Item	Trend Graph on Calibration Window
Automatic Calibration	Zero calibration	Available
	Air Calibration	
Manual Slope Cal.	Slope (Fixed)	Available

TIPS

Temperature calibration only works correctly when the sensors setting of “Measure setting” -> “Temp. Compensation”-> “Compensation” = Auto. In other case, it does not work correctly.

D-6 Action Menu

Action menu shows the command list for sensor operation. The user can operate the sensors by selecting each of command in the menu. The command list is as follows.

Table D-6-1 The list of command in the Action Menu for Sensors

Command	Outline of function
Show All	Display the Sensor Detail Window. (Refer to “D-5-1 Sensor Detail”)
Sensor Wellness	Display the Sensor Wellness Window.
SENCOM Sensor Parameter	Display the SENCOM SA Parameter Window.
Predicted Maintenance	Display the Predicted Maintenance Window.
Logbook	Execute Logbook Window and display the sensor’s Logbook. (Refer to “D-4-2 Logbook”)
Trend Graph	Display the Trend Graph Window. (Refer to “D-5-2 Trend Graph”)
Alarm Detail	Execute Alarm Window and display the Sensor’s alarm status. (Refer to “D-4-3 Alarm Detail”)
Upload All Data to FieldMate	Get and save the All setting parameters of the selected Sensor. (Refer to “D-4-4 Upload All Data to FieldMate”)
Sensor setting	Display and set the parameters of the Sensor.
Product Information	Display the sensor’s Product Information (Serial No., Software Revision, and so on).

This document describes about “Sensor Wellness”, “SENCOM Sensor Parameter”, “Predicted Maintenance”, “Sensor setting” and “Product Information” command.

TIPS

When the sensor type is DO70G, the command “Sensor Wellness”, “SENCOM Sensor Parameter” and “Predicted Maintenance” are not displayed on the Action Menu for sensors.

D-6-1 Sensor Wellness

Display the Sensor Wellness Window. The user can reset the sensor wellness information on this window.

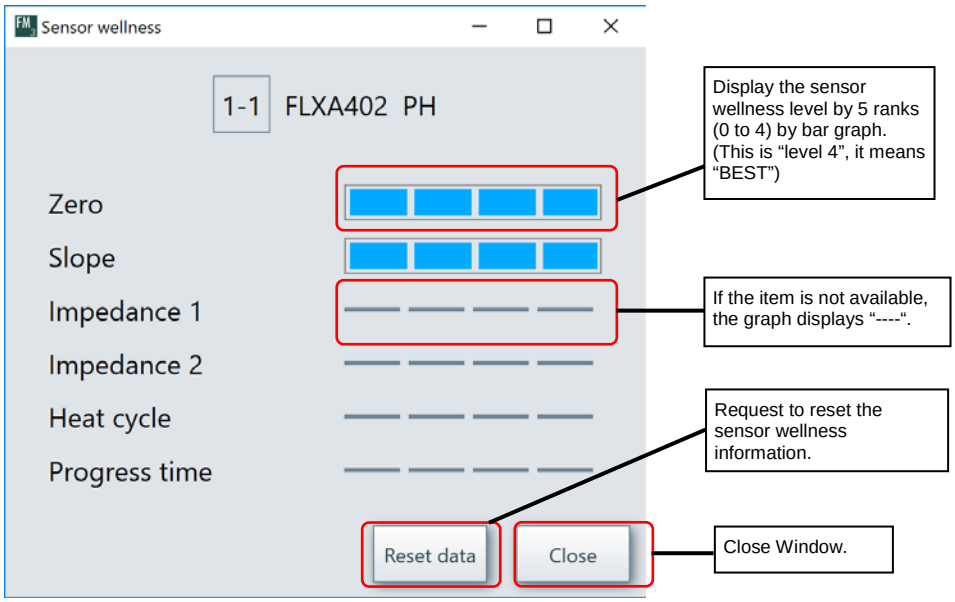


Figure D-6-1 Sensor Wellness Window(pH)

Table D-6-2 Display items of Sensor Wellness Window

Items	pH	SC	ISC	DO
Zero	○	—	—	—
Slope	○	—	—	○
Impedance1	○	—	—	—
Impedance2	○	—	—	—
Polarization	—	○	—	—
C.C.	—	○	○	—
Heat Cycle	○	○	○	○
Progress Time	○	○	○	○

○:Available, —:Not Available

SEE ALSO

- About pH sensor of Sensor Wellness, refer to "3.4 Wellness settings" in "FLXA402 4-Wire Converter Operation of pH/ORP (IM 12A01F02-01EN)".
- About SC sensor of Sensor Wellness, refer to "3.4 Wellness settings" in " FLXA402 4-Wire Converter Operation of SC (IM 12A01F03-01EN)".
- About ISC sensor of Sensor Wellness, refer to "3.4 Wellness settings" in " FLXA402 4-Wire Converter Operation of ISC (IM 12A01F04-01EN)".
- About DO sensor of Sensor Wellness, refer to "3.4 Wellness settings" in " FLXA402 4-Wire Converter Operation of DO (IM 12A01F05-01EN)".

D-6-2 SENCOM SA Parameter

Display the SENCOM SA Parameter Window.

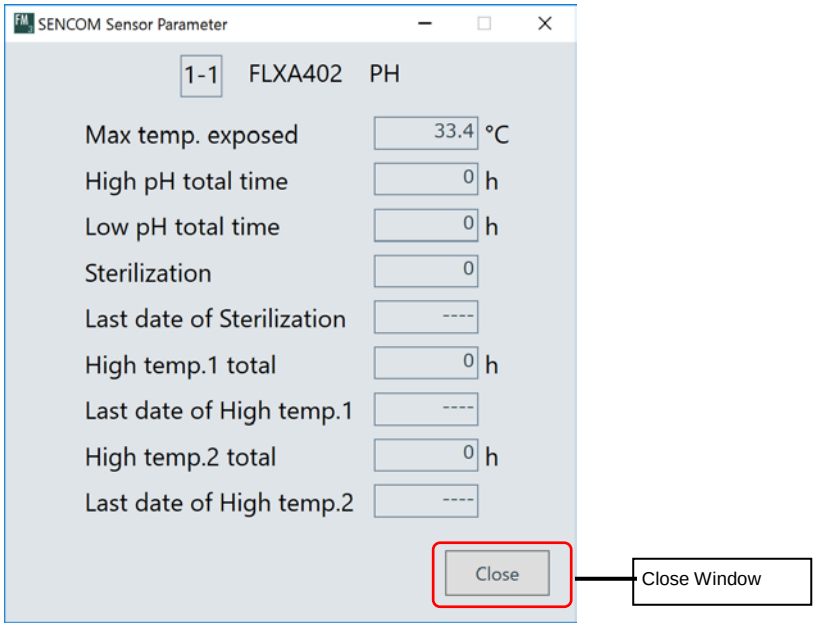


Figure D-6-2 SENCOM SA Parameter Window(pH)

Table D-6-3 Display items of SENCOM SA Parameter Window

Items	pH	SC, ISC, DO
Max temp. exposed	○	○
High pH total time	○	—
Low pH total time	○	—
Sterilization	○	○
Last date of Sterilization	○	○
High temp.1 total	○	○
Last date of High temp.1	○	○
High temp.2 total	○	○
Last date of High temp.2	○	○

○:Available, —:Not Available

SEE ALSO

- About pH sensor of SENCOM SA Parameter, refer to "SENCOM Sensor status " at "2.1 Detail" in "FLXA402 4-Wire Converter Operation of pH/ORP (IM 12A01F02-01EN)".
- About SC sensor of SENCOM SA Parameter, refer to "SENCOM Sensor status " at "2.1 Detail" in " FLXA402 4-Wire Converter Operation of SC (IM 12A01F03-01EN)".
- About ISC sensor of SENCOM SA Parameter, refer to "SENCOM Sensor status " at "2.1 Detail" in " FLXA402 4-Wire Converter Operation of ISC (IM 12A01F04-01EN)".
- About DO sensor of SENCOM SA Parameter, refer to "SENCOM Sensor status " at "2.1 Detail" in " FLXA402 4-Wire Converter Operation of DO (IM 12A01F05-01EN)".

D-6-3 Predicted Maintenance

Display the Predicted Maintenance Window.

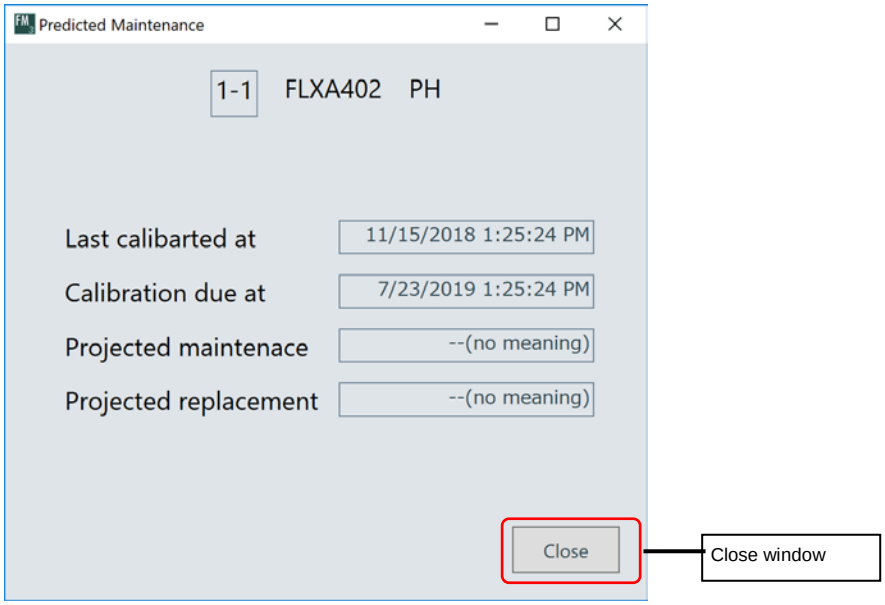


Figure D-6-3 Predicted Maintenance Window(pH)

Table D-6-4 Display items of Predicted Maintenance Window

Items	pH	SC, ISC,	DO
Last Calibrated at	○	○	○
Calibration due at	○	○	○
Projected Maintenance	○	—	—
Projected Replacement	○	—	—
Projected Calibration	—	○	—

○:Available, —:Not Available

SEE ALSO

- About pH sensor of Predicted Maintenance, refer to "Predict. maintenance " at "2.1 Detail" in "FLXA402 4-Wire Converter Operation of pH/ORP (IM 12A01F02-01EN)".
- About SC sensor of Predicted Maintenance, refer to "Predict. maintenance " at "2.1 Detail" in " FLXA402 4-Wire Converter Operation of SC (IM 12A01F03-01EN)".
- About ISC sensor of Predicted Maintenance, refer to "Predict. maintenance " at "2.1 Detail" in " FLXA402 4-Wire Converter Operation of ISC (IM 12A01F04-01EN)".
- About DO sensor of Predicted Maintenance, refer to "Predict. maintenance " at "2.1 Detail" in " FLXA402 4-Wire Converter Operation of DO (IM 12A01F05-01EN)".

D-6-4 Sensor Setting

Display and set the sensor's Parameters. If select this menu, the sensor's parameters is uploaded to the FieldMate via communication, and displayed on the Sensor setting Window.

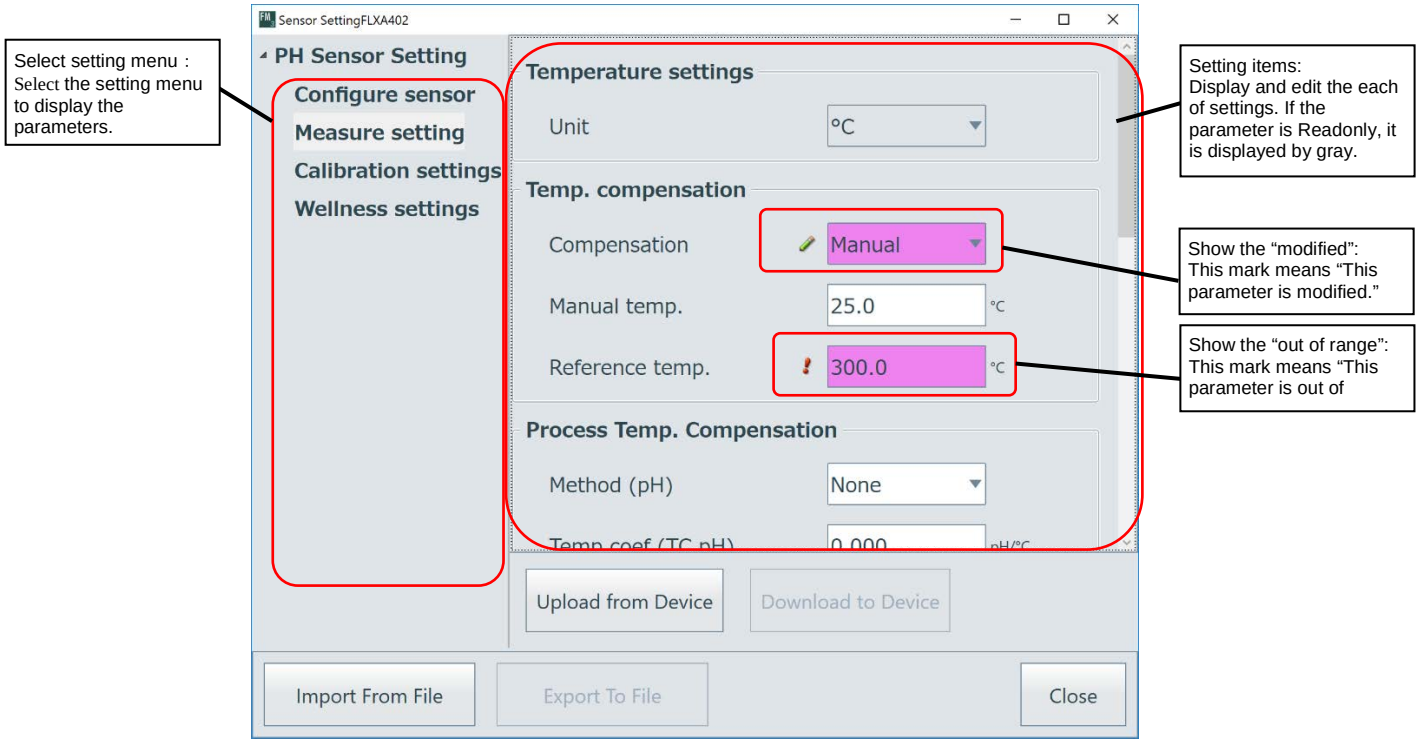


Figure D-6-4 Sensor setting window

Table D-6-5 The button list of Sensor setting window

Button name	Functions
Upload from Device	Upload current setting parameters from the sensor to FieldMate.
Download to Device	Commit the edited parameters and download to the sensor. If a parameter which is out of range exists, this button is disabled.
Import From File	Import the parameter file which exported from Sensor setting window, and display the parameters.
Export To File	Export the parameters displayed this window to the file. If a parameter which is out of range exists, this button is disabled. The exported parameters file can import to Sensor setting window of another FieldMate.
Close	Close window.

● The list of Sensor setting Menu

The list of each sensors (pH, SC, ISC and DO) setting menu are as follows.

Table D-6-6 The list of Sensor Settings Menu (pH)

Menu	Setting items			Remarks	Refer to
Category	Index 1	Index 2	Items		*1
Configure sensor	Configure sensor		Sensor type (A)		3.1
			Temp. element (A)		
			Modbus address (S)		
			COM Settings (D)	*2	
Measure setting	Temperature settings		Unit	ReadOnly	3.2
	Temp. compensation		Compensation		
			Manual temp.		
			Reference temp.		
	Process Temp. Compensation		Method (pH)		
			Temp coef (TC pH)		
			Matrix Temperature Compensation	Graphical Setting for Temperature Comp. Table.	
			Method (ORP)		
			Temp coef1 (TC ORP)		
			Temp coef2 (TC ORP)		
	High and Low Limit Setting		Temp. warning high limit		
			Temp. warning low limit		
			pH warning high limit		
			pH warning low limit		
			ORP warning high limit		
			ORP warning low limit		
			rH warning high limit		
			rH warning low limit		
Calibration settings	Cal. set pH	Unit *	Zero unit		3.3
			Slope unit		
		Limits and timing	Zero high limit		
			Zero low limit		
			Slope high limit		
			Slope low limit		
			Step Range		
		Buffers (select set)	Select Buffer		
			Buffer table 1	Graphical Setting for Buffer Table.	
			Buffer table 2		
			Buffer table 3		
		Zero/Slope/ITP	Zero		
			Slope		
			ITP		
			Zero2	ReadOnly	
			Slope2	ReadOnly	
			Sample Offset	*3	
	Cal. set ORP/rH	Limits and timing	Zero high limit		
			Zero low limit		
			Slope high limit		
			Slope low limit		
			Step Range (ORP)		

			Step Range (rH)		
		Zero/Slope (ORP1)	Zero		
			Slope		
			Sample Offset	*3	
		Zero/Slope (ORP2)	Zero		
			Slope		
			Sample Offset	*3	
	Cal. set temperature		Temp offset		
	Cal. Set others		Stabilization time		
			Calibr. interval		
Wellness settings	Impedance settings		Impedance measure (A)		
		Impedance 1	Impedance1		
			High limit		
			Low limit		
		Impedance 2	Impedance2		
			High limit		
			Low limit		
	Sensor diag. settings		Impedance1		
			FINE		
			Impedance2		
			FINE		
			Progress time		3.4
			BAD Limit		
	Define heat cycle		Heat cycle		
			BAD Limit		
			Heat cycle temperature		
			Heat cycle time		
	Define SENCOM status		Sterilized temp.		
			Sterilized time		
			High temp.1		
			High temp.2		
			High pH value		
			Low pH value		

*1: “Refer to” means reference section No. in FLXA402 4-Wire Converter Operation of pH/ORP (IM 12A01F02-01EN)

*2:”COM Settings (D)” is only available for Direct Access Functions of FieldMate. This is the communication settings for SA11, and Read Only in the Local Display Functions. If the user selects ”B19200_E_8_2”, SA11 won’t communicate with FieldMate.

*3: The settings about Sample calibrations are only available for Direct Access Functions of FieldMate. These parameters are only displayed in Direct Access Functions.

Table D-6-7 The list of Sensor Settings Menu (SC)

Menu	Setting items			Remarks	Refer to
Category	Index 1	Index 2	items		*1
Configure sensor	Configure sensor		Sensor type (A)		3.1
			Measuring unit		
			Temp. element (A)		
			c.c.(factory)		
			Modbus address (S)		
			COM Settings (D)	*2	
Measure setting	Measure Value setting		SC1 sel./comp.		3.2
			SC2 sel./comp.		
			Concent1 sel./comp.		
	Temperature settings		Unit	ReadOnly	
	Temp. compensation		Compensation		
			Manual temp.		
			Reference temp.		
	Temp. coef		Temp coef1		
			Temp coef2		
	Matrix		Select matrix1		
			Select matrix2		
			User defined 1	Graphical Setting for User Defined Table	
			User defined 2		
	Concentration		Matrix Setting	Graphical Setting for Concentration Table	
	Error Settings		Temp. warning high limit		
			Temp. warning low limit		
			Conductivity High limit		
			Conductivity Low limit		
			Resistance High limit		
			Resistance Low limit		
			USP safety margin		
Calibration settings	Limits		Air adjust limit (A)		3.3
			c.c. high		
			.c. low		
	Cal. set temperature		Temp offset		
	Calibr. interval		Step Range		
			Stabilization time		
			Calibr. interval		
Wellness settings	Sensor diag. settings		Progress time		3.4
			BAD Limit		
	Define heat cycle		Heat cycle		
			BAD Limit		
			Heat cycle temperature		
			Heat cycle time		
	Others		Polarization High Limit		
	Define SENCOM status		Sterilized temp.		
			Sterilized time		
			High temp.1		
			High temp.2		

*1: “Refer to” means reference section No. in FLXA402 4-Wire Converter Operation of SC (IM 12A01F03-01EN)

*2:"COM Settings (D)" is only available for Direct Access Functions of FieldMate. This is the communication settings for SA11, and Read Only in the Local Display Functions. If the user selects "B19200_E_8_2", SA11 won't communicate with FieldMate.

Table D-6-8 The list of Sensor Settings Menu (ISC)

Menu	Setting items			Remarks	Refer to
Category	Index 1	Index 2	items		*1
Configure sensor	Configure sensor		Measuring unit		3.1
			Temp. element (A)		
			c.c.(factory)		
			Modbus address (S)		
			COM Settings (D)	*2	
Measure setting	Measure Value setting		SC1 sel./comp.		3.2
			SC2 sel./comp.		
			Concent1 sel./comp.		
	Temperature settings		Unit	ReadOnly	
	Temp. compensation		Compensation		
			Manual temp.		
			Reference temp.		
	Temp. coef		Temp coef1		
			Temp coef2		
	Matrix		Select matrix1		
			Select matrix2		
			User defined 1	Graphical Setting for User Defined Table	
			User defined 2		
	Concentration		Matrix Setting	Graphical Setting for Concentration Table	
	Error Settings		Temp. warning high limit		
			Temp. warning low limit		
			Conductivity High limit		
			Conductivity Low limit		
Calibration settings	Limits		Air Calibration		3.3
			c.c. high		
			c.c. low		
	Cal. set temperature		Temp offset		
	Calibr. interval		Step Range		
			Stabilization time		
			Calibr. interval		
Wellness settings	Sensor diag. settings		Progress time		3.4
			BAD Limit		
	Define heat cycle		Heat cycle		
			BAD Limit		
			Heat cycle temperature		
			Heat cycle time		
	Define SENCOM status		Sterilized temp.		
			Sterilized time		
			High temp.1		
			High temp.2		

*1: "Refer to" means reference section No. in FLXA402 4-Wire Converter Operation of ISC (IM 12A01F04-01EN)

*2:"COM Settings (D)" is only available for Direct Access Functions of FieldMate. This is the communication settings for SA11, and Read Only in the Local Display Functions. If the user selects"B19200_E_8_2", SA11 won't communicate with FieldMate.

Table D-6-9 The list of Sensor Settings Menu(DO)

Menu	Setting items			Remarks	Refer to
Category	Index 1	Index 2	items		*1
Configure sensor	Configure sensor	Sensor type	Sensor type		3.1
		Galvanic	Sensitivity Galvanic		
			Sensitivity Galvanic(Other)		
		Polarographic	Sensitivity Polaro		
			Polarization Voltage		
		Others	Temp. element (A)		
			Modbus address (S)		
			COM Settings (D)	*2	
Measure setting	DO setting		Unit *	*3	3.2
	Temperature settings		Unit	ReadOnly	
	Temp. compensation		Compensation		
			Manual temp.		
	Salinity comp.		Salinity comp.		
			Salinity *	*3	
	Pressure comp.(Measure)		Compensation		
			Pressure level (process) *	*3	
			Pressure unit	ReadOnly	
	Error Settings		Temp. warning high limit		
			Temp. warning low limit		
			DO warning high limit(mg/l)		
			DO warning low limit(mg/l)		
			DO warning high limit(ppm)		
			DO warning low limit(ppm)		
			DO warning high limit(ppb)		
			DO warning low limit(ppb)		
			DO warning high limit(%SAT)		
			DO warning low limit(%SAT)		
Calibration settings	Limits and timing (Galvanic)		Zero high limit		3.3
			Zero low limit		
			Slope high limit		
			Slope low limit		
	Limits and timing (Polarographic)		Zero high limit		
			Zero low limit		
			Slope high limit		
			Slope low limit		
	Step Range (mg/l)		Zero point		
			Span point		
	Step Range (ppm)		Zero point		
			Span point		
	Step Range (ppb)		Zero point		
			Span point		

	Step Range (%SAT)		Zero point		
			Span point		
	zero/slope (Galvanic)		Zero Current		
			Slope		
	zero/slope (Polarographic)		Zero Current		
			Slope		
	Temp offset		Temp offset		
	Pressure Comp.(Cal.)		Pressure level (calibration)		
	Calibr. interval		Stabilization time		
			Calibr. interval		
Wellness settings	Sensor diag. settings		Progress time		
			BAD Limit		
	Define heat cycle		Heat cycle		
			BAD Limit		
			Heat cycle temperature		
			Heat cycle time		3.4
	Check KOH residue		Sensor type		
	Define SENCOM status		Sterilized temp.		
			Sterilized time		
			High temp.1		
			High temp.2		

*1: “Refer to” means reference section No. in FLXA402 4-Wire Converter Operation of DO (IM 12A01F05-01EN)

*2:”COM Settings (D)” is only available for Direct Access Functions of FieldMate. This is the communication settings for SA11, and Read Only in the Local Display Functions. If the user selects”B19200_E_8_2”, SA11 won’t communicate with FieldMate.

3：The setting values marked “” are available for DO7G sensor.

NOTE

During calibration or editing the settings in the converter, Sensor settings uploading and downloading in the FieldMate are not available to avoid operation conflict. Please operate again after finishing those operation in the converter.

● Edit Setting values by Graphical Setting Window

“Local Display Functions” supports the Graphical Setting Window which has the advanced graphical user interface to edit the tables like buffer table for pH sensors and concentration table for SC/ISC sensors easily. These windows’ operation is easy to understand for the users. This document describes about the operations example for the concentration table for SC sensor as follows.

1) Initial display of Concentration table

Display the concentration table according to the current concentration table of the SC sensor.

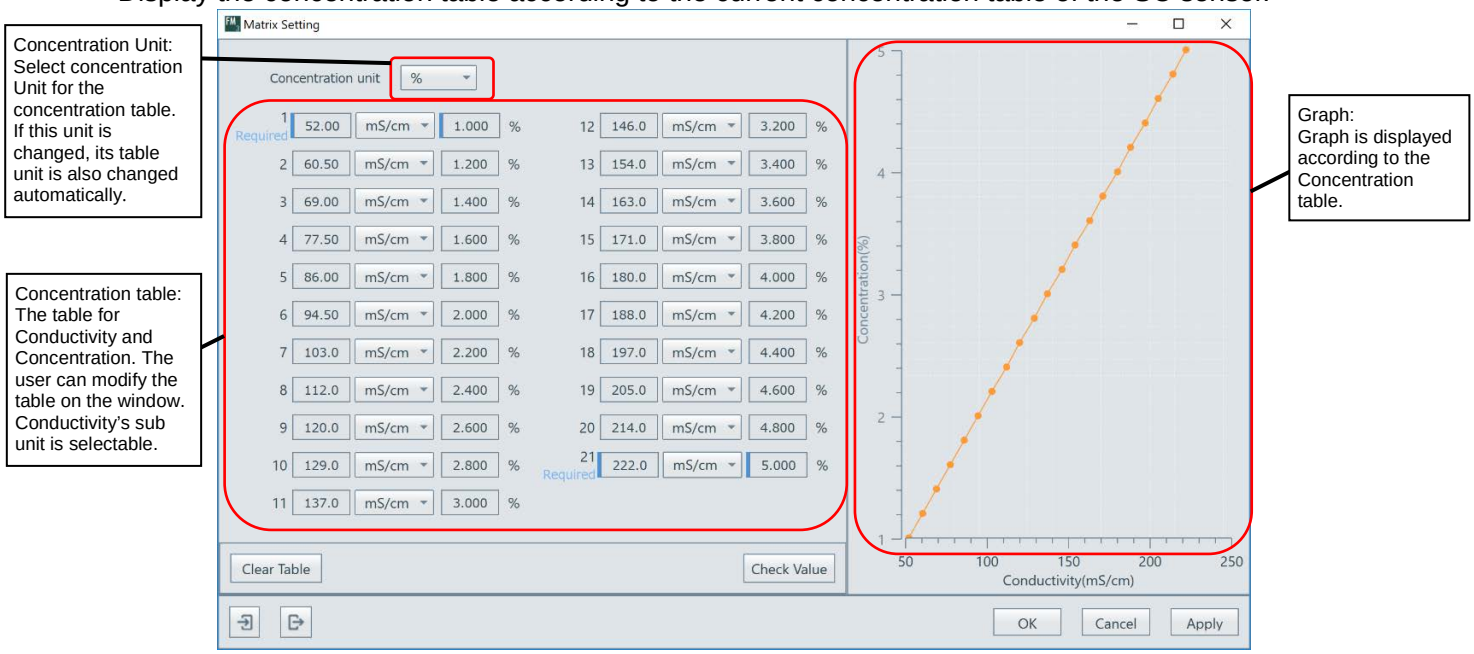


Figure D-6-5 Concentration Table (Initial display)

2)"Clear Table" and "linear interpolation" with minimum data input.

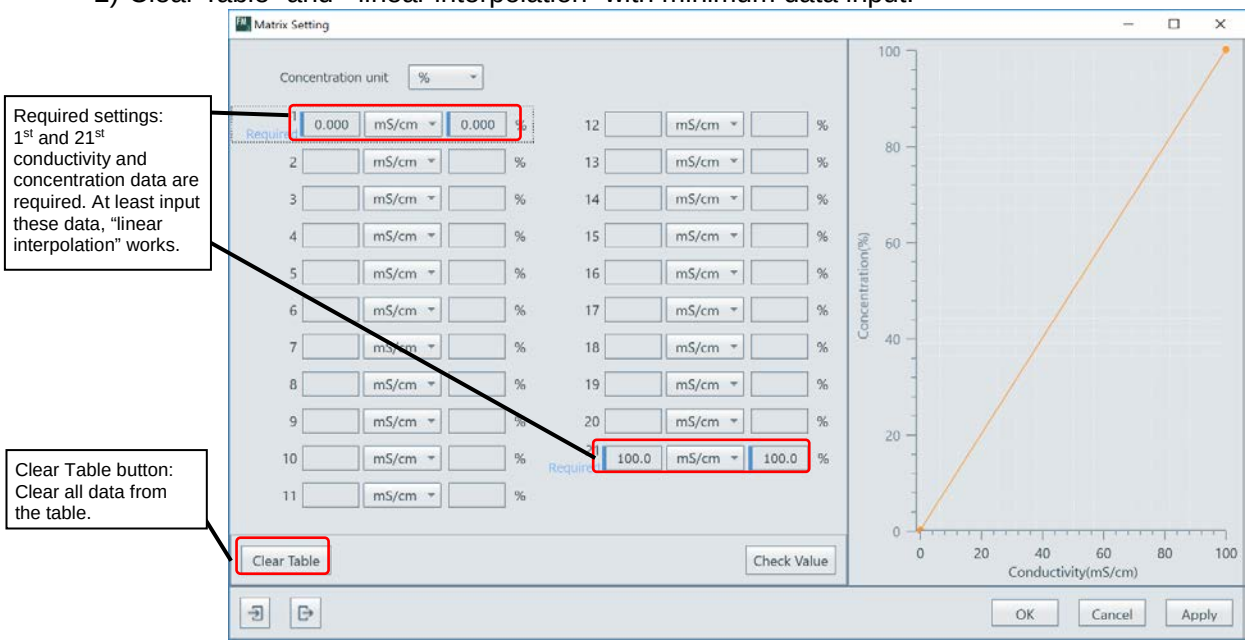


Figure D-6-6 Concentration Table (Clear table and minimum input)

Figure D-6-7 Concentration Table (After “linear interpolation”)

3)Check the input values

The use can confirm the error values which is not suitable for input rules by graphical user I/F.

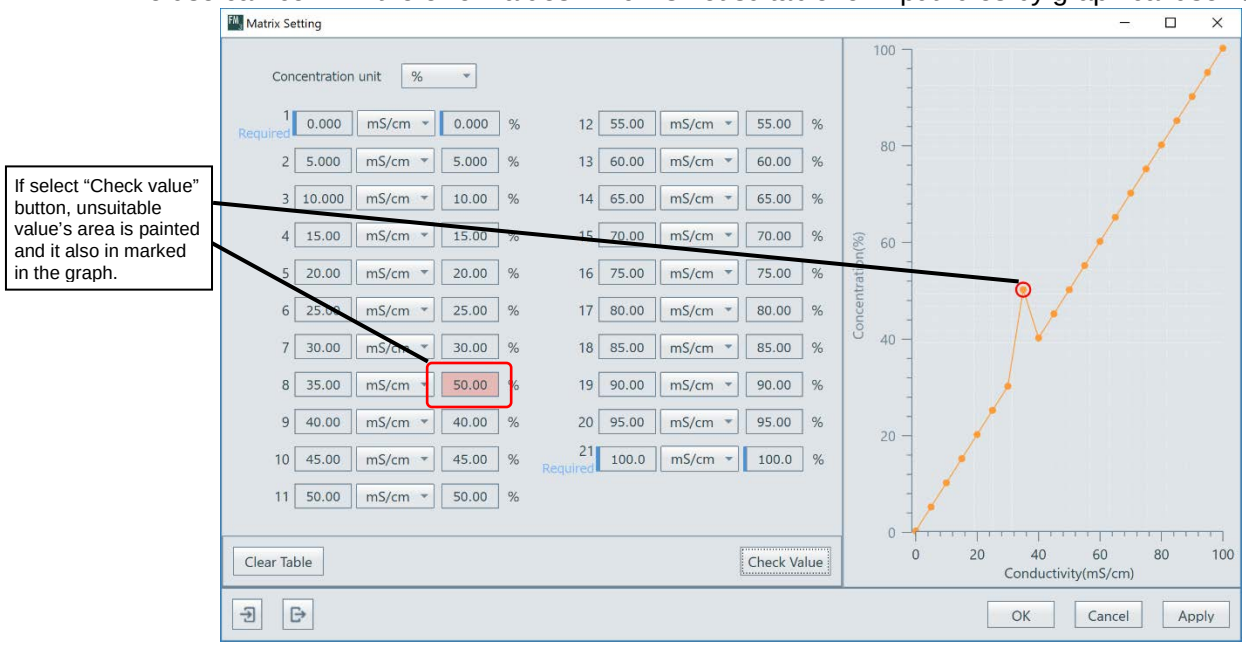


Figure D-6-8 Concentration Table (When the Input error is detected.)

TIPS

The setting values edited on Graphical Settings Window are not downloaded to the converter and sensors just after selecting the OK or Apply button on it. To download the settings to them, select “Download to device” button after back to the Setting Window.

Table D-6-10 The command list to call the Graphical Setting Window

Converter/Sensor	Menu	Index 1	Setting Item
Converter	mA output settings>mA1	mA1(output)	Table button
	mA output setting>mA2	mA2(output)	Table button
	mA output setting>mA3(Ad)	mA3(output)	Table button
	mA output setting>mA4(Ad)	mA4(output)	Table button
Sensor(pH)	Measure setting	Process Temp. Compensation	Matrix Temperature Compensation button
	Calibration settings	Buffers (select set)	Buffer table 1 button
	Calibration settings	Buffers (select set)	Buffer table 2 button
	Calibration settings	Buffers (select set)	Buffer table 3 button
Sensor(SC/ISC)	Measure setting	Matrix	User define 1 button
	Measure setting	Matrix	User define 2 button
	Measure setting	Concentration	Matrix Setting button

D-6-5 Product Information

This window shows the sensor's product information.

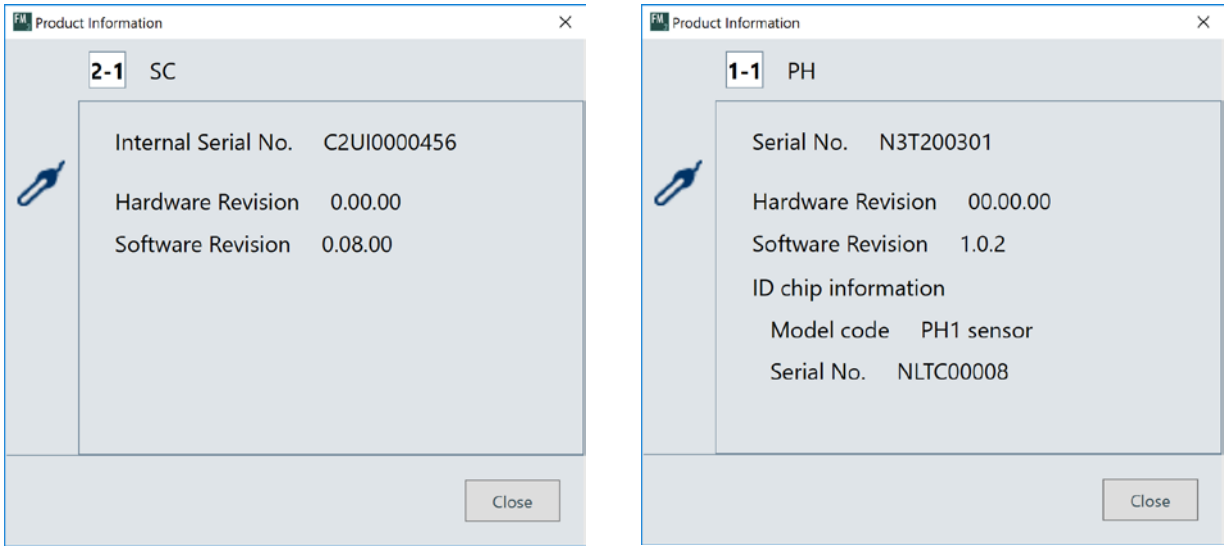


Figure D-6-9 Product Information Window (Left: Analog Sensor Module, Right: SENCOM SA)

Table D-6-11 Display items of Product Information Windows (Analog Sensor Module)

Items	Detail
Internal Serial No.	Internal Serial No. of Analog Sensor Module.
Hardware Revision	Hardware Revision of Analog Sensor Module.
Software Revision	Software (Firmware) Revision of Analog Sensor Module.

Table D-6-12 Display items of Product Information Window (SENCOM SA)

Items	Detail
Serial No.	Serial No. of SENCOM SA.
Hardware Revision	Hardware Revision of SENCOM SA.
Software Revision	Software (Firmware) Revision of SENCOM SA.
Model code (ID chip)	Model code of Sensor module connected with SENCOM SA.
Serial No. (ID chip)	Serial No. of Sensor module connected with SENCOM SA.

E Direct Access Functions with SA11

E-1 Direct Access Functions

● Direct Access Functions

Direct Access Functions support direct communication with SENCOM ™ Smart Adaptor (SENCOM SA) “SA11” to realize the sensor calibration and parameter settings outside of the field.
Direct access is that FieldMate communicate with SENCOM ™ Smart Adaptor (SENCOM SA) “SA11” directory, without FLXA402.
Bluetooth I/F Box “IB100” is needed for the direct communication between FieldMate and”SA11”. In addition, FieldMate communicate with “SA11” via Bluetooth. So, to use this function, please prepare the PC with Bluetooth installed FieldMate. Direct Access Function supports up to 4 of SA11s.

E-1-1 Communication with SA11

FieldMate communicates with SA11 via Bluetooth for Direct Access.
To communicate FieldMate and SA11, the user need to prepare an IB100 for a SA11. (If the user wants to communicate with 4 of SA11 at the same time, 4 of IB100s are needed. In addition, the user needs to do the Bluetooth paring between IB100 and FieldMate PC in advance.
The image of communication between FieldMate and SA11s are as follow.

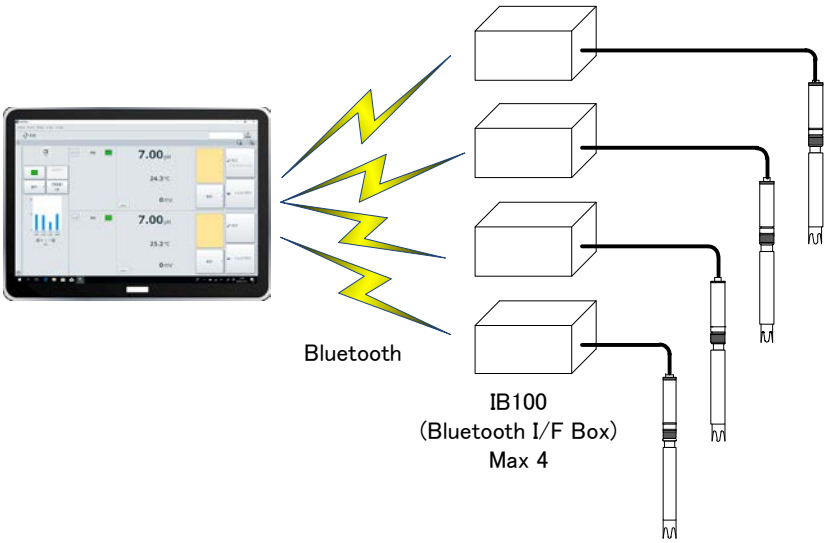


Figure E-1-1 The image of communication between FieldMate and SA11s

E-2 Top Window for Direct Access

Top Window for Direct Access Functions with SA11 consists of “Common display area” and “Sensor display area”. The number of sensors displayed on Top Window can be switched “1 Sensor display”->”2 Sensors display”->”4 Sensors display” by selecting “+”,”-“ button. (Display image might be different from following image examples depending on PC’s screen resolution.)

1 Sensor display

2 Sensors display

4 Sensors display

Figure E-2-1 Display image of Top Window for Direct Access Functions

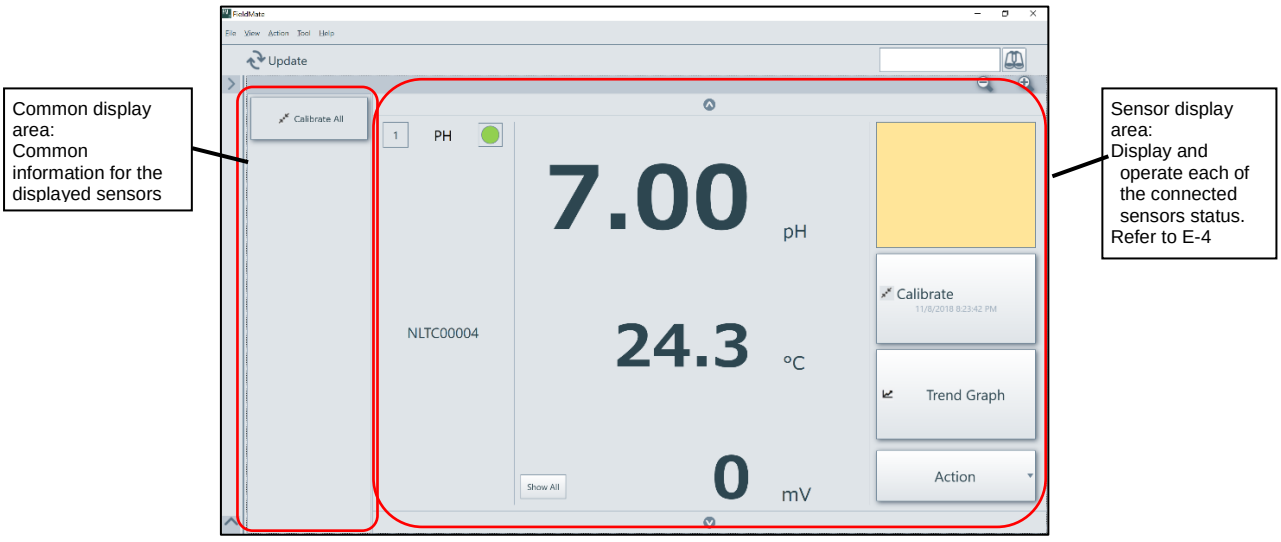


Figure E-2-2 Configuration of Top Window for Direct Access Functions

E-3 Common display area

“Common display area” has following functions.

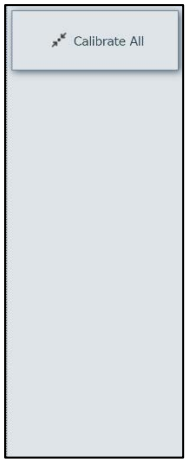


Figure E-3-1 Image of “Common display area”

Table E-3-1 Items list of “Common display area”

Item	Details
Calibration All	Start the “Multiple sensors calibration Window”(Only for pH Sensors.)

E-3-1 Calibration All

■ Multiple sensors calibration

Select “Calibration All”, and display the “Multiple sensors calibration window”. This function only supports pH Sensors.

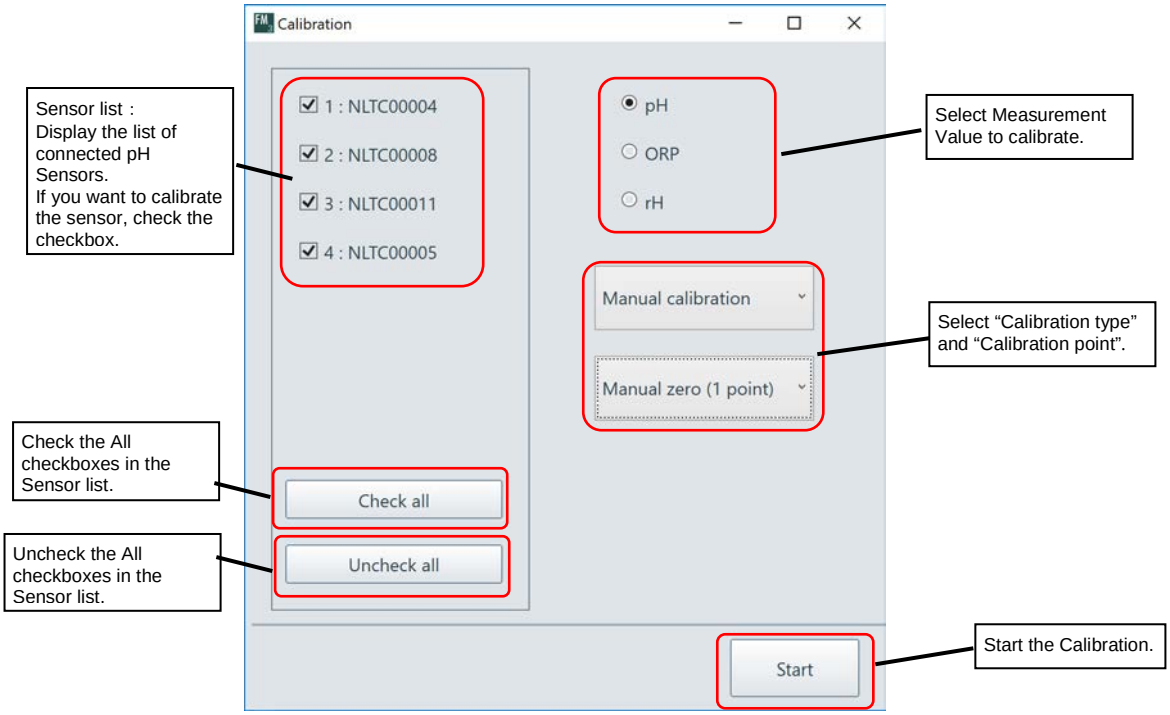
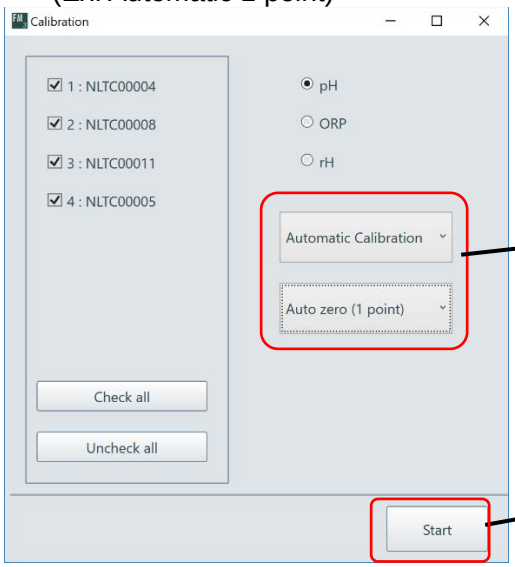


Figure E-3-2 Multiple sensors calibration window

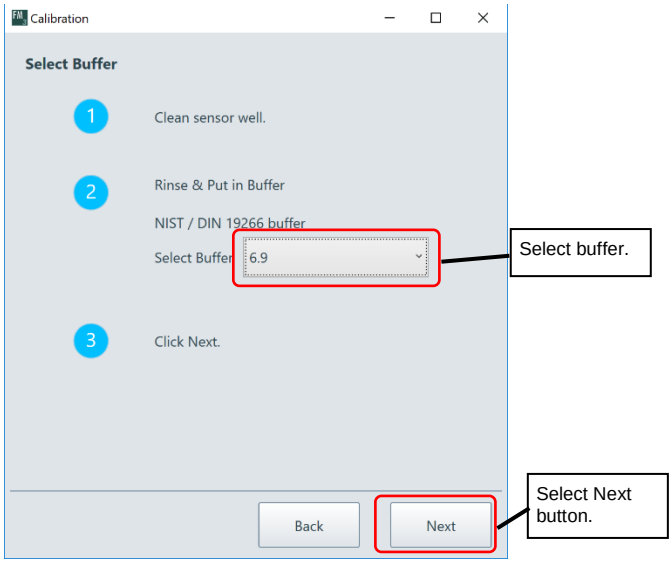
Multiple sensors calibration is performed stepwise according to the displayed guide on the windows. Basically, its procedure is the same as described on “D-5-3 Calibration Window”. In this section, the document describes about “Automatic 1-point Calibration” for 4 pH sensors. Another multiple calibrations are also the similar procedures. And the users can calibrate easily according to displayed guide.

■ Procedure of “Automatic 1-point Calibration” for 4 pH sensors

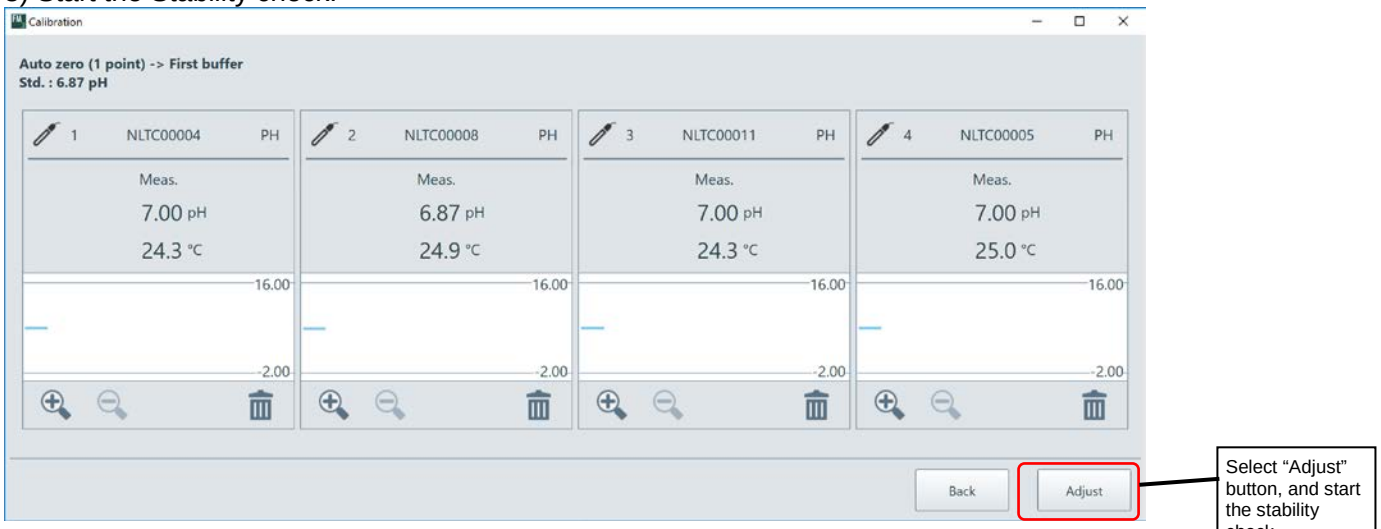
1) Select sensors and Calibration type.
(Ex: Automatic 1 point)



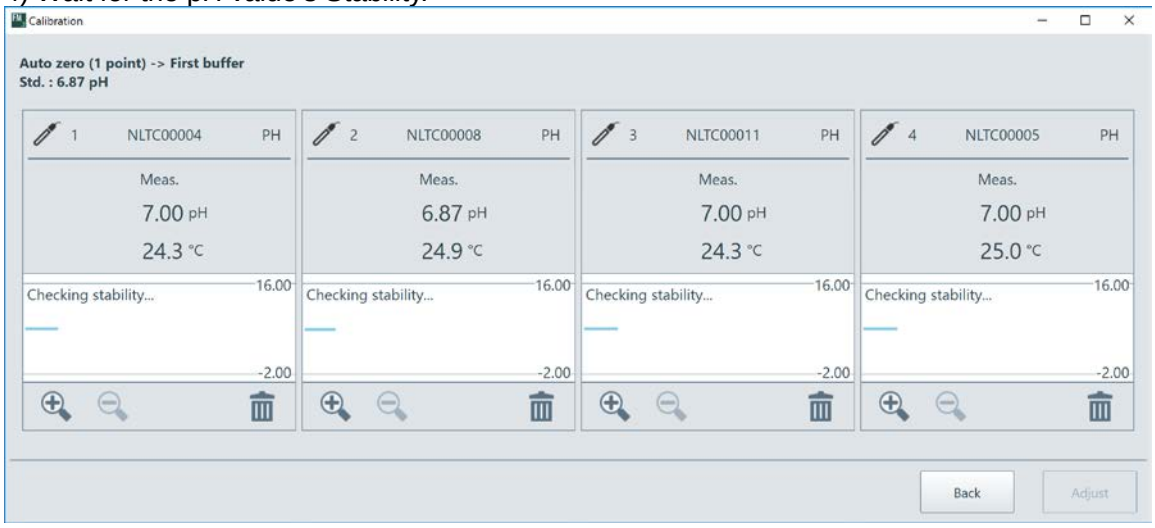
2) Select buffer.



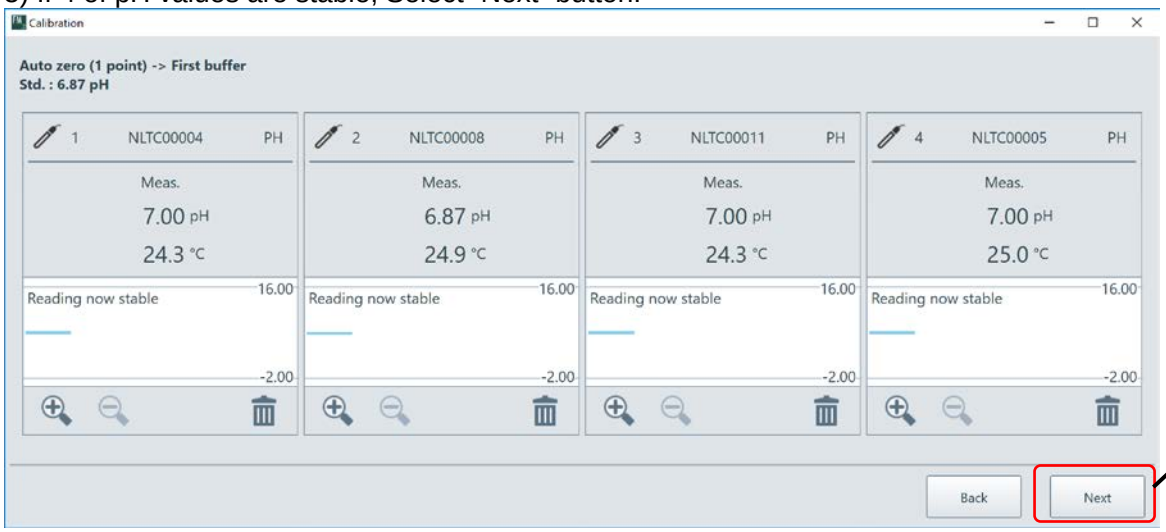
3) Start the Stability check.



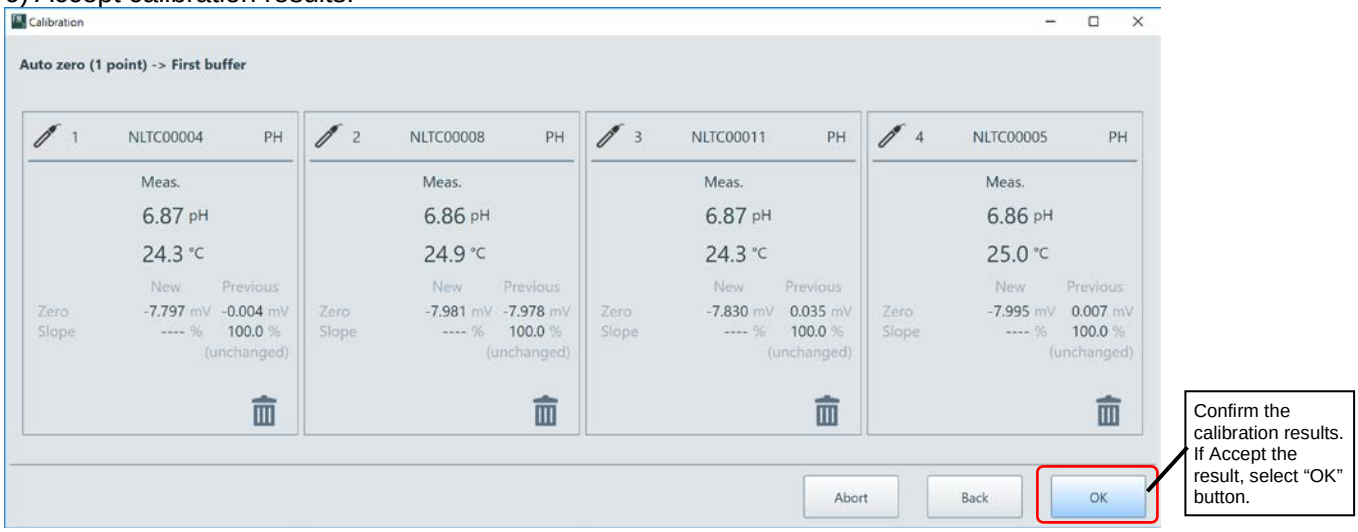
4) Wait for the pH value’s Stability.



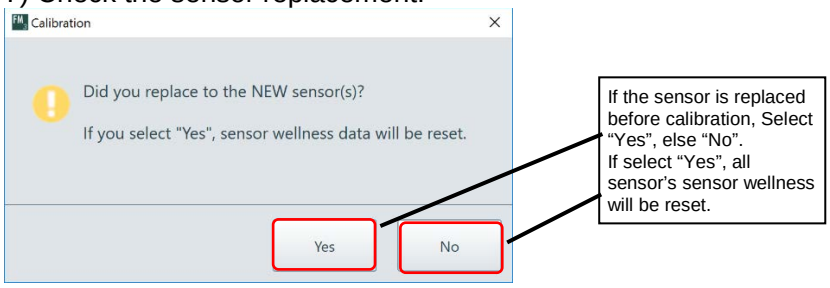
5) If 4 of pH values are stable, Select “Next” button.



6) Accept calibration results.



7) Check the sensor replacement.



■ Exclusion of a sensor from calibration

Some cases of multiple sensors calibration cannot continue because one of sensor's pH value is not stable during the stability check. To continue the calibration in such cases, the unstable sensor can exclude from the calibration. If you want to exclude, select the ( ) button of the sensor. Refer to the following image.

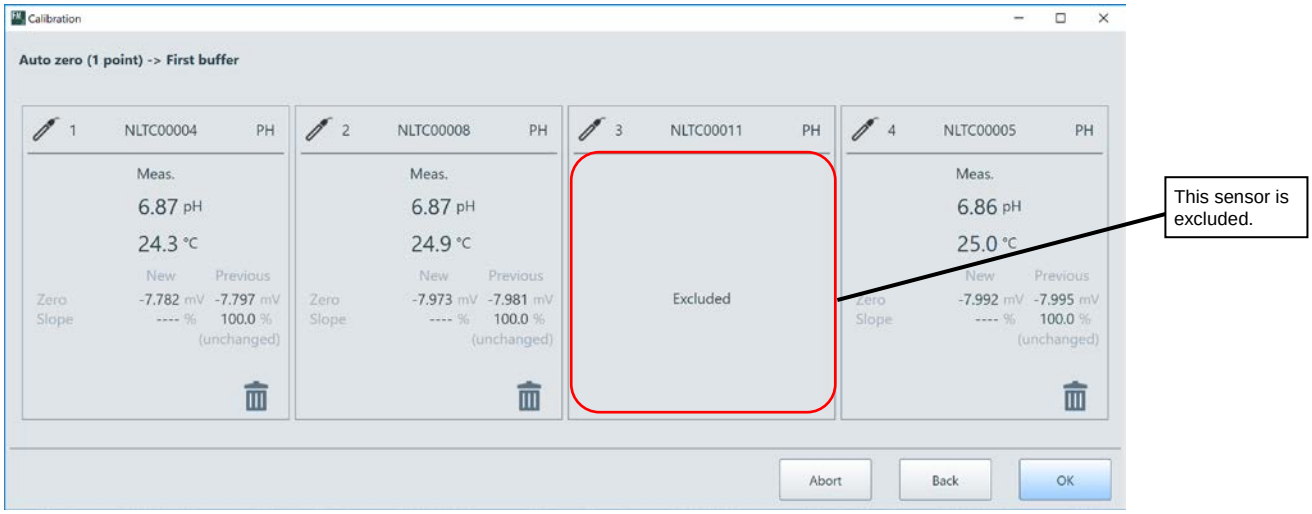


Figure E-3-3 Example of exclusion of a sensor from calibration (Sensor 3 is excluded)

NOTE

Once the sensor is excluded, it cannot back to the calibration procedure again. If you want to calibrate the excluded sensor again, please start from the first step of the calibration.

IMPORTANT

During the Direct access functions with SA11, displayed data might stop updating because of unstable communication with SA11. Usually, 1st to 3rd measurement values are updated periodically, but in this unstable situation, all measurement values show "----". In this case, select "Update" button on the upper left of Top Window, and FieldMate will try to reconnect with SA11 to recover the communication.

■ The list of Calibration Types supported multiple sensors calibration

Table E-3-2 The Calibration types list for pH Sensor (pH)

1st Item	2nd Item	Trend Graph on Calibration Window
Manual calibration	Manual zero (1 point)	Available
	Manual zero/slope (2 point)	
	Manual zero/slope/ITP (3 point)	
	Manual zero/slope1, 2 (3 point)	
Automatic Calibration	Auto zero (1 point)	Available
	Auto zero/slope (2 point)	
	Auto zero/slope/ITP (3 point)	
	Auto zero/slope1, 2 (3 point)	
Temperature Cal.	Temp offset (Fixed)	Not Available

Table E-3-3 The Calibration types list for pH Sensor (ORP/rH)

1st Item	2nd Item	Trend Graph on Calibration Window
Manual calibration	Manual zero (1 point)	Available
	Manual zero/slope (2 point)	
Sample Cal.	Temp offset (Fixed)	Not Available

■ Precondition of multiple sensors calibration

Multiple sensors calibration only works correctly when the following settings are the same at the all sensors.

1) Sensor type(pH, ORP, pH+ORP)
2) Temperature Unit
3) Kind of buffer(NIST, DIN, US or FreeProgmmable)(In case of Automatic calibration)

NOTE

If above 1) to 3) conditions are different in some sensors, the multiple sensors calibration does not work correctly.

E-4 Sensor display area

Sensor display area shows as following functions.

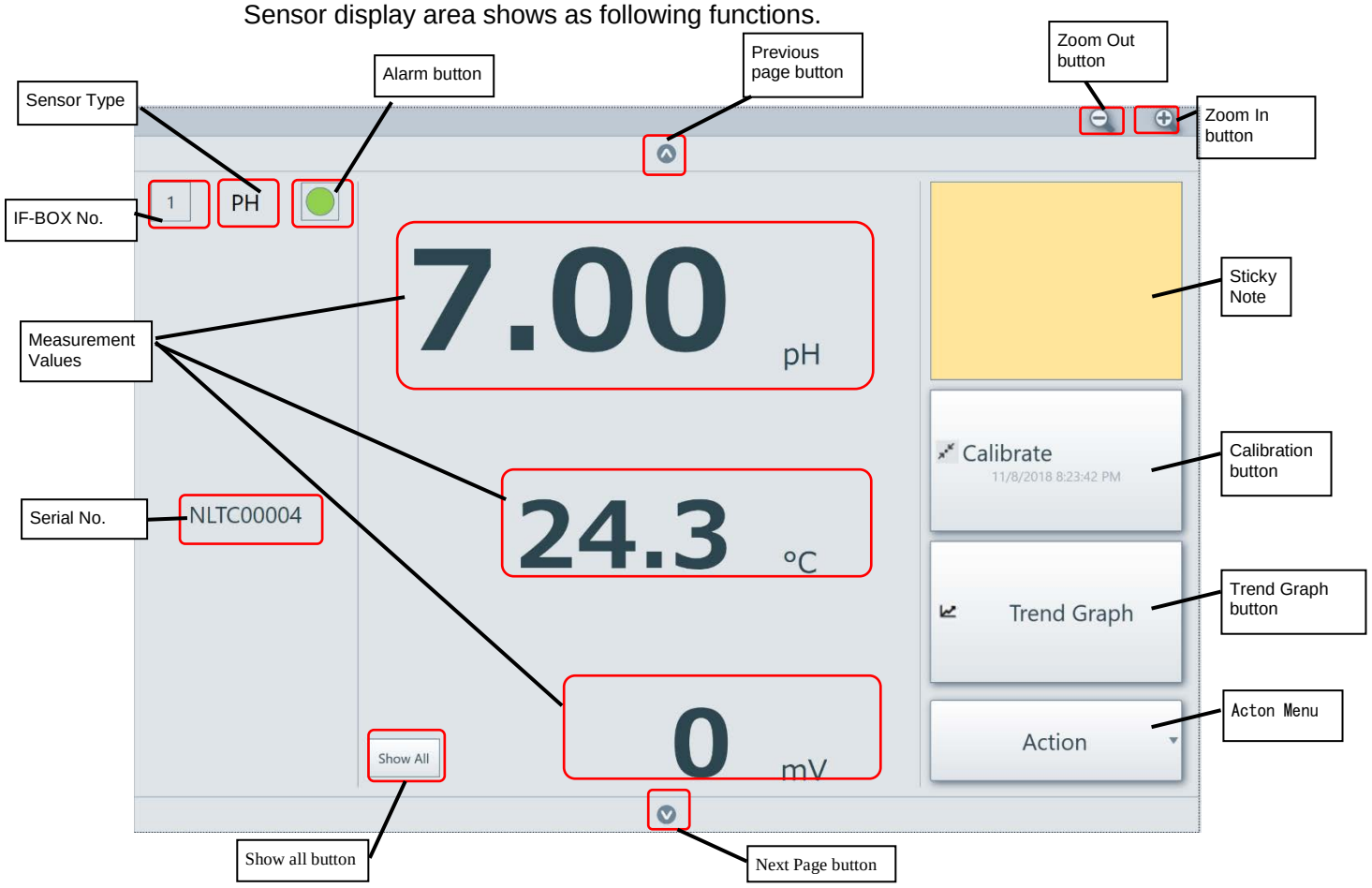


Figure E-4-1 Sensor display area

Table E-4-1 The display items of “Sensor display area”

Items	Details
IF-BOX No.	Display the IF-BOX No.(1-4) related the COMPort at SA11 Bluetooth Settings Window.
Sensor type	Display the sensor type (pH, SC, ISC and DO). If FieldMate cannot receive the sensor type from SENCOM SA, “NONE” is displayed.
Alarm button	Display the Sensor’s Alarm status. Alarm icon is always displayed as the “Legacy”. Select Alarm button, and Alarm Window is displayed.
Serial No.	Display the Serial No. of Sensor module connected with SENCOM SA.
Measurement Values	Display the 1st to 3rd Measuremet Value. Displayed values are fixed depending on its Sensor type. (Refer to “Each sensors of the measurement values displayed on the Top Window”)
Show All button	Display the Sensor Detail Window. Its function is the same as”Local Display Functions”.

Sticky Note	Display and Edit“Memo”for the displayed sensor.
Calibration button	Start the Displayed Sensor’s calibration. The Last calibrated date is displayed on this button.
Trend Graph button	Display the Trend Graph about 1st Measurement Value to 3rd Measurement Value. The funcions are the same as “Local Display Functions”.
Acton Menu	Action menu shows the command list for sensor operations. The user can operate the sensors by selecting each of command in the menu.
Previous button	Display the next sensor’s information.
Next button	Display the privous sensor’s information.
ZoomIn button	Increace the number of sensor’s displayed their information on the Top window at once.(4 Sensors->2 Sensors->1 Sensor)
ZoomOut button	Decreace the number of sensor’s displayed their information on the Top window at once.(1 Sensor->2 Sensors->4 Sensors)

The display items are changed as following table depending on the number of the sensors displayed their information on the Top window at once.

Table E-4-2 The Display items list and number of sensors on the Top Window

	1 Sensor	2 Sensors	4 Sensors
IF-BOX No.	○	○	○
Sensor type	○	○	○
Alarm button	○	○	○
Serial No.	○	○	○
The number of Measurement Values	3	3	3
Show All button	○	○	○
Sticky Note	○	○	○
Calibration button	○	○	○
Trend Graph button	○	○	○
Acton Menu	○	○	○
Previous button	○	—	—
Next button	○	—	—
ZoomIn button	○	○	○
ZoomOut button	○	○	○

○ :Displayed, — :Not Displayed

■ Each sensors of the measurement values displayed on the Top Window

Direct Access functions for SA11 does not have the settings to decide which measurement values should be displayed. So, in this function, Top Window always shows the same kind of the measurement value according to the sensor type.

Table E-4-3 Display settings for pH sensor's Measurement values

Sensor type	1st Value	2nd Value	3rd value
pH	pH	Temperature	None
ORP	ORP	Temperature	None
pH+ORP	pH	Temperature	ORP

Table E-4-4 Display settings for SC sensor's Measurement values

1st Value	2nd Value	3rd value
SC1 Meas. Value	Temperature	SC2 Meas. Value

Measurement value of SC1 and SC2 are selected from following 8 choices.
1:SC(uncomp), 2:SC(tc2), 3:SC(NaCl), 4:SC(Matrix2), 5:R(uncomp), 6:R(tc2), 7:R(NaCl), 8:R(Matrix2)

Table E-4-5 Display settings for ISC sensor's Measurement values

1st Value	2nd Value	3rd value
SC1 Meas. Value	Temperature	SC2 Meas. Value

Measurement value of SC1 and SC2 are selected from following 4 choices.
1:SC(uncomp), 2:SC(tc2), 3:SC(NaCl), 4:SC(Matrix2)

Table E-4-6 Display settings for DO sensor's Measurement values

1st Value	2nd Value	3rd value
DO	Temperature	None

E-4-1 Alarm Window

The function of Alarm Window is basically the same as the “Local Display Functions”. Its difference is as follows.

1) Alarm status will be displayed on it according to the SENCOM SA’ s alarm status.
2) Alarm icon is always displayed as the “Legacy”. It does not support NE107(FMSC Categorize).
3) When the Alarm Window detects error, all alarm level will be “Failure” (Red).
4) There is no button to switch the sensor connection number. If you want to switch to another sensor, Select the alarm button you want to display.

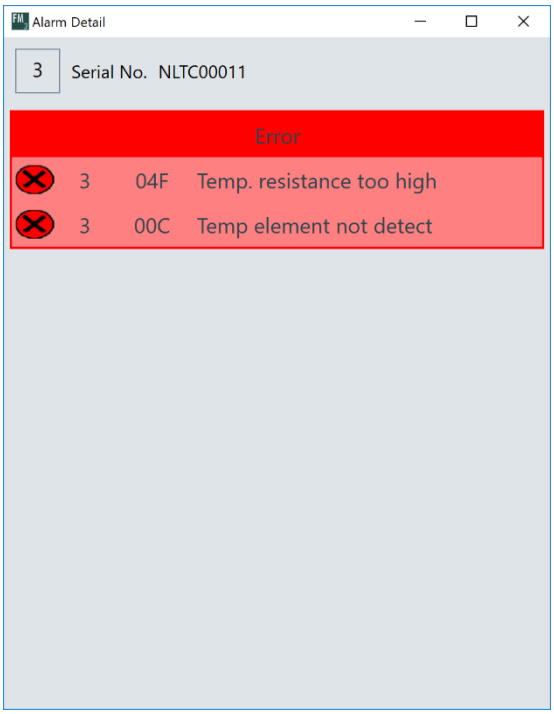


Figure E-4-2 Alarm Window for Direct Access communication with SA11

E-4-2 Calibration Window

The function of calibration is basically the same as the “Local Display Functions”. Its difference is as follow.

1) Sample calibration of pH sensor is not supported. Because the main target of sample calibration is the field devices.

E-5 Action Menu

Action menu shows the command list for sensor operation. The user can operate the sensors by selecting each of command in the menu. The command list is as follows.

Table E-5-1 The list of command in the Action Menu

Command	Outline of function
Show All	Display the Sensor Detail Window. Its function is the same as"Local Display Functions".
Sensor Wellness	Display the Sensor Wellness Window. Its function is the same as"Local Display Functions".
SENCOM Sensor Parameter	Display the SENCOM SA Parameter Window. Its function is the same as"Local Display Functions".
Predicted Maintenance	Display the Predicted Maintenance Window. Its function is the same as"Local Display Functions".
Logbook	Execute Logbook Window and display the sensor's Logbook. In the Direct Access for SA11, the button to select Sensor connection number is not displayed. Another function is the same as "Local Display Functions".
Trend Graph	Display the Trend Graph Window. Its function is the same as"Local Display Functions".
Alarm Detail	Execute Alarm Window and display the Sensor's alarm status. (refer to "E-4-1 Alarm Window")
Upload All Data to FieldMate	Upload the All setting parameters of the selected Sensor, and save them into the FieldMate database. Its function is the same as"Local Display Functions".
Sensor setting	Display and set the parameters of the Sensor. About its function, refer to "D-6-4 Sensor Settings Window".
Error Configuration	Configure the error detection settings When the SENCOM SA communicates with the MODBUS host except FLXA402 and FieldMate.
Erase Logbook	Erase the Logbook in the SENCOM SA.
Product Information	Display the sensor's Product Information (Serial No., Software Revision, and so on).
Disconnect Sensor	Disconnect the Sensor's communication. If select "Update "button", FieldMate will communicate with SENCOM SA connected with the same IF-Box.

This document describes about "Error Configuration", "Erase Logbook" and "Product Information" command.

E-5-1 Error Configuration

When the SENCOM SA communicates with the MODBUS host except FLXA402 and FieldMate (Ex: Digital Indicator with Alarms “UM33A-S”), the user can configure the error detection settings on this window.

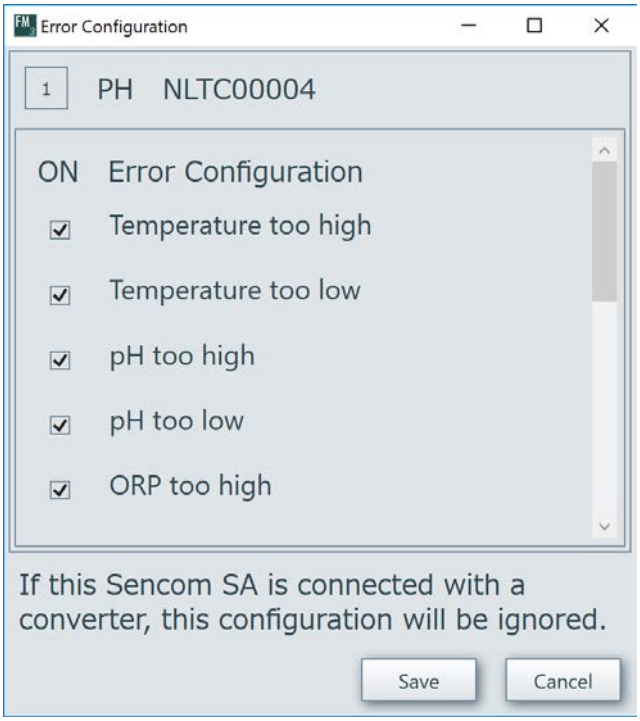


Figure E-5-1 Error Configuration Window

The error which can be configurated the settings on this window is as follow.

Table E-5-2 The list of error which can be configurated on this window

Sensor Type	Error name	Default settings
pH	Temperature too high Temperature too low pH too high pH too low ORP too high ORP too low rH too high rH too low Imped. (pH/ORP) too high Imped. (pH/ORP) too low Imped. (ref) too high Imped. (ref) too low pH Temperature Compensation Process Error SSA Temperature Out of Spec	All of them is OFF.

TIPS

When SENCOM SA is connected with FieldMate or FLXA402, you do not need this “Error configuration”.

E-5-2 Erase Logbook

This window is to erase the Logbook in the SENCOM SA.

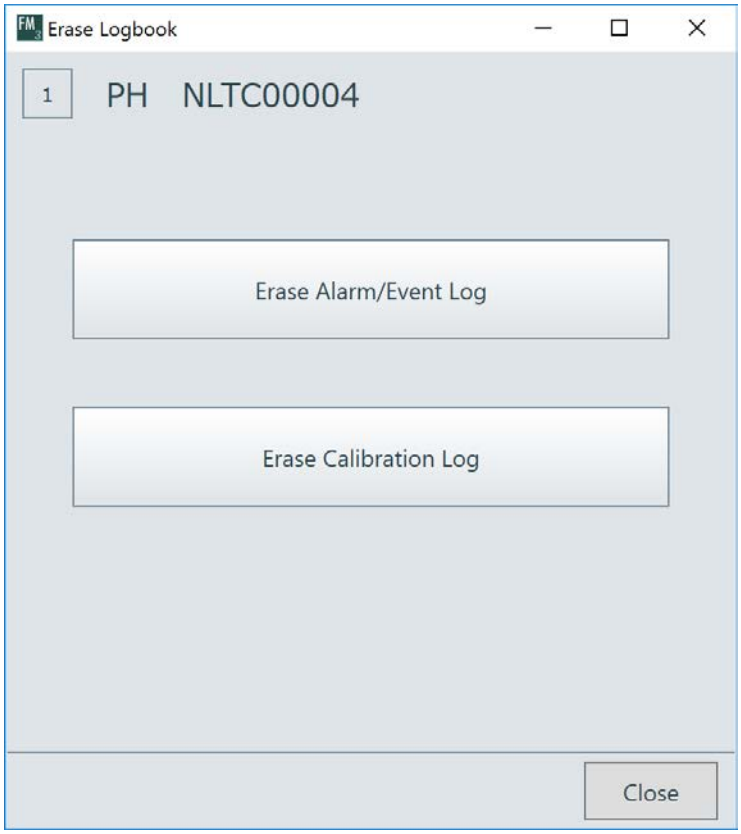


Figure E-5-2 Erase Logbook Window

E-5-3 Product Information

This window shows the sensor's product information.

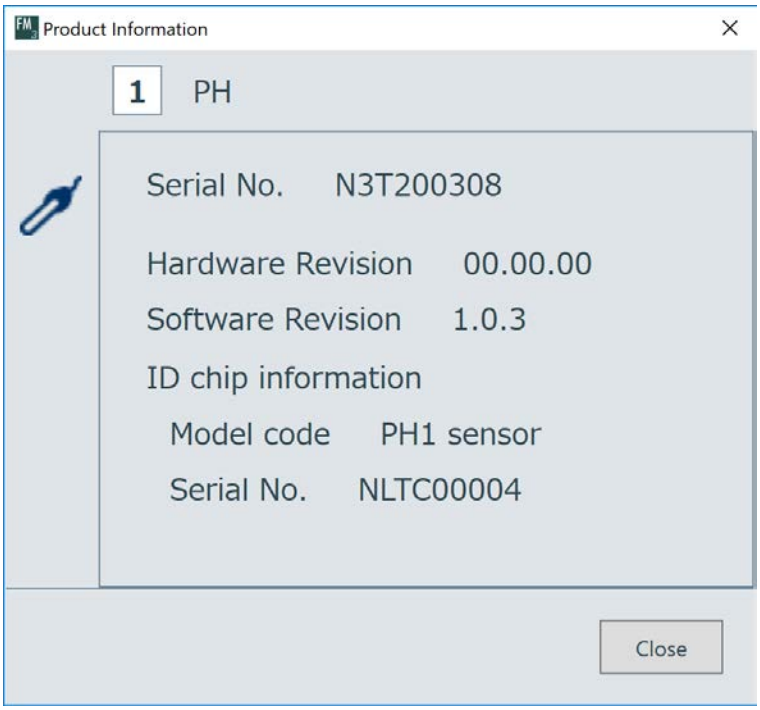


Figure E-5-3 Product Information Window

Table E-5-3 Display items of Product Information Window (SENCOM SA)

Items	Detail
Serial No.	Serial No. of SENCOM SA.
Hardware Revision	Hardware Revision of SENCOM SA.
Software Revision	Software (Firmware) Revision of SENCOM SA.
Model code (ID chip)	Model code of Sensor module connected with SENCOM SA.
Serial No. (ID chip)	Serial No. of Sensor module connected with SENCOM SA.

F Device Navigator

When the user operates “Calibration Management for Liquid Analyzers” the device information saved into the database by “Local display functions” and “Direct access functions for SA11” are displayed on Device Navigator Window of the FieldMate. This manual describes about the operation how to manage the information saved by “Calibration Management for Liquid Analyzers” at the Device Navigator Window.

F-1 Device Navigator Window

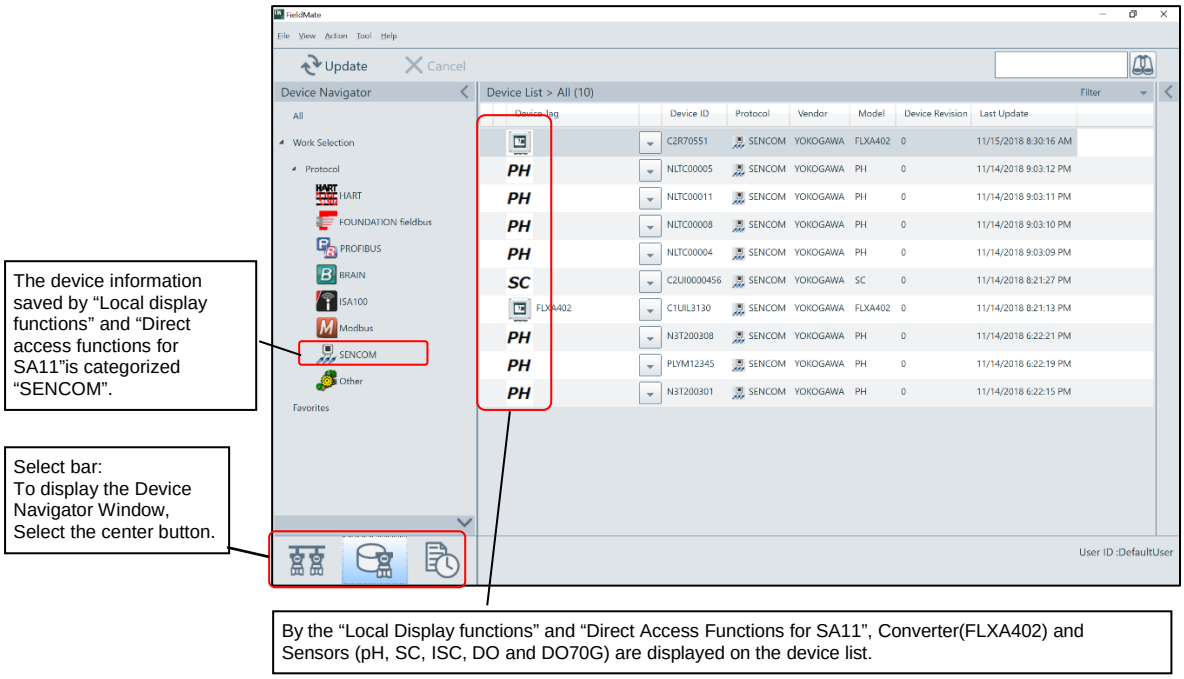


Figure F-1-1 Device Navigator Window

TIPS

- When the senor type is “Analog sensor”, Analog sensor module information connected the analog sensor is displayed on the device list.
- When the senor type is “SA11”, SA11’s information is displayed on the device list.
- As for SA11, the same sensor is possible to save the sensor’s information by both communications (“Local Display” and “Direct Access”). In this case, the sensor information will be saved as the same SA11.

■ Operation

● Filter Function

Filters users and devices (models).

● Operation(▼)

Push ▼ button on a line on the Device Navigator window displays the Action Menu.

● Operation at Right-clicking

Right-clicking on a line on the Device Navigator window displays the Action Menu.

● Operation at Double-clicking

Double-clicking on a line on the Device Navigator window displays the Device Maintenance Info window.

■ Select Bar Switch

Select Bar is hidden at the initial setting. If you want to display the Select Bar, please select the “Select Bar Switch”.

Figure F-1-2 Select Bar Switch

F-2 Device Maintenance Information

This window is to manage the Device Maintenance Information.

● Startup

Device Navigator → Select Device → Operation (▼) → Open Device Maintenance Info...

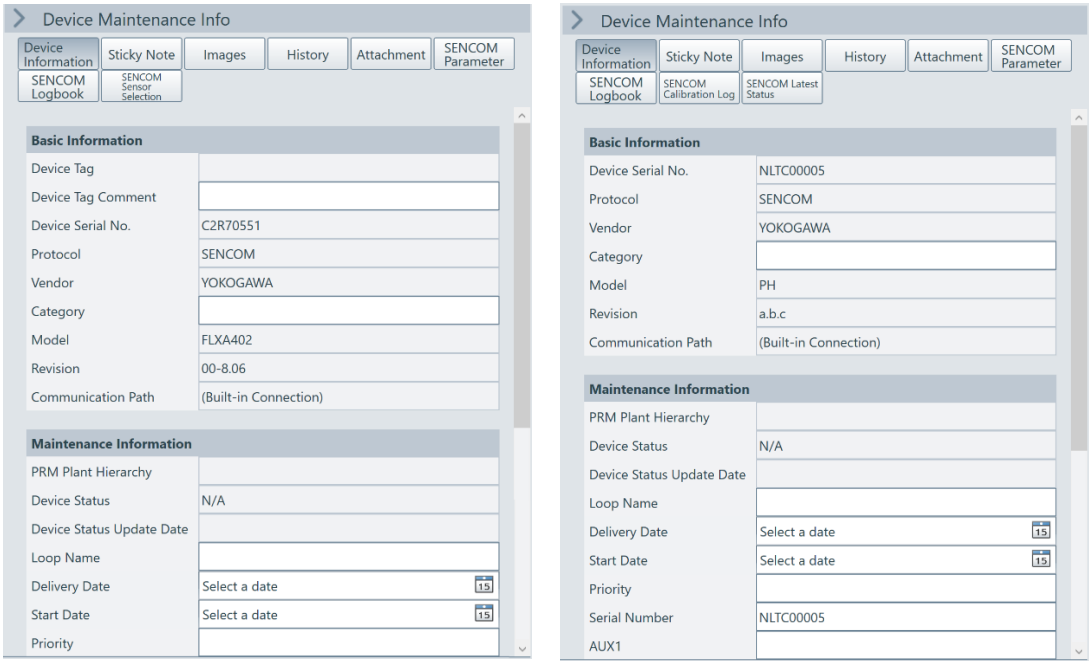


Figure F-2-1 Device Maintenance Information (Left: Converter(FLXA402), Right: Sensor(pH))

About displayed information on the Device Maintenance Information, “Device information”, “Sticky Note”, “Images”, “History”, “Parameter” and “Attachment” are the same as FieldMate. To get more details, refer to “FieldMate Versatile Device Management Wizard (IM 01R01A01-01E)”.
This document describes about “SENCOM Parameter”, “SENCOM Logbook”, “SENCOM Calibration Log”, “SENCOM Latest Status” and “SENCOM Sensor selection”.

F-2-1 Device Maintenance Information (SENCOM Parameter)

The list of the setting parameters of the Converter and the Sensors saved by “Calibration Management for Liquid Analyzers” is displayed. In addition, selected setting parameters from the list can be displayed.

■ Window

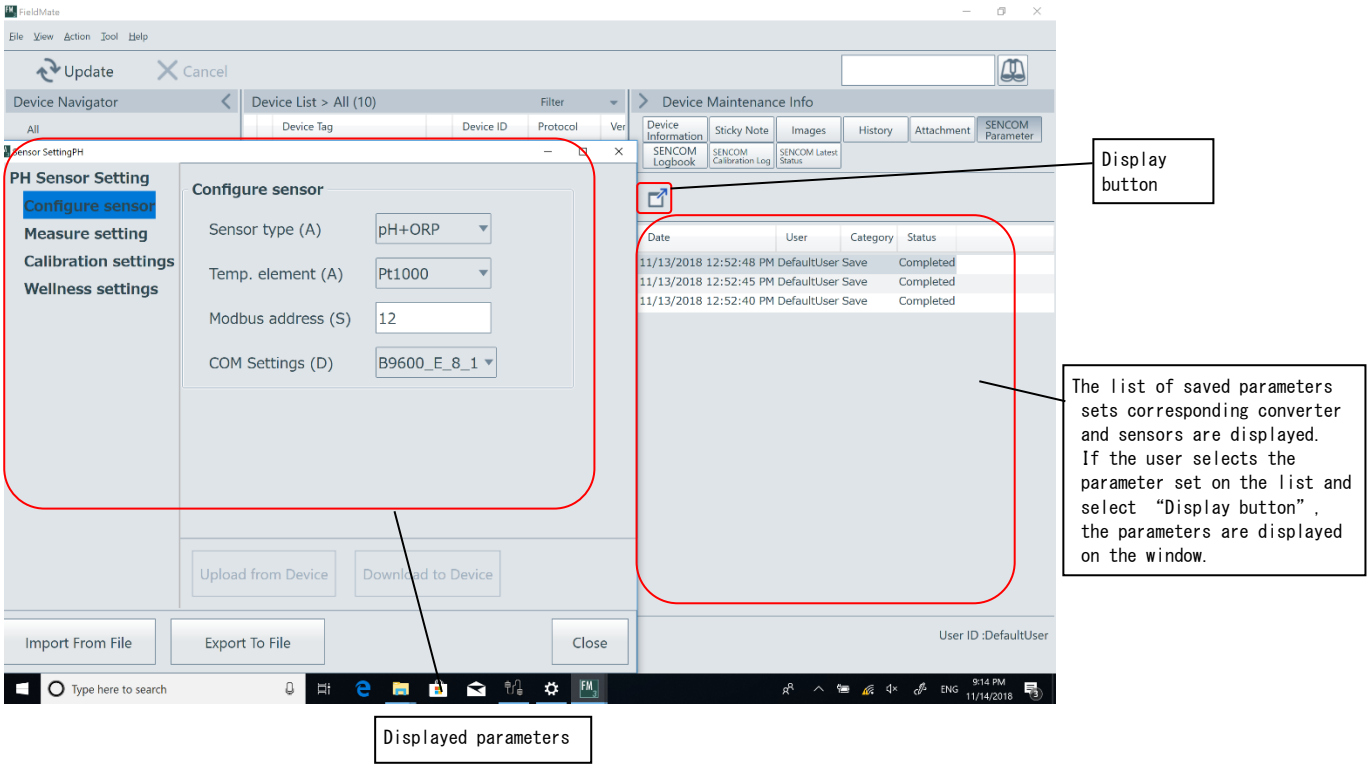


Figure F-2-2 Device Maintenance Information (SENCOM Parameter)

TIPS

The “Category” of setting parameter, the saved timing are displayed.

“Save”: Saved automatically after changing the settings of the Converter or the Sensor.

“Upload”: Saved by “All data upload to FieldMate” command.

F-2-2 Device Maintenance Information (SENCOM Logbook)

The list of the Logbooks of the Converter and the Sensors saved by “Calibration Management for Liquid Analyzers” is displayed. In addition, selected Logbook from the list can be displayed.

■ Window

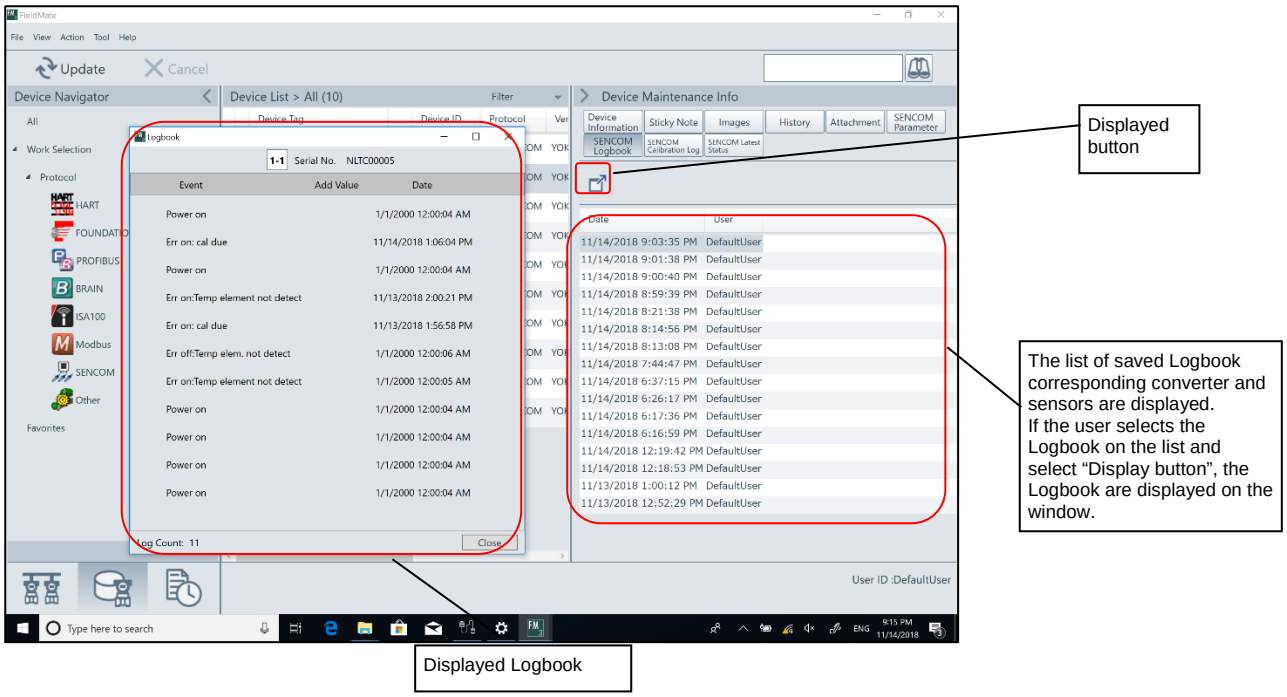


Figure F-2-3 Device Maintenance Information (SENCOM Logbook)

F-2-3 Device Maintenance Information (SENCOM Calibration Log)

The list of the Calibration Logs of the Sensors saved by “Calibration Management for Liquid Analyzers” is displayed. In addition, selected Calibration Log from the list can be displayed.

■ Window

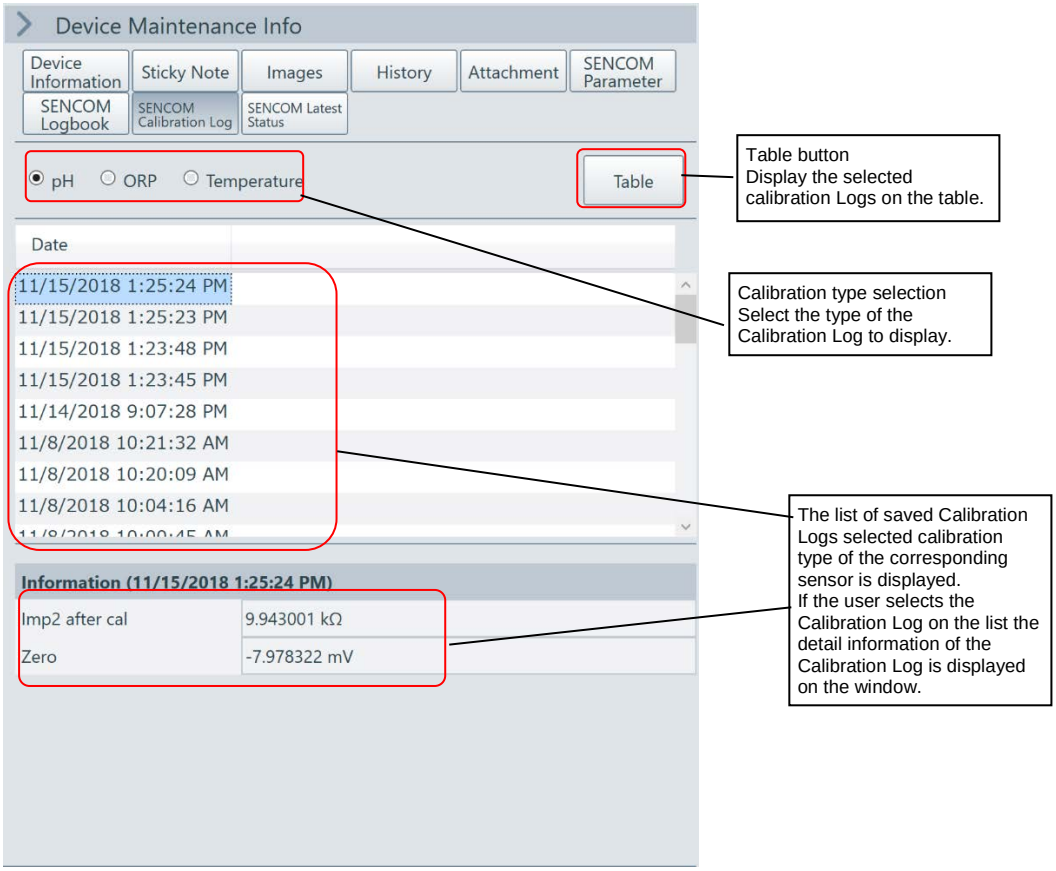


Figure F-2-4 Device Maintenance Information (SENCOM Calibration Log)

● Calibration type selection

The selection items of “Calibration type selection” will be changed depending on its sensor type.

Table F-2-1 The list of sensor type and selection items of calibration type

Sensor Type	Selection items of calibration type
pH	pH, ORP, Temperature
SC and ISC	SC, Air Calibration, temperature, temperature coefficient
DO and DO70G	DO, temperature

● Displayed Calibration Information

The calibration information will be displayed as follow depending on the combination of sensor type and calibration type.

Table F-2-2 The list of Calibration information according to the sensor type and calibration type

Sensor type	Calibration type	Displayed calibration information
pH	pH	Zero, Slope, Zero2, Slope2, ITP, Impedace2 after calibration
	ORP	ORP1 Zero, ORP1 Slope, ORP2 Zero, ORP2 Slope, Impedace2 after calibration
	Temperature	Temperature(Offset)
SC and ISC	SC	C.C.(Calibration)
	Air calibration	Air Calibration(Zero)
	Temperature	Temperature(Offset)
	Temperature coefficient	Temperature Coefficient 1, Temperature Coefficient 2
DO and DO70G	DO	Zero, Slope
	Temperature	Temperature(Offset)

TIPS

- All Calibration Information into the above table are not always displayed. It depends on Calibration method.
  Ex: Calibration type = pH
  1 point calibration: Zero, Impedace2 after calibration.
  2 points calibration: Zero,Slope,Impedace2 after calibration.
  3 points calibration(ITP): Zero, Slope, ITP,Impedace2 after calibration.
  3 points calibration(Line segment): Zero, Slope, Zero2, Slope2, Impedace2 after calibration.
- Usually, Calibration Log will be updated after the calibration. In addition, it will also be saved by changing the calibration settings by Sensor settings manually. In this case, “Impedance2 after calibration” won’t be saved.
- The Calibration Log does not have the information to distinguish the Automatic Calibration or Manual Calibration.
- To operate the temperature coefficient calibration for SC or ISC, the user must change the sensor setting of “SC1 sel./comp.”or “SC2 sel./comp.”in the measurement settings to “T.C.1” or “T.C.2”in advance.
- To save the temperature coefficient Calibration Log by “the Local Display functions”, the user must change the following Logbook settings of the Converter settings to “On”(default is “OFF”).
  “Logbook Settings”->” Sensor settings”->Compensation setup”

■ Table of Calibration Log

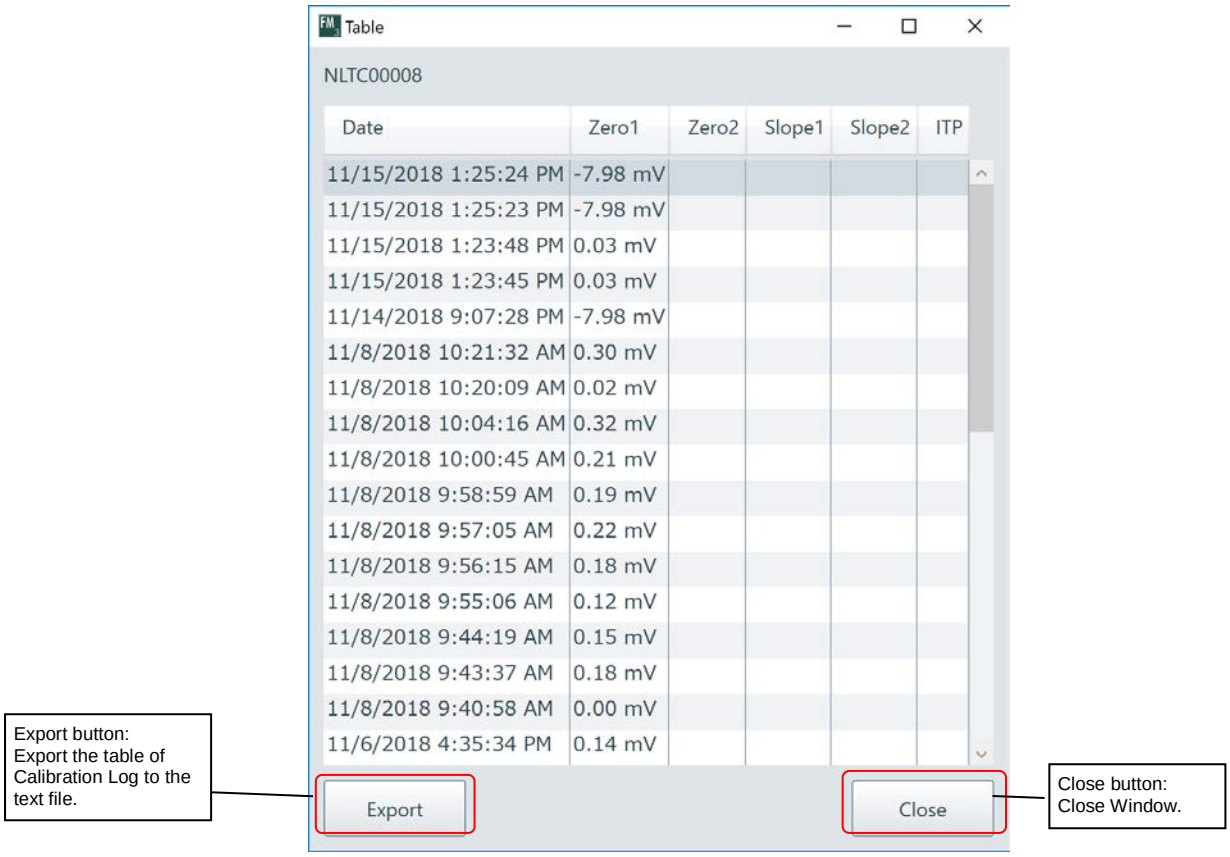


Figure F-2-5 Table of Calibration Log (SENCOM Calibration Log)

F-2-4 Device Maintenance Information (SENCOM Latest Status)

Display the latest sensor information.
In addition, it can export the latest information to external file.
When the Segment Viewer receive the latest device information, this information will be saved automatically.

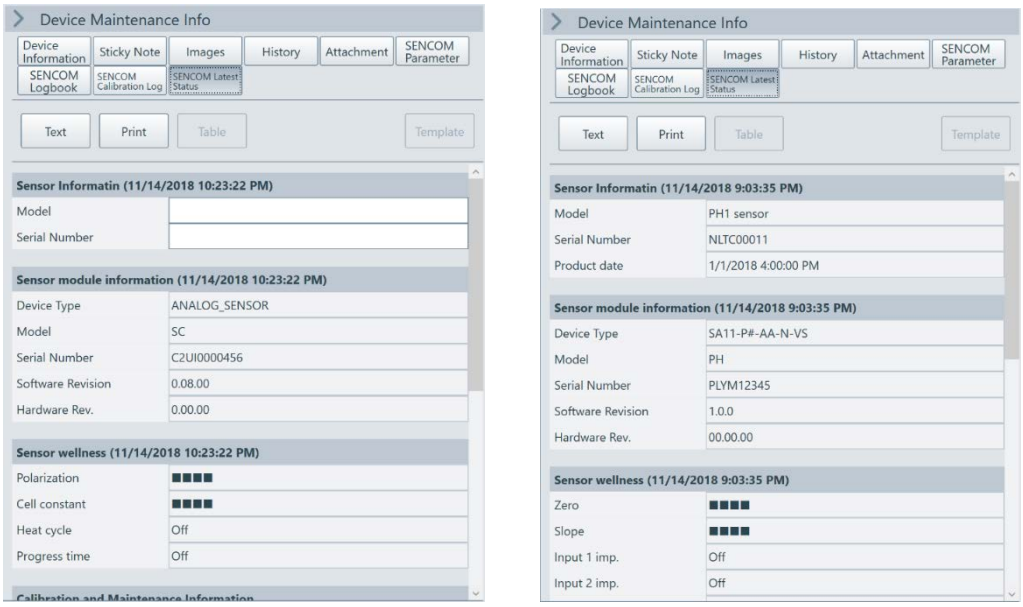


Figure F-2-6 Device Maintenance Information (SENCOM Latest Status) (Left: Analog Sensor Module Right: SA11)

● Each sensor type of the SENCOM Latest Status

Each sensor type of the SENOCM Latest Status is as follow.

Table F-2-3 Each sensor type of the SENCOM Latest Status (Sensor and sensor module information)

Category	Display items	Analog Sensor Module DO70G	SA11
Sensor information	Model	(Empty) *1	Model of Sensor module
	Serial No.	(Empty) *1	Serial No. of Sensor Module
	Product date	(No area)	Product date of Sensor Module
Sensor Module Information	Device Type	ANALOG_SENSOR (DO70G is" DO70G")	Device type of SA11
	Model	Model of Analog sensor module/DO70G (PH/SC/ISC/DO)	Model of SA11 (PH)
	Serial No.	Internal Serial No. of Analog Sensor Module/DO70G	Serial No. of SA11
	Software Revision	Software Rev. of Analog Sensor Module/DO70G	Software Rev. of SA11
	Hardware Rev.	Hardware Rev. of Analog Sensor Module/DO70G	Hardware Rev. of SA11

*1) Analog sensor module can set it from the display manually.

Table F-2-4 Display items of Sensor type and SENCOM Latest Status (Sensor wellness, Calibration, Maintenance and settings)

Category	Display Item	PH	SC	ISC	DO	DO70G
Sensor Wellness	Zero	○	–	–	–	–
	Slope	○	–	–	–	–
	Impedance1	○	–	–	–	–
	Impedance2	○	–	–	–	–
	Polarization	–	○	–	–	–
	C.C.	–	○	○	–	–
	Heat Cycle	○	○	○	○	○
	Progress Time	○	○	○	○	○
Calibration, Maintenance information *1	Projected Replacement	○	○	○	○	○
	Projected Reliability	○	○	○	○	○
	pH *2	○	–	–	–	–
	ORP *2	○	–	–	–	–
	C.C.*2	–	○	○	–	–
	Air Calibration(Zero) *2	–	○	○	–	–
	DO *2	–	–	–	○	–
	Temperature *2	○	○	○	○	–
	Temperature Coefficient *2	–	○	○	–	–
Settings	Sensor type	○	○	–	○	○
	Heat cycle Temperature	○	○	○	○	○
	Heat cycle time	○	○	○	○	○
	Sterilized temp.	○	○	○	○	○
	Sterilized time	○	○	○	○	○
	High temp. 1	○	○	○	○	○
	High temp. 2	○	○	○	○	○
	pH High limit	○	–	–	–	–
	pH Low limit	○	–	–	–	–
	Impedance1	○	–	–	–	–
	Impedance2	○	–	–	–	–

○:Available, －: Not Available

*1) To Display this information the Sensor should be calibrated at least once.

*2) The last date of each calibration will be displayed. If the calibration is not executed "----“will be displayed.

● Action of Selecting “Print” button

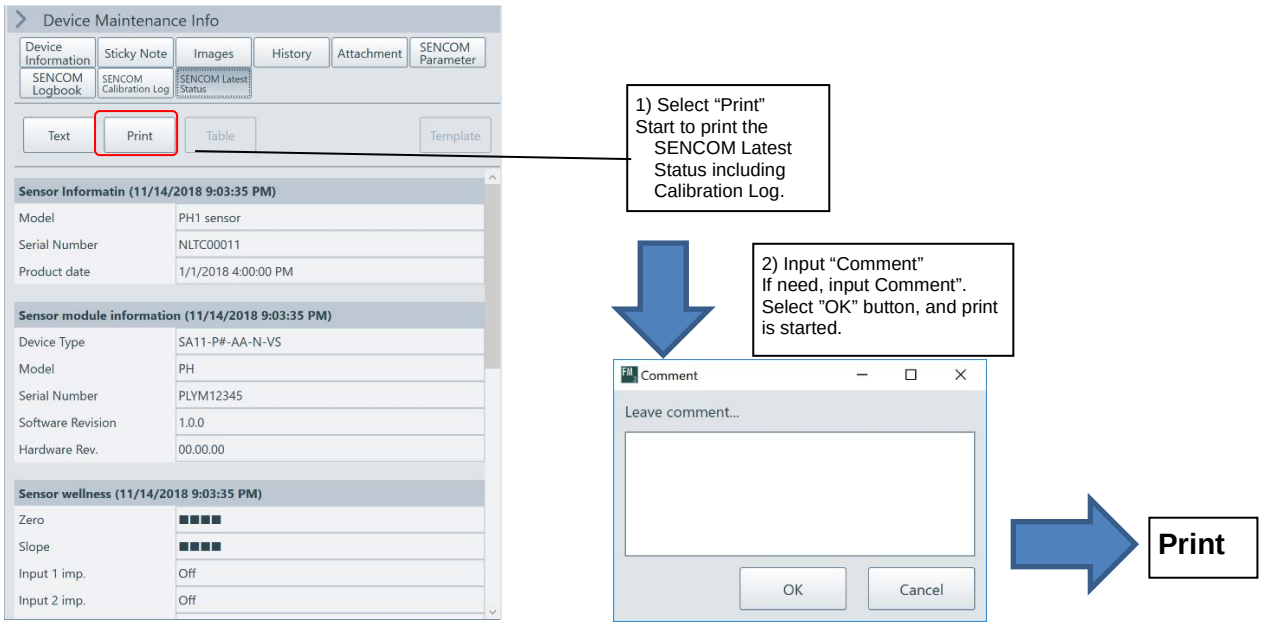


Figure F-2-7 Action of Selecting “Print” button

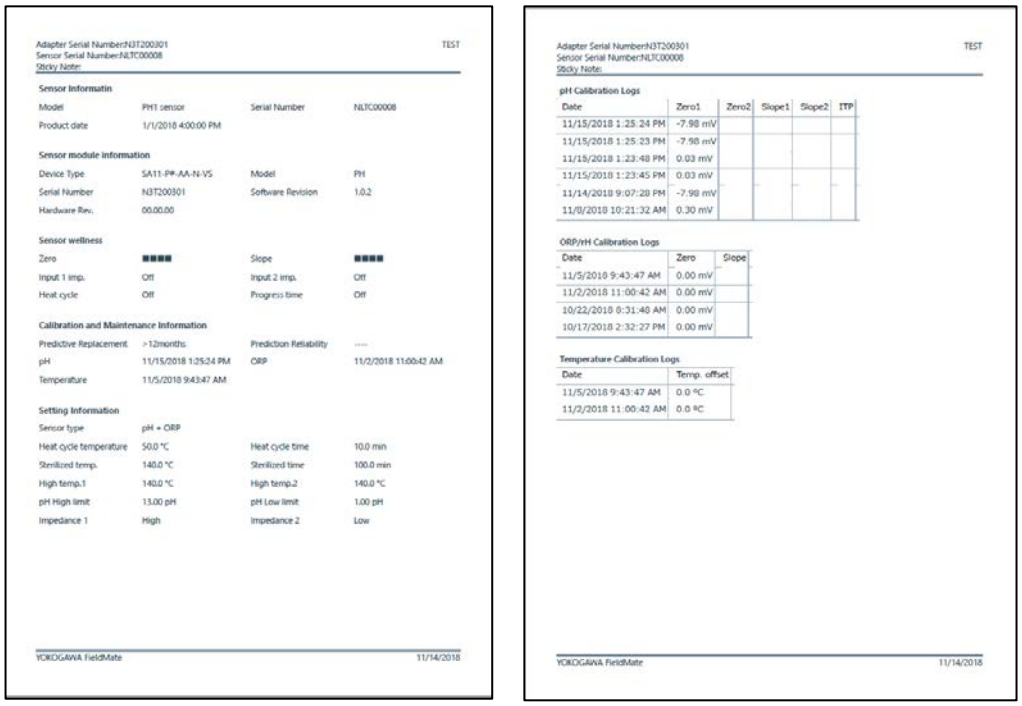


Figure F-2-8 Print image
(Left: p1:SENCOM Latest Status,Right:p2:SENCOM Calibration Log)

TIPS

If you select “Text” button, “Table” button or “Template” button, only SENCOM Latest Status will be printed. printed items are the same as SENCOM Latest Status Window.

■ Report Template

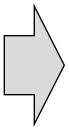
This sentence describes about creating the Report template.
Enter the substitution string where you want to insert parameter values in Microsoft® Word or Excel® files. The substitution string is shown in ID row of data that is displayed by pressing the “Text” or “Table” button in Figure F-2-7. The substitution string is replaced to the value with unit.

● Example (Microsoft® Word)

Template file

Process variables

Pressure value [Pres] :(pressure_value)
Pressure value in % [Pres %] :(pressure_percent_range)
Loop current value [AO] :(analog_output_value)
User scaled value [Engr Disp] :(engr_disp_value) (engr_disp_unit)
Static pressure value [SP] :(static_pressure_value)
Static pressure value in % [SP %] :(static_pres_percent)



Report

Process variables

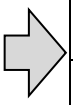
Pressure value [Pres] :-0.003 kPa
Pressure value in % [Pres %] :-0.01%
Loop current value [AO] :3.997 mA
User scaled value [Engr Disp] :-0.00 kPa
Static pressure value [SP] :0.0000 MPa
Static pressure value in % [SP %] :0.0%

● Example (Microsoft® Excel®)

Template file

Process variables

Pressure value [Pres]	(pressure_value)
Pressure value in % [Pres %]	(pressure_percent_range)
Loop current value [AO]	(analog_output_value)
User scaled value [Engr Disp]	(engr_disp_value) (engr_disp_unit)
Static pressure value [SP]	(static_pressure_value)
Static pressure value in % [SP %]	(static_pres_percent)



Report

Process variables

Pressure value [Pres]	-0.003 kPa
Pressure value in % [Pres %]	-0.01%
Loop current value [AO]	3.997 mA
User scaled value [Engr Disp]	(engr_disp_value) (engr_disp_unit)
Static pressure value [SP]	0.0000 MPa
Static pressure value in % [SP %]	0.0%

In the case of the template file with Microsoft Excel, the substitution strings are replaced by the cell. If any character other than the substitution string or some substitution strings are in the cell, the replacement does not be performed.

F-2-5 Device Maintenance Information (SENCOM Sensor Selection)

Call the Sensor’s Device Maintenance Information connected with the converter saved by “Calibration Management for Liquid Analyzers”

■ Window

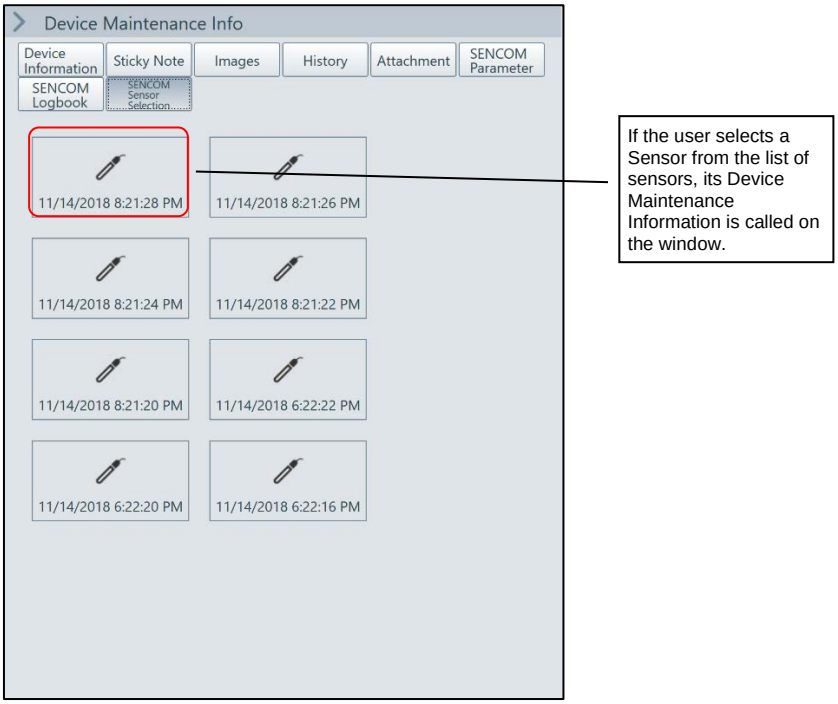


Figure F-2-9 Device Maintenance Information (SENCOM Sensor Selection)

G Tools for FLXA402

This section describes about tools for FLXA402.

- FLXA402 logbook converter
- FLXA402 Parameter editor

G-1 FLXA402 logbook converter

FLXA402 logbook converter is the tool for converting the logbook data exported from FLXA402 to the SD card to the TSV format file. The logbook of the Local Display functions can display up to 50 log data. If the user converts the logbook exported to SD card to the TSV format file, the user can read about 160,000 log data.

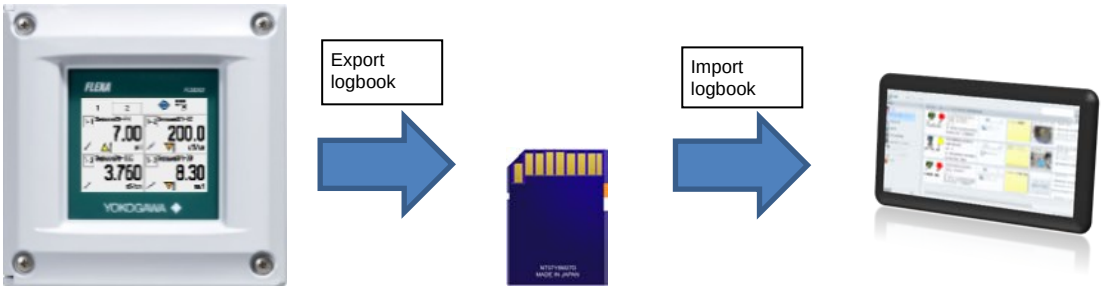


Figure G-1-1 The image of logbook data export

SEE ALSO

About exporting logbook data from the converter, refer to “5.1.8 Export all logbook” in “FLXA402 4-Wire Converter Operation of Converter” (IM 12A01F01-03EN).

■ Start

Select the following menu.

Windows “Start” menu -> All programs -> Yokogawa FieldMate -> FLXA402 Logbook Converter.

■ Operation

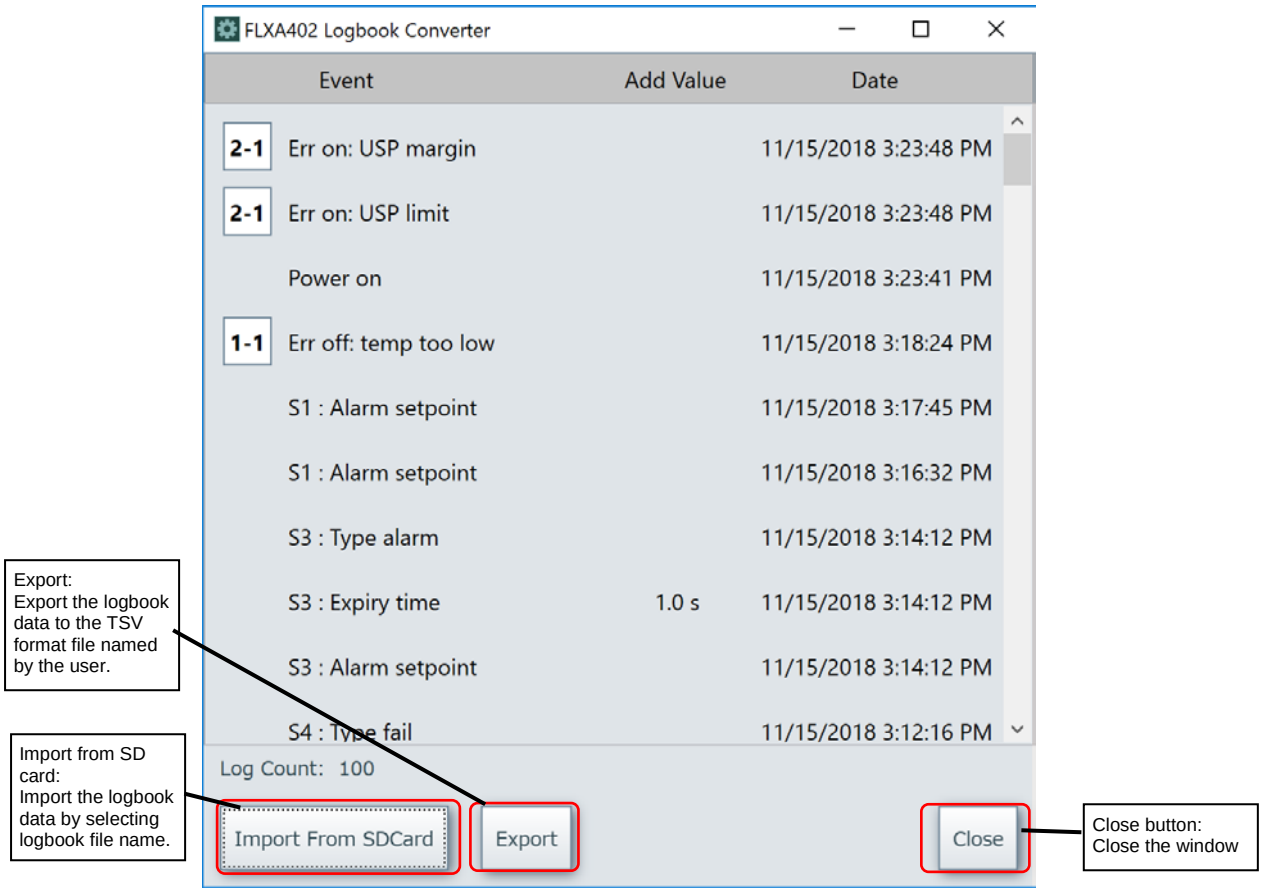


Figure G-1-2 The image of FLXA402 Logbook converter

Table G-1-1 List of the items on the FLXA402 logbook converter

Item	Details
Sensor connection number	Show the sensor connection number(1-1, 1-2, …,2-4) where detected the event. The event occurred in the FLXA402, it is not displayed.
Event	Display the occurred event.
Add value	Display the additional value related the event. Some eventdoes not have the “Add value”.
Date	Display the date when the event occurred.

On this window, the last 100 logbook data imported from the SD card will be displayed on the window. All data imported from the SD card will be exported to the TSV format file.

SEE ALSO

About the detail of logbook, refer to “Converter log / Sensor log” at “3.1 Detail(Converter)” in “FLXA402 4-Wire Converter Operation of Converter” (IM 12A01F01-03EN).

G-2 FLXA402 Parameter Editor

FLXA402 Parameter Editor is the tool for displaying and editing the parameter of FLXA402 on the PC. In addition, it can export the edited parameter on the PC into the SD card. If the user provides the exported data to another FLXA402 by SD card, the user can set the same parameter settings to the FLXA402 easily.

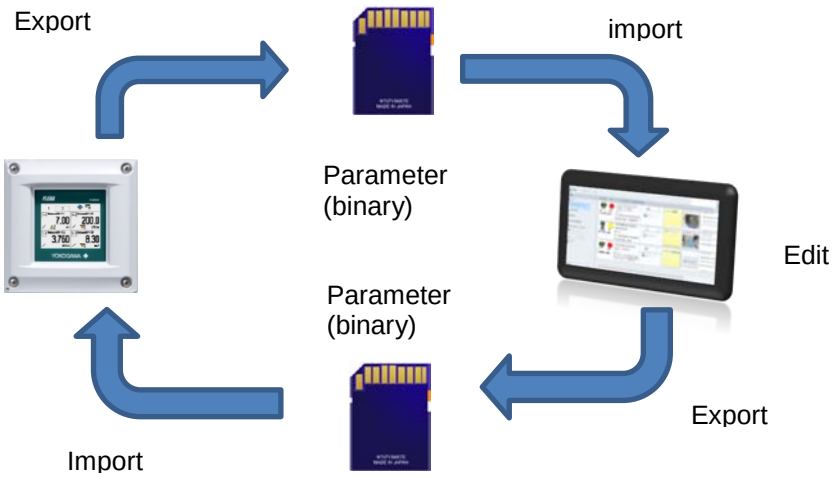


Figure G-2-1 The Image of editing the parameter FLXA402 Parameter Editor

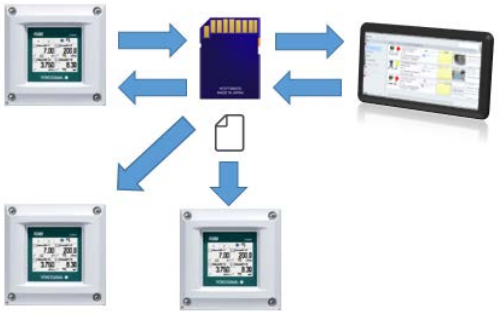


Figure G-2-2 The Image of Parameter providing to FLXA402s after edited by the tool

SEE ALSO

About parameter export and import of converter and SD card, refer to”5.1.6 Export all configuration” and “5.1.7 Import configuration” in “FLXA402 4-Wire Converter Operation of Converter” (IM 12A01F01-03EN).

■ Start

Select the following menu.

Windows “Start” menu -> All programs -> Yokogawa FieldMate -> FLXA402 Parameter Editor.

■ Operation

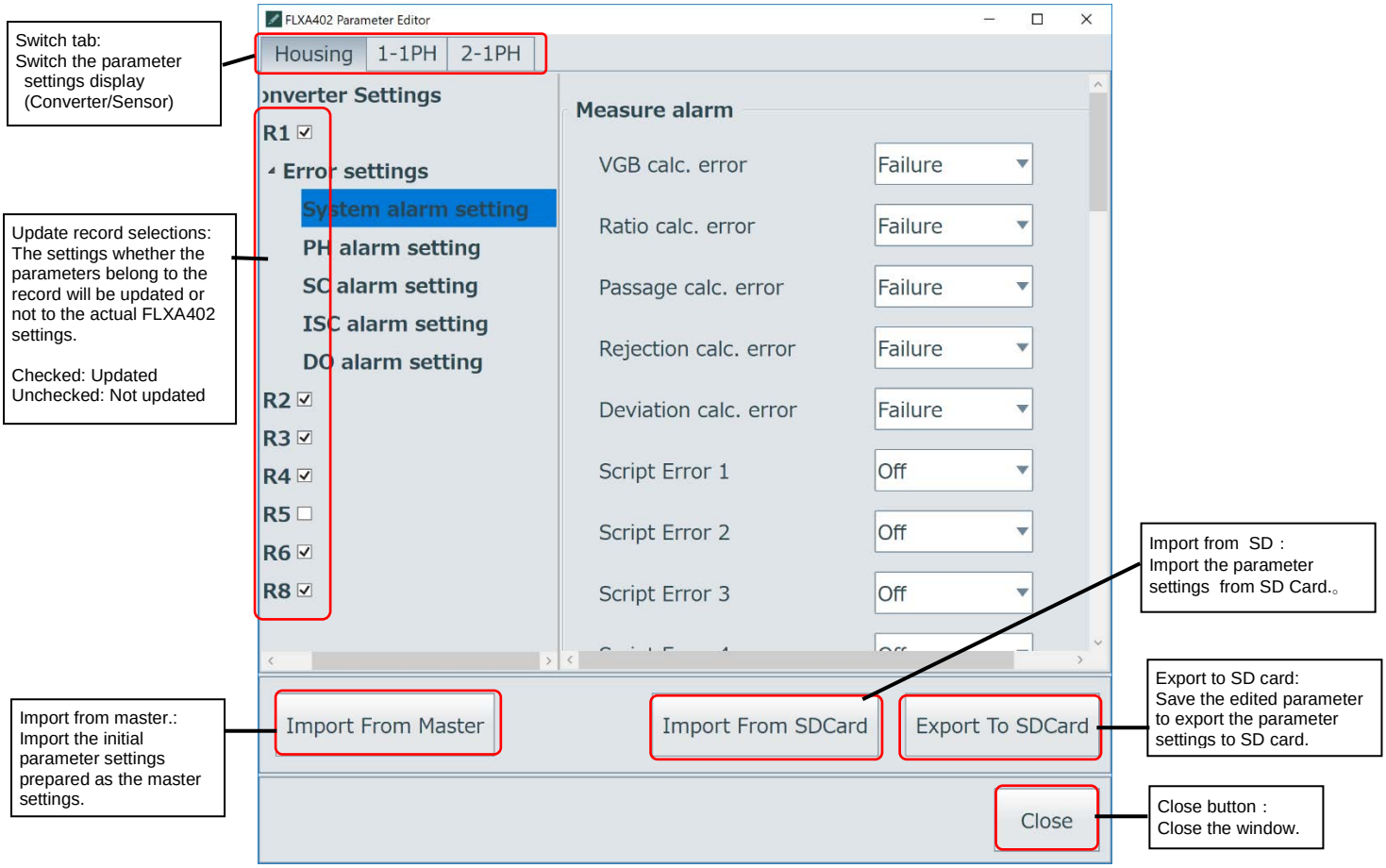


Figure G-2-3 The image of FLXA402 Parameter Editor

● Import from SD card

Import the Parameter settings of the converter from the SD card. Setting parameter consists of 3 file types following table. Select the System configuration file(*.F00) when the user imports the parameter settings.

Table G-2-1 The file configuration of FLXA402 SD card converter

File types		File extensions	information
System configuration file		.F00	Save the system configurations (connection number and sensor type).
Setting file for converter		.C00	Converter settings file. This file is only one file in the each of parameter configuration.
Setting files for sensor	PH	.S00	Each of sensors parameter setting files. One sensor setting is in a setting file. One parameter configuration has up to 5 sensors settings.
	SC	.S01	
	ISC	.S02	
	DO	.S03	
	DO70G	.S04	

● Export from the SD card

Save the edited parameters on the tool and export them into the SD card. The user can set another file name (up to 10 characters) to the exported parameters. The parameters of sensor combinations cannot change on the tool.
If the parameter settings have wrong data, “Export to SD card” button is disabled.

● Import from master

Display the “Import from mater” to select the initial parameter settings prepared as the “Master settings”. And then import the selected parameters.

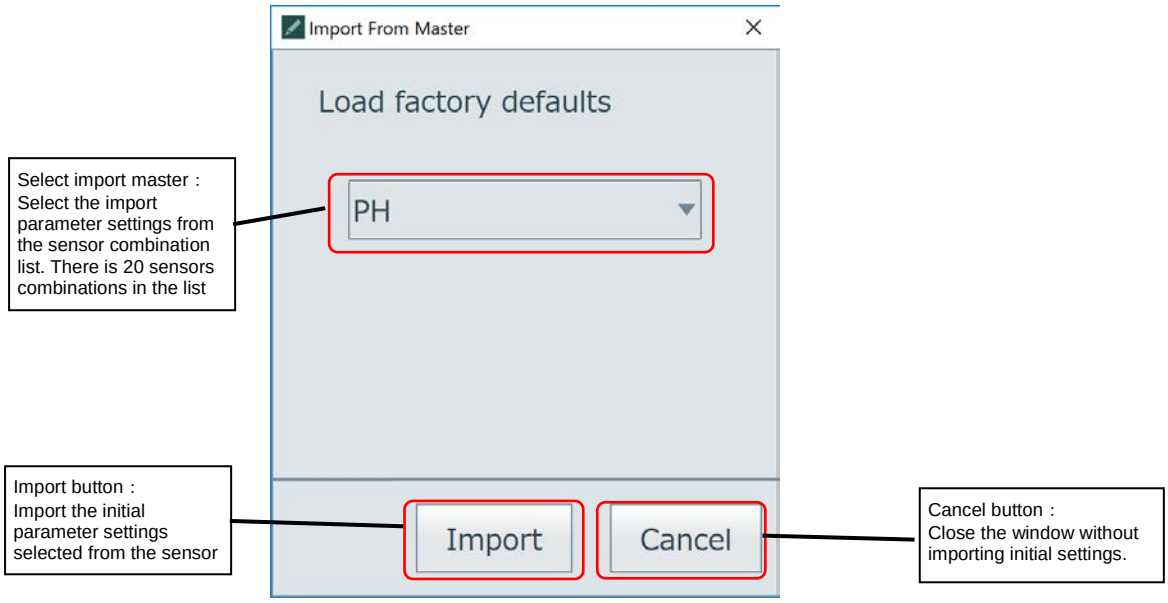


Figure G-2-4 Import from master window

TIPS

Initial parameter settings prepared as the master is 20 patterns. (1 sensor settings sensor: pH, SC, ISC and DO, 2 sensor settings are the combination of those 4 sensors). If the user wants to set more than 3 sensors or more than 2 SSAs into the 1 module, please set the parameters on the FLXA402 directly.

● Update record selections

The settings whether the parameters belong to the record will be updated or not to the actual FLXA402 settings. For example, R2 of pH sensor is the parameter settings for the calibration settings (Zero, Slope, Temperature offset, and so on). The parameters have no meaning if the user copy the R2 parameters to another FLXA402. So, this tool has the function to select the update record one by one. If the user wants to update the record, please uncheck the checkbox.

● Edit Parameter

Basically, display and edit Parameter procedure is the same as the “Parameter edit” of converter and sensor.

TIPS

FLXA402 Parameter editor cannot receive the FLXA402’s hardware configuration. So, this tool always shows the parameter not supported actual device configurations. (Ex. Even if FLXA402 has Basic module, this tool will be shown mA3 and mA4.) In this case, the settings of mA3 and mA4 will be ignored when the parameter is imported to the FLXA402 which has Basic module.

Revision Information

●Title : Calibration Management for Liquid Analyzers

●Manual No. : IM 01R01A07-01EN

The following table describes the changes on this User's Manual.

Revision No.	Revised Date	Major Changes
1st Edition	November 2018	Newly published