HIOKI

Instruction Manual

9768

SMART SITE UTILITY PRO

HIOKI E. E. CORPORATION

May 2011 Revised edition 2 9768A981-02 11-05H

600094642

Contents

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Introduction

Thank you for purchasing the HIOKI “Model 9768 SMART SITE UTILITY PRO.” To obtain maximum performance from the product, please read this manual first, and keep it handy for future reference.

Verifying Package Contents

When you receive the product, inspect it carefully to ensure that no damage occurred during shipping. If damage is evident, or if it fails to operate according to the specifications, contact your dealer or Hioki representative.

- 9768 SMART SITE UTILITY PRO(CD-R) 1
- Instruction manual 1

Safety Symbols

The following symbols in this manual indicate the relative importance of cautions and warnings.

⚠CAUTION	Indicates that incorrect operation presents a possibility of injury to the user or damage to the product.

Other Symbols

❖	Indicates references.

Notation

- Unless otherwise specified, “Windows” represents Windows 2000, Windows XP, Windows Vista, or Windows 7.
- Dialog box represents a Windows dialog box.
- Menus, commands, dialogs, buttons in a dialog, and other names on the screen and the keys are indicated in brackets.
- Windows and Excel are the registered trademark of Microsoft Corporation in the United States and/or other countries.
- In this manual, the model number is indicated as follows:
  Example: 2351-20 → 2351 (the number following the "-" is omitted.)

Mouse Operation

Click	Press and quickly release the left button of the mouse.
Right-click	Press and quickly release the right button of the mouse.
Double click	Quickly click the left button of the mouse twice.
Drag	While holding down the left button of the mouse, move the mouse and then release the left button to deposit the chosen item in the desired position.
Activate	Click on a window on the screen to activate that window.

Operating Precautions

Follow these precautions to ensure safe operation and to obtain the full benefits of the various functions.

⚠CAUTION

- Always hold the disc by the edges, so as not to make fingerprints on the disc or scratch the printing.
- Never touch the recorded side of the disc. Do not place the disc directly on anything hard.
- Do not wet the disc with volatile alcohol or water, as there is a possibility of the label printing disappearing.
- To write on the disc label surface, use a spirit-based felt pen. Do not use a ball-point pen or hard-tipped pen, because there is a danger of scratching the surface and corrupting the data. Do not use adhesive labels.
- Do not expose the disc directly to the sun's rays, or keep it in conditions of high temperature or humidity, as there is a danger of warping, with consequent loss of data.
- To remove dirt, dust, or fingerprints from the disc, wipe with a dry cloth, or use a CD cleaner. Always wipe radially from the inside to the outside, and do no wipe with circular movements. Never use abrasives or solvent cleaners.
- Hioki shall not be held liable for any problems with a computer system that arises from the use of this CD-R, or for any problem related to the purchase of a Hioki product.

Operating Environment and Installation 1

1.1 Operating Environment

Computer environment requirements

Hardware	CPU: 1 GHz or higher OS: Windows 2000/XP/Vista/7 .NET Framework 2.0 Internet Explorer 5.01 more
Memory	512 MB or more
Display	Resolution 1024 x 768 dots, 65536 colors or more
Hard disk	At least 30 MB of free space (However, when .NET Framework 2.0 is not installed, approximately 500MB alternates are necessary), plus space for stored data (at least 500 MB recommended)
Interfaces	COM port, LAN

1.2 Installation

The installation procedure for the 9768 SMART SITE UTILITY PRO is as follows.

Procedure

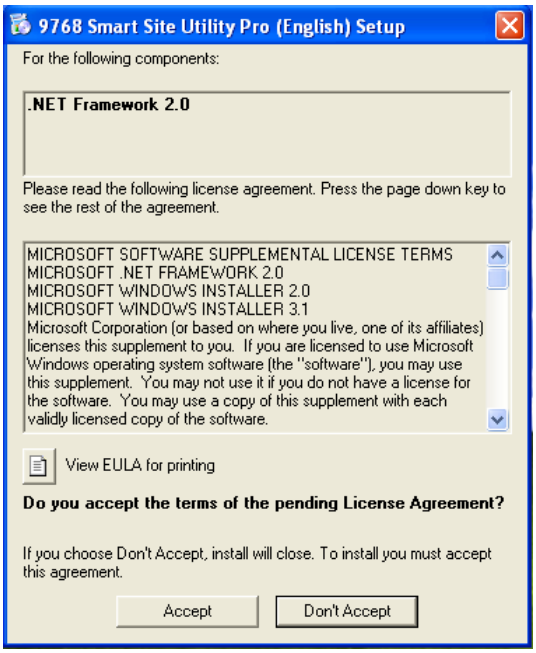
1. Execute Setup.exe from the English folder on the CD-ROM.

To install the program under Windows 2000/XP, you must be logged in with Administrator privileges.

Run installation as an administrator.
Installation is carried out in two stages.
- Install NET Framework 2.0
  (Only when it is not installed on the computer)
- Install 9768 SMART SITE UTILITY PRO
  If Internet Explorer 5.01 or higher is not installed, an error occurs and it cannot be installed. In that case, install after updating Internet Explorer to the latest version using software such as Windows Update.

2. If .NET Framework 2.0 is not installed on the computer, the following dialog box opens.

❖ If .NET Framework 2.0 is already installed, proceed to 6. (P. 6).

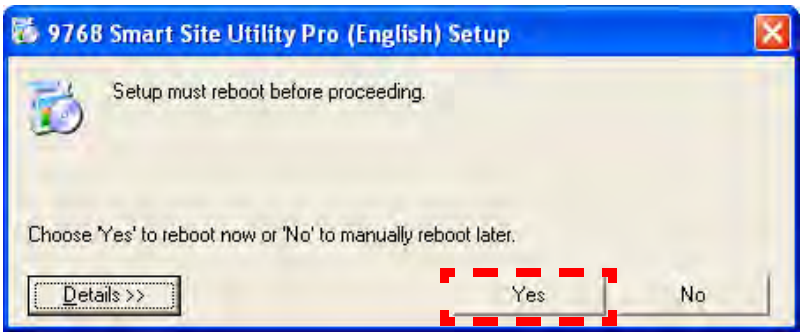


3. Click [Accept], .NET Framework 2.0 is installed.

4. When the installation of .NET Framework 2.0 is complete, the 9768 SMART SITE UTILITY PRO installation dialog box opens.

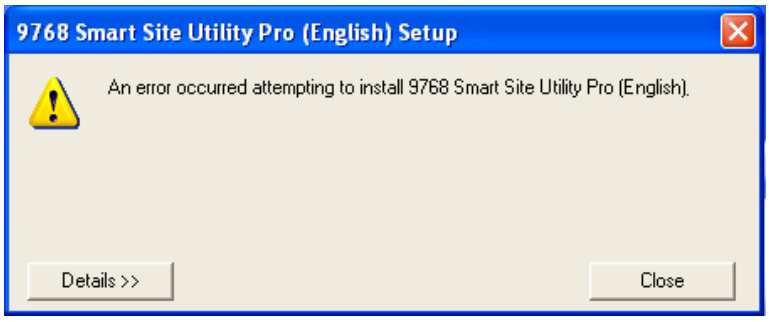
❖ Go to 6 (P. 6)

If the following screen opens instead of the 9768 SMART SITE UTILITY PRO installation dialog box, click [Yes] to restart the computer.

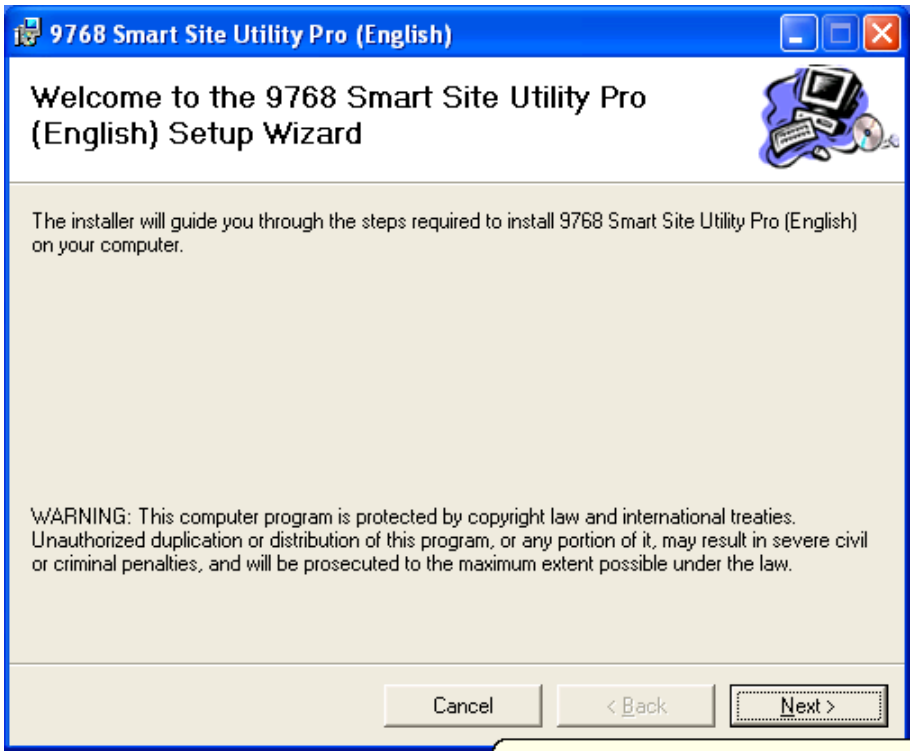


After restarting, installation continues automatically.

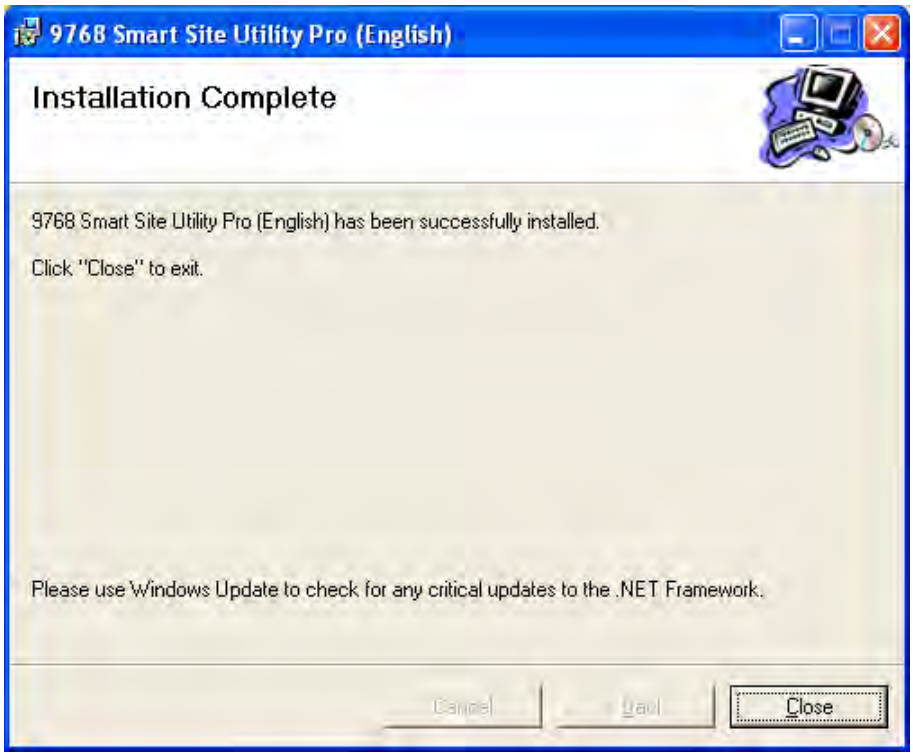
If the installation is not restarted and the following message appears, execute Setup.exe again.
When it is executed again, the 9768 SMART SITE UTILITY PRO installation dialog box opens.



5. **Install 9768 SMART SITE UTILITY PRO.**
Click [Next] and follow the on-screen instructions to install.



6. **When the following screen appears, installation is complete.**



Overview 2

2.1 Main Functions

The Smart Site Utility has the following functions.

Make communication settings for communication modules and measurement parameter settings for measurement modules

Measurement value monitoring

Monitor windows placed on the background screen allow monitoring close to the actual image.

Trend graph display

Monitor values can be represented as a trend graph.

Data recording and acquisition

The utility can control the recording function of measurement modules, for periodic acquisition of data at specified intervals.

Viewing recorded data and alarm data (Smart Site Viewer)

You can view collected recorded data and alarm data as a table or a graph. You can also print out the graph. Also, table data can be output to Microsoft Excel, and then output as a CSV file.

Create report (Smart Site Viewer)

Using Microsoft Excel, daily and monthly reports can be created, using a format file as a template.

Alarm

When an alarm is triggered, an alarm log pop-up display and an alarm sound can be generated.

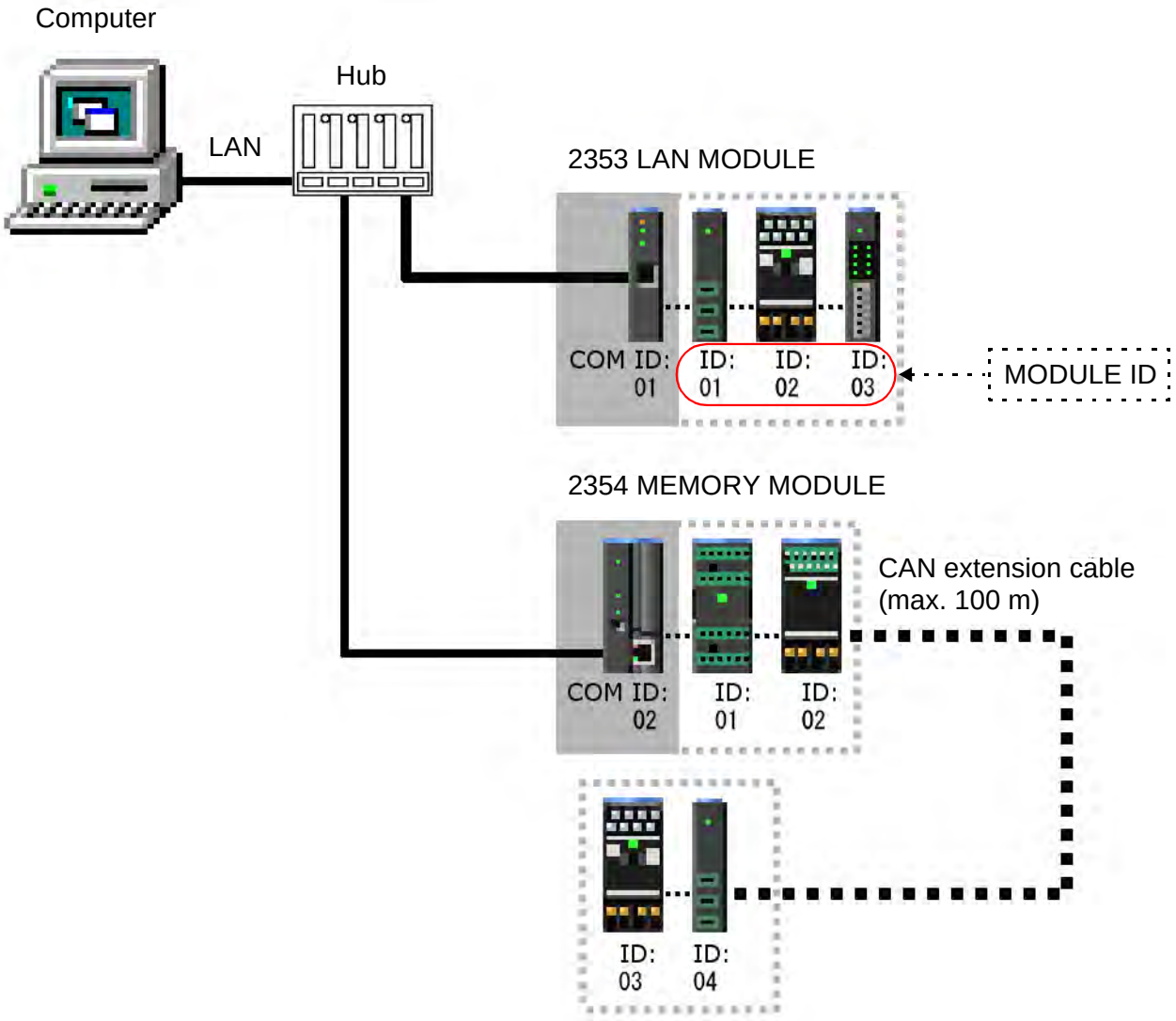
Operation with a CF card

By using a 2354 Memory Module CF card, this can record operations off line.
Also, data stored on a CF card can be read and viewed by computer card readers or files downloaded by connecting to FTP.

2.2 System Configuration Diagram

System example 1.....LAN system

❖ 3.1.2 "Setting the LAN system" (page 13)



COM ID of communication module*1

- Set within the range 01 to 89.
- In one module list, set a COM ID that is not duplicated.
- If the module list is different, duplicate ID settings are allowed.

MODULE ID of measurement module*2

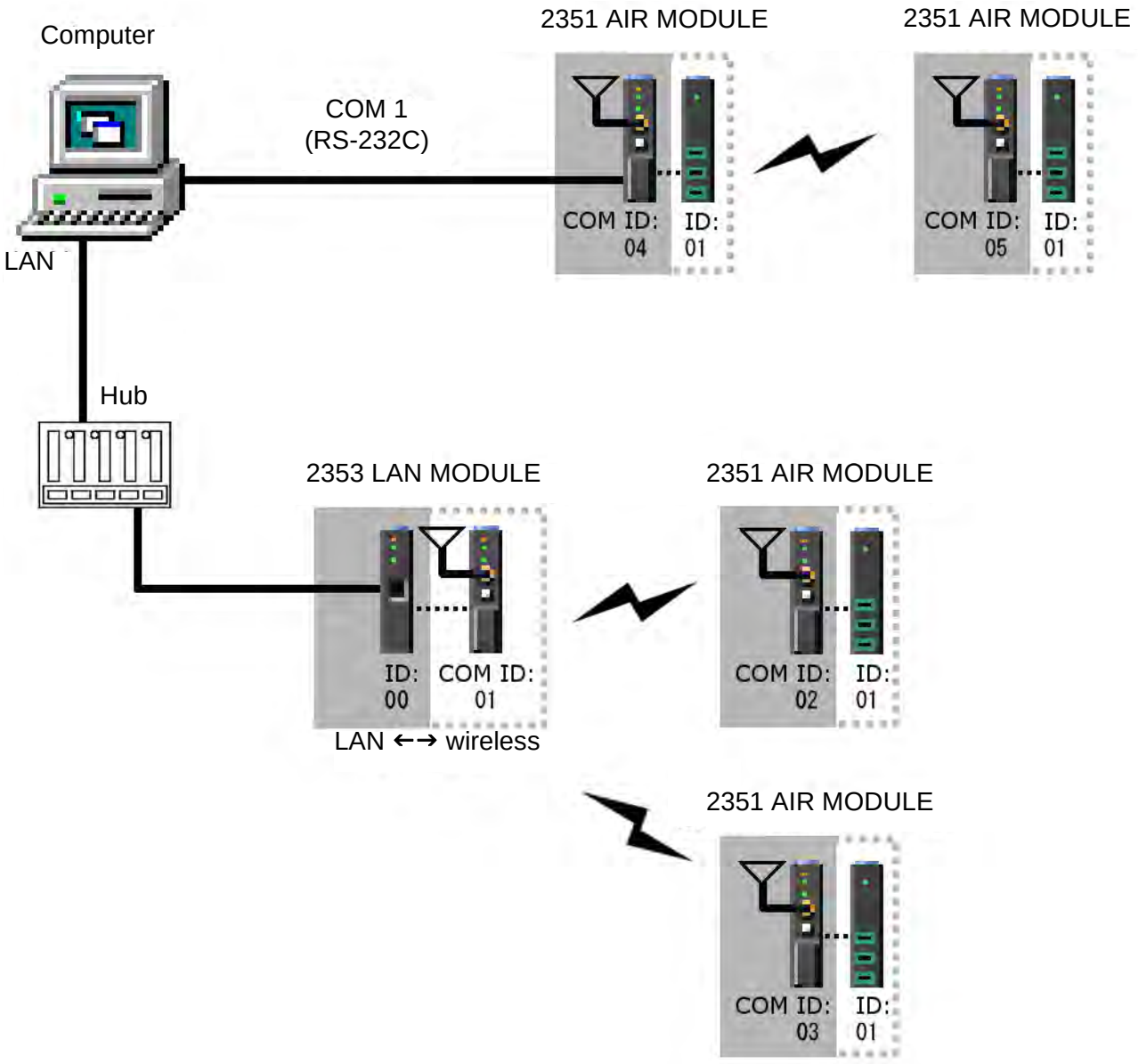
- Set within the range 01 to 63.
- Make sure that there are no duplicate MODULE ID settings within the same CAN bus.
- If the communication module is different, duplicate MODULE ID settings are allowed.

*1 Communication module : Collective name for 2351 Air Module, 2352 Wire Module, 2353 LAN Module,2354 Memory Module

*2 Measurement module : Collective name for 2301 Humidity Module to 2305 Instrumentation Module, 2306 Multifunction Module, 2331 Power Meter Module, 2332 Power Meter Module, 2341 Input Module, 2342 Output Module, 2343 RS Link Module

System example 2.....Wireless system

❖ 3.1.3 "Setting the Wireless system" (page 24)



When converting LAN ←→ wireless, the [2353] LAN MODULE and the [2351] AIR MODULE are connected within the same CAN bus. Set the [2353] LAN MODULE COM ID to 00.

- Make the ID setting with the rotary switches on the rear of the module.
- When the POWER LED of a module flashes in red, MODULE ID duplication has been detected within the CAN bus. Change the settings so that all MODULE IDs in the same CAN bus are unique.
- In system configuration diagrams in this Instruction Manual, the power source and the module base have been left out.
- If the POWER LED on each measuring module flashes yellow, the sensor may not be connected or no signal has been input. In this status, continue setting the measurement systems.

2.2 System Configuration Diagram

Operation (Basics) 3

3.1 Initial Settings for the Measurement System

This section describes the procedure for making only the settings that are required for communication, and using auto recognition for the measurement modules.

General procedure

1. Start the MAP editor. ❖ 3.1.1 (page 12)

2. Edit the system you actually want to construct on the MAP editor. Using the communication module only for editing is fine. At this point, enter the initial settings for the communication module.

3. Each communication module is connected to the computer and the initial settings are sent.

4. Setup the module in the installation position, and construct the system.

5. Check communication, and measurement modules installed are automatically recognized. ❖ 3.1.4 (page 42)

6. Set the measurement conditions.
(Initial settings for the measurement module) ❖ 3.2 (page 44)

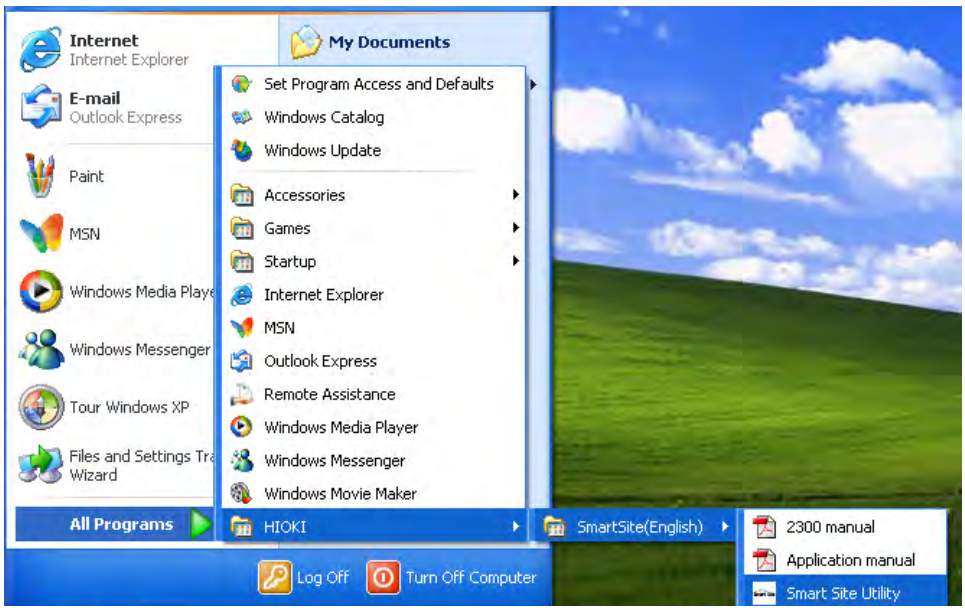
3.1.1 Starting MAP Editor

To use 2300 Smart Site, you need to enter the system configuration (module configuration) into the computer.
To do this, start the Smart Site Utility MAP editor.

- In the MAP editor, you can build the entire module configuration including measurement modules.
- For a simple, you enter the intended module configuration into the computer by making settings only for the communication module and using auto recognition for the other modules.

Procedure

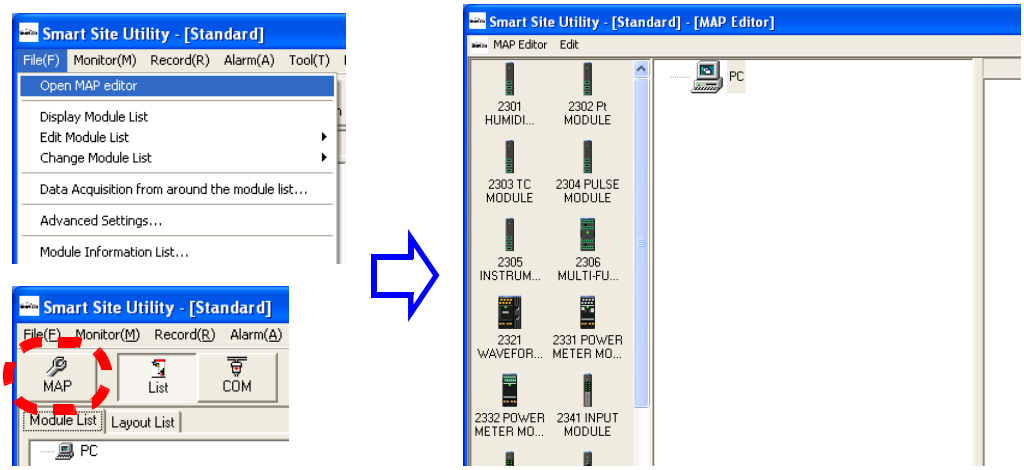
1. **Start the Smart Site Utility.**
Select [Start] - [All Programs] - [HIOKI] - [SmartSite] - [Smart Site Utility].
The illustration below shows an example for starting the Smart Site Utility in Windows XP.



2. **From the menu bar, select [File] - [Open MAP Editor] to open the MAP editor.**

You can also open the MAP editor by selecting [MAP] from the toolbar.

Serect either

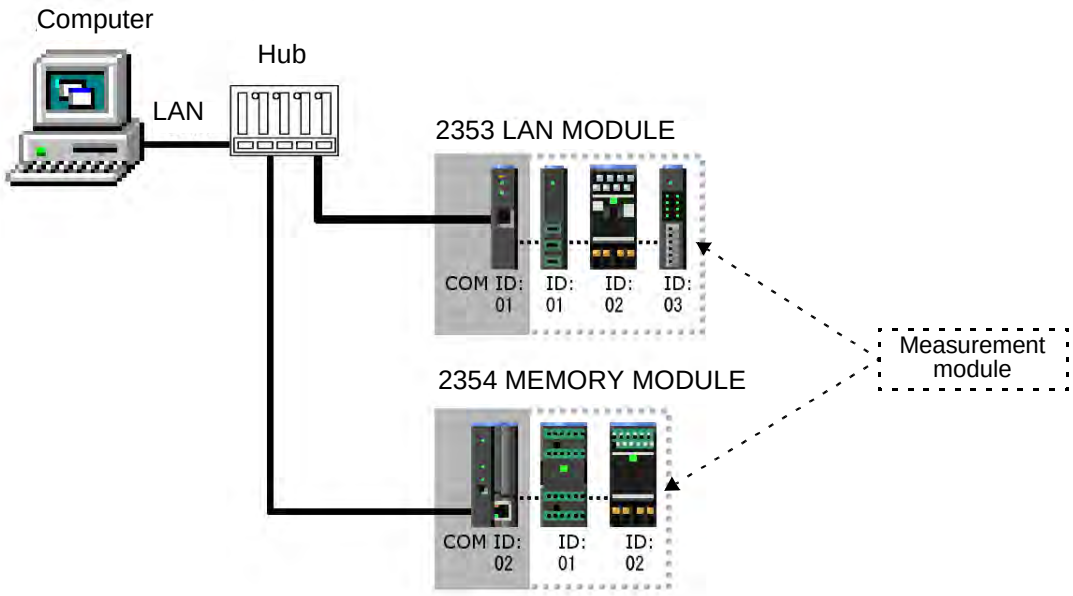


3.1.2 Setting the LAN system

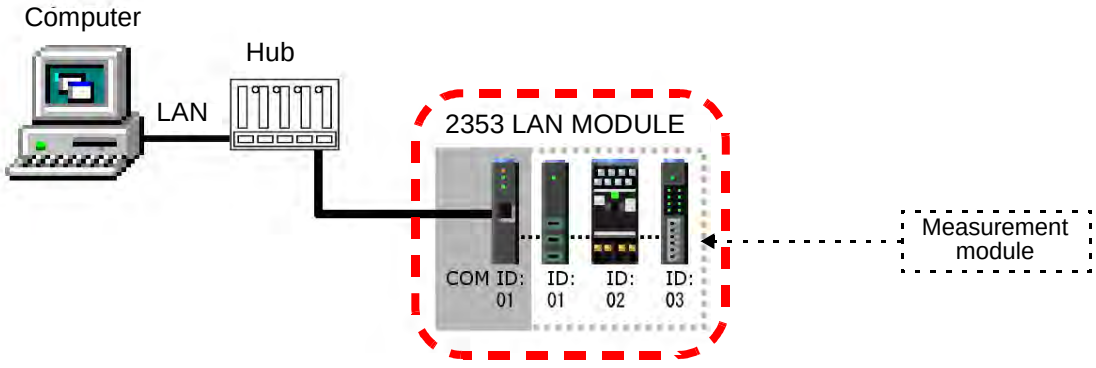
This section describes how to configure a LAN-based system

(1) Configuring initial settings for a LAN-based system

This description explains how to set up the following example setup:

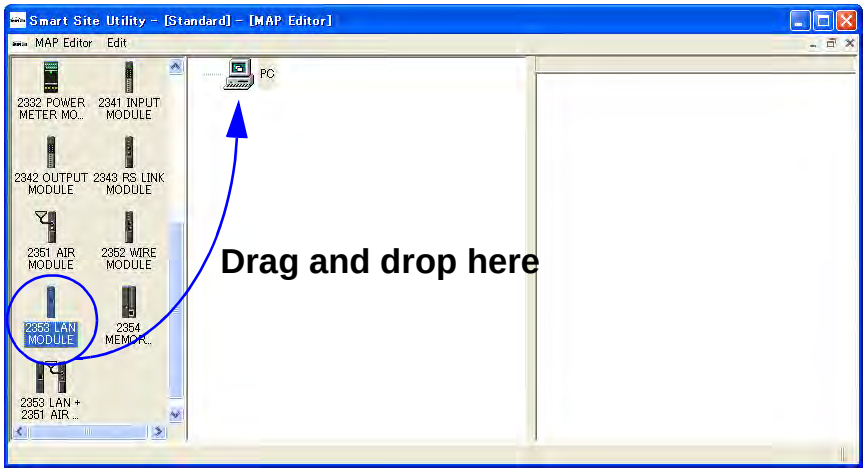


[2353] LAN MODULE addition, initial settings



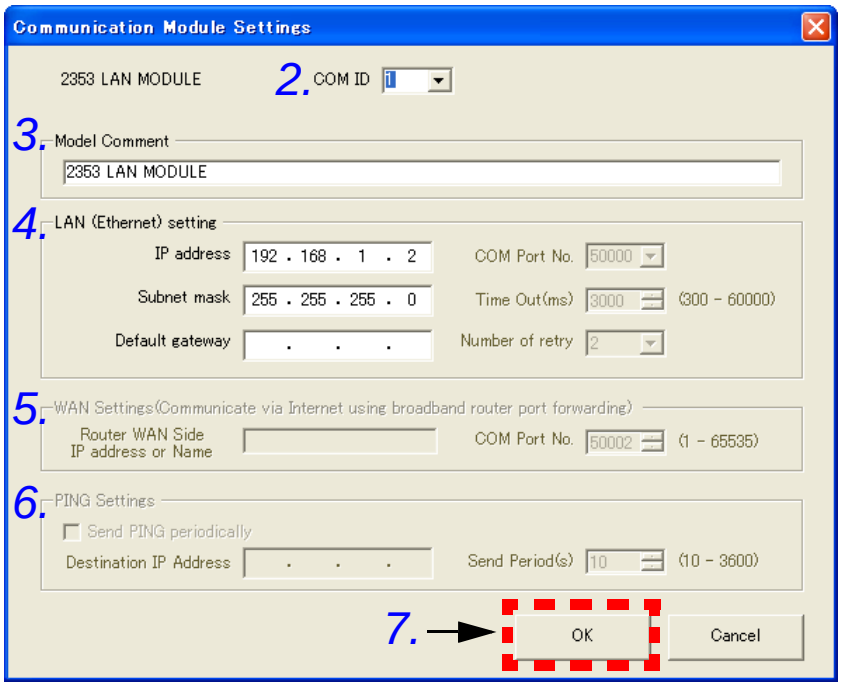
Procedure

1. **Add [2353] LAN MODULE for COM ID:1.**
Drag [2353 LAN Module] from the module icon section on the left side of the screen and drop it onto the [PC] icon in the center.



Right-click on [Computer] to access the popup menu, and then select [Add] - [2353 LAN MODULE] to make the same settings.

The [**Communication module settings**] dialog box appears.



2. **Verify that [COM ID] is set to [1].**

- An empty ID is automatically assigned to the COM ID field.
- Any number can be set as long as it does not duplicate other communication modules and IDs.
- Set the rotary switch for the LAN Module to this ID before sending initial settings.

3. **The [Model Comment] field serves for identifying the communication module to distinguish it from other modules. Enter a comment string here that is meaningful and easy to understand.**

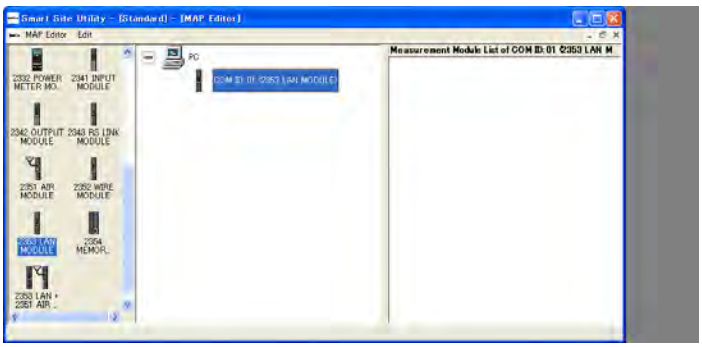
4. **In the [LAN (Ethernet) setting] fields, enter the IP address, subnet mask, and default gateway.**

- For information on how to set these items, consult the network administrator.
- When no default gateway is used, this field may be left blank.

5. **When a LAN module enters an Internet environment through a broadband router, set [WAN Settings].**
A WAN global IP address for a broadband router to which a LAN module is connected is set to [Router WAN IP address].
[WAN Settings] can be changed when [Advanced Settings] is enabled.
❖ 4.6.5 "Advanced Communication Settings" (page 204)

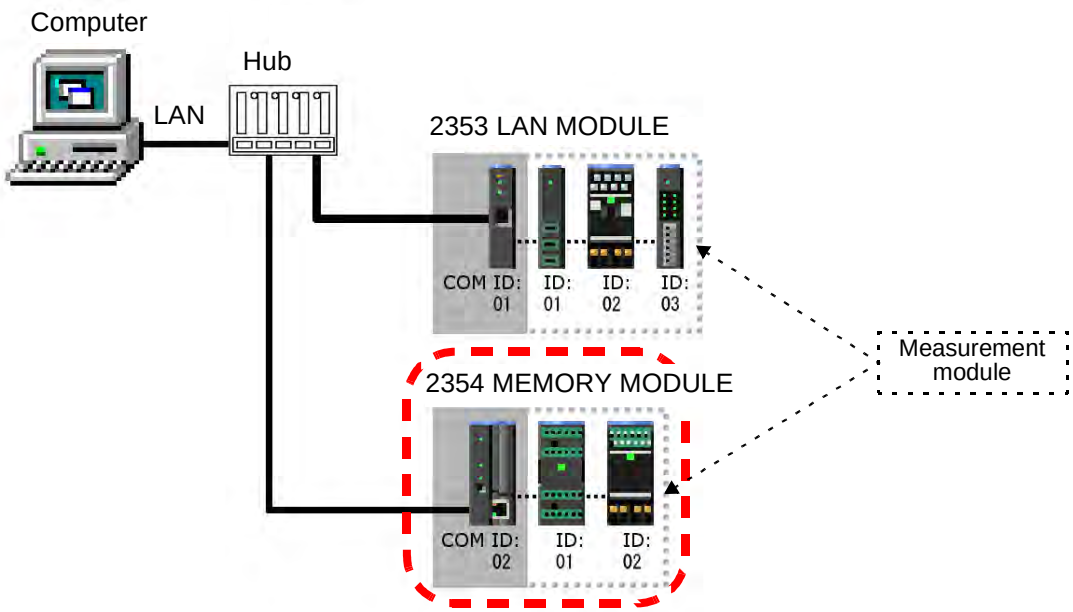
6. **[PING Send Settings] are set so that a ping is regularly sent to the IP address specified from the LAN module.**
Click ☐ from [Send Regular PING], to set the [Destination IP Address] and [Send Period(s)].
[PING Send Settings] can be changed when [Advanced Settings] is enabled.
❖ 4.6.5 "Advanced Communication Settings" (page 204)

7. **Click [OK].**
The computer and [COM ID:01(2353 LAN Module)] are now connected.



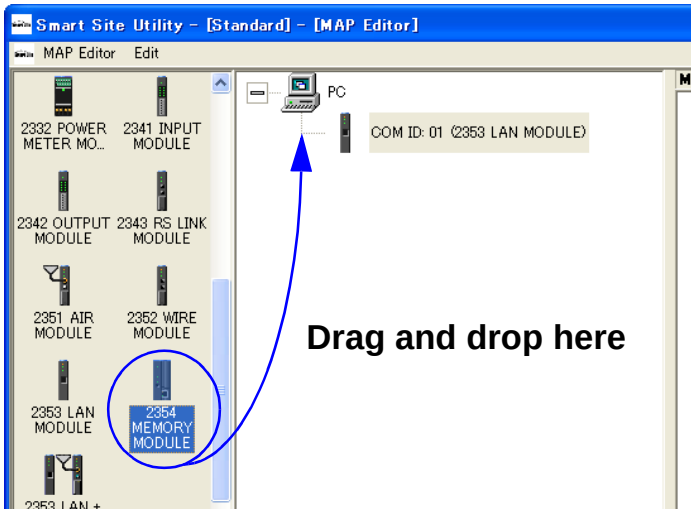
Next [2354] **Memory Module** is added and initialized.

[2354] Memory Module addition, initial settings



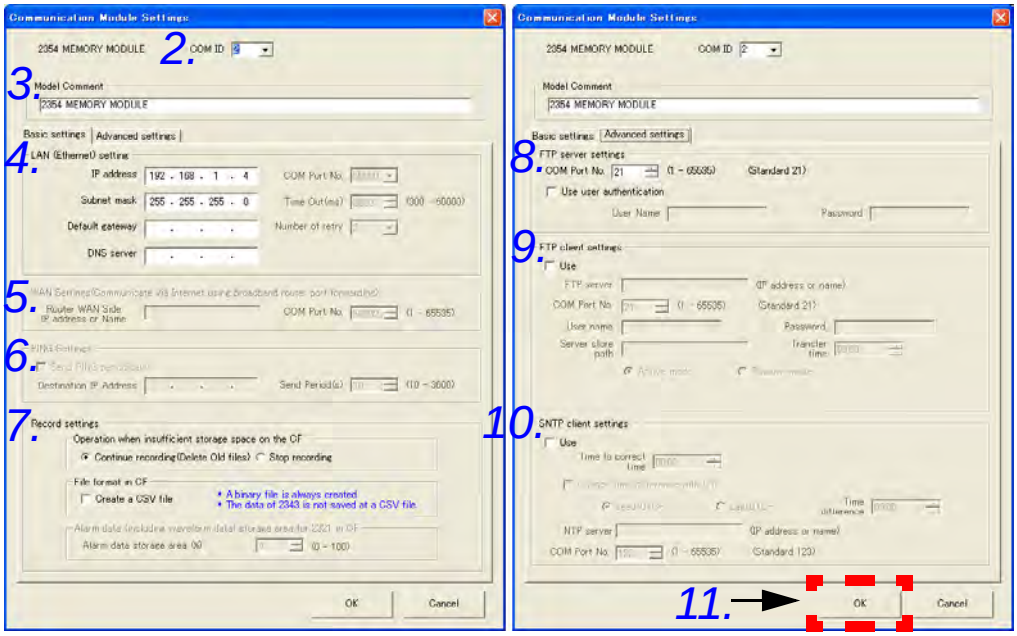
Procedure

1. **Add [2354] Memory Module for COM ID:2.**
Drag [2354 Memory Module] from the module icon section on the left side of the screen and drop it onto the [PC] icon in the center.



Right-click on [Computer] to access the popup menu, and then select [Add] - [2354 Memory Module] to make the same settings.

The [**Communication Module Settings**] dialog box appears.



2. **Verify that [COM ID] is set to [2].**

- An empty ID is automatically assigned to the COM ID field.
- Any number can be set as long as it does not duplicate other communication modules and IDs.
- Set the rotary switch for the Memory Module to this ID before sending initial settings.

3. **The [Model Comment] field serves for identifying the communication module to distinguish it from other modules. Enter a comment string here that is meaningful and easy to understand.**

4. **In the [LAN (Ethernet) setting] fields, enter the IP address, subnet mask, and default gateway.**

For information on how to set these items, consult the network administrator.
When no default gateway is used, this field may be left blank.

5. **When a Memory Module enters an Internet environment through a broadband router, set [WAN Settings].**
A WAN global IP address for a broadband router to which a Memory Module is connected is set to [Router WAN IP address].
[WAN Settings] can be changed when [Advanced Settings] is enabled.
❖ 4.6.5 "Advanced Communication Settings" (page 204)

6. **[PING Send Settings] are set so that a ping is regularly sent to the IP address specified from the Memory Module.**
Click ☐ from [Send Regular PING], to set the [Destination IP Address] and [Send Period(s)].
[PING Send Settings] can be changed when [Advanced Settings] is enabled.
❖ 4.6.5 "Advanced Communication Settings" (page 204)

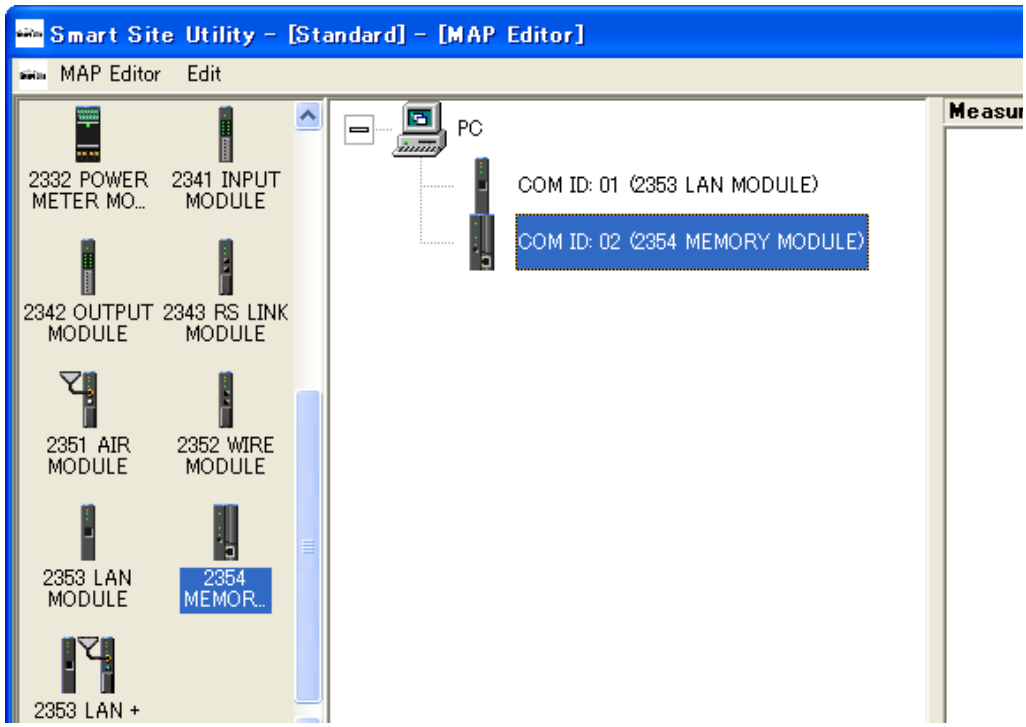
7. **In [Record settings], set the recording method for individual memory modules.**
When [Continue recording] is set from [Operation when insufficient storage space on the CF], old files are deleted one by one when there is insufficient storage space on the CF card.
When [Stop recording] is set, recording stops but files are not deleted.
When [Create a CSV file] is set from [File format in CF], in addition to the binary format file, a CSV file for viewing and editing in Excel etc. is created at the same time.

8. **In [FTP server settings], set the authentication method for the FTP connection to the memory module.**
Click ☐ from [Perform user authentication], to set the [User name] and [Password] when connecting to an FTP.
❖ 6.4 "Collecting Recorded Data with FTP" (page 252)

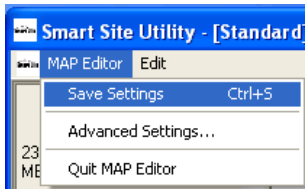
9. **In [FTP client settings], set the function that automatically sends the recorded data of the memory module to the FTP server once a day.**
Click ☐ from [Use], to input the [FTP server], [User name], [Password], [Server store path] and [Transfer time] and to select the [Active mode] or [Passive mode].
❖ 6.5 "Sending Recorded Data Automatically by the FTP Client" (page 256)

10. **In [SNTP client settings], set the function that corrects the time of memory module with NTP server once a day.**
Click ☐ from [Use], to set the [Time to correct time], [Time difference with UTC], [NTP server] and [COM port].
❖ 6.6 "Time Correction by SNTP Client." (page 258)

11. Click [OK].
The computer and [COM ID:02(2354 Memory Module)] are now connected.



This completes initial settings on the MAP editor.
Save the settings you created.



Next, the initial settings are sent to each communication module.

(2) Sending LAN system settings

Sending settings to [2353] LAN Module, [2354] Memory Module

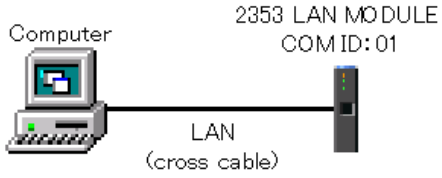
Initial settings are sent to [COM ID:01 (2353 LAN Module)] or [COM ID:02 (2354 Memory Module)]. Send via LAN.
The following is the setting procedure for the LAN module. Send settings to the memory module in the same way.

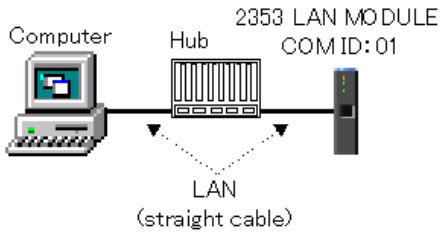
Procedure

1. **The COM ID for the LAN Module is set to 01.**
(Set with the rotary switch on the rear of the module)

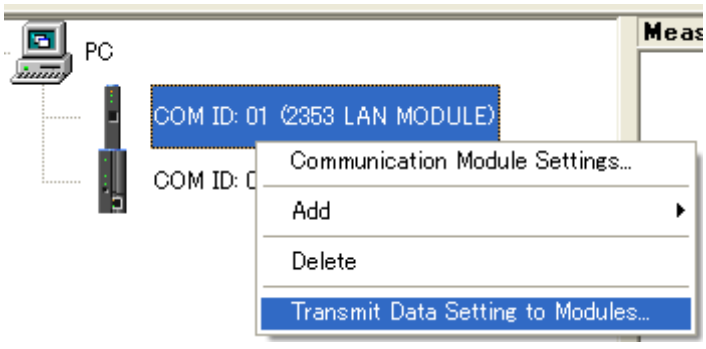
2. **Connect the power supply module and 2353 LAN Module to the module base, and turn power on.**

3. **Connect the LAN module with the computer by a cross cable or a straight cable via a hub, and then turn on the power to the LAN Module.**

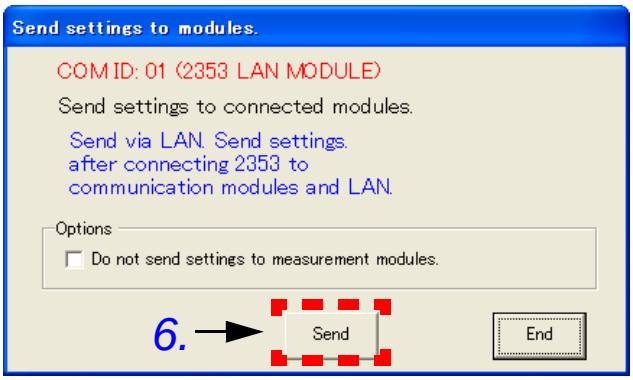




4. **In the MAP editor, select [COM ID: 01 (2353 LAN Module)] and right-click to access the popup menu. Then select [Transmit Data Setting to Modules].**



5. **The following [Transmit Data Setting to Modules].**



6. **Click the [Send] button to initiate the transmission.**

7. **When the settings have been sent, the message [Settings sent.] appears. Verify that the procedure was successful, and click the [OK]- [End] button to close the dialog box.**

When the settings are sent, the internal clock of the module will be set to the same time as the clock of the computer.

Note

When the IP address for the network address set in the LAN module and for each computer (network group) is different, the following dialog box opens.

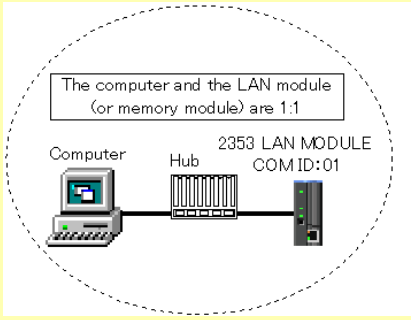
This means that after successfully setting the IP address for the LAN module, a communication test was carried out between the computer and the LAN module, but communication was not possible because the network group is different.
The LAN module settings are successfully completed.

If an error occurs

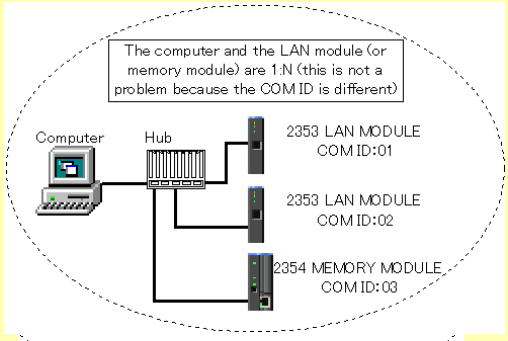
If the following dialog box opens, sending the initial settings has failed. Check the following items and then try again.

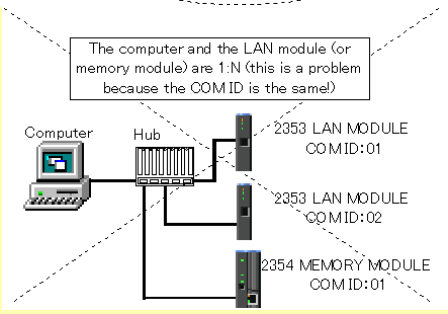
- Is the COM ID of the 2353 LAN Module correct? (Is the same number for COM ID set in the MAP editor?) ❖ 1. (Page 21) 2.(Page 29)
- Was the sending process attempted while the 2353 LAN Module was still in the initialization phase (about 10 seconds immediately after power-up, about 20 seconds for the memory module)?
  Please send settings after initialization.

- One LAN module and computer on the network: They must be set up in a one-to-one relationship. If the router is exceeded, settings cannot be sent.
  If the settings are sent to the wrong COM ID when using multiple LAN modules or memory modules, a malfunction will occur.
  Be careful not to make a mistake in the COM ID when using multiple LAN modules or memory modules.



- In this example, because no measurement modules are set, it does not matter whether or not the [Options] check box is selected.
- When the settings are sent, the internal clock of the LAN module or the memory module will be set to the same time as the clock of the computer.





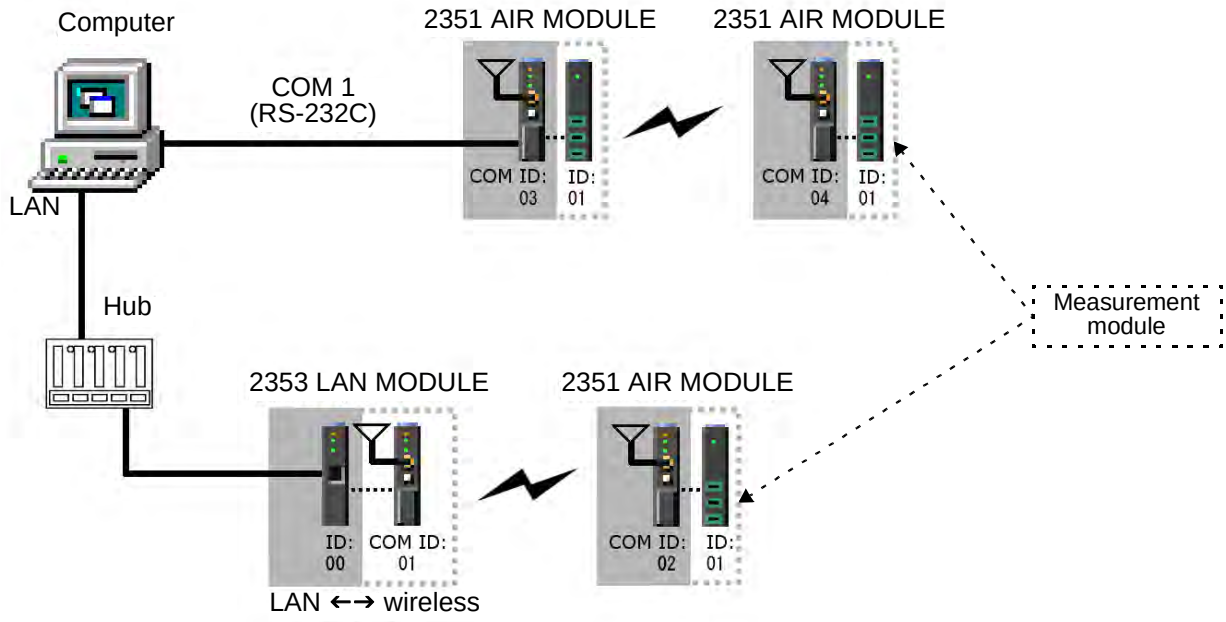
This completes sending settings to the LAN MODULE for COM ID:1.

3.1.3 Setting the Wireless system

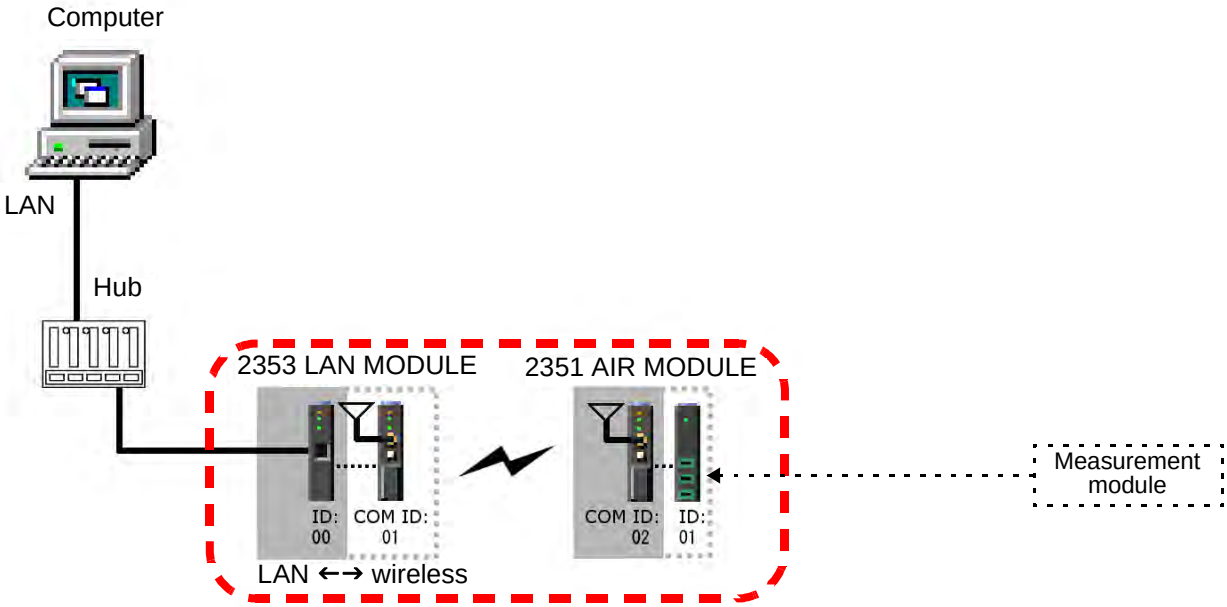
This section describes how to set up a wireless system.

(1) Configuring initial settings for a wireless system

This description explains how to set up the following wireless system:

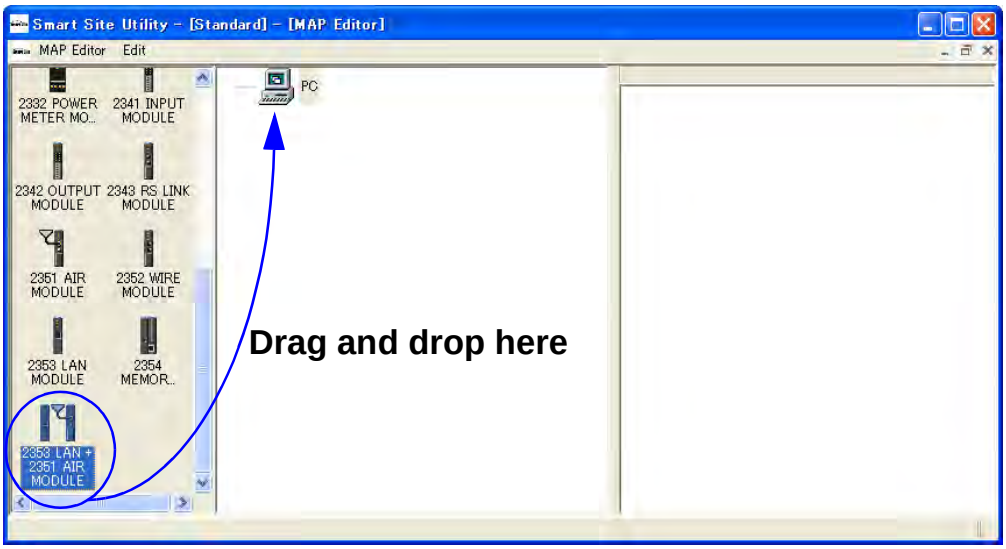


LAN←→Wireless conversion ([2353] LAN Module +[2351]AIR Module) Eaddition, initial settings



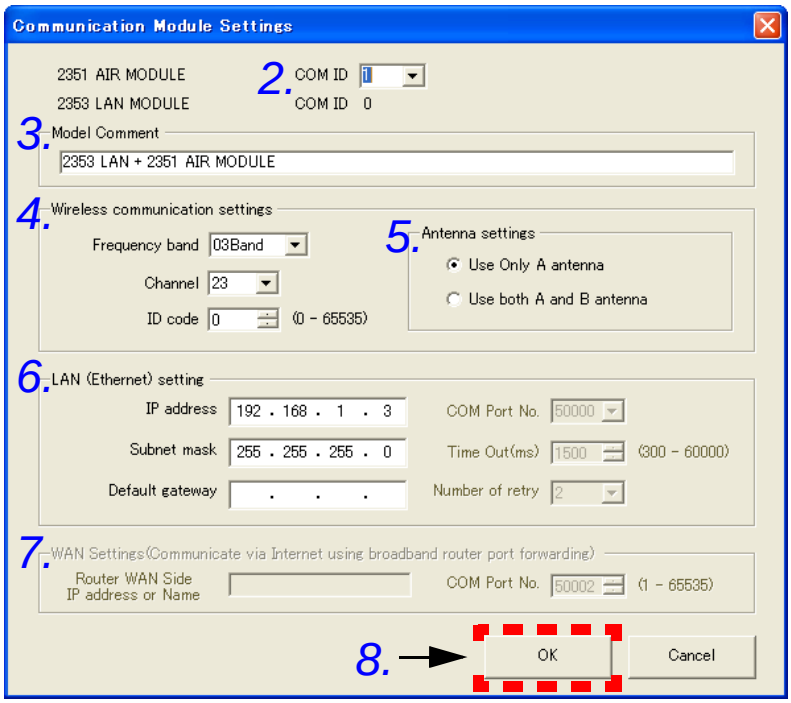
Procedure

1. **Drag [2353LAN+2351 Air Module] from the module icon section on the left side of the screen and drop it onto the [PC] icon in the center.**



Right-click on [Computer] to access the popup menu, and then select [Add] - [2353LAN + Air Module] to make the same settings.

The [**Communication Module Settings**] dialog box appears.



2. **Verify that [COM ID] is set to [1].**

An empty ID is automatically assigned to the COM ID field.

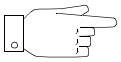
- Any number can be set as long as it does not duplicate other communication modules and IDs.
- Set the rotary switch for the LAN Module to this ID before sending initial settings.
  (The LAN module ID is set to [0])

3. **The [Model Comment] field serves for identifying the communication module to distinguish it from other modules. Enter a comment string here that is meaningful and easy to understand.**
(20 characters or less)

4. **In the [Air Module settings] section, select the frequency band, frequency channel, and ID code. You may initially want to leave these settings in the default condition.**

5. **In the [Antenna settings] section, select the [Use both A and B antennae] button only when two antennas are used.**

6. **In the [LAN (Ethernet) setting] fields, enter the IP address, subnet mask, and default gateway.**



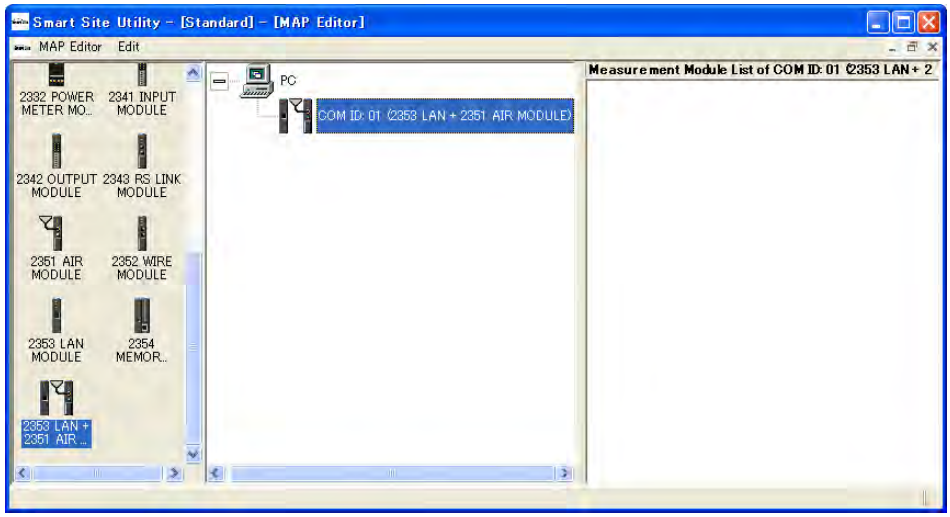
- For information on how to set these items, consult the network administrator.
- When no default gateway is used, this field may be left blank.

7. **When a LAN module enters an Internet environment through a broadband router, set [WAN Settings].**
A WAN global IP address for a broadband router to which a LAN module is connected is set to [Router WAN IP address].
[WAN Settings] can be changed when [Advanced Settings] is enabled.

❖ 4.6.5 "Advanced Communication Settings" (page 204)

8. Click [OK].

The computer and [COM ID:01(2353 LAN + 2351 Air Module)] are now connected.

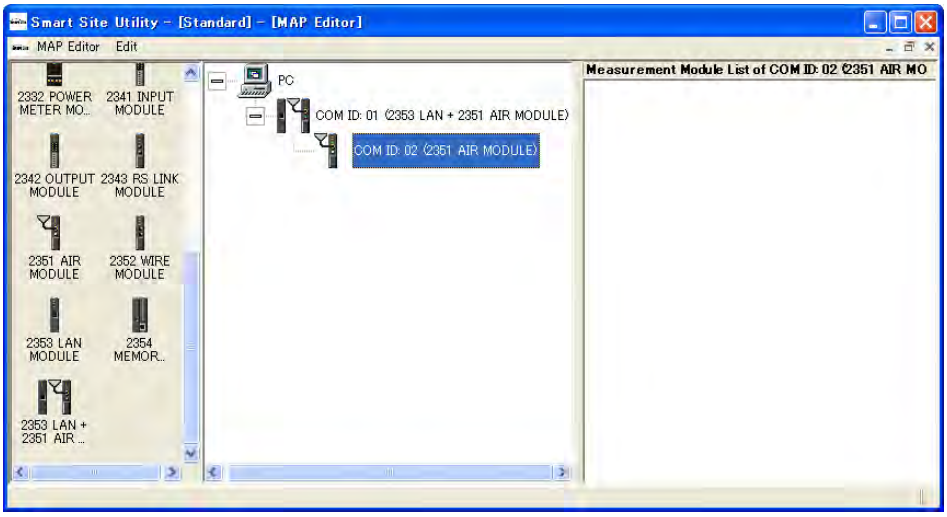


9. Next, connect to the [COM ID: 02 (2351 Air Module)].

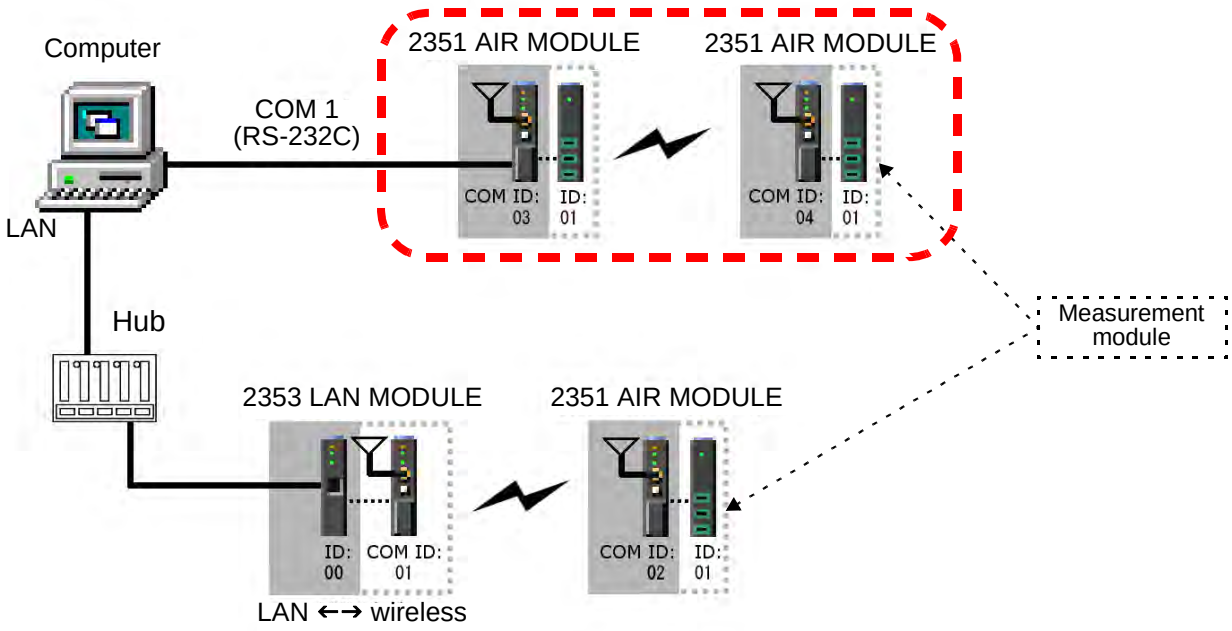
2353+51complete1.pngUse the same procedure as described for step 1.

- The drop target icon is [**COM ID 01(2353 LAN + 2351 Air Module)**] (because Air Module occurs via the [**COM ID 01(2353 LAN + 2351 Air Module)**.)
- [**COM ID**] of [**Communication Module Setting**] should be set to [**2**].
- The same settings as the current highest level Air Module are automatically assigned for the frequency band, frequency channel, and ID code.

The computer and the [**COM ID: 01 (2353 LAN + 2351 Air Module)**] and [**COM ID: 02 (2351 Air Module)**] are connected.



[2351] Air Module addition, initial settings

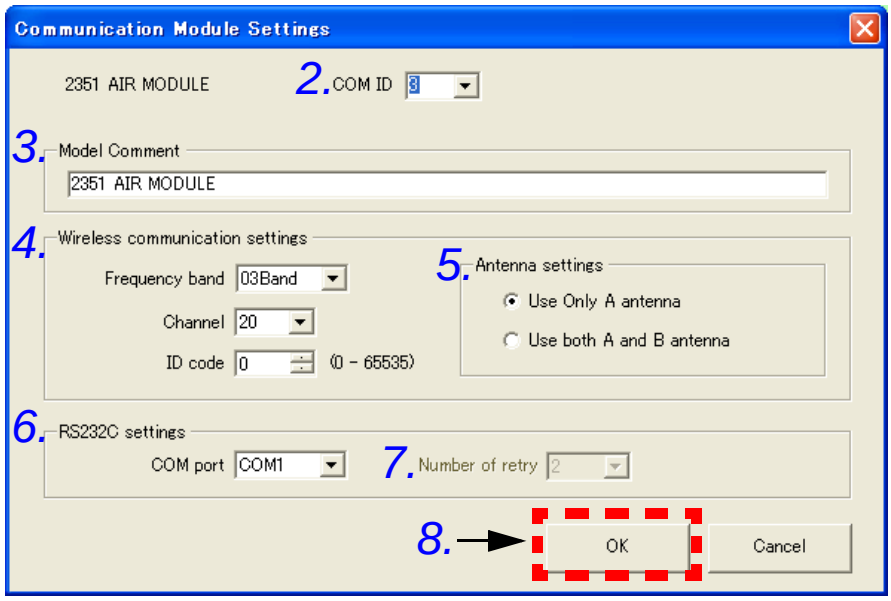


Procedure

1. **Add [2351] Air Module for COM ID:3.**
Drag [2351 Air Module] from the module icon section on the left side of the screen and drop it onto the [PC] icon in the center.

Right-click on [Computer] to access the popup menu, and then select [Add] - [2351 Air Module] to make the same settings.

The [Communication Module Settings] dialog box appears.



2. Verify that [COM ID] is set to [3].

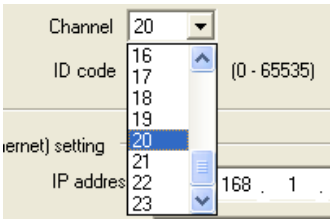
- An empty ID is automatically assigned to the COM ID field.
- Any number can be set as long as it does not duplicate other communication modules and IDs.
- Set the rotary switch for the Air Module to this ID before sending initial settings.

3. The [Model Comment] field serves for identifying the communication module to distinguish it from other modules. Enter a comment string here that is meaningful and easy to understand.

(20 characters or less)

4. In [Air Module settings] set the frequency band, frequency channel, and the ID code.

Because a different wireless system already exists in the system constructed in this manual (COM ID:1 and COM ID:2 Air Module...frequency channel 23), it is necessary to set a frequency channel other than 23 to prevent wireless interference.



5. In the [Antenna settings] section, select the [Use both A and B antennae] button only when two antennas are used.

6. In the [RS-232C setting] - [COM port] field, select the COM port to be used for RS-232C communication.

7. **For [Retry Frequency], if a communication error occurs in RS-232C communication, reset the communication retry frequency. [Retry Frequency] can be changed when [Advanced Settings] is enabled.**

❖ 4.6.5 "Advanced Communication Settings" (page 204)

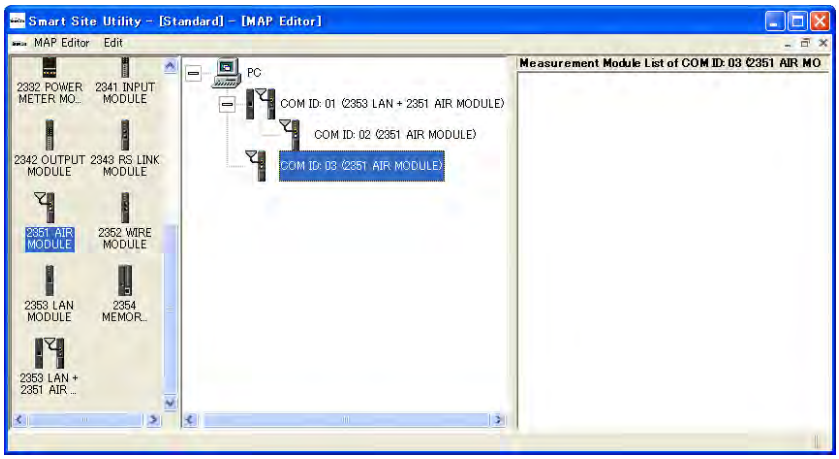
8. **Click [OK].**

About Air Module

- The [Frequency band] and [Channel] settings determine the frequency that will be used for Air Module.
- Even if the wireless frequency matches, no communication is possible between two devices if the [ID code] setting is not matched, or the frequency is occupied. Verify the [ID code], or change the wireless frequency.

❖ Appendix 4 "Wireless Transmission Stages" (page 306)

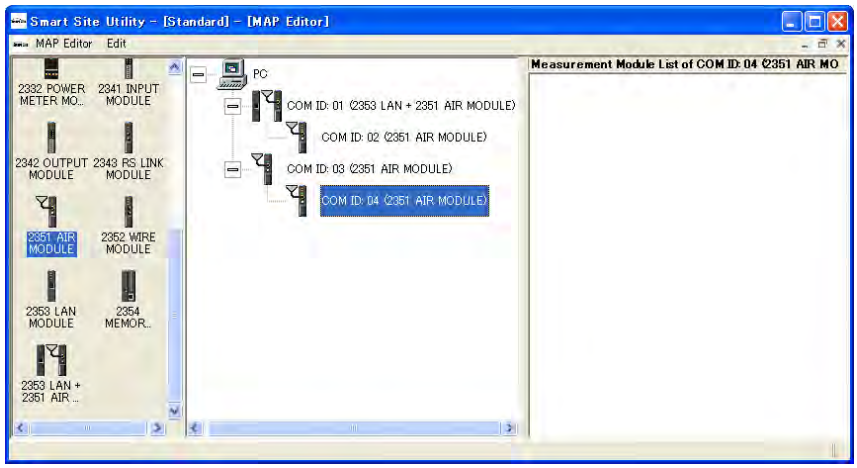
The computer and [**COM ID: 03 (2351 Air Module)**] are now connected.



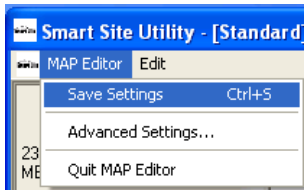
9. **Next, connect to the [COM ID: 04 (2351 Air Module)].**
Use the same procedure as described for step 1.

- The drop target icon is [COM ID 03 (2351 Air Module)] (because Air Module occurs via the [COM ID 03 (2351 Air Module)].
- [COM ID] of [Communication Module Setting] should be set to [4].
- The same settings as the current highest level Air Module are automatically assigned for the frequency band, frequency channel, and ID code.

The computer and the [**COM ID: 03 (2351 Air Module)**] and [**COM ID: 04 (2351 Air Module)**] are connected.



This completes Air module initial settings on the MAP editor.
Save the settings you created.



Next, the initial settings are sent to each communication module.

(2) Sending wireless system settings

Sending settings to LAN ←→ Wireless conversion ([2353] LAN Module + [2351] Air Module)

Initial settings are sent to [COM ID:00 (2353 LAN MODULE)] or [COM ID:01 (AIR MODULE)]. Send via LAN.

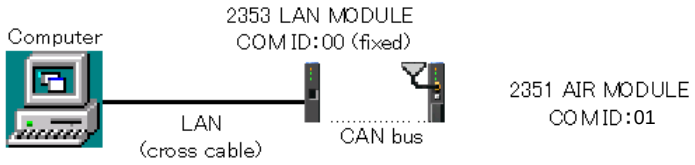
Procedure

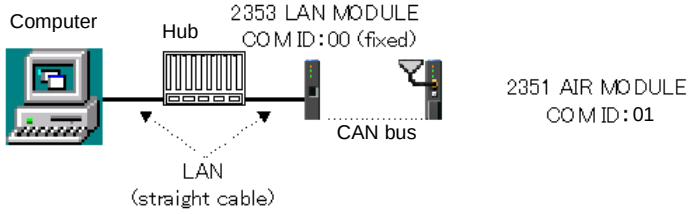
1. **The COM ID for the LAN MODULE is set to 00 and the COM ID for the Air Module is set to 01.**
(Set with the rotary switch on the rear of the module)

For LAN ←→ wireless conversion, make sure you adjust the COM ID for the LAN module to 00.

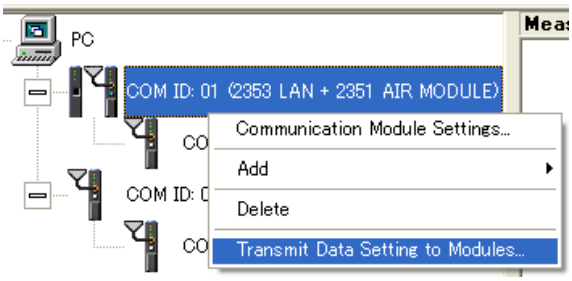
2. **Connect the power supply module and LAN Module, Air Module to the module base, and turn power on.**

3. **Connect the LAN Module with the computer by a cross cable or a straight cable via a hub, and then turn on the power to the LAN Module and Air Module.**

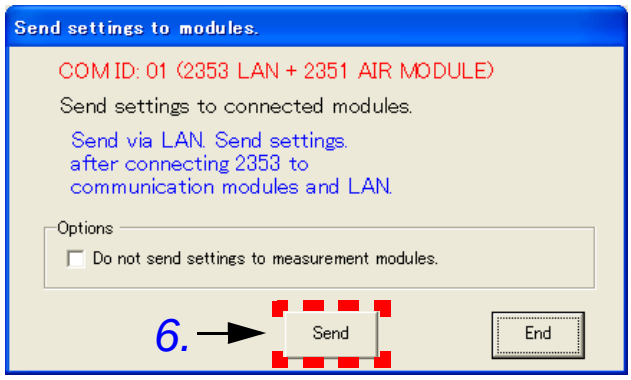




4. **In the MAP editor, select [COM ID: 01 (2353 LAN Module+2351 Air Module)] and right-click to access the popup menu. Then select [Transmit Data Setting to Modules].**



5. **The following [Transmit Data Setting to Modules].**



6. **Click the [Send] button to initiate the transmission.**

7. **When the settings have been sent, the message [Settings sent.] appears. Verify that the procedure was successful, and click the [OK]- [End] button to close the dialog box.**

When the settings are sent, the internal clock of the module will be set to the same time as the clock of the computer.

Note

When the IP address for the network address set in the LAN module and for each computer (network group) is different, the following dialog box opens.

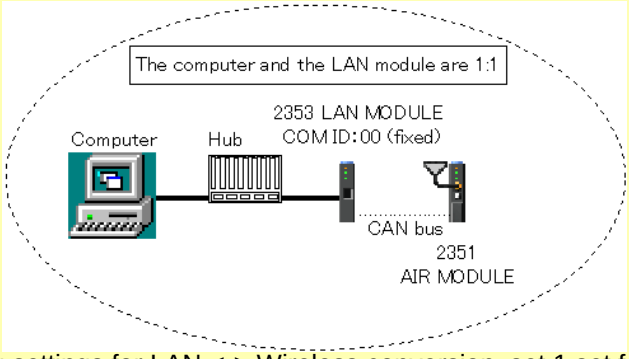
This means that after successfully setting the IP address for the LAN module, a communication test was carried out between the computer and the LAN module, but communication was not possible because the network group is different.
The LAN module settings are successfully completed.

If an error occurs

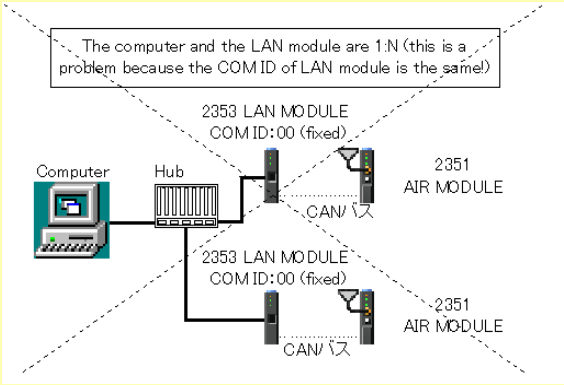
If the following dialog box opens, sending the initial settings has failed. Check the following items and then try again.

• Is the COM ID of the 2353 LAN Module correct? (Is the same number for COM ID set in the MAP editor?)	❖ 1. (Page 32) 2.(Page 26)
• Is the 2353 LAN Module COM ID set to 00?	
• Was the sending process attempted while the 2353 LAN Module was still in the initialization phase (about 10 seconds after power-on)? Please send settings after initialization.	

On the network, the LAN Module and computer must be set up in a one-to-one relationship
One LAN module and computer on the network: They must be set up in a one-to-one relationship. If the router is exceeded, settings cannot be sent



When sending settings for LAN <-> Wireless conversion, set 1 set for each.
When connected to more than two sets on LAN, settings cannot be sent.



- In this example, measurement module setup is not performed. Therefore the check/uncheck status of [**Options**] has no effect.
- When the settings are sent, the internal clock of the module will be set to the same time as the clock of the computer.

This completes the process of sending settings to the 2353 LAN MODULE with COM ID: 00 and the 2351 WIRELESS MODULE with COM ID: 01.

8. Next, send the settings to [COM ID:02 (2351 Air Module)].

Send the settings by following the same procedure as procedure 1.(Page 36) to 8.(Page 38).
(Set the COM ID for the Air Module to [2])

Sending settings to [2351] Air Module

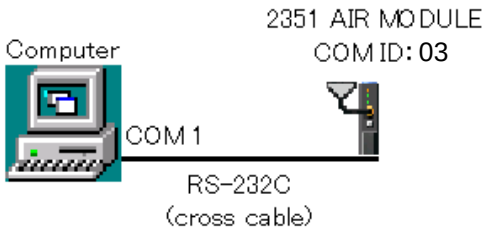
Send initial settings to [COM ID:03 (2351 Air Module)]. Send via RS-232C.

Procedure

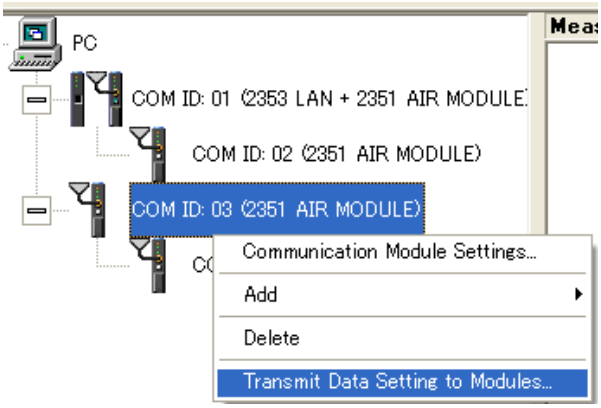
1. **The COM ID for the Air Module is set to 03.**
(Set with the rotary switch on the rear of the module)

2. **Connect the power supply module and Air Module to the module base, and turn power on.**

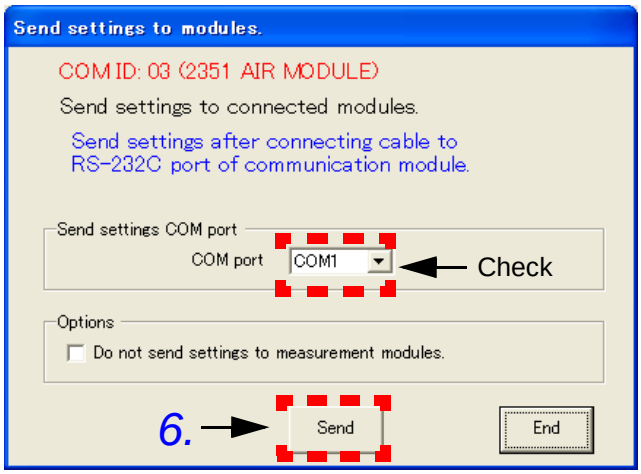
3. **Use LAN cable as shown in the illustration below to connect the 2353 LAN Module to the computer. The settings will be sent via the hub on the LAN.**



4. **In the MAP editor, select [COM ID: 03 (2353 LAN Module)] and right-click to access the popup menu. Then select [Transmit Data Setting to Modules].**



5. The following [Transmit Data Setting to Modules].



6. Check that the COM port settings match and then press [Send] to send the settings.

7. When the settings have been sent. Click the [OK]-[End] button to close the dialog box.

In this example, measurement module setup is not performed. Therefore the check/uncheck status of [**Options**] has no effect.
When the settings are sent, the internal clock of the module will be set to the same time as the clock of the computer.

If an error occurs

If the following dialog box opens, sending the initial settings has failed. Check the following items and then try again.

Is the COM ID of the 2351 Air Module correct? (Is the same number for COM ID set in the MAP editor?)	❖ 1.(Page 36)
Does the [COM port used to send settings] setting match the actual COM port to which the cable is connected?	❖ 6.(Page 37) Appendix 7 (page 310)
Is a cross-wired (null-modem) RS-232C cable being used?	❖ 3.(Page 36)
Was the sending process attempted while the 2351 Air Module was still in the initialization phase (about 10 seconds after power-on)?	Please send settings after initialization.
Is another application currently using the COM port?	Terminate the application and restart Smart Site Utility.

8. In the same way, send the settings also to the [COM ID 04(2351 Air Module)].

Reconnect the RS-232C cable to the[COM ID 04(2351 Air Module)] and repeat steps 1 and 8 of the procedure.

(Set the COM ID for the wireless communications module to [04].)

Before sending the settings, make sure that the RS-232C cable is connected correctly.

This completes sending settings to the AIR Module for COM ID:3 and COM ID:4.

This completes the process of configuring initial settings for all communications modules.
Exit the MAP editor.

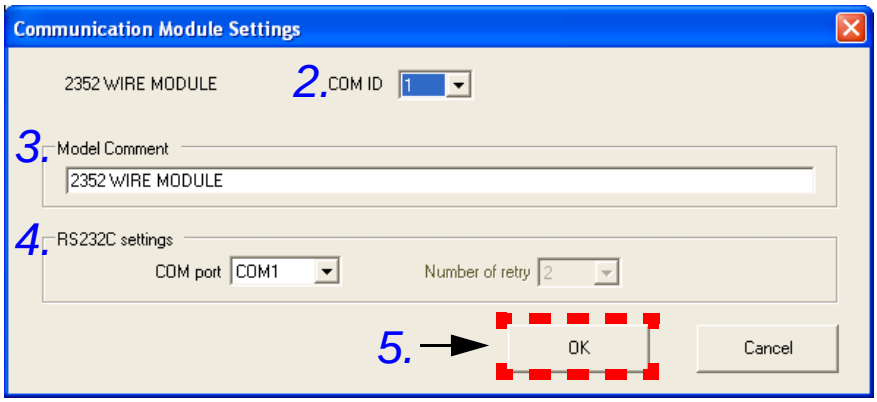
<Notes>

[2352] Wire Module Eaddition, initial settings

Although no examples are given in this manual, use the same procedure to add and initialize the [2352] Wire Module.

Procedure

1. **Drag [2352 Wire Module] from the module icon section on the left side of the screen and drop it onto the [PC] icon in the center.**
The [Communication Module Settings] dialog box appears.



2. **Verify that [COM ID] is set to [1].**

An empty ID is automatically assigned to the COM ID field.

- Any number can be set as long as it does not duplicate other communication modules and IDs.
- Set the rotary switch for the Wire Module to this ID before sending initial settings.

3. **The [Model Comment] field serves for identifying the communication module to distinguish it from other modules. Enter a comment string here that is meaningful and easy to understand.**

4. **In the [RS-232C setting] - [COM port] field, select the COM port to be used for RS-232C communication.**
For [Retry Frequency], if a communication error occurs in RS-232C communication, reset the communication retry frequency.
[Retry Frequency] can be changed when [Advanced Settings] is enabled.
❖ 4.6.5 "Advanced Communication Settings" (page 204)

5. **Click [OK].**

Sending settings to [2352] Wire Module

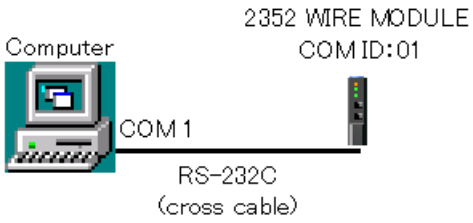
Although no examples are given in this manual, use the same procedure to send settings to the [2352] Wire Module.

Procedure

1. **The COM ID for the Wire Module is set.**
   (Set with the rotary switch on the rear of the module)

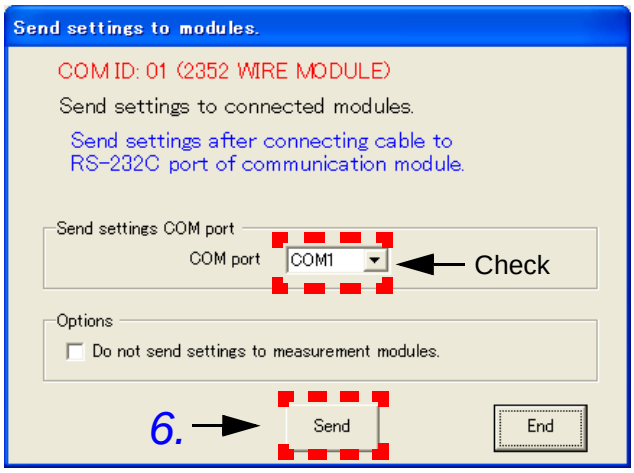
2. **Connect the power supply module and 2352 Wire Module to the module base, and turn power on.**

3. **Use a cross-wired (null-modem) RS-232C cable as shown in the illustration below to connect the 2352 Wire Module to the computer.**



4. **In the MAP editor, select [COM ID: 01 (2352 Wire Module)] and right-click to access the popup menu. Then select [Transmit Data Setting to Modules].**

5. **The following [Transmit Data Setting to Modules].**



6. After checking [COM port used for settings], press [Send] to send the settings.

7. After sending is complete, click [OK] - [End] to close the dialog box.

When the settings are sent, the internal clock of the module will be set to the same time as the clock of the computer.

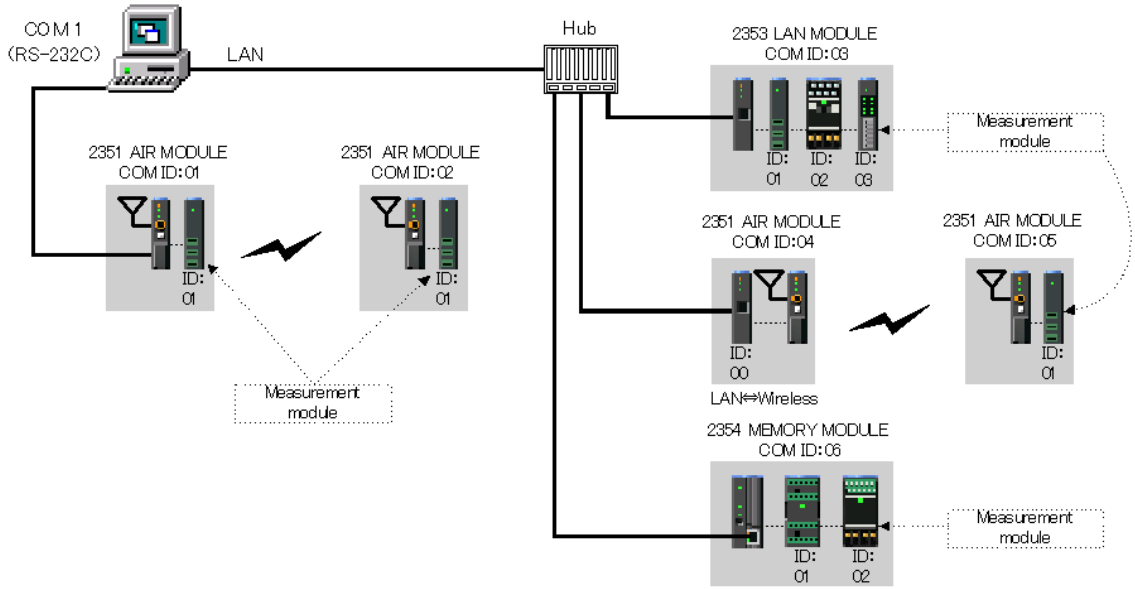
If an error occurs

If the following dialog box opens, sending the initial settings has failed. Check the following items and then try again.

• Is the COM ID of the 2351 Air Module correct? (Is the same number for COM ID set in the MAP editor?)	❖ 1.(Page 40) 2.(Page 39)
• Does the [**COM port used to send settings**] setting match the actual COM port to which the cable is connected?	❖ 6.(Page 41) Appendix 7 (page 310)
• Is a cross-wired (null-modem) RS-232C cable being used?	❖ 3.(Page 40)
• Was the sending process attempted while the 2351 Air Module was still in the initialization phase (about 10 seconds after power-on)? Please send settings after initialization.	

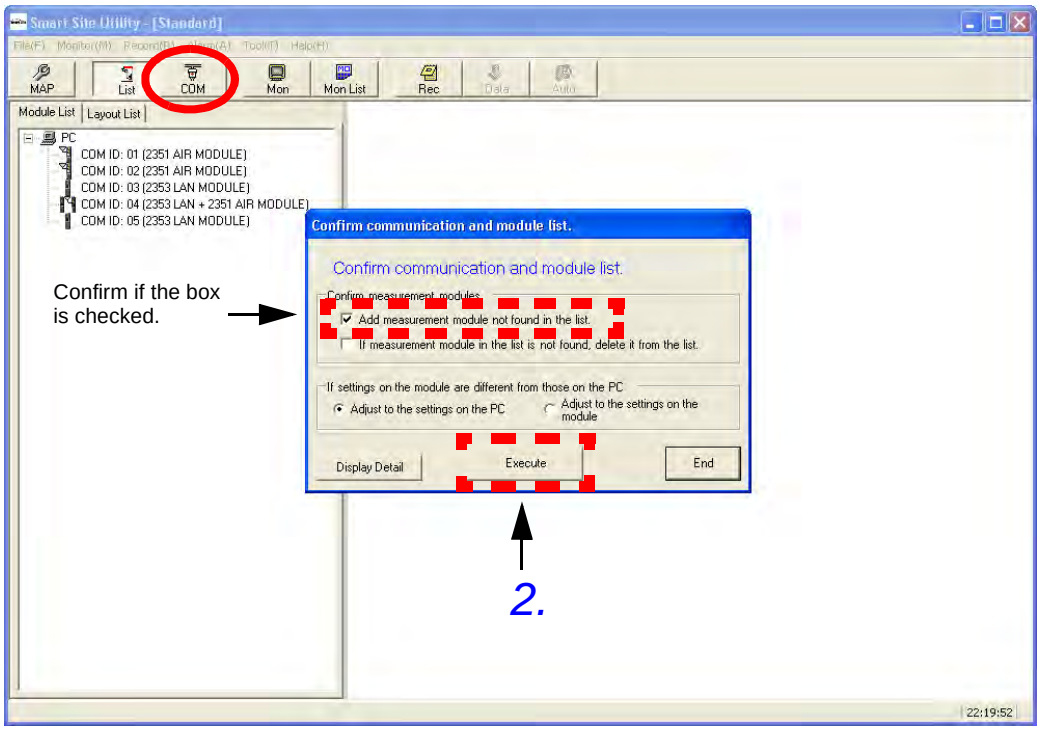
3.1.4 Auto Recognition of Measurement Modules

- Install the communication modules and measurement modules in the actual measurement locations, and turn power on.
- The communication module connection method is as follows.



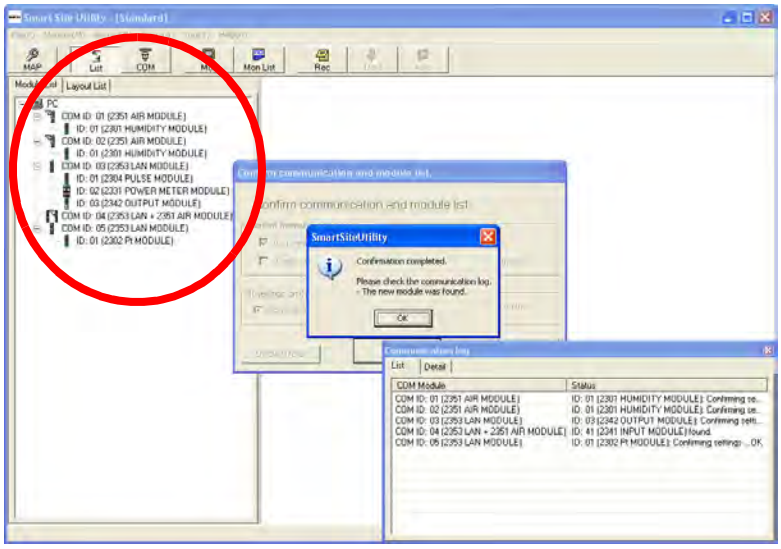
Procedure

1. **On the menu bar, click the [COM] button.**
   The [Confirm communication and module list] dialog box appears.



2. **Verify that the [Add recording module not found in the list] check box is selected, and then click [Execute].**

3. **When the check is complete, recognized modules will be added to the [Module list] as circled in the illustration below.**

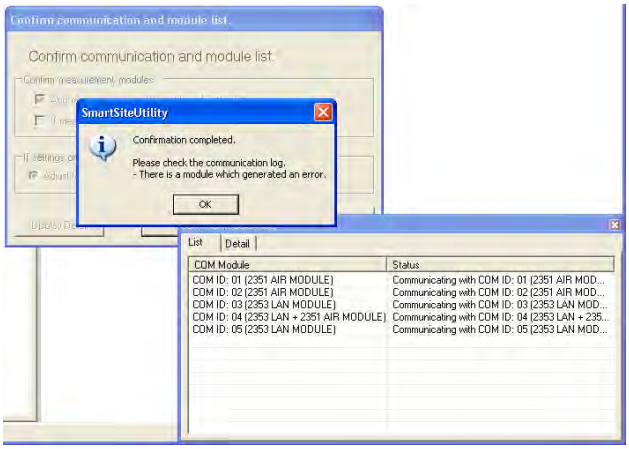


In this example, measurement module setup is not performed. Therefore the status of the check boxes for [If recording module in the list is not found, delete it from the list] and [If settings on the module are different from those on the PC] has no effect.

The above completes the initial setup of the measurement system.
Most functions described below in this instruction manual are performed for a specific measurement module, after selecting that module from the [Module list].

If an error occurs

If the following dialog box opens, a communication malfunction has occurred in the system installed. Check the following items



- Was the setting transmission to the communication module completed? ❖ 3.1.3 (page 24)
- Were the LAN cable and the RS-232C cable connected correctly?
- Is the module connected to the power supply?
- Was communication checked during communication module setup (about 10 seconds immediately after power-up, about 20 seconds for the memory module)?

3.2 Setting the Measurement Parameters (Initial settings for the measurement module)

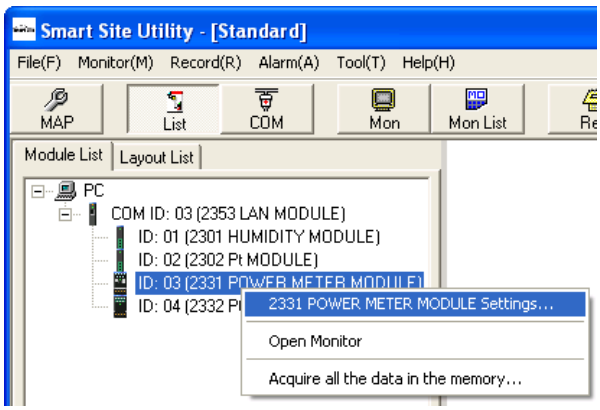
3.2.1 Common Steps

To set the operation parameters for a measurement module, you should first bring up the [**Module settings**] dialog box.

Procedure

1. **Select the measurement module from the [Module list].**

2. **Right-click to access the popup menu. Then select [Set Modules] (Top menu).**

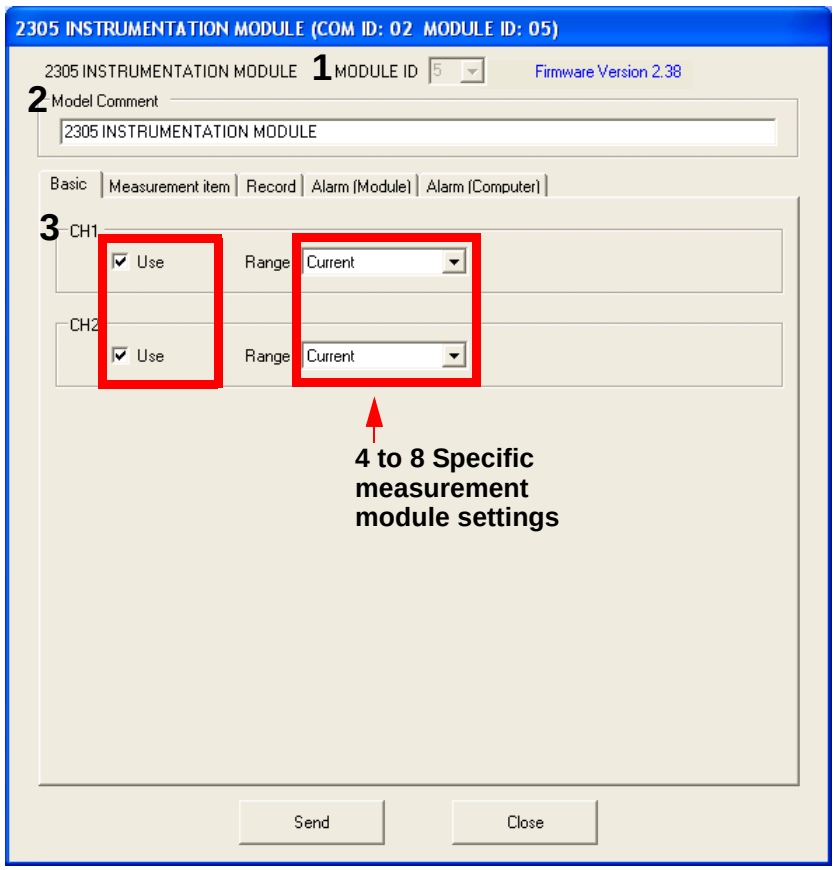


3.2.2 Setting Measurement Parameters for Models 2301 to 2305

Procedure

1. **Bring up the [Module settings] dialog box.**
❖ 3.2.1 "Common Steps" (page 44)

2. **Set the [Basic Settings] tab.**
The diagram is an example of Model 2305.
The [Basic Settings] tab for Models 2301 to 2305 is the same except for the part enclosed by the red frame (4 to 8: settings particular to each measurement module).



Setting item		Description	
1	**MODULE ID**	• ID number of the measurement module • You cannot make changes from this screen. • Can only be changed during the initial setup of the MAP editor.	
2	**Model Comment**	• The string entered here serves for identifying the module to distinguish it from other modules. • This string is used in the measurement value monitor and Smart Site Viewer when displaying recorded data. Enter a comment string here that is meaningful and easy to understand (up to 40 characters).	
3	**CH use indicator**	• Select the CH to use. • The data recording, alarm output, and measurement error check functions for that channel are turned off. • This is convenient to prevent spurious alarm output or LED flashing.	
4	**Model 2302 (specific setting) Pt**	• Sets the Pt type.	[**Pt100** / **JPt100**]
5	**Model 2303 (specific setting) Thermocouple**	• Sets the thermocouple type.	[**K** / **E** / **J** / **T**]
6	**Model 2304-20 (2304-21) (specific setting) Filter**	• Controls the filter setting. *Only setting Model 2304-21 is enabled for the [Filter] for CH2.	[**OFF** / **ON**]
7	**Model 2304-20 (2304-21) (specific setting) Input Terminal**	• Select an input terminal.	[**Use +Lo / Use +Hi**]
8	**Model 2305(specific setting) Range**	• Sets the voltage or current range.	[**50 mV** / **500 mV** / **5 V** / **50 V** / **Current**]
9	**Firmware**	• The firmware version number for the module appears when communicating with the module by sending settings or checking communication.	

3. **Set the [Measurement Item Settings] tab.**

❖ For an explanation of the [Measurement Item Settings] see 3.2.10"Common Tab Settings" -1.(Page 76).

4. **Set the [Record Settings] tab.**

❖ For an explanation of the [Record Settings] see 3.2.10"Common Tab Settings" -2(Page 77).

5. **Set the [Alarm Settings (Module)] tab.**

❖ For an explanation of the [Alarm Settings (Module)] see 3.2.10"Common Tab Settings" -3(Page 78).

6. **Set the [Alarm Settings (Computer)] tab.**

❖ For an explanation of the [Alarm Settings (Computer)] see 3.2.10"Common Tab Settings" -4(Page 79).

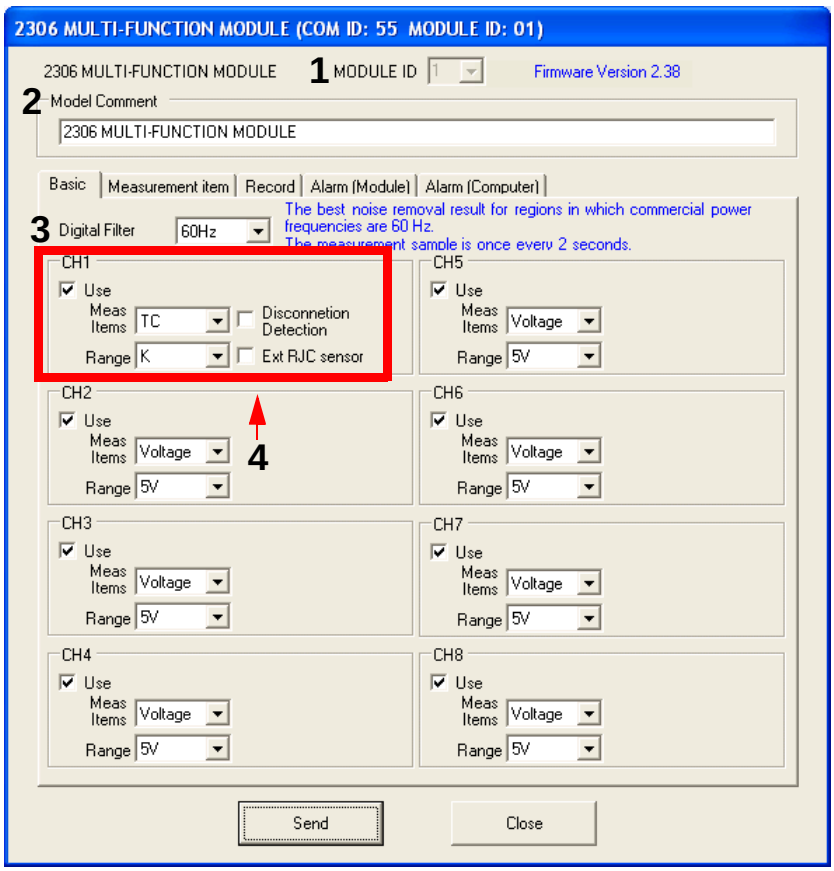
7. **When the settings are complete, click the [Send] button to send the settings to the measurement module.**

3.2.3 Setting Measurement Parameters for Model 2306

Procedure

1. **Bring up the [Module settings] dialog box.**
❖ 3.2.1 "Common Steps" (page 44)

2. **Make settings under the [Basic Settings] tab.**

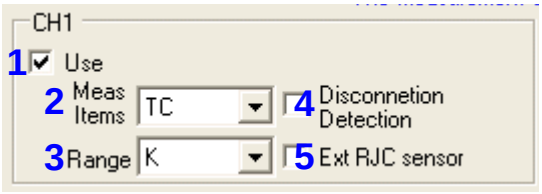


Setting item		Description
1	**MODULE ID**	• ID number of the 2306 Multifunction Module. • You cannot make changes from this screen. • Can only be changed during the initial setup of the MAP editor.
2	**Model Comment**	• The string entered here serves for identifying the module to distinguish it from other modules. • This string is used in the measurement value monitor and Smart Site Viewer when displaying recorded data. Enter a comment string here that is meaningful and easy to understand (up to 40 characters).

Setting item		Description	
3	**Digital Filter**	• By using a digital filter setting, it is possible to have a highly accurate setting with little variation.	
		OFF	• Highly accurate measurements are only possible under excellent environments without any noise. • The influence of extraneous noise such as commercial power and inverters causes large variations in measurement values. • The measurement sample is once every 1 second.
		60 Hz	• The best noise removal result for regions in which commercial power frequencies are 60 Hz (Western Japan). • The measurement sample is once every 2 seconds.
		50 Hz	• The best noise removal result for regions in which commercial power frequencies are 50 Hz (Eastern Japan). • The measurement sample is once every 2 seconds.
		10 Hz	• The most satisfactory noise removal effect in Eastern and Western Japan. • It is possible to remove both 50 and 60 Hz commercial frequencies. • It also makes it hard for high frequency noise (tens of KHz) from inverters etc. to have any influence. • The measurement sample is once every 10 seconds.
4	**CH Settings**	• Sets the measurements for each CH. *1: See the following for CH settings	
5	**Firmware**	• The firmware version number for the module appears when communicating with the module by sending settings or checking communication.	

*1 : Detailed CH Settings

Sets the measurements for each CH.



Setting item		Description	
1	**CH use indicator**	• Select the CH to use. • The data recording, alarm output, and measurement error check functions for that channel are turned off. • This is convenient to prevent spurious alarm output or LED flashing.	
2	**Measurement Item**	• Set the type of measurement.	[Thermocouple/Pt/Voltage/Current]
3	**Range**	• Set the type of range. • The choices vary depending on the item set by the measurement item.	Thermocouple: [K/E/J/T/R]
			Pt: [Pt100 / JPt100]
			Voltage: [50 mV / 500 mV / 5 V / 50 V]
			Current: 30 mA
4	**Disconnection Detection**	• Select when performing thermocouple measurement disconnection detection. *This is necessary only when thermocouple is selected as the measurement item.	
5	**Reference Junction Compensation External**	• Select when you want to set external reference junction compensation for thermocouple measuring. When this is cleared, it is set to internal. *This is necessary only when thermocouple is selected as the measurement item.	

3. **Set the [Measurement Item Settings] tab.**

❖ For an explanation of the [Measurement Item Settings] see 3.2.10"Common Tab Settings" -1.(Page 76).

4. **Set the [Record Settings] tab.**

❖ For an explanation of the [Record Settings] see 3.2.10"Common Tab Settings" -2(Page 77).

Important

For 2306, there are times when restrictions appear for recording intervals with digital filter settings. The following combination cannot be set.

Digital Filter:	Recording interval
60 Hz, 50 Hz:	1, 5, and 15 seconds
10 Hz:	1, 2, 5, and 15 seconds

5. **Set the [Alarm Settings (Module)] tab.**

❖ For an explanation of the [Alarm Settings (Module)] see 3.2.10"Common Tab Settings" -3(Page 78).

6. **Set the [Alarm Settings (Computer)] tab.**

❖ For an explanation of the [Alarm Settings (Computer)] see 3.2.10"Common Tab Settings" -4(Page 79).

7. **When the settings are complete, click the [Send] button to send the settings to the 2306 Multifunction Module.**

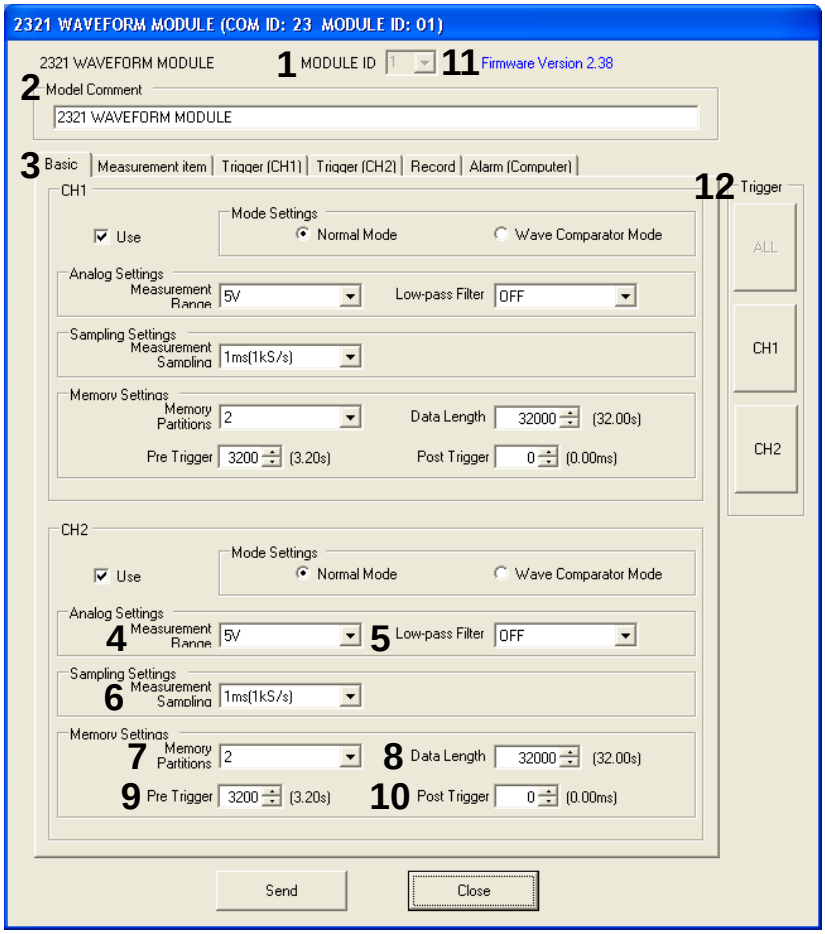
3.2.4 Setting Measurement Parameters for Model 2321

Procedure

1. **Bring up the [Module settings] dialog box.**

❖ 3.2.1 "Common Steps" (page 44)

2. **Make settings under the [Basic Settings] tab.**



Setting item		Description
1	**MODULE ID**	• ID number of the 2321 Waveform Module. • You cannot make changes from this screen. • Can only be changed during the initial setup of the MAP editor.
2	**Model Comment**	• The string entered here serves for identifying the module to distinguish it from other modules. • This string is used in the measurement value monitor and Smart Site Viewer when displaying recorded data. Enter a comment string here that is meaningful and easy to understand (up to 40 characters).
3	**CH use indicator**	• Select an input terminal. • The data recording, alarm output, and measurement error check functions for that channel are turned off. • This is convenient to prevent spurious alarm output or LED flashing.
4	**Measurement Range**	• Select a measurement range.
5	**Low-pass Filter**	• Set the low-pass filter used in the analog detection section.

Setting item		Description
6	**Measurement Sampling**	• Set the measurement sampling.
7	**Memory Partitions**	• Set the number of partitions for waveform acquisition memory.
8	**Data Length**	• Set the acquisition data length after a trigger occurs.
9	**Pre-trigger**	• Set the data number to acquire before the start trigger occurs.
10	**Post trigger**	• Set the data number to acquire after the stop trigger occurs.
11	**Firmware**	• The firmware version number for the module appears when communicating with the module by sending settings or checking communication.
12	**Trigger**	• Acquire the current waveform data. ❖ This can be used for firmware version 2.36 or later. ❖ For details, see 3.4 "Checking the Current Waveform" (page 88).

❖ For details on each item, see chapter 8 in the 2300 SMART SITE manual.

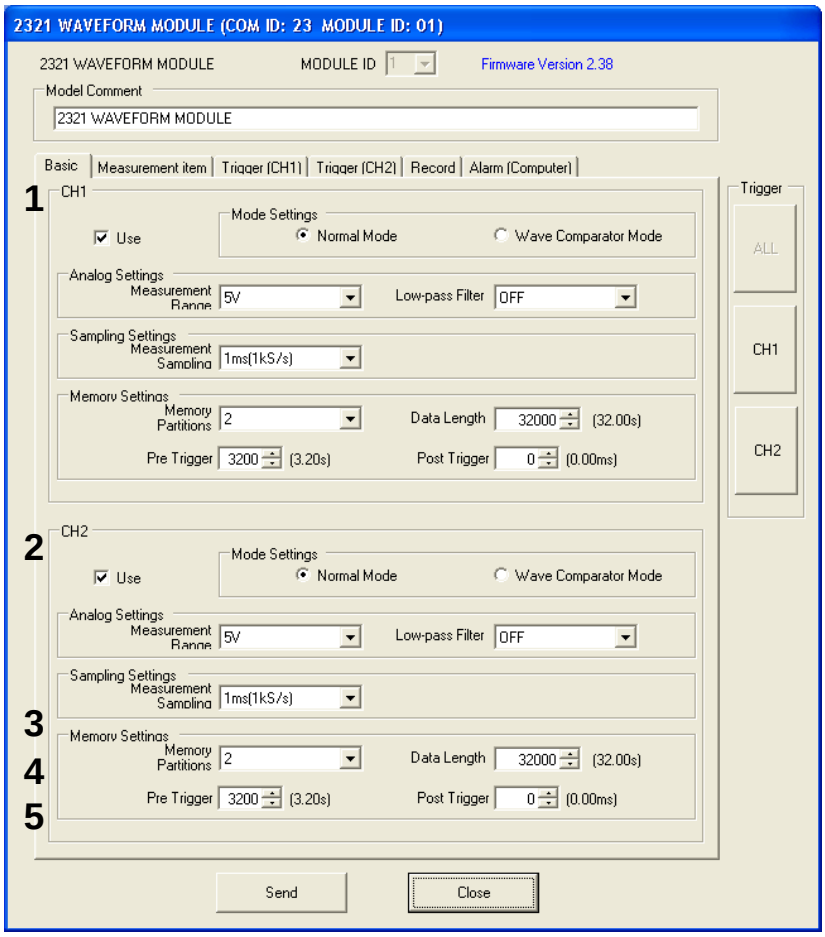
3. Set the [Measurement Item Settings] tab.

❖ For an explanation of the [Measurement Item Settings] see 3.2.10"Common Tab Settings" -1.(Page 76).

Scaling sets Inst for each CH.

4. Set [Trigger (CH1)], [Trigger (CH2)].

Set the settings for each CH trigger condition, pre-trigger, post trigger, trigger filter, and trigger output.



Setting item		Description
1	**Start Trigger**	• Set the trigger conditions for beginning waveform recording.
2	**Stop trigger**	• Set the trigger conditions for stopping waveform recording.
3	**Trigger filter**	• Set a trigger filter for the analog trigger and the logic trigger respectively.
4	**Trigger output**	• Set the trigger output method when a trigger occurs. Three types can be set: Saving waveform, Continuous output, and Fixed time (you can set 1 to 255 seconds)
5	**Waveform data pixel skipping**	• Select the checkbox ☐ to perform pixel skipping on waveform data. You can set 2 to 32000.

❖ For details on each item, see chapter 8 in the 2300 Smart Site manual.

5. **Set the [Record Settings] tab.**

❖ For an explanation of the [Record Settings] see 3.2.10"Common Tab Settings" -2(Page 77).

6. **Set the [Alarm Settings (Computer)] tab.**

❖ For an explanation of the [Alarm Settings (Computer)] see 3.2.10"Common Tab Settings" -4(Page 79).

7. **When the settings are complete, click the [Send] button to send the settings to the 2321 Waveform Module.**

Note
When the settings are changed, the trigger doesn't work during about five seconds after transmitting the settings.

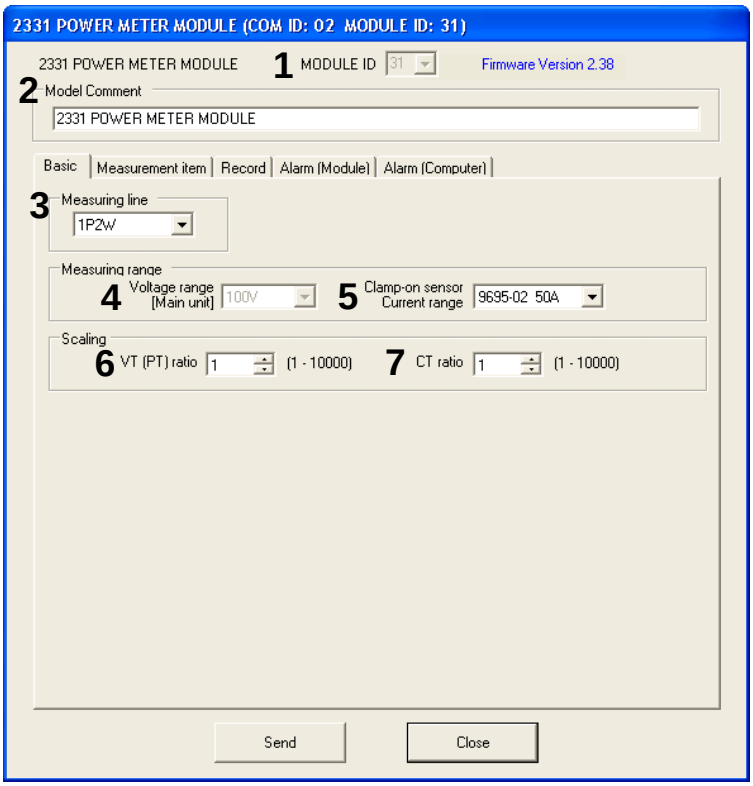
3.2.5 Setting Measurement Parameters for Model 2331

Procedure

1. **Bring up the [Module settings] dialog box.**

❖ 3.2.1 "Common Steps" (page 44)

2. **Make settings under the [Basic Settings] tab.**



Setting item		Description	
1	**MODULE ID**	• ID number of the measurement module • You cannot make changes from this screen. • Can only be changed during the initial setup of the MAP editor.	
2	**Model Comment**	• The string entered here serves for identifying the module to distinguish it from other modules. • This string is used in the measurement value monitor and Smart Site Viewer when displaying recorded data. Enter a comment string here that is meaningful and easy to understand (up to 40 characters).	
3	**Measuring line**	• Serves to select the type of measurement line. • Make the setting so that it matches the actual measurement connection. ❖ Regarding the connection method, refer to the instruction manual of the Model 2331.	[**1P2W** / **1P3W** / **3P3W** / **3P4W**]
4	**Voltage range**	• Check the voltage range. • The actual setting must be made with the switch on the unit. The setting cannot be changed here.	
5	**Clamp-on sensor Current range**	Select according to the type of clamp sensor being used.	

Setting item		Description
6	**Scaling VT (PT) ratio**	• Sets the VT (PT) ratio. (Voltage value shown on measurement screen = actually measured voltage x VT (PT) ratio) • Used when a transformer is used in the voltage measurement line.
7	**Scaling CT ratio**	• Sets the CT ratio. (Current value shown on measurement screen = actually measured current x CT ratio) • Used when a current transformer is used in the current measurement line.
8	**Firmware**	• The firmware version number for the module appears when communicating with the module by sending settings or checking communication.

3. **Set the [Measurement Item Settings] tab.**

❖ For an explanation of the [Measurement Item Settings] see 3.2.10"Common Tab Settings" -1.(Page 76).

4. **Set the [Record Settings] tab.**

❖ For an explanation of the [Record Settings] see 3.2.10"Common Tab Settings" -2(Page 77).

5. **Set the [Alarm Settings (Module)] tab.**

❖ For an explanation of the [Alarm Settings (Module)] see 3.2.10"Common Tab Settings" -3(Page 78).

6. **Set the [Alarm Settings (Computer)] tab.**

❖ For an explanation of the [Alarm Settings (Computer)] see 3.2.10"Common Tab Settings" -4(Page 79).

7. **When the settings are complete, click the [Send] button to send the settings to the 2331 Power Meter Module module.**

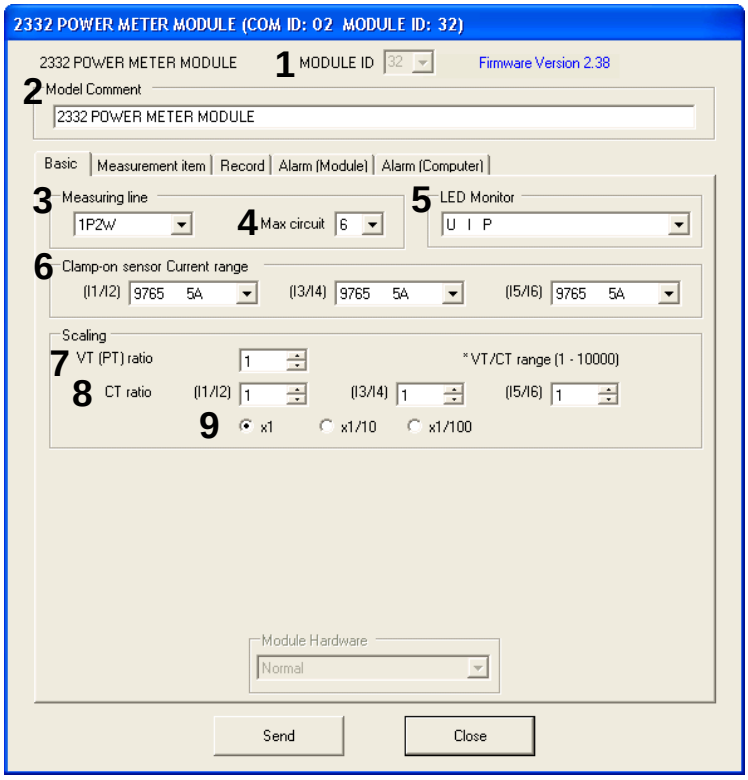
3.2.6 Setting Measurement Parameters for Model 2332

Procedure

1. Bring up the [Module settings] dialog box.

❖ 3.2.1 "Common Steps" (page 44)

2. Make settings under the [Basic Settings] tab.



Setting item		Description
1	**MODULE ID**	• ID number of the measurement module • You cannot make changes from this screen. • Can only be changed during the initial setup of the MAP editor.
2	**Model Comment**	• The string entered here serves for identifying the module to distinguish it from other modules. • This string is used in the measurement value monitor and Smart Site Viewer when displaying recorded data. Enter a comment string here that is meaningful and easy to understand (up to 40 characters).
3	**Measuring line**	• Serves to select the type of measurement line. • Make the setting so that it matches the actual measurement connection. ❖ Regarding the connection method, refer to the instruction manual of the 2332 Power Meter Module. [**1P2W** / **1P3W** / **3P3W**]

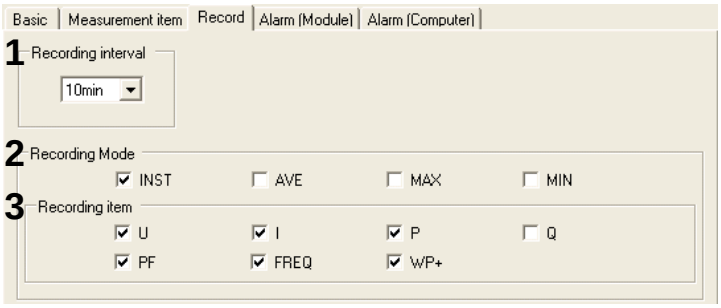
Setting item		Description
4	**Max circuit**	• Sets the number of circuits to be measured. • The data for the number of circuits selected here will be recorded as measurement values. Data for other circuits will not be recorded. • For common voltages, [**1P2W**] can be set to 1 to 6, and [**1P3W**] and [**3P3W**] can be set to 1 to 3.
5	**LED Monitor**	• Monitor display selections for POWER LED. For normal measurements, use [**Voltage/Current/Power Monitoring Mode**]. For measuring current only (no voltage input), use the Current Monitoring Mode. [**Voltage/Current/Power Monitoring Mode**] • In the following cases, the LED flashes yellow. When the voltage is beyond the effective input, the current exceeds the range, or the effective power is negative. [**Current Monitoring Mode**] • When the current exceeds the range, the LED flashes yellow. There is no influence from the voltage and effective power.
6	**Clamp-on sensor Current range**	• Select according to the type of clamp sensor being used. • Can be set for each of the two channels [**(I1/I2)**], [**(I3/I4)**], and [**(I5/I6)**].
7	**Scaling VT (PT) ratio**	• Sets the VT (PT) ratio. (Voltage value shown on measurement screen = actually measured voltage x VT (PT) ratio) • Used when a transformer is used in the voltage measurement line.
8	**Scaling CT ratio**	• Sets the CT ratio. (Current value shown on measurement screen = actually measured current x CT ratio) • Used when a current transformer is used in the current measurement line. • Can be set for each of the two channels [**(I1/I2)**], [**(I3/I4)**], and [**(I5/I6)**].
9	**Scaling x1,x1/10,x1/100**	• Serves to set the CT ratio to a fraction. • [**x1/10**]:CT ratio is 0.1. • [**x1/100**]:CT ratio is 0.01. • The setting applies globally to [**(I1/I2)**], [**(I3/I4)**], and [**(I5/I6)**].
10	**Firmware**	• The firmware version number for the module appears when communicating with the module by sending settings or checking communication.

3. Set the [Measurement Item Settings] tab.

❖ For an explanation of the [Measurement Item Settings] see 3.2.10"Common Tab Settings" -1.(Page 76).

4. Make settings under the [Record Settings] tab.

These settings are used for the data recording function.
You can set the [**Rec. Interval**] and [**Recording Mode**].



Setting item		Description
1	**Rec. Interval**	• Sets the interval in which measurement values are recorded in the internal memory.
2	**Recording Mode**	• Select the type of measurement value to save in the internal memory. • Select all required items from the available choices: instantaneous value, [**AVE**] (average value), [**MAX**] (maximum value), [**MIN**] (minimum value). • Common recording mode settings (instantaneous value, MAX, MIN, AVE, instantaneous value +MAX, MIN, AVE) do not apply to this module. Be sure to make the settings from this screen, regardless of the common settings.
3	**Recording item**	• Select the measurement item (parameter) to save in the internal memory. • Select all required items from the available choices: [**U**] (Voltage), [**I**] (Current), [**P**] (Effective power], [**Q**] (Reactive power), [**PF**] (Power factor), [**FREQ**] (Frequency), [**WP+**] (Effective power within interval time). Be sure to select at least one item.

Important
When using the same recording settings for all measurement modules, the recording interval and recording mode can be set together at the start of recording, but only the recording interval setting will be valid.
The recording mode setting will be as set on this screen. Therefore you should be sure to make this setting beforehand.
❖ 3.5.1 "Starting Data Recording" (page 91)

5. **Set the [Alarm Settings (Module)] tab.**
❖ For an explanation of the [Alarm Settings (Module)] see 3.2.10"Common Tab Settings" -3(Page 78).

6. **Set the [Alarm Settings (Computer)] tab.**
❖ For an explanation of the [Alarm Settings (Computer)] see 3.2.10"Common Tab Settings" -4(Page 79).

7. **When the settings are complete, click the [Send] button to send the settings to the 2332 Power Meter Module.**

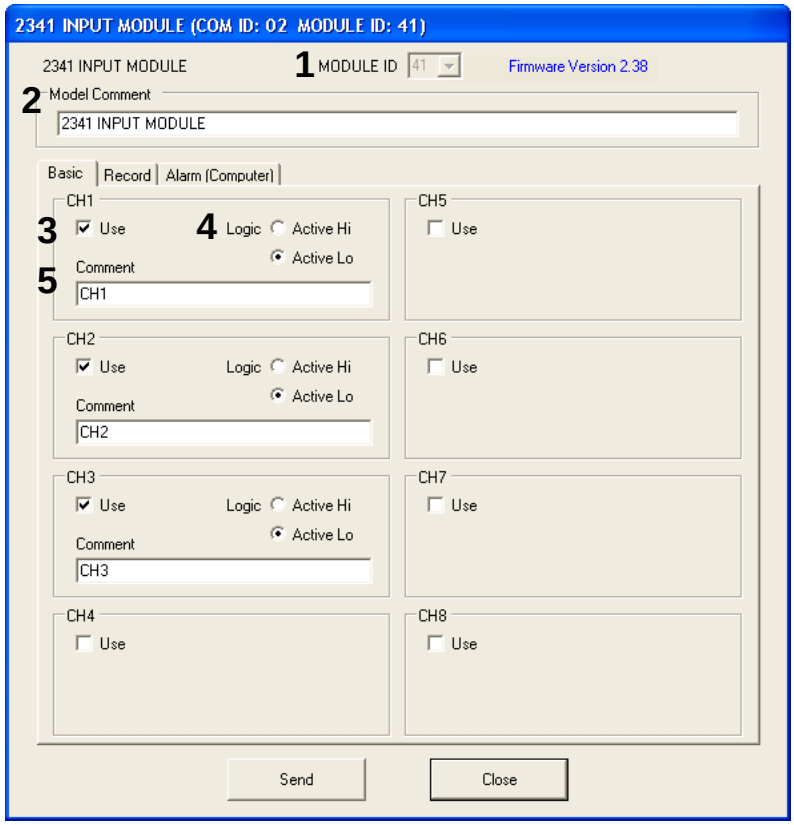
3.2.7 Setting Measurement Parameters for Model 2341

Procedure

1. **Bring up the [Module settings] dialog box**

❖ 3.2.1 "Common Steps" (page 44)

2. **Make settings under the [Basic Settings] tab.**



Setting item		Description
1	**MODULE ID**	• ID number of the 2341 Input Module • You cannot make changes from this screen. • Can only be changed during the initial setup of the MAP editor.
2	**Model Comment**	• The string entered here serves for identifying the module to distinguish it from other modules. • This string is used in the measurement value monitor and Smart Site Viewer when displaying recorded data. Enter a comment string here that is meaningful and easy to understand (up to 40 characters).
3	**CH**	• Selects the channel to use.
4	**CH logic**	• Select [**Active Hi**] or [**Active Lo**]. **Example:** [**Active Lo**] is selected When a contact short or similar (Lo level) input is detected, the internal alarm (evaluation result) becomes ON. • INPUT LED on the 2341 main unit is green at Lo level input (regardless of the logic setting).

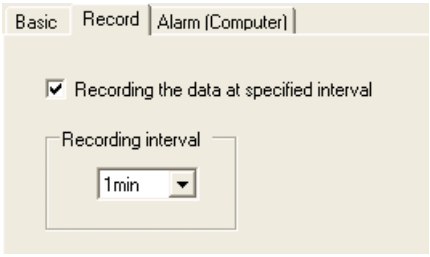
Setting item		Description
5	**Comment**	• The string entered here serves to identify the channel. • This string is used in the measurement value monitor and Smart Site Viewer when displaying recorded data. Enter a comment string here that is meaningful and easy to understand (up to 40 characters).
6	**Firmware**	• The firmware version number for the module appears when communicating with the module by sending settings or checking communication.

3. Make settings under the [Record Settings] tab.

These settings are used for the data recording function.

❖ For an explanation of the [Measurement Item Settings] see 3.2.10"Common Tab Settings" -2(Page 77).

2341 records data when there is a change in status (ON → OFF, OFF → ON) in logic (measured values). Aside from this, if you want to record logic data at specified intervals, select [Record input data at specified intervals] and select the recording interval.



POINT

- Because this can be set when recording starts if all measurement modules have a common recording setting, you do not need to set it here.
- If you want to set each measurement module, set before this window.

Important

2341 saves each effective CH ON/OFF change in the memory as alarm information regardless of the settings in [Record Settings].

4. Set the [Alarm Settings (Computer)] tab.

❖ For an explanation of the [Alarm Settings (Computer)] see 3.2.10"Common Tab Settings" -4(Page 79).

5. When the settings are complete, click the [Send] button to send the settings to the 2341 Input Module.

3.2.8 Setting Measurement Parameters for Model 2342

Procedure

1. Bring up the [Module settings] dialog box.

❖ 3.2.1 "Common Steps" (page 44)

2. Make settings for the various items.

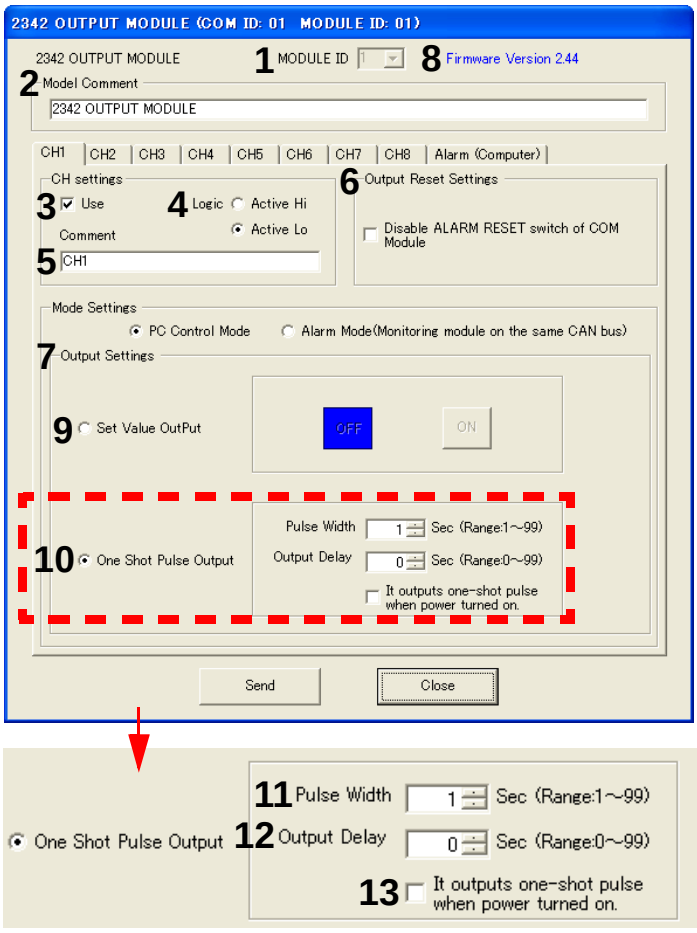
There are two modes. Select the appropriate mode with the [**Watch Settings**] item.

PC Control Mode	The alarm output of the Model 2342 is controlled from the computer.
Alarm Mode	The Model 2342 monitors and evaluates the data from measurement modules on the same CAN bus and activates alarm output as necessary.

The tab contents change, depending on the selected mode.
When [**Alarm Mode**] is selected, the tab settings also change depending on which module is being monitored.

Using PC control mode

For [**Operating Mode Settings**], select [**PC Control Mode**].



Required setting items (common to [PC Control Mode] and [Alarm Mode]

	Setting item	Description
1	**MODULE ID**	• ID number of the 2342 Output Module • Cannot be changed from the main screen. • Can only be changed during the initial setup of the [**MAP editor**].
2	**Model Comment**	• The string entered here serves for identifying the module to distinguish it from other modules. • This string is used in the measurement value monitor and Smart Site Viewer when displaying recorded data. Enter a comment string here that is meaningful and easy to understand (up to 40 characters).
3	**Use**	• Selects the channel to use. • For CH in which [Use] is not selected, port output is set to Hi (transfer OFF).
4	**Logic**	• Select [**Active Hi**] or [**Active Lo**]. • When the alarm evaluation result for the specified channel becomes ON (alarm output), the selected signal is output. **Example:** [**Active Hi**] is selected When the internal alarm (evaluation result) changes from OFF to ON, the output transistors change from ON to OFF (alarm signal = output transistors OFF). (Alarm signal = Output Hi --- Output transistor OFF) • The OUTPUT LED is green when the output is Lo (output transistor is ON). (regardless of the logic setting).
5	**Comment**	• The string entered here serves to identify the channel. • This string is used in the measurement value monitor and Smart Site Viewer when displaying recorded data. Enter a comment string here that is meaningful and easy to understand (up to 40 characters).
6	**Output Reset Settings**	• This function is intended to prevent inadvertent resetting of the Model 2342 output if the [**ALARM RESET**] switch is pushed by mistake
7	**Operating Mode Settings**	• Select one of the following modes, depending on the intended purpose. [**PC Control Mode**]: The alarm output of the Model 2342 is controlled from the computer. [**Alarm Mode**] : The Model 2342 monitors and evaluates the data from measurement modules on the same CAN bus and from the input module. It is also possible to monitor the data from a power meter module or similar connected to the Model Model 2343. Data are compared to threshold settings for evaluation, and the alarm output is activated according to the result.
8	**Firmware**	• Displays the firmware version numbers for any modules with which data was exchanged in the course of sending settings or verifying communications.

Setting item when [**PC Control Mode**] is selected

	Setting item	Description
9	**Set Value Output**	• When [**ON**] is selected, the alarm signal is output according to the logic evaluation result. • When [**OFF**] is selected, the alarm signal is disabled. • To switch the output signal, click the [**ON**] or [**OFF**] button, and then click the [**Send**] button.
10	**One-Shot Pulse Output**	• Generates a single output pulse based on the settings.

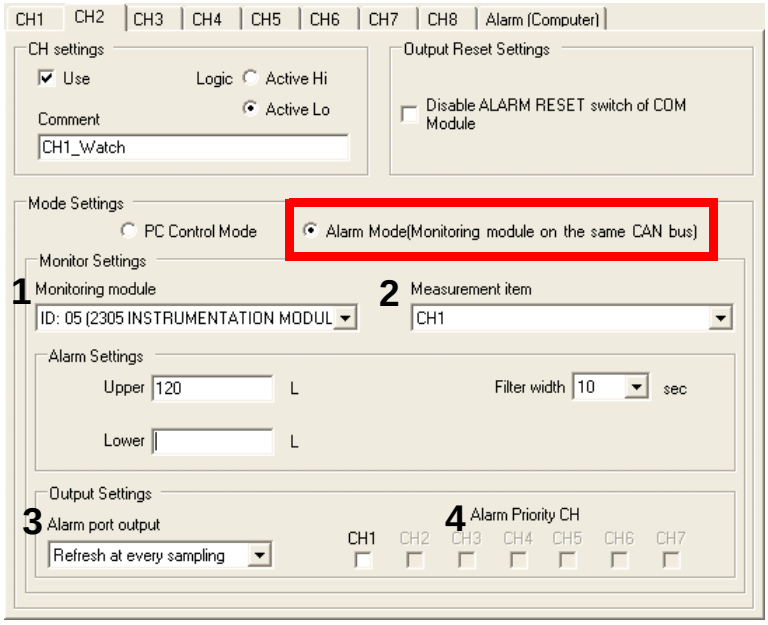
Setting item when [**One-shot pulse output**] is selected

	Setting item	Description
11	**Pulse width**	• Sets the width of the one-shot pulse.
12	**Output Delay**	• Sets how long to wait before outputting the one-shot pulse.
13		• Generates one-shot pulse output during check operation and when the power is turned on.

Using alarm mode

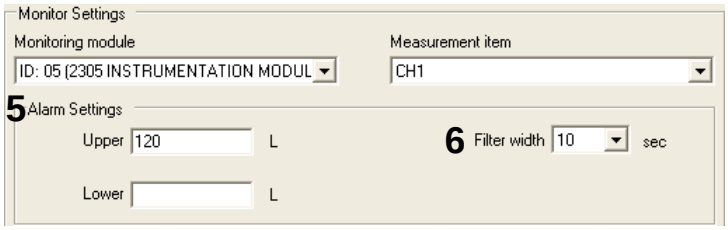
For [**Operating Mode Settings**], select [**Alarm Mode**].
First, set the required items.

❖ "Required setting items (common to [PC Control Mode] and [Alarm Mode]" (page 62)



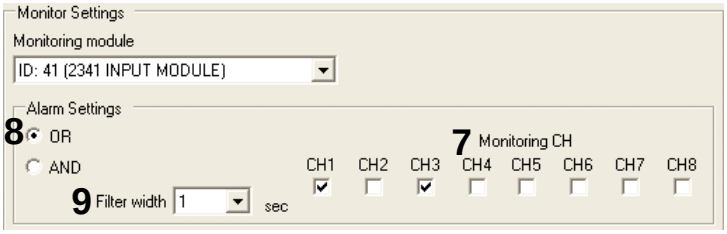
Common settings for all modules

Setting item		Description
1	Module Type	• Select the monitoring module.
2	Monitored Measurement Item	• In [Monitoring Module] select which measurement item to monitor from the specified module. * When input module Model 2341 is specified in [Monitoring Module], this setting item is not displayed.
3	Alarm output control	• Select from the following two methods of alarm port output from the module. **[Save Alarm Status]**: Once the alarm signal output has been activated, it stays on regardless of the subsequent evaluation result. **[Update at each sampling]**: The result of the comparison and evaluation process that occurs each second is reflected in the state of the output. • To clear the alarm, the [ALARM RESET] switch on the communication must be pressed for at least 1 second.
4	Alarm Priority CH	• A function to force alarm evaluation result OFF when the high priority CH evaluation result is ON • Select the channel which has highest output priority. • If the function is not required, select nothing here. Example: On the CH8 settings screen, when the CH alarm priority is set to CH2. When the CH2 evaluation result is ON, the CH8 alarm evaluation result is forced OFF.



Setting items when watching Models 2301 to 2306,2321,2331,2332

Setting item		Description
5	**Upper** **Lower**	• Enter the lower and upper alarm threshold values • When no value is entered, there is no maximum or minimum evaluation. • The setting range is -1E+07 to -1E-07, 0, 1E-07 to 1E+07.
6	**Filter Time**	• This function serves to suppress spurious alarm signal output that may be caused when the watched module indicates an abnormal measurement value due to transient noise or another cause. • When the specified filter duration for evaluation results is the same, the alarm evaluation result (ON/OFF) as well as the port output are changed. • When [OFF] is selected, the evaluation result for each second is reflected in the output. Example: Filter time set to 5 seconds Internal alarm OFF⟶ ON change: When ON condition persists 5 times in succession, the alarm signal is output. Internal alarm ON ⟶ OFF change: When OFF condition persists 5 times in succession, the alarm signal is output.



Setting items when watching Model 2341

Setting item		Description
7	Monitoring CH	• Select the channels of the Model 2341 to watch.
8	OR/AND	• When several CH are selected in [CH Monitoring], set evaluation under either OR/AND conditions. Example: When CH1 and CH3 are selected in [CH Monitoring], and [OR] is selected, if either CH1 or CH3 for Model 2341 turn ON, Model 2342 alarm is output (ON).
9	Filter Time	• This function serves to suppress spurious alarm signal output that may be caused when the watched module indicates an abnormal measurement value due to transient noise or another cause. • When the specified filter duration for evaluation results is the same, the alarm evaluation result (ON/OFF) as well as the port output are changed. • When [OFF] is selected, the evaluation result for each second is reflected in the output. Example: Filter time set to 5 seconds Internal alarm OFF⟶ ON change: When ON condition persists 5 times in succession, the alarm signal is output. Internal alarm ON ⟶ OFF change: When OFF condition persists 5 times in succession, the alarm signal is output.

3. **Set the [Alarm Settings (Computer)] tab.**

❖ For an explanation of the [Alarm Settings (Computer)] see 3.2.10"Common Tab Settings" -4(Page 79).

4. **When the settings are complete, click the [Send] button to send the settings to the 2342 Output Module.**

Important
Model 2342 saves each effective CH ON/OFF change in the memory as alarm information.

3.2.9 Setting Measurement Parameters for Model 2343

The 2343 RS Link Module communicates with external equipment with an RS-232C port and acquires data for the external equipment. Multiple commands registered beforehand are transmitted, and the response data from the external equipment is saved as it is. You can set how this response data is interpreted, and handle it as optional measurements.

The 2343 RS Link Module has two types of settings, optional equipment and MELSEC made by the Mitsubishi Electric Corporation.

Optional Equipment (Page 67)

The module supports equipment that satisfies the following requirements:
- When a command is transmitted, response data must be returned
- The command transmitted is a fixed command
- Reception must have a condition to determine when reception ends (reception delimiter)
- Response data must be no more than 250 bytes in length.
- The response data format should be any of the following:

(1) In ASCII format using commas and semicolons to delimit numeric data (many HIOKI products)
(2) In ASCII format using any one character to delimit data
(3) In binary format fixed length data (big/little endian)
(4) Modbus RTU protocol

Mitsubishi Electric Corporation MELSEC (Page 72)

Serial communications unit for Q/A series and QnA series sequencers

In communication with MELSEC, the frame for data communication uses A compatible 1C frame format 1.
Alternately, set the MELSEC checksum to [None].

Note for data type DWORD and BCD12
In Smart Site Utility, all values are treated as single-precision floating points (float), although these can be interpreted as 32bit integers. Therefore the accuracy falls (canceled) for values where the significant digit exceeds 24bit.

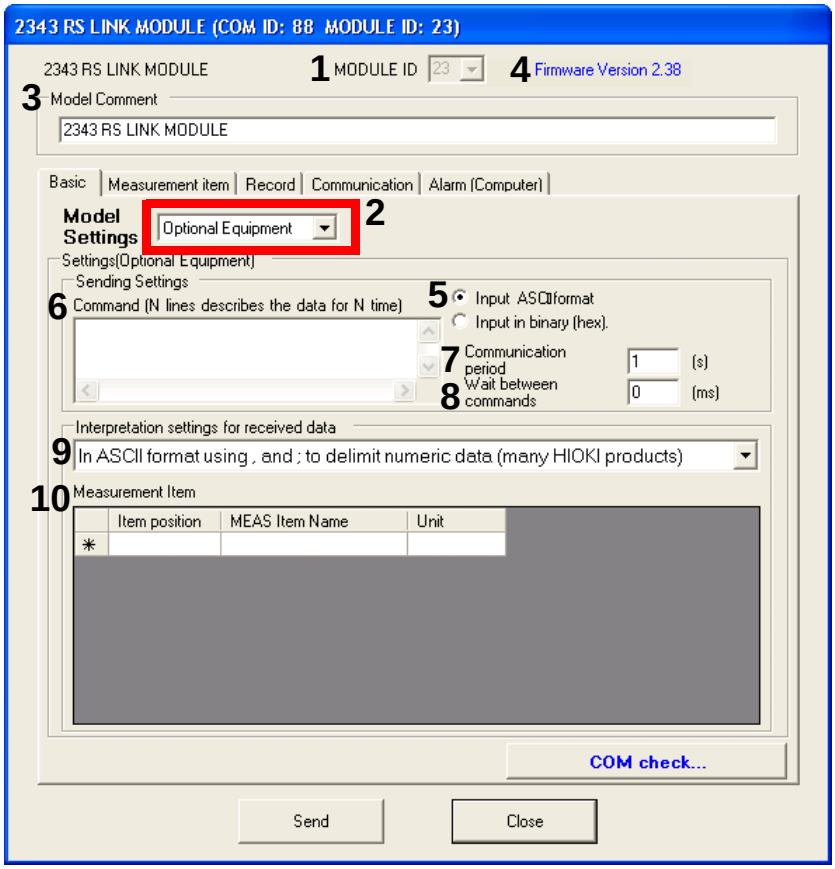
Selecting optional equipment

Procedure

1. **Bring up the [Module settings] dialog box.**

❖ 3.2.1 "Common Steps" (page 44)

2. **Make settings under the [Basic Settings] tab.**



Setting items

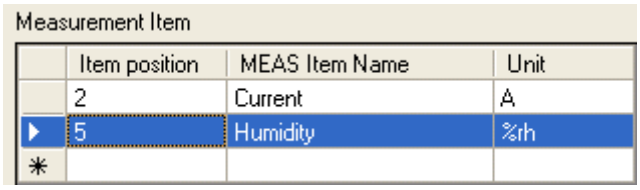
Setting item		Description
1	**MODULE ID**	• ID number of the RS Link Module • Cannot be changed from the main screen. • Can only be changed during the initial setup of the [MAP editor].
2	**Connection Model**	• Selects the optional equipment to use.
3	**Model Comment**	• The string entered here serves for identifying the module. • This string is used in the measurement value monitor and Smart Site Viewer when displaying recorded data. Enter a comment string here that is meaningful and easy to understand (up to 40 characters).
4	**Firmware**	• The firmware version number for the module appears when communicating with the module by sending settings or checking communication.
5	**Command input format**	• Select either ASCII format or binary format (hexadecimal form) as the command input format.
6	**Measurement command**	• Multiple entries can be input, and one line becomes one sending command. • Input using the command input format you set.

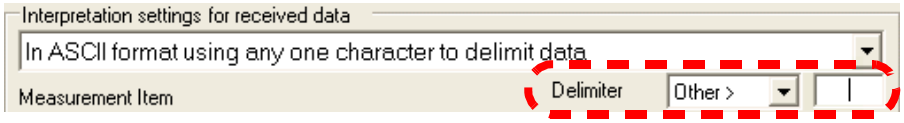
Setting items

Setting item		Description
7	**Communication period**	• Communicate with the optional equipment in the communication period set here. However, when the communication period for the recording interval is not divided during recording, it operates under the assumption that the communication period = the recording interval. • Setting range: you can set from 1 to 255 seconds in 1 second units.
8	**Wait between commands**	• Set the wait between communication commands for optional equipment. • When sending several measurement commands, after the previous command's response has ended, wait until the next command is sent. (This is because, depending on the equipment, it might not be able to receive the command immediately after the response is sent.)
9	**Interpretation settings for received data**	• Set how data at certain positions is interpreted for response data saved in Model 2343. * In order to set the interpretation method, you need a good understanding of the response data specifications for the external equipment.
10	**Measurement item settings**	• Set the specification for the read data and interpretation method for the received data. *: See Detailed Settings for Measurement Items

*: Detailed Settings for Measurement Items

When the interpretation settings for received data are as follows:
"ASCII format using commas and semicolons to delimit numeric data"
"ASCII format using any one character to delimit numeric data"

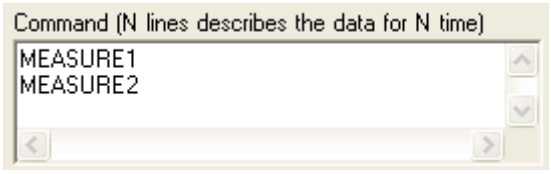


Item position	• Set what item to retrieve from the response data.
Measurement Item Name	• The name of the measurement item retrieved. (40 characters or less) • Used for the measurement value monitor display and the CSV header file.
Units	• The units of the measurement item retrieved. (20 characters or less) • Used for the measurement value monitor display and the CSV header file.
Delimiter	• When item 9 above, "Interpretation settings for received data," is set to "ASCII format using any one character to delimit numeric data," set the delimiter here. 

Example: To acquire current and humidity

Assume that commands trigger comma-delimited responses as follows:
- "MEASURE1," the command to acquire current, results in response data consisting of "voltage, current, resistance."
- "MEASURE2," the command to acquire humidity, results in response data consisting of "temperature, humidity."

In this case, the following settings should be made:



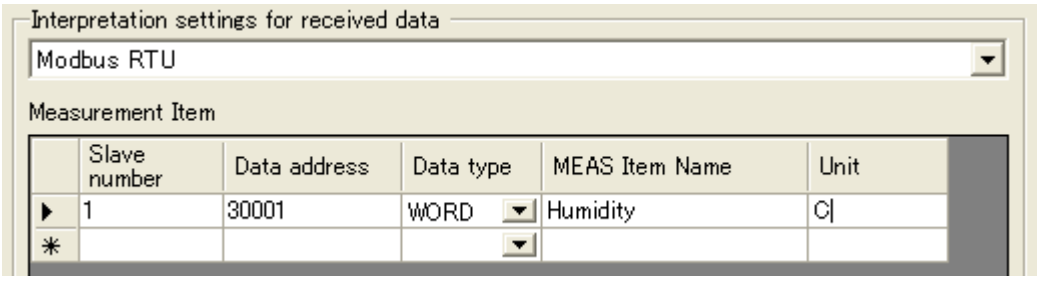
Set the interpretation settings for received data to "ASCII format using commas and semicolons to delimit numeric data" and enter the commands into the measurement command field as shown above.

Set the interpretation settings for received data to "ASCII format using commas and semicolons to delimit numeric data" and enter the commands into the measurement command field as shown above.

received data	**voltage**	**current**	**resistance**	**temperature**	**humidity**
Item Positions	1	2	3	4	5

Consequently, position 2 should be set for current and position 5 for humidity.

When the interpretation settings for received data are as follows:
"Binary format fixed length data (big endian)"
"Binary format fixed length data (little endian)"
"Modbus RTU"



Readout byte position	• Set what byte to retrieve from the response data.	
Data type	• Select what type to use to interpret the received data. • Please note, there is a possibility that DWORD will be canceled. • When using a Modbus RTU, DWORD/FLOAT data is interpreted as little endian. BYTE/UBYTE data cannot be used.	
	BIT	• Interpret the specified BIT of 1 byte received data as a unsigned integer.
	BYTE	• Interpret 1 byte received data as a signed 8bit integer.
	UBYTE	• Interpret 1 byte received data as an unsigned 8bit integer.
	WORD	• Interpret 2 byte received data as a signed 16bit hexadecimal form integer.
	UWORD	• Interpret 2 byte received data as an unsigned 16bit hexadecimal form integer.
	DWORD	• Interpret 4 byte received data as a signed 32bit hexadecimal form integer.
	FLOAT	• Interpret 4 byte received data as a single-precision floating point.
BIT position (When the data type is BIT)	• Look at which bit is set in 1 byte by hexadecimal format. • When you can see bit 0 use "01", when you can see bit 4 to 7 use "F0", in this way, make the bit you want to see 1 with a hexadecimal descriptor.	
Measurement Item Name	• The name of the measurement item retrieved. (40 characters or less) • Used for the measurement value monitor display and the CSV header file.	
Units	• The units of the measurement item retrieved. (20 characters or less) • Used for the measurement value monitor display and the CSV header file.	
Slave no. (Modbus RTU)	• Sets the Modbus device slave number.	
Data address (Modbus RTU)	• Sets the data address. • Ordinarily, bit data addresses start at 10001, while integer and floating point (input register) data addresses start at 30001.	

3. Set the [Measurement Item Settings] tab.

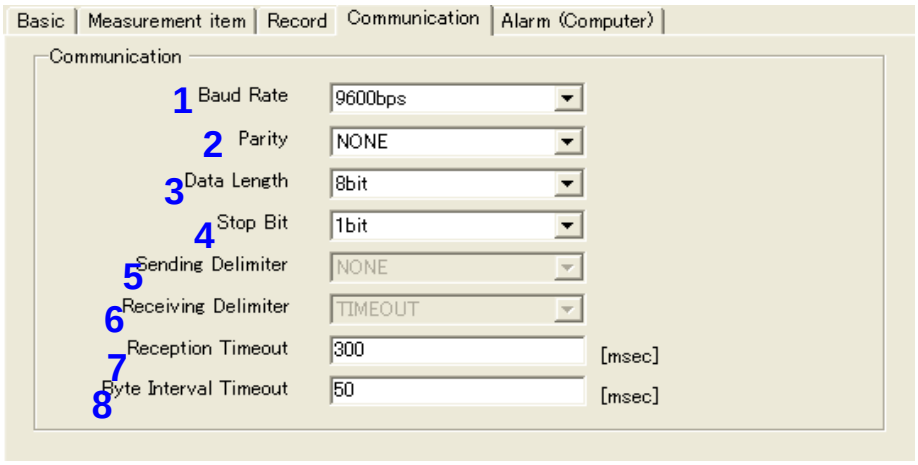
❖ For an explanation of the [Measurement Item Settings] see 3.2.10"Common Tab Settings" - "Measurement Item" (Page 76).

4. Set the [Record Settings] tab.

❖ For an explanation of the [Record Settings] see 3.2.10"Common Tab Settings" - "Record Settings" (Page 77)

5. Set the [Sending Settings] tab.

Match the sending rate, parity, data length, and the stop bit to the settings for the external equipment.



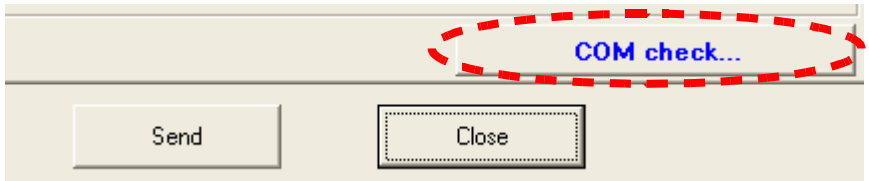
1	**Sending Rate**	• 1200bps to 57600bps
2	**Parity**	• None/Odd number/Even number
3	**Data Length**	• 7bit / 8bit
4	**Stop Bit**	• 1bit / 2bit
5	**Sending Delimiter**	• Data added after the send command. (Usually used to communicate in the ASCII format) • None/CR+LF/CR/LF
6	**Receiving Delimiter**	• Allows for a chance to determine when reception ends. CR+LF/CR/LF/Timeout
7	**Reception Timeout**	• The timeout value after the command is sent until the first 1 byte is received.
8	**Byte Interval Timeout**	• The reception timeout value after the second byte. When a reception delimiter is timed out, reception is determined to have ended if no data is received after this interval.

6. Set the [Alarm Settings (Computer)] tab.

❖ For an explanation of the [Alarm Settings (Computer)] see 3.2.10"Common Tab Settings" -"Alarm Settings (Computer)"(Page 78)

7. When the settings are complete, click the [Send] button to send the settings to the 2343 RS Link Module.

8. Check whether communication with external equipment is performed correctly by clicking the [Communication check after sending settings] button from the [Basic Settings] tab after sending settings is complete.



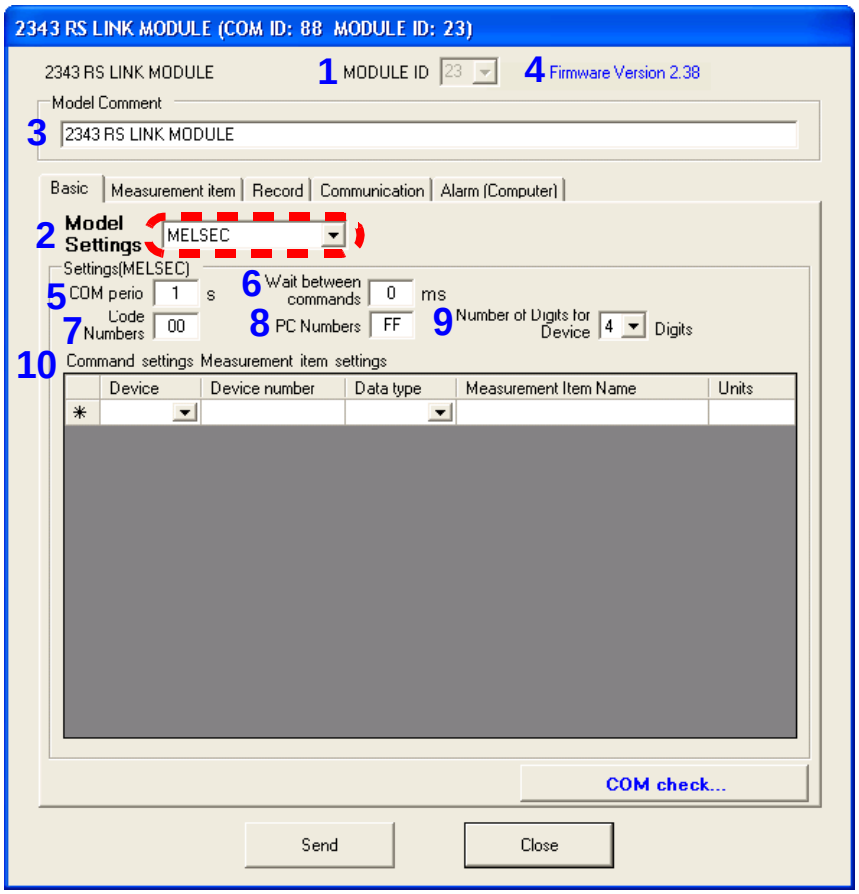
Selecting Mitsubishi Electric Corporation MELSEC

Procedure

1. **Bring up the [Module settings] dialog box.**

❖ 3.2.1 "Common Steps" (page 44)

2. **Make settings under the [Basic Settings] tab.**



Setting items

Setting item		Description
1	**MODULE ID**	• ID number of the RS Link Module • Cannot be changed from the main screen. • Can only be changed during the initial setup of the [MAP editor].
2	**Connection Model**	• Selects the MELSEC.
3	**Model Comment**	• The string entered here serves for identifying the module. • This string is used in the measurement value monitor and Smart Site Viewer when displaying recorded data. Enter a comment string here that is meaningful and easy to understand (up to 40 characters).
4	**Firmware**	• The firmware version number for the module appears when communicating with the module by sending settings or checking communication.

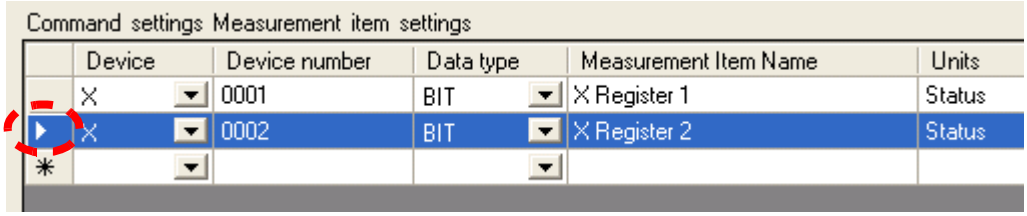
Setting items

Setting item		Description	
5	**Communication period**	• Communicate with the optional equipment in the communication period set here. However, when the communication period for the recording interval is divided during recording, it operates under the assumption that the communication period = the recording interval. • Setting range: you can set from 1 to 255 seconds in 1 second units.	
6	**Wait between commands**	• Set the wait between communication commands for optional equipment. • When sending several measurement commands, after the previous command's response has ended, wait until the next command is sent. (This is because, depending on the equipment, it might not be able to receive the command immediately after the response is sent.)	
7	**Code Numbers**	• Setting range: 00 to 31 (enter decimals) Set the same number as the code number set in MELSEC. • Setting range: 00 to 31 (enter decimals)	
8	**PC Numbers**	• Set the same number as the PC number set in MELSEC. • Setting range: 00 to FF (enter hexadecimals)	
9	**Number of Digits for Device**	• Only when reading a high order device (device for which 6 digits are necessary), set the number of digits for the device to 6.	
10	**Command settings (Measurement item settings)**	• Set the specification interpretation method for the read data and the received data. *Multiple data types cannot be read in a command. • For example, when interpreting the D0 to D7 register, divide the 8 pieces of data for column BCD4 into 8 separate descriptors.	
		Device	• Specify the device name of the data to read.
		Device number	• Specify the device number of the data to read.
		Data type	• Select what type to use to interpret the received data. • Please note, there is a possibility that DWORD, BCD12 will be canceled. * See Details for data type
		Measurement Item Name	• The name of the measurement item retrieved. (40 characters or less) • Used for the measurement value monitor display and the CSV header file.
		Units	• The units of the measurement item retrieved. (20 characters or less) • Used for the measurement value monitor display and the CSV header file.

* Details for the data type

Data type	BIT	• 1 byte received data is regarded as BIT data.
	WORD	• Interpret 4 byte received data as a signed 16bit hexadecimal form integer.
	UWORD	• Interpret 4 byte received data as an unsigned 16bit hexadecimal form integer.
	DWORD	• Interpret 8 byte received data as a signed 32bit hexadecimal form integer. • Interpret as replacing low bytes and high bytes. Example Received data: "1234 0567" (hex) Data is interpreted as "0567 1234" (hex), is read by signed 32bit, and is converted into decimals. Therefore, the measurement is "90640940" (decimal).
	BCD4 / 8 / 12	• Interpret 4/8/12 byte received data as a decimal form. • Interpret as replacing low bytes and high bytes. Example Received data: "1234 0567" (hex) Interpreted data "0567 1234" (BCD). Therefore, the measurement is "5671234" (decimal).

About command settings
(1) Depending on the type of command, you can read approximately 45 devices.
For Model 2343 internal, the send command is less than 700 bytes, and the configurable range for the received data is less than 250 bytes.
(2) When you want to delete the send command
In the command setting column, click the line header to the left of the command that you want to delete to select the line.



Press the "Delete" key to delete the command you selected.

3. Set the [Measurement Item Settings] tab.

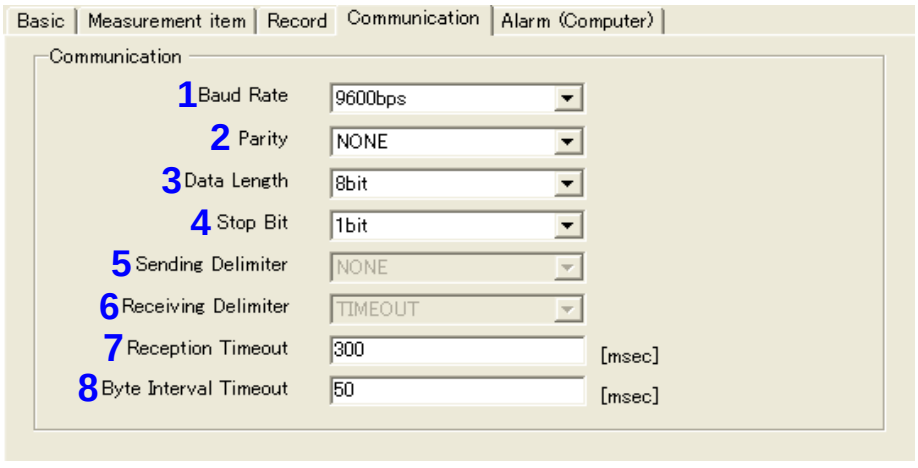
❖ For an explanation of the [Measurement Item Settings] see 3.2.10"Common Tab Settings" - "Measurement Item" (Page 76).

4. Set the [Record Settings] tab.

❖ For an explanation of the [Record Settings] see 3.2.10"Common Tab Settings" - "Record Settings" (Page 77)

5. Set the [Sending Settings] tab.

Match the sending rate, parity, data length, and the stop bit to the settings for the external equipment.



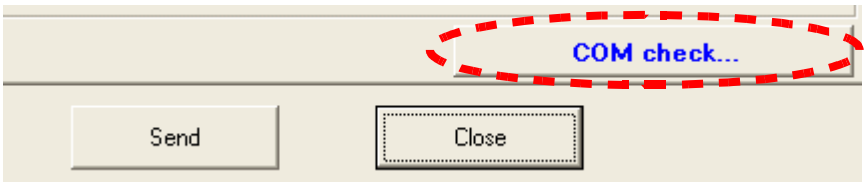
1	**Sending Rate**	• 1200bps to 57600bps *57600bps is recommended
2	**Parity**	• None/Odd number/Even number
3	**Data Length**	• 7bit / 8bit
4	**Stop Bit**	• 1bit / 2bit
5	**Sending Delimiter**	• This setting cannot be changed from [None].
6	**Receiving Delimiter**	• This setting cannot be changed from [Timeout].
7	**Reception Timeout**	• The timeout value after the command is sent until the first 1 byte is received.
8	**Byte Interval Timeout**	• The reception timeout value after the second byte. When a reception delimiter is timed out, reception is determined to have ended if no data is received after this interval.

6. **Set the [Alarm Settings (Computer)] tab.**

❖ For an explanation of the [Alarm Settings (Computer)] see 3.2.10"Common Tab Settings" -"Alarm Settings (Computer)"(Page 78)

7. **When the settings are complete, click the [Send] button to send the settings to the 2343 RS Link Module.**

8. **Check whether communication with external equipment is performed correctly by clicking the [Communication check after sending settings] button from the [Basic Settings] tab after sending settings is complete.**



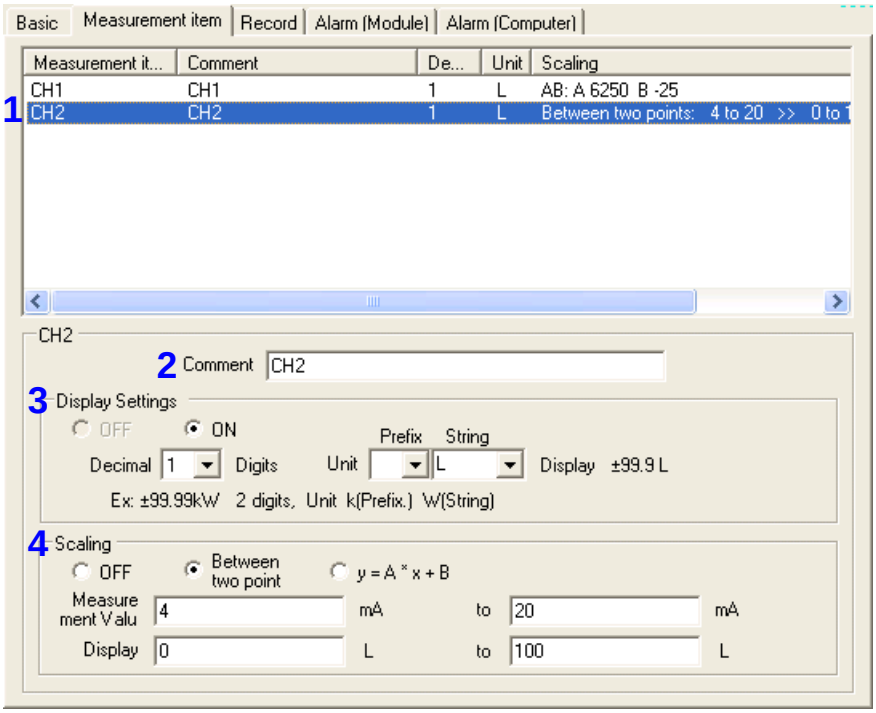
* Optional equipment and MELSEC common items

3.2.10 Common Tab Settings

To make common tab settings, you need to set the [Basic Settings] tab beforehand. Set each tab in order from the left.

1. Make settings under the [Measurement Item Settings] tab.

This setting allows you to set the [Comment], [Number of Characters to Display], and [Scaling] for each measurement item.

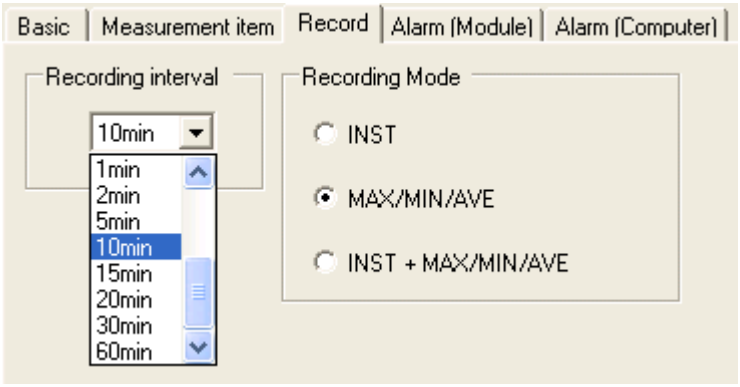


Setting item		Description
1	**Measurement Item**	• The current setting contents for each measurement item appear. • When you want to change a setting, click the measurement item for which you want to change a setting.
2	**Comment**	• The string entered here serves for identifying the Measurement Item. • This string is used in the measurement value monitor and Smart Site Viewer when displaying recorded data. Enter a comment string here that is meaningful and easy to understand (up to 40 characters).

<table>
<tr><th colspan="2">Setting item</th><th colspan="3">Description</th></tr>
<tr><td rowspan="4">3</td><td rowspan="4">Display Digit Setting</td><td colspan="3">• Set the display digit when measurements are displayed on the Monitoring screen.
• Perform [Display Digit Setting] whenever you use scaling.</td></tr>
<tr><td>Decimal number</td><td>Set the number of digits to display after the decimal point.</td><td>[0 to 4]</td></tr>
<tr><td>Units: (Supplementary)</td><td>Set the supplementary unit.</td><td>[p/ n/ μ/ m/ k/ M/ G/ T]</td></tr>
<tr><td>Units: (Character string)</td><td>This can be set when scaling is used.
Set an optional character string of up to 6 characters. You can select from options prepared beforehand.</td><td>[W/ V/ A/ °C/ %rh/ Hz]</td></tr>
<tr><td rowspan="3">4</td><td rowspan="3">Scaling</td><td colspan="3">• Perform scaling operation Y [units] = A x measurement values (absolute value) + B for measurement values.
Example: If A = 200, B = 100, units (supplementary) = k, units (character string) = W, when the original measurement value is 1[V] after the scaling operation the measurement value is 300[kW].
• Perform [Display Digit Setting] whenever you use scaling.
• When you are not using scaling, select [OFF].</td></tr>
<tr><td>Between two points</td><td>• The values of coefficient A and B are not specified directly, the measurement value range ([Measurement Value]) as well as the value after scaling which corresponds to the value ([Display]) are specified.
• The values for coefficients A and B are automatically calculated according to the value entered.</td><td>The numerical entry range is -1E+07 to -1E-07, 0, 1E-07 to 1E+07.</td></tr>
<tr><td>A*x + B</td><td>• The values of coefficient A and B are specified directly.</td><td>The numerical entry range is -1E+09 to -1E-09, 0, 1E-09 to 1E+09.</td></tr>
</table>

2. Make settings under the [Record Settings] tab.

These settings are used for the data recording function.
You can set the [**Rec. Interval**] and [**Recording Mode**].



Hints

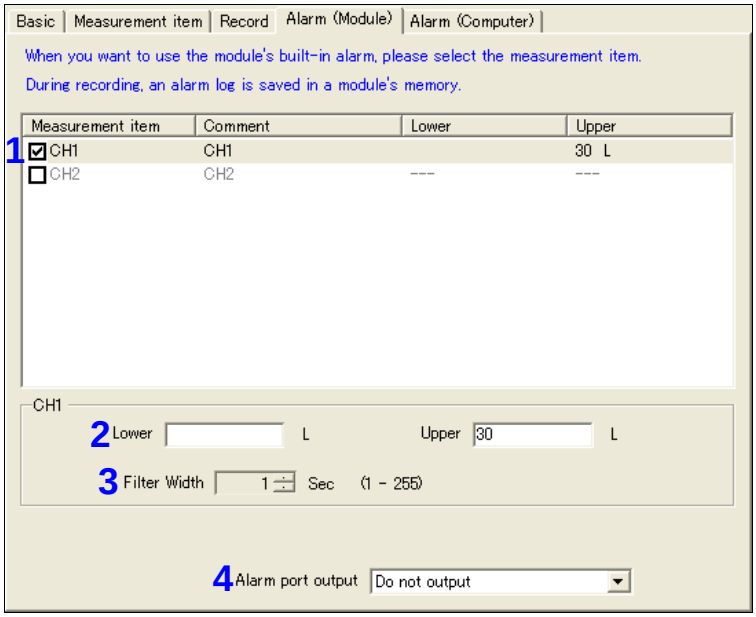
- When wishing to use the same recording settings for all measurement modules, you can make the setting at the start of recording and do not need to do it here.
- When wishing to use different settings for individual measurement modules, you should make the settings beforehand on this screen.

3. Settings for the [Alarm Settings (Module)] tab.

This setting is to use the alarm function of the module. If you are not going to use it, you do not need to make any settings.

❖ For details on the alarm, see 5 "Alarm Function" (page 207).

When you want an alarm evaluation in the computer for the monitor value when measurement values are being monitored, set the alarm from the [Alarm Settings (Computer)] tab.

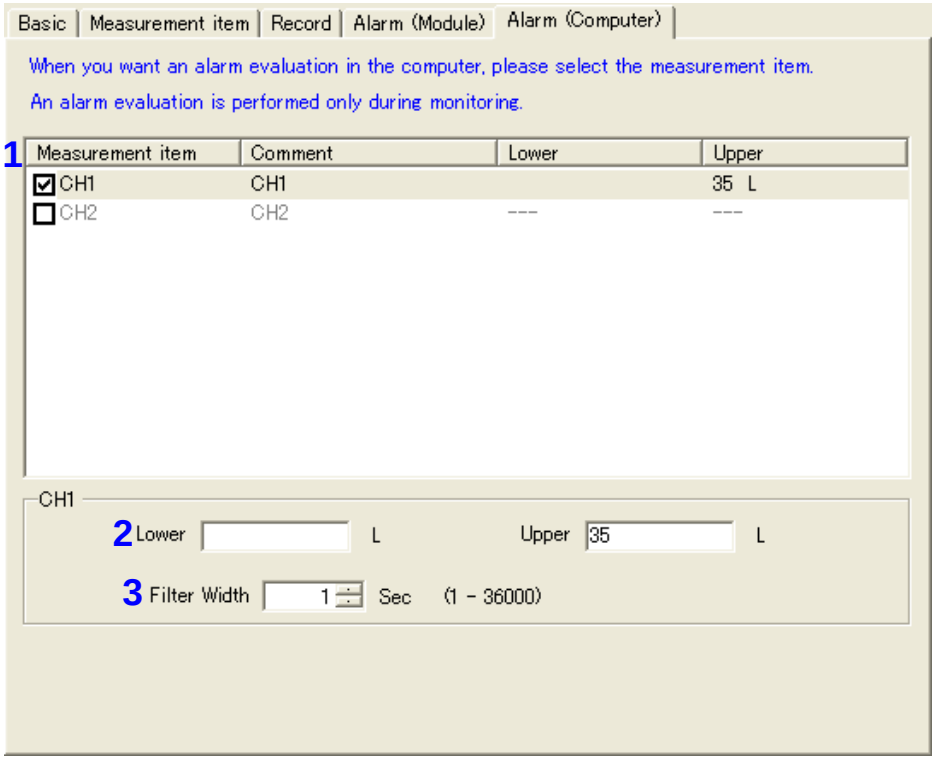


Setting item		Description
1	**Measurement Item**	• Select the CH for alarm evaluation. • Select the check box ☐ at the left of the window to enable alarm settings, and the setting item appears below the screen. • When an alarm is triggered for measurements in the measurement module and an alarm occurs, it is saved in the memory as alarm data.
2	**Upper** **Lower**	• Enter the lower and upper alarm threshold values • When no value is entered, there is no maximum or minimum evaluation. • The setting range is -1E+07 to -1E-07, 0, 1E-07 to 1E+07.
3	**Filter time width**	• Sets the alarm judgment filter time. • This functionality prevents sudden fluctuations in the measured value from causing changes in the alarm judgment result. • Whenever the alarm judgment reaches or exceeds the filter time width, the alarm judgment result is changed. Example: If the filter time width is set to 5 sec • When the alarm judgment result changes from "in-range" (off) to "out-of-range" (on): The alarm judgment result will change to "out-of-range" once the out-of-range state persists for 5 sec. • When the alarm judgment result changes from "out-of-range" (on) to "in-range" (off): The alarm judgment result will change to "in-range" once the in-range state persists for 5 sec.
4	**Alarm port output method (All items common settings)**	• Set whether or not to output the alarm evaluation result to the alarm port and the LED for the measurement module. (Settings are common for all measurement items.) • [Do not output], it is not output. • For [Save Alarm Status], when the alarm evaluation result is outside the range, it continues to output until it is cleared*. • For [Update at each sampling], evaluation results are output every second. *: When you clear the alarm output (port) for the measurement module, hold down the [ALARM RESET] switch on the communication module for more than one second.

4. Settings for the [Alarm Settings (Computer)] tab.

When you want an alarm evaluation on the computer, this setting sets the measurement item monitoring with Smart Site Utility. If you are not going to use alarm evaluation for the computer, you do not need to make any settings.

When you want to use the module's built-in alarm, set the alarm from the [Alarm Settings (Module)] tab.



Setting item		Description
1	**Measurement Item**	• Select the measurement item for alarm evaluation. • Select the check box ☐ at the left of the window to enable alarm settings, and the setting item appears below the screen. • When alarm evaluation is enabled, the alarm can evaluate monitor values while monitoring measurements. Check alarm information from the [Alarm log] window.
2	**Upper** **Lower**	• Enter the lower and upper alarm threshold values • When no value is entered, there is no maximum or minimum evaluation. • The setting range is -1E+07 to -1E-07, 0, 1E-07 to 1E+07.
3	**Filter time width**	• Sets the alarm judgment filter time. • This functionality prevents sudden fluctuations in the measured value from causing changes in the alarm judgment result. • Whenever the alarm judgment reaches or exceeds the filter time width, the alarm judgment result is changed. Example: If the filter time width is set to 5 sec • When the alarm judgment result changes from "in-range" (off) to "out-of-range" (on): The alarm judgment result will change to "out-of-range" once the out-of-range state persists for 5 sec. • When the alarm judgment result changes from "out-of-range" (on) to "in-range" (off): The alarm judgment result will change to "in-range" once the in-range state persists for 5 sec.

3.3 Monitoring Measurement Values

You can open a window for each measurement module and use the display to monitor measurement values.

The monitored items can be displayed in the monitor list.

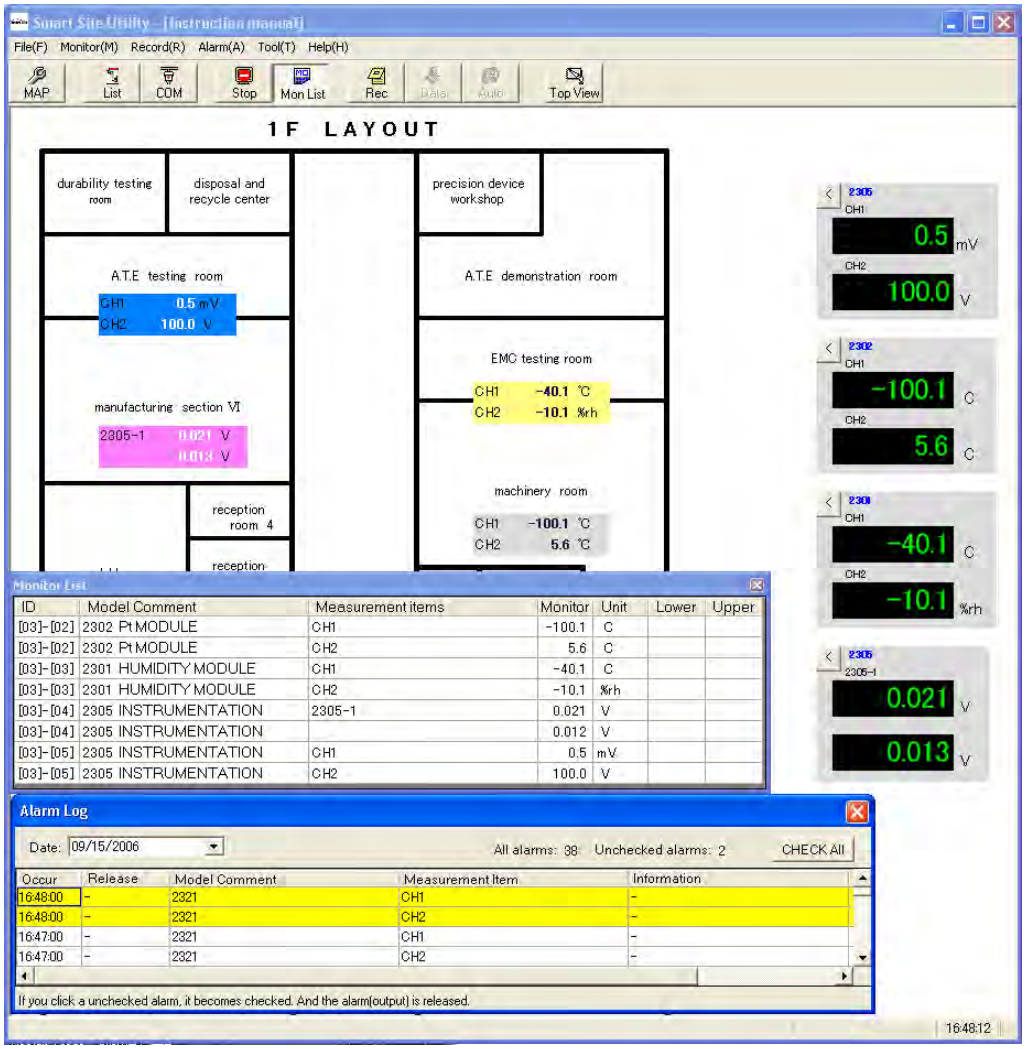
❖ 3.3.1 "Starting and Stopping the Monitor Function" (page 81)

When an alarm is triggered, the color changes for the measurement value in which the alarm occurs.

❖ 5.2.3 "Displaying the Alarm Log" (page 211)

You can move open monitor windows to the position you want by dragging them.

You can select the display size from five sizes: Large, Medium, Small, Minimum, Button.



3.3.1 Starting and Stopping the Monitor Function

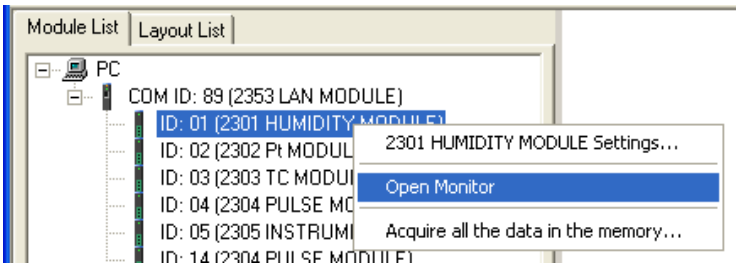
Important
When you use Smart Site Utility for a long period, set the computer so that it does not enter standby mode or hibernate.
If the computer enters either standby or hibernation status, Smart Site Utility cannot communicate between modules and monitoring and recorded data for measurement values cannot be collected.
❖ For details on the setting method, see Appendix 8 "Canceling Standby and Hibernation Functions" (page 313).

Procedure

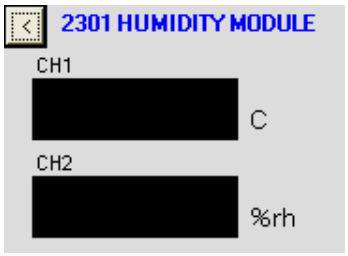
1. **Select the measurement module for which you want to monitor measurements from the [Module List].**

2. **Right-click to access the popup menu. Then select [Open Monitor].**

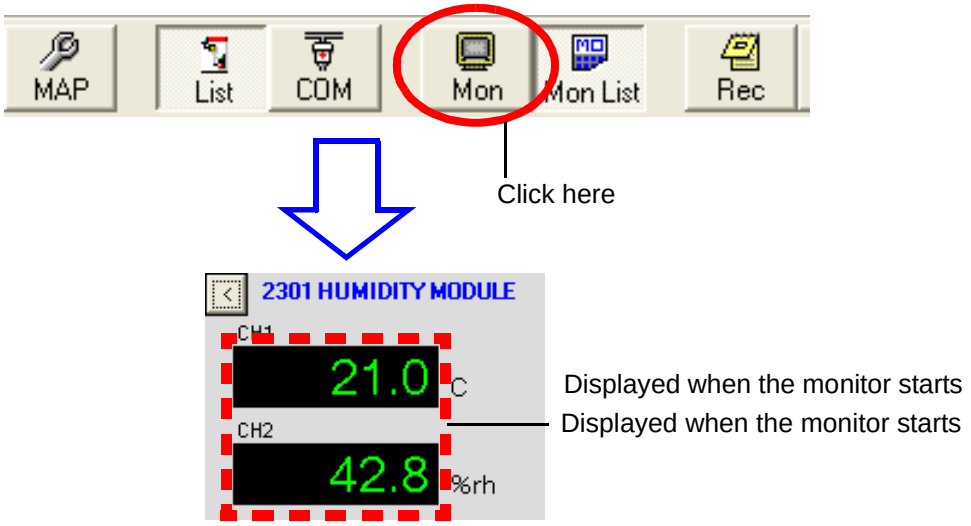
The same effect can be achieved by double-clicking on the measurement module in step 1.



3. **The Monitoring screen opens.**



4. **To start the monitor function, click the [Mon] button on the toolbar.**

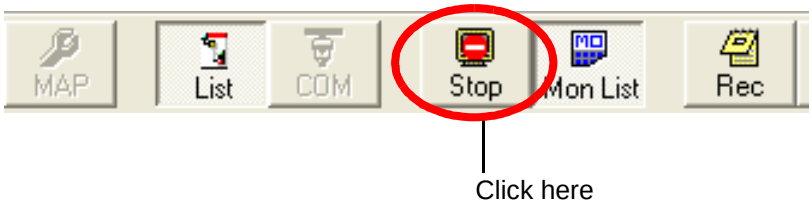


The measurement items are listed in the monitor list. Click the [Monitor List] button on the toolbar to display and hide.

Monitor List

ID	Model Comment	Measurement items	Monitor	Unit	Lower	Upper
[89]-[01]	2301 HUMIDITY MODULE	CH1	22.8	C		
[89]-[01]	2301 HUMIDITY MODULE	CH2	44.4	%rh		
[89]-[02]	2302 Pt MODULE	CH1	23.5	C		
[89]-[02]	2302 Pt MODULE	CH2	24.8	C		
[89]-[03]	2303 TC MODULE	CH1	24.2	C		
[89]-[03]	2303 TC MODULE	CH2	25.0	C		
[89]-[04]	2304 PULSE MODULE	CH1	983			
[89]-[04]	2304 PULSE MODULE	CH2	983			

5. **To stop the monitor function, click the [Stop] button on the toolbar.**



Note

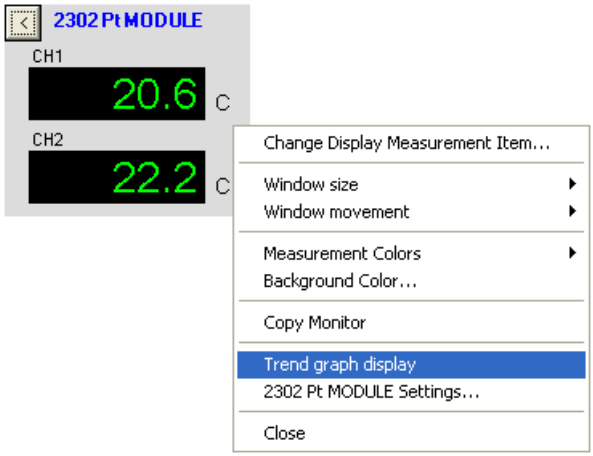
- The monitor function serves only to check the measurement values. Measurement data obtained in this way cannot be stored.
- The following monitoring values (integrated data) are reset (0 to clear) at recorded intervals set in the measurement module.
  This is reset whether or not the measurement module is recording.
  2304-20 Pulse Module
  2304-21 Pulse Module
  The active energy for the 2331 Power Meter Module.
  The active energy for the 2332 Power Meter Module.

3.3.2 Displaying a Trend Graph

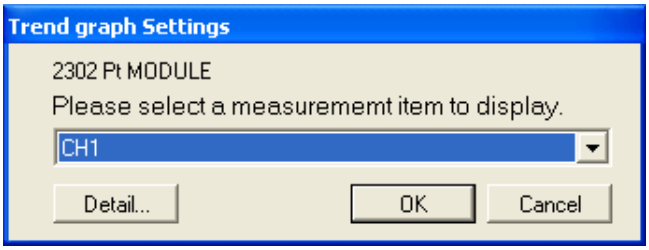
The monitor window normally shows instantaneous values in numeric format. Sometimes it may be desirable to use measurement values from a short preceding interval and display the results in graphical form. This can be achieved by using the trend graph function.
The longest interval that can be covered by the trend graph is one hour.

Procedure

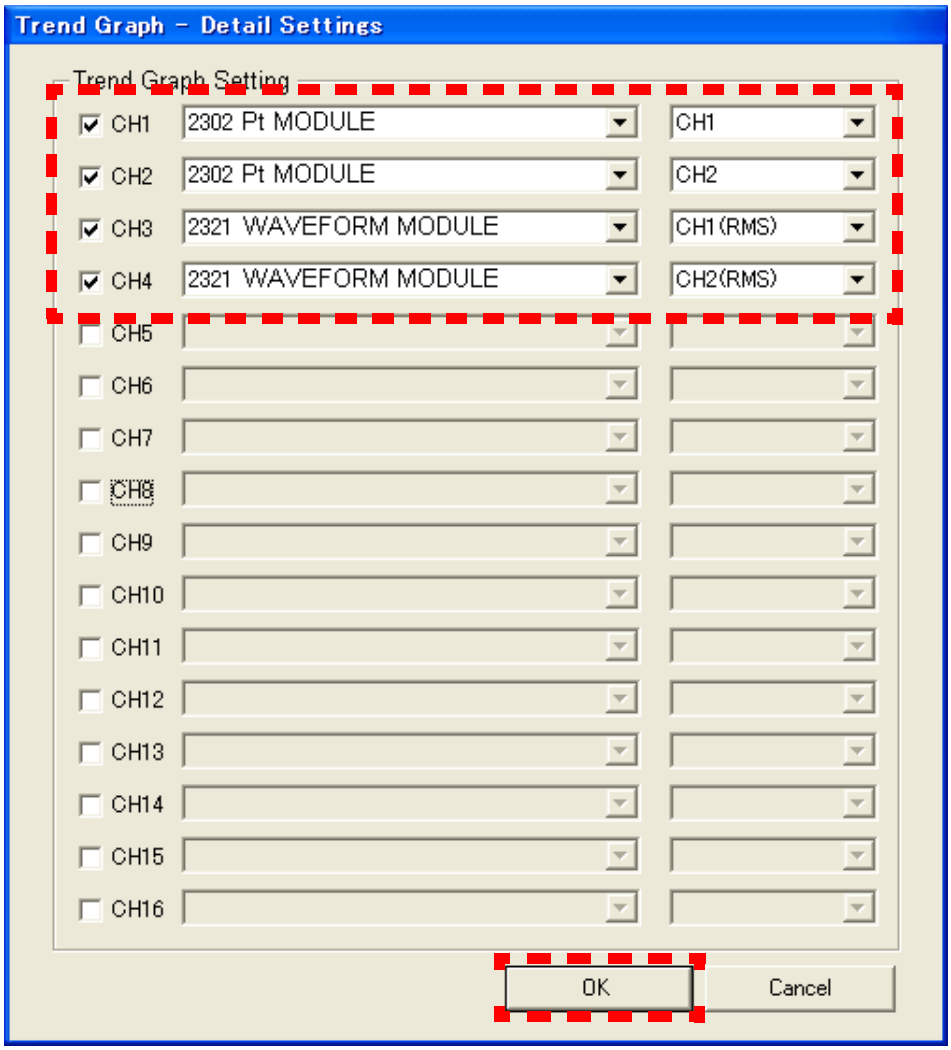
1. **Right-click on the monitor window and click menu, [Show Trend Graph] to bring up the [Trend Graph Settings] dialog box.**



2. **The display item selection window for the selected module opens.**



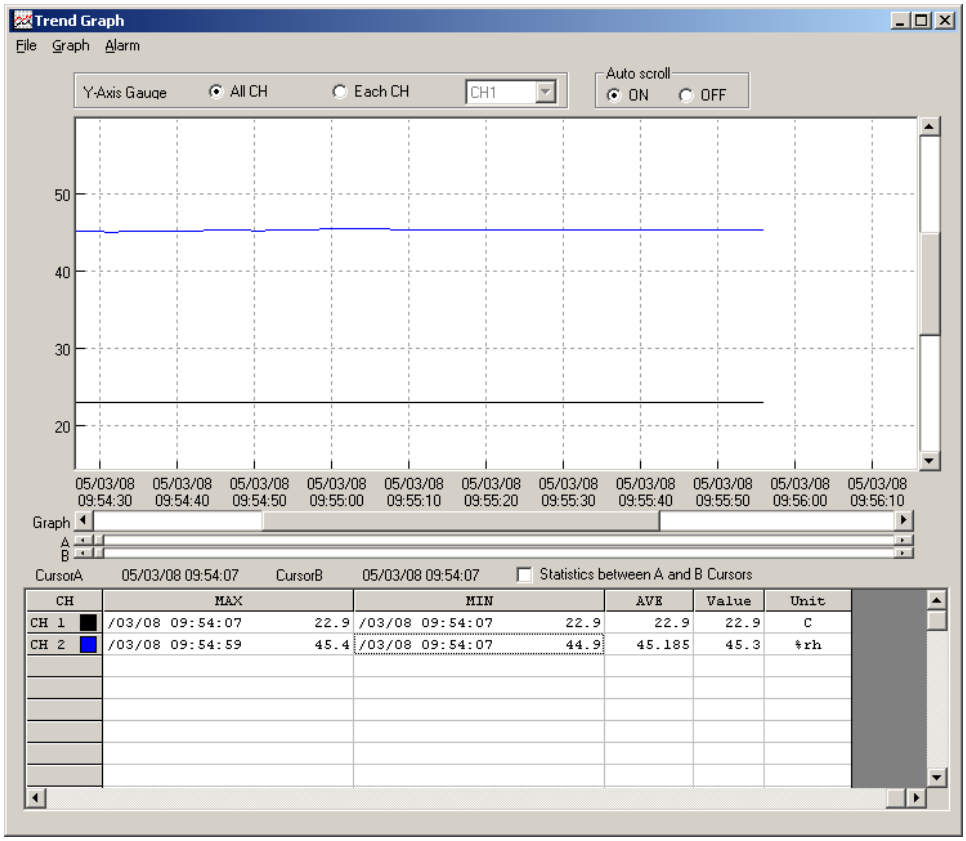
The trend graph window opens when the displayed CH is selected and [Set] is clicked.
When [Detailed Settings] is clicked, a window containing all selected setting items for the module that exist in the module list opens.



Select the check boxes of items for which you want to display a trend graph (maximum 16). Then click [Set]. Monitoring starts automatically, and the trend graph window opens.

3. **The trend graph menu items are the same as on the [Graph] window of Smart Site Viewer.**

❖ 3.7.4 "Main Functions of "Graph"" (page 116)



Note

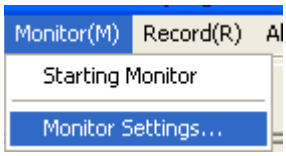
- The trend graph is updated every second, using the monitor data. If wireless connection conditions are poor, the measurement values may not be displayed properly.
- The trend graph can show up to 16 channels and up to one hour's worth of data. When one hour is exceeded, old data will progressively disappear from view.
- Graph settings will not be stored.

3.3.3 Setting the Monitor

To reduce the load during monitor communication, you can set a cycle for monitor communication. Also, you can set to automatically start monitoring.

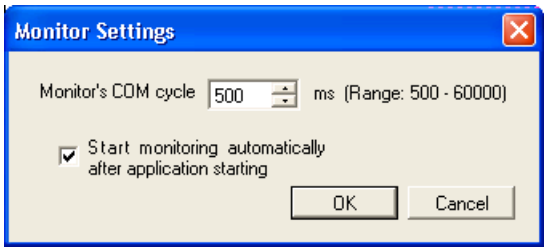
Procedure

1. **From the menu bar, select [Monitor]-[Monitor Settings].**



2. **Displays the [Monitor Settings] dialog box.**

Set the monitor's communication cycle.
When you want monitoring to start automatically after restarting the application (for example, after making settings when starting from startup etc.) select "Start monitoring automatically after startup" and click the [OK] button.



3.3.4 Monitoring Screen Right-Click Menu

You can find the following items on the right-click menu of the Monitoring screen.

Right-click menu	Description
Change display measurement item	• Change the measurement item displayed.
Window size	• Select the window size. **Notes:** Window sizes that can be displayed vary depending on the type of module.
Window movement	• Set allow or deny movement for the Monitoring screen.
Measurement colors	• Change the display color for the monitor values.
Background color	• Change the background color of the Monitoring screen.
Copy monitor	• Make a copy of the Monitoring screen. After copying, the new Monitoring screen inherits the pointers and Monitoring screen attributes (display items, window size, measurement colors, and background color).
Trend graph display	• Display the trend graph.
Module settings	• Change alarm settings etc. for the module.
Close	• Close the measurement labels.

3.4 Checking the Current Waveform

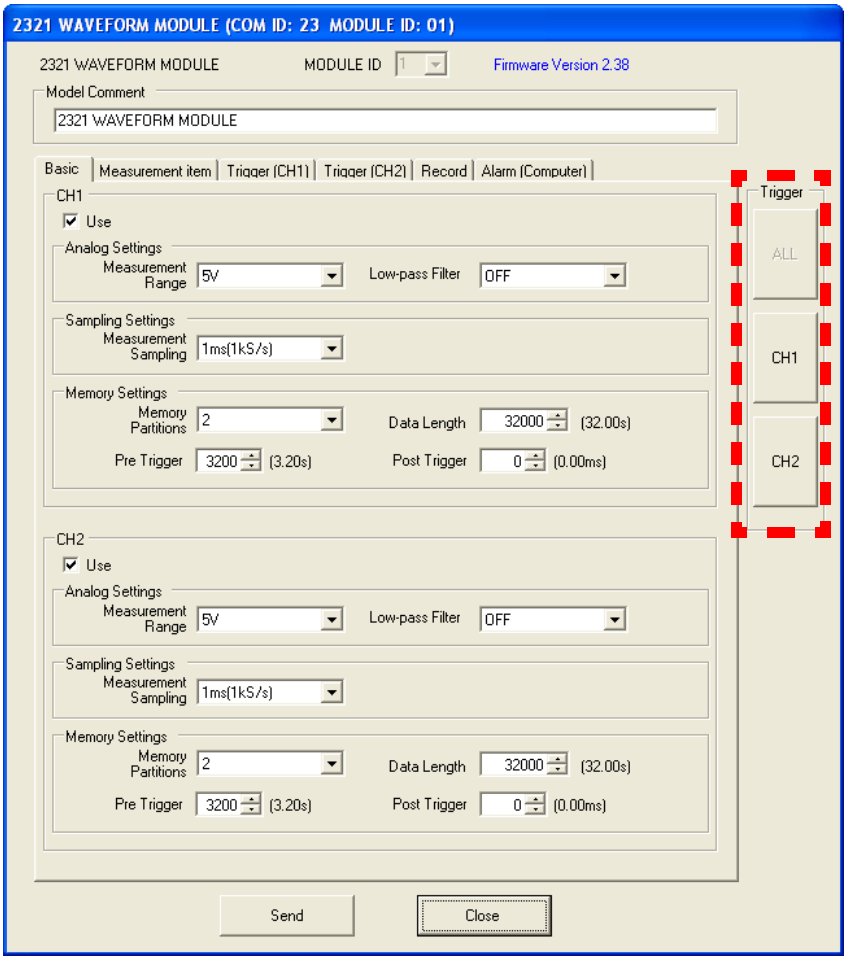
You can use this to collect the current waveforms acquired, and to adjust the range and trigger settings. Without depending on the status of 2321 (before recording, during recording), current waveform data can be acquired.

Note
This can be used for firmware version 2.36 or later.

Procedure before starting recording

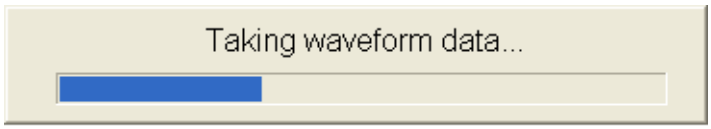
1. **Display the [Measurement Module Settings] dialog box.**

2. **Click the trigger button for the CH that you want to acquire.**



* You cannot click ALL before recording starts.

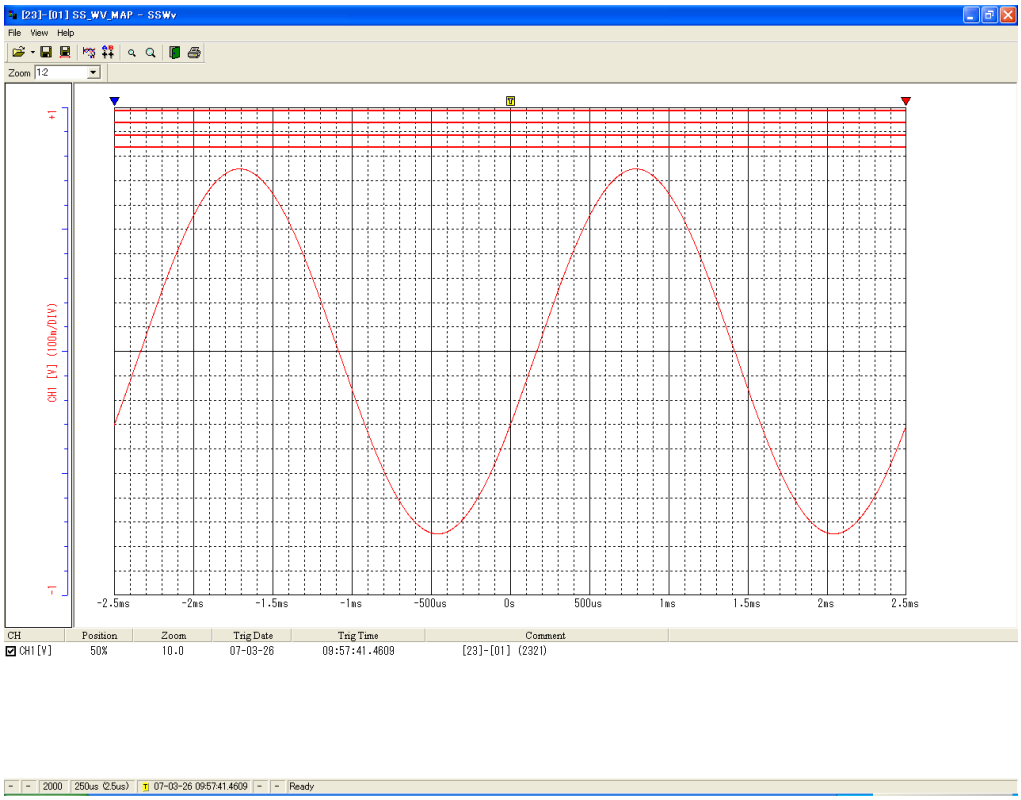
3. The following dialog box appears for the period in which waveform data is collected.
You cannot perform other operations while acquiring waveform data.



* The dialog box closes after one minute if waveform data cannot be acquired due to network problems etc.

4. The Smart Site Wave Viewer starts automatically when waveform data collection has finished, and the waveform data that has been acquired is displayed.

❖ For details on how to use the Smart Site Wave Viewer, see 3.9.3 "Using the Smart Site Wave Viewer" (page 127)

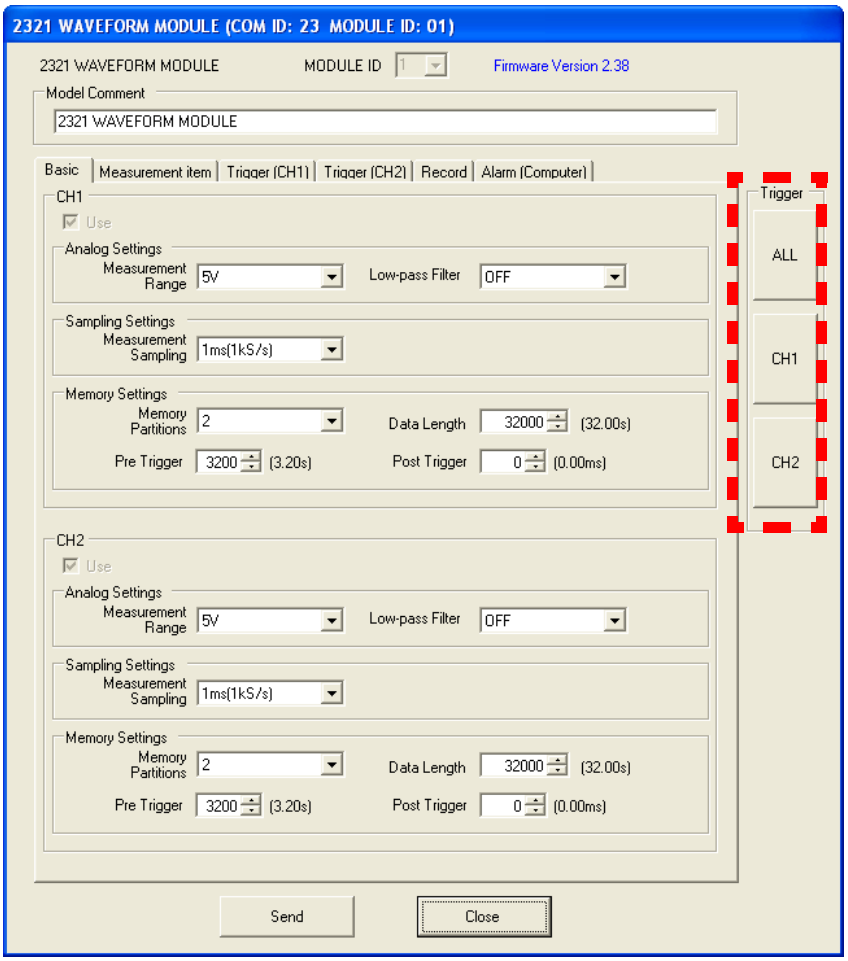


Note
- If the CH setting is not set to "Use", the trigger cannot be applied.
- You can acquire waveform data at a maximum of one a minute.
- Data acquired before recording starts is not automatically saved in the PC.

Procedure when recording

1. **Display the [Measurement Module Settings] dialog box.**

2. **Click the trigger button for the CH that you want to acquire.**
To acquire waveform data for both CH, click ALL.



3. **Send the trigger command to each module.**

4. **Waveform data is automatically collected.**

❖ For details on displaying the waveform data, see 3.9 "Displaying Waveform Data" (page 124).

3.5 Recording and Acquiring Data

- When a recording start command is received by a measurement module, the module starts to save measurement data at regular intervals in its internal memory.
- The recorded data can be collected by the computer and saved in a file.
- Files created in this way can be viewed with Smart Site Viewer (this is also possible while data recording is still in progress).

General procedure

1. Set the recording parameters and start data recording. ❖ 3.5.1 (page 91)

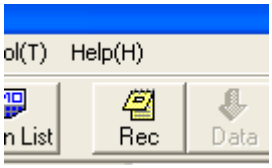
2. Acquire data at regular intervals, either automatically or manually. ❖ 3.5.2 (page 103)

3. When all necessary data have been acquired, stop recording. ❖ 3.5.3 (page 107)

3.5.1 Starting Data Recording

Procedure

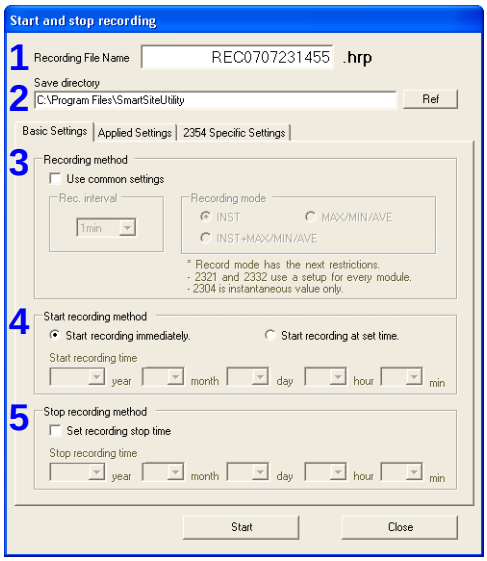
1. **Click the [Rec] button on the toolbar to open the [Start and stop recording] dialog box. This dialog box lets you set the recording parameters and start recording.**

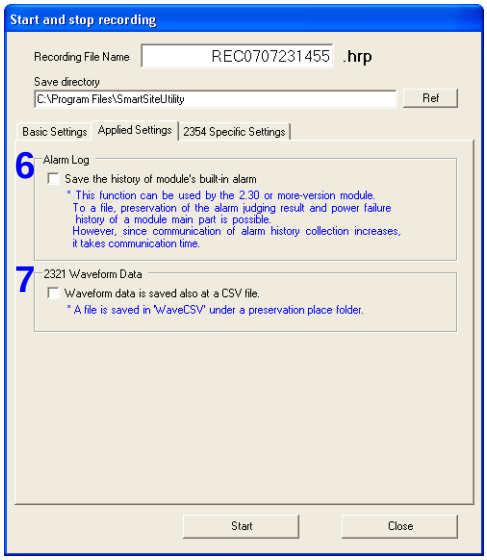


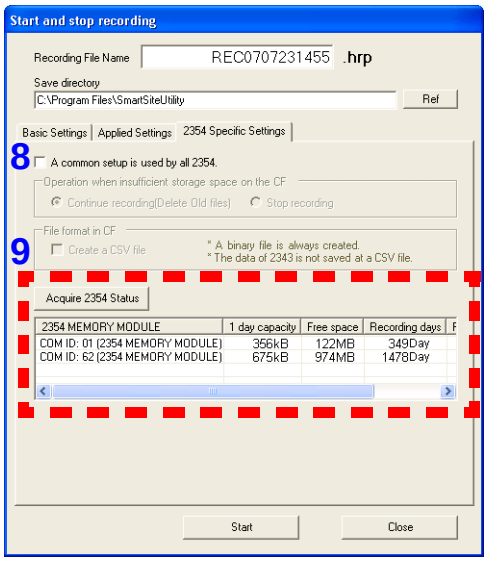
You can also select [Record] - [Start/Stop Recording] from the menu bar.

2. If the [Start/Stop Recording] dialog box opens, make the necessary settings.

Select each of the tabs [Basic Settings], [Applied Settings], and [2354 Specific Settings] and perform settings.





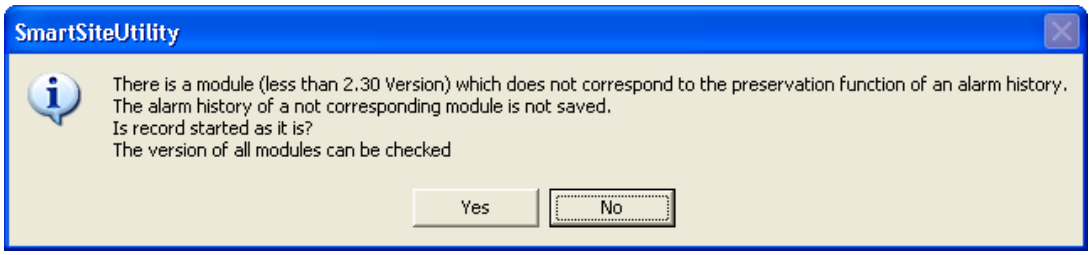


Setting item		Description
1	**File name**	• Specifies the file name for recorded data.
2	**Save directory**	• To change the directory, click the [Ref] button.
3	**Recording method**	• To use the same settings for all modules, select the [Use common settings] check box, and make settings for [Rec. interval] and [Recording mode]. • When the [Use common settings] check box is not selected, individual settings will be used for each module. ❖ See the section on making settings for the [Recording Method] tab of each module 3.2 "Setting the Measurement Parameters (Initial settings for the measurement module)" (page 44)
4	**Start recording method**	• Determines whether recording starts immediately or at a specified time. • Actual recording start will occur at a suitable transition point.

Setting item		Description
5	**Stop recording method**	• Set this option if you want the recording to stop at a specified time.
6	**Alarm Log**	• Select to save alarm logs in the module itself.
7	**2321 Waveform Data**	• If [Create CSV file for waveform data] is selected, when waveform data for 2321 Waveform Module is collected, the file is converted to a CSV file at the same time the waveform data is saved in the "Target file\Wave" folder. • This setting is only enabled when Model 2321 is present in the module list.
8	**2354 Specific Settings**	• When present in the module list, to make all 2354 Memory Module recording settings common, check [Use common settings for all 2354]. • When [Continue recording] is set from [Operation when insufficient storage space on the CF], old files are deleted one by one when there is insufficient storage space on the CF card. When [Stop recording] is set, recording stops but files are not deleted. • When [Create a CSV file] is set from [File format in CF], in addition to the binary format file, a CSV file for viewing and editing in Excel etc. is created at the same time. • This setting is only enabled when 2354 is present in the module list.
9	**2354 Status Check**	• Click [Acquire 2354 Status] to query all Model 2354 present in the module list and display the status in one column. • [1 day capacity] is necessary for the CF card, and [Free space], [Recording days], and [Recording Status] are displayed for the CF card. • When there are problems in the CF card such as not enough free space, the contents of the problem are highlighted in red.

- Alarm logs cannot be saved when the module's firmware version earlier than 2.30.
- When saving alarm logs, you need to enable the alarm in the module beforehand.

❖ For an explanation of the [Alarm Settings (Module)] see 3.2.10"Common Tab Settings" -3(Page 78).



Important note 1

- Internally, a measurement module will start recording at a suitable transition point in time (a time that can be divided by the interval time).
  Example:
  Interval setting: 60 minutes
  Specified recording start time (or time at which immediate recording start is activated): 9:01:00
  Actual recording start: 10:00:00

Important note 2

- For [**MAX/MIN/AVE**] and [**INST+MAX/MIN/AVE**], the first recording data are generated after the interval has elapsed. If one of these modes is selected in the example of "Important note 2", the first recording data will be generated at 11:00:00.

Important note 3

- When using the 2332 Power Meter Module, recording items cannot be selected from this dialog box. For details on setting the recording mode from the [Measurement Module Settings] dialog box for each module, see 3.2.6 "Setting Measurement Parameters for Model 2332" (page 56)

Important note 4

- Before starting to record, make sure your computer's clock is set correctly. When recording starts, the internal clocks for all modules are set according to the computer's clock.

Important note 5

- When using 2354 Memory Module, you need to install the CF card in Model 2354. Also, you cannot start recording when there is less than two days of free space on the CF card. For details on CF card capacity, see 6.5 "Recording File Size of the CF Card" (page 241).

3. When all settings have been made, click the [Start] button.

- The recording settings are sent, and recording starts. The indication [**Recording**] appears on the toolbar.

- The internal clock of the module will be set to the same time as the clock of the computer.

Module save data numbers and available recording time

- The amount of saved data and the time that can be saved for the measurement modules differs depending on the number of uses of the CH and the recording mode.
- When alarm settings are made for each measurement module, and the alarm is enabled in the module, an increase in the frequency of alarm events means a decrease in the time that can be saved.

1. Rough relationship between the number of save data and the maximum storage days (hours) for Models 2301 to 2305.

	Recording mode		
	Instantaneous value	MAX/MIN/AVE	Instantaneous value + MAX/MIN/AVE
Number of save data	26000	13000	10000
Recording interval (interval)			
1 s	7.5 h	3.5 h	2.5 h
2 s	14.5 h	7 h	5.5 h
5 s	1.5 d	18 h	14.5 h
10 s	3 d	1.5 d	1 d
15 s	4.5 d	2 d	1.5 d
20 s	6 d	3 d	2 d
30 s	9 d	4.5 d	3.5 d
1 m	18 d	9 d	7 d
2 m	36 d	18 d	14 d
5 m	92 d	46 d	36 d
10 m	184 d	92 d	73 d
15 m	277 d	138 d	110 d
20 m	369 d	184 d	147 d
30 m	554 d	277 d	221 d
60 m	1109 d	554 d	443 d

2. Rough relationship between the number of save data and the maximum storage days (hours) for Model 2306.

	Recording mode		
	Instantaneous value	MAX/MIN/AVE	Instantaneous value + MAX/MIN/AVE
Number of save data	49140	18900	14430
Recording interval (interval)			
1 s	13 h	5 h	4 h
2 s	1 d	10.5 h	8 h
5 s	2.5 d	1 d	20 h
10 s	5.5 d	2 d	1.5 d
15 s	8.5 d	3 d	2.5 d
20 s	11 d	4 d	3 d
30 s	17 d	6 d	5 d
1 m	34 d	13 d	10 d
2 m	68 d	26 d	20 d
5 m	171 d	66 d	50 d
10 m	341 d	131 d	100 d
15 m	512 d	197 d	150 d
20 m	683 d	263 d	200 d
30 m	1024 d	394 d	301 d
60 m	2048 d	788 d	601 d

3. Rough relationship between the number of save data and the maximum storage days (hours) for Model 2321.

	Recording mode		
	Instantaneous value	MAX/MIN/AVE	Instantaneous value + MAX/MIN/AVE
Number of save data	5300	2000	1500
Recording interval (interval)			
1 s	80 m	30 m	25 m
2 s	2.5 h	1 h	50 m
5 s	7 h	2.5 h	2 h
10 s	14.5 h	5.5 h	4 h
15 s	22 h	8.5 h	6.5 h
20 s	1 d	11 h	8.5 h
30 s	1.5 d	17 h	13 h
1 m	3.5 d	1 d	1 d
2 m	7 d	2.5 d	2 d
5 m	18 d	7 d	5 d
10 m	37 d	14 d	11 d
15 m	55 d	21 d	16 d
20 m	74 d	28 d	22 d
30 m	111 d	43 d	33 d
60 m	222 d	85 d	65 d

4. Rough relationship between the number of save data and the maximum storage days (hours) for Model 2331.

1P2W			
	Recording mode		
	Instantaneous value	MAX/MIN/AVE	Instantaneous value + MAX/MIN/AVE
Number of save data	13000	5900	4600
Recording interval (interval)			
1 s	3.5 h	1.5 h	1 h
2 s	7 h	3 h	2.5 h
5 s	18 h	8 h	6 h
10 s	1.5 d	16 h	12.5 h
15 s	2 d	1 d	19 h
20 s	3 d	1 d	1 d
30 s	4.5 d	2 d	1.5 d
1 m	9 d	4 d	3 d
2 m	18 d	8 d	6 d
5 m	46 d	20 d	16 d
10 m	92 d	41 d	32 d
15 m	138 d	61 d	48 d
20 m	184 d	82 d	64 d
30 m	277 d	123 d	96 d
60 m	554 d	246 d	192 d

3P4W			
	Recording mode		
	Instantaneous value	MAX/MIN/AVE	Instantaneous value + MAX/MIN/AVE
Number of save data	8800	3500	2700
Recording interval (interval)			
1 s	2 h	0.5 h	0.5 h
2 s	4.5 h	1.5 h	1.5 h
5 s	12 h	4.5 h	3.5 h
10 s	1 d	9.5 h	7.5 h
15 s	1.5 d	14.5 h	11 h
20 s	2 d	19.5 h	15 h
30 s	3 d	1.5 d	22.5 h
1 m	6 d	2 d	1.5 d
2 m	12 d	4 d	3.5 d
5 m	30 d	12 d	9 d
10 m	61 d	24 d	18 d
15 m	92 d	36 d	28 d
20 m	123 d	49 d	37 d
30 m	184 d	73 d	56 d
60 m	369 d	147 d	113 d

1P3W/3P3W			
	Recording mode		
	Instantaneous value	MAX/MIN/AVE	Instantaneous value + MAX/MIN/AVE
Number of save data	12000	5100	3900
Recording interval (interval)			
1 s	3 h	1 h	1 h
2 s	6.5 h	2.5 h	2 h
5 s	17 h	7 h	5.5 h
10 s	1 d	14 h	11 h
15 s	2 d	21 h	16.5 h
20 s	2.5 d	1 d	22 h
30 s	4 d	1.5 d	1 d
1 m	8 d	3.5 d	2.5 d
2 m	17 d	7 d	5 d
5 m	42 d	17 d	13 d
10 m	85 d	35 d	27 d
15 m	127 d	53 d	41 d
20 m	170 d	71 d	55 d
30 m	255 d	106 d	82 d
60 m	511 d	213 d	165 d

5. Rough relationship between the number of save data and the maximum storage days (hours) for Model 2332

In the case of 1P2W 6 Circuit measurement

	Recording mode		
	Instantaneous value	MAX/MIN/AVE	Instantaneous value + MAX/MIN/AVE
Number of save data	3510	1410	1080
Recording interval (interval)			
1 s	50 m	20 m	15 m
2 s	1.5 h	40 m	30 m
5 s	4.5 h	1.5 h	1.5 h
10 s	9.5 h	3.5 h	3 h
15 s	14.5 h	5.5 h	4.5 h
20 s	19.5 h	7.5 h	6 h
30 s	1 d	11.5 h	9 h
1 m	2 d	23.5 h	18 h
2 m	4.5 d	1.5 d	1.5 d
5 m	12 d	4.5 d	3.5 d
10 m	24 d	9.5 d	7.5 d
15 m	37 d	14.5 d	11 d
20 m	49 d	19.5 d	15 d
30 m	73 d	29 d	22.5 d
60 m	146 d	59 d	45 d

In the case of 1P2W 5 Circuit measurement

	Recording mode		
	Instantaneous value	MAX/MIN/AVE	Instantaneous value + MAX/MIN/AVE
Number of save data	4095	1657	1275
Recording interval (interval)			
1 s	1 h	20 m	20 m
2 s	2 h	50 m	40 m
5 s	5.5 h	2 h	1.5 h
10 s	11 h	4.5 h	3.5 h
15 s	17 h	6.5 h	5 h
20 s	22.5 h	9 h	7 h
30 s	1 d	13.5 h	10.5 h
1 m	2.5 d	1 d	21 h
2 m	5.5 d	2 d	1.5 d
5 m	14 d	5.5 d	4 d
10 m	28 d	11.5 d	8.5 d
15 m	43 d	17 d	13 d
20 m	57 d	23 d	17.5 d
30 m	85 d	35 d	26.5 d
60 m	171 d	69 d	53 d

In the case of 1P2W 4 Circuit measurement

	Recording mode		
	Instantaneous value	MAX/MIN/AVE	Instantaneous value + MAX/MIN/AVE
Number of save data	4912	2010	1552
Recording interval (interval)			
1 s	1 h	30 m	20 m
2 s	2.5 h	1 h	50 m
5 s	6.5 h	2.5 h	2 h
10 s	13.5 h	5.5 h	4 h
15 s	20 h	8 h	6 h
20 s	1 d	11 h	8.5 h
30 s	1.5 d	16.5 h	12.5 h
1 m	3 d	1 d	1 d
2 m	6.5 d	2.5 d	2 d
5 m	17 d	6.5 d	5 d
10 m	34 d	13.5 d	10.5 d
15 m	51 d	20.5 d	16 d
20 m	68 d	27.5 d	21.5 d
30 m	102 d	42 d	32 d
60 m	205 d	84 d	65 d

In the case of 1P2W 3 Circuit measurement

	Recording mode		
	Instantaneous value	MAX/MIN/AVE	Instantaneous value + MAX/MIN/AVE
Number of save data	6142	2557	1980
Recording interval (interval)			
1 s	1.5 h	40 m	30 m
2 s	3 h	1 h	1 h
5 s	8.5 h	3.5 h	2.5 h
10 s	17 h	7 h	5.5 h
15 s	1 d	10.5 h	8 h
20 s	1 d	14 h	11 h
30 s	2 d	21 h	16.5 h
1 m	4 d	1.5 d	1 d
2 m	8.5 d	3.5 d	2.5 d
5 m	21 d	8.5 d	6.5 d
10 m	43 d	17.5 d	13.5 d
15 m	64 d	26.5 d	20.5 d
20 m	85 d	36 d	27.5 d
30 m	128 d	53 d	41 d
60 m	256 d	107 d	83 d

In the case of 1P2W 2 Circuit measurement

	Recording mode		
	Instantaneous value	MAX/MIN/AVE	Instantaneous value + MAX/MIN/AVE
Number of save data	8190	3510	2730
Recording interval (interval)			
1 s	2 h	50 m	40 m
2 s	4.5 h	1.5 h	1.5 h
5 s	11 h	4.5 h	3.5 h
10 s	22.5 h	9.5 h	7.5 h
15 s	1 d	14.5 h	11 h
20 s	1.5 d	19.5 h	15 h
30 s	2.5 d	1 d	22.5 h
1 m	5.5 d	2 d	1.5 d
2 m	11 d	4.5 d	3.5 d
5 m	28 d	12 d	9 d
10 m	57 d	24 d	18.5 d
15 m	85 d	37 d	28 d
20 m	114 d	49 d	38 d
30 m	171 d	73 d	57 d
60 m	341 d	146 d	114 d

In the case of 1P2W 1 Circuit measurement

	Recording mode		
	Instantaneous value	MAX/MIN/AVE	Instantaneous value + MAX/MIN/AVE
Number of save data	12285	5580	4387
Recording interval (interval)			
1 s	3 h	1.5 h	1 h
2 s	6.5 h	3 h	2 h
5 s	17 h	7.5 h	6 h
10 s	1 d	15.5 h	12 h
15 s	2 d	23 h	18 h
20 s	2.5 d	1 d	1 d
30 s	4 d	1.5 d	1.5 d
1 m	8.5 d	3.5 d	3 d
2 m	17 d	7.5 d	6 d
5 m	43 d	19 d	15 d
10 m	85 d	39 d	30 d
15 m	128 d	58 d	46 d
20 m	171 d	78 d	61 d
30 m	256 d	116 d	91 d
60 m	512 d	233 d	183 d

In the case of 1P3W/ 3P3W 3 Circuit measurement

	Recording mode		
	Instantaneous value	MAX/MIN/AVE	Instantaneous value + MAX/MIN/AVE
Number of save data	5115	2047	1575
Recording interval (interval)			
1 s	1 h	30 m	20 m
2 s	2.5 h	1 h	50 m
5 s	7 h	2.5 h	2 h
10 s	14 h	5.5 h	4 h
15 s	21 h	8.5 h	6.5 h
20 s	1 d	11 h	8.5 h
30 s	1.5 d	17 h	13 h
1 m	3.5 d	1 d	1 d
2 m	7 d	2.5 d	2 d
5 m	17.5 d	7 d	5 d
10 m	36 d	14 d	10.5 d
15 m	53 d	21 d	16 d
20 m	71 d	28 d	21.5 d
30 m	107 d	43 d	33 d
60 m	213 d	85 d	66 d

In the case of 1P3W/ 3P3W 2 Circuit measurement

	Recording mode		
	Instantaneous value	MAX/MIN/AVE	Instantaneous value + MAX/MIN/AVE
Number of save data	6825	2790	2152
Recording interval (interval)			
1 s	1.5 h	40 m	30 m
2 s	3.5 h	1.5 h	1 h
5 s	9 h	3.5 h	2.5 h
10 s	18.5 h	7.5 h	5.5 h
15 s	1 d	11.5 h	8.5 h
20 s	1.5 d	15.5 h	11.5 h
30 s	2 d	23 h	17.5 h
1 m	4.5 d	1.5 d	1 d
2 m	9 d	3.5 d	2.5 d
5 m	23.5 d	9.5 d	7 d
10 m	47 d	19 d	14.5 d
15 m	71 d	29 d	22 d
20 m	95 d	39 d	29.5 d
30 m	142 d	58 d	45 d
60 m	284 d	116 d	90 d

In the case of 1P3W/ 3P3W 1 Circuit measurement

	Recording mode		
	Instantaneous value	MAX/MIN/AVE	Instantaneous value + MAX/MIN/AVE
Number of save data	10237	4387	3412
Recording interval (interval)			
1 s	2.5 h	1 h	50 m
2 s	5.5 h	2 h	1.5 h
5 s	14 h	6 h	4.5 h
10 s	1 d	12 h	9 h
15 s	1.5 d	18 h	14 h
20 s	2 d	1 d	18.5 h
30 s	3.5 d	1.5 d	1 d
1 m	7 d	3 d	2 d
2 m	14 d	6 d	4.5 d
5 m	36 d	15 d	11.5 d
10 m	71 d	30 d	23.5 d
15 m	107 d	46 d	36 d
20 m	142 d	61 d	47 d
30 m	213 d	91 d	71 d
60 m	427 d	183 d	142 d

3.5.2 Acquiring Recorded Data

You can acquire (collect) the recorded data in the computer and save them as files.

The recorded data is saved in CSV text file format in the folder specified in [Target Folder] in the [Start/Stop Recording] dialog box.
❖ Appendix 2 "Recording folder configuration for Smart Site Utility" (page 304)

There are two ways to acquire recorded data: manual acquisition, which causes data to be acquired once, and regular acquisition, which causes data to be automatically acquired at a regular interval.

Additionally, there are two types of data acquisition: data acquisition for short-term data and data acquisition for long-term data.

You can acquire data manually in two ways.

Data acquisition (for short term data)

- This method assumes that the computer and communication modules are permanently connected.
- Previously uncollected data are acquired one by one.

When the number of uncollected data is less than 400, this method is faster.

Data acquisition (for long term data)

- This method assumes that the computer and modules are not permanently connected. Data from a measurement module installed in the field are acquired before stopping to record.
- The contents of the internal memory of the measurement module are transferred in blocks to the computer. The search for uncollected data is then performed in the computer and files are created.
- There is a certain overhead, but because there is no data search processing in the measurement module itself, the method is suitable for large amounts of data.

When the number of uncollected data is 400 or more, this method is faster.

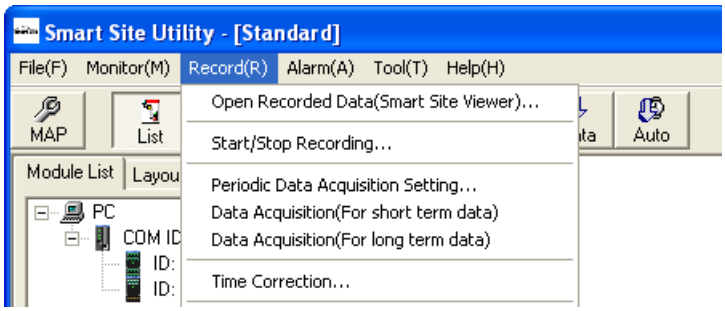
Important

- When you use Smart Site Utility for a long period, set the computer so that it does not enter standby mode or hibernate.
  If the computer enters either standby or hibernation status, Smart Site Utility cannot communicate between modules and monitoring and recorded data for measurement values cannot be collected.
  ❖ For details on the setting method, see Appendix 8 "Canceling Standby and Hibernation Functions" (page 313)
- When collecting data from Model 2354, if the CF card is not installed in Model 2354 correctly, you cannot carry out data acquisition from Smart Site Utility. Collect once the CF card is installed in Model 2354, and the cover is closed.
- In Model 2354, data is saved to the CF card once about every 30 seconds. Make sure there is at least 30 seconds free space to perform data collection from Smart Site Utility from the data file saved on the CF card.

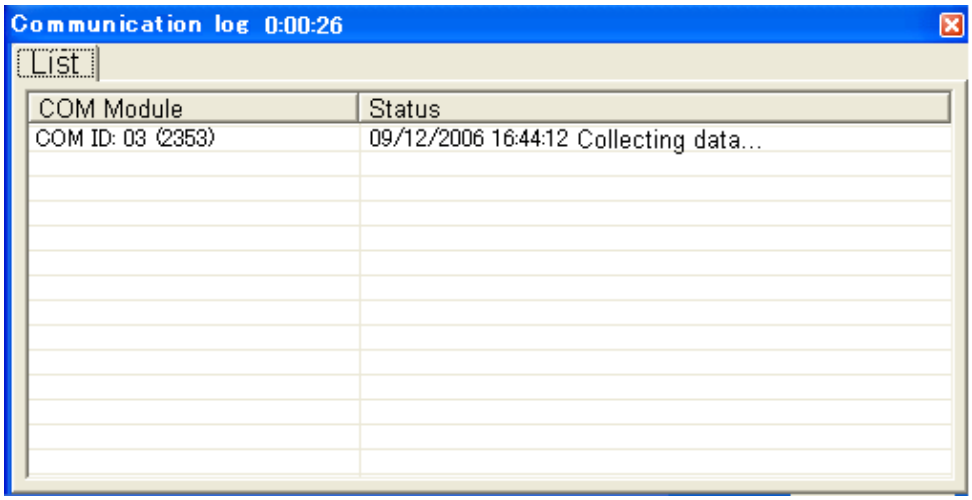
Manual acquisition

Procedure

1. **Select [Record] on the menu bar, and then select [Data Acquisition (For Short Term Data)] or [Data Acquisition (For Long Term Data)].**



2. **When data acquisition starts, a message appears in the bottom right of the screen. (This message will close automatically when the process is finished.)**
When wishing to stop data acquisition before the process is finished, click [Cancel].



The illustration shows the case when [Data Acquisition (For Short Term Data)] was selected.

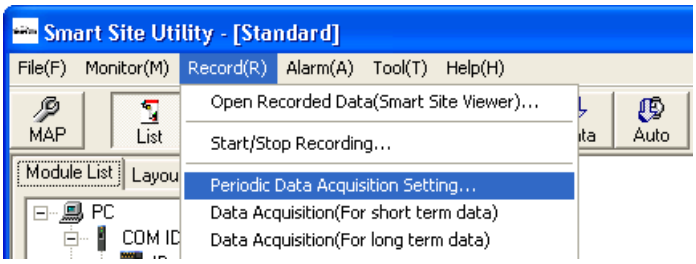
Periodic acquisition

You can specify an interval and have data acquisition performed automatically.

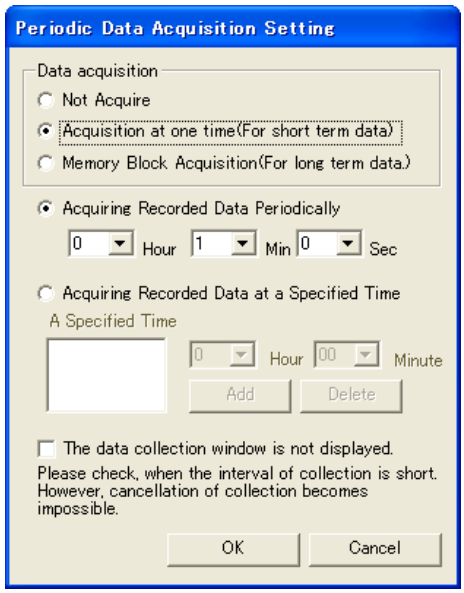
In systems using Air Module, periodic acquisition is recommended, because bulk acquisition after measurement will take a long time.

Procedure

1. **Select [Record] on the menu bar, and then select [Periodic Data Acquisition Setting].**



2. **Display the [Periodic Data Acquisition Setting] dialog box.**
Set the data acquisition type, acquisition interval, and whether to display a window while acquiring the data.



Acquiring Recorded Data Periodically

Select [Acquiring Recorded Data Periodically], and then set the acquisition interval.

Acquiring Recorded Data at a Specified Time

Select [Acquiring Recorded Data at a Specified Time], set the acquisition time, and then click [Add]. There is no maximum for the frequency set for acquisition time.
When you want to delete a set acquisition time, select the time and then click [Delete].

You can switch regular collection ON/ OFF using the [Collect Regularly] button on the toolbar.
If you click the [Data] button, the procedure for manual acquisition ([Data Acquisition (For Short Term Data)]) is activated.

3. When you finish making settings, click [Setting]. During periodic acquisition operation, the time until the next acquisition is shown on the status bar at the bottom of the screen.

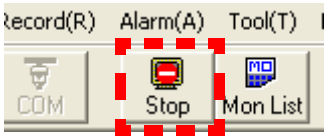
Hints
The settings for periodic acquisition and the time of uncollected data are retained also when shutting down the Smart Site Utility. This makes the following actions possible.
- Avoiding to start Smart Site Utility during working hours when other operations are to be performed.
- Starting Smart Site Utility outside of working hours to carry out periodic acquisition.

3.5.3 Stopping Data Recording

When recording is stopped, the recording file is temporarily closed.
This is added to the next time recording starts. Additions can be made even if the module is added or deleted, but when changes are made to the settings in which the number of measurement items for each module increases or decreases (a change of the recording mode, CH ON/OFF, etc), additions cannot be made.

Procedure

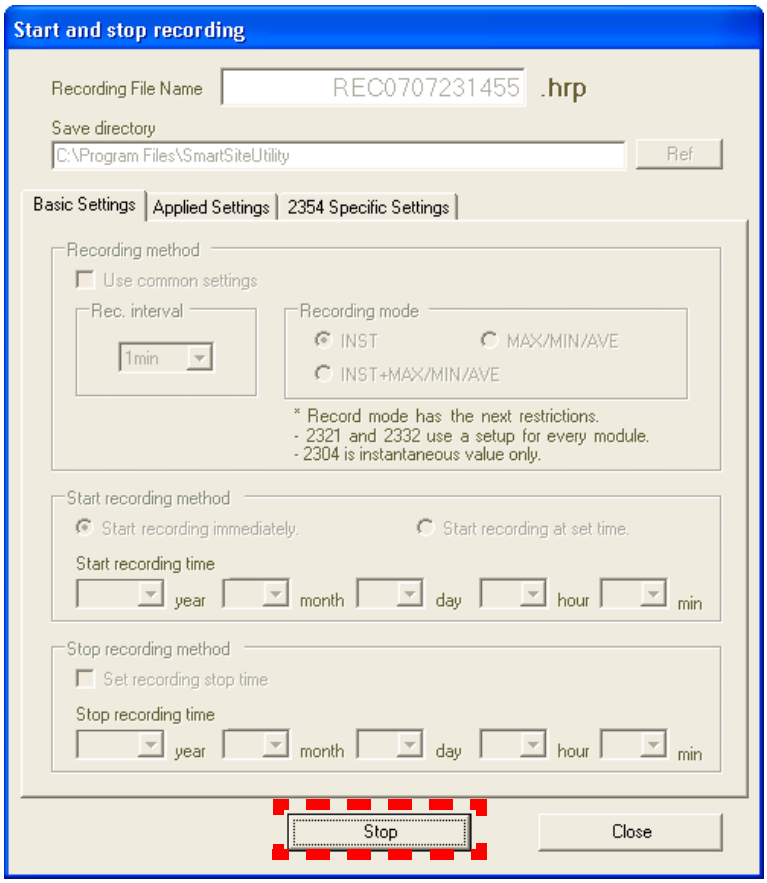
1. **You can stop monitoring during monitoring by clicking the [Stop Monitoring] button.**



2. **Click the [Rec] button on the toolbar to open the [Start/Stop Recording] dialog box.**

You can also open the dialog box from [Record] - [Start/Stop Recording] on the menu bar.

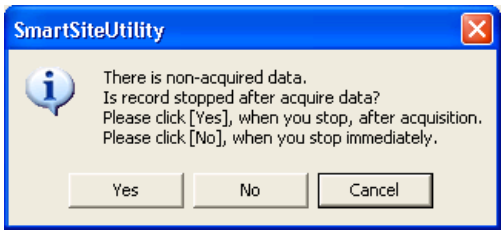
The [**Start and Stop recording**] dialog box appears.



Click the [**Stop**] button.

3. A confirmation message about stopping the recording process appears.

When there is uncollected data



When [Yes] is selected, recording stops after acquiring the data.
When [No] is selected, recording stops without acquiring uncollected data.
When [Cancel] is selected, recording is not stopped.

When there is no uncollected data

When [Yes] is selected, recording stops.

4. Recording stops.

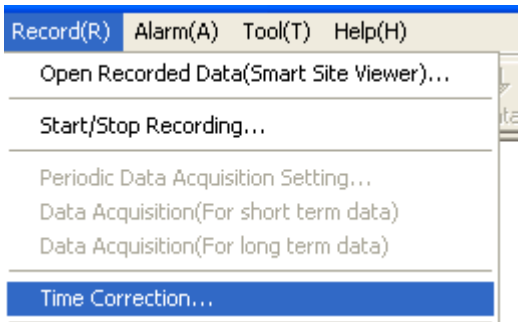
Important
Collect as many data as possible before clicking [Stop]. After stopping the recording function, you can only acquire data once more. After that, no further data acquisition is possible.

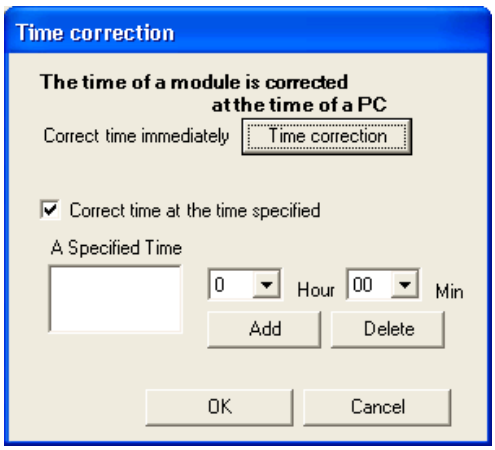
3.6 Time Correction

With the time correction function, you can synchronize the time in the module with the computer.

Procedure

1. **Select [Record] - [Time Correction] to open the Time correction window.**





2. **To correct time immediately, click [Time correction].**

3. **Select [Correct time at the time specified] to correct the time to the time you specify.**

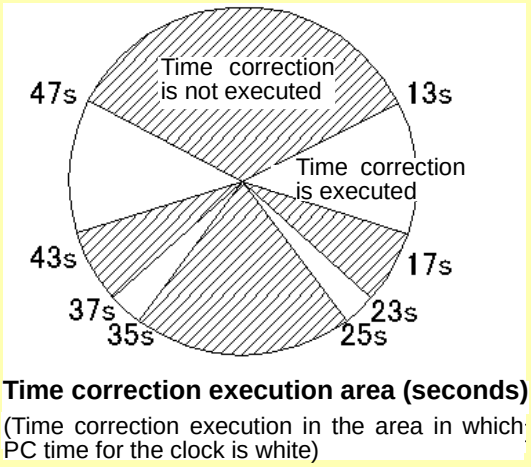
Add specified time
Set the time to correct and then click [Add].

Delete specified time
To delete a time, select the time you want to delete and then click [Delete].

4. **When you finish making settings, click [OK].**

Note

- Lack of data could occur when the recording interval is less than 10 seconds, and when the time interval for time correction is too long.
- When performing time correction at the specified time, after setting the computer time, it is corrected when it enters the time correction execution area shown in the figure below.



Time correction execution area (seconds)

(Time correction execution in the area in which PC time for the clock is white)

When time is set automatically

Next time, the internal clock for the communication module is automatically set by the computer's clock.

- When setting transmission to the communication module
- When recording starts

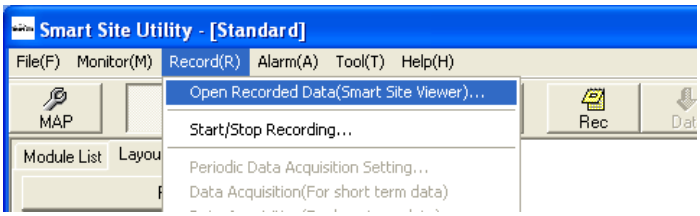
3.7 Read the recorded data

You can read the recorded data, tables and graphs in Smart Site Viewer.
- You can print graphs.
- Graph data can be saved in Microsoft Excel or saved as CSV file.

3.7.1 Reading the recorded data

Procedure

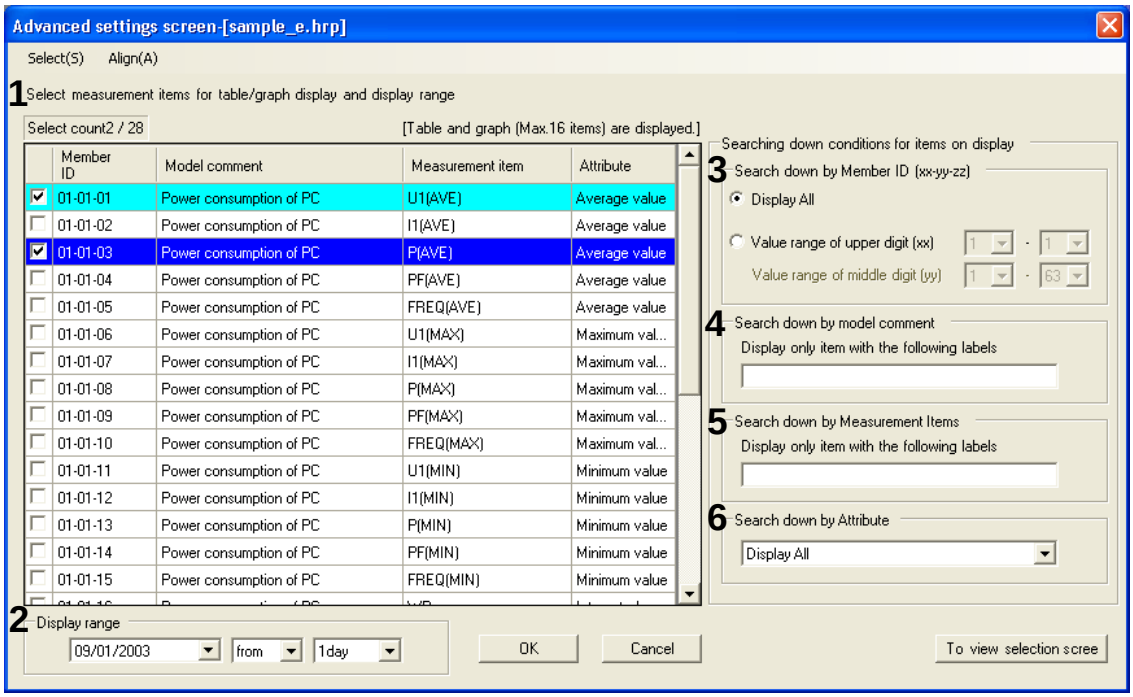
1. **Start Smart Site Viewer.**
Select [Record] – [Open Recorded Data (Smart Site Viewer)]



If recording is in progress and there is collected data, a selection window for the current recording file (selection screen in procedure 3) appears automatically when Smart Site Viewer is started.

2. **Select [File] – [Open record file] from the menu bar in Smart Site Viewer . Select the record file (*.hrp file) to read and click [Open].**

3. [Advanced setting screen] for selecting measurement items will appear.



You can read the recorded data in [Graph] or [Graph and Table] when the following setting item is set and clicked [Open], record data can be read.

Setting item		Contents
1	**Measurement item list**	Check the measurment items you want to read. • [Graph and Table] will be shown when you select 16 or less items. [Table] will be shown when you select 17 or more items. Up to 600 items can be selected. • When you select the [Select] menu, the following can be carried out. (1) Clear all selections. (2) Additional selection/clear selection of selection range • When you select the [Align] menu, the following can be carried out. (1) Align by Member ID/model type/measured item/attribute. (2) Move the selected item up or down.
2	**Display range**	• Select the display range for the data. • [Specified date] [from/until] [1 to 6 days/ 1 week/ 1 month/ current month] will be displayed. • However, the data count that can be displayed is up to 86400 data per measurement item.

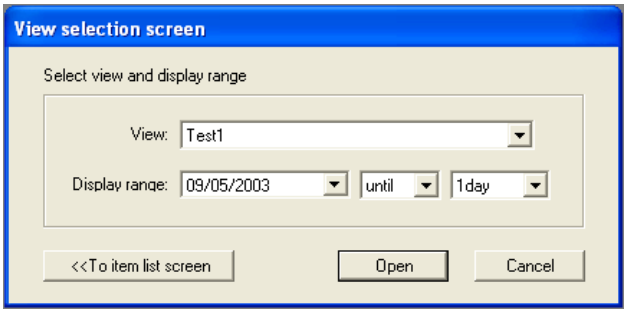
Use the [Searching down conditions for measurement items on display] for easier selection of measured items to output. Only measurement items which meet all the conditions of each group condition will be displayed.

Searching down conditions		Contents
3	**Search down by Member ID**	• Only the upper ID and middle ID of the Member ID which is within the specified range will be displayed.
4	**Search down by Model type**	• Only items containing characters inputted into the model comment will be displayed.
5	**Search down by measurement item**	• Only items containing characters inputted into the measurement items' names will be displayed.
6	**Search down by attribute**	• Only attributes of the measurement items which are items of specified models will be displayed. The following types can be specified. Instant value/average value/maximum value/ minimum value/ integrated value/ logic value/ display all

Viewing steps when view is saved

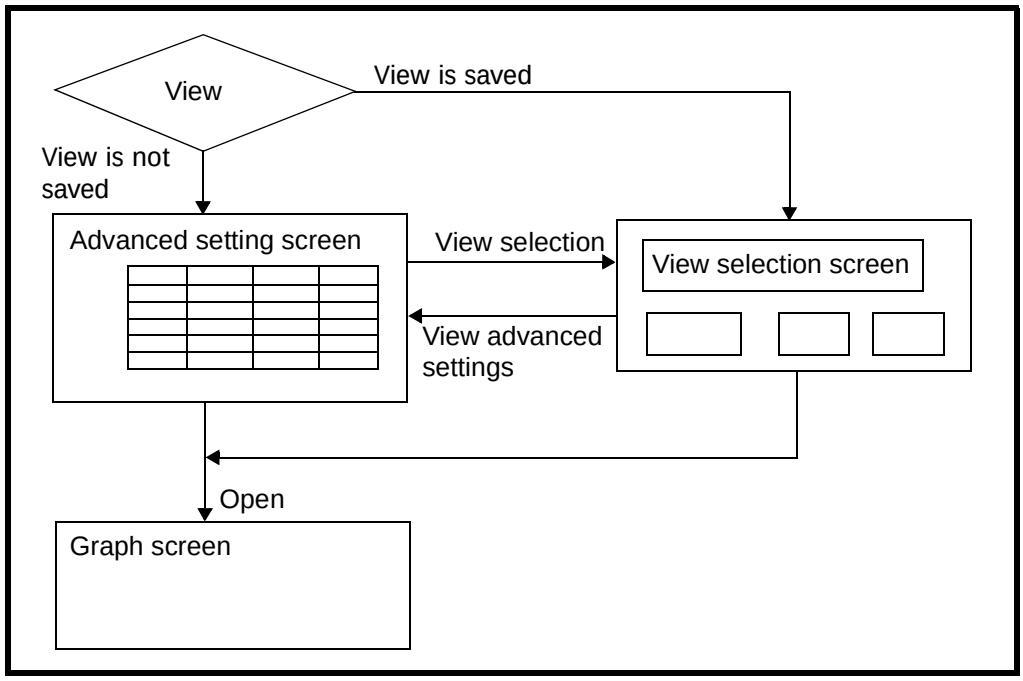
Settings for measured items to be displayed and graph display can be saved as [View]. It is convenient to save measured items which are viewed frequently as view.

When view is saved, [View selection screen] will appear first.



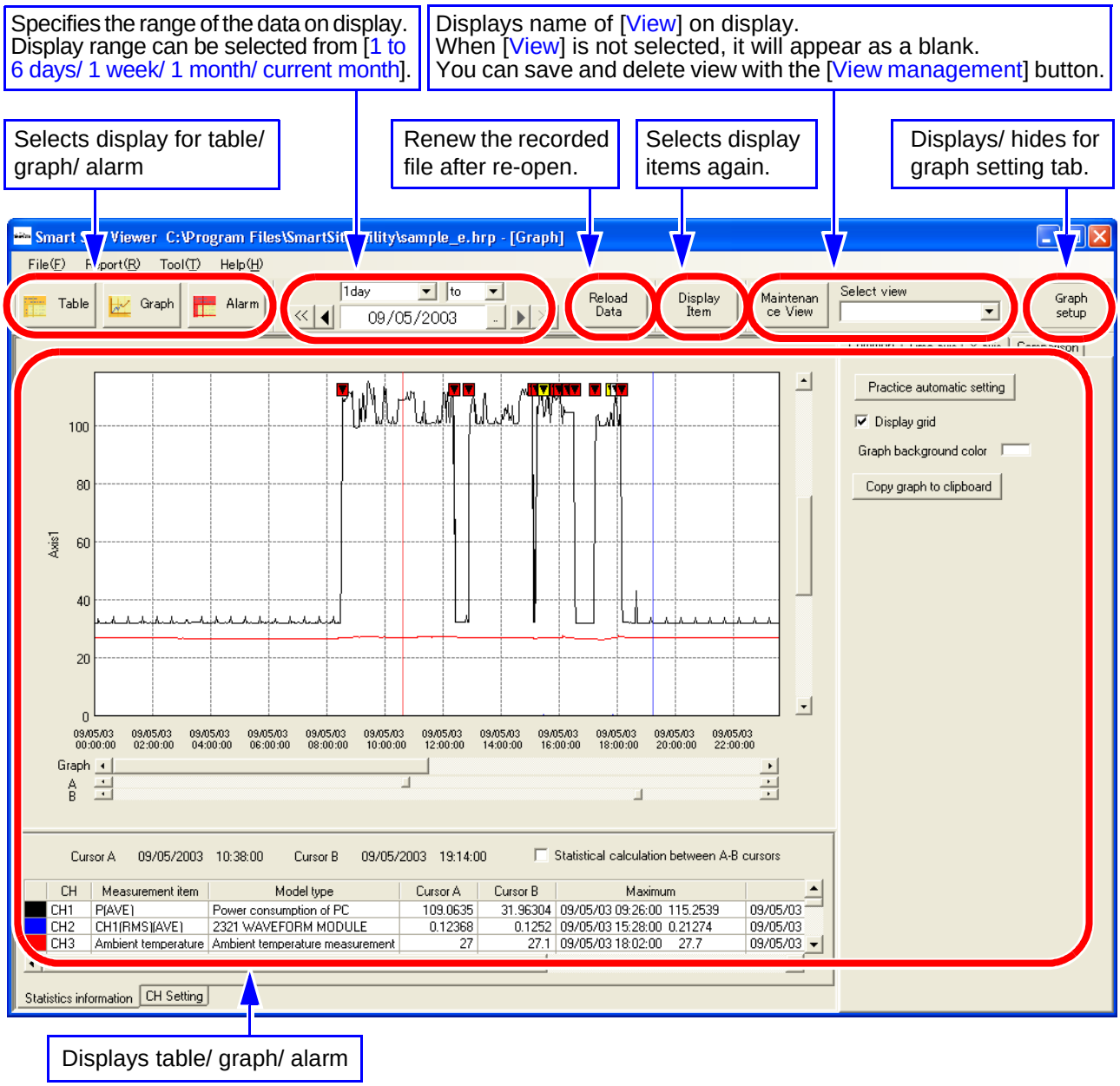
Select [View] and [Display range] then press [Open] to read data.

The following diagram shows the flow of displaying data.



3.7.2 Screen Organization of Smart Site Viewer

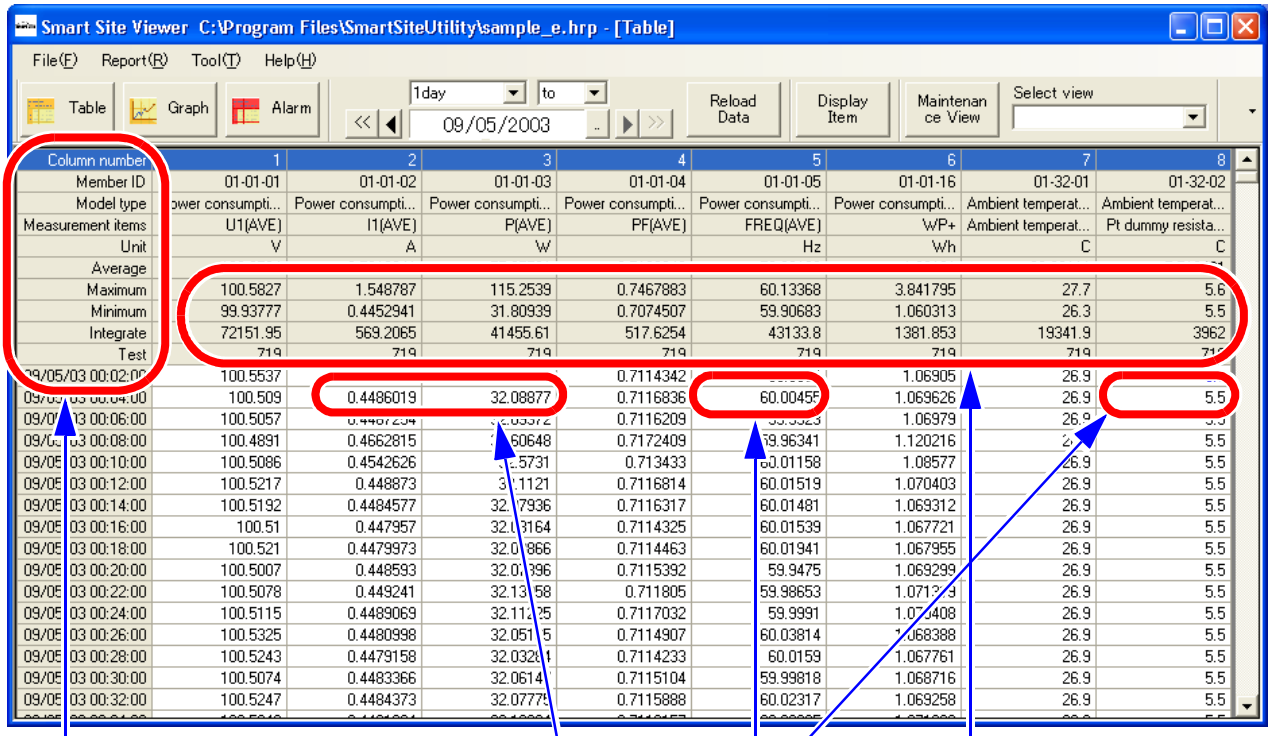
Screen organization for reading data.



Common menu items		Contents
File	**Paste in Microsoft Excel**	• Paste the displayed data to Microsoft Excel.
	Send to CSV file	• Send the displayed data to CSV file.
	Renew data periodically	• Read record files at regular intervals and renew table, graph and alarm.
	Print graph	• Prints graph.
Report	**Create report format file**	• Makes the format file for reports.
	Automatic report creating	• Automatically makes reports at periodical intervals or at specified dates.
	Manual report creating	• Makes reports at specified dates. Used as a test for automatic report making.
Tool	**Option**	• Sets options (measured value display settings and integrated value display settings).

3.7.3 Main Functions of "Table"

Displays the major functions of [Table]



Displays column number, Member ID, model type, measurement item, unit and all data of average value, maximum value, minimum value, integrated value. The integrated value will be displayed only for integrated type measurement items.

Minimum value is shown in green and maximum value is shown in red.

When you double click the maximum or minimum value with a mouse, the cursor will jump to the start of the relevant cell.

Useful functions for Table

The following keys can be used to scroll tables and copy data to the clipboard.

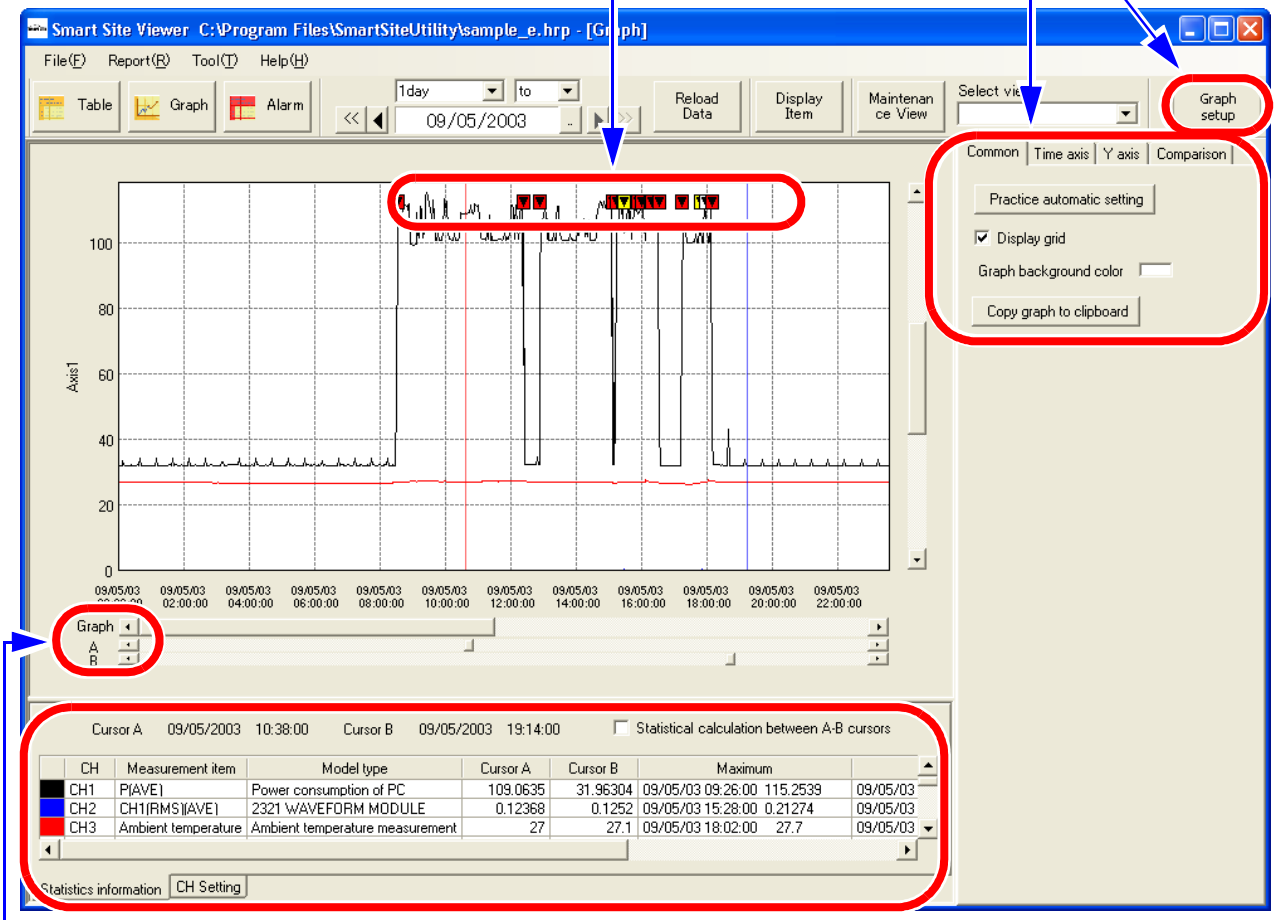
Press the [Ctrl] and [Home] keys simultaneously.	Moves cursor to the top left corner of the table.
Press the [Ctrl] and [End] keys simultaneously.	Moves cursor to the bottom right corner of the table.
[Home] key	Scrolls to the left side of the table.
[End] key	Scrolls to the right side of the table.
Press the [Ctrl] and [c] keys simultaneously.	Copies the value of the cell currently selected to the clipboard.

3.7.4 Main Functions of "Graph"

Displays the main features of [Graph].

alarm mark
This mark will appear when an alarm is present.
The shape of the mouse cursor will change when the mouse is moved to an alarm mark.
Allows users to move to table to confirm the advanced information, or to display waveforms when waveform data exists.

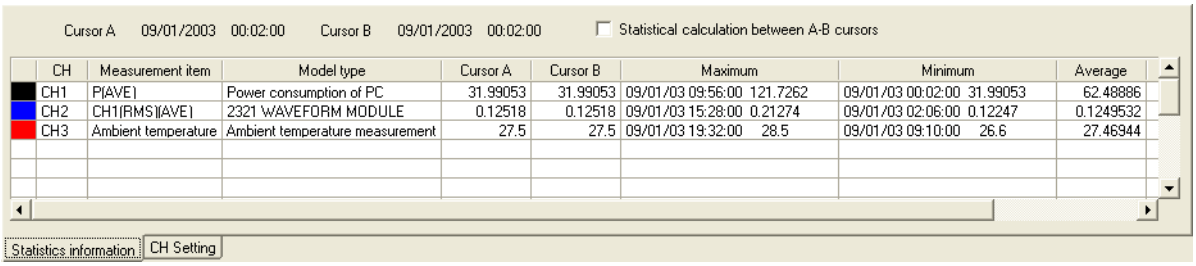
Sets the axis etc of the graph.
Press the [Graph setting] button to display/ hide the setting tabs.



Moves the time axis of the graph or the A/B cursor with the scroll bar.

Displays the statistics information of data on display or the location and value of the A/B cursor in the [Statistics information] tab.
Shows the line type of each CH graph and displays/ hides the graph in the [CH setting] tab.

Statistics Information



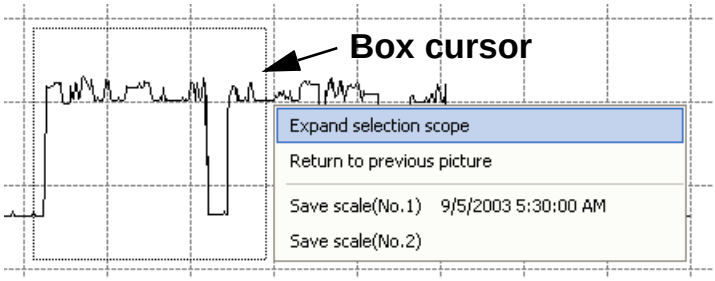
Displays the time of the A/B cursor location, measurement item per CH, model type, data of the cursor location, average value, maximum value, integrated value and unit in the [Statistics Information] tab.
Carries out calculation on the maximum value, minimum value, average value and integrated value between the A/B cursors when [Statistical calculation between A-B Cursors] is selected.
Integrated value will be displayed only for integrated type measurement items.

You can enlarge graph

Procedure

1. Drag the mouse over the scope to enlarge with the left button to box it with the box cursor.

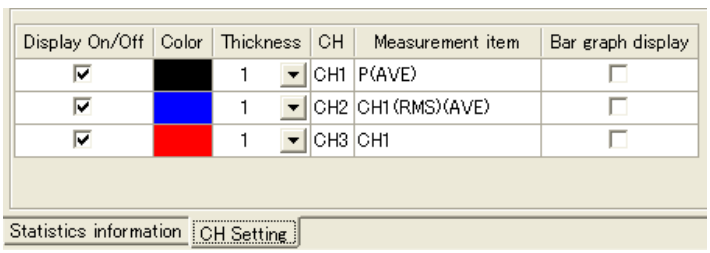
2. Open up the pop-up menu with a right click and select [Expand selection scope].



3. Click [Save scale] to save the scale.

You can save up to 5 scales.
Attempting to save another file will delete the earliest scale.

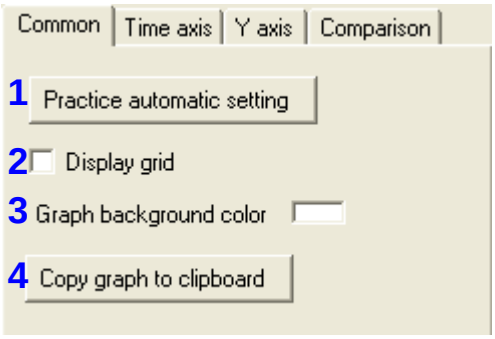
Graph line type and display



Specifies the ON/OFF display, line color and thickness, use of bar graph for each CH with the [CH setting] tab.

The following can be carried out with [Graph setting]

[Common] tab



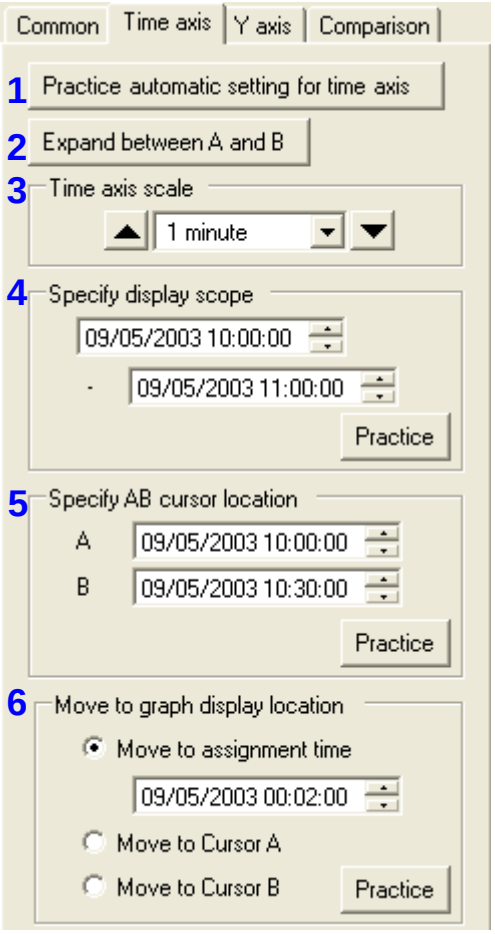
1 Practice automatic setting
Automatically sets scales for both the time axis and Y axis.

2 Display grid
Displays/hides grids.

3 Graph background color
Changes the background colors of the graph.

4 Copy graph to clipboard
Copies graph to the clipboard.
You can copy the graph to Word document etc.

[Time axis] tab



1 Practice automatic setting for time axis
Automatically sets scale for time axis only.

2 Expand between A and B
Expands distance between A and B cursors.

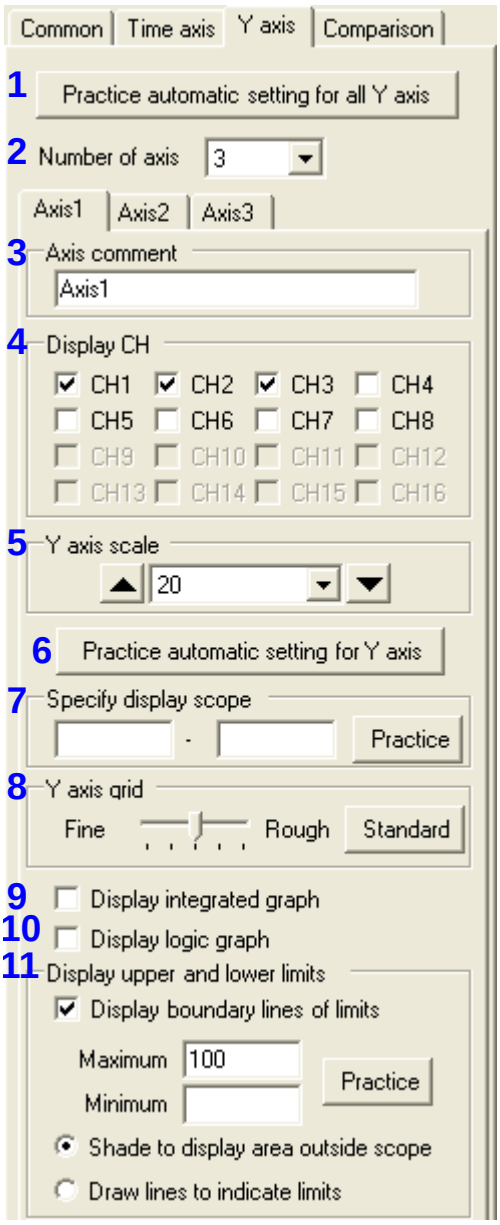
3 Time axis scale
Changes the scale of the time axis.

4 Specify display scope
Specifies the display scope for the time axis direction.
Press [Practice] to reflect the setting.

5 Specify of AB cursor location
Specifies the location of the cursor.
Press [Practice] to reflect the setting.

6 Move to graph display location
Specifies the starting location of the graph display.
Press [Practice] to reflect the setting.

[Y axis] tab



1 Practice automatic setting for all Y axis
Automatically sets scales for all the Y axis.

2 Number of axis
To separate the Y axis according to each CH, set a number higher than 1 for the axis count. Up to 16 axes or the number of the display CH counts can be set.

3 Axis comment
Sets comment for each axis.

4 Display CH
Sets the CH used in each axis.

5 Y axis scale
Sets the Y axis scale for each axis.

6 Practice automatic setting for Y axis
Automatically sets the scale for the current Y axis.

7 Specify display scope
Specifies the display scope of the Y axis.
Click on [Practice] to reflect Setting.

8 Y axis grid
Sets the interval between the Y axis grids.

9 Display integrated graph
When this setting is enabled, all the graphs for all the CH selected in [CH display] will not be displayed individually but will be displayed as a combined graph.

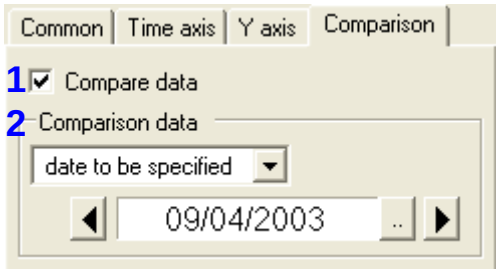
10 Logic display
Graphically displays the CH selected in [Display CH] as logic.

* [Display integrated graph] and [Logic display] cannot be used simultaneously.

11 Display upper and lower limits
Displays the upper and lower limits on the graph as lines or shadings.

[Comparison] tab

Compares and displays past data when the display item counts (CH count) on display are 8 CH or less.



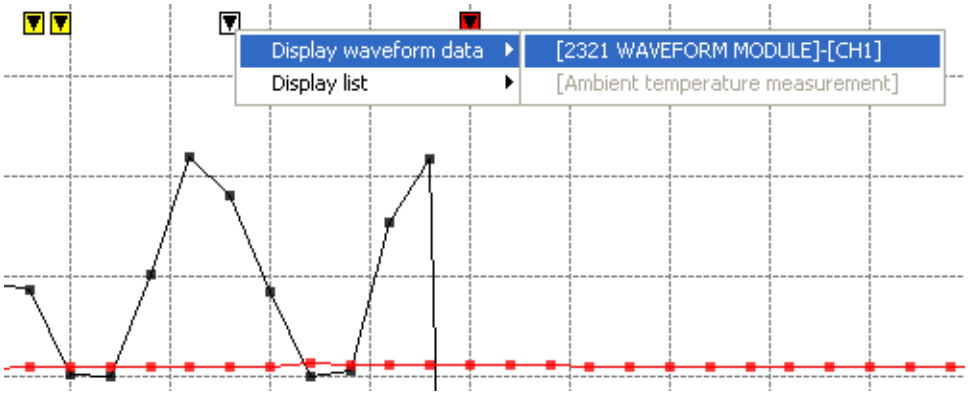
1 Compare data
When this setting is enabled, specified data to be compared will be displayed on the table or graph.

2 Comparison data
Specifies the data to be compared.
Date can be selected from [date to be specified]/ [The day before]/ [Last week]/ [1 month ago]/ [1 year ago].

Alarm mark

Alarm mark will show when there is an alarm.
The types of alarm mark are differentiated by colors.

Red	A normal alarm is present.
Yellow	Waveform data is present.
White	A normal alarm and waveform data are present at the same time.



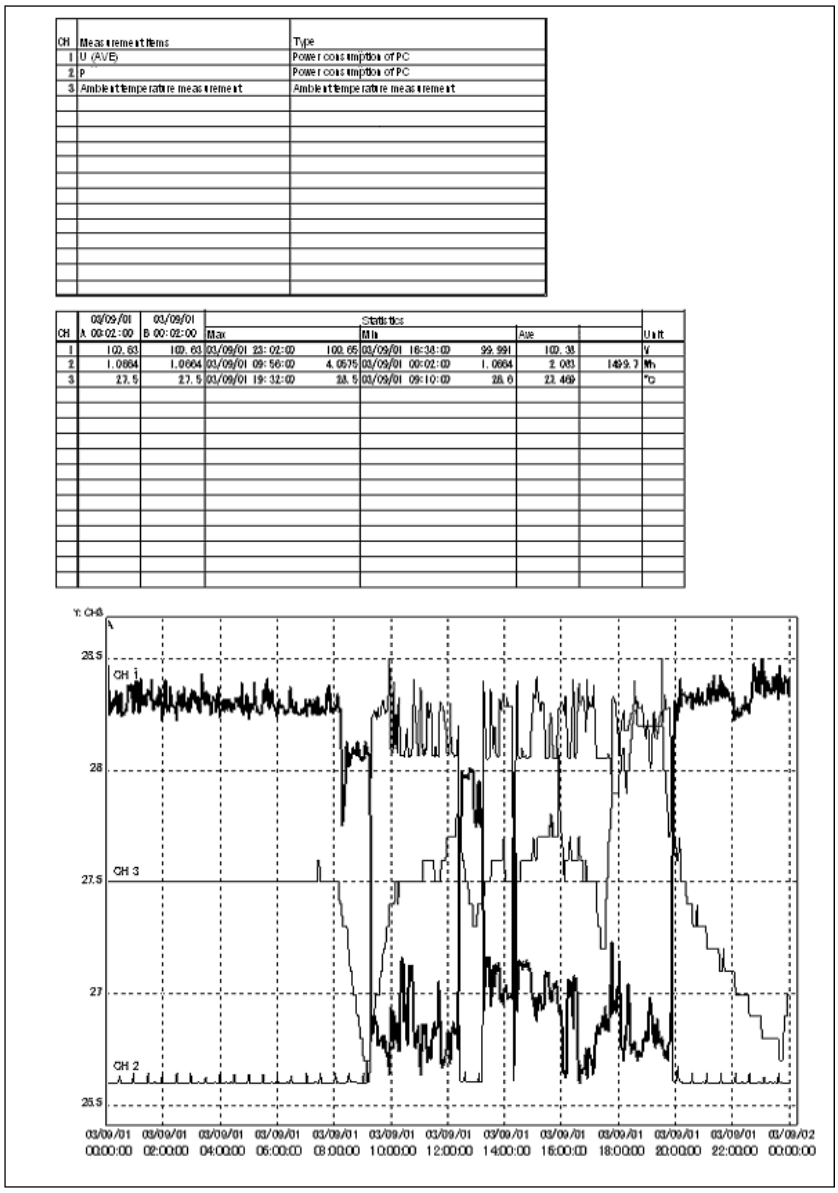
Right click the alarm mark to change the display.
[Model type] and [Measurement item name] of all simultaneous alarms will appear in the sub menu so select the sub menu you wish to display.

Display waveform data	Select the alarm and display the waveform data. ❖ 3.9.3 (page 127) This menu is invalid for data with no waveform data.
Display list	Choose alarm and display list of [Alarm]. You can use to confirm advanced information.

You can print graphs.

You can print graphs on A3, A4 and B4 paper.
Select [File] – [Print graph] from the menu bar.

Example of graph printing

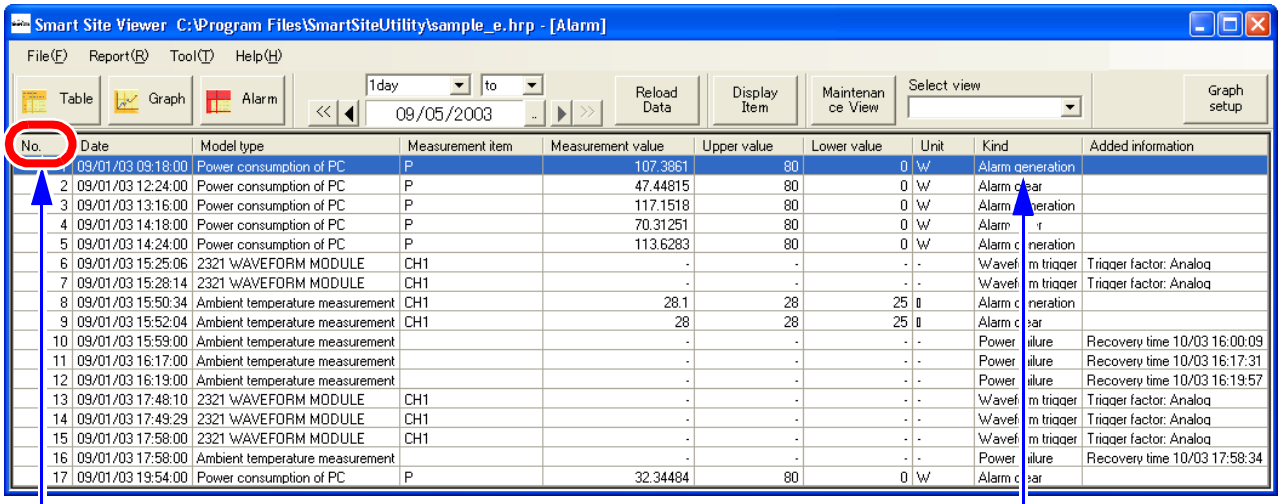


CH	Measurement Items	Type
1	U (AVE)	Power consumption of PC
2	P	Power consumption of PC
3	Ambient temperature measurement	Ambient temperature measurement

CH	03/09/01 A 00:02:00	03/09/01 B 00:02:00	Statistics Max		Min		Ave		Unit
1	102.63	102.63	03/09/01 23:02:00	100.65	03/09/01 16:34:00	99.991	102.38		V
2	1.0864	1.0864	03/09/01 09:56:00	4.0575	03/09/01 00:02:00	1.0864	2.083	1499.7	Wh
3	27.5	27.5	03/09/01 19:32:00	28.5	03/09/01 09:10:00	28.0	23.469		°C

3.7.5 Main Functions of "Alarm"

Displays the main features of [Alarm].



Displays number, date, model type, measurement item, upper limit value, lower limit value, unit, type, and added information.
You can rearrange the items by clicking the title (the place where "No." etc. are displayed).

When an alarm is selected and right-clicked, the menu appears.

Display waveform data	When waveform data is present in the selected alarm, waveform data appears. It cannot be selected for the other alarms.
Display alarm mark	A graph showing the times when an alarm occurred appears.

3.8 Acquiring Batches of Waveform Data

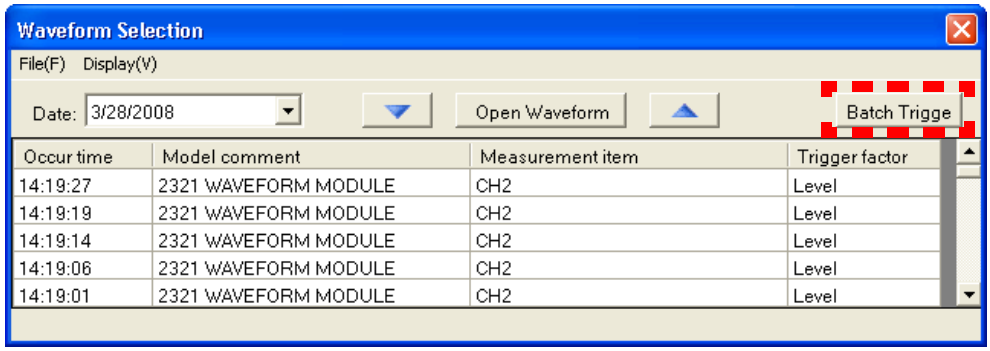
You can acquire batches of Model 2321 waveform data that is included in the modules list during recording.

Note
This can be used for firmware after version 2.36.

Procedure

1. **When Model 2321 is included in the [Module List], the [Wave] button appears in the toolbar.**

   Click the [Wave] button.



❖ For details on using the Waveform Selection Screen, see 3.9 "Displaying Waveform Data" (page 124).

2. **When [Batch Trigger] is clicked, a trigger is attached to all Model 2321 in the module list.**

Restrictions
1. Because the trigger command is sent to each Model 2321 one at a time, you cannot perform time synchronization for waveform acquisition between each module.
2. When waveform data has been acquired in all memories but not collected, you cannot collect waveform data with the batch trigger.
3. When acquiring waveforms, waveform data with other triggers attached cannot be acquired with the batch trigger.
4. Triggers are not attached to unused channels.

3. **Waveform data is automatically collected from the oldest time.**

❖ For details on displaying the waveform data, see 3.9 "Displaying Waveform Data" (page 124).

3.9 Displaying Waveform Data

3.9.1 How to Display Waveform Data

You can display waveform data by using the following method.

- **Waveform data can be displayed from Smart Site Viewer's "Graph".**

  ❖ 3.7.4 "Main Functions of "Graph"" (page 116)

- **Waveform data can be displayed from Smart Site Viewer's "Alarm".**

  ❖ 3.9.4 "Displaying Multiple Waveform Data" (page 130)

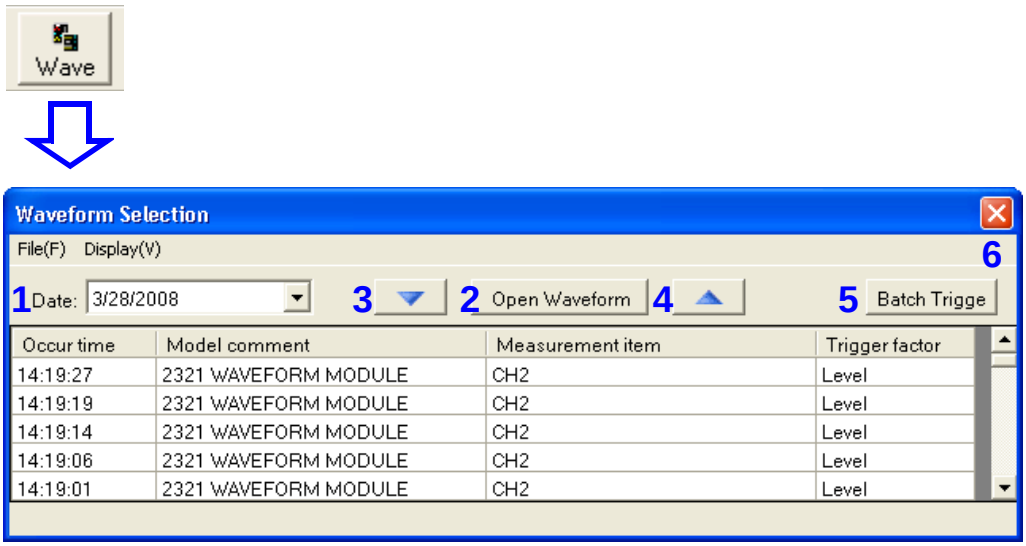
- **Waveform data can be displayed by clicking items in 9768 "Alarm Log".**

- **Waveform data can be displayed from 9768 "Waveform Selection".**

  ❖ 3.9.4 "Displaying Multiple Waveform Data" (page 130)

3.9.2 Using the Waveform Selection Screen

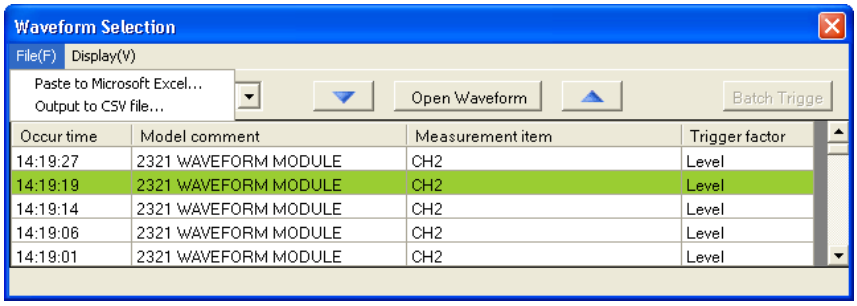
When 2321 is included in the [Module List], the [Wave] button appears in the toolbar. Click the [Wave] button to display the Waveform Selection Screen.



item		Description
1	**Date**	Select the waveform date displayed in the list.
2	**[Open Waveform]**	Open the waveform selected from the list with Smart Site Wave Viewer. You can even display the waveform by double-clicking the cell.
3	**[▼]**	Open the previous waveform (older) to the waveform currently displayed in Smart Site Viewer.
4	**[▲]**	Open the next waveform (newer) to the waveform currently displayed in Smart Site Viewer.
5	**[Batch Trigger]**	Attach triggers to all Model 2321 registered to the current MAP, for functions that can only be used during recording.
6	**[×]**	Close the Waveform Selection Screen.

Outputting a waveform acquisition time file

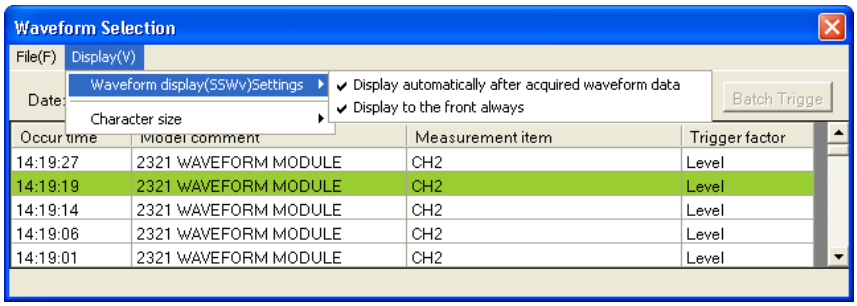
Select the waveform selection [File] to save the waveform acquisition time list in Excel file format.



Paste to Microsoft Excel	Save waveform acquisition time that occurred on that day in XLS format.
Output to CSV file	Select an optional period and save as a CSV file.

Set operations for Smart Site Viewer

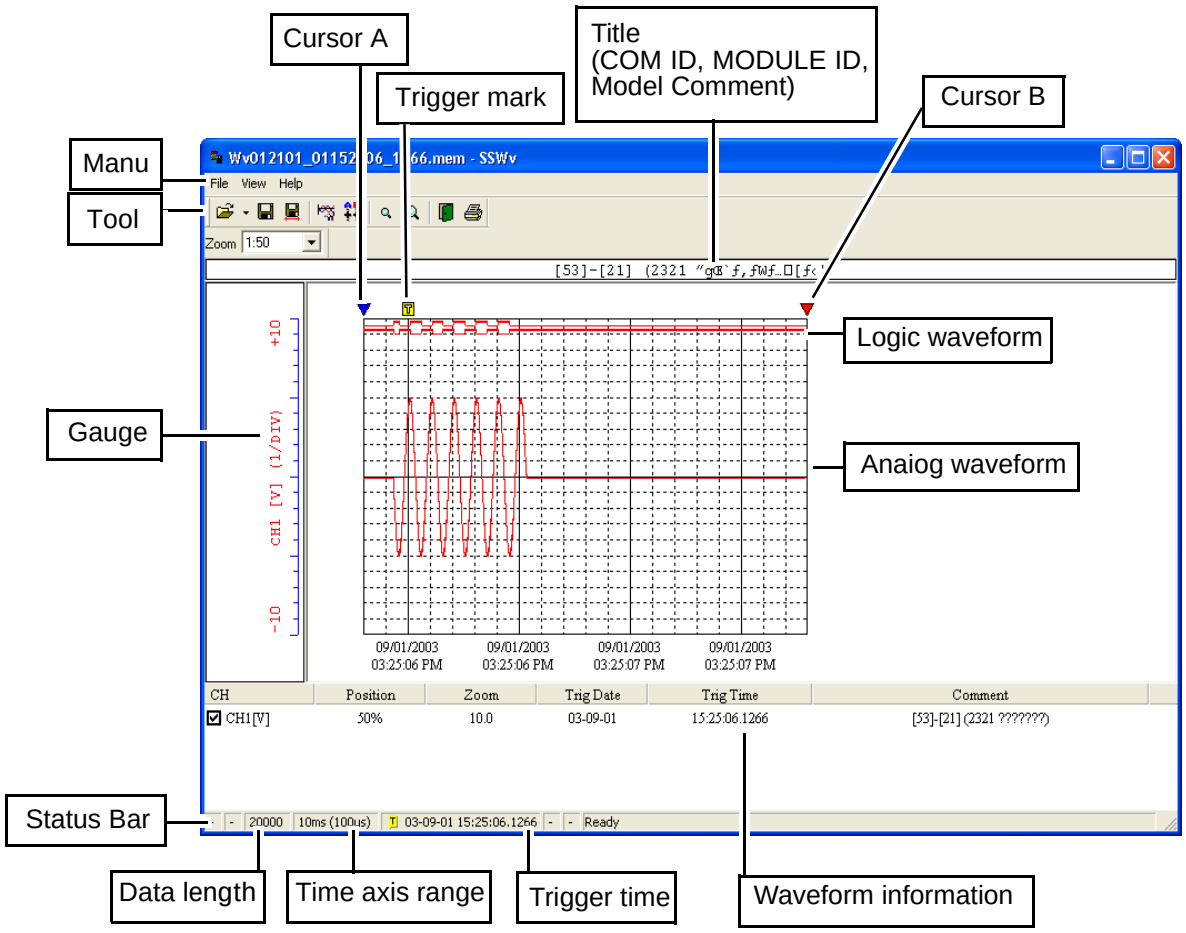
You can set operations for Smart Site Wave Viewer.



Automatically display collected waveform data	Select to always display the latest waveform data with Smart Site Wave Viewer
Pin on top	Select to always display Smart Site Wave Viewer at the front.

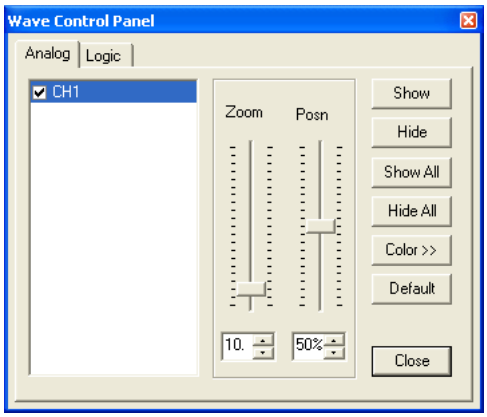
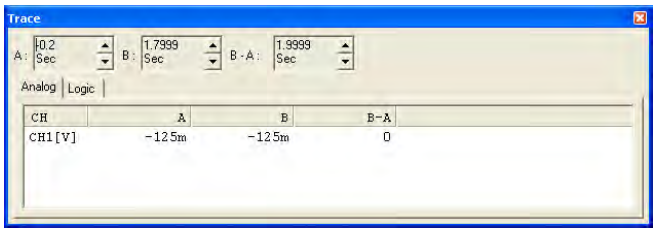
3.9.3 Using the Smart Site Wave Viewer

Screen structure



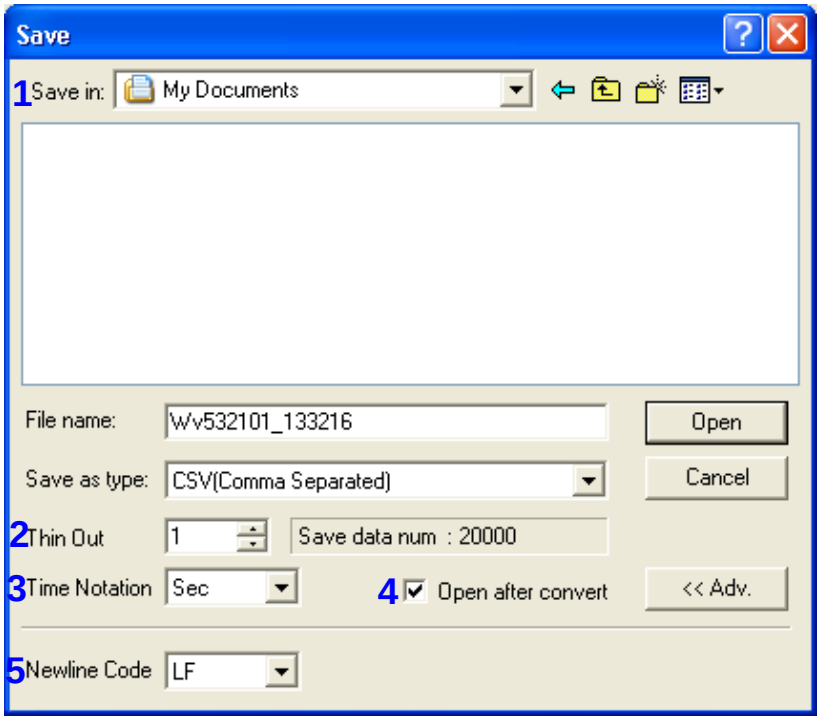
Main Functions

Menu item		Tool Bar	Description
File	**Open**		Open the file. Opens waveform data files with the dedicated. mem format extension.
	Save All		Save waveforms in all sections in a text file.
	Save Between Cursors		Save waveforms for cursor sections in a text file.
	Print		Print the displayed waveform.
	Print Preview	–	Display a print preview.
	Printer Settings	–	Make printer settings.
	Exit		Exit the Smart Site Wave Viewer.

Menu item		Tool Bar	Description	
Display	**Tool Bar**	–	Switch between showing or hiding the tool bar.	
	Status Bar	–	Switch between showing or hiding the status bar.	
	Waveform Control Panel		Switch between showing or hiding the [Waveform Control Panel] screen. You can make the following settings on the [Waveform Control Panel] screen. • Enlarge/Reduce and Position waveforms (analog waveforms only) • Show/Hide waveforms • Change waveform colors <Waveform control panel screen> 	
	Trace		Switch between showing or hiding the [Trace] dialog box. In the [Trace] dialog box, you can check the 2 cursor locations for time value and time line, as well as voltage values and variations for all channels. <Trace dialog box> 	
	Reduce and Enlarge		Enlarge or Reduce the displayed waveform.	
	Jump	–	Change the waveform display position to [Trigger Position], [Cursor A] or [Cursor B] positions.	
	Timetable record	–	Select the display format for the scale label for the horizontal axis from the following.	[DIV/Seconds/ Points/Relative Time/Time]
	Type of grid	–	Select the type of horizontal axis grid from the following.	[None/Standard/ Detailed]
	Title display	–	Switch between showing or hiding the Title.	
	Legend display	–	Switch between showing or hiding the legend display.	
	Gauge display	–	Switch between showing or hiding the Gauge display.	
	Specified value	–	Return display settings to their specified values.	
Help	**SSWv version information**	–	Display version information for Smart Site Wave Viewer.	

Converting and saving waveform data as a text file (File saving function)

You can convert waveform data into a text file for all sections or the cursor sections, and then save. Use the file saving function to save as a text file when you want to edit waveform data by using a spreadsheet program etc.



When saving a file, make the following settings.

item		Description	
1	**File type**	Select from the types in the column on the right.	[CSV (comma delimited) /Text (space delimited)/Text (tab delimited)]
2	**Narrowing**	When [1] is set, you can save it by performing pixel skipping on the waveform data. Set the value for thinning out the data for what sampling interval.	
3	**Time axis format**	Select the type of time axis format from the following.	[Seconds/Time/Relative time /Points]
4	**Open after conversion**	When selected, after saving the file, it is automatically opened by an application associated with CSV files.	
5	**Line feed code**	Select the line feed code from [LF/CR+LF]. Click the [Advanced Settings] button to display the setting items.	

Procedure

1. **Select [Saving Location].**

2. **Enter the [File name], and set the items from the table above.**

3. **Click the [Save] button to save the file.**
   (If you do not want to save, click [Cancel])

3.9.4 Displaying Multiple Waveform Data

With Smart Site Viewer you can display multiple waveform data simultaneously from the Smart Site Viewer Alarm screen or the Waveform Selection screen.

Procedure

1. **Display Smart Site Viewer or the Waveform Selection screen.**

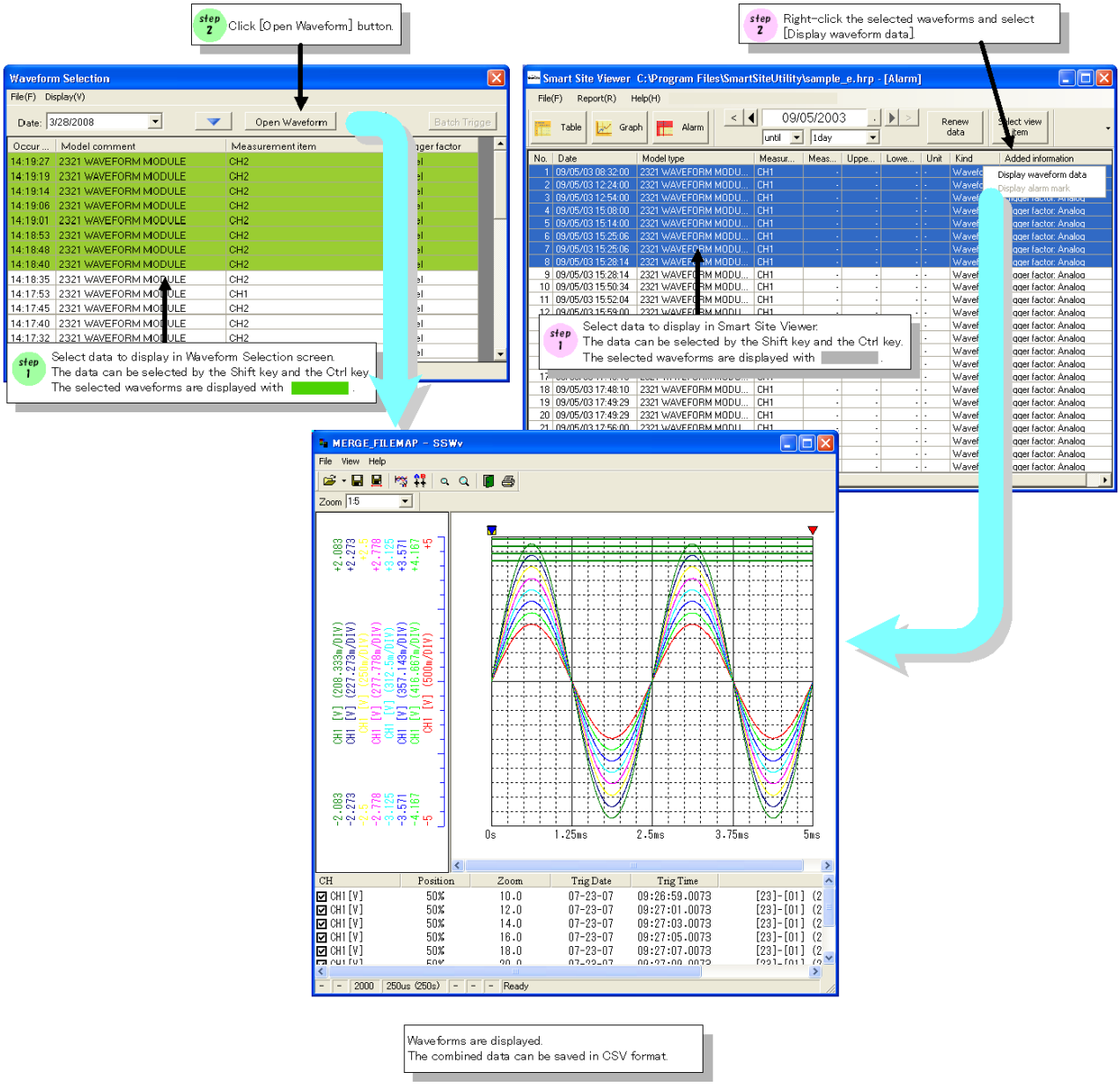
2. **Select the waveform you want to display with the SHIFT and CTRL keys. The selected data opens in the illustration.**

3. **For Smart Site Viewer, when you right-click on the selected waveform and [Waveform Data Display] is selected, the waveform appears.**
   For the Waveform Selection screen, when you click [Open Waveform] the waveform appears.

Note
- You can save the waveform data displayed in CSV format.
- When displaying waveform data with a different number of acquired data at the same time, the lowest data is unified and displayed.

Display method of waveforms in [Waveform Selection] screen

Display method of waveforms in [Smart Site Viewer]



Operation (Advanced) 4

4.1 Creating the Layout

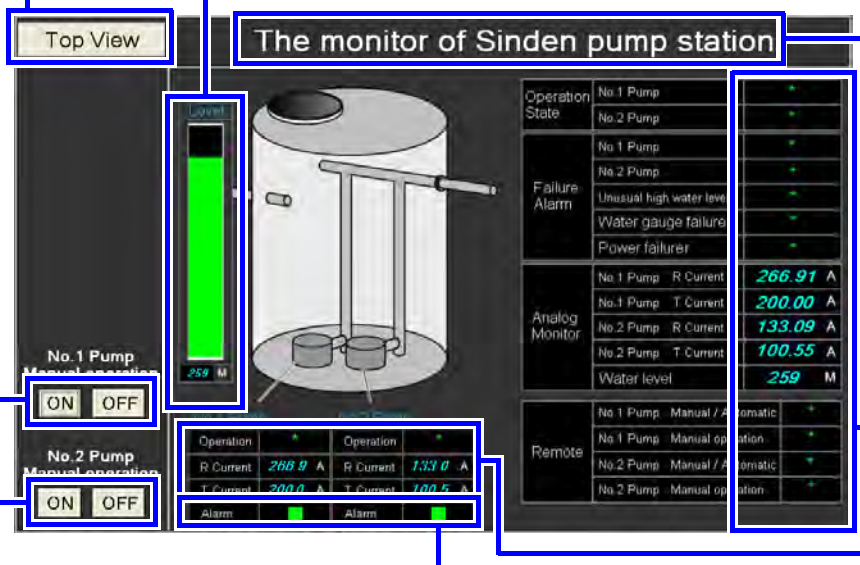
For information on how to easily monitor measurements, see 3.3.3 "Setting the Monitor" (page 86).
Here, we will explain how to make a slick and professional "layout".

4.1.1 Creating the Layout

You can create a layout screen for a monitoring system like the diagram below by using the layout parts in Layout.

Layout link button
Moves the screen to a layout that has been previously registered in the layout list.

Measurement graphic
Displays measured values as a bar graph.
Displays measured values in the form of a bar graph for which you have set maximum and minimum values, orientation, and other parameters.



Comment
Allows you to display comments in the layout.

Measurement label
Allows you to place measured values with no frames in the layout.

Send buttons
These buttons send commands to the modules.

ON/ OFF indicators
Module alarm states can be displayed as a series of on/off indicators.
You can select either a color- or graphic-based display format.

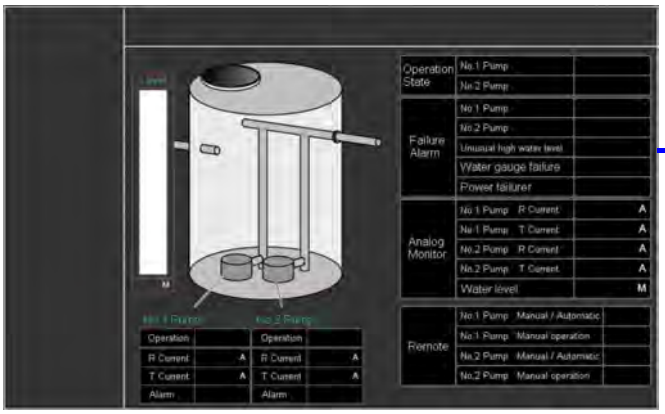
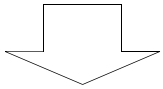


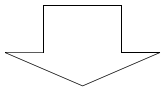
Image created for the background

The flow for creating the layout screen is as follows.

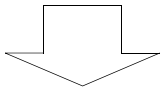
1. Deciding on the screen size to be used for monitoring system status ❖ (Page 135)



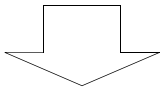
2. Placing the image you created for the background image ❖ (Page 137)



3. Placing the layout parts ❖ (Page 138)



4. Prohibiting screen editing and fixing the layout ❖ (Page 138)



5. Saving the created layout ❖ (Page 146)

(1) Deciding on the screen size

Decide on the screen size to be used for monitoring system status.

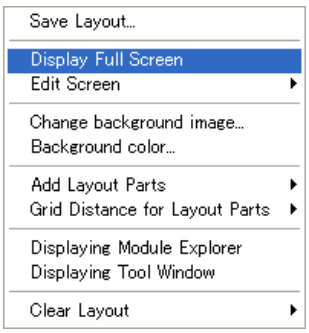
Use the mouse to set the position and size of the screen for Smart Site Utility Pro. You can display the entire screen in Smart Site Utility Pro. If you are not displaying all screens, go to step 4.1.1 (2) (Page 136)

The layout opens on the entire screen (Full Screen)

You can display the layout on the entire screen.

Procedure

1. **Right-click the layout, and select [Display Entire Screen].**



2. **Display the layout on the entire screen.**

Note

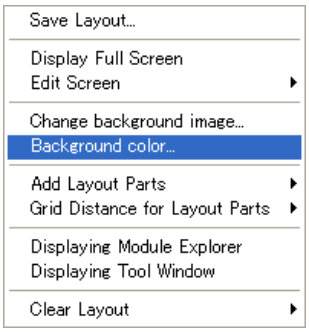
To return to the previous size, select [Display Entire Screen] or press the ESC key.

(2) Changing background color

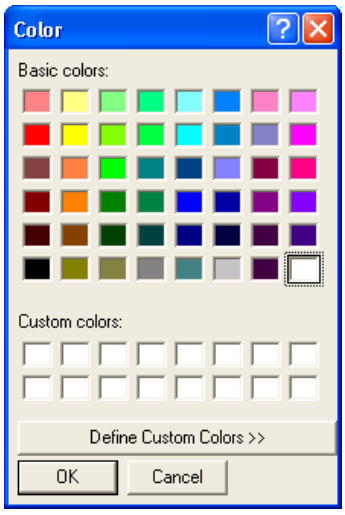
You can change the background color for the layout.

Procedure

1. **Right-click the layout, and select [Background Color].**



2. **When the [Set Color] screen opens, select the background color and click the [OK] button.**

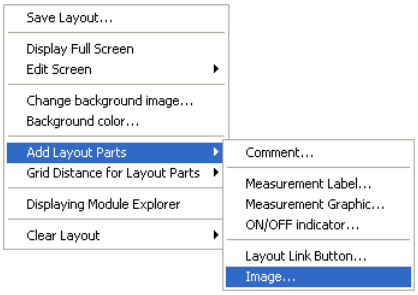


(3) Placing the background image

Set the position and size of the background image you created, and register as the background image.

Procedure

1. **Right-click the layout, and select [Add Layout Part] - [Image].**

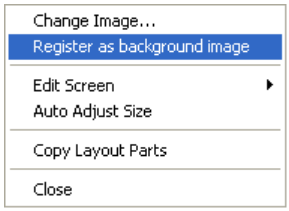


2. **Click the file you want to place, and then click [Open].**

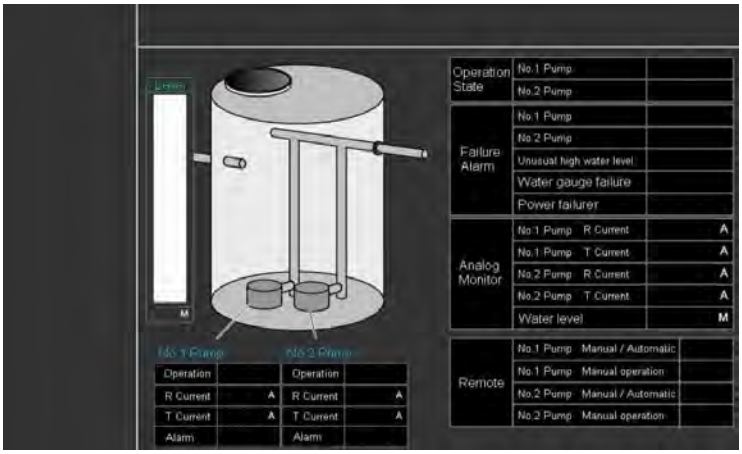
3. **Use the mouse to change the position and size of the image.**

4. **Grab the corner of the image, fix the aspect ratio, and change the size.**

5. **Once you have the layout you want, right-click the image.**
Select [Register as background image] to register it as the background image.



6. **As it is registered as the background image, the image closes.**



For more details on the right-click menu for images, see 4.1.3 (2) (Page 151)

(4) Placing the layout parts

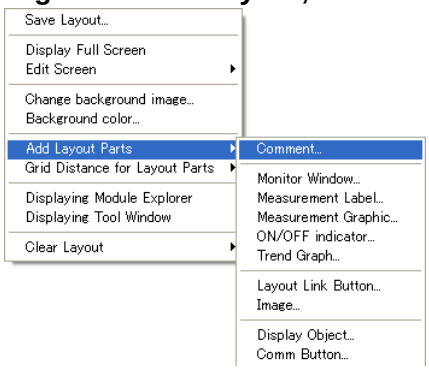
You can place the layout parts on the background image.

Placing comments

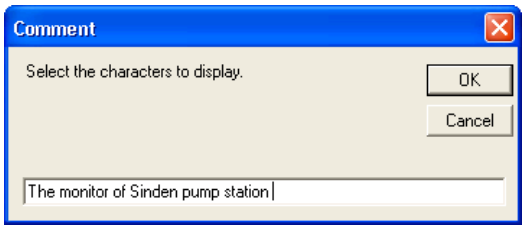
You can display optional comments in the layout.

Procedure

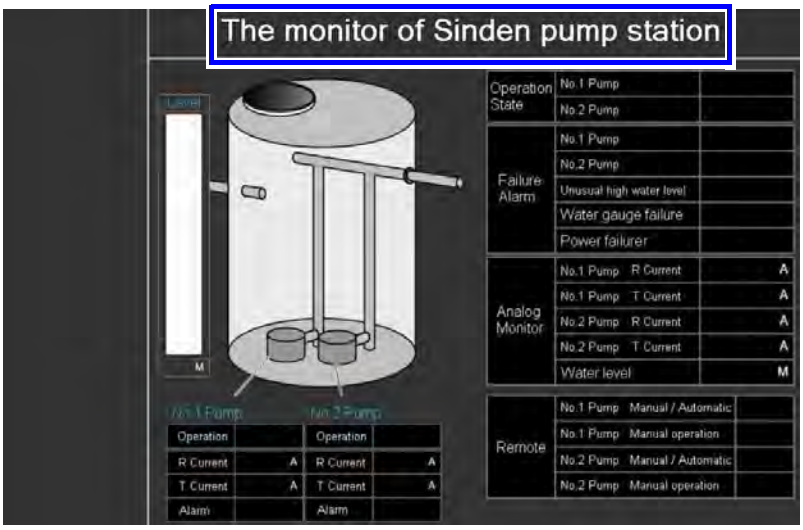
1. **Right-click the layout, and select [Add Layout Parts] - [Comment].**



2. **Enter the comment and then click [OK].**



3. **Use the mouse to place the comment.**



For more details on the right-click menu for comments, see 4.1.3 (2) (Page 151).

Placing measurement labels

You can place “Measurement Labels” without borders in the layout.

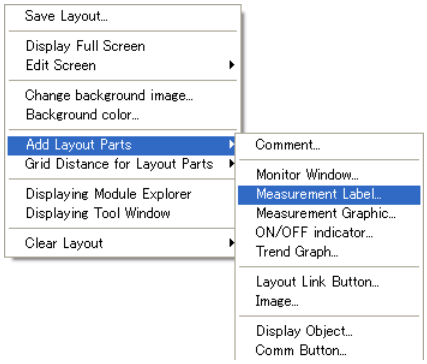
NOTE

The difference between the Monitoring screen and the Measurement labels is as follows.

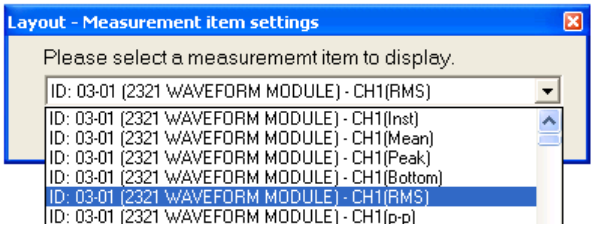
- Measurement labels do not have borders.
- Measurement labels display measurement item units, and the Monitoring screen displays module units.

Procedure

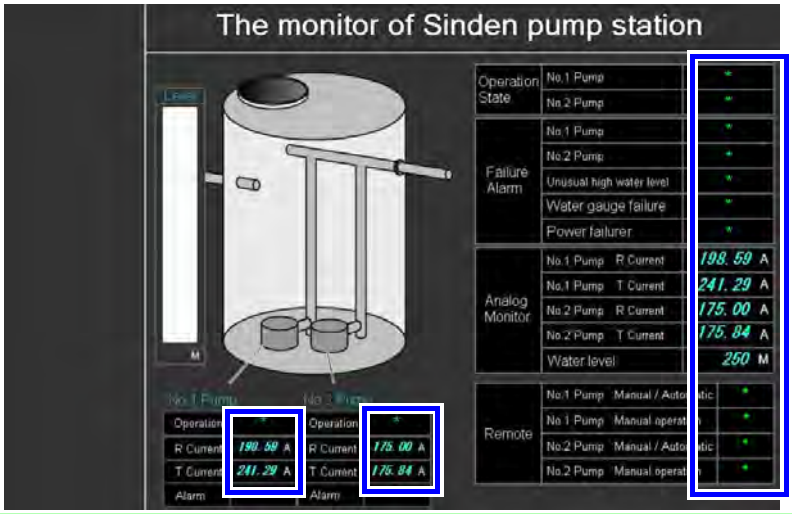
1. **Right-click the layout, and select [Add Layout Parts] - [Measurement Label].**



2. **An additional window for Measurement labels opens. You can select from all of the module measurement items included in the module list. Select the measurement item to display, and then click [OK].**



3. **Use the mouse to place the Measurement label.**



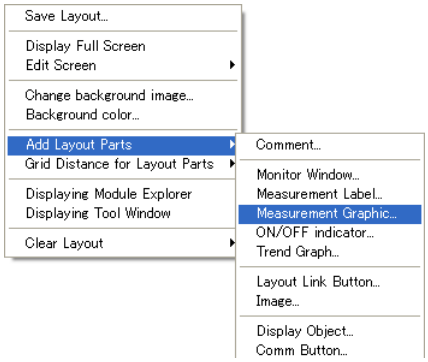
For more details on the right-click menu for measurement labels, see 4.1.3 (2) (Page 151).

Placing measurement graphics

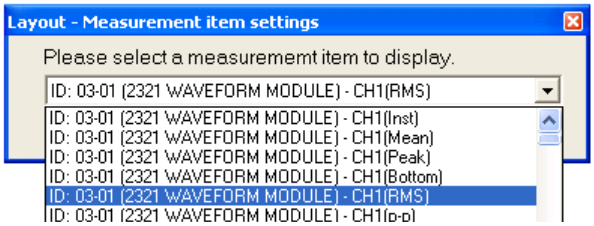
You can place “Measurement Graphics” in the layout.

Procedure

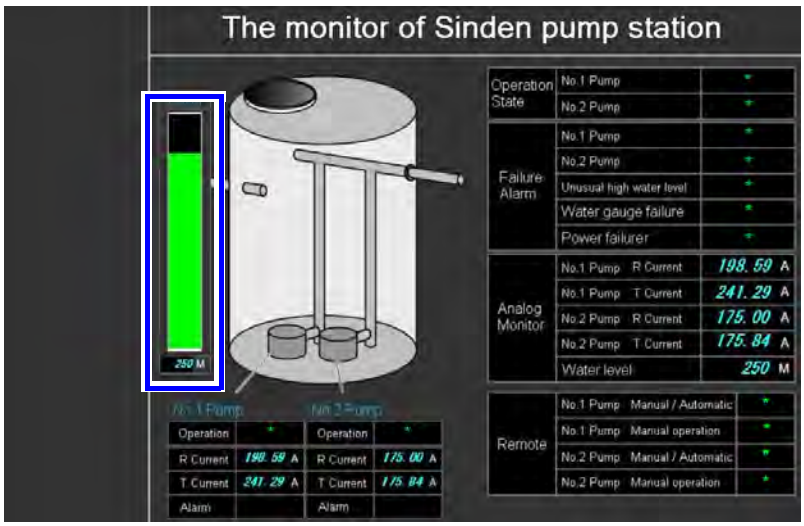
1. **Right-click the layout, and select [Add Layout Parts] - [Measurement Graphic].**



2. **An additional window for measurement graphics opens.**
You can select from all of the module measurement items included in the module list.
Select the measurement item to display, and then click [OK].



3. **Use the mouse to change the position and size of the measurement graphic.**



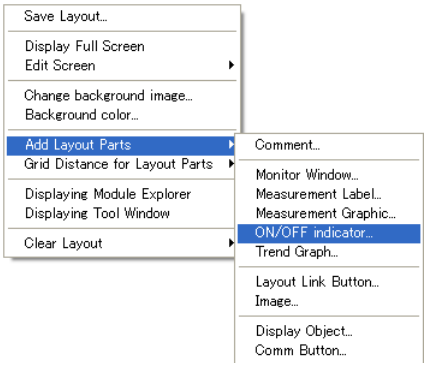
For more details on the right-click menu for measurement graphics, see 4.1.3 (2) (Page 151).

Placing ON/OFF indicators

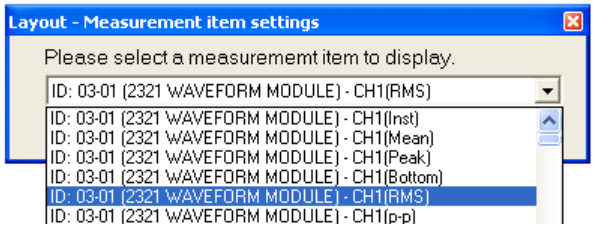
You can place ON/OFF indicators in the layout.

Procedure

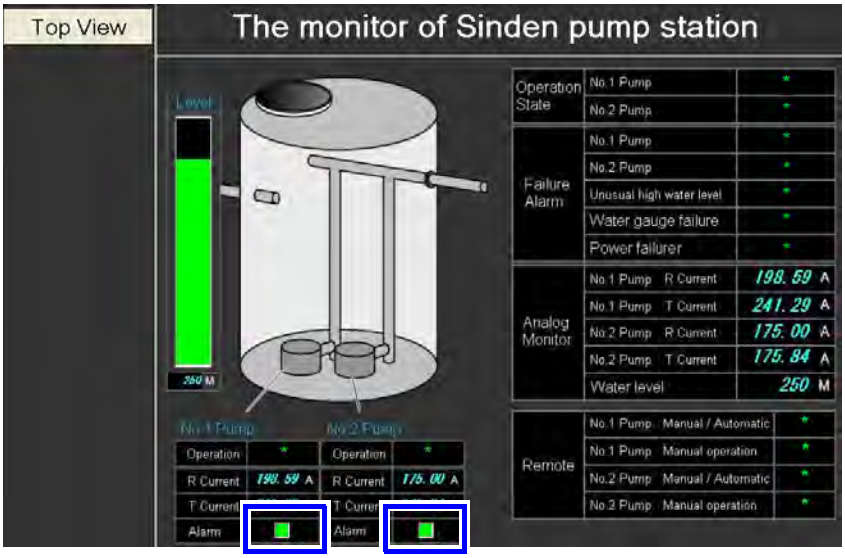
1. **Right-click on the layout and select [Add Layout Parts] - [ON/OFF Indicator].**



2. **The measurement items window opens. You can select from all of the module measurement items included in the module list.**
Select the measurement item to display, and then click [OK].



3. **Use the mouse to place the ON/OFF indicators.**



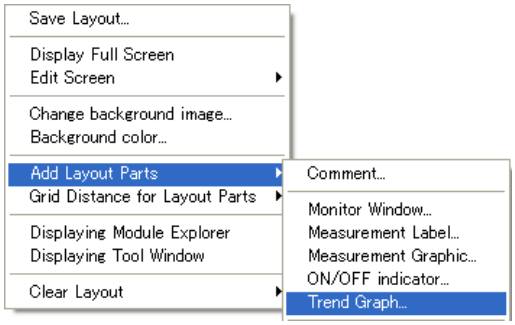
For more details on the right-click menu for ON/OFF indicators, see 4.1.3 (2) (Page 151).

Placing Trend Graph

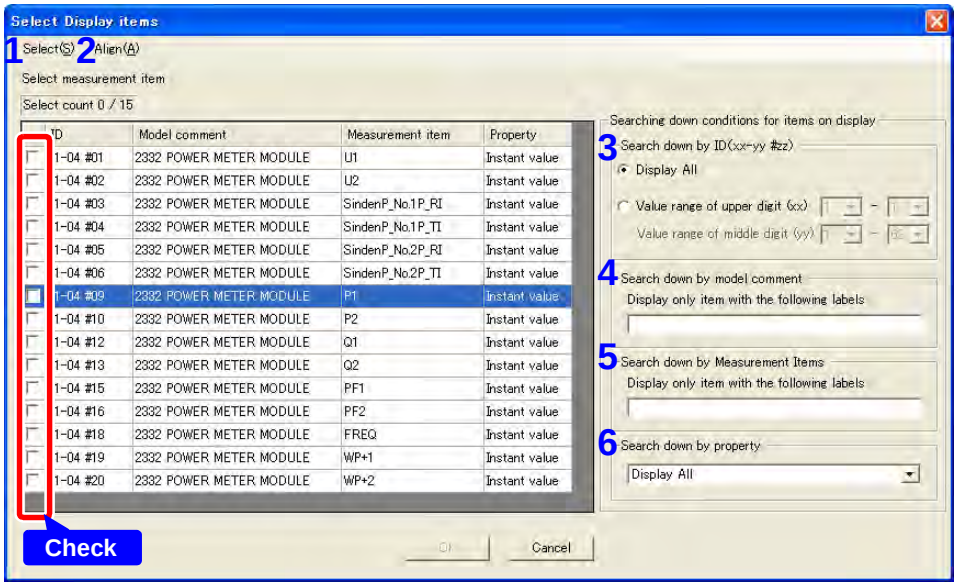
You can place Trend Graph in the layout.

Procedure

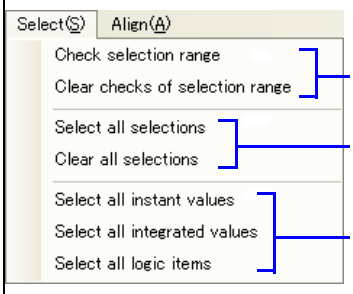
1. **Right-click on the layout and select [Add Layout Parts] - [Trend Graph].**

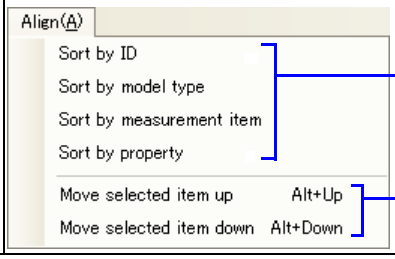


2. **The display items selection window of trend graph opens.**



Select the measurement item to display, and then click [OK].
Up to 16 items can be shown by the trend graph.

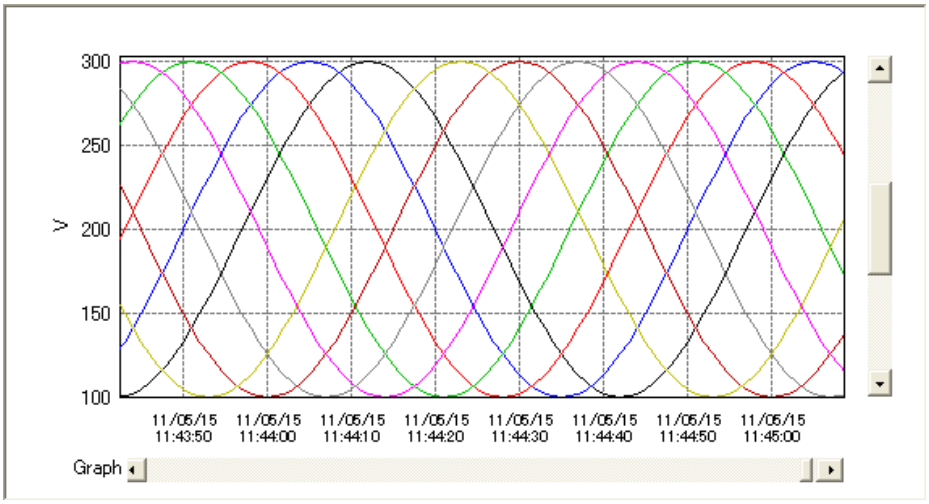
Setting item		Description
1	**Select**	 Checks/unchecks multiple items selected by dragging (shown in blue). When there are 16 or fewer items in the list, allows you to select/clear all items. When there are 16 or fewer items which meet the property in the list, allows you to select these items at once.

Setting item		Description
2	**Align**	 Align by Member ID/model type/measured item/property. Move the selected item up or down.

Use the [Searching down conditions for measurement items on display] for easier selection of measured items to output. Only measurement items which meet all the conditions of each group condition will be displayed.

Setting item		Description
3	**Search down by ID (xx-yy #zz)**	Only the upper ID and middle ID of the Member ID which is within the specified range will be displayed.
4	**Search down by model comment**	Only items containing characters inputted into the model comment will be displayed.
5	**Search down by Measurement Items**	Only items containing characters inputted into the measurement itemsÅf names will be displayed.
6	**Search down by property**	Only properties of the measurement items which are items of specified models will be displayed. The following properties can be specified. Instant value/average value/maximum value/ minimum value/ integrated value/ logic value/ display all

3. Use the mouse to change the position and size of the trend graph.



For more details on the right-click menu for trend graph, see 4.1.3 (2) (Page 151)

NOTE

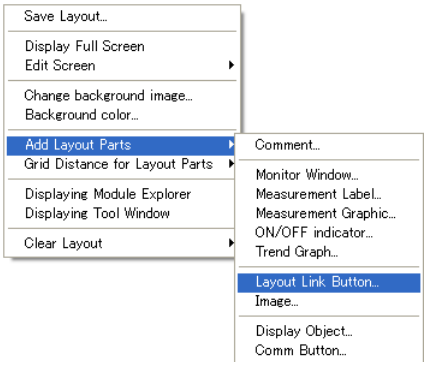
- The trend graph is updated every second, using the monitor data. If wireless connection conditions are poor, the measurement values may not be displayed properly.
- The trend graph can show up to 16 items and up to one hour's worth of data. When one hour is exceeded, old data will progressively disappear from view.

Placing the layout link button

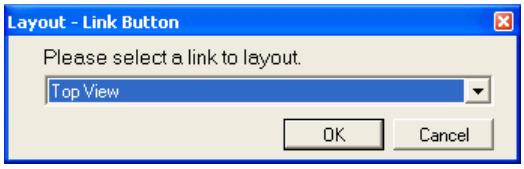
Use the following steps to place the layout link button.

Procedure

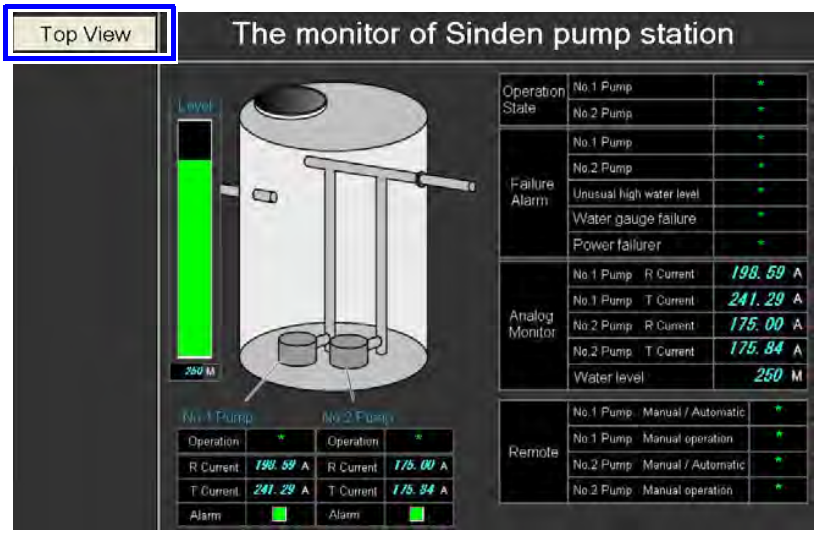
1. **Right-click the layout, and select [Add Layout Parts] - [Layout Link Button].**



2. **Select the layout link target in the link button additional window, and then click [OK].**



When you place the link button, save the layout again.



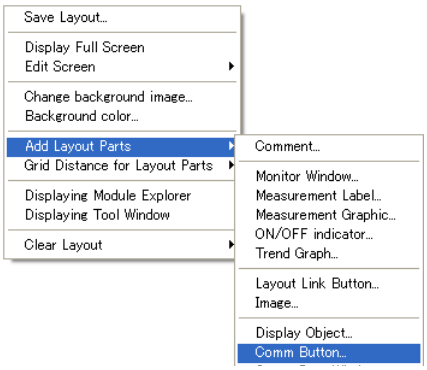
For more details on the right-click menu for layout link button, see 4.1.3 (2) (Page 151).

Setting Communication buttons

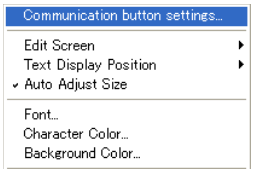
Use the following steps to place the send button.

Procedure

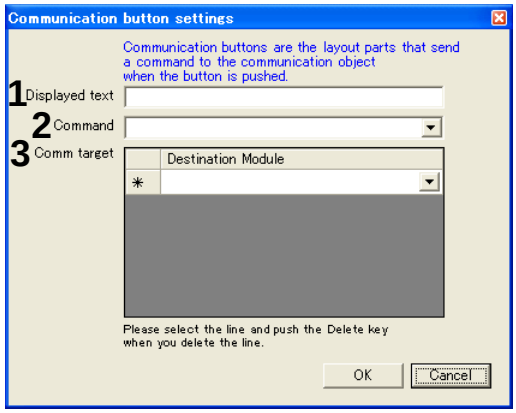
1. **Right-click the layout, and select [Add Layout Parts] - [Comm Button].**



2. **Right-click on the newly added button and select [Communication button settings].**



3. **The [Communication button settings] dialog box will be displayed.**



Setting item		Description
1	**Displayed text**	• Changes the text displayed in the button.
2	**Command**	• Sets the command to send to the measurement module.
3	**Comm target**	• Selects the module to which to send the command.

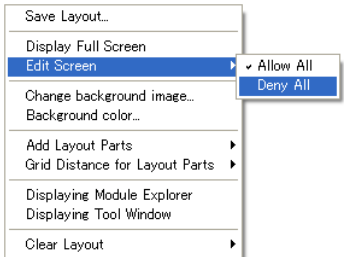
(5) Locking the Layout

You can lock the layout screen to prohibit screen editing for all of the layout parts.

Procedure

1. **Right-click the layout, and select [Edit Screen].**

2. **Select [Deny All].**

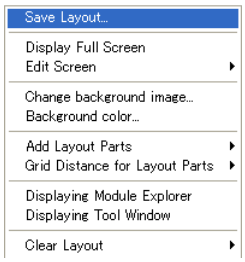


(6) Saving the layout

When you have finished placing layout parts, save the Layout.

Procedure

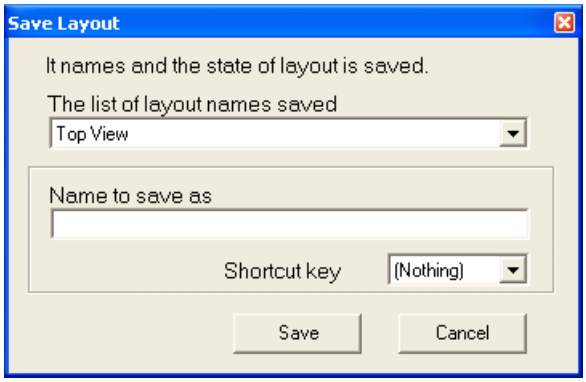
1. **Right-click the layout, and select [Save Layout].**



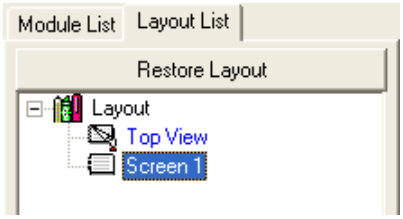
2. **When the save screen opens, enter the "Name to save as".**

3. **If you use a shortcut key for the screen, set the shortcut key.**

4. **Click [Save].**



When the layout is saved, the names already saved in the [Layout List] appear.



(An example of saving the layout as "Screen 1")

Note
Whenever you change the layout, be sure to save the layout.

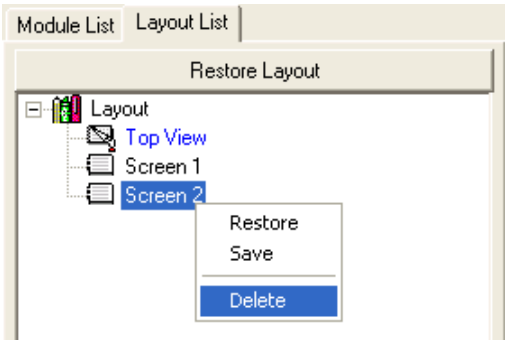
(7) Deleting the layout

Use the following steps to delete the layout.

Procedure

1. **Open the layout list.**

2. **Right-click the layout you want to delete, and select [Delete].**



(8) Switching layouts with the layout link button

When you want to monitor multiple layouts, you can place a [Layout Link] button in the layout to switch back and forth between screens.

When the layout is only 1 screen, you do not need a [Layout Link] button.

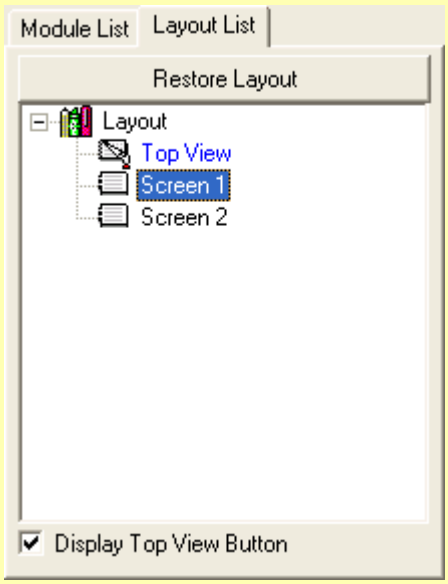
Note

About Top View

The [Top view] for the layout list is a special layout.
You can display a dedicated button in the tool bar for moving to the Top view.
You can switch to the Top view screen by clicking the Top view button.

Displaying the Top view

You can display the Top view button by selecting the Top view check box from the Layout list.

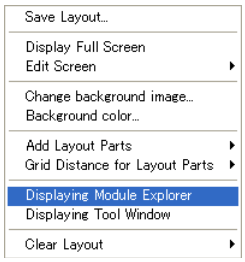


Using the Module Explorer

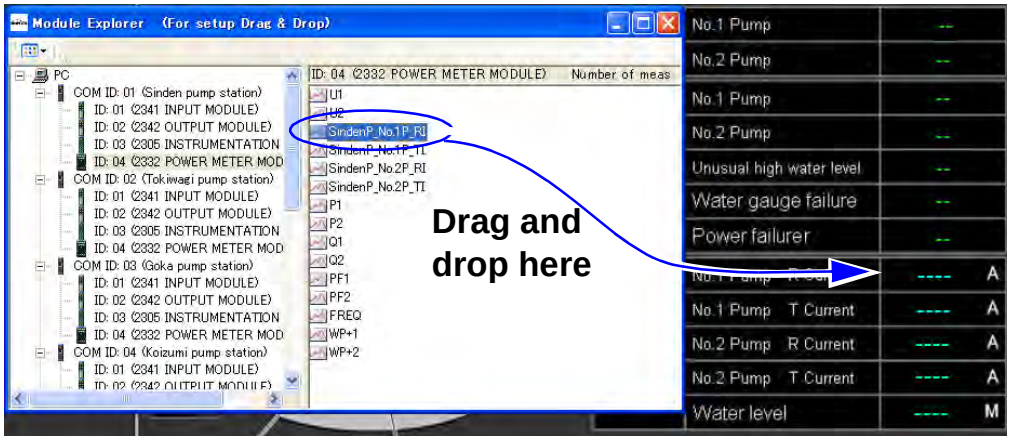
The Module Explorer allows you to use previously configured module settings to easily configure additional modules.

Procedure

1. **Right-click on the layout and select [Display Module Explorer].**



2. **The Module Explorer will be displayed.**



To apply settings, drag and drop them onto the desired layout component.

4.1.2 Switching layouts

You can use either of the following methods to switch between layouts.

Procedure

1. **Click the [Layout link] button placed on each layout.**

2. **When the layout list appears, double-click or right-click in the layout that you want to switch to, and then select [Restore].**

3. **After selecting the layout you want to switch to, you can also switch by clicking [Restore Layout].**

4.1.3 Right-Click Menus for Layouts and Layout Parts

The right-click menus for the layouts and the layout parts appear.

(1) The right-click menu in layouts

You can find the following items in the right-click menu in layouts.

Right-click menu	Description
Save Layout	• Save the layout. ❖ (Page 146)
Display Entire Screen	• Open the layout on the entire screen (Full Screen).
Edit Screen	• Set screen movement for all monitor screens, as well as allow/deny permissions for editing all layout parts on the screen.
Change Background Image	• View the background image in the layout.
Add Layout Part	• Add layout parts.
Grid Distance for Layout Parts	• Set the grid for quantifying the amount of movement for parts that make up the layout. • By setting the grid, you can line up the different layout parts.
Clear Layout	• Clear the layout. • Use [Clear Background Image] to clear the background. • Use [Clear Monitor and Layout Parts] to clear all of the Monitoring screen and Layout parts. • Use [Clear All] to clear the entire layout.
Exit Smart Site Utility	• Exit the Smart Site Utility.

(2) Right-Click Menu for Layout Parts

Right-Click Menu for Comments

You can find the following items in the right-click menu in Comments.

Right-click menu	Description
Change Comment	• Change the contents of the comment.
Edit Screen	• Set allow or deny permissions for editing the comment.
Text Display Position	• Set the text display position.
Auto Adjust Size	• Automatically adjusts the size.
Font	• Change the font of the comment.
Character Color	• Change the character color of the comment.
Background Color	• Change the background color of the comment.
Copy Layout Parts	• Create a copy of the comment. *After copying, the new comment inherits the comment's attributes (contents, text display position, size, font, character color, and background color).
Close	• Close the comment.

Right-Click Menu for Measurement Labels

You can find the following items in the right-click menu in Measurement Labels.

Right-click menu	Description
Unit Display	• Set whether or not to use a unit display.
Change display measurement item	• Change the measurement item displayed.
Module settings	• Change alarm settings etc. for the module.
Edit Screen	• Set allow or deny permissions for editing the measurement label.
Text Display Position	• Set the text display position.
Auto Adjust Size	• Automatically adjusts the size.
Font	• Change the font of the measurement label.
Measurement Colors	• Change the character color of the measurement label.
Background Color	• Change the background color of the measurement label.
Copy Layout Parts	• Create a copy of the measurement label. *After copying, the new Measurement label inherits the Measurement label's attributes (Presence of unit display, display items, module settings, text display position, size, font, measurement colors, and background color).
Close	• Close the measurement label.

Right-Click Menu for Measurement Graphics

You can find the following items in the right-click menu in Measurement Graphics.

Right-click menu	Description
Graphic settings *1	• Set the display range, upper and lower limit display, as well as the gauge display.
Change display measurement item	• Change the measurement item displayed.
Module settings	• Change alarm settings etc. for the module.
Edit Screen	• Set allow or deny permissions for editing the measurement graphic.
Copy Layout Parts	• Create a copy of the measurement graphic. *After copying, the new measurement graphic inherits the Measurement label's attributes (Graphic settings, display items, module settings).
Close	• Close the measurement graphic.

*1: Graphic settings

You can set the display range, upper and lower limit display, as well as the gauge display in measurement graphic settings.

Procedure

1. **Right-click the Measurement graphic, and select [Graphic settings].**
2. **Set the maximum and minimum values within the display range.**
3. **You can set the upper and lower limit display.**
4. **You can set the gauge display.**
5. **Press the Update button to update the measurement graphic display.**

Right-click menu for the ON/OFF indicator

You can find the following items on the right-click menu for the ON/OFF indicator.

Right-click menu	Description
ON/OFF indicator settings *1	• Set the image, color, and style of the borderline.
Change display measurement item	• Change the measurement item displayed.
Module settings	• Change alarm settings etc. for the module.
Edit Screen	• Set allow or deny permissions for editing the ON/OFF indicator.
Auto Adjust Size	• Automatically adjusts the size.
Copy Layout Parts	• Create a copy of the ON/OFF indicator. *After copying, the new ON/OFF indicator inherits the ON/OFF indicator's attributes (Image settings, display items, and module settings).
Close	• Close the measurement ON/OFF indicator.

*1: Setting ON/OFF indicators

You can set the style of the background color, image, and borderline with the ON/OFF indicator.

Procedure

1. **Right-click on the ON/OFF indicator, and select [ON/OFF Indicator Settings].**

2. **You can set the image and color at ON/OFF.**

3. **You can set the borderline style.**

4. **Press the [OK] button to change the ON/OFF measurement display.**

Right-Click Menu for Trend Graph

You can find the following items in the right-click menu in trend graph.

Right-click menu	Description
Change display measurement item	• Change the displayed measurement items.
Setting of graph *1	• Set the detail of graph.
Alignment of trend graph	• Aligns trend graphs on the Layout screen with the edge of the screen. The size of the trend graphs will be automatically adjusted.
Edit Screen	• Set allow or deny permissions for editing the trend graph.
Copy Layout Parts	• Copies a trend graph. *The trend graph's attributes (graph settings, display items, display position, and size) will be applied to the newly created trend graph.
Close	• Close the trend graph.

*1 : Setting of trend graph

You can set details of the time axis, Y axis, and the display, etc. by the graph setting.

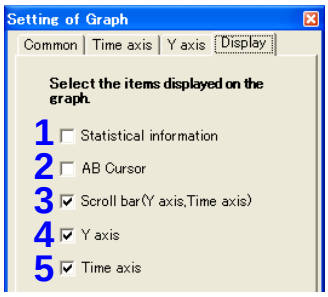
Procedure

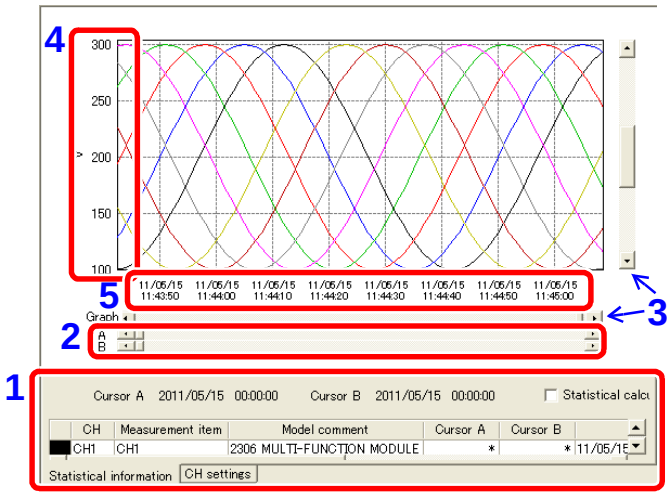
1. **Right-click on the trend graph, and select [Setting of graph].**

2. **You can set Common, Time axis, and Y axis in the trend graph.**

❖ For details on this function, see 3.7.4"Main Functions of "Graph"" - "The following can be carried out with [Graph setting]" (page 118). (In the trend graph, some functions may not be used.)

3. **You can set the display settings in the graph.**
Selected items are displayed in the graph.





Right-Click Menu for Images

You can find the following items in the right-click menu in Images.

Right-click menu	Description
Change image	• Read the image.
Register as background image	• Registers the image as the background image.
Edit Screen	• Set allow or deny permissions for editing the image.
Auto Adjust Size	• Restore it to the size when reading.
Copy Layout Parts	• Create a copy of the image. *After copying, the new image inherits the image's attributes (Image, sized).
Close	• Close the image.

Right-click Menu for Layout Link Button

You can find the following items in the right-click menu in Layout Link Button.

Right-click menu	Description
Change link target	• Change the layout link target for the button.
Edit Screen	• Set allow or deny permissions for editing the layout link button.
Text Display Position	• Set the text display position.
Auto Adjust Size	• Automatically adjusts the size.
Font	• Change the font of the layout link button.
Character Color	• Change the character color of the layout link button.
Background Color	• Change the background color of the layout link button.
Copy Layout Parts	• Create a copy of the layout link button. *After copying, the new layout link button inherits the layout link button's attributes (link target, text display position, size, font, character color, and background color).
Close	• Close the ilayout link button.

Right-click Menu for Send Button

You can find the following items in the right-click menu in send Button.

Right-click menu	Description
Configure Send Button	• Sets the button name, command to send, and target module.
Edit Screen	• Enables/disables editing of the comment screen.
Set Text Display Position	• Sets the text display position.
Automatically Adjust Size	• Automatically adjusts the size.
Change Font	• Changes the font used to display the send button.
Change Text Color	• Changes the text color used to display the send button.
Change Background Color	• Changes the background color of the send button.
Copy Layout Component	• Creates a copy of the send button. *The copied button will inherit the attributes of the send button (communications and display settings).
Close	• Closes the send button.

4.2 Report Creating Function

This section explains how to create various reports.

- Data collected with the Smart Site Utility can be used to create daily and monthly reports.
- Daily and monthly reports can be output as Microsoft Excel files in 1-month-units.
- A maximum of 10 report files can be created.
- Since the latest data and the past data can be displayed on 1 sheet, data can be compared briefly.
- Excel 2000, 2002, 2003, 2007, and 2010 are supported.
- For creating daily and monthly reports, a format file to be used as a template must first be created in Microsoft Excel.
- After report making, you can perform Microsoft Excel macro.

General procedure

1. **Create the format file.** ❖ 4.2.1 (page 158)

2. **Test the output and edit the format file as necessary.** ❖ 4.2.2 (page 168)

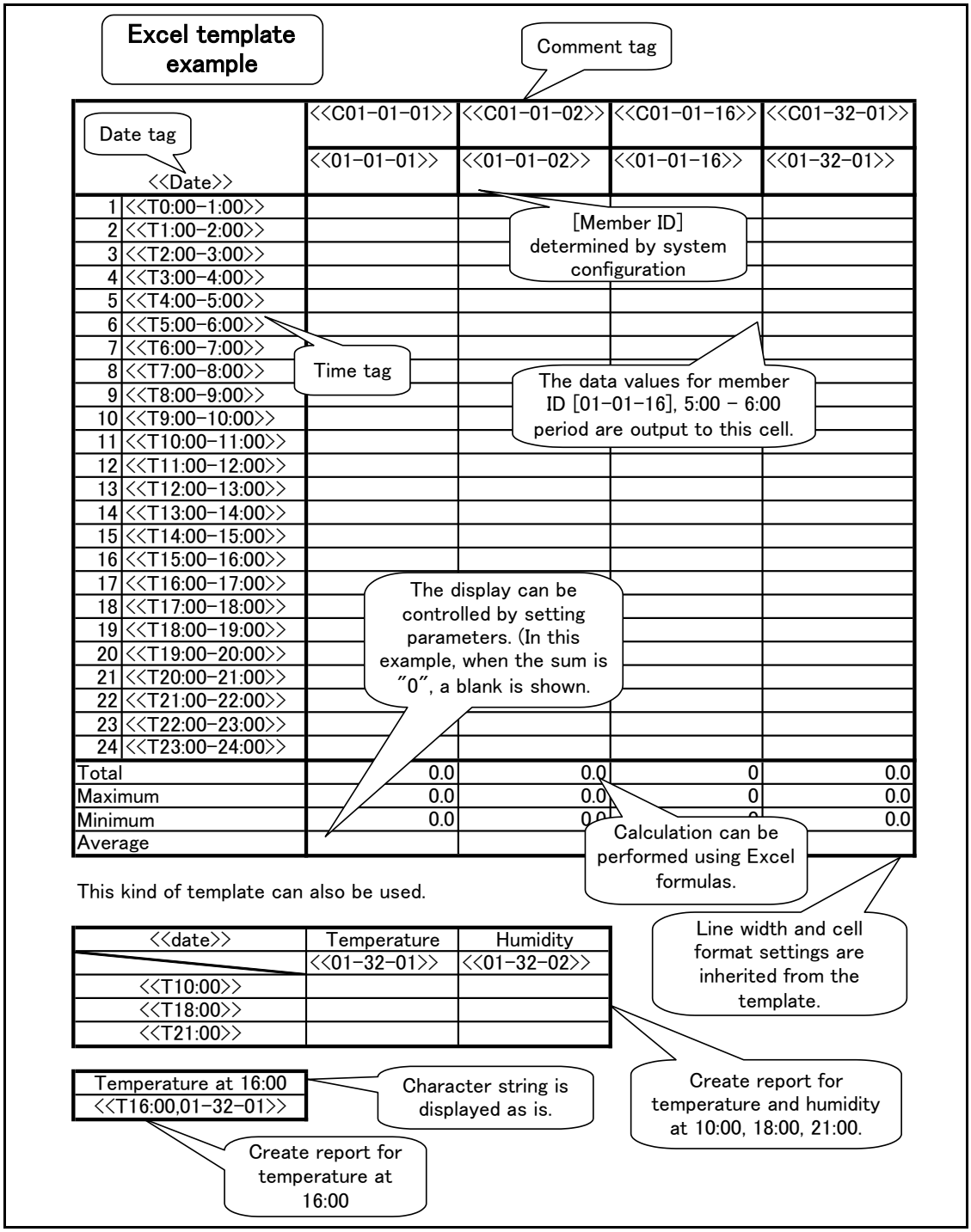
3. **Create reports automatically.** ❖ 4.2.3 (page 170)

4.2.1 Creating a Format File

An example for a format file and a sample output report are shown below. This section explains the procedure for creating the format file, using the examples shown.

❖ See the [Report] folder in the application folder (such as C:\Program Files\Smart-SiteUtility or similar).

Sample format file



Sample report

Excel template example

	2003/9/1	Power consumption of PC U1(AVE)	Power consumption of PC I1(AVE)	Power consumption of PC WP+	Ambient temperature measurement Ambient temperature
1	01:00	100.6	0.4	32	27.5
2	02:00	100.6	0.4	32	27.5
3	03:00	100.6	0.4	32	27.5
4	04:00	100.6	0.4	32	27.5
5	05:00	100.6	0.4	32	27.5
6	06:00	100.6	0.4	32	27.5
7	07:00	100.6	0.4	32	27.5
8	08:00	100.6	0.4	32	27.5
9	09:00	100.5	0.5	32	26.8
10	10:00	100.2	1.2	90	27.4
11	11:00	100.1	1.4	105	27.5
12	12:00	100.1	1.5	107	27.7
13	13:00	100.3	0.8	59	27.3
14	14:00	100.2	1.2	90	27.6
15	15:00	100.2	1.4	101	27.7
16	16:00	100.1	1.5	108	27.7
17	17:00	100.1	1.5	110	27.5
18	18:00	100.1	1.4	105	27.9
19	19:00	100.1	1.5	109	28.2
20	20:00	100.1	1.3	97	27.7
21	21:00	100.6	0.5	32	27.3
22	22:00	100.6	0.5	32	27.1
23	23:00	100.6	0.5	32	26.9
24	24:00	100.6	0.5	32	27.0
Total		2409.1	20.6	1500	659.3
Maximum		100.6	1.5	110	28.2
Minimum		100.1	0.4	32	26.8
Average		100.4	0.9	62	27.5

This kind of templates can also be used.

2003/9/1	Temperature	Humidity
	Ambient temperature	Pt dummy resistance
10:00	27.4	5.5
18:00	27.9	5.5
21:00	27.3	5.6

Temperature at 16:00
27.7

Tag types

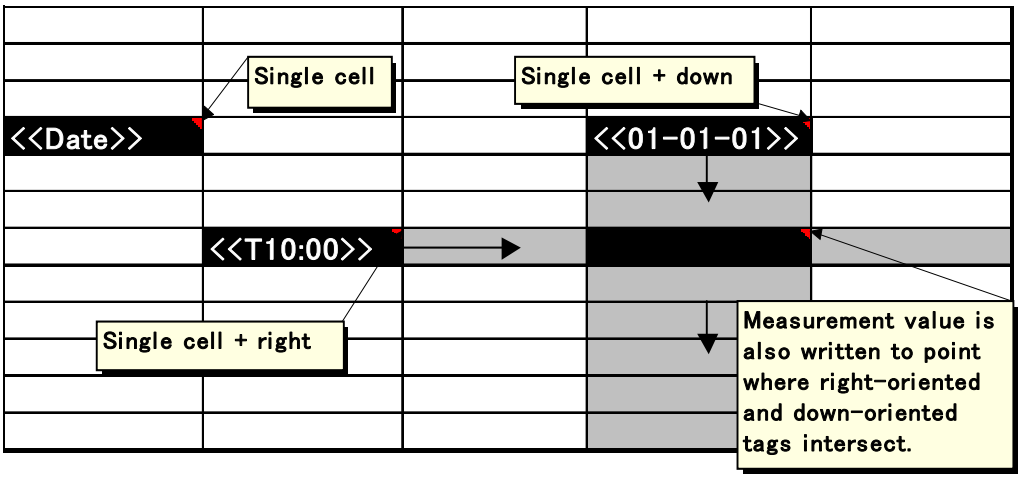
Strings enclosed in "<<" and ">>" (tags) written to the format file allow you to modify the output to an Excel worksheet. The table below lists the available tag types

Tag types and their use in reports

Tag	Example	Output item	Effective direction*	Display format [type]	See
Dayly report:					
<<Date>>	<<Date>>	Report output date	Single cell	Date	P.178
<<T time, member ID>>	<<T2:00,01-01-02>>	Setting value		Value	P.178
<<T time>>	<<T1:00>>	Time	Single cell + right	Character string	P.178
<<T time - time>>	<<T1:00-2:00>>	Time			P.179
Monthly report:					
<<MDate>>	<<MDate>>	1st of month	Single cell	Date	P.180
<<D Date>>	<<D3>>	Date	Single cell + right	Value	P.180
<<W>>	<<W>>	Day of week	Single cell + down	Character string	P.180
<<Max member ID>>	<<Max01-01-01>>	Maximum value		Value	P.180
<<Max member ID, interval (minutes)>>	<<Max01-01-01,30>>	Maximum value in specified interval			P.181
<<MaxT member ID>>	<<MaxT01-01-01>>	Time of maximum value		Character string	P.181
<<MaxT member ID, interval (minutes)>>	<<MaxT01-01-01,30>>	Time of maximum value in specified interval			P.182
<<AT time, member ID>>	<<AT10:00,01-01-01>>	Measurement value at given time		Value	P.182
Daily/Monthly common items:					
<<C member ID>>	<<C01-01-01>>	Comment	Single cell	Character string	P.178
<<Member ID>>	<<01-01-01>>	Measurement value	Single cell + down	Value	P.178

*The effective tag direction has 3 states.

Single cell	Based on the tag information, the value is output only to the cell for which the tag is written.
Single cell + right	In addition to the single cell write, data are also written to the position where right-oriented tags and down-oriented tags intersect. This allows easy creation of tabular data.
Single cell + down	



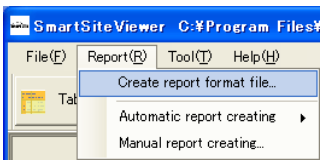
Create the formatting for the report.
The explanations in this section use Microsoft Excel 2000 as an example. In Excel 2002 and 2003, you can create a format file using similar procedures.

Steps to make daily report format file

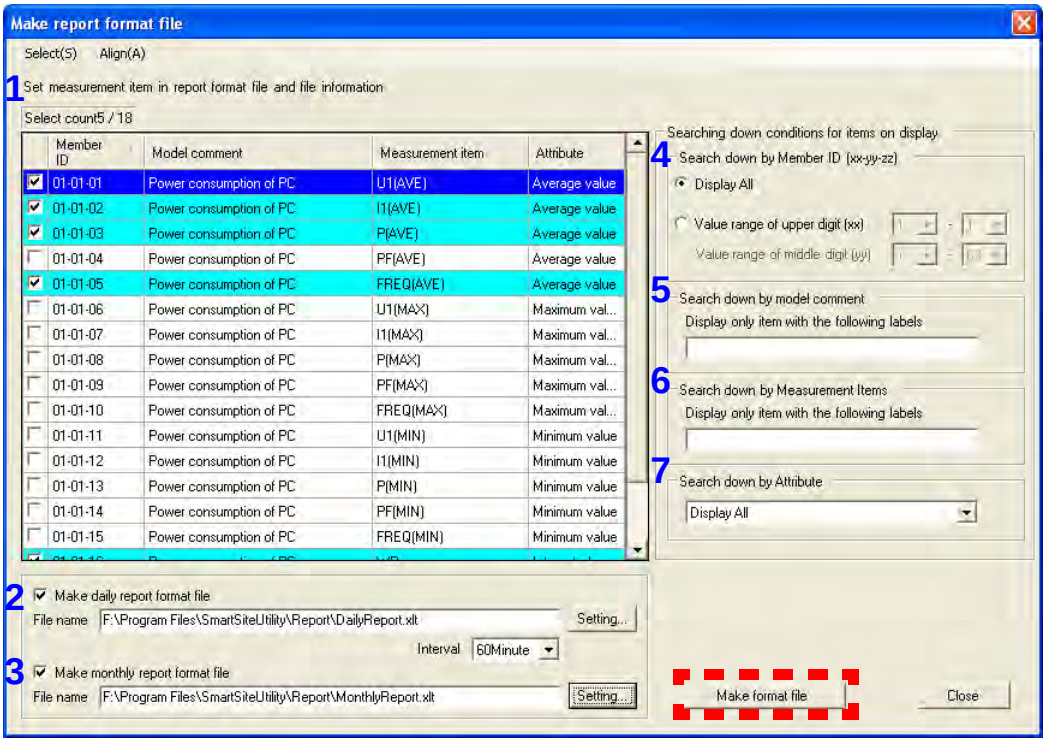
First, the simple steps on how to make a daily format file of record data will be explained.

Procedure

1. **Start Smart Site Viewer and select [Report]-[Make report format file…].**



2. **Make report format file screen will appear.**



3. Set the measurement items to output as a report and format file information.

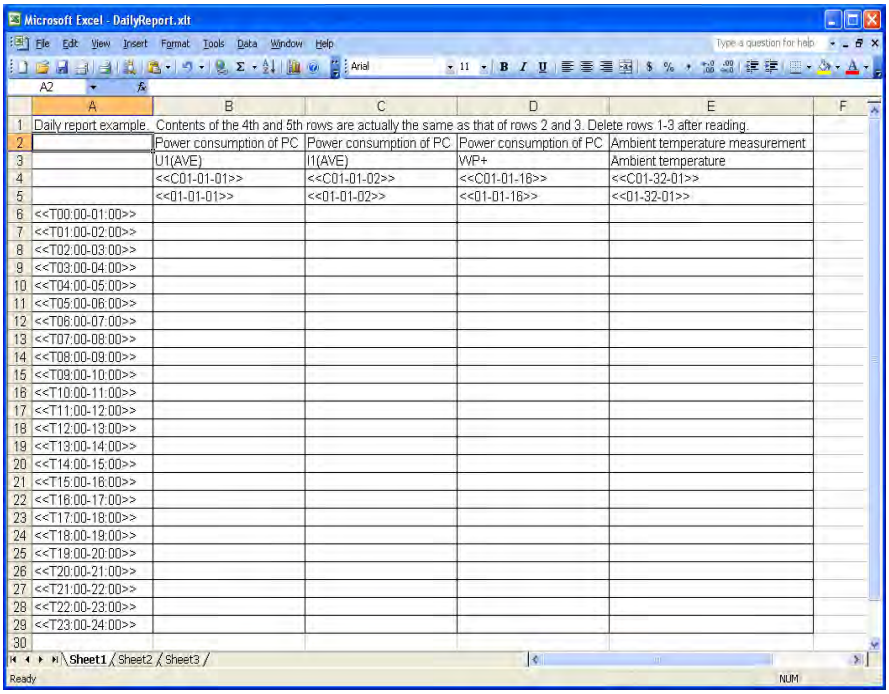
Setting items		Contents
1	**Measured item list**	Check the measurement items to output as a report. • The following can be carried out when the [Select] menu is selected. (1) Clear all selections (2) Additional selection/ clear selection of selection range • The following can be carried out when the [Align] menu is selected. (1) Align by Member ID/ model type/ measurement item/ attribute. (2) Move selected item up or down.
2	**Daily report format file**	To make the daily report format file, check here to set the format file name and interval. Intervals can be set for example, at [60 minute intervals for original data at 10 minute intervals].
3	**Monthly report format file**	To make the monthly report format file, check here to set the format file name.

Use the [Searching down conditions for measurement items on display] for easier selection of measurement items to output.
Only measurement items which meet all the conditions of each group condition will be displayed.

Searching down conditions		Contents
4	**Search down by Member ID**	Only the upper ID and middle ID of the Member ID which is within the specified range will be displayed.
5	**Search down by Model type**	Only items containing characters inputted into the model comment will be displayed.
6	**Search down by measurement item**	Only items containing characters inputted into the measurement items' names will be displayed.
7	**Search down by attribute**	Only attributes of the measurement items which are items of specified models will be displayed. The following types can be specified. Instant value/average value/maximum value/ minimum value/ integrated value/ logic value/ display all

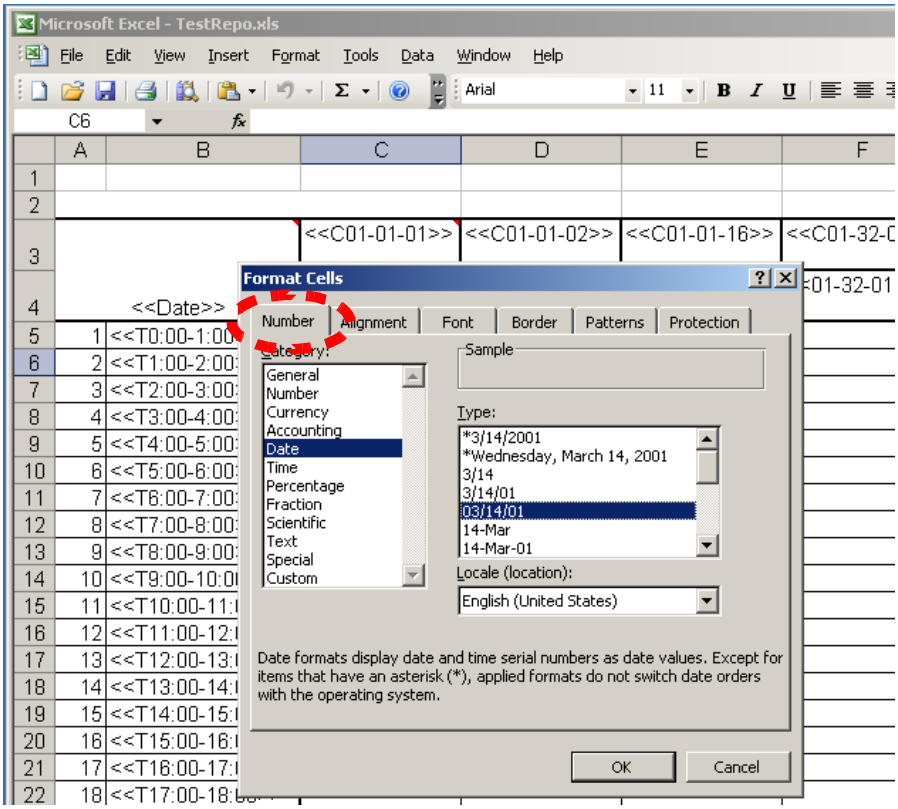
4. Click [Make format file]. Automatically creates format file.

Example of daily report format file



Refer to the format file outputed and make use of other tags as well to create an optional daily/monthly report format file.

Tags listed in "Tag types and their use in reports" (page 160) have a display format. If the display format is not matched properly, values may not be displayed correctly. Make the setting in Excel under [Format cells] - [Number] - [Category].

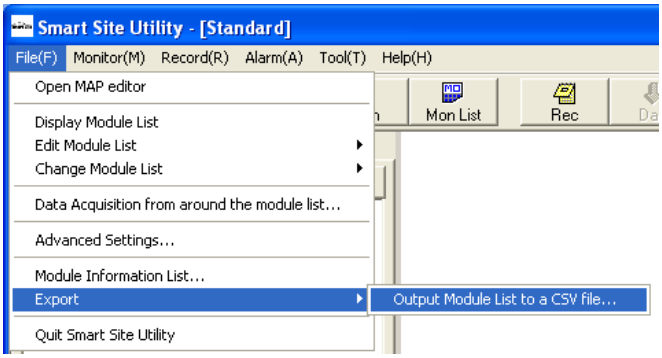


To make a format file before starting the recording

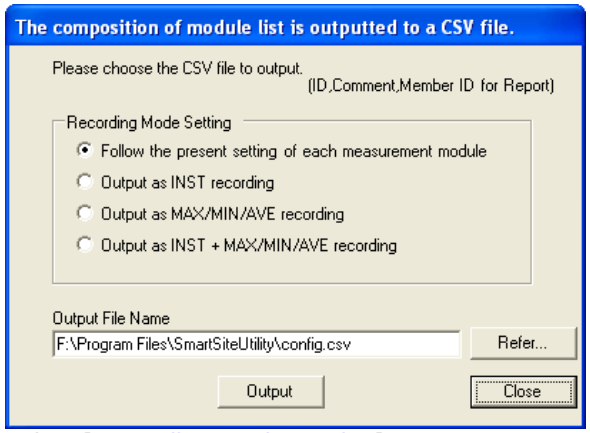
Sometimes users may wish to make a format file before starting the recording (for example, when there is no record data). In this case, the format file will have to be created manually.

Procedure

1. **Check Member ID corresponding to the item to output.**
Select [File] – [Export] – [Output Module List to a CSV file] in the Smart Site Utility.



2. **[The composition of module list is outputted to a CSV file] dialogue box will appear.**



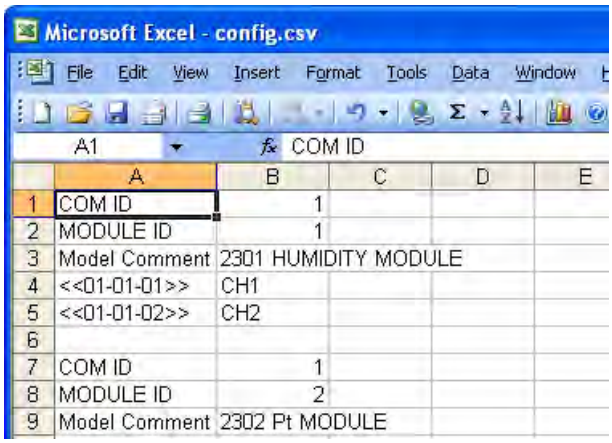
Select [Recording Mode Setting]

Record mode selection	Explanation
Follow the present settings of each measurement module	Select when record operation for measurement module has started.
Output as INST recording	Select when record operation on all measurement modules is carried out on a common setting. Select when recording instant value.
Output as MAX/ MIN/ AVE recording	Select when record operation on all measurement modules is carried out on a common setting. Select when recording MAX. MIN, AVE.
Output as INST + MAX/ MIN/ AVE recording	Select when record operation on all measured items' modules is carried out on a common setting. Select when recording instant value + MAX, MIN, AVE.

3. **Input file name to output and click on the [Output] button to output the CSV file.**

4. **The following diagram shows an example of a CSV file. Member ID is shown as <<XX-XX-XX>>.**

Retrieves the member ID of the measurement item to output as a report, and inputs onto an excel sheet so that it may correspond to the location to output. All other tags are also written.



	A	B	C	D	E
1	COM ID	1			
2	MODULE ID	1			
3	Model Comment	2301 HUMIDITY MODULE			
4	<<01-01-01>>	CH1			
5	<<01-01-02>>	CH2			
6					
7	COM ID	1			
8	MODULE ID	2			
9	Model Comment	2302 Pt MODULE			

Example of inputting onto an Excel sheet

Retrieve the member ID from the exported CSV file or from [Table] window (screen above), follow [Image to output] and write onto the format file.

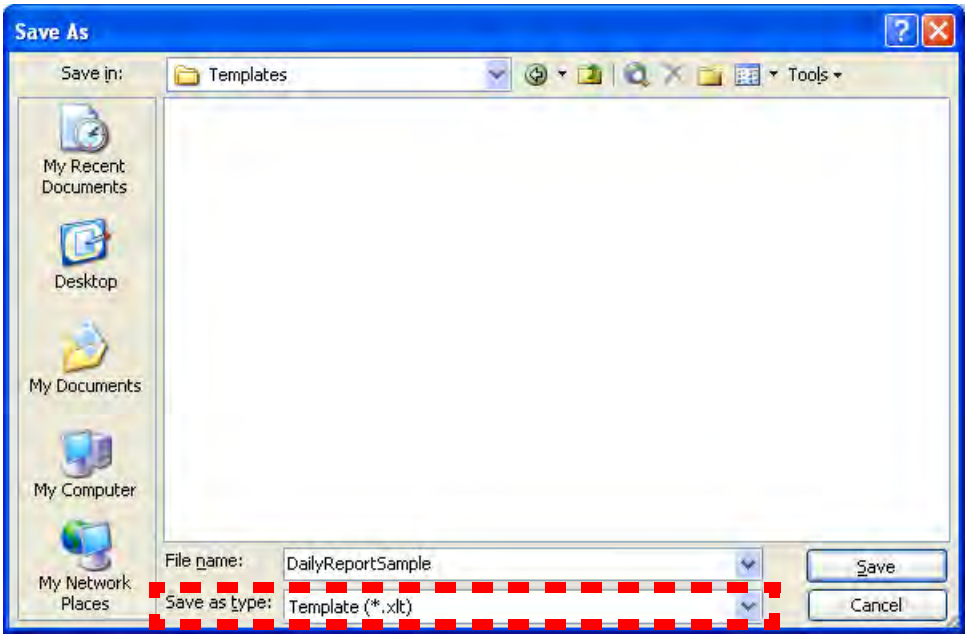
Image to output

	U1(AVE)	I1(AVE)
1:00	100.5521	0.4483249
2:00	100.5086	0.4481325
3:00	100.5058	0.4488249

Format

	<<01-01-01>>	<<01-01-02>>
<<T1:00>>		
<<T2:00>>		
<<T3:00>>		

5. **Bring up [Save as] as a dialogue box using [File] – [Save] in the Excel file.**



Select [Template (*.xlt)] for [File type] and save and close format file.

6. **Carry out the same steps for making a format file for the monthly report, if necessary.**

❖ "Monthly report format" (page 175)

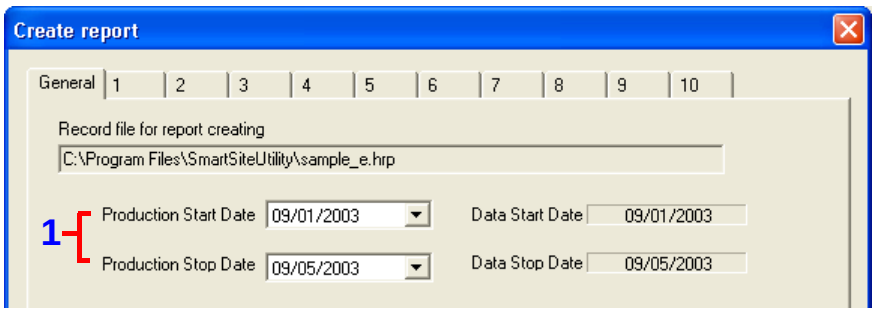
4.2.2 Confirm output test and format file

Procedure

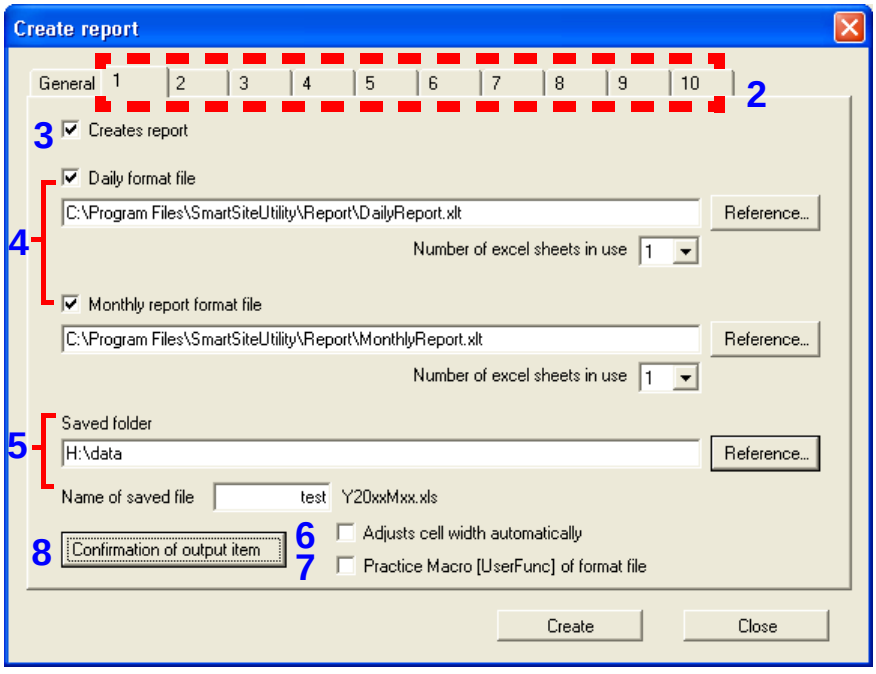
1. **Select [Manual report making] from the [Report] menu.**

2. **Manual report setting screen will appear.**
Set the respective contents for [General] tab and [Reports 1 to 10] tab.
You can output up to 10 report files.

[General] tab

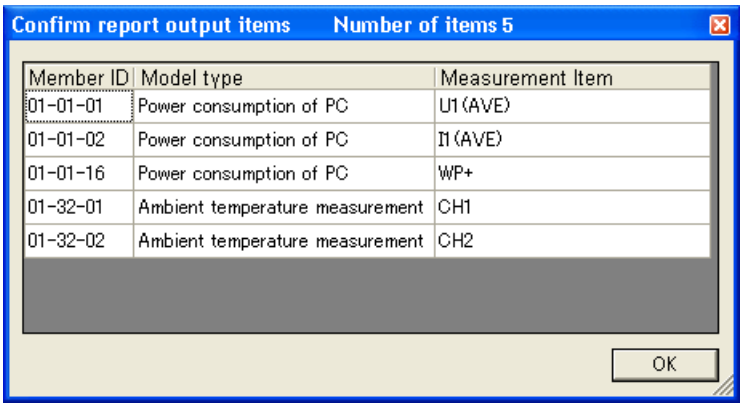


[Reports 1 to 10] tab



Setting items		Contents
1	**Start date, End date**	Set the range of the report output date. This is a common setting for all reports to be outputted.
2	**Reports 1 to 10 tab**	Set 10 report output settings for each tab.
3	**Output report**	To output a report, first click here.
4	**Daily report format file, Monthly report format file**	Set the format file to use as a daily report or monthly report. Up to 5 sheets can be used in a format file.
5	**Saved folder, Name of saved file**	Input the folder of the report and the saved file name. For example, when the saved file is named as “test”, the name of a report in Apr 2007 will be testY2007M04.xls.
6	**Automatic cell width alignment**	Click here to automatically align the cell width of the report file (Excel file) to fit the length of the cell characters.
7	**Perform macro task on format file**	If the macro function [UserFunc] is present during file formatting, clicking here will start the macro task once the report making is completed.
8	**Confirmation of output item**	Verifies the accuracy of the report output items after each setting is carried out.

3. Click [Confirmation of output item] after setting each content setting to verify the accuracy of the report output items.



4. Click [Make] to test output a report.

Repeats editing and test output of the format file until the file is properly formatted.

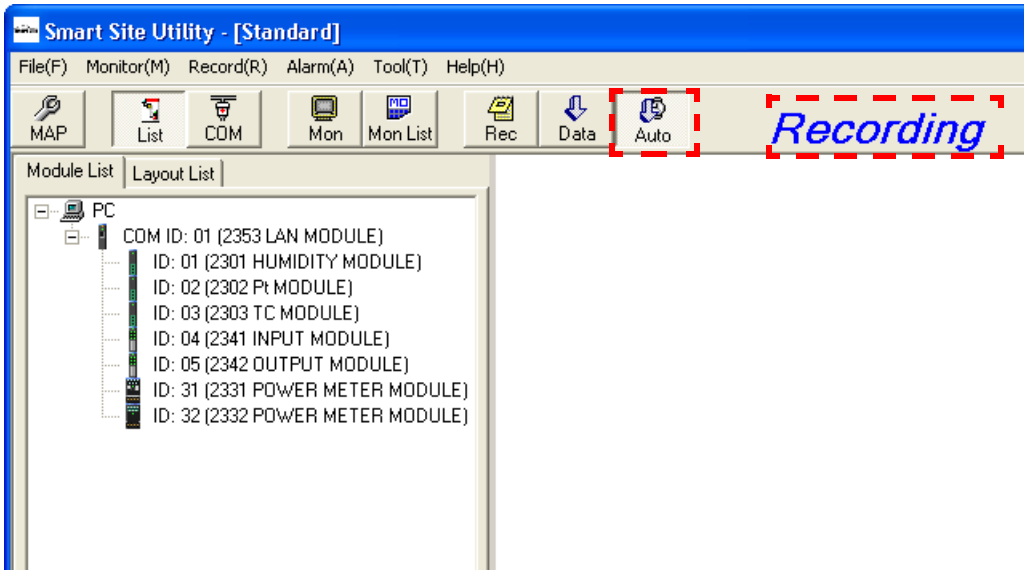
Please close the format file before carrying out report output.

4.2.3 Auto Report Output

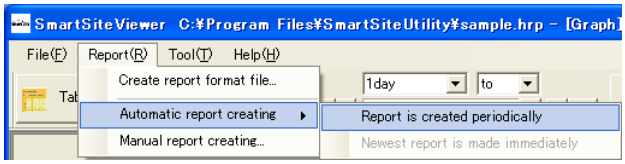
Using the completed report format file, reports can be created automatically as follows.

Procedure

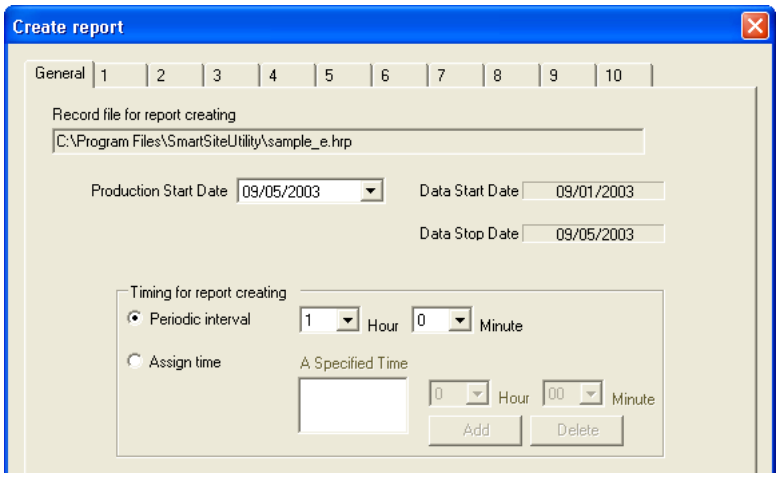
1. **Verify that the indication [Recording] is shown for the Smart Site Utility. Also verify that the [Auto] button has been clicked to update reports periodically.**

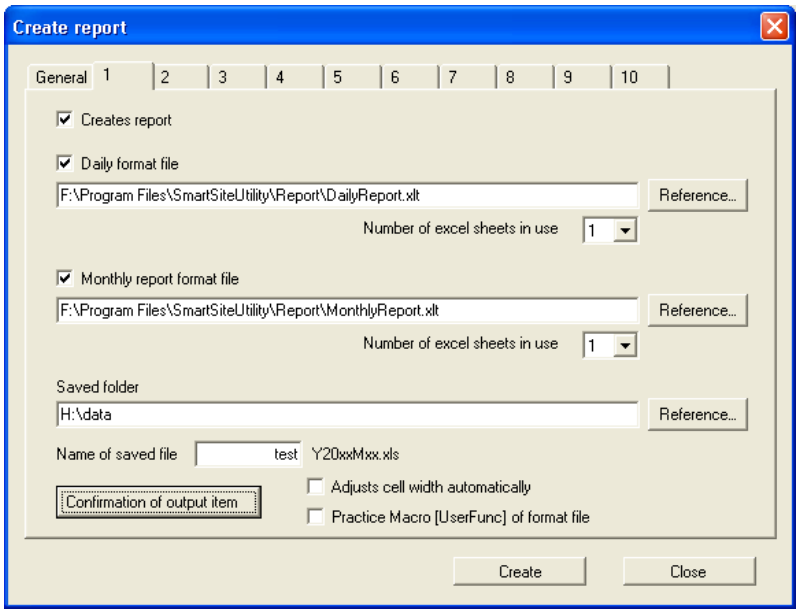


2. **Select [Report] - [Automatic report creating] - [Report is created periodically].**



3. The [Automatic report creating] dialog box appears.



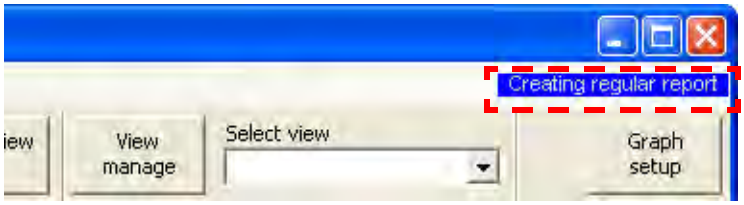


[**Periodic interval**] or [**Assign time**] can be chosen as [**Timing for report creating**].
If [**Assign time**] is chosen, a report will be resumed when a specified time passes after a report creation.
A setup of the other format file etc is the same as that of manual report creation.

❖ Procedure, step 4.2.2 "Confirm output test and format file" (page 168) procedure step 3.

4. The [Create] button is clicked, the automatic report output is started.

5. **The hourglass symbol appears, and a report is created automatically. (This process may take several minutes.) When the hourglass symbol disappears, verify that the [Creating regular report] indication is shown.**



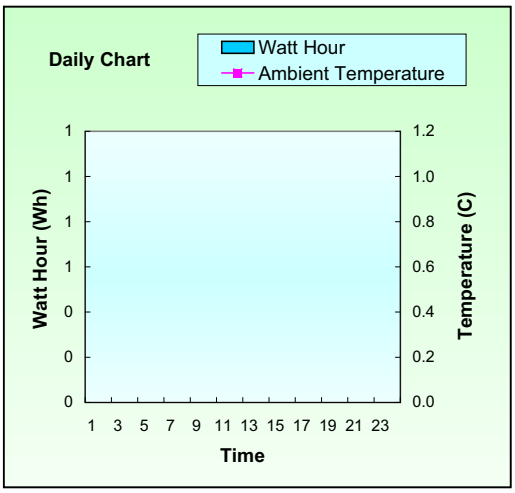
The [Creating regular report] indication is normally blue, but when a report is being written using Excel, the indication changes to red.

While the [Auto Report] indication is red, do not start up Excel.

6. **To continue creating reports after terminating the application, start Smart Site Utility and Smart Site Viewer. When Smart Site Utility is set to [Auto] (see procedure step1. (page 170)) and Smart Site Viewer is set to [Creating regular report] (see procedure step5. (page 172)), report creation will be resumed automatically.**

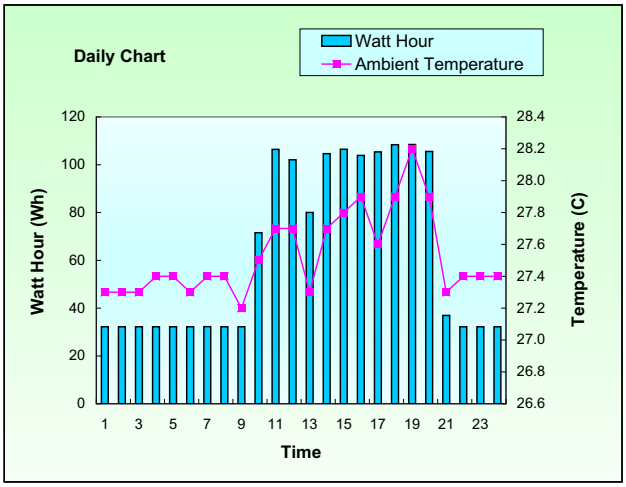
Daily report format: graph format is also available.

<<Date>>		<<C01-01-01>> <<01-01-01>>	<<C01-01-02>> <<01-01-02>>	<<C01-01-16>> <<01-01-16>>	<<C01-32-01>> <<01-32-01>>
1	<<T0:00-1:00>>				
2	<<T1:00-2:00>>				
3	<<T2:00-3:00>>				
4	<<T3:00-4:00>>				
5	<<T4:00-5:00>>				
6	<<T5:00-6:00>>				
7	<<T6:00-7:00>>				
8	<<T7:00-8:00>>				
9	<<T8:00-9:00>>				
10	<<T9:00-10:00>>				
11	<<T10:00-11:00>>				
12	<<T11:00-12:00>>				
13	<<T12:00-13:00>>				
14	<<T13:00-14:00>>				
15	<<T14:00-15:00>>				
16	<<T15:00-16:00>>				
17	<<T16:00-17:00>>				
18	<<T17:00-18:00>>				
19	<<T18:00-19:00>>				
20	<<T19:00-20:00>>				
21	<<T20:00-21:00>>				
22	<<T21:00-22:00>>				
23	<<T22:00-23:00>>				
24	<<T23:00-24:00>>				
Total		0.0	0.0	0	0.0
Maximum		0.0	0.0	0	0.0
Minimum		0.0	0.0	0	0.0
Average					

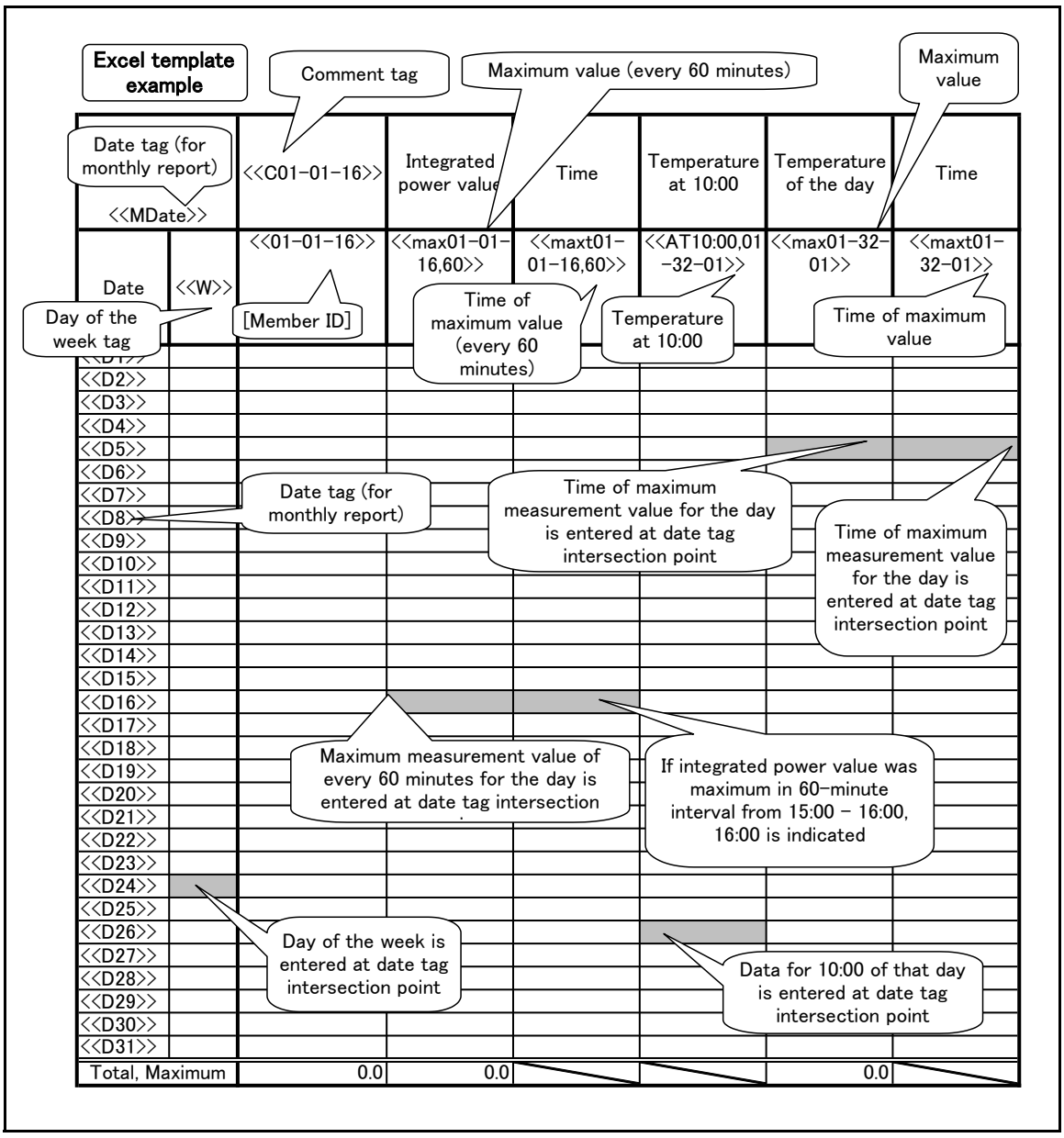


Automatically generated daily report

2003/9/3		Power consumption of PC U1(AVE)	Power consumption of PC I1(AVE)	Power consumption of PC WP+	Ambient temperature measurement Ambient temperature
1	01:00	100.6	0.4	32	27.3
2	02:00	100.6	0.4	32	27.3
3	03:00	100.6	0.5	32	27.3
4	04:00	100.6	0.4	32	27.4
5	05:00	100.5	0.5	32	27.4
6	06:00	100.6	0.5	32	27.3
7	07:00	100.5	0.5	32	27.4
8	08:00	100.5	0.5	32	27.4
9	09:00	100.3	0.5	32	27.2
10	10:00	100.1	1.0	72	27.5
11	11:00	99.9	1.4	106	27.7
12	12:00	99.9	1.4	102	27.7
13	13:00	100.1	1.1	80	27.3
14	14:00	99.9	1.4	105	27.7
15	15:00	99.9	1.4	106	27.8
16	16:00	100.0	1.4	104	27.9
17	17:00	100.0	1.4	105	27.6
18	18:00	100.0	1.5	108	27.9
19	19:00	99.9	1.5	108	28.2
20	20:00	100.0	1.4	106	27.9
21	21:00	100.4	0.5	37	27.3
22	22:00	100.5	0.5	32	27.4
23	23:00	100.5	0.4	32	27.4
24	24:00	100.5	0.4	32	27.4
Total		2406.4	20.9	1526	660.7
Maximum		100.6	1.5	108	28.2
Minimum		99.9	0.4	32	27.2
Average		100.3	0.9	64	27.5



Monthly report format



Output example

Excel template example

Sep 2003		Power consumption of PC	Integrated power value	Time	Temperature at 10:00	Temperature of the day	Time
Date	Week day	WPT	MAX	Time	Ambient temperature	MAX	Time
1	Mon	1499.7	109.5	17:00	27.4	28.5	19:32
2	Tue	773.1	32.2	11:00	27.0	28.0	17:54
3	Wed	1526.3	108.5	19:00	27.5	28.3	14:16
4	Thu	1603.2	108.9	12:00	27.5	27.9	19:02
5	Fri				27.2		
6	Sat						
7	Sun						
8	Mon						
9	Tue						
10	Wed						
11	Thu						
12	Fri						
13	Sat						
14	Sun						
15	Mon						
16	Tue						
17	Wed						
18	Thu						
19	Fri						
20	Sat						
21	Sun						
22	Mon						
23	Tue						
24	Wed						
25	Thu						
26	Fri						
27	Sat						
28	Sun						
29	Mon						
30	Tue						
Total, Maximum		5402.3	109.5			28.5	

4.2.4 Precautions for Report Creation

General precautions

- Report files for one month will become one Excel file.
- Excel sheets are lined up from left in date order, with the monthly report being the rightmost sheet.
- Output file names use the format "**Header + Y20xxMxx.xls**", thereby providing information about the year and month in the file name.
- Report format files employ the Excel template file type (extension .xlt).
- Sheets containing only a graph cannot be output as a report.
- If an error occurs during automatic report creation, the error is not indicated. The next report will be created and the output will include also the data from the time of the error.
- For cells which are not blank except for a tag, the value will be displayed as is.
- Up to 300 lines of tags can be entered in a sheet.
- The auto report setting is saved for each recording file separately. When the recording file was changed, you should make the auto report settings again.

Frequently Asked Questions (FAQ)

Question	Answer	Reference
Do not know member ID	To know the member ID, Smart Site Viewer must be started. First, record some test data and perform data acquisition. Then load the recorded data, and the member ID will be displayed.	❖ 4.2.1 "Creating a Format File" (page 158)
Report is not output	1. Is format file closed? While the format file is being edited, an attempt by the software to write to the Excel file will result in an error, and no report is output.	
	2. Is the number of Excel worksheets used by the format file correct? When multiple sheets are used as format, the number of Excel worksheets must be set to exactly the correct number.	❖ Procedure Step [4] (Page 169)
Values are not output correctly	Is the "Format cell" setting in Excel correct? If the "Format cell" setting is different, a value may be output as another value. Make the setting in Excel under [Format cells] - [Format number] - [Category].	
Data in auto report do not increase	1. During recording with Smart Site Utility, is [Auto] enabled? The daily and monthly reports are created from the recording files. Make sure that the recording files are periodically acquired.	❖ Procedure Step 1. (page 170)
	2. Is the [Auto Report] indication shown in Smart Site Viewer? If this indication is not shown, the report will not be automatically created. Initiate report output as described in 4.2.1 "Creating a Format File" (page 158).	❖ 4.2.1 "Creating a Format File" (page 158)
Previous settings for [Save directory] etc. are lost	Was recording stopped? Set the items again and start the auto report function. To prevent losing the settings, do not stop recording unless module settings have to changed.	❖ 4.2.3 "Auto Report Output" (page 170)

Tag details

Tag details are explained below.

- In a tag, the string enclosed in "<<" and ">>" is not case-sensitive. You can use either upper case or lower case characters.
- The format for member ID information is "xx-xx-xx" (where xx is two digits).

Daily/monthly report tags

❖ (Page 158) to (Page 159), (Page 175) to (Page 176)

<<C member ID>>	
Tag string	<<C01-01-01>>
Display format	Character string
Effective direction	Single cell
Description	Outputs the comment string for the specified member ID to the cell containing the tag.

<<Member ID>>	
Tag string	<<01-01-02>>
Display format	Numeric value
Effective direction	Single cell + down
Description	Outputs the measurement item name to the cell containing the tag, and passes member ID information to cells below. If the column beneath this cell intersects with a blank cell containing a date tag (<<D3>> etc.) or time tag (<<T10:00>> etc.), the measurement value is output to that cell. If there is no measurement value, nothing is output to the cell. Make settings for effective numeric values with [**Format cells**].

Daily report only tags

❖ (Page 158) to (Page 159)

<<Date>>	
Tag string	<<Date>>
Display format	Date
Effective direction	Single cell
Description	Specifies the report output date for the cell containing the tag. Make settings for the display format with [**Format cells**].

<<T time, member ID>>	
Tag string	<<T2:00,01-01-02>>
Display format	Numeric value
Effective direction	Single cell
Description	Outputs the measurement value for the specified time and specified member ID to the cell containing the tag.

<<T time>>	
Tag string	<<T1:00>>
Display format	Character string/time
Effective direction	Single cell + right

<<T time>>

Description	• Outputs the specified time to the cell containing the tag, and passes the time information to cells at right. • If the row to the right of this cell intersects with a cell containing a member ID tag, the measurement value for the respective measurement item is output to that cell. • If you select [**Format cells**] - [**Number**] - [**Time**] in Excel, 24:00 is displayed as 0:00.

<<T time - time>>

Tag string	<<T1:00-2:00>>
Display format	Character string/time
Effective direction	Single cell + right
Description	• Outputs the second time setting to the cell containing the tag, and passes the second time information to cells at right. • If the row to the right of this cell intersects with a cell containing a member ID tag, the member ID and measurement value for the respective measurement item is output to that cell. • If the measurement value output to the intersecting cell is an instantaneous value, the instantaneous value for the second time is used. If the measurement value is an average, maximum, minimum, or integrated value, the average, maximum, minimum, or integrated value for the interval between the first time and the second time is output. • If there are no data for the intersecting cell, the cell will be blank. **Example <<T1:00-2:00>> tag and member ID tag for instantaneous value output intersect:** Integrated value for 1-hour period from 1:00 to 2:00 is output. The integrated value for 1:00:00 sharp is not included.

Monthly report only tags

❖ (Page 175) to (Page 176)

<<MDate>>

Tag string	<<MDate>>
Display format	Date
Effective direction	Single cell
Description	Data for the first day of the month are output to the cell containing the tag. To output for example [**2004/10**], make the setting in Excel with [**Format cells**] - [**Number**].

<<D date>>

Tag string	<<D3>>
Display format	Numeric value
Effective direction	Single cell + right
Description	• Outputs a numeric value corresponding to the date to the cell containing the tag, and passes the date information to cells at right. • If the row to the right of this cell intersects with a cell having the effective direction [**Single cell + down**], the measurement value for the cell of that date is output.

<<W>>

Tag string	<<W>>
Display format	Character string
Effective direction	Single cell + down
Description	• Outputs the [**Day of the week**] information to the cell containing the tag, and passes the information to cells below. • For intersecting blank cells with a date tag (<<D3>> etc.), the day of the week for that month is written into the cell, using the format [**Mon, Tue, Wed, Thu, Fri, Sat**].

<<Max member ID>>

Tag string	<<Max01-01-01>>
Display format	Numeric value
Effective direction	Single cell + down
Description	• Outputs the [**Maximum value**] information to the cell containing the tag, and passes the information to cells below. • For intersecting blank cells with a date tag (<<D3>> etc.), the maximum value for that day and the specified member ID is output. • This is convenient for displaying only maximum values out of the recorded instantaneous values in the report.

<<Max member ID, interval (minutes)>>

Tag string	<<Max01-01-01,30>>
Display format	Numeric value
Effective direction	Single cell+ down
Description	• Outputs the [**Maximum value**] information to the cell containing the tag, and passes the information to cells below. • For intersecting blank cells with a date tag (<<D3>> etc.), the day is divided into a number of intervals, and the measurement value for interval with the highest value is output. • This is convenient for displaying the maximum value of an interval such as using integrated values in the report. • For instantaneous values, the tag operates in the same way as <<Max member ID>>. • For average, maximum, minimum, or integrated values, first the average, maximum, minimum, or integrated value for each interval is determined, and then the maximum value out of these is output. • The interval period includes the end time but not the start time.

<<MaxT member ID>>

Tag string	<<MaxT01-01-01>>
Display format	Character string/time
Effective direction	Single cell + down
Description	• Outputs the [**Time**] information to the cell containing the tag, and passes the information (about the time when maximum value occurred for that day) to cells below. • For intersecting blank cells with a date tag (<<D3>> etc.), the time of the maximum value for that day is output. • If you select [**Format cells**] - [**Number**] - [**Time**] in Excel, 24:00 is displayed as 0:00. • By using this tag next to the <<Max member ID>> tag, the maximum value and the time of occurrence can be displayed side by side.

<<MaxT member ID, interval (minutes)>>

Tag string	<<MaxT01-01-01,30>>
Display format	Character string/time
Effective direction	Single cell + down
Description	• Outputs the [**Time**] information to the cell containing the tag, and passes the information (about the time when maximum value occurred in an interval for that day) to cells below. • For intersecting blank cells with a date tag (<<D3>> etc.), the day is divided into a number of intervals, and the end time of the interval with the highest value is output. • This is convenient for displaying the maximum value of integrated values in the report. • For instantaneous values, the tag operates in the same way as <<MaxT member ID>>. • For average, maximum, minimum, or integrated values, first the average, maximum, minimum, or integrated value for each interval is determined, and then the end time of the interval with the maximum value is output. • The interval period includes the end time but not the start time. • By using this tag next to the <<Max member ID, interval>> tag, the maximum value for an interval and the end time of the interval can be displayed side by side.

<<AT time, member ID>>

Tag string	<<AT10:00,01-01-01>>
Display format	Numeric value
Effective direction	Single cell + down
Description	• Outputs the measurement item name to the cell containing the tag, and passes member ID and time information to cells below. • If the column beneath this cell intersects with a blank cell containing a date tag (<<D3>> etc.), the specified time for that day is output to that cell. • For example, this is convenient to include the temperature at exactly 10:00 for the day in a monthly report.

4.3 Calculating Measured Values (PC Calculation Module)

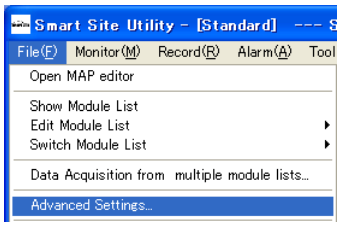
This section describes how to calculate measured values from different measurement modules using a computer, display monitor values, and save recorded data. For example, you can use this functionality to measure electric energy on each floor with a 2331 POWER MODULE and display the total electric energy value obtained by adding together individual floor readings. Calculated measured values are treated as a virtual module known as the PC calculation module. This module supports all the 9768 functionality that can be used with other (physical) measurement modules.

4.3.1 Enabling PC Calculation Modules

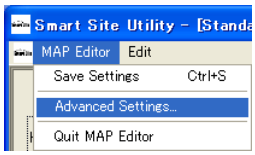
To use a PC calculation module, you must first configure the software to enable it.

Procedure

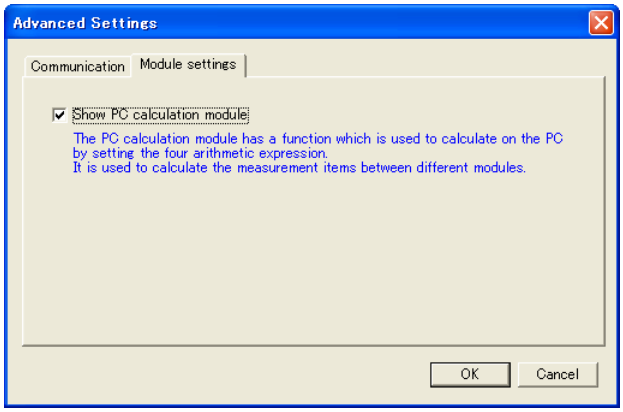
1. **Select [Advanced Settings...] on the [File] menu.**



From the MAP editor, select [Advanced Settings...] on the [MAP editor] menu.

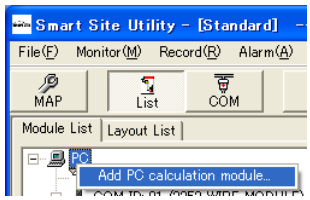


2. **Select the [Module Settings] tab and select the [Display PC calculation modules] checkbox.**

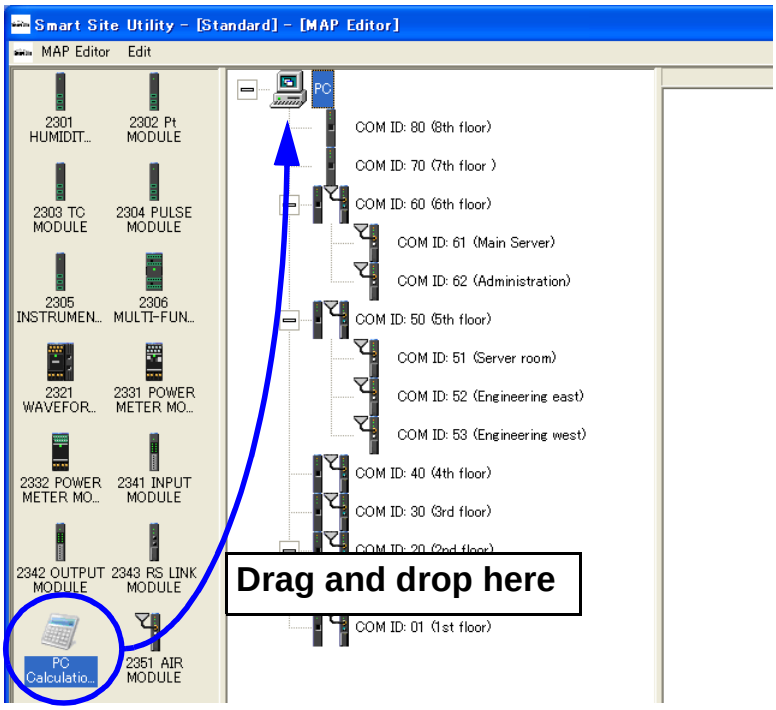


4.3.2 Adding a PC Calculation Module

Right-click on [Computer] in the module list to display the pop-up menu and click [PC calculation module].



From the MAP editor, drag the [PC calculation module] from the module icon on the left side of the screen and drop it onto the [PC] icon.

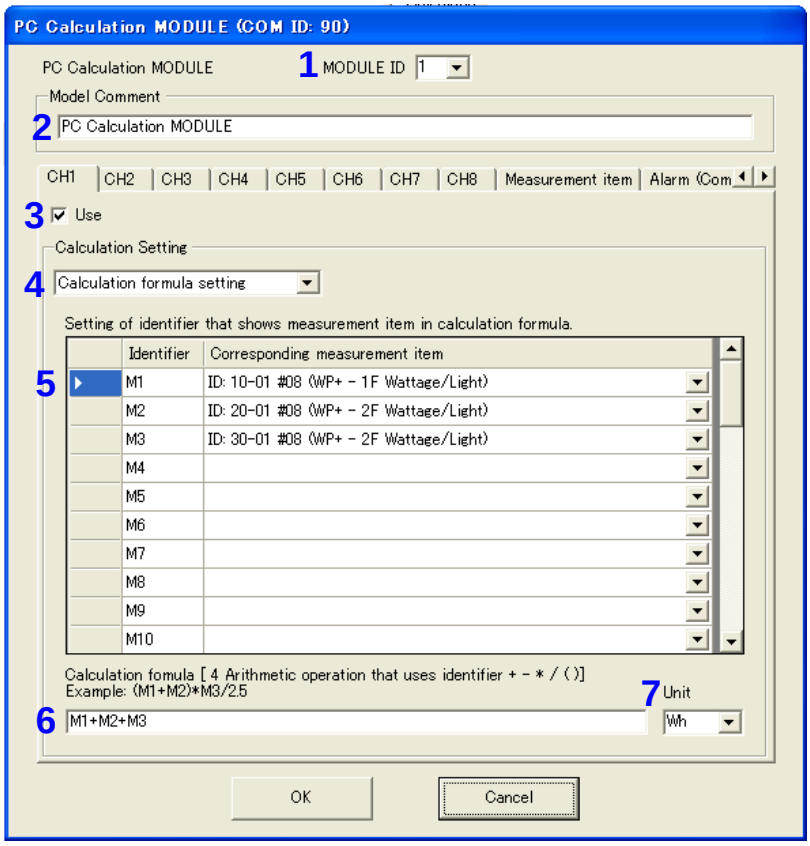


Up to 8 calculated values can be set for a single PC calculation module. If you wish to set 9 or more calculated values, add additional PC calculation modules.

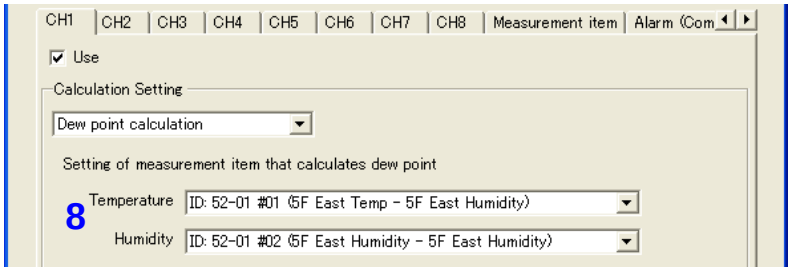
4.3.3 Configuring PC Calculation Modules

Select [PC calculation module] on the module list and open the calculation module's settings screen from the contextual menu.

Example dialog box when configuring equations



Example dialog box when calculating the dew point



Setting item		Description
1	**MODULE ID**	• Indicates the PC calculation module's ID number. • This setting can only be configured when configuring initial settings in the MAP editor.
2	**Model Comment**	• Helps identify the module. • This information is used to display recorded data in the measured value monitor and Smart Site Viewer, so be sure to enter an easy-to-understand comment. (Comments can be up to 20 characters in length.)
3	**Channel use**	• Selects whether the channel in question will be used.

Setting item		Description
4	**Calculation method**	• Select either [Set formula] or [Calculate dew point].
5	**Calculation settings**	• Sets the identifiers and corresponding measurement items used in the formula.
6	**Formula**	• Enter the formula here. Formulas may consist of identifiers along with the four basic arithmetic operators (+, -, *, and /) and parentheses.
7	**Units**	• Sets the unit to use for the calculation results (do not include the prefix). • Prefixes (such as the "k" and "m" in "kW" and "mA") are set on the [Measurement Item] tab.
8	**ent items for dew point calculation**	• Sets the temperature and humidity measurement items to use in calculating the dew point.

The settings on the [Measurement Item] and [Alarm (Computer)] tabs are the same as those described in 3.2.10 "Common Tab Settings" (page 76).

PC calculation module data

- Monitor values are calculated whenever any of the measurement items in the corresponding formula is updated, causing the corresponding measured value to be updated. (The times at which data points are gathered are not considered.)

- Recorded data is calculated by aligning the data times for each measurement item and then saved. Consequently, the recording interval is the lowest common multiple of the recording intervals for the measurement modules used in the calculation.

  Example: If the module recording intervals are 10 min and 15 min, the recording interval will be 30 min.

- If all measurement items used in the calculation have the same recording mode, recording items will be saved after being calculated for each data attribute.

  If even one recording mode differs, processing will search for data attributes in the following order, and only values for the first data attribute to be found will be calculated and saved:

  Average value > maximum value > minimum value > instantaneous value/integrated value/logical value

  Example 1: DC current measured by measurement module A: M1
  DC voltage measured by measurement module B: M2
  Formula: M1*M2 (DC power calculation)

  When measurement modules A and B are both configured to record average values (max., min., ave. recording):

Recording item saved	Calculation performed
DC power average value	M1 (average value) * M2 (average value)
DC power maximum value	M1 (maximum value) * M2 (maximum value)
DC power minimum value	M1 (minimum value) * M2 (minimum value)

When measurement module A is configured to record instantaneous values, while measurement module B is configured to record average values:

Recording item saved	Calculation performed
DC power	M1 (instantaneous value) * M2 (average value)

Example 2:
Electric energy measured by power module A: M1
Electric energy measured by power module B: M2
Electric energy measured by power module C: M3
Formula: M1+M2+M3 (total electric energy)

Recording item saved	Calculation performed
Total electric energy	M1 (Integrated value) + M2 (Integrated value) + M3 (Integrated value)

Since the power module's electric energy is an integrated value attribute, the calculation is performed using integrated values only.

To verify which recording items will be saved before starting recording, select [Export] - [Output Module List Structure to CSV File] on the [File] menu.
❖ (Page 165)

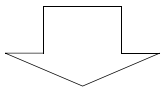
4.4 Initializing the measurement module before setting up

The chapter about initial setup in the "Basic" section of this manual described the setup procedure only for the communication module.
Also, the measurement module was automatically recognized from the computer after the communication module and the measurement module were set up on the installation site, and the measurement module was initialized.
❖ 3.1 "Initial Settings for the Measurement System" (page 11)

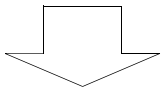
In some instances, measurement modules may also require setup before starting installation.

In this case, the procedure is as follows.

1. **On the MAP editor, create the organization and the measurement conditions for the measurement module.**
❖ 4.4.1 (page 189)



2. **When sending the communication settings, send also the measurement module settings.**
❖ 3.1.3 (page 24)
❖ 4.4.2 (page 191)



3. **Check the communication status.**
❖ 3.1.4 (page 42)
❖ 4.4.3 (page 192)

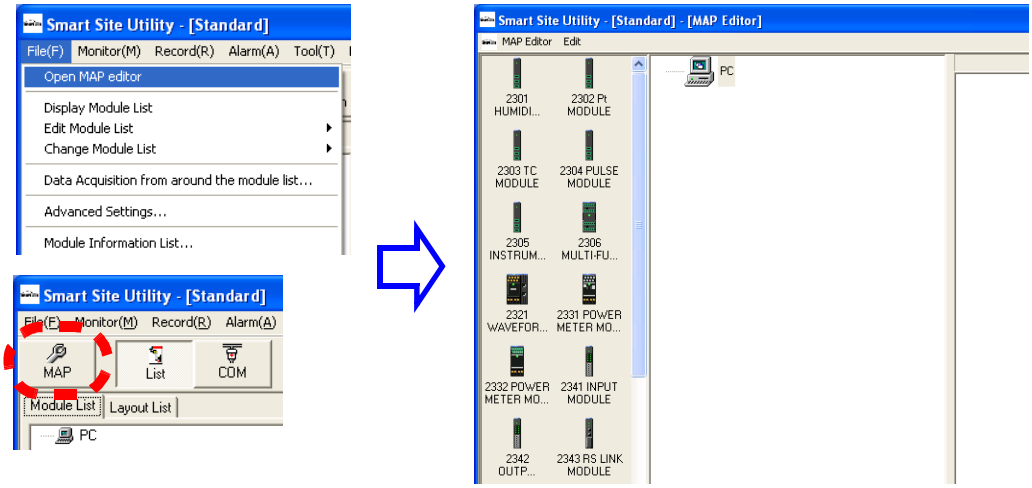
4.4.1 Setting Measurement Module Configuration and Measurement Parameters

Procedure

1. **Start the Smart Site Utility, and select [File] - [Open MAP Editor] from the menu bar to open the MAP editor.**

You can also open the MAP editor by selecting [MAP] from the toolbar.

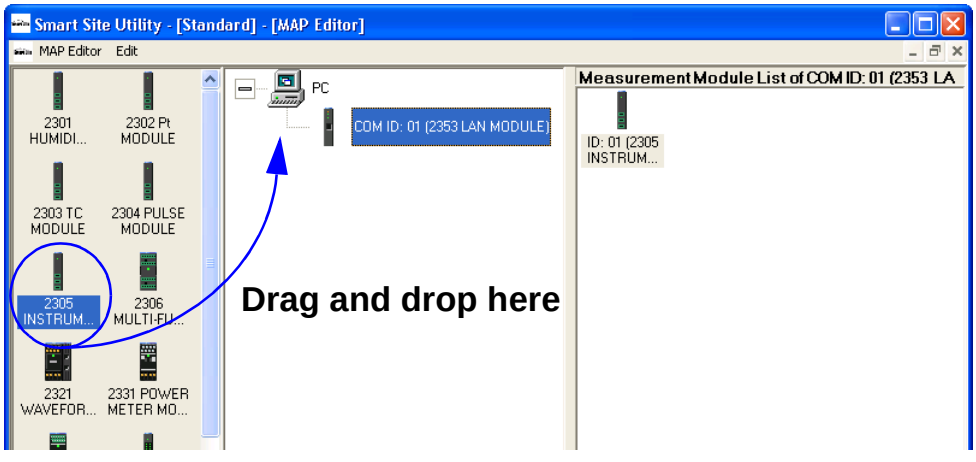
Serect either



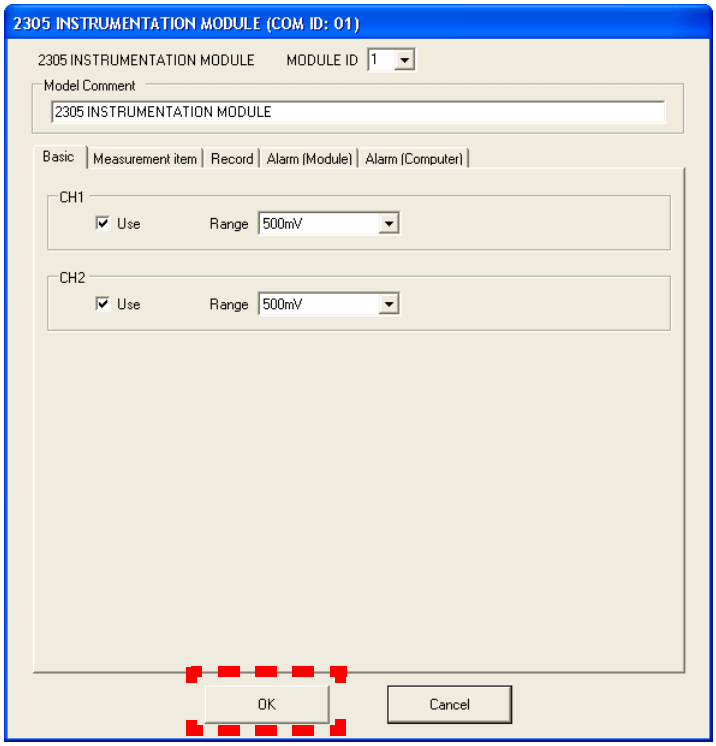
2. **Connect the communication module to the computer following the procedures in 3.1.2 (page 13), and enter the initial settings for the communication module.**

3. **Drag the measurement module from the module icon section on the left side of the screen and drop it onto the icon for the communication module to which you want to connect.**

The figure below is an example of connecting "2305 Instrumentation Module" with "COM ID:01 LAN Module".

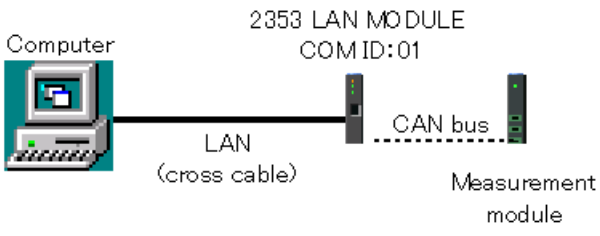


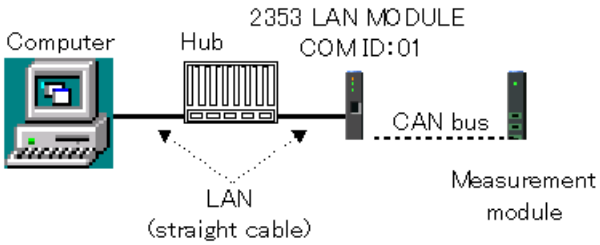
4. **When you release the mouse button after dragging, the [Module settings] dialog box appears.**
Initialize the instrumentation module, and then click [OK].



The setting procedure is the same as for 3.2 "Setting the Measurement Parameters (Initial settings for the measurement module)" (page 44).

5. **Prepare the measurement module for the send settings.**
Prepare the power supply module and the module base for operating the communication module and the measurement module, and then turn on the power.
After that connect the computer to the communication module via LAN.



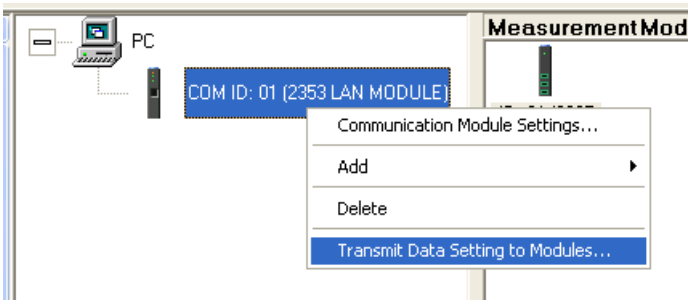


4.4.2 Sending the Measurement Module Settings

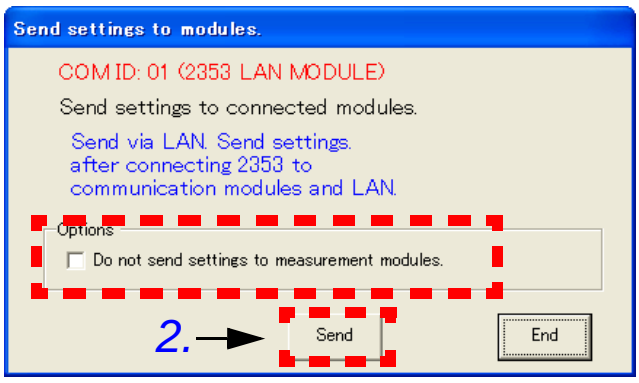
The measurement module settings are sent at the same time as the communication settings.

Procedure

1. **Select LAN module from the MAP editor, and then right-click. From the menu, click [Transmit Data Setting to Modules...].**



When the [**Send settings to modules.**] dialog box appears, make sure that the [**Do not send settings to recording modules.**] check box is not selected.



2. **Click [Send] to send the settings to the measurement module and the communication module.**

4.4.3 Checking the Communication Status

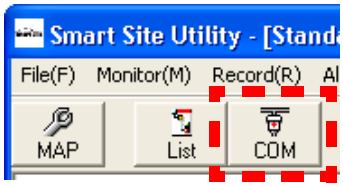
Install the measurement module in the measurement location, and check the communication status as follows.

❖ 3.1.4 "Auto Recognition of Measurement Modules" (page 42)

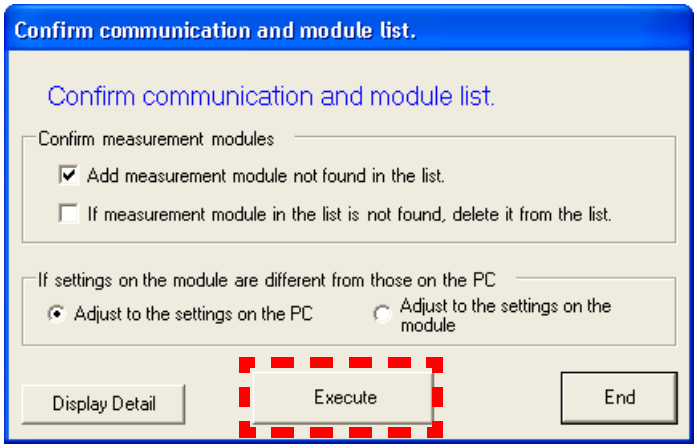
Procedure

1. **Check whether the measurement module configuration created with the MAP editor and the actual measurement module configuration are matched.**

2. **In Smart Site Utility, click the [COM] button in the toolbar to open [Confirm communication and module list] dialog box.**



3. **The [Confirm measurement modules] column and [If settings on the module are different from those on the PC] for the [Confirm communication and module list] dialog are checked, and then click [Execute] button.**



When the [**If recording module in the list is not found, delete it from the list**] check box is selected, a measurement module will be deleted from the list if it has not been installed.

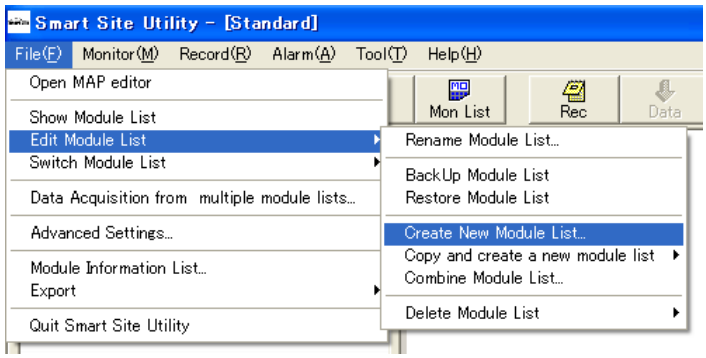
Adjust to the settings on the PC	Normally, this option should be selected.
Adjust to the settings on the module	Select this option if the measurement module configuration was created on the computer but measurement parameters were not set.
	Select this option if the measurement module was used before and the parameter settings established previously should be used again.

4.5 Managing Module Lists

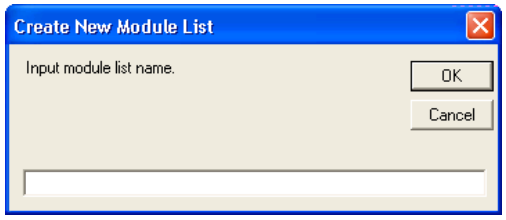
This section describes how to manage module lists, for example by creating and deleting module lists.

Create a new module list.

You can create a new module list from [File] - [Edit Module List] - [Create New Module List].



Select to open



The created module list is automatically saved. The following information is stored. (All settings except for [Tool] settings on the menu)

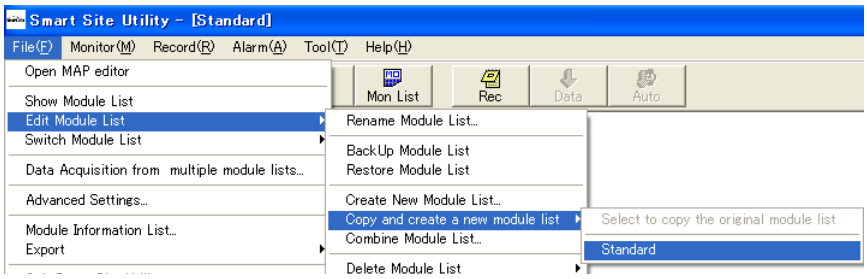
- Module list (module configuration)
- Module measurement parameters
- Recording operation condition (recording settings and data acquisition settings)
- Measurement value monitor layout settings
- Alarm settings etc.

Copy and create a new module list.

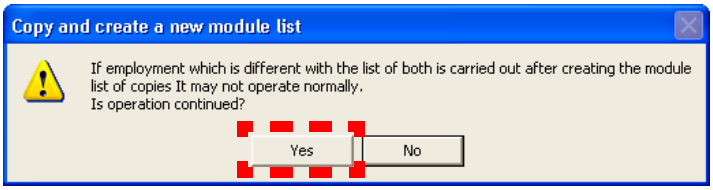
You can create a new module list by copying an already created module list.

Procedure

1. **Select [File] - [Edit Module List] - [Copy and create a new module list], and select to copy the original module list.**



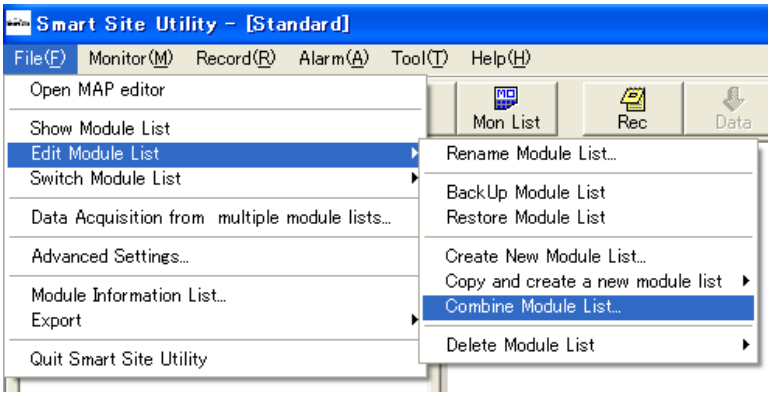
2. **Click [Yes] in the following dialog box.**



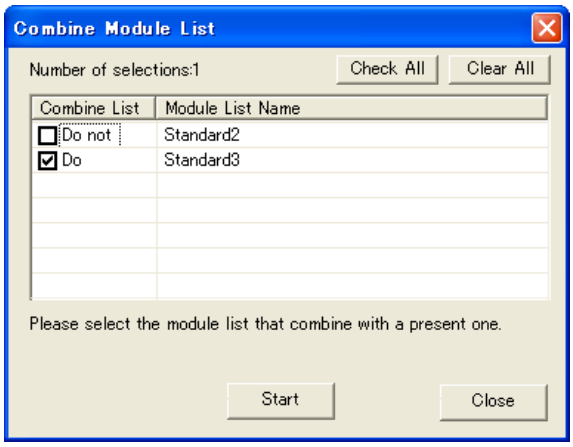
3. **When the name of the module list is entered in the dialog box below and [OK] is clicked, a new module list is created.**

Merging module lists

You can merge one or more module lists with the current module list.



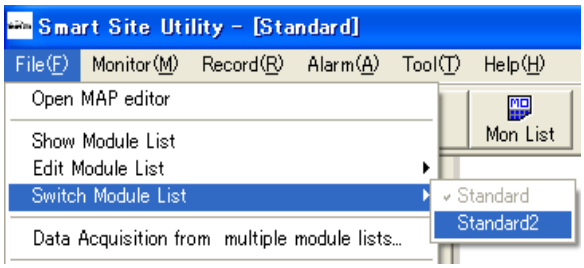
Select to open



The selected module lists will be merged with the current module list.
Modules with conflicting COM IDs cannot be merged.

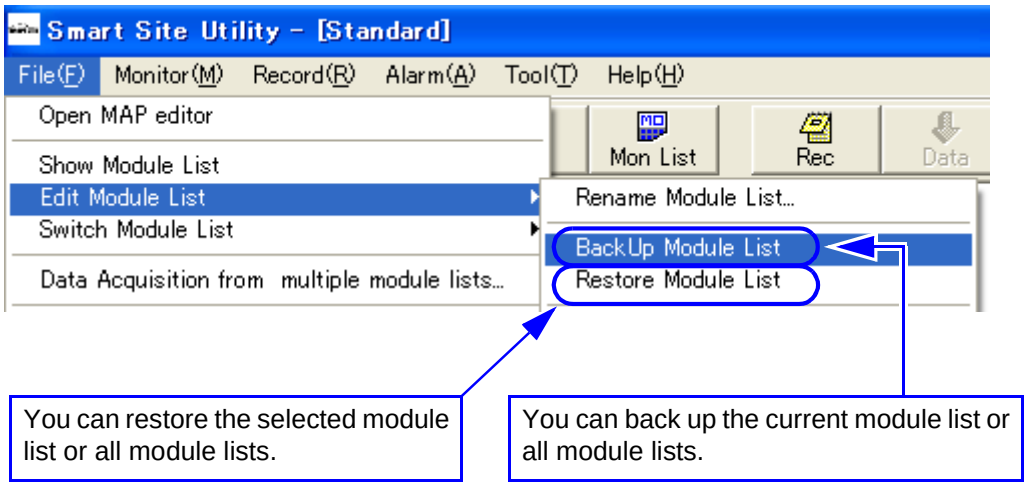
From the [File] menu, you can change the name of the module list, switch, and delete.

Initially the module list is saved with the name [Standard].



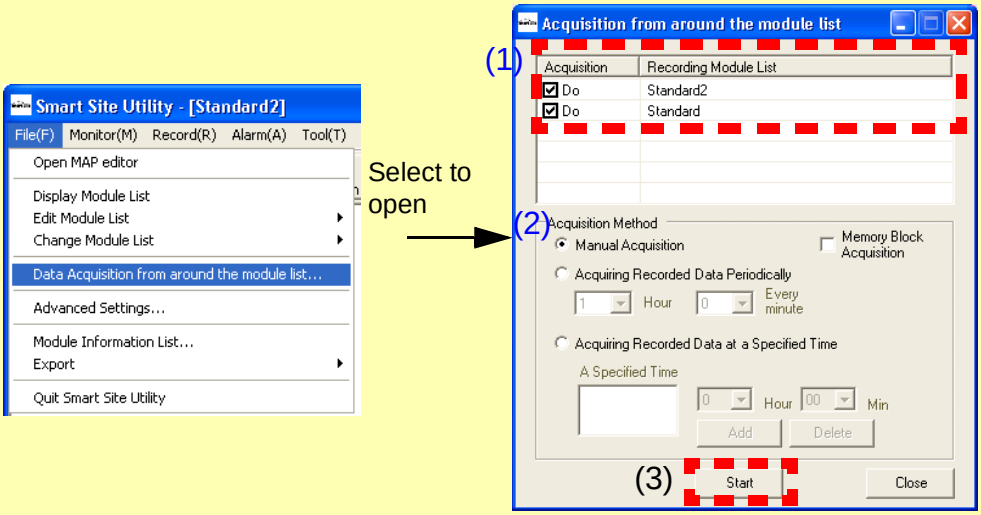
Backing up and restoring module lists

You can back up and restore module lists.



Important

- When acquiring recording data for multiple module lists, from the [File] menu select [Data Acquisition from around the module list]. (In normal data collection, only the displayed module lists are collected.)



- Module lists recording are displayed as a list.
  (1) Select the module list which collects data on the computer.
  (2) Select the acquisition method. Set the acquisition interval and the acquisition time for automatic acquisition.
  (3) When [Start] is clicked, all recorded data for the selected module list is acquired on the personal computer.

4.6 Other Functions

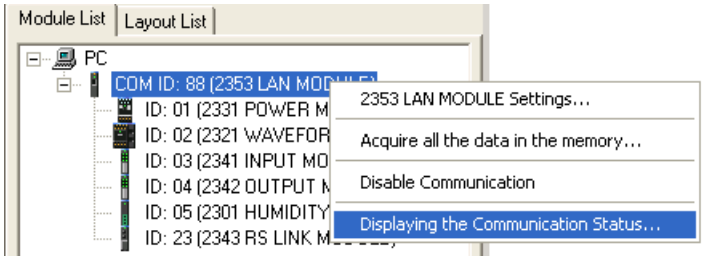
4.6.1 Displaying the Communication Status

You can check data transmission times and measure the wireless signal reception condition.

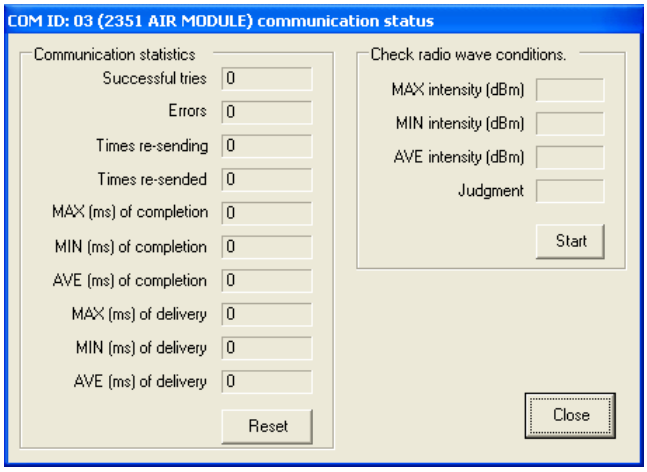
Procedure

1. **Select the communication module from the [Module list].**

2. **Right-click to access the popup menu, and select [Communication Status].**



The [communication status] dialog box for the selected communication module appears.



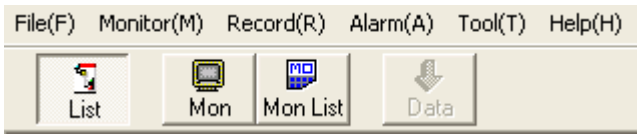
Communication statistics	This lets you check retry and error conditions as well as transmission times. The display is automatically updated every 500 ms. While monitoring measurement values (see 3.5 (page 91)), it lets you check the overall communication condition. [**delivery**] : Time required for the first received packet to arrive [**completion**]: Time required until all packets are received. (Time of delivery < Time of completion) During wireless communication, a certain amount of resending is normal, but if the [**Times re-sending**] count is very high (about 40 percent), settings should be revised.
Check radio wave conditions (Use 2351 Air Module)	When you click the [**Start**] button, the wireless signal strength is measured 10 times, and the result is displayed on a 3-step scale.

4.6.2 Setting the Administrator Mode

This function allows users who know the password to change various settings.
Users who do not know the password can only monitor measurements.

Procedure

1. **Select [Tool] - [Operation/Administrator Mode Switching Settings].**



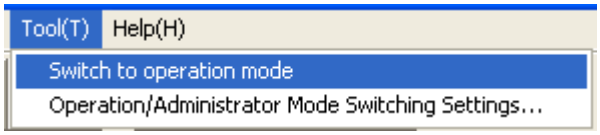
2. **The [Operation/Administrator Mode Switching Settings] dialog box opens.**
After selecting [Use operation/administrator mode switch], enter the password in two places and then click [OK].

Operation mode	This mode is for when users who do not know the password use Smart Site Utility. Measurements can only be monitored.
Administrator mode	This mode is for users (administrators) who know the password use Smart Site Utility. The users are allowed to use the full range of Smart Site Utility functions such as various setting changes etc.

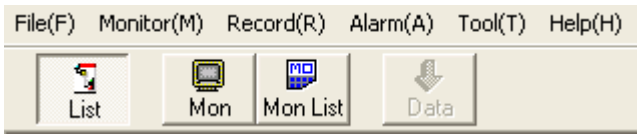
Switching from Administrator mode → Operation mode

Procedure

Click [Tool] - [Switch to Operation mode]



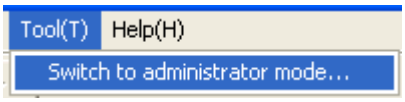
The screen switches to [Operation mode]. Measurements can only be monitored.



Switching from Operation mode → Administrator mode

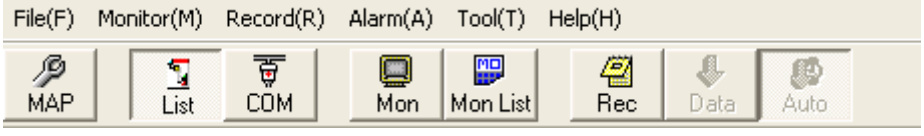
Procedure

1. **Click [Tool] - [Switch to Administrator mode]**



2. **Opens the [Enter Password] dialog box. Enter the password and then click [OK].**
The password is displayed as asterisks (*).

The screen switches to [Administrator mode]. You can use the full range of Smart Site Utility functions.

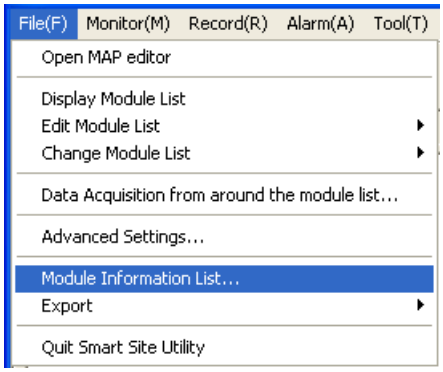


4.6.3 Checking Module Information

You can check the version etc. of the communication and measurement modules at the same time.

Procedure

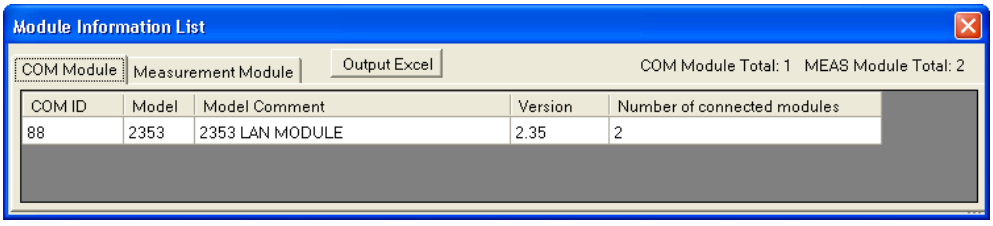
1. **Select [File] - [Module Information List].**



2. **The [Module Information List] dialog box opens.**

COM Module Total	The total number of communication modules in the entire system.
MEAS Module Total	The total number of measurement modules in the entire system.

You can view information on each module by selecting the "COM Module" or "Measurement Module" tab.



ID	• The ID set on the settings screen. Communication module: COM ID Measurement module: COM ID - MODULE ID
Model	• The type of module.
Model comment	• The module name set on the settings screen.
Version	• The module version.
Number of connected modules	• The number of measurement modules connected to the communication module. (Communication module only)

4.6.4 Acquires all memory data for the measurement module, and saves it as a CSV file

You can acquire all the data in the memory in the measurement module, and save it as a CSV file.

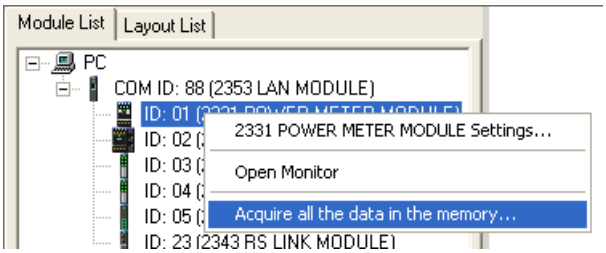
Important

- The CSV file saved here is unrelated to the file recorded by data recording and data acquisition functions (see 3.5 (page 86)).
- This CSV file cannot be viewed by Smart Site Viewer.

Procedure

1. **Select the module from the module list.**

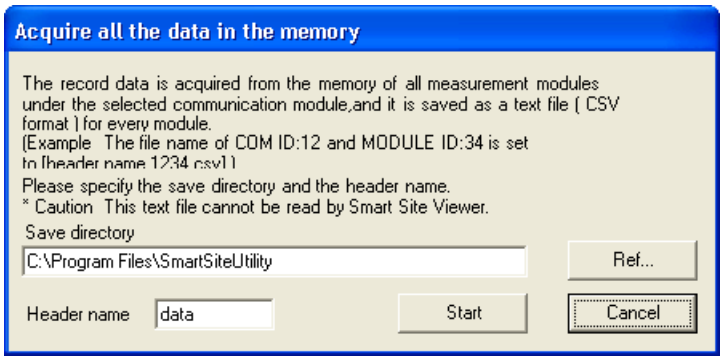
2. **Right-click to access the pop-up menu, and select [Acquire all data in memory].**



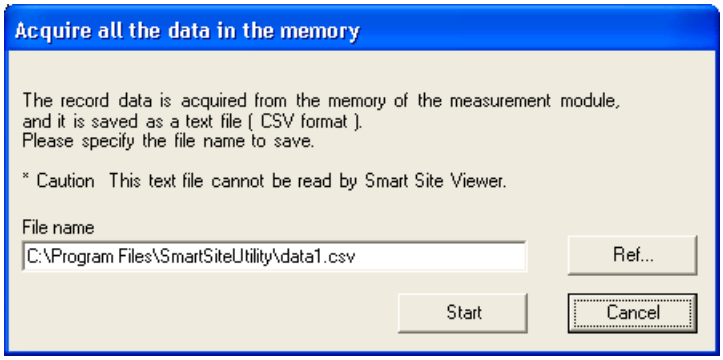
When selecting the measurement module	Only data for the module is acquired.
When selecting the communication module	All data for all measurement modules below it is acquired.

3. **When the communication module is selected, specify the [Save directory] and the [Header name], and then click the [Start] button.**
When the measurement module is selected, specify the [File name], and then click the [Start] button.

The screen when communication module is selected



The screen when measurement module is selected

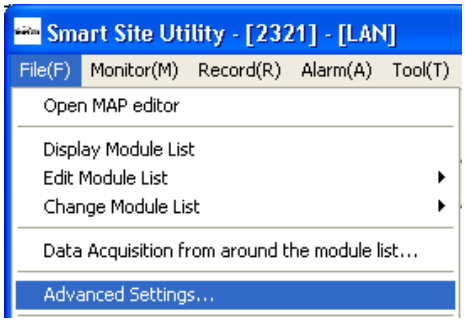


4.6.5 Advanced Communication Settings

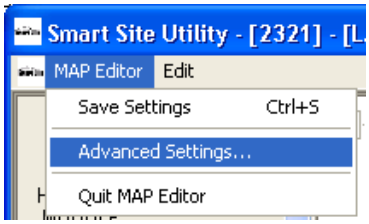
Depending on the communication environment, there are times when you may want to make fine timeout time and retransmission frequency settings.
(Especially for wireless systems)
Also, when accessing the Internet using a broadband router, and the initial settings when setting up are LAN, switch to WAN when operating.
Perform the following to enable editing for these settings.

Displaying the settings screen

From [File] on the menu bar, select [Advanced Settings...].

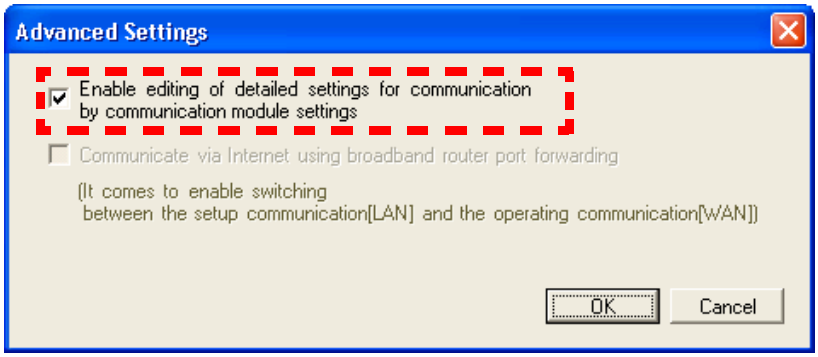


For the MAP editor, from [MAP Editor] select [Advanced Settings...].



To enable editing of detailed settings for communication

Select [Enable editing of detailed settings for communication by communication module settings].
When this is selected, you can edit detailed settings such as the timeout period and the retransmission frequency on the communication module's settings screen.



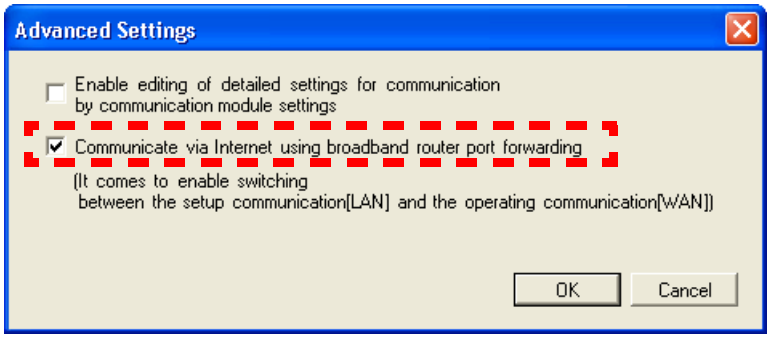
❖ 3.1.2 "Setting the LAN system" (page 13)

To enable switching between the setup communication settings (LAN) and the operating communication settings (WAN)

Complete initial LAN settings before switching from LAN to WAN, according to the steps in 3.1.2 "Setting the LAN system" (page 13).

1. Open the settings screen from MAP editor.

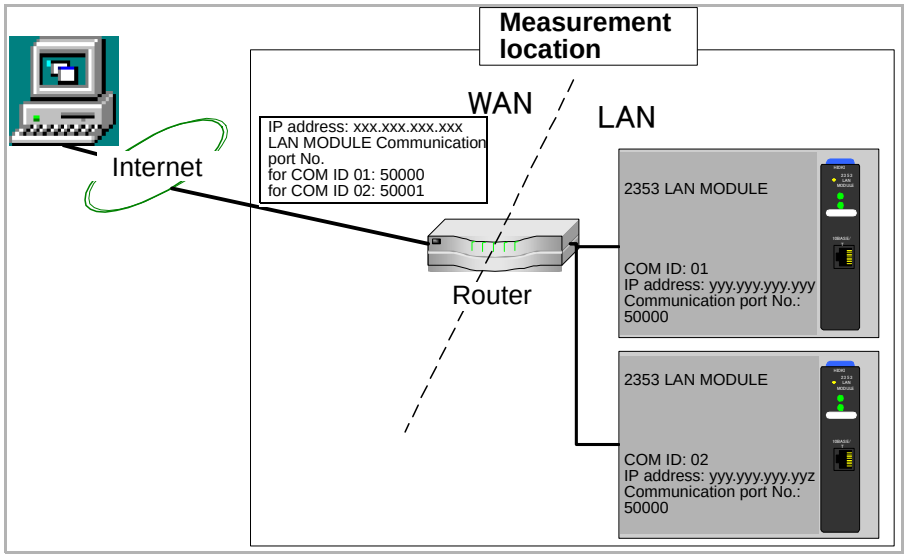
Select [Communicate via Internet using broadband router port forwarding].



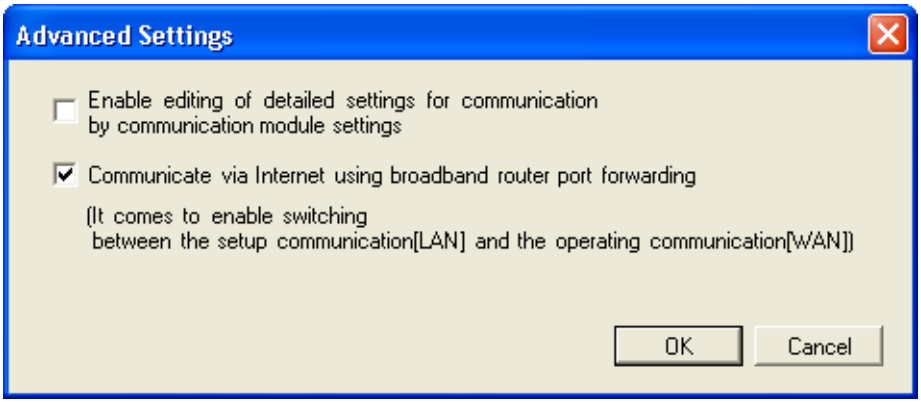
2. Set WAN on the communication module's setting screen.

❖ 3.1.2 "Setting the LAN system" (page 13)

Contact your network administrator regarding IP address and Port No. settings while referring to the diagram below.



3. **To switch the settings at setup (LAN) to the settings during operation (WAN), open the Setting screen from the Main screen, and switch to the current operational settings box.**



For various functions on the main screen, it communicates with the communication module by the settings (IP address) that correspond to the switched settings.

Alarm Function 5

5.1 Overview

The alarm function is a function that emits an alarm signal and saves alarm information when measurements for the measurement module exceed the threshold range or measurements for the I/O module (logic) correspond to the setting conditions.

Alarm evaluation is performed with the computer or module. What evaluation depends on all kinds of functions (following table). Therefore, the function for evaluating alarms by computer cannot be achieved without a computer.

Function to evaluate alarms by computer	Function to evaluate alarms by module
You can perform the following while monitoring measurements by Smart Site Utility. • Display alarm logs Information about alarm generations and releases are displayed on Smart Site Utility. When an alarm occurs, you can also have a pop up display. ❖ 5.2.3 (page 211) • Alarm signal output for 2342 Output Module An alarm signal is output from the optional 2342 registered in the module list. ❖ 5.2.4 (page 213)	• Saving alarm data Alarm data is saved in the measurement module's internal memory.*1 ❖ 5.3.1 (page 217) • Alarm signal output An alarm signal is output from the measurement module's alarm output port.*2 ❖ 5.3.1 (page 217),5.3.2 (page 222) • Sending emails The 2353 LAN MODULE and 2354 MEMORY MODULE can send email notifications when alarms occur or are cancelled.*1 The 9768-02 LAN module email option is required in order to send email notifications. ❖ 9 (page 283)

*1: Not including 2343 RS Link Module
*2: Not including the 2306 Multi-Funfthion,2332 Power Meter Module , 2341 Input Module, and 2343 RS Link Module.

Note
When evaluating alarms by computer, it is not possible to evaluate alarms for measurement data while a communication error occurs between the computer and the communication module.

5.2 Function to evaluate alarms by computer

To evaluate alarms by computer, you need to set alarm settings (computer) beforehand for the measurement item you want to evaluate.
❖ For an explanation of the [Alarm Settings (Computer)] see 3.2.10"Common Tab Settings" -4(Page 79).

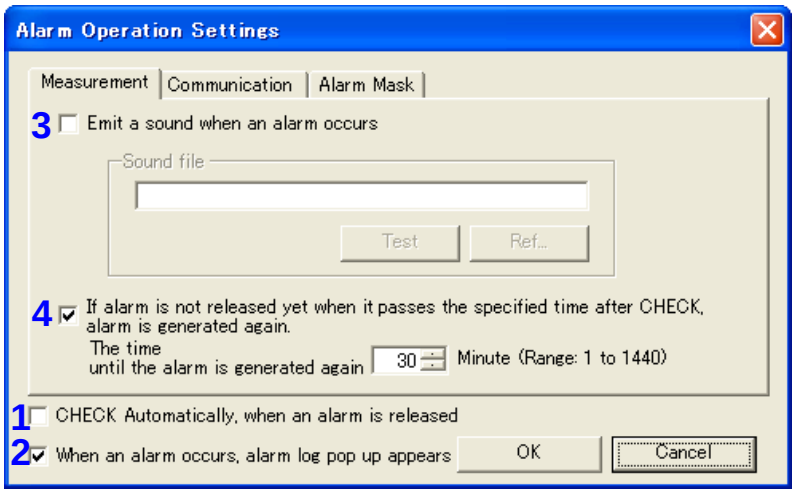
5.2.1 Alarm operation settings

Set operations when an alarm is generated.

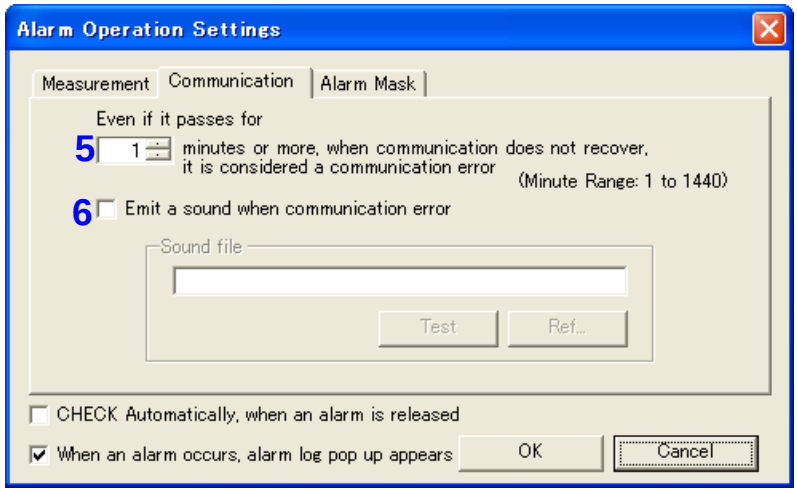
Procedure

1. **Select [Alarm] - [Alarm Operation Settings].**

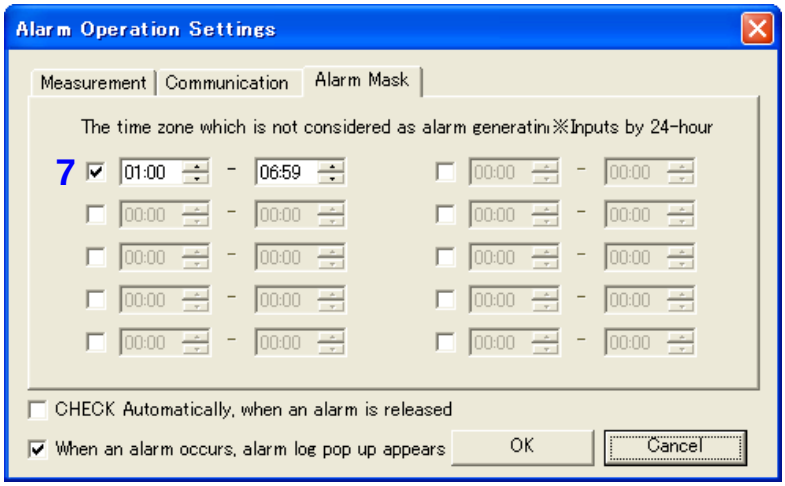
2. **The settings dialog box for alarm operations opens.**



item	Description
1	• Check the chekbox in order to chek automatically when an alarm is released.
2	• Check the chekbox so that an alarm log pop up appears when an alarm occurs.
3	• Check the chekbox in order to emit a sound when an alarm occurs, and set the sound file.
4	• Check the chekbox so that a new alarm will be generated when the alarm is not released and the specified time passes after the alarm is checked, and set the time until the alarm occurs again.



item	Description
5	• Set the time until it is considered a communication error.
6	• Check the chekbox in order to emit a sound when a communication error occurs, and set the sound file.



item	Description
7	• Sets the period during which to suppress alarms.

Note

- The valid time input range is 00:00 to 23:59.
- The minimum input unit is 1 min.

5.2.2 Start alarm operation

From the tool bar, click [Mon], and start the alarm evaluation by computer.

When an alarm is triggered, the monitor display changes for the measurement value in which the alarm occurs.

When an alarm sound is set

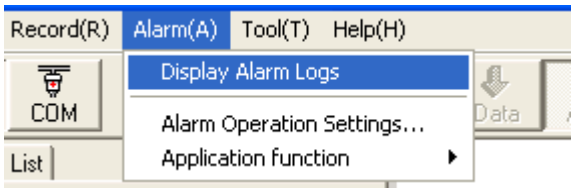
When an alarm occurs, an alarm sound is emitted from the computer. When you want to remove an alarm sound, click the relevant alarm in [Alarm Log].
When all alarms are set to "Checking Complete", the alarm sound is released.

Note
Alarms cannot be evaluated for measurement data when a communication error occurs between the computer and the communication module.

5.2.3 Displaying the Alarm Log

Information about alarm generations and communication errors are displayed on Smart Site Utility.

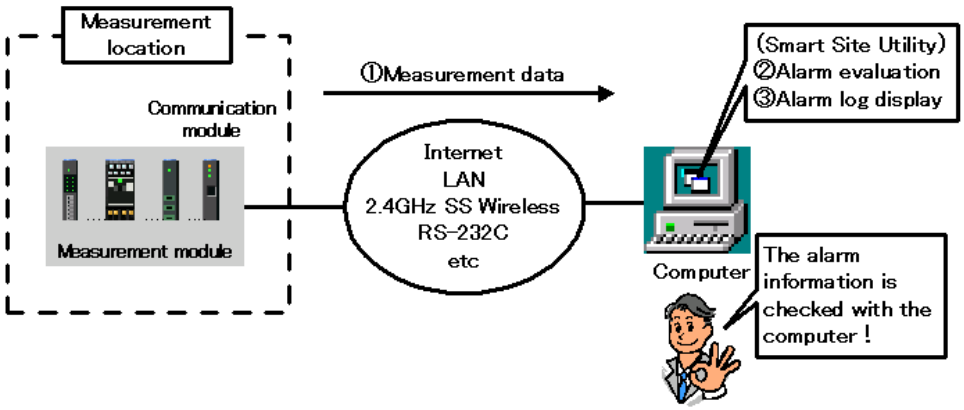
- Select [Alarm] - [Display Alarm Logs] to display the alarm logs.



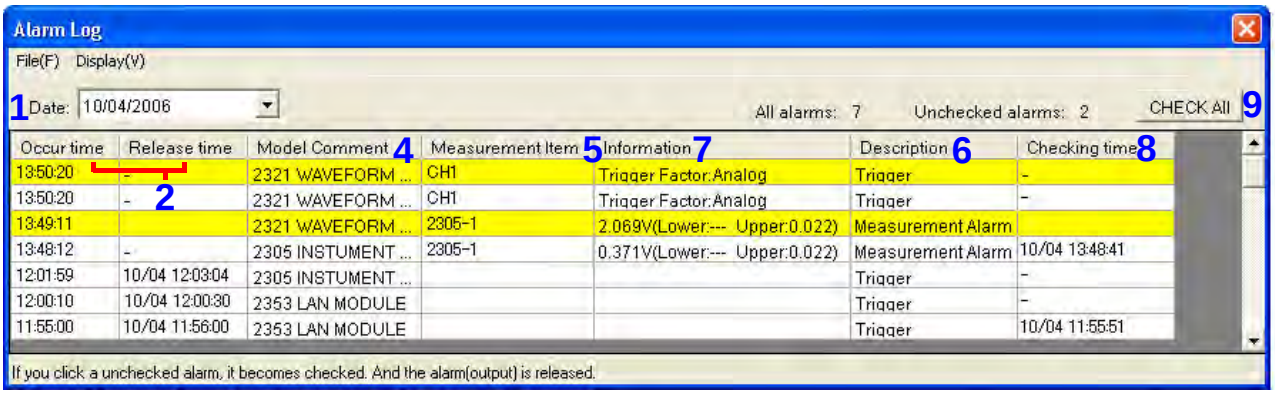
- When an alarm occurs, you can also have a pop up display.

❖ 5.2.1 "Alarm operation settings" (page 208)

- When an alarm is evaluated by monitoring values while monitoring measurement data for the measurement module installation from the computer, if the threshold value is exceeded the [Alarm Log] appears.
- When a communication error occurs between the computer and the communication module during monitoring, the error is displayed in [Alarm Log].



Unchecked alarms are displayed in yellow.
The alarm is released when it is clicked, and the date is entered at the checking time.
Also, when a "Trigger occurs", you can view waveform data by double-clicking.

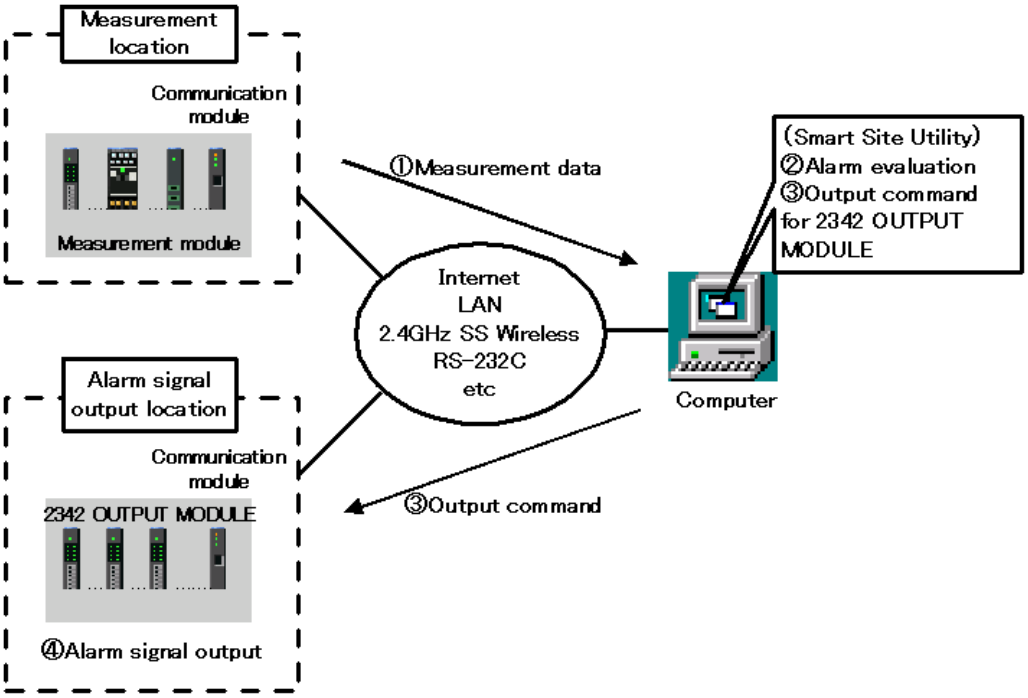


Example of displaying the [Alarm Log] dialog box

item		Description
1	**Date**	• Date when the alarm occurred.
2	**Occur time, Release time**	• The time when the alarm occurs and when it was released.
3	**ID**	**When an alarm occurs** • The [COM ID for the communication module] - [MODULE ID for the measurement module] open. Example: When [01] - [02] appear, data for the measurement module of MODULE ID:02 that exists on the same CAN bus as the communication module for COM ID:01 was evaluated as an alarm. **When a communication error occurs** • The COM ID for the communication module in which the communication error occurred appears. * By default the ID is set to not appear.
4	**Model comment**	**When an alarm occurs** • Displays the model comment set to the measurement module. **When a communication error occurs** • The model comment for the communication module in which the communication error occurred appears.
5	**Measurement Item**	• Displays the CH comment set to the measurement module.
6	**Description**	• When an alarm occurs, a [Measurement alarm] appears. • When a communication error occurs, a [Communication error] appears. • When a trigger occurs, a [Trigger occurs] appears.
7	**Information**	• Displays the setting values of alarm and instantaneous data at the time of alarm event. • The trigger factor appears when a trigger occurs.
8	**Checking time**	• After checking the display contents of the alarm log, click the checked row, and the checking date and time are committed to memory.
9	**Check All**	• Click [Check All] to confirm that all the alarms of that day are checked.

5.2.4 An alarm signal occurs from 2342 Output Module

When an alarm occurs, you can output an alarm signal from optional 2342 registered in the module list.
When monitoring measurement data for the measurement module at the installation location by computer, when an alarm evaluated at a monitoring value exceeds the threshold value, an alarm signal is output from 2342 Output Module connected to the computer.

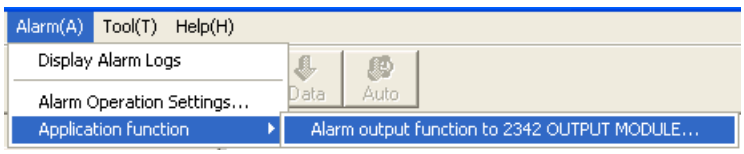


Settings

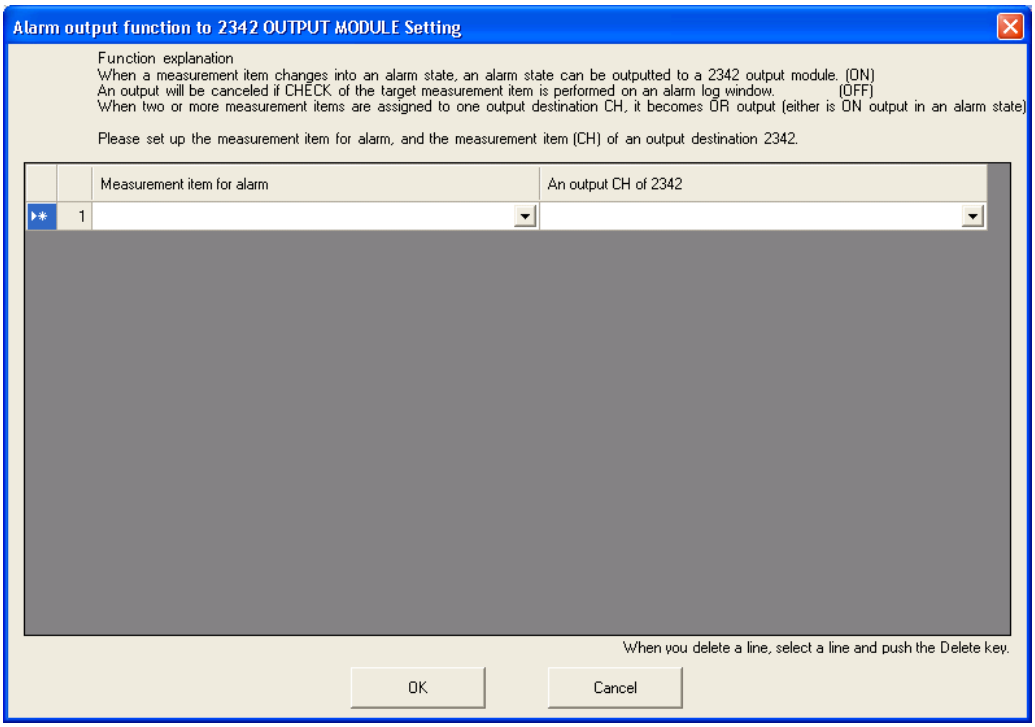
Procedure

1. **Set the alarm for the measurement items for each module.**
❖ 3.2.4 (page 50)

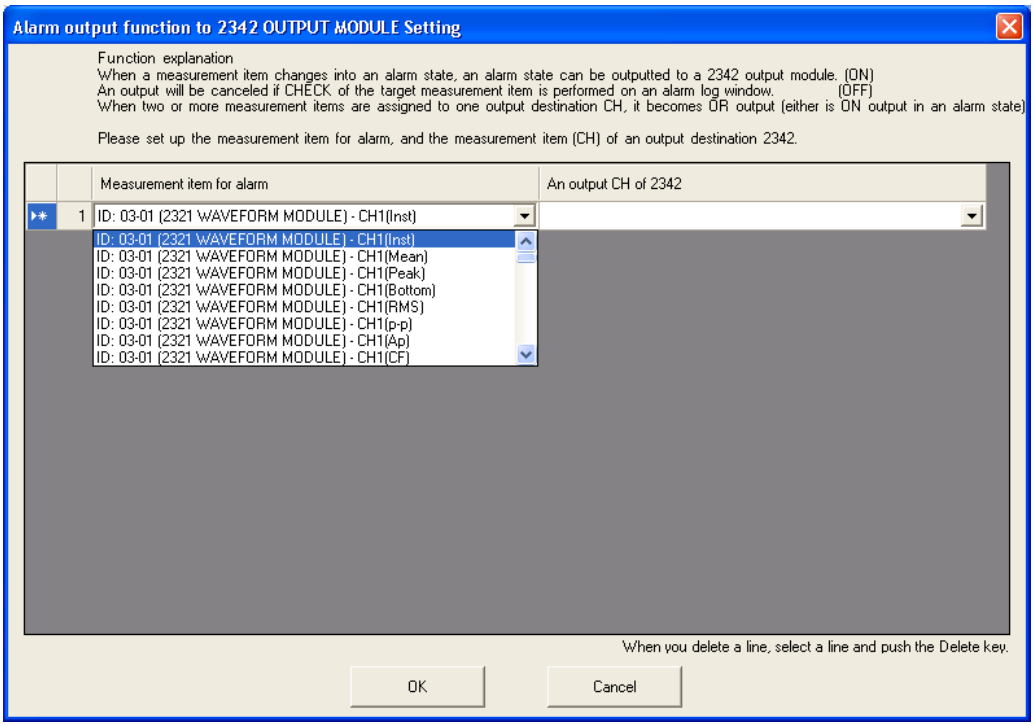
2. **From the tool bar, select [Alarm] - [Application function] - [Alarm output function to 2342 Output Module].**



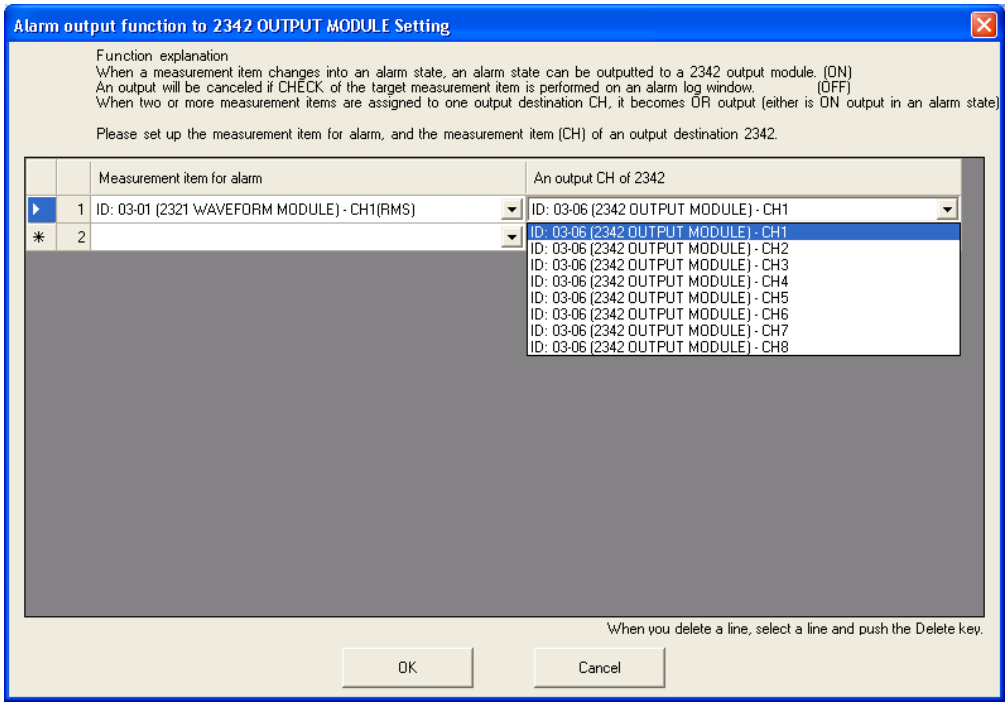
3. The setting screen for the alarm output function opens.



4. Select the measurement item for the target alarm. Displays all the measurement items for modules that exist in the module list.



5. **Select the CH of the 2342 that will output the alarm. You can select the CH which becomes "PC control mode" in the Model 2342 CH output setting.**



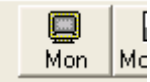
6. **Repeat 4 and 5 to set multiple alarms.**

7. **When output settings for all alarms are complete, click [OK].**

Beginning of mission

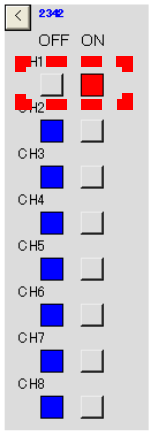
Procedure

1. **From the tool bar, click [Mon], and start the alarm evaluation by computer.**

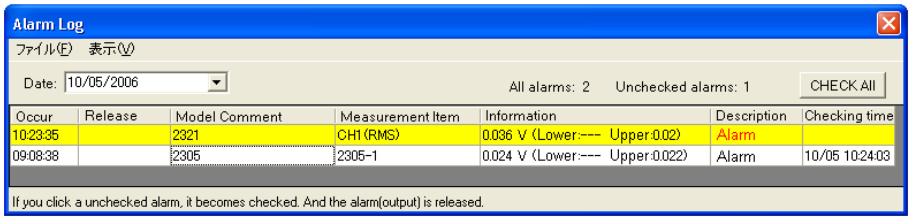


Monitor 2342 Output Module at the same time.

2. **When an alarm occurs, the CH for the output module specified in [Output Destination] changes.**



The display turns red.



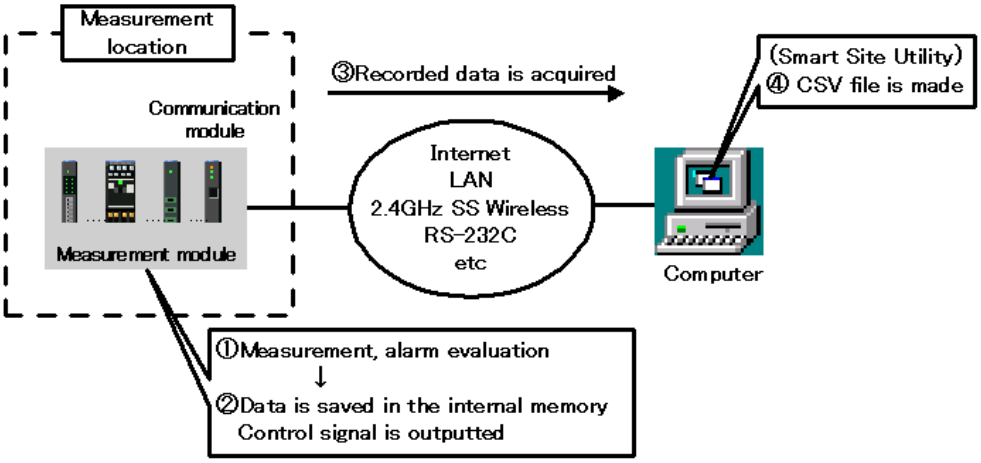
3. **When the alarm is clicked (checked) on the [Alarm log] screen, the output module output destination CH is turned OFF. If [Check All] is clicked on the [Alarm Log] screen, the output destination of all currently generated CH is turned "OFF".**

Note
Alarms cannot be evaluated for measurement data when a communication error occurs between the computer and the communication module.

5.3 Function to evaluate alarms by module

5.3.1 An alarm data is saved or an alarm signal is output by the measurement module

- The measurement module has an alarm evaluation function. (Not including 2343 RS Link Module)
- Alarm data is saved in the internal memory of the measurement module, and the computer can extract the data later.
- After evaluating the alarm, the measurement module with an alarm output port can output the control signal (alarm output signal).
- The 2353 LAN MODULE and 2354 MEMORY MODULE can send email notifications when alarms occur or are cancelled (except for the 2343 RS LINK MODULE).
  The 9768-02 LAN module email option is required in order to send email notifications.

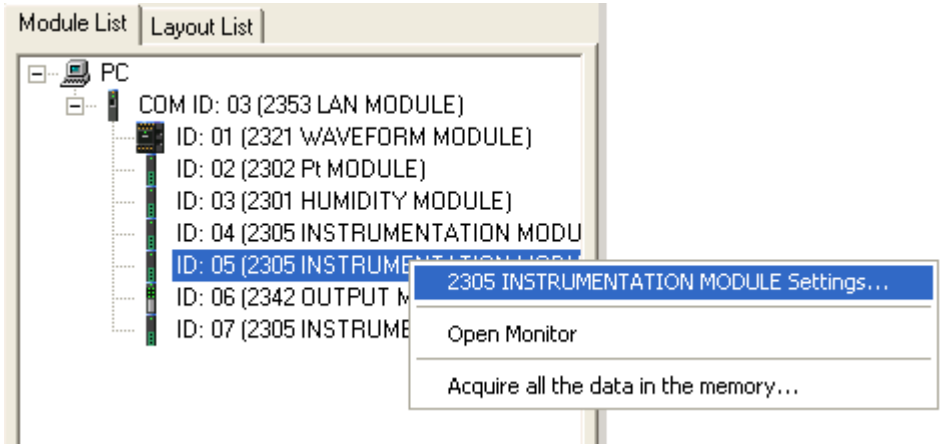


Settings

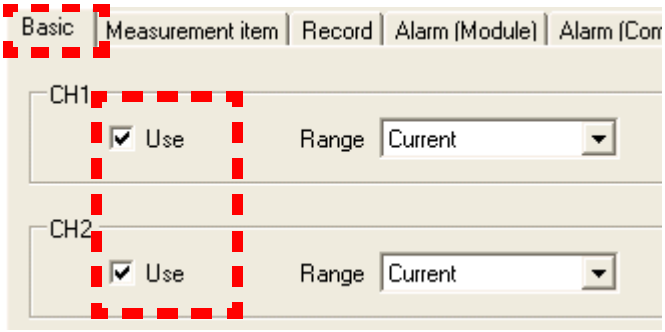
As an example, an alarm is evaluated by 2305 Instrumentation Module, and we show the set-up steps to save data in the internal memory.

Procedure

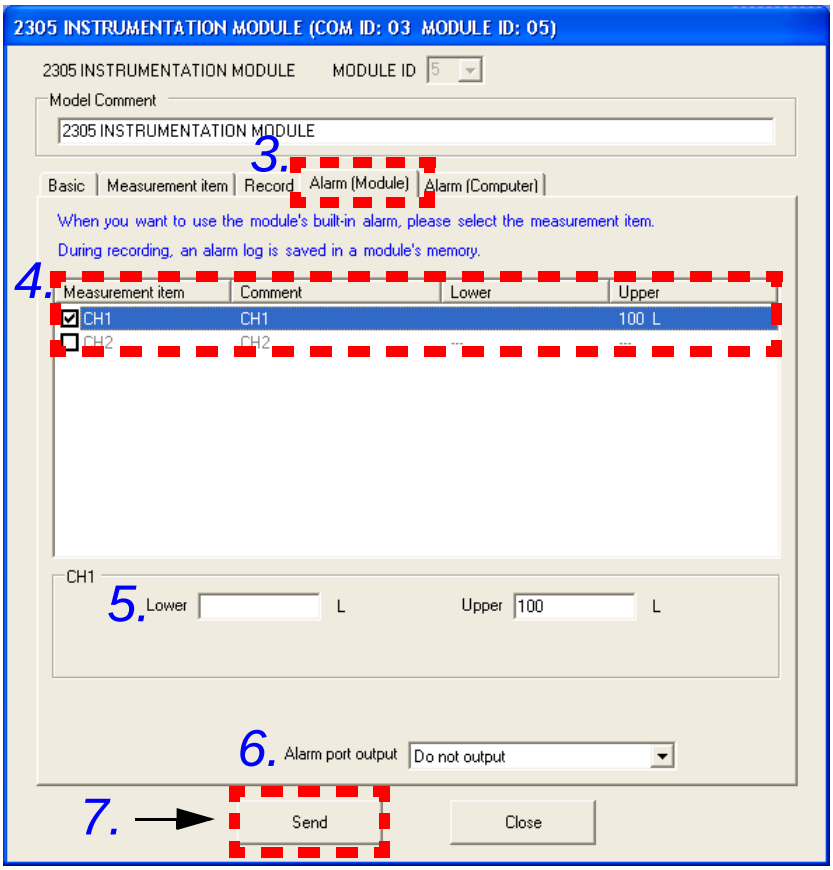
1. **Right-click in the measurement module which holds the alarm you want to evaluate from the module list, and select [Module settings].**



2. **The [Measurement Module Settings] dialog box opens. Click the [Basic] tab and check that the [Use] is selected for the CH to be measured.**



3. **Click [Alarm (Module)].**



4. **When the ☐ for the CH (measurement item) for alarm evaluations is selected, an alarm evaluation can be performed for that CH.**
A CH comment is displayed in the measurement item.

5. **Enter the [Lower limit] and the [Upper limit].**
The entered value acts as the threshold for alarm evaluation.

6. Select [Alarm port output].

Set whether or not to output the alarm evaluation result to the alarm port and the LED measurement module.
(Settings are common for all measurement items.)

Do not output	Nothing is output.
Save Alarm Status	When the alarm evaluation result is outside the range, it continues to output until it is cleared*. *: Hold down the [ALARM RESET] switch on the communication module for more than one second to clear. For 2342, you can clear (ON → OFF) by clicking the monitor screen.
Update at each sampling	The evaluation result is output every second.

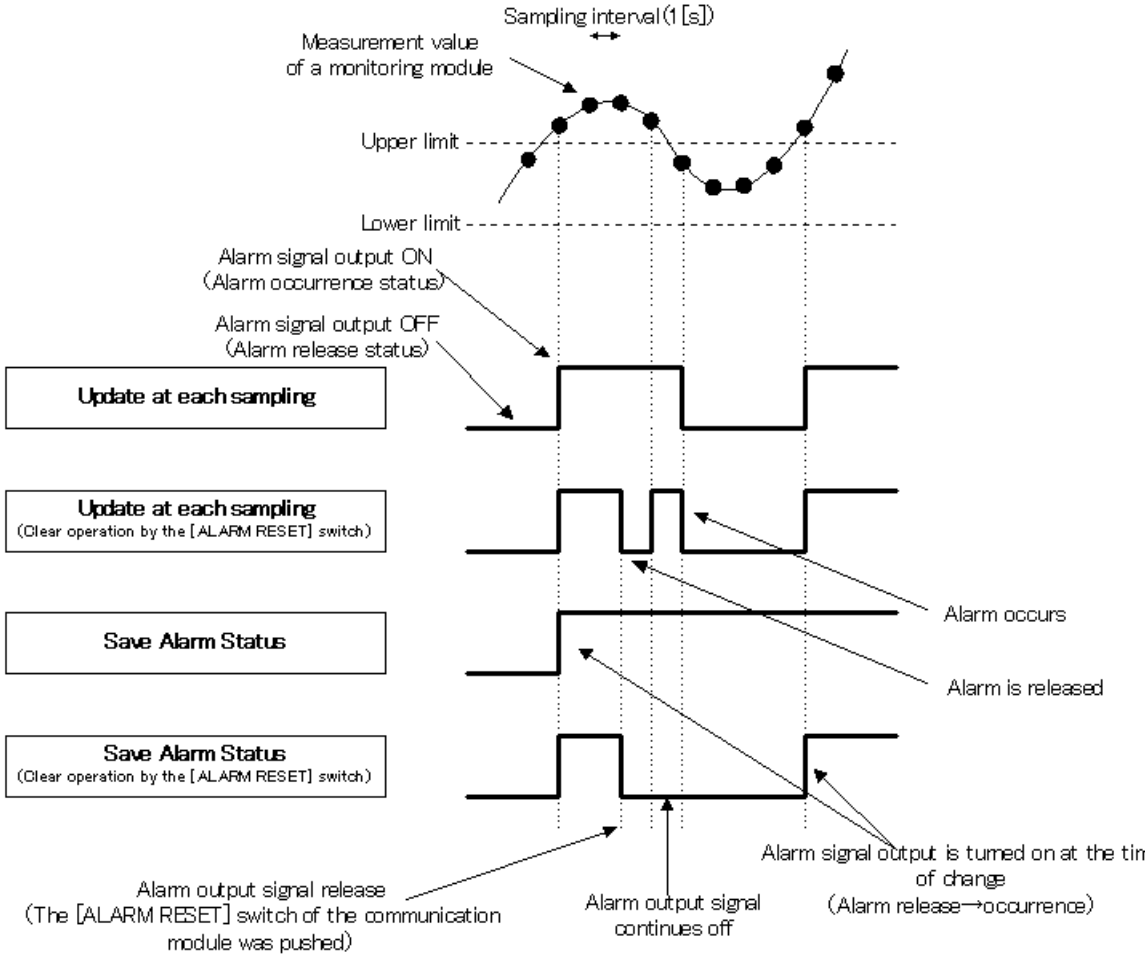
7. Click [Send] to send the settings.

If you click [Close] before clicking the [Send] button, the settings are not saved.

This completes the settings.
Use the same step to set alarm evaluations for other measurement modules.

Operational step example for alarm evaluation and alarm signal output

In the following diagram shows an operational step example for [Save Alarm Status] and [Update at each sampling].
(In this example the upper limit for the measurement is exceeded)



Beginning of operation

Procedure

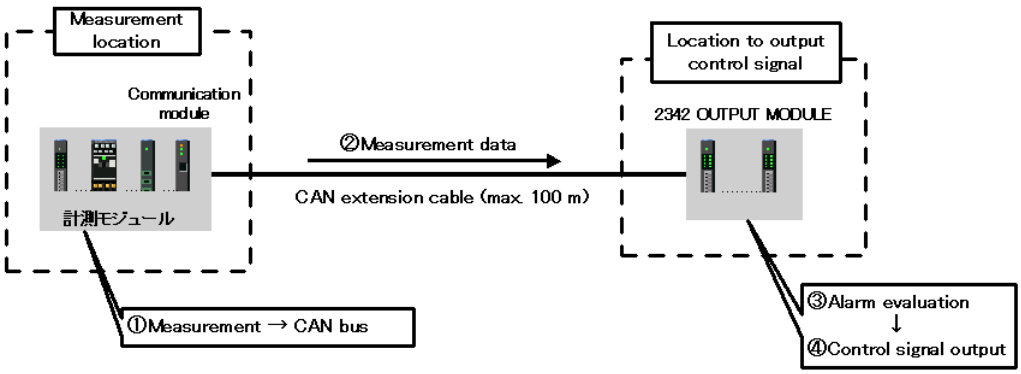
From the tool bar, click [Rec] to start recording for the module.

When an alarm occurs and it is released, alarm data is saved in the module's internal memory.
Also, a control signal is output from the alarm output port by the alarm evaluation result.

5.3.2 An alarm signal is output by using the 2342 Output Module's evaluation function

- 2342 Output Module monitor and evaluate alarms for measurement values for other modules connected on the same CAN bus, and can output a control signal.
- Because the CAN cable can be extended up to 100m, the control signal can be output in locations remote from the measurement location.
- Model 2342 has 8CH output ports, and each CH operates independently.
- Use the 2342 Output Module when you want to evaluate module* data without an alarm output terminal and output a control signal.

*:2332 Power Meter Module and 2341 Input Module

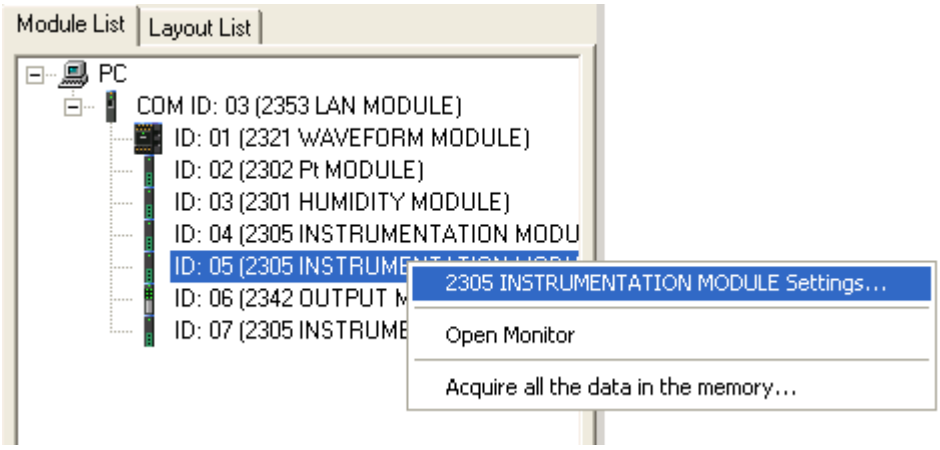


Settings

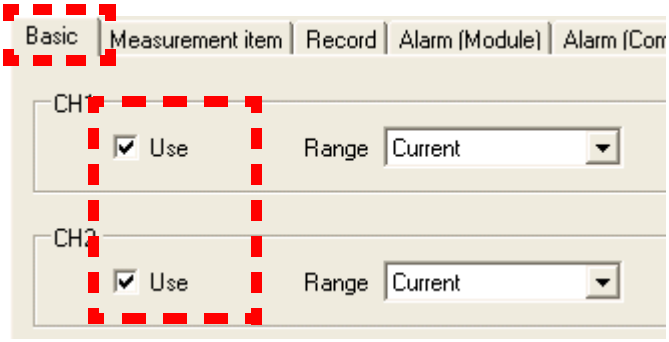
As an example, measurements for CH1 for 2305 Instrumentation Module (MODULE ID:05) are shown, and an alarm is evaluated with CH2 for 2342 Output Module, and we show the set-up steps to perform control output.

Procedure

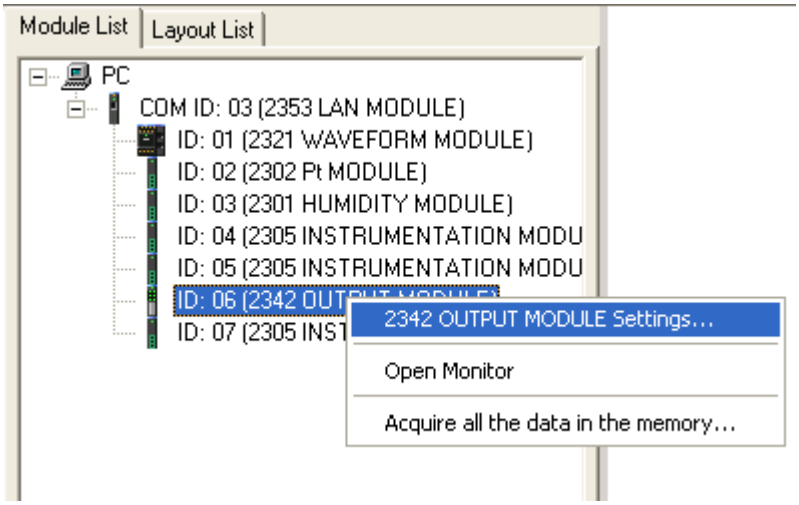
1. **Right-click in the measurement module you want to measure from the module list, and select [Module settings].**



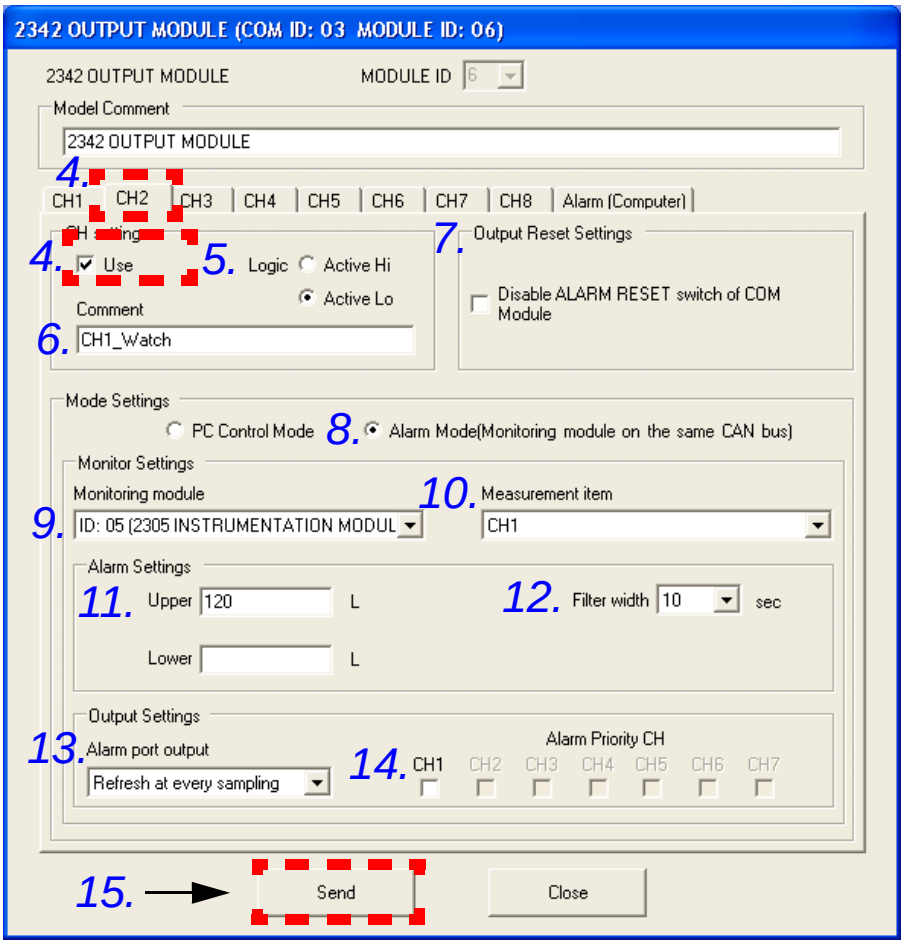
2. **The [Measurement Module Settings] dialog box opens.**
Click the [Basic] tab and check that the [Use] is selected for the CH to be measured. Close the dialog after you have checked.



3. **Right-click in the 2342 Output Module from the module list, and select [Module settings].**



4. Click the CH tab you are using (in this example CH2), to open the Setting screen.
Select [Use].



5. Select [Logic].

Active Lo	When an alarm occurs, Lo is output from the port. When an alarm is released, Hi is output.
Active Hi	When an alarm occurs, Hi is output from the port. When an alarm is released, Lo is output.

6. Edit the [Comment].

- Use to classify CH.
- Because it is used by the measurements monitor and the recorded data display with Smart Site Viewer, enter an easily understandable comment. (40 characters or less)

7. Set the [Output Reset Setting].

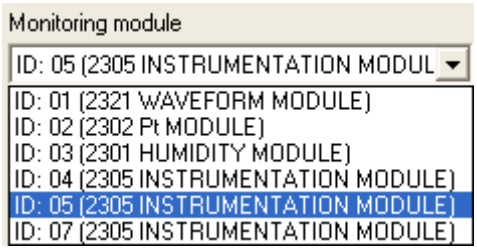
Select if you want to be unable to release the alarm output with the communication module's [ALARM RESET] switch. This is a function to prevent miss operation.

8. Select [Alarm Mode].

9. Select [Monitoring module].

Because the MODULE ID and the model comment for measurement modules that are present on the same CAN bus as Model 2342 are displayed as a list, you can select the module you want to monitor. In the example in this paragraph [ID: 05 (Cool temperature water generator)]) was selected.

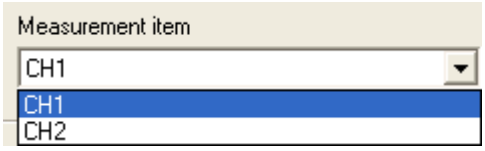
*Change the contents of the list for [Measurement Item].



10. Select the [Measurement Item].

In [Monitoring Module] select which measurement item to monitor from the specified module.

* When 2341 Input Module is specified in [Monitoring Module], this setting item is not displayed.



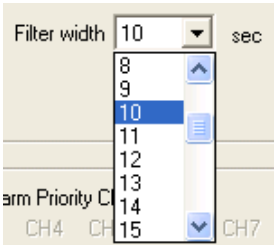
<Supplementary>

- When monitoring data for 2341 INPUT MODULE, select alarm evaluation CH and CH for logic (OR,AND).

In the example diagram, when an alarm occurs (ON) for either CH1 or CH3 for 2341 INPUT MODULE, an alarm signal is output from Model 2342.

11. **Enter the [Upper] and the [Lower].**
The entered value acts as the threshold for alarm evaluation.

12. **Select [Filter width].**
If this function is not used, it does not matter if it is [OFF].
❖ For details on this function, see "2342 Output Module Filtering Function" (page 228)



13. **Select [Alarm port output].**
You can select [Continuous] or [Refresh at each sampling].

Continuous	• Once an alarm occurs, until the [ALARM RESET] switch on the communication module is held down, the status of the port output and the LED is saved. • After holding down the [ALARM RESET] switch and then releasing, when the alarm evaluation result changes from OFF → ON, the status of the port output and the LED changes. (Enters alarm output status)
Refresh at each sampling	• The evaluation result is output every second.

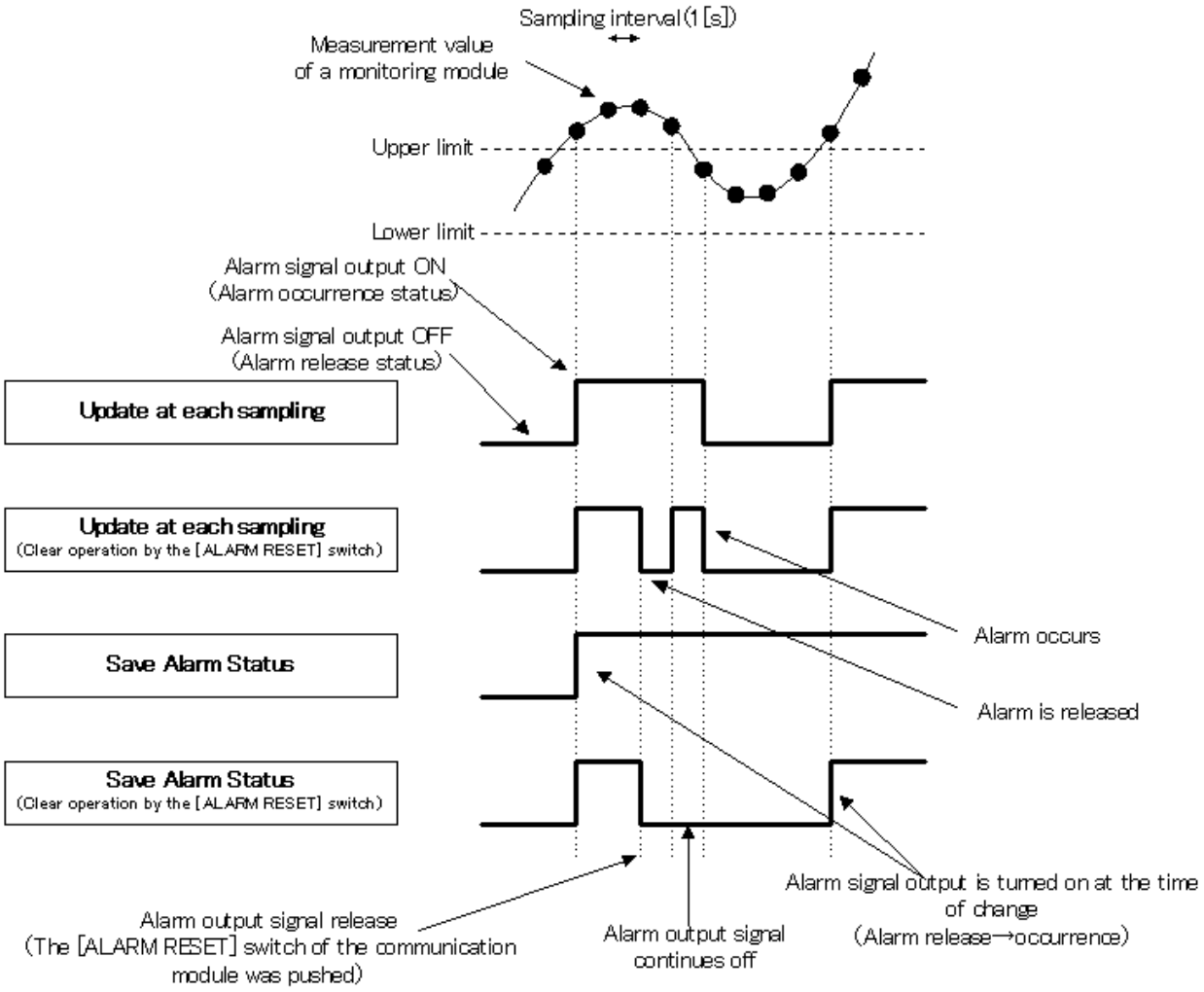
14. **Select [Alarm Priority CH].**
If this function is not used, it does not matter if nothing is selected.
❖ For details on this function, see "2342 Output Module Alarm Priority CH" (page 229)

15. **Click [Send] to send the settings.**
If you click [Close] before clicking the [Send] button, the settings are not saved.

This completes the settings.
When the settings are sent, 2342 Output Module starts evaluation operations.
Use the same step to set alarm evaluations for other CH.

Operational step example for alarm evaluation and alarm signal output

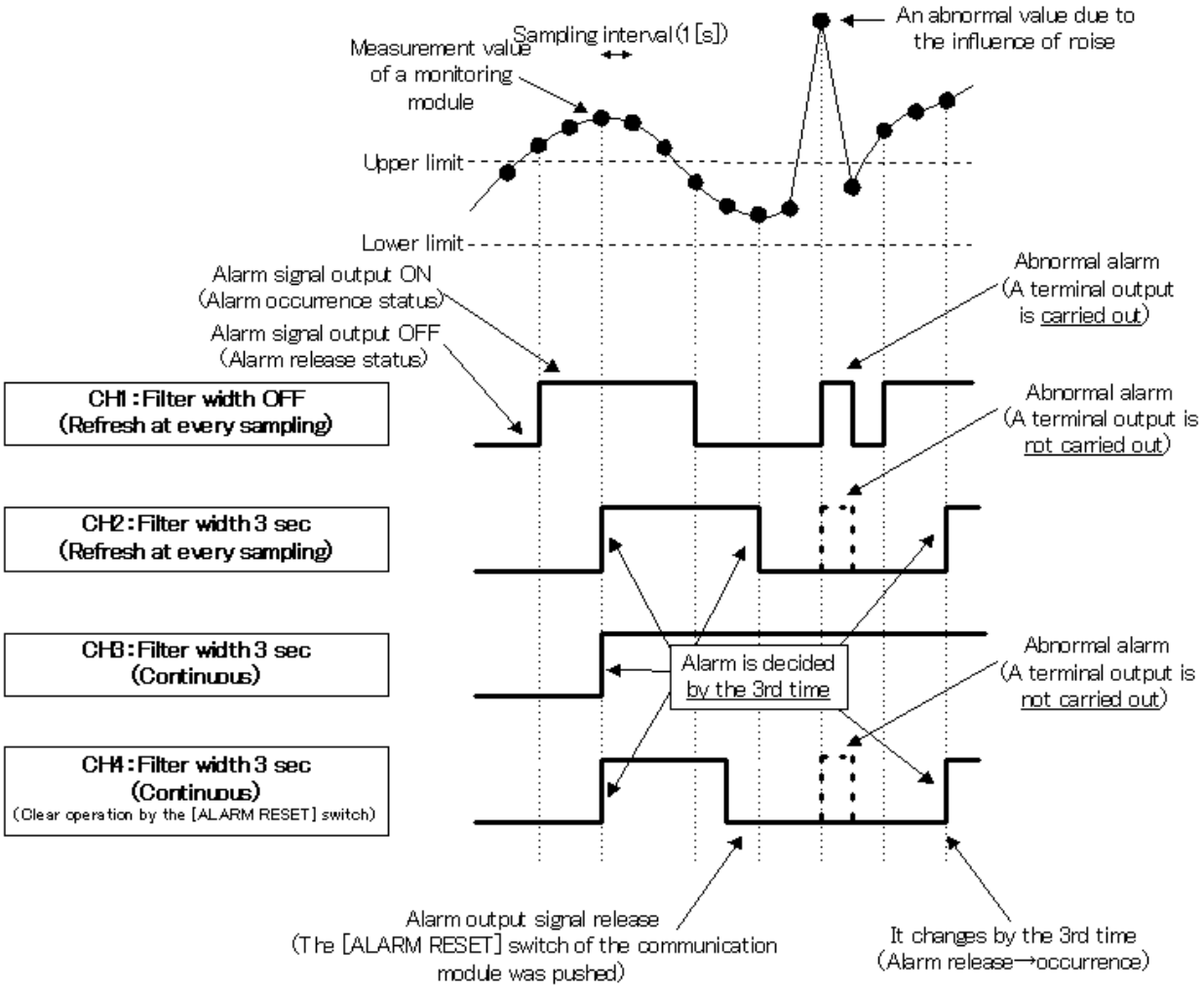
In the following diagram shows an operational step example for [Continuous] and [Refresh at each sampling]. (In this example the upper limit for the measurement is exceeded)



2342 Output Module Filtering Function

- This function does not output an alarm signal when measurements for the monitored module reach an abnormal value due to the influence of unexpected noise etc.
- When the alarm evaluation result for the specified time for the filter is the same, the alarm evaluation result as well as the terminal output change.
- When [OFF] is selected, the evaluation result for every second is reflected in the alarm evaluation result.

The following diagram shows the operational concept. (An example when Model 2342 CH1 to 4 monitor the same measurements)



2342 Output Module Alarm Priority CH

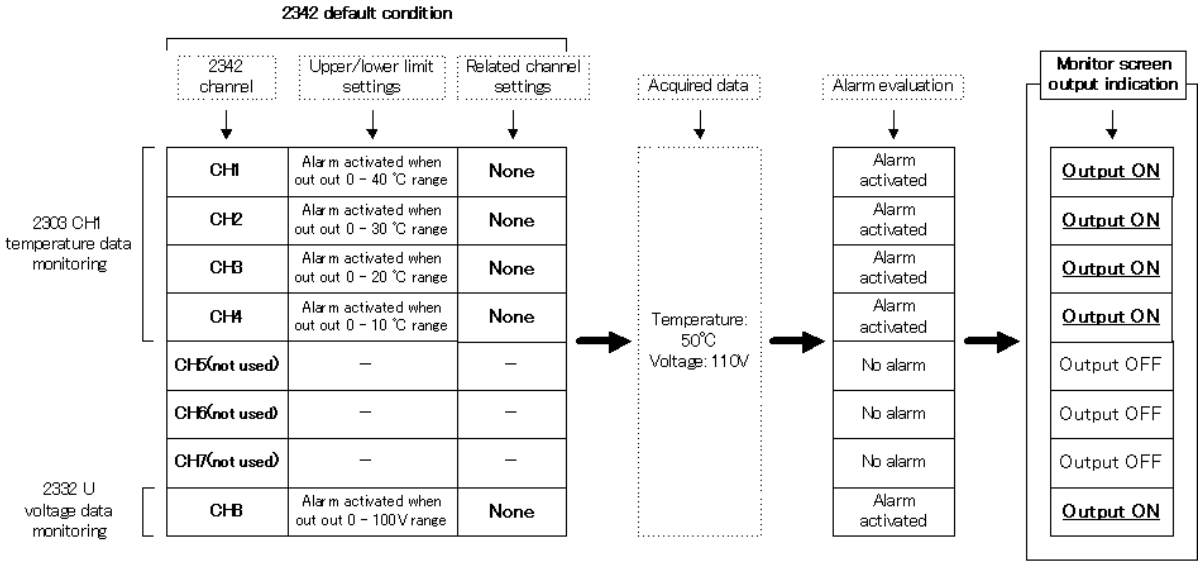
- The [Alarm Priority CH] setting allows you to specify channels which have high priority with regard to the alarm. When alarm evaluation in any such channel results in the ON (alarm activated) state, the alarm output of other channels is disabled.
- For example, this can be used when not wanting to have alarm output from CH2 while there is alarm output from CH1[*1].
- Do not use this function when wishing to use the alarm output of each channel independently.

As shown in the table below, the default priority setting as CH1 (highest) to channel 8 (lowest).

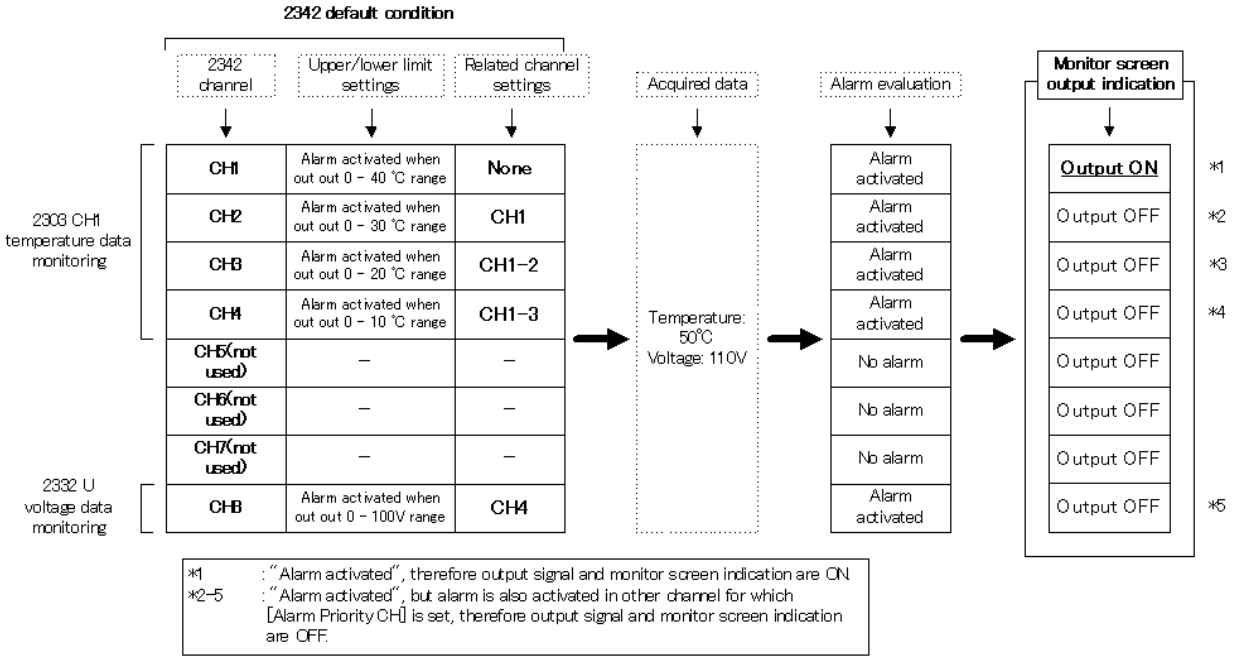
Priority	Model 2342 channel	Selectable channel
Highest ↕ **Lowest**	CH1	None
	CH2	CH1
	CH3	CH1 to 2 (multiple selection possible)
	CH4	CH1 to 3 (multiple selection possible)
	CH5	CH1 to 4 (multiple selection possible)
	CH6	CH1 to 5 (multiple selection possible)
	CH7	CH1 to 6 (multiple selection possible)
	CH8	CH1 to 7 (multiple selection possible)

*1: In such a case, select CH1 (which has higher priority) as the [Alarm Priority CH] setting for CH2.
Some operation examples are shown below. (Among CH1 to CH8 of the Model 2342, this function is used for CH1 to 4 and CH8.)

[Alarm Priority CH] not selected



[Alarm Priority CH] selected



*1 : "Alarm activated", therefore output signal and monitor screen indication are ON.
*2–5 : "Alarm activated", but alarm is also activated in other channel for which [Alarm Priority CH] is set, therefore output signal and monitor screen indication are OFF.

Example using 2342 Output Module

Usage example 1

- Using CH1 of the Model 2341, relay contact status is to be monitored. (Short-circuit monitoring)
  When the short-circuit signal is input to the Model 2341, CH1 of the Model 2342 should output a Lo active signal each second.
  Output reset should be locked.
- Using CH2 of the Model 2341, relay contact status is to be monitored. (Open-circuit monitoring)
  When the open-circuit signal is input to the Model 2341, CH2 of the Model 2342 should output a Hi active signal and maintain this signal.

Required initial settings *1

1. Hardware settings

Set the module ID (Model 2341, Model 2342).

2. Software settings (Smart Site Utility)

Use the setup screen for each module.

[Model 2341]

Setting item	CH1	CH2	CH3 to CH8
Use	Selected	Selected	Not selected
Logic	Active Lo	Active Hi	-

[Model 2342]

Setting item	CH1	CH2	CH3 to CH8
Use	Selected	Selected	Not selected
Logic	Active Lo	Active Hi	-
Mode settings	Alarm Mode	Alarm Mode	-
Monitor module	Model 2341 ID	Model 2341 ID	-
Alarm settings	OR or AND	OR or AND	-
Measurement item	CH1	CH2	-
Filter width	OFF	OFF	-
Alarm port output	Refresh at every sampling	Continuous	-
Output reset settings	Selected	Not selected	-

*1: Refer to the documentation of the respective module for information on cable types and connections and mounting to the module base.

Usage example 2

- Using CH1 of the Model 2342, the Lo active signal is to be controlled from the computer.
  (Output reset should be locked.)
- Using CH2 of the Model 2342, CH1 (temperature) of the PT MODULE is to be monitored each second.
  (When a status occurs in which it goes outside the 0 to 20 °C range three times continuously, a Hi alarm signal is output.)
- Using CH3 of the Model 2342, CH1 (temperature) of the 2303 TC Module is to be monitored each second.
  (When a status occurs in which it goes outside the 0 to 40 °C range, a Low alarm signal is output.)
- Using CH4 of the Model 2342, CH1 (temperature) of the 2303 TC Module is to be monitored each second.
  (When a status occurs in which it goes outside the 0 to 30 °C range, a Low alarm signal is output.)
  However, if the CH3 alarm has been activated, the CH4 signal is to be suppressed.)

Required initial settings *1

1. Hardware settings

Set the module ID (Models 2302, 2303, 2342).

2. Software settings (Smart Site Utility)

Use the setup screen for each module.

[Models 2302, 2303]

Setting item	CH1	CH2
Use	Selected	Not selected
Other settings	Optional *2	-

[Model 2342]

Setting item	CH1	CH2	CH3	CH4	CH5 to CH8
Use	Selected	Selected	Selected	Selected	Not selected
Logic	Active Lo	Active Hi	Active Lo	Active Lo	-
Mode settings	PC Control Mode	Alarm Mode	Alarm Mode	Alarm Mode	-
Monitoring module	-	Model 2302 ID	Model 2303 ID	Model 2303 ID	-
Measurement item	-	CH1	CH1	CH1	-
Upper	-	20	40	30	-
Lower	-	0	0	0	-
Filter width	-	3 s	OFF	OFF	-
Alarm port output	*3	Refresh at every sampling	Refresh at every sampling	Refresh at every sampling	-
Output Reset Settings	Selected	Not selected	Not selected	Not selected	-
Alarm Priority CH	-	Not selected	Not selected	CH3 selected	-

*1: Refer to the documentation of the respective module for information on cable types and connections and mounting to the module base.
*2: Setting not related to Model 2342 control system.
*3: Fixed to [Save Alarm Status].

Operation (part Model 2354) 6

6.1 Overview

The 2354 Memory Module is a communication module equipped with a LAN (100BASE-TX or 10BASE-T) port and a CF card slot. You can operate Model 2354 by either of two methods (online/off line). Because the operating steps and actions differ for each, select the most practical method depending on your operating environment. The following explains the features and outlines each operating method.

(1) Online

Usually this is the same as other communication modules, the computer uses Model 9768 and the LAN is always connected with Model 2354.
If, by any chance, communication is interrupted or abnormalities occur in the computer, or if data is not collected by 9768 for a long period due to long periods of inactivity etc., concerns about losing recorded data can be reduced because a higher capacity CF card than the internal memory of each measurement module is used.
We do not give a detailed account in this chapter because the method used is the same as that for other communication modules. See the corresponding item in the table below.

Description	Method	Browse
Equipment setting method	• Send the settings from 9768.	❖ 3.1 (page 11) 3.2 (page 44)
Start/Stop Recording	• Starting/Stopping recording by communication.	❖ 3.5.1 (page 91)
Recorded data	• 9768 acquires recorded data regularly through communication, and saves it to a computer.	❖ 3.5.2 (page 103)
CF card	• The CF card is used as a buffer memory for recorded data. • When the CF card is full, it automatically deletes from the oldest data. • You do not need to replace the CF card.	–
Using recorded data	• Recorded data that was acquired and saved by computer can be viewed by Smart Site Viewer.	❖ 3.7 (page 111)

(2) Off line

You can operate Model 2354 without connecting the computer with a LAN.
Use this operation method when you cannot have an always-on LAN connection, and when you want to perform temporary installation in order to perform checks etc.
For details on the operating method, see the explanation from 6.2.

Description	Method
Equipment setting method	• Save the setting file on the CF card by Model 9768. • When recording starts, the equipment is automatically set using the setting file saved on the CF card.
Start/Stop Recording]	• Using the Model 2354 START/STOP switch.
Recorded data	• Model 2354 collects regularly and saves on to the CF card. • Remove the CF card, and read it from a computer. • When LAN is connected, you can download from the FTP using Internet Explorer
CF card	• Recorded data is saved on the CF card • You can set operations when the CF card is full to "Stop" or "Continue" (automatically deletes from the oldest data). • Be sure to replace the CF card regularly when you select "Continue".
Using recorded data	• Data saved on the CF card is converted using Model 9768, and it can be viewed by Smart Site Viewer. • Data saved on multiple CF cards can be treated as one piece of recorded data. • When set to save in text format on the CF card, files saved in text format can be processed by Excel etc.

Note

- If a CF card is not installed, Model 2354 cannot perform recording operations.
- When either operation method starts recording, Model 2354 creates a new recording file for the CF card When a CF card is used repeatedly, check the free space on the CF card before use, and when there is not enough space on the card, use a new CF card or delete unnecessary recorded files.

6.2 Using Off Line

When using Model 2354 off line, first create the module configuration, and set by using Model 9768.
The following is only a general procedure. For detailed procedures, see the explanation for each item.

General Procedure

1. Start MAP editor. ❖ 3.1.1 (page 12)

2. Add Model 2354. Enter the initial settings for Model 2354. ❖ 3.1.2(Page 16)

3. Send the settings to Model 2354. ❖ 3.1.3(Page 21)

4. Add a measurement module. Enter the initial settings for the measurement module. ❖ 4.4.1 (page 189)

5. Save the initial settings file to the CF card. ❖ 6.2.2 (page 242)

6.
   - Install the CF card in Model 2354.
   - Hold down the Model 2354 START/STOP switch until the REC LED flashes yellow, and data logging starts.
   - When there is not enough free space on the CF card, replace it with a new card.
   - When all data logging is complete, hold down the Model 2354 START/STOP switch until the REC LED turns off, and data logging stops.

   ❖ Model 2300 Instruction manual "Chapter16 Model 2354"

7. Convert the recorded data.

8. View the recorded data. ❖ 3.7 (page 111)

Note

- Make sure to perform from the start of this procedure when changing the module configuration or settings, or when changing the recording interval etc.
- When removing the CF card during recording, do not disconnect the power to Model 2354. After powering up the Model 2354, you may not be able to resume normal recording.
- When collecting data from Model 2354, if the CF card is not installed in Model 2354 correctly, you cannot carry out data acquisition from Smart Site Utility
- Collect once the CF card is installed in Model 2354, and the cover is closed.
- When recording by using Model 2354, you need to acquire a CF card (we recommend using a new card) and a commercially available computer and card reader. See the manual supplied with the card reader for the connection method and how to use the card reader.
- The necessary capacity of the CF card changes depending on the operation method, the system configuration, the recording interval, etc. Use a CF card with the optimum capacity. Regarding the necessary capacity, when saving the setting file to the CF card (see 6.2.2 (page 242)), the basic necessary capacity appears. Or, use 6.7 "Recording file size for CF card" (page 259) as a guide.

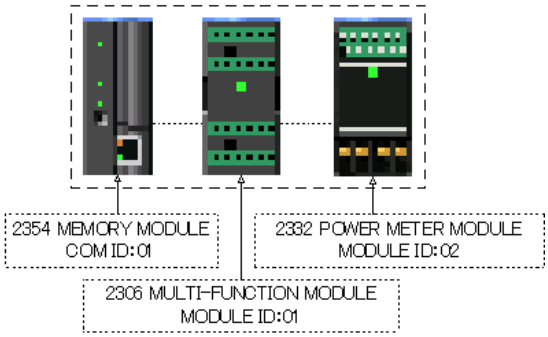
Important

- Do not leave the CF card removed for more than about ten minutes during recording. Recording data may be missed.
- If it is left in a status in which the CF card is installed but the cover is not closed for about 2 hours, it automatically begins recording data to prevent data from being missed, but there is no guarantee that all of the data will be recorded. Check that the cover is closed securely.
  Also, please note that the CF card may be damaged if you remove the CF card after forgetting to close the cover when forced saving of recorded data is carried out. Remove the CF card after closing and then opening the cover.
- HIOKI's Optional CF Cards
  - 9726 PCcard 128M
  - 9727 PCcard 256M
  - 9728 PCcard 512M
  - 9729 PCcard 1G

6.2.1 Constructing the System

First, perform system construction of the memory module and the measurement module used for Model 2354. The following example of a system construction diagram is a general explanation only.

❖ For detailed procedures and contents, see 3.1.1 (page 12), 3.1.2(Page 16), 3.1.3(Page 21), 4.4.1 (page 189)

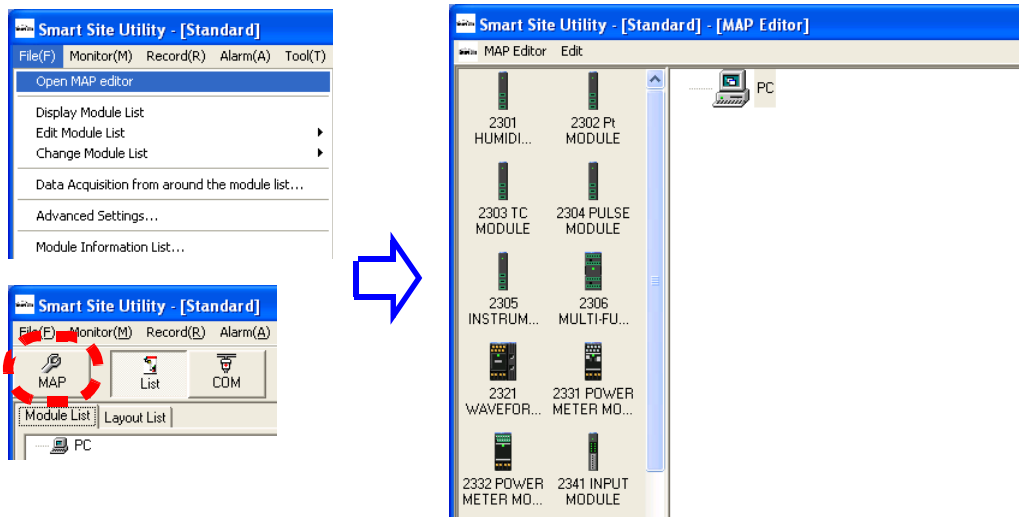


Procedure

1. **Start the MAP editor.**

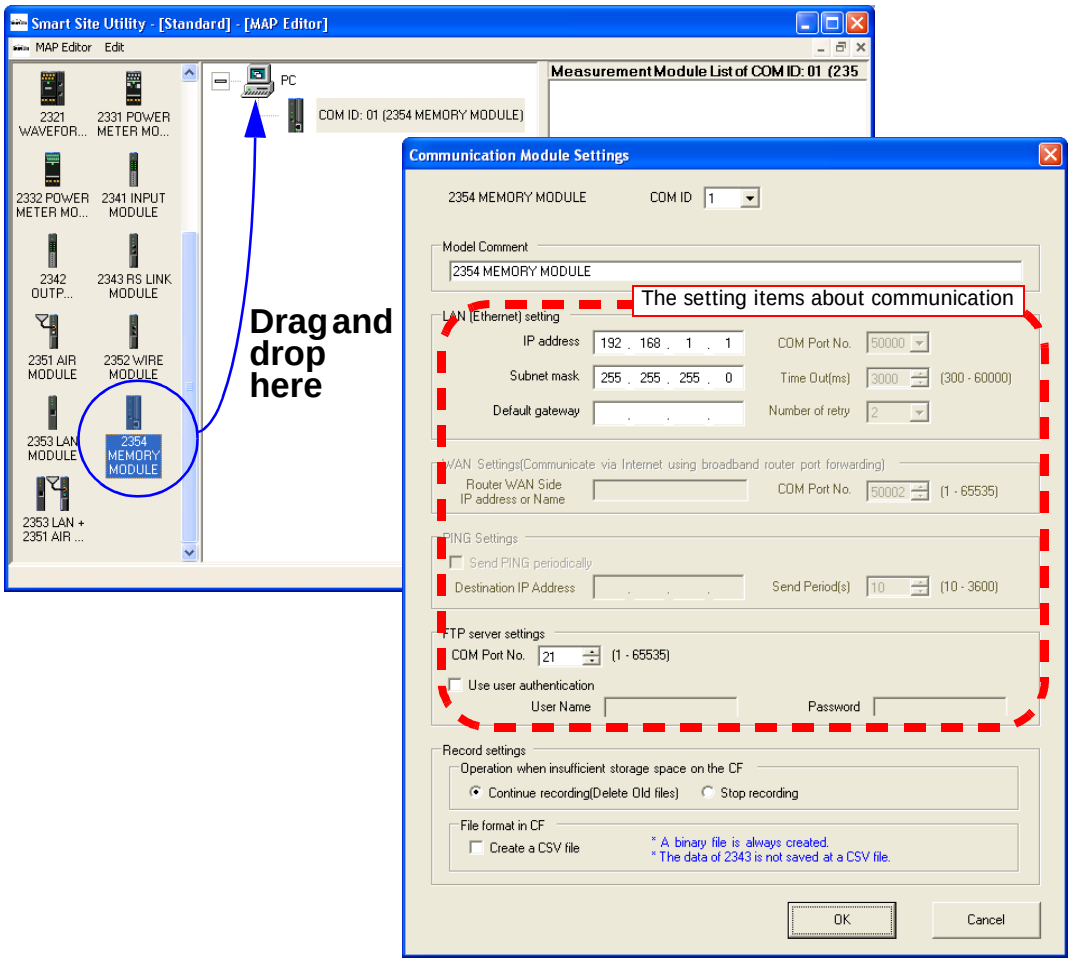
❖ 3.1.1 (page 12)

Select either



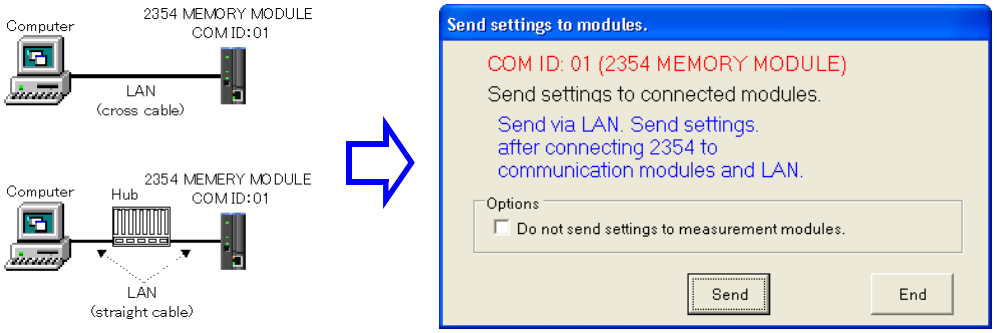
2. Add [2354] memory module for COM ID:1, and enter the settings.

❖ 3.1.2(Page 16)



3. Send the settings to Model 2354. Temporarily connect the computer and Model 2354, and send the settings as shown in the following diagram.

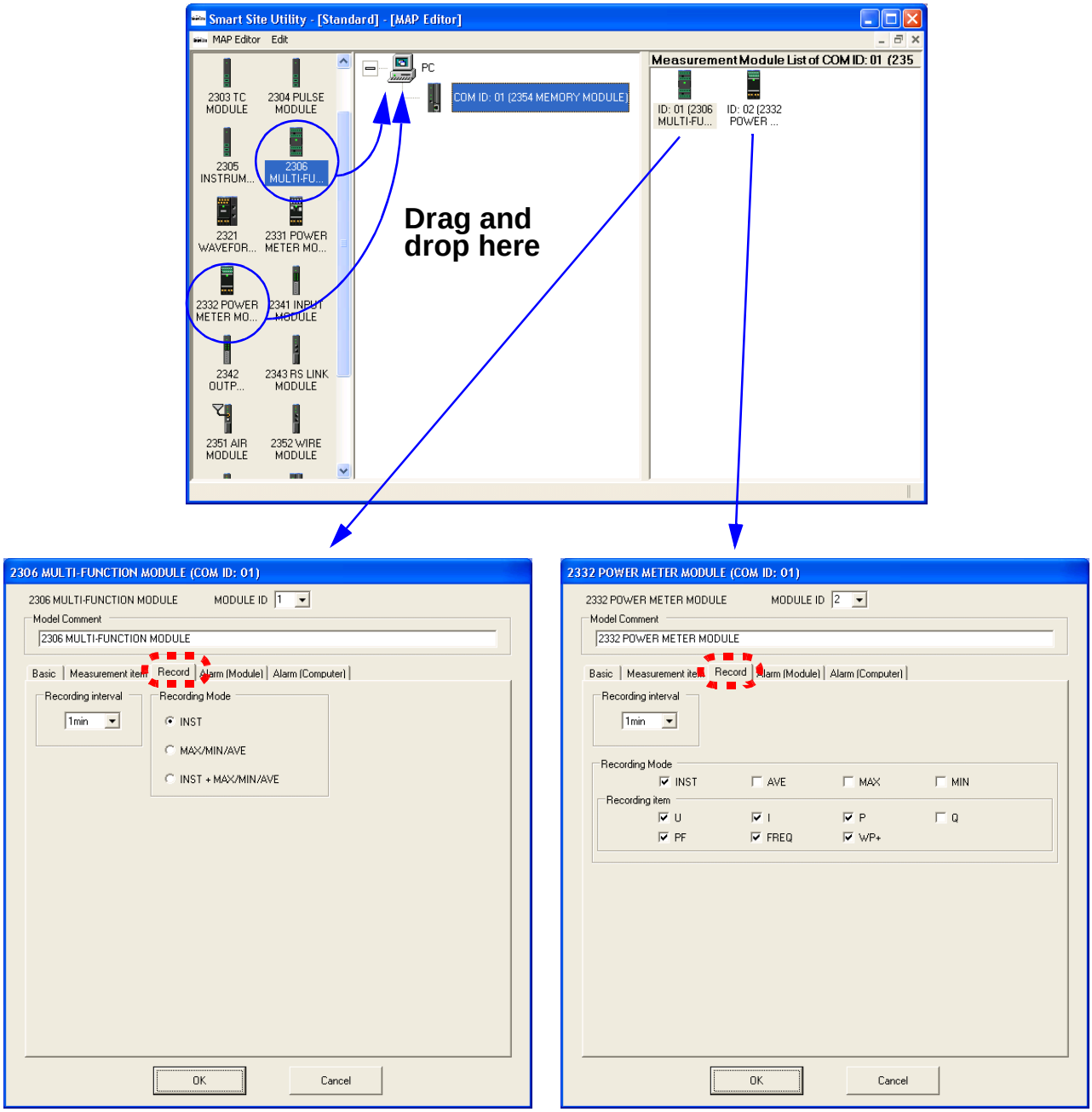
❖ 3.1.3(Page 21)



Note

- The Model 2354 internal clock is set when it is shipped from the factory, but errors may occur due to the temperature of the operational environment etc. Send the settings before starting operations.
- Although LAN is not normally connected during off line operations, the LAN connects temporarily when sending settings. Be sure to set setting items (within the limits) regarding communication for step 2.

4. **Add MODULE ID:1 for the [2306] MULTIFUNCTION MODULE (see 4.4.1 (page 189)), and MODULE ID:2 for the [2332] MULTI-CIRCUIT POWER MODULE, and enter the settings.**
Because Model 2354 automatically sets the measurement module by using the setting file saved on the CF card (see 6.3.2 (page 250)), you do not need to send settings to the measurement module here.



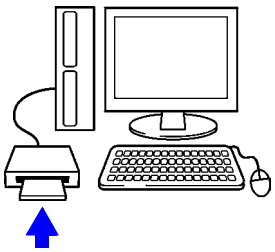
Note
In particular check the contents of the [Record] tab, the recording interval, recording mode, etc.
The method for recording each measurement module is determined depending on the content of the recording settings entered here.

6.2.2 Saving the Setting to the CF Card

Save the system configuration and settings created in 6.2.1 "Constructing the System" (page 239) to the CF card as a setting file. With this CF card installed in Model 2354, by starting recording, each module in the system is automatically set and you can perform recordings.

Procedure

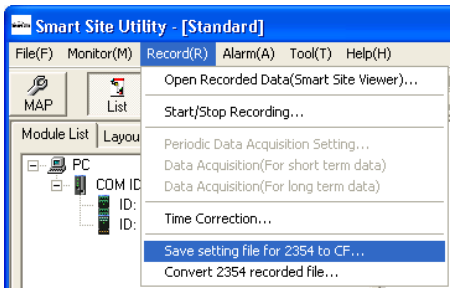
1. Connect a card reader to the computer, and insert the CF card.

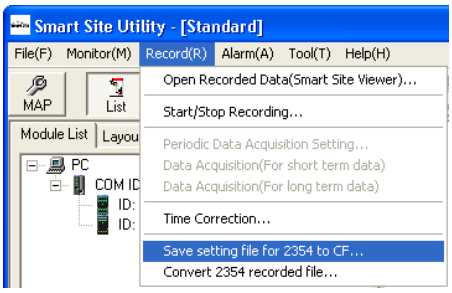


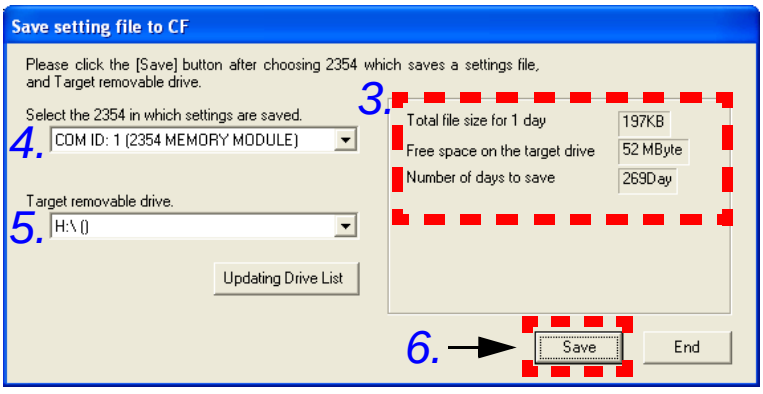
2. From the [Module List], select Model 2354 that saves settings to the CF card.
Right-click to access the pop-up menu, and select [Save setting file to CF]. [Save setting file to CF] opens.

From the menu bar, select and open [Record] - [Save setting file for 2354 to CF].

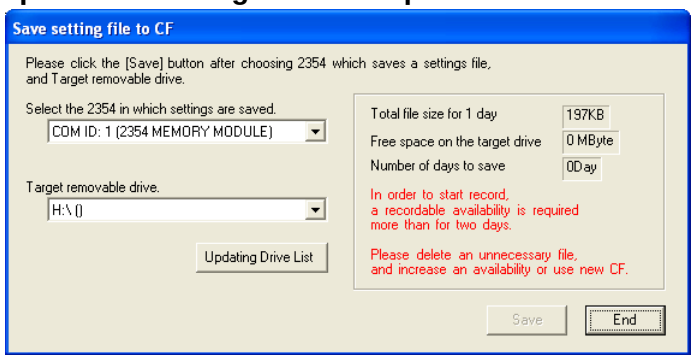
Select either







3. **Check the necessary capacity of the CF card.**
When using this CF card, the current recording settings [Total file size for 1 day], [Free space on the target drive], and [Number of days to save] appear.
When there is not enough free space on the CF card, the following screen opens and saving cannot be performed.

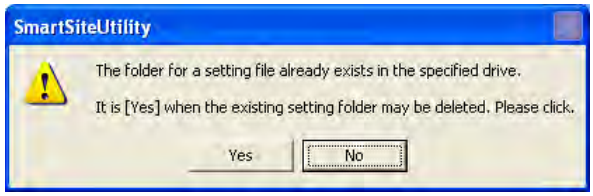


4. **Select the Model 2354 in which settings are saved.**
In step 2, when [Save setting file for 2354 to CF] is opened from the menu bar, it is registered to the module list, and all Model 2354 are displayed in the list. When opening by right-clicking on the module list, you cannot select any Model 2354 other than the Model 2354 selected.

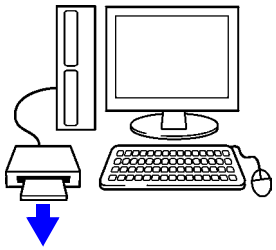
5. **Select the target removable drive.**
Here, connect it to the computer, and all removable mass storage devices (CF and USB memory, etc.) are displayed in a list, so select the CF card connected to the computer.
The drive character ("H:" in this example) and the volume label ("CF" in this example) are displayed, so be sure to select the correct one.

6. **Click [Save].**
For Model 2354 a settings folder "SET" is created in the CF card, and a screen such as the following opens.

A message such as following is displayed when there is already a "SET" folder in the target destination. Check that the target destination is correct, and click [Yes] to overwrite.



7. Remove the CF card from the card reader.

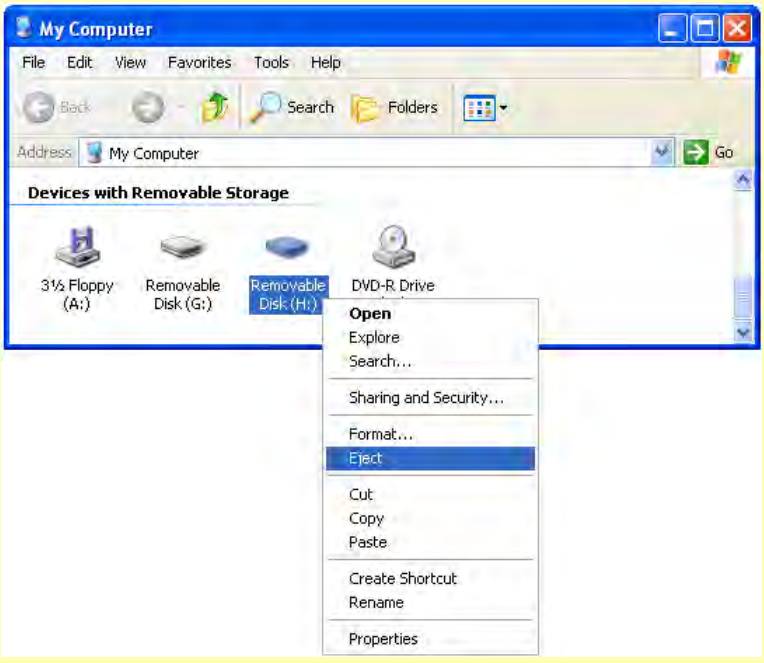


8. Insert the CF card in Model 2354, and start recording.

For details on inserting the CF card and starting recording, see the "2300 Instruction Manual - Chapter 16 Model 2354"

Note

- When replacing CF cards, you do not need to save the setting file to the CF card.
- Important files may be lost if a mistake is made in the target when saving the setting file. Before saving the setting file, be sure to check the target destination.
- After connecting to the computer, the card reader may not be recognized immediately.
  Repeat the operation if the target CF card is not displayed after waiting for a while.
- Before removing the CF card from the card reader, be sure to perform [Eject].
- From Explorer on the computer, right-click the CF card drive, and then select [Eject]. In the worst case scenario, the CF card may be destroyed if it is removed suddenly without performing [Eject], and it will become unusable.



6.3 Viewing Recorded Data (Off line)

When operating Model 2354 off line, you need to convert the recorded data saved on the CF card into a viewable format for the Smart Site Viewer.
Also, when Model 2354 is set to "Create a CSV file" (see 3.1.2 (Page 16), you can also view and edit the CSV file saved to the CF card with a spreadsheet program such as Excel etc. (See 6.3.2 (page 250))

The following is only a general procedure. For detailed procedures, see the explanation for each item.

General procedure

1. Remove the CF card from Model 2354. ❖ Model 2300 Instruction manual "Chapter16 Model 2354"

2. Insert the CF card in the computer's card reader, and convert to a format that can be viewed by Smart Site Viewer. ❖ 6.3.1 (page 245)

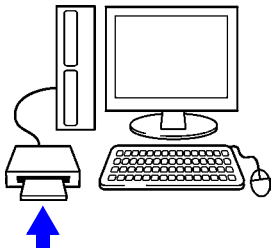
3. View the recorded data. ❖ 3.7 (page 111)

6.3.1 Converting Recorded Data

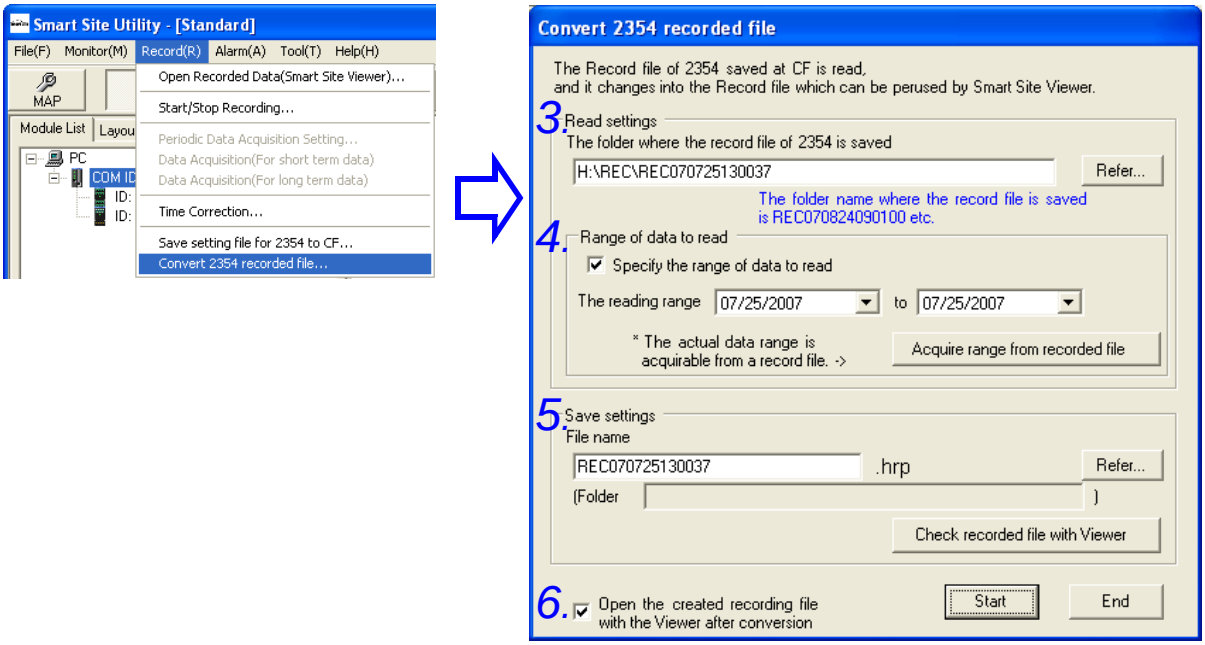
The recording file saved on the CF card cannot be viewed by Smart Site Viewer as it is. Use the following steps to convert the format.
Because converted recording data can be saved in an optional folder with an optional name, you can view it at any time. Also, recorded files that are saved on different CF cards can be added to the computer as the same recorded data

Procedure

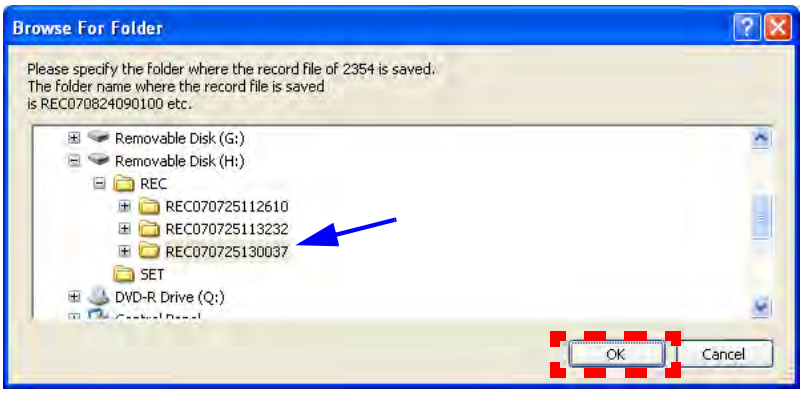
1. **Connect a card reader to the computer, and insert the CF card.**



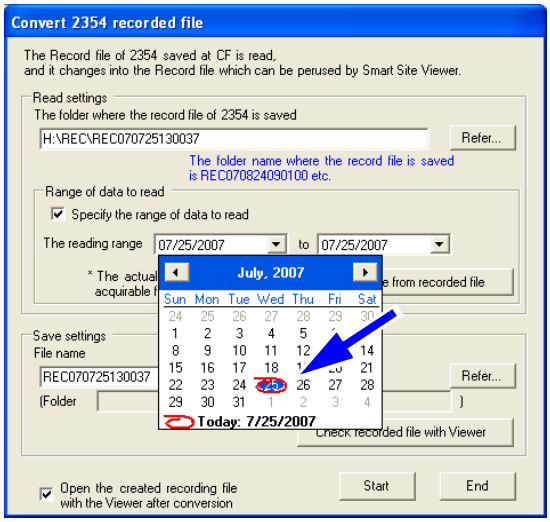
2. From the menu bar, select [Record] - [Convert 2354 recorded file]. [Convert 2354 recorded file] opens.



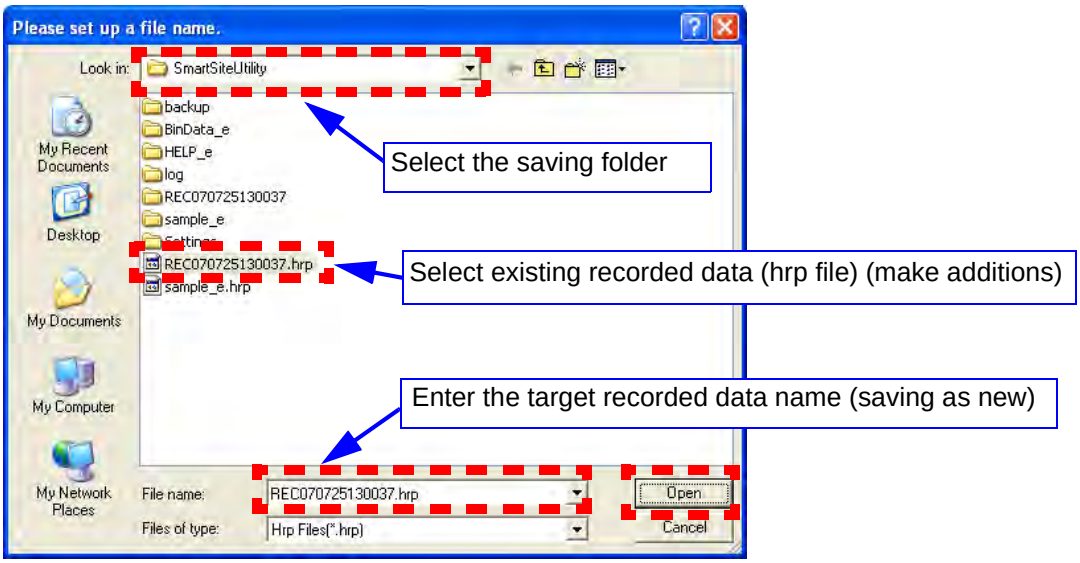
3. Select the folder containing the original recorded file to be read. Click the [Browse] button and select the folder where the recorded file is saved. In the example in the following screen, the "REC\REC070725130037" folder saved on the CF card (H drive) is selected. Select and then click the [OK] button. See Appendix 9 "CF card" (page 317) for the structure of the recorded file saved on the CF card (target file name etc.).



4. **To read only a section of the recorded file, select [Specify the range of data to read], and specify the reading range by clicking the date on the calendar.**
When [Acquire range from recorded file] is clicked, the actual date for the saved recording file appears, and so specify within this range.

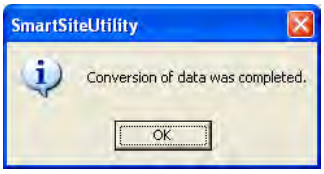


5. **Click the [Browse] button, select the target folder for the recorded data, and set the file name. Enter the target recorded data name when saving as new recorded data.**
Also, when making additions to existing recorded data, select the existing recorded data (hrp file). Next, click the [Open] button.

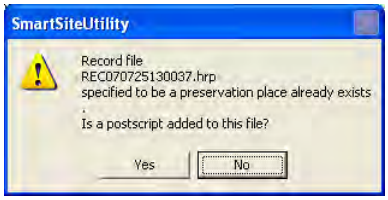


Use the [Check recorded file with Viewer] button to open existing recorded data and check it in the Viewer. When clicked, the selected existing recorded data is opened with the Viewer.

6. **Click [Execute]. The following message appears and the recorded data is converted.**
When [Open the created recording file with the Viewer after conversion] is selected, the converted recorded data is opened in the Viewer after conversion is completed normally.



The following message appears when recorded data already exists. Check that the target destination is correct, and click [Yes] to make additions.

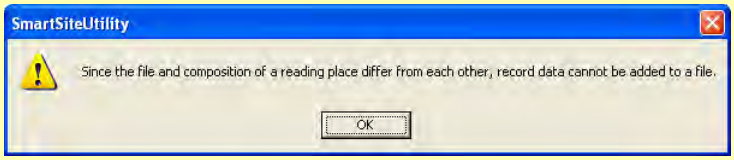


7. **For Model 2354, when there is not enough free space on the CF card, you can replace it with a new CF card and continue recording.**
For this kind of operation, when the recorded data is saved on multiple CF cards, repeat the step above for the number of cards needed.

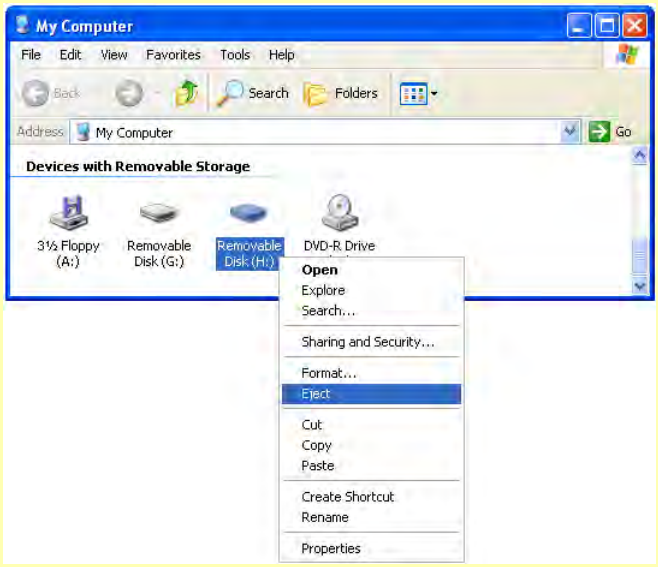
8. **You can view the converted recording file at any time with Smart Site Viewer. For details on using Smart Site Viewer, see 3.7 (page 111).**

Note

- The following screen appears when trying to make additions to existing recorded data if the settings etc. for the recorded file on the CF card and the settings for the recording items for the recorded data targeted for additions on the computer differ, and additions are not possible. In this case, specify a new target recording file.



- When adding to existing recorded data, if you make a mistake in the file targeted for additions, older important files may be overwritten. Before executing additions to recorded data, be sure to check the target for additions.
- After connecting to the computer, the card reader may not be recognized immediately. Repeat the operation if the target CF card is not displayed after waiting for a while.
- Before removing the CF card from the card reader, be sure to perform [Eject]. From Explorer on the computer, right-click the CF card drive, and then select [Eject]. In the worst case scenario, the CF card may be destroyed if it is removed suddenly without performing [Eject], and it will become unusable.

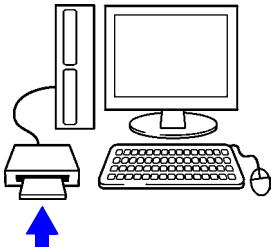


6.3.2 Viewing Recorded data with Excel

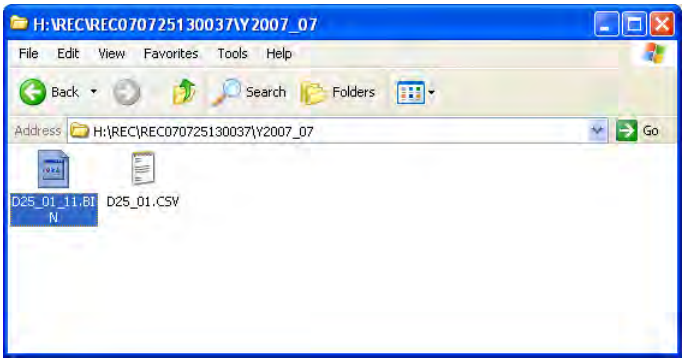
When Model 2354 is set to "Create a CSV file" (3.1.2 (Page 16)), you can also view and edit the CSV file saved to the CF card with a spreadsheet program such as Excel etc.

Procedure

1. **Connect a card reader to the computer, and insert the CF card.**



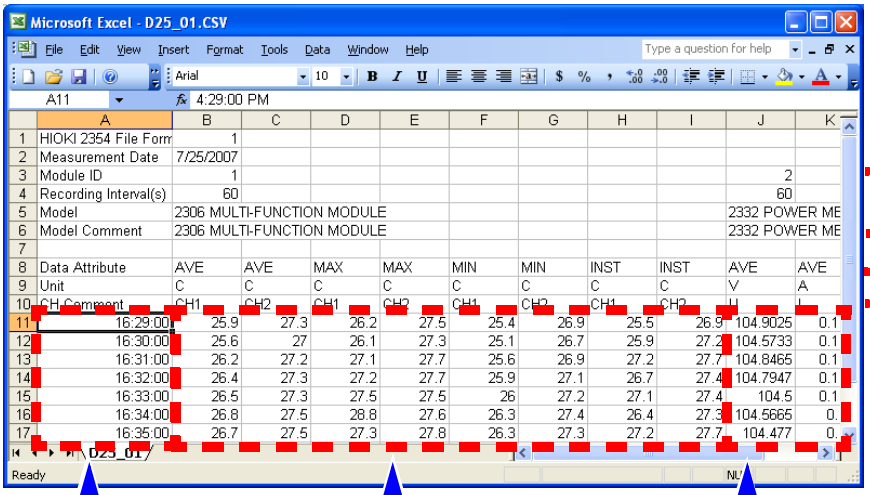
2. **From Explorer on the computer, open the target folder on the CF card drive. For details on the target recorded file, see Appendix 9 "CF card" (page 317).**



3. **When the target file is double-clicked, Excel starts.**
The target file is displayed with a .csv extension and an Excel icon.

When it starts up, Excel opens as shown in the following screen. You can use Excel to analyze the data by creating graphs, calculating measurement items, etc.

In the following example, the recording interval for both the [2306] Multi-function Module (MODULE ID:1), and the [2332] Power Meter Module (MODULE ID:2) is 60 seconds.
Each modules recording mode is as a result of using "Instantaneous value + MAX/MIN/AVE vale" recording.



Note

- The CF card recording file saves the recorded data for all measurement modules for one day in one file. For details, see Appendix 9 "CF card" (page 317).
- Because the data number for one day is 86400 when the recording interval is set to one second, it cannot be viewed by Excel. This is due to limitations in the number of lines (vertical) and the number of rows (horizontal), that can be opened by Excel and, for example, you can only open up to 65536 lines and 256 rows in Excel 2002 (XP). Therefore, when the total number of recorded items is more than 256 items, or when the number of records per recording item for one day is 65526 or more (with a 10 line header line), use Smart Site Viewer or a commercially available spreadsheet program that does not have these limitations.
- Please note that when the CF card is removed etc. while it is being accessed (the CF LED is flashing), or a mistake is made in the handling of the CF card when saving a CSV file, the line being saved may be corrupted.
  However, even in this situation, because saving begins from the corrupted line the next time a CSV is saved, original recorded data is never missed. Also, this has no influence on files recorded in binary format.
- For details on using Excel, see the Excel Help.

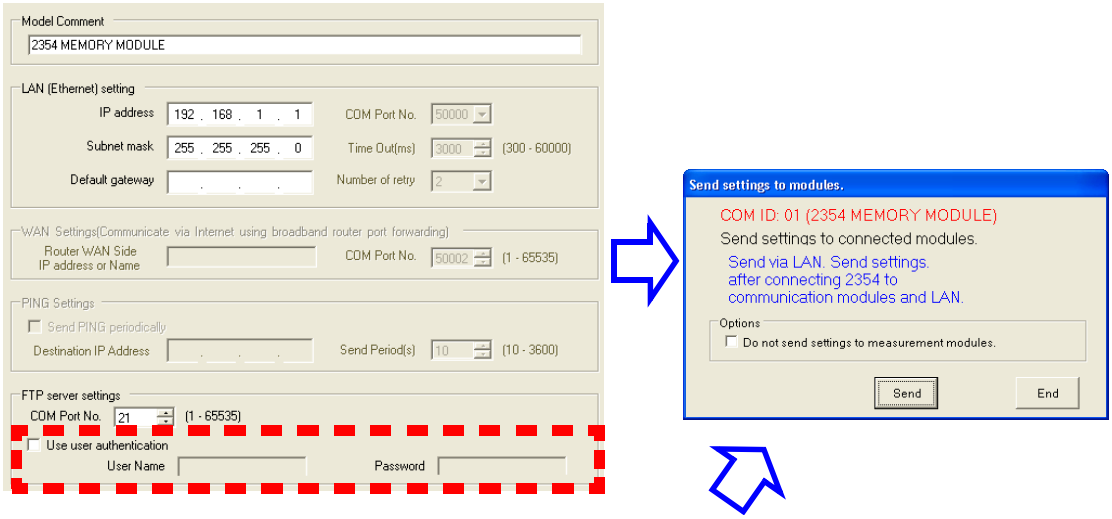
6.4 Collecting Recorded Data with FTP

Model 2354 has a built-in FTP (File-Transfer-Protocol, RFC959 compliant) server. Recorded data saved on Model 2354 CF cards can be sent to a computer by using the computer's Explorer (or Internet Explorer).
In the following example, the Model 2354 IP address is "192.168.1.1", and we used Explorer in Windows XP.

Procedure

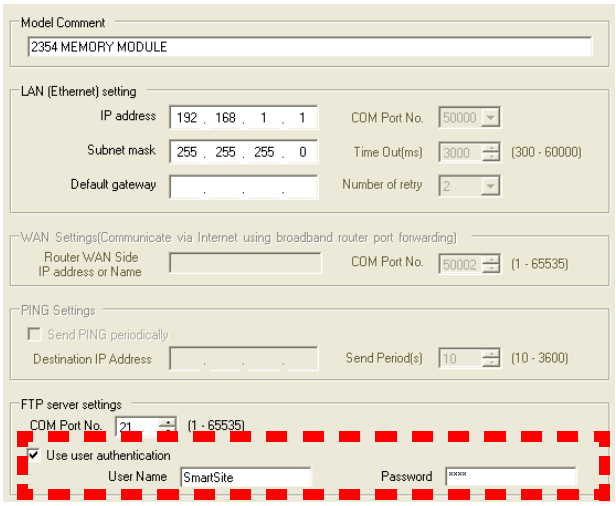
1. **Perform communication settings for Model 2354, and send the settings.**
❖ 3.1.2(Page 16), 3.1.3(Page 21)

When not using user authentication

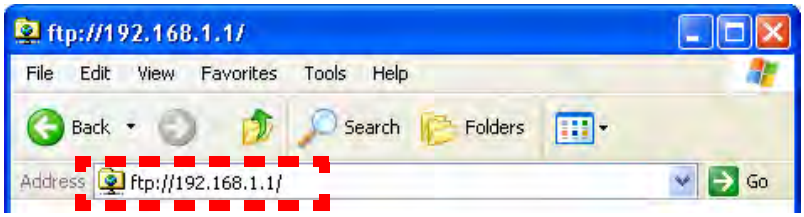


When using user authentication

In this example, the User name is "smartsite" and the password is "2354".

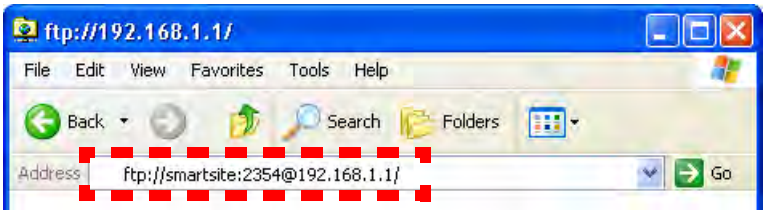


2. **Connect the FTP to Model 2354 via Explorer.**
In the Explorer [Address column], enter the "ftp://" and Model 2354 IP address, and then press the "Enter" key on the keyboard.

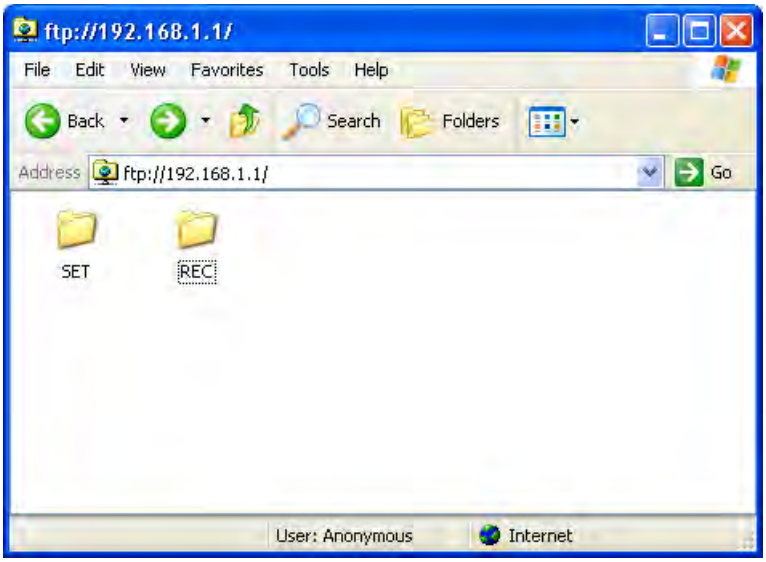


When user authentication is used, the following user identification screen opens, enter the User name and Password, and then click the [Logon] button.

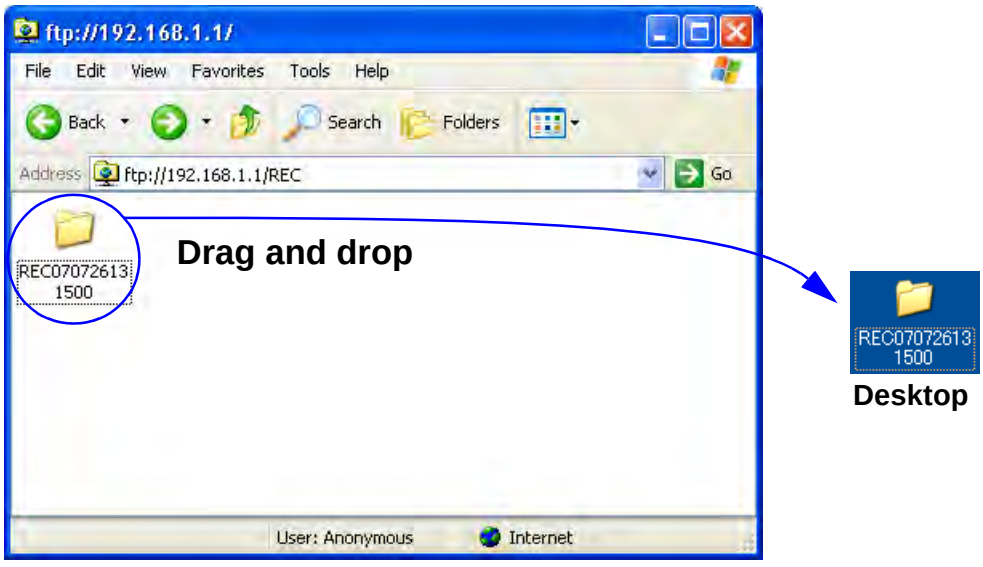
Or, you can connect without displaying the user authentication by entering "Ftp://<User name>:<Password>@" and the Model 2354 IP address as shown in the following screen.



3. **The Model 2354 CF card file list opens when the connection is successful as shown in the following screen. The first folder displayed here is the CF card "/" folder (root folder).**

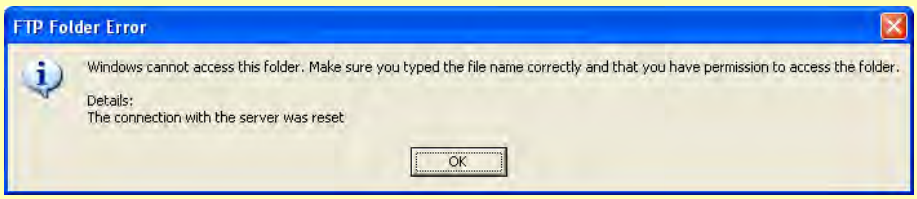


4. **The recording folder is collected.**
Navigate to the "/REC/" folder, and after selecting the recording folder you want to collect from the folder list, use the mouse to drag and drop the folder to the target destination on the computer (in the example screen the desktop).



Note

- When accessing the CF card within the 2354, FTP transmission may be interrupted. In this case, wait for a while before transmitting again.
- FTP transmission cannot be carried out when the CF card is not properly attached to the 2354. Carry out the FTP transmission by attaching the CF card to the 2354 and closing the cover.
- There is only one connection for Model 2354 FTP server. Multiple computers cannot connect and access at the same time; if you cannot connect please wait for a while and then try again.
  In this case, the following screen is displayed in Explorer.



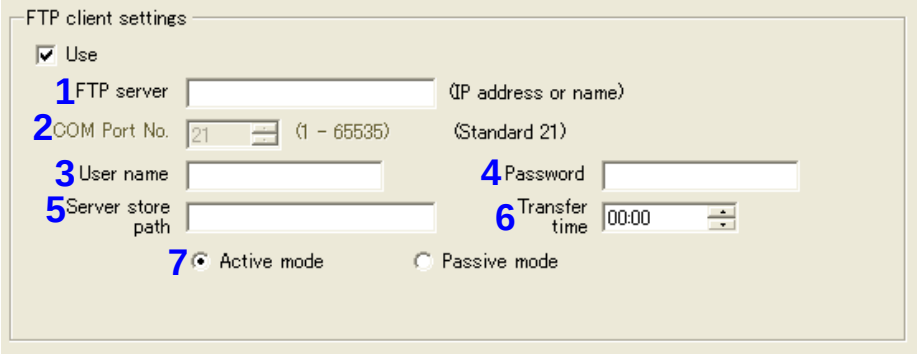
- The Model 2354 FTP connection is "Read only". Files cannot be uploaded (copying files to Model 2354), or deleted.
- To use the FTP server function, you need to complete sending communication settings for Model 2354.
- The user name and password distinguish between capital and lower case letters. Also, you cannot use Japanese.
- The password is displayed as asterisks "*".
- COM port No.21 is an FTP protocol port number. Usually, this should not be changed.
- If no operations are made for one minute or more after connecting, the FTP may be disconnected from Model 2354. In this case, reconnect the FTP. Also, there are times when you may not be able to reconnect after being disconnected from the FTP. In that case, wait for about one minute before trying to reconnect.
- The Explorer file update date and time display may not synchronize with the Model 2354 update date and time.
- In Explorer, when data remains in temporary files when the Internet was accessed previously, instead of the newest data the previous data is displayed, and so there are times when you cannot collect the latest recorded file. In that case, connect to the FTP after restarting Explorer once.
- You may not be able to operate normally when using FTP client software other then Windows Explorer if the software uses commands that are not compatible with Model 2354.
- Disconnect the FTP when exchanging Model 2354 CF cards.
- When performing an FTP connection through public lines such as the Internet, there are times when FTP communication may not be allowed in intermediate routers, and you may not be able to connect. Contact your network administrator for more details.

6.5 Sending Recorded Data Automatically by the FTP Client

Model 2354 has a built-in FTP client function .
Recorded data (CVS file) can be automatically sent once a day by specifying the destination and so on.

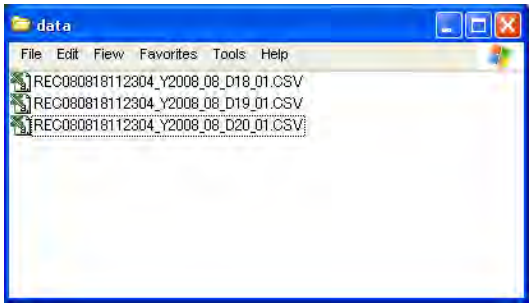
Procedure

1. Perform communication settings for Model 2354, and send the settings.



Setting item		Description
1	**FTP server**	• Set the IP address or name of FTP server to use the FTP client.
2	**COM port**	• Set the port number of the FTP server to use the FTP client. • 21 port usually used.
3	**User name**	• Set the user name for attestation to access the FTP server.
4	**Password**	• Set the password for attestation to access the FTP server.
5	**Server store path**	• Set the destination path of the recorded data (CVS file).
6	**Transfer time**	• Set the time to transfer the recorded data (CVS file) automatically.
7	**Transfer mode**	• Active mode: The data connection opened by the server from its port to a negotiated client port. • Passive mode: The data connection opened by the client from an arbitrary port to a negotiated server port.

2. The recorded data of the previous day is sent at the forwarding time.



File names are the following compositions, so Recording start time, Date, COM ID can be confirmed.

REC(Recording start time)_Y(Year)_(Month)_D(Day)_(COM ID).CSV

Example: [REC080818112304_Y2008_08_D20_01.CSV]

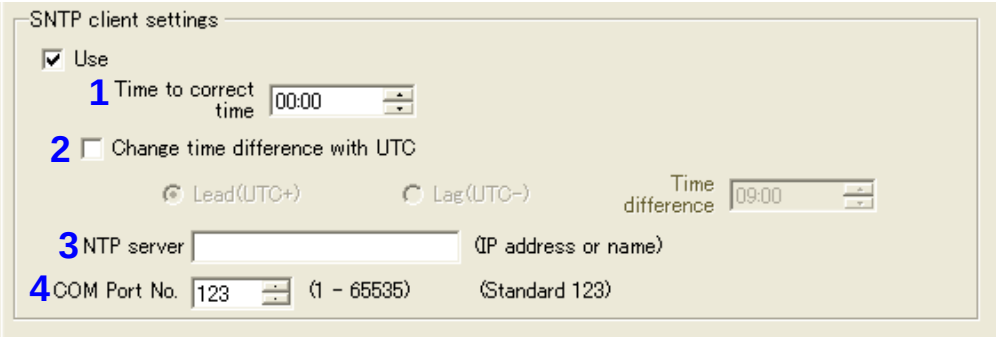
- Recording start time: 2008-8-8, 11:23:4
- Date: Aug. 20, 2008
- COM ID: 01
  The above information can be read from the file name.

6.6 Time Correction by SNTP Client.

Model 2354 has a built-in SNTP client function .
Time can be corrected once a day by specifying the server.

Procedure

1. Perform communication settings for Model 2354, and send the settings.



Setting item		Description
1	**Time to correct time**	• Set the time to execute the time correction.
2	**Change time difference with Coordinate Universal Time (UTC).**	• Set the time difference with UTC.
3	**NTP server**	• Set IP address or the name of the NTP server (time server) to use for the time correction.
4	**COM port**	• Set the port number of the NTP server to be used in communication with NTP server. 123port is normally used.

2. Time correction is executed at time to correct time.

6.7 Recording file size for CF card

The size of recorded files saved on Model 2354 CF cards differs depending on the Model 2354 CSV file saving settings (see 3.1.2(Page 16)), the number of CH used for each measurement module, and the recording mode settings. Select a CF card with the optimum capacity based on the operating methods for recording and the recording period.

The following reference material shows the basic recording file size necessary for one day.
When a setting file is saved on the CF card, the necessary file size appears. (see 6.2.2 (page 242))

Note

- If there is less than two days free space on the card, recording cannot be performed. If there is not enough free space, use after replacing with a new CF card or delete unnecessary files.
- Particularly for CSV files, because the size of data changes depending on the recorded measurements, the size may differ largely from the file during actual operation and the numerical values shown here. Also, files saved to the CF card are done in MS-DOS format.
  Even when saving a small file, the size of the file is never smaller than this block size because the area is secured in MS-DOS format for each block for a certain settled size. Therefore, when all necessary file sizes are added, the size that the CF card actually uses increases.
- A binary file is always saved irrespective of the CSV file save settings.

(Reference material) [CF card file size]

File size

Read the file size corresponding to the measurement module settings you are using from the following table, and all numerical values added give the necessary capacity of the CF card for recording for one day as a system.
However, when the recording interval for each measurement module differs due to the CSV file save settings, the numerical value that is simply added differs greatly from the actual numerical value. The numerical value shown when a setting file is saved on the CF card gives a more accurate file size, so use this as the standard.
❖ 6.2.2 (page 242)

Note
Due to the settings for Model 2343, the file size fluctuates greatly, and so the following entries are omitted.
Check the numerical value shown when a setting file is saved on the CF card.
❖ 6.2.2 (page 242)

(1) For Models 2301 to 2305 (File size and units for one day: KB = 1,024 bytes, MB = 1,024 KB)

Condition: Using 2 channels

Recording interval	Instantaneous value only		Instantaneous value + MAX/MIN/AVE	
	Binary only	Binary + CSV	Binary only	Binary + CSV
1 second	707KB	3,070KB	–	–
2 second	370KB	1,551KB	1,382KB	4,842KB
5 second	167KB	640KB	572KB	1,956KB
10 second	100KB	336KB	302KB	994KB
15 second	77KB	235KB	212KB	674KB
20 second	66KB	184KB	167KB	513KB
30 second	55KB	134KB	122KB	353KB
1 min	43KB	83KB	77KB	193KB
2 min	38KB	58KB	55KB	113KB
5 min	34KB	43KB	41KB	64KB
10 min	33KB	37KB	37KB	48KB
15 min	33KB	36KB	35KB	43KB
20 min	33KB	35KB	34KB	40KB
30 min	32KB	34KB	34KB	38KB
1 hour	32KB	33KB	33KB	35KB

(2) For Model 2306 (File size and units for one day: KB = 1,024 bytes, MB = 1,024 KB)
Condition: Using 8 channels

Recording interval	Instantaneous value only		Instantaneous value + MAX/MIN/AVE	
	Binary only	Binary + CSV	Binary only	Binary + CSV
1 second	2,732KB	9,651KB	–	–
2 second	1,382KB	4,842KB	5,432KB	18MB
5 second	572KB	1,956KB	2,192KB	7,221KB
10 second	302KB	994KB	1,112KB	3,627KB
15 second	212KB	674KB	752KB	2,429KB
20 second	167KB	513KB	572KB	1,830KB
30 second	122KB	353KB	392KB	1,231KB
1 min	77KB	193KB	212KB	631KB
2 min	55KB	113KB	122KB	332KB
5 min	41KB	64KB	68KB	152KB
10 min	37KB	48KB	50KB	92KB
15 min	35KB	43KB	44KB	72KB
20 min	34KB	40KB	41KB	62KB
30 min	34KB	38KB	38KB	52KB
1 hour	33KB	35KB	35KB	42KB

(3) For Model 2341 (File size and units for one day: KB = 1,024 bytes, MB = 1,024 KB)
Condition: Using 2 channels

Recording interval	Instantaneous value only	
	Binary only	Binary + CSV
1 second	370KB	7,289KB
2 second	201KB	3,661KB
5 second	100KB	1,484KB
10 second	66KB	758KB
15 second	55KB	516KB
20 second	49KB	395KB
30 second	43KB	274KB
1 min	38KB	153KB
2 min	35KB	93KB
5 min	33KB	57KB
10 min	33KB	45KB
15 min	32KB	40KB
20 min	32KB	38KB
30 min	32KB	36KB
1 hour	32KB	34KB

(4) For Model 2331 (File size and units for one day: KB = 1,024 bytes, MB = 1,024 KB)

- Measurement line: Single-phase 2 lines (1 circuit)

Recording interval	Instantaneous value only		Instantaneous value + MAX/MIN/AVE	
	Binary only	Binary + CSV	Binary only	Binary + CSV
1 second	2,057KB	7,457KB	–	–
2 second	1,045KB	3,745KB	3,576KB	12MB
5 second	437KB	1,517KB	1,450KB	4,808KB
10 second	235KB	775KB	741KB	2,420KB
15 second	167KB	527KB	505KB	1,624KB
20 second	133KB	404KB	386KB	1,226KB
30 second	100KB	280KB	268KB	828KB
1 min	66KB	156KB	150KB	430KB
2 min	49KB	94KB	91KB	231KB
5 min	39KB	57KB	56KB	112KB
10 min	35KB	45KB	44KB	72KB
15 min	34KB	41KB	40KB	59KB
20 min	34KB	39KB	38KB	52KB
30 min	33KB	37KB	36KB	46KB
1 hour	33KB	34KB	34KB	39KB

- Measurement line: Single-phase 3 lines, or three phases circuit line (1 circuit)

Recording interval	Instantaneous value only		Instantaneous value + MAX/MIN/AVE	
	Binary only	Binary + CSV	Binary only	Binary + CSV
1 second	2,732KB	9,651KB	–	–
2 second	1,382KB	4,842KB	4,926KB	16MB
5 second	572KB	1,956KB	1,990KB	6,563KB
10 second	302KB	994KB	1,011KB	3,298KB
15 second	212KB	674KB	685KB	2,209KB
20 second	167KB	513KB	521KB	1,665KB
30 second	122KB	353KB	358KB	1,121KB
1 min	77KB	193KB	195KB	577KB
2 min	55KB	113KB	114KB	305KB
5 min	41KB	64KB	65KB	141KB
10 min	37KB	48KB	48KB	87KB
15 min	35KB	43KB	43KB	69KB
20 min	34KB	40KB	40KB	60KB
30 min	34KB	38KB	38KB	51KB
1 hour	33KB	35KB	35KB	41KB

- Measurement line: Three phases 4 lines (1 circuit)

Recording interval	Instantaneous value only		Instantaneous value + MAX/MIN/AVE	
	Binary only	Binary + CSV	Binary only	Binary + CSV
1 second	3,407KB	12MB	–	–
2 second	1,720KB	5,939KB	6,276KB	20MB
5 second	707KB	2,395KB	2,530KB	8,318KB
10 second	370KB	1,214KB	1,281KB	4,175KB
15 second	257KB	820KB	865KB	2,794KB
20 second	201KB	623KB	656KB	2,104KB
30 second	145KB	426KB	448KB	1,413KB
1 min	88KB	229KB	240KB	723KB
2 min	60KB	131KB	136KB	378KB
5 min	43KB	72KB	74KB	171KB
10 min	38KB	52KB	53KB	101KB
15 min	36KB	46KB	46KB	78KB
20 min	35KB	42KB	43KB	67KB
30 min	34KB	39KB	39KB	55KB
1 hour	33KB	36KB	36KB	44KB

(5) For Model 2332 (File size and units for one day: KB = 1,024 bytes, MB = 1,024 KB)

Conditions: Recording items voltage, current, effective power, reactive power, power factor, frequency, active energy

- Measurement line: Single-phase 2 lines (6 circuit)

Recording interval	Instantaneous value only		Instantaneous value + MAX/MIN/AVE	
	Binary only	Binary + CSV	Binary only	Binary + CSV
1 second	11MB	35MB	37MB	119MB
2 second	5,601KB	18MB	18MB	60MB
5 second	2,260KB	7,289KB	7,525KB	24MB
10 second	1,146KB	3,661KB	3,778KB	12MB
15 second	775KB	2,451KB	2,530KB	8,155KB
20 second	589KB	1,846KB	1,905KB	6,124KB
30 second	403KB	1,242KB	1,281KB	4,094KB
1 min	218KB	637KB	656KB	2,063KB
2 min	125KB	335KB	344KB	1,048KB
5 min	69KB	153KB	157KB	439KB
10 min	51KB	93KB	95KB	235KB
15 min	44KB	73KB	74KB	168KB
20 min	41KB	63KB	63KB	134KB
30 min	38KB	53KB	53KB	100KB
1 hour	35KB	42KB	43KB	66KB

- Measurement line: Single-phase 3 lines, or three phases circuit line (3 circuit)

Recording interval	Instantaneous value only		Instantaneous value + MAX/MIN/AVE	
	Binary only	Binary + CSV	Binary only	Binary + CSV
1 second	7,457KB	24MB	25MB	82MB
2 second	3,745KB	12MB	13MB	41MB
5 second	1,517KB	4,876KB	5,162KB	16MB
10 second	775KB	2,454KB	2,597KB	8,377KB
15 second	527KB	1,647KB	1,742KB	5,596KB
20 second	403KB	1,243KB	1,315KB	4,205KB
30 second	280KB	840KB	887KB	2,814KB
1 min	156KB	436KB	460KB	1,423KB
2 min	94KB	234KB	246KB	728KB
5 min	57KB	113KB	118KB	311KB
10 min	44KB	73KB	75KB	171KB
15 min	40KB	59KB	61KB	125KB
20 min	38KB	53KB	53KB	102KB
30 min	36KB	46KB	46KB	79KB
1 hour	34KB	39KB	39KB	56KB

(5) For Model 2321 (File size and units for one day: KB = 1,024 bytes, MB = 1,024 KB)

Conditions: Using 2 analog channels, and using 8 logic channels

- Recording items Inst/Mean/Peak/Bottom/RMS/p-p/Ap/CF

Recording interval	Instantaneous value only		Instantaneous value + MAX/MIN/AVE	
	Binary only	Binary + CSV	Binary only	Binary + CSV
1 second	6,107KB	25MB	–	–
2 second	3,070KB	12MB	11MB	38MB
5 second	1,247KB	5,061KB	4,487KB	15MB
10 second	640KB	2,547KB	2,260KB	7,812KB
15 second	437KB	1,709KB	1,517KB	5,219KB
20 second	336KB	1,290KB	1,146KB	3,922KB
30 second	235KB	871KB	775KB	2,626KB
1 min	133KB	451KB	403KB	1,329KB
2 min	83KB	242KB	218KB	681KB
5 min	52KB	116KB	106KB	292KB
10 min	42KB	74KB	69KB	162KB
15 min	39KB	60KB	57KB	119KB
20 min	37KB	53KB	51KB	97KB
30 min	35KB	46KB	44KB	76KB
1 hour	34KB	39KB	38KB	54KB

Period that can be recorded on a 1GB CF card (example)

The following examples describes the period that can be recorded when saving to a 1GB CF card for various system configurations.

(Example 1) Model 2306 (record only instantaneous values) ..... 1 (8 channel)

Recording interval	Without saving CSV		Saving CSV	
	Size (KB)	Period (days)	Size (KB)	Period (days)
1 second	2,732	383	12,383	84
2 second	1,382	758	6,224	168
5 second	572	1,832	2,528	414
10 second	302	3,471	1,296	808
30 second	122	8,588	475	2,206
60 second	77	13,601	270	3,886

(Example 2) Model 2306 (record only instantaneous values) ..... 5 (40 channel)

Recording interval	Without saving CSV		Saving CSV	
	Size (KB)	Period (days)	Size (KB)	Period (days)
1 second	13,660	76	61,916	16
2 second	6,910	151	31,119	33
5 second	2,860	366	12,641	82
10 second	1,510	694	6,482	161
30 second	610	1,717	2,376	441
60 second	385	2,720	1,349	777

(Example 3) Model 2306 (record instantaneous value + MAX/MIN/AVE)1 (8 channel)

Recording interval	Without saving CSV		Saving CSV	
	Size (KB)	Period (days)	Size (KB)	Period (days)
1 second	212	4,943	844	1,243
2 second	122	8,588	454	2,309
5 second	68	15,399	220	4,759
10 second	50	20,932	142	7,362
30 second	38	27,526	90	11,589
60 second	35	29,879	77	13,531

(Example 3) Model 2306 (record instantaneous value + MAX/MIN/AVE)5 (40 channel)

Recording interval	Without saving CSV		Saving CSV	
	Size (KB)	Period (days)	Size (KB)	Period (days)
1 second	1,060	988	4,218	248
2 second	610	1,717	2,270	461
5 second	340	3,079	1,102	951
10 second	250	4,186	712	1,472
30 second	190	5,505	452	2,317
60 second	175	5,975	387	2,706

(Example 5) Model 2332 (record three phase circuit 3 lines, 3 circuits, instantaneous value + MAX/MIN/AVE).....1 (3 circuits)

Recording interval	Without saving CSV		Saving CSV	
	Size (KB)	Period (days)	Size (KB)	Period (days)
1 second	460	2,281	1,883	556
2 second	246	4,265	974	1,076
5 second	118	8,916	428	2,448
10 second	75	14,010	246	4,256
30 second	46	22,626	125	8,380
60 second	39	26,736	95	11,059

(Example 6) Model 2332 (record three phase circuit 3 lines, 3 circuits, instantaneous value + MAX/MIN/AVE).....5 (15 circuits)

Recording interval	Without saving CSV		Saving CSV	
	Size (KB)	Period (days)	Size (KB)	Period (days)
1 second	2,298	456	9,414	111
2 second	1,229	853	4,868	215
5 second	588	1,783	2,141	489
10 second	374	2,802	1,232	851
30 second	232	4,525	626	1,676
60 second	196	5,347	474	2,211

Specifications 7

Basic specifications

Product medium	CD-R(1)
Supplied accessories	Instruction manual (1)
Software Configuration	Smart Site Utility, Smart Site Viewer, Smart Site Wave Viewer

Computer System Requirements

Hardware	CPU 1 GHz or higher
Operating system	Windows 2000/XP/Vista/7
Memory	512 MB or more
Display	Resolution 1024 x 768 dots, 65536 colors or more
Hard disk	At least 30 MB of free space (for software installation) When .NET Framework 2.0 is not installed, approximately 500 MB alternates are necessary Alternates are necessary for saving recording data (500 MB or more recommended)
Interfaces	COM port, LAN
Application	Microsoft Excel 2000/2002/2003/2007/2010 (necessary when using the report editing function)

Function specifications

LAN communication specifications	1. Normal operation Uses a proprietary TCP protocol. Connects to port 50000 or 50002 of the communications module. 2. Sending settings from the MAP editor Broadcasts data using a proprietary UDP protocol. The computer opens port 49999, and the communications module sends to port 50001.
RS-232C communication specifications (COM port)	1. Uses a proprietary protocol. 2. Communication settings Communication speed: 57,600 bps Parity: None Data bits: 8 Stop bits: 1
Module list creation and switching function	Save communication and measurement module configuration as module list (multiple lists allowed)
Communication module setup functions	1. Communication module setup (wireless, wired, LAN) 2. Auto recognition of connected measurement modules 3. Measurement and display of wireless signal condition

Function specifications

Measurement module set-up functions (Smart Site Utility)	1. Settings particular to measurement modules 2. Measurement item settings (setting comments, number of digits to display, and scaling) 3. Recording settings (recording mode and interval) 4. Alarm settings (alarm in module and alarm in computer)
Monitor functions	Measurement date is acquired from the measurement module and displayed 1. Monitoring window (multiple measurement items are displayed in each module) 2. Measurement label (single measurement item is displayed) 3. Real-time trend graph (max. 16 measurement items) 4. Layout creation function You can place layout parts and a background image and create a layout
Alarm functions	You can perform alarm evaluations for measurements by the monitoring function 1. Display alarm logs Display occurrence/release information, pop up display when alarm occurs 2. Alarm sound occurs When an alarm occurs, a warning sound (sound file) is emitted from computer 3. Alarm signal output for 2342 Output Module When an alarm occurs, an alarm signal is output to optional Model 2342 4. Waveform display Waveforms can be displayed from the trigger alarm logs (Model 2321 waveform data)
Recorded function	Collect recorded data and alarm information from the measurement module, and save it to a file. Recording modes : Instantaneous value/MAX,MIN,AVE/Instantaneous value, MAX,MIN,AVE Recording interval settings: 1/2/5/10/15/20/30 s, 1/2/5/10/15/20/30/60 m File format: Each measurement module is saved as a CSV file every day 1. Start/Stop recording for measurement module 2. Manual acquistion and automatic acquistion function 3. Collects automatically from around the module list
Recorded data viewing function	Recorded data is displayed as a "Table", a "Graph", and an "Alarm". 1. Graph functions Auto setting, zoom selected range, time axis, Y axis setting, CH setting, grid, cursor interval processing,Graph function, Alarm position display, printing, and copying to clipboard 2. Table function Output to CSV file, Paste to Microsoft Excel 3. Alarm function Waveform data display, links to the alarm position of the graph 4. View function You can save and restore the display method as a view 5. Comparison function
Report creation function	Create a report file in Microsoft Excel format from the format file and the recorded data created beforehand 1. Manual report creation function 2. Automatic report creation function 3. Format file creation function

Function specifications

Measured value calculation function (PC calculation module)	Measured values from different measurement modules can be calculated on a computer and displayed as monitor values or saved as recorded data. 1. Calculations can be configured to use either the four basic arithmetic operations or dew point calculation.

Basic specifications

Option	1. 9768-01 Server/Client Option 2. 9768-02 LAN Modle Mail Option 3. 9768-03 Modbus Server Option

9768-01 Server/ Client Option

8

Server/ Client functions to set the server to Smart Site Utility, and the client to Smart Site Client are available as an option. With this option, users can monitor the monitor value of the 2300 module connected to the server from another computer.

Up to 10 computers can be monitored simultaneously.

The following software are available in the CD-R of the 9768-01 Server/Client option.

Server option software

A software to add a server function to the Smart Site Utility.

NOTE

This software can only be installed in a computer installed with the 9768 Smart Site Utiliy Pro. Install the 9768 Smart Site Utiliy Pro first.

Client software "Smart Site Client"

A software to communicate with the server to carry out measurement value monitoring. It also allows record files to be read. The following two softwares will be installed when Smart Site Client is installed.

Smart Site Client : A monitor software to display monitor values acquired by the Smart Site Utility (Server). Up to 10 computers can be monitored simultaneously.

The Smart Site Client is a software imposing restrictions on the functions of the Smart Site Utility. The operating methods for executable functions are exactly the same as the Smart Site Utility.
Except for module settings for the 2300, individual settings for each of the function are possible for every client.

Smart Site Viewer : A software to read record data acquired by the Smart Site Utility.

The Smart Site Viewer equips the same functions as the software for the 9768 SMART SITE UTILITY PRO.
For details on how to use it, refer to 3.7.1 "Reading the recorded data" (page 111).

8.1 Install the Server Option software

NOTE

The 9768 Smart Site Utiliy Pro needs to be installed in the computer to be installed. Please install the 9768 Smart Site Utiliy Pro first.

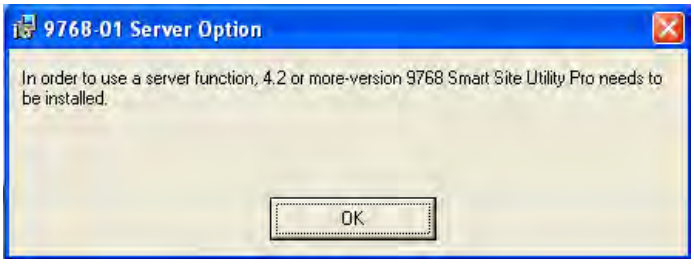
❖ 1.2 "Installation" (page 4)

Procedure

1. **Insert the 9768-01 Server/ Client Option CD-R into the computer, and open up setup. exe in the CD-R's Server folder.**

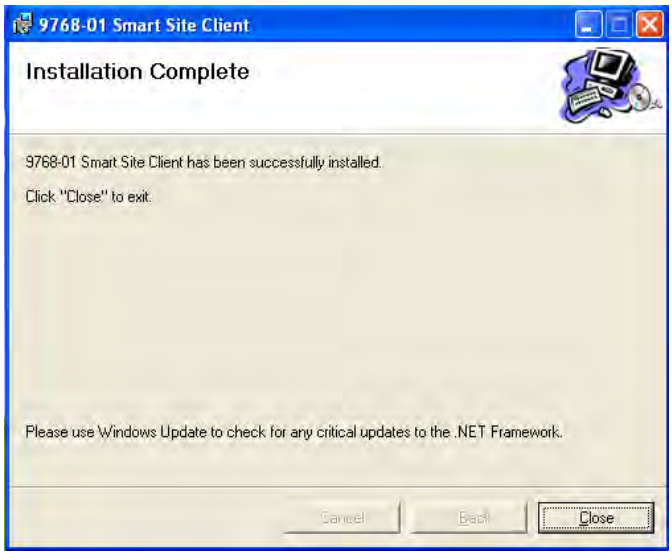
   Run installation as an administrator.

2. **The following screen will appear when the 9768 Smart Site Utiliy Pro is not installed in the computer. Press [OK] to end the installation.**



   Once the 9768 Smart Site Utiliy Pro has been installed, open up setup.exe again.

3. **Follow the installation steps on the screen until the following screen to show that installation is complete appears.**



8.2 Install the Client Software Smart Site Client

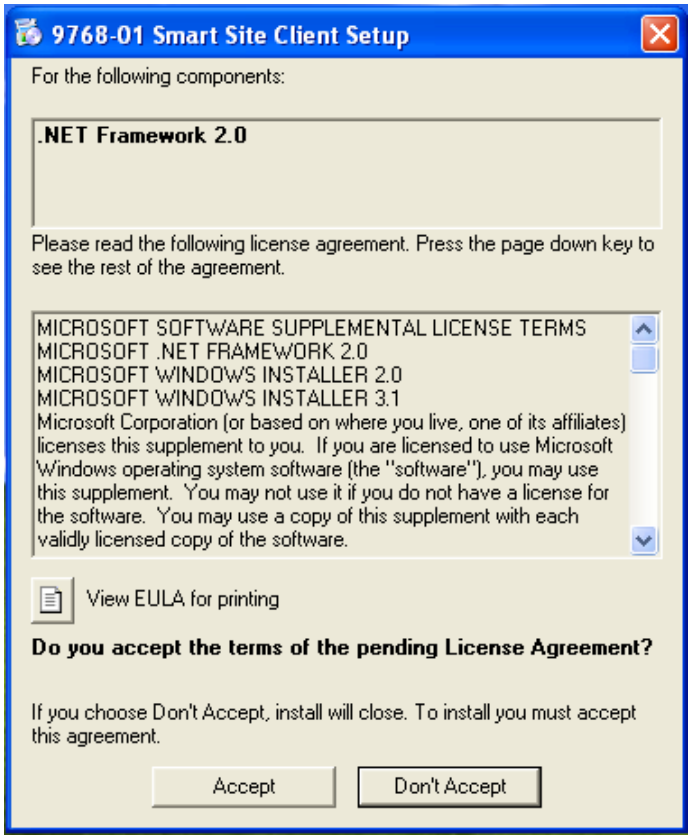
Procedure

1. **Insert the 9768-01 Server/Client Option CD-R into the computer, and open up setup.exe in the CD-R's Client folder.**

Run installation as an administrator.

2. **If .NET Framework 2.0 is not installed on the computer, the following screen appears.**

❖ If .NET Framework 2.0 is already installed, proceed to 5. (page 275).

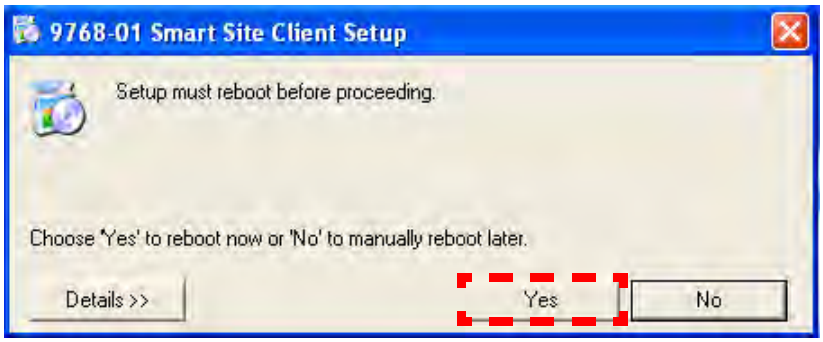


3. **Press [Accept] to install the .NET Framework 2.0.**

4. **When the installation of .NET Framework 2.0 is complete, the Smart Site Client installation screen will appear.**

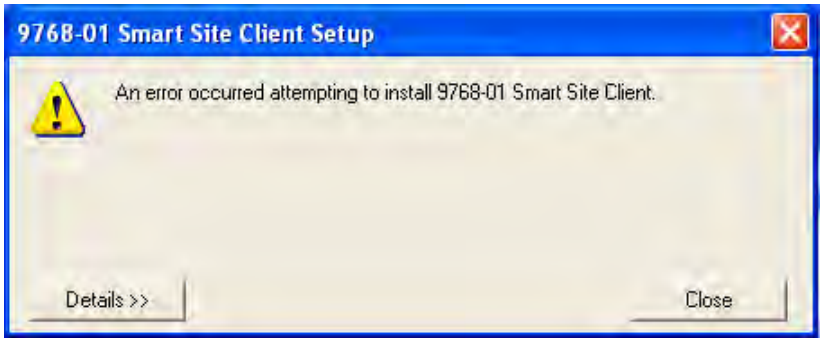
❖ Proceed to 5. (page 275).

When the Smart Site Client installation screen is not displayed but the following screen is displayed, press [Yes] to restart the computer.



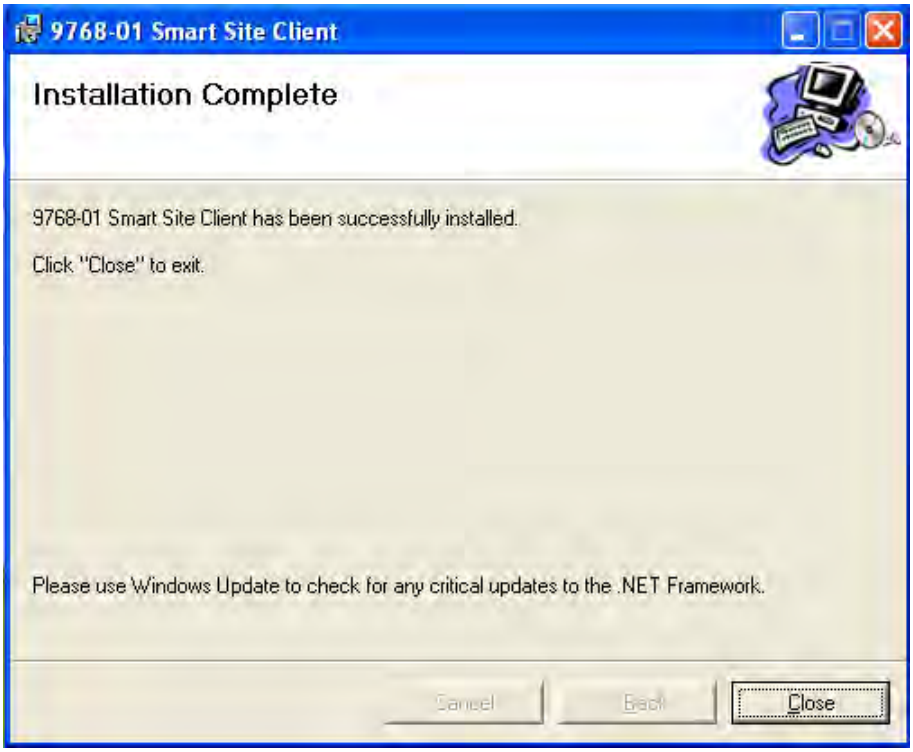
After restarting, installation continues again.

When the following message appears and installation does not resume, open up setup.exe again.
When setup.exe is opened up again, the Smart Site Client installation screen will appear.



5. **Install the Smart Site Client.**
Press [Next] and follow the steps on the screen to carry out the installation.

6. **When the following screen appears, installation is complete.**



8.3 Construct the Monitoring System

A monitoring system which uses the server/ client function can be constructed.

Set the computer on the server side (Smart Site Utility)

(1) Carry out all system construction to allow communication and measurement with the 2300 module using the Smart Site Utility on the server side computer.
(2) In order to carry out measurement value monitoring using the client, start the measurement value monitoring with the Smart Site Utility on the server side.
(3) To carry out setting on the client side, the IP address of the computer on the server side or the computer name (name on the network) is required. Please check the IP address or the computer name.

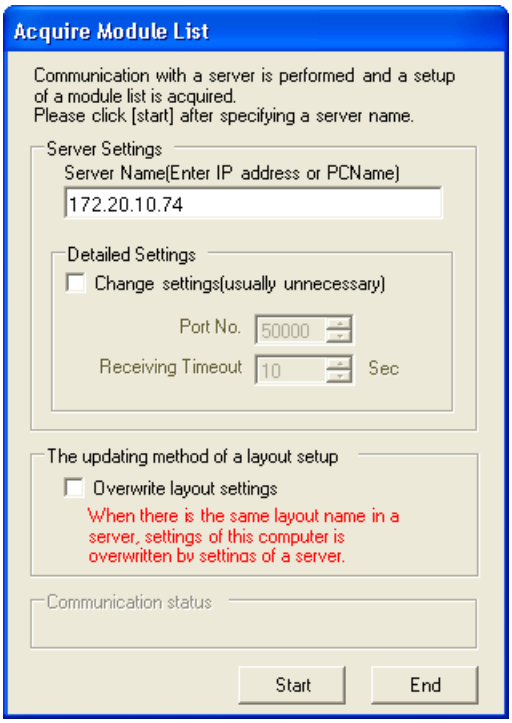
Set the computer on the client side (Smart Site Client)

In order to carry out the measurement value monitoring using the Smart Site Client, it is necessary to communicate with the server's Smart Site Utility and acquire the module list.

Procedure

1. **Start up the Smart Site Client.**
Click [All programs] – [HIOKI] – [Smart Site Client] – [Smart Site Client] on the Start menu.

2. **The [Get module list] screen automatically appears after the Smart Site Client is installed and started up for the first time.**

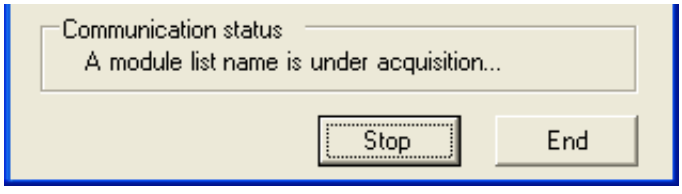


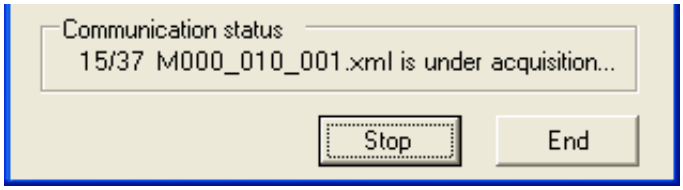
Setting items		Contents
Server name		• Input the IP address of the computer where the 9768-01 Server/Client Option has been installed or the computer name.
Detailed settings	**Port No.**	• Set the port number to be used in communication with the server. 5000 port is normally used.
	Receiving Timeout	• Set the receiving timeout time for communication with the server. • Adjust the time when communication (receiving) takes a longer time due to restrictions on the path of communication with the server.
Overwrite layout settings		• Layout information is also retrieved when the module list setting is retrieved from the server. • When [Overwrite layout settings] is enabled (when ❑ is checked), the layout of the client side will be overwritten by the layout of the server side if two files of the same name appear on both the server/client computers. *In particular, in cases when the module structure on the server side is changed, etc., measurement value monitoring may not be available with the layout setting on the client side. In this case, enable the function [Overwrite layout settings].

3. **Under [Server name], set the IP address of the server computer or the computer name (name on the network).**

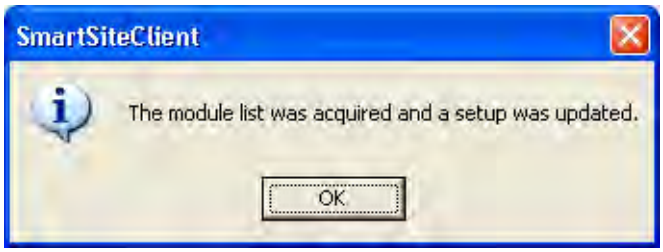
4. **When it is necessary to change the setting of the server's communication port, enable [Detailed Settings] (when ❑ is checked)and set the port number and receiving timeout time.**

5. **Press [Start] to communicate with the server and start acquiring the module list (the server settings will be saved automatically).**
During communication, the following communication status will be displayed.



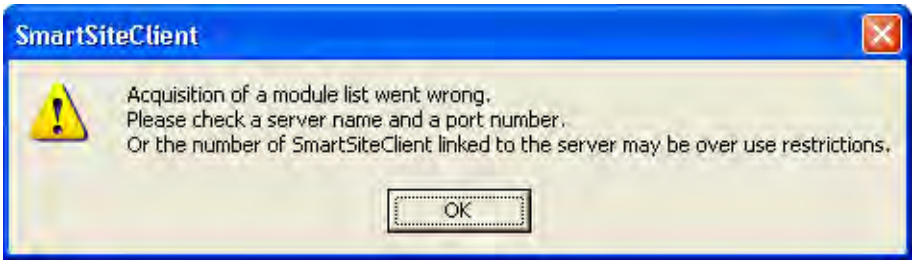


6. When acquisition of the module list is completed, the unit will automatically change to a module list which is the same as the server's list and display the following message. Click [OK] to return to the main screen.



The following messages will appear when communication with the server has failed. Check the following items and restart again.

- IP address of the server (computer name), port number
- Is the Smart Site Utility on the server computer opened?
- Is the server function addition software of the 9768-01 Server/Client Option installed on the server computer?



7. Execute measurement value monitoring.

❖ The steps for executing the measurement value monitoring are the same as the Smart Site Utility.
Refer to 3.3 "Monitoring Measurement Values" (page 80).

8.4 Read record data in multiple computers

The record data acquired with the Smart Site Utility can be read in multiple computers.

Procedure

1. **Set the upper folder where the record data is saved in the server computer to a shared folder on the network.**

2. **Copy the [Record file (files with extension .hrp)] and [Record folder] from the shared folder on the network to the hard disk of the computer on the client side.**

3. **Open up the copied record files with the Smart Site Viewer to read the record data.**

Record files in the shared folder can also be directly opened with the Smart Site Viewer. Reading the files in this way may take time, however, depending on the size of the record file and the network environment. Therefore, it is recommended that you copy the files to the computer on the client side before reading and processing them.

8.5 Refresh the settings of the module list

When the settings for the module list on the server side has been changed, follow the steps below to refresh the settings of the module list.

Procedure

1. **Click [Tools] – [Client] – [Download Module list] on the menu to open up the [Acquire Module list] screen.**

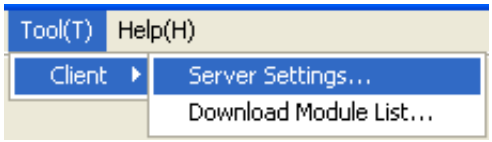
2. **Click [Start] to acquire the current module list from the server.**

8.6 Refresh the settings (IP address, port number) on the server computer

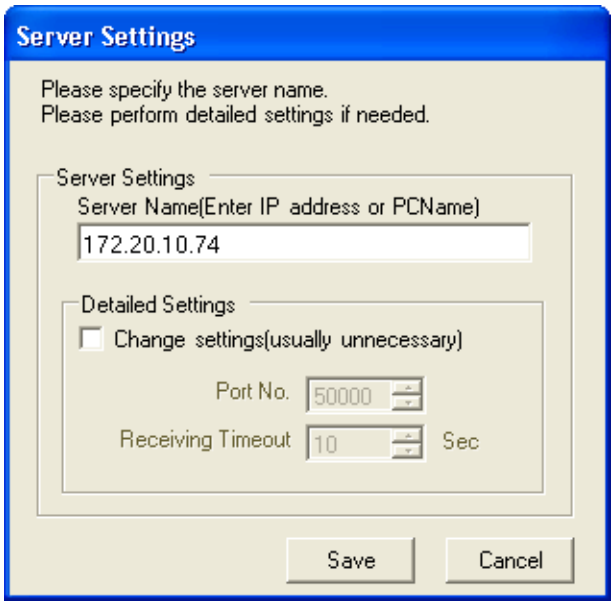
When the IP address (or computer name) of the computer on the server side has changed after operation has started, follow the steps below to renew the settings.

Procedure

1. **Click [Tools] – [Client] – [Server settings] to open up the [Server settings] screen.**



2. **Carry out the necessary server settings then click [Save].**



8.7 Specifications

Basic specifications

Product medium	CD-R(1)
Supplied accessories	Instruction manual (1)
Software Configuration	A software to add a server function to the Smart Site Utility. Smart Site Client, Smart Site Viewer, Smart Site Wave Viewer

Computer System Requirements

Hardware	CPU 1 GHz or higher
Operating system	Windows 2000/XP/Vista/7 .NET Framework 2.0 Internet Explorer 5.01 or more
Memory	512MB or more
Display	Resolution 1024 x 768 dots, 65536 colors or more
Hard disk	At least 30 MB of free space (for software installation) When .NET Framework 2.0 is not installed, approximately 500 MB alternates are necessary Alternates are necessary for saving recording data (500 MB or more recommended)
Interfaces	COM port, LAN
Application	9768 Smart Site Utility Pro 4.2 or more (Necessary when using server option) Microsoft Excel 2000/2002/2003/2007/2010 (necessary when using the report making function)

Function specifications

1.Server option software

Add server functions to the 9768 Smart Site Utility Pro.

Server Functions	1. Allows the measurement value monitoring to be carried out from multiple computers with the client software, Smart Site Client. 2. Allows up to 10 client software connections. 3. Measurement value monitoring which can be provided to the client software is only applicable with the measurement module registered in the module list carrying out the measurement value monitoring with the server computer. 4. Allows the information of the module list currently in use to be provided to the client software.

2.Client software

- Smart Site Client specifications

Monitor functions	Acquire and display the measurement value of the measurement module from the 9768 Smart Site Utility Pro with additional server functions 1. Monitor window (displays multiple measurement items in module units) 2. Measurement value labels (displays single measurement item) 3. Real time trend graph (up to 16 measurement items) 4. Layout creation function Creates multiple layouts of layout parts and layout with background pictures
Alarm function	Carry out alarm evaluations for measurement values with the monitor function 1. Display alarm logs Displays information of activation and removal and pops up to display alarm activation 2. Alarm sound activation Activates the alert sound (sound file) from the computer when the alarm is activated 3. Standard value for alarm evaluations cannot be changed
Information of the module list can be acquired from the 9768 Smart Site Utility Pro with additional server functions.	

- Smart Site Viewer specifications

Recorded data browsing function	Displays recorded data in the form of tables, graphs, and alarms. 1. Graphing functions Display of alarm locations, automatic configuration, enlargement of selected range, time axis and Y-axis settings, channel settings, channel alarm settings, grid settings, cursor-defined calculations, printing, copying to clipboard 2. Display functions Output to CSV file, paste into Microsoft Excel 3. Alarm functions Display of waveform data, link to alarm locations on graph 4. View functions Save and restore display methods as views
Report creation functions	A Microsoft Excel report file can be created from a previously created format file and recorded data. 1. Manual report creation function 2. Automatic report creation function

9768-02 LAN Module Mail Option 9

You can be notified of evaluation results for alarms for connected measurement modules by two means using 2353 LAN Module or 2354 Memory Module.

- Send e-mail to an optional address
- Control network alarm lights "DN-1000 series" made by the ISA Co., Ltd.

Note
This software is only applicable to communication module 2353 LAN Module or 2354 Memory Module. This cannot be used with 2353 + 2351 systems when the Model 2353 COM ID is set to "00".

9.1 Install LAN Module Mail Option

Note
You need to install 9768 Smart Site Utility Pro on the target computer.
First, install 9768 Smart Site Utility Pro.
❖ 1.2 "Installation" (page 4)

Procedure

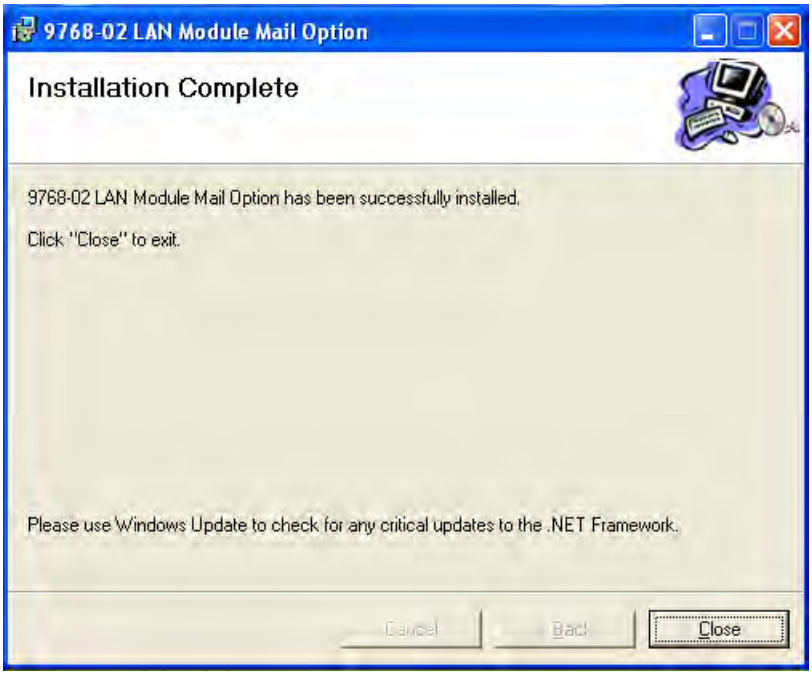
1. **Insert the 9768-02 LAN Module E-mail Option CD-R in the computer, and run setup.exe on the CD-R.**

   Run installation as an administrator.

2. **If 9768 Smart Site Utility Pro is not installed on the computer, the following dialog box opens. Click [OK] to finish the installation.**

After installing 9768 Smart Site Utility Pro, run setup.exe again.

3. **Follow the steps on the screen to install, and when the screen below is displayed, installation is complete.**



9.2 Set conditions for alarm evaluation for the measurement module

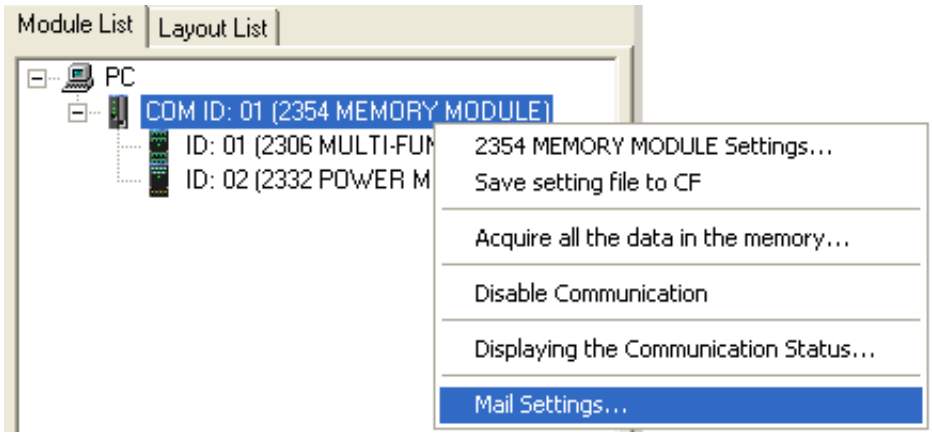
Set the conditions for alarm evaluation for measurement modules before setting the alarm e-mail.
❖ 5.3 "Function to evaluate alarms by module" (page 217)

Note
This is unnecessary for 2341 Input Module and 2342 Output Module.

9.3 Set alarm notification

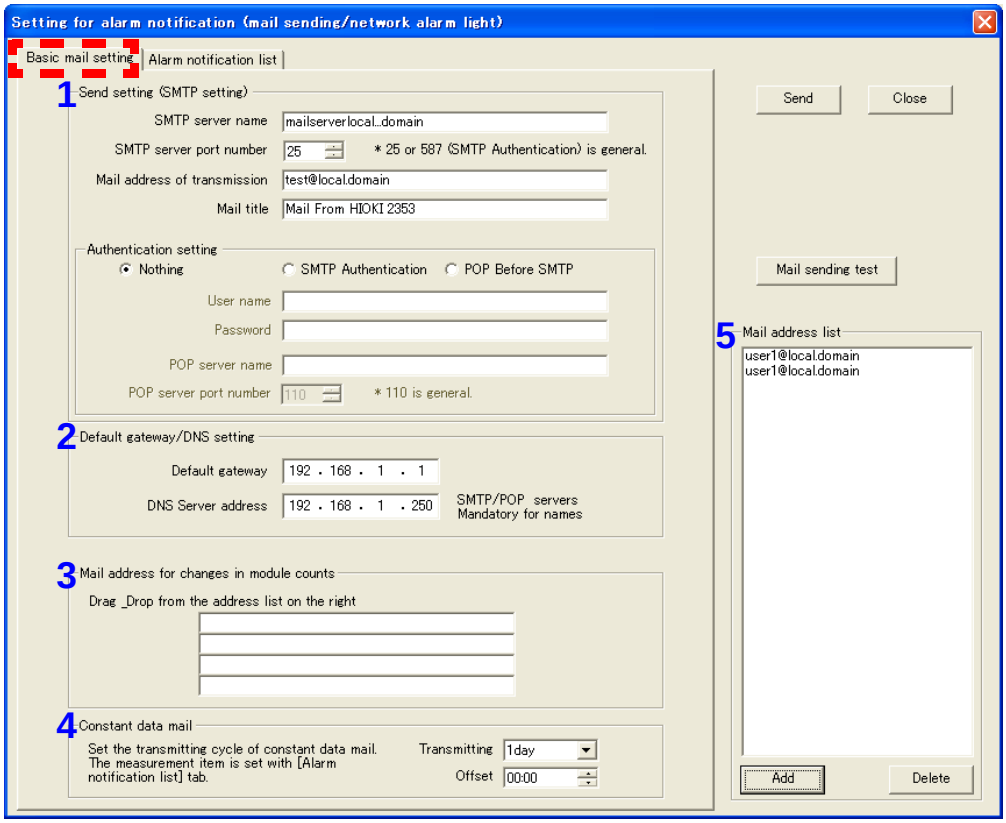
Procedure

1. **Right-click [2353 LAN MODULE] or [2354 MEMORY MODULE] from the module list, and then click [Mail Settings]. The Settings screen opens.**



2. **Perform basic e-mail settings when using the E-mail Sending function. Click the [Mail Basic Setting] tab.**

Note
Not necessary when only using the network alarm lights.



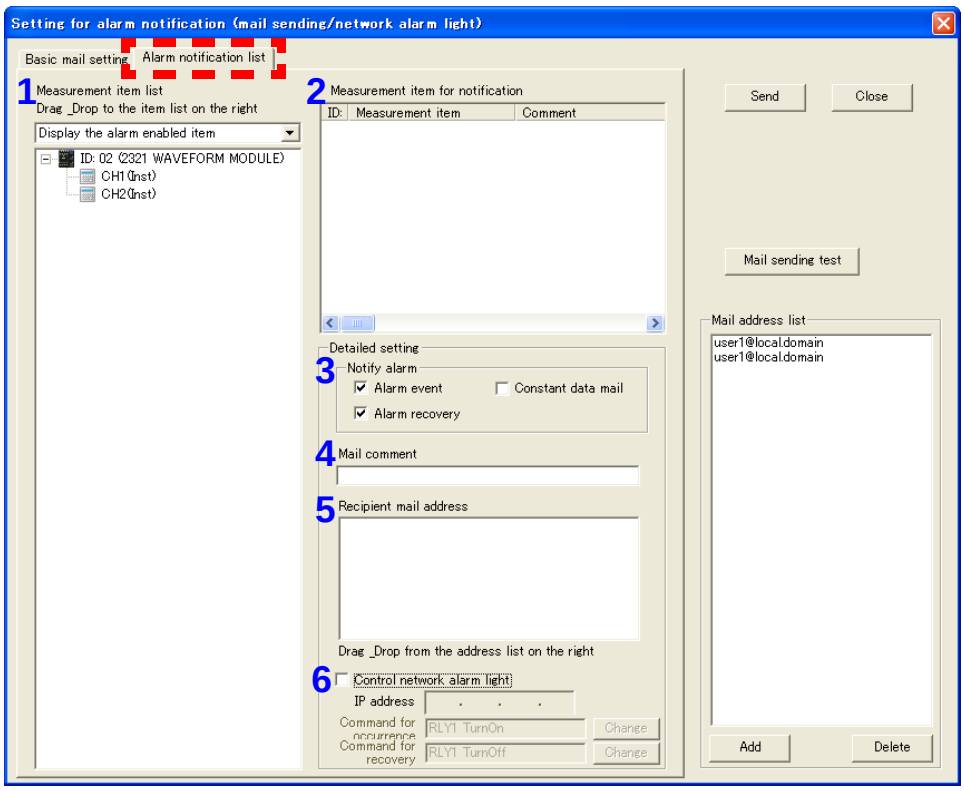
Set the send mail server etc. Configures these settings to accommodate the network to which the 2353 (or 2354) is connected.
If you do not know the details, contact your network administrator.

Setting Content			Description
1	**Send setting (SMTP setting)**	**SMTP server name**	Input the host name (+ domain name) or IP address of SMTP server.
		SMTP server port number	Set the SMTP server port number.
		Mail address of transmission	Input the Mail address of transmission.
		Mail title	Input the Mail title.
		Authentication setting	• Nothing: Select it, if there is no authentication. • SMTP Authentication: Input the user-name and the password for the attestation. • POP Before SMTP: Input the [User name], [Password], [POP mail server name] and [POP server port number]
		User name	Input the mail account of POP server.
		Password	Input the password of POP server.
		POP server name	Input the host name (+ domain name) or IP address of POP server.
		POP server port number	Set the port number of POP server.
2	**Default gateway/ DNS setting**	**Default gateway**	Input the default gateway address.
		DNS server address	Input the DNS server address.
3	**Mail address for changes in module counts** *An mail will be sent if a measurement module is removed or added, or if the communication module is unable to recognize a module due to a hardware failure.		• When number of modules changes, send mail to the registered address. • Up to 4 addresses can be registered. • When registering, drag and drop the address from [Mail address list]. • When you want to delete an address, select the address and then click [Delete].

Setting Content			Description
4	**Constant data mail** *The monitor value at set interval is regularly transmitted with mail.	**Transmitting**	Set the transmission interval. Sends data mails at the set interval. (Select from 1/5/10/15/20/30 minutes, 1/2/4/6/12 hours, or 1 day.)
		Offset	Sets the time at which to send data mails. This setting is only valid when the interval is set to 1/2/4/6/12 hours or 1 day. Examples • When the transmission interval is set to 1 day, setting this parameter to [10:00] will cause data mails to be sent at 10:00 every day. • When the transmission interval is set to 2 hours, setting this parameter to [00:30] will cause data mails to be sent at 2:30, 4:30, 6:30, etc.
5	**Mail address list**		• Displays a list of destination addresses. Up to 20 addresses can be registered. • Click [Add], input address and then click [OK].  • When you want to delete an address, select the address and then click [Delete].

3.

Mail notification setting of each measurement items. push the [Alarm notification list] tab.



Setting Content			Description
1	**Measurement item list**		• Display the alarm enabled item: Displays the items for which alarm evaluation conditions have been set as described in 5.3 (page 217). Measurement items that are unused or for which the alarm setting is OFF are not shown. • Display all item : All measurement items are displayed. Unused measurement items are not shown.
2	**Measurement item for notification**		• Drag and drop items you wish to control, for example email transmission or the network warning light, from the [Measurement Items List]. • Up to 80 items can be registered.
3	**Notify alarm** *Set the condition of sending mail and controlling the network warning light.		• [Alarm event] : The alarm generation is notified. • [Alarm recovery] : The alarm recovery is notified. • [Constant data mail] : Constant data mail is transmitted.
4	**Mail comment**		• Up to 20 characters can be inputs.
5	**Recipient mail address**		• Drag and Drop the address from [Mail address list]. • Up to 20 addresses can be registered.
6	**Control network alarm light**	Check it when you control the light.	
		IP address	Set the IP address of network warning light.
		Command	• It is necessary to select [Alarm event] and [Alarm recovery] in [Notify alarm]. • An initial value of the command is as follows. [RLY1 TurnOn] : Red LED is turned on when the alarm generated. [RLY1 TurnOff] : Red LED is turned off when the alarm recovery. • When you want to change a command, click the [Change] button and then input the command.

4. Click the [Send] button to send the settings to the 2353 LAN Module (or the 2354 Memory Module).

- It may take some time to complete sending. Please wait until "Settings have been sent" is displayed.
- If you click the [Close] button, the Settings screen closes without saving the settings.

5. Click "Mail seinding test" to check if the alarm e-mail was sent correctly. Perform this test after sending the settings by following the procedure in step 4.

- When executing the test, a test e-mail can be sent to an optional e-mail address.
- When settings are correct, the message "LAN module connected to mail server successfully." appears, and the following e-mail is sent.
  Subject: Model 2300 test e-mail
  Message: Model 2300 test e-mail by Model 2353
  For the memory module, the message "Memory module connected to mail server successfully." appears, and the following e-mail is sent.
  Subject: Model 2300 test e-mail
  Message: Model 2300 test e-mail by Model 2354

9.4 Checking E-mail for Alarm Evaluation Results

Check the content of the alarm evaluation result e-mail, and check the monitoring system status.

Checking Alarm Event and Release E-mail

The respective e-mails sent when an alarm is generated and then released when the E-mail subject is "Alarm e-mail", the e-mail comment is "Temperature 1", COMID:53, and the upper limit for MODULE ID: 2 for CH1 of 2302 is set to "33°C" and monitored.

(Example)

Subject: Alarm e-mail
Message: 2353 LAN Module

Data and time: 2005/09/26 11:37:30
Message: Temperature 1
ID model: 53.02 2302
Alarm Summary: Alarm occurred
Alarm Details: Upper limit
Parameter: CH1
Threshold: +33.0000 °C
Current position +33.5000°C

Alarm occurred e-mail

Subject: Alarm e-mail
Message: 2353 LAN Module

Data and time: 2005/09/26 11:40:25
Message: Temperature 1
ID model: 53.02 2302
Alarm Summary: Alarm released
Alarm Details: Upper limit
Parameter: CH1
Threshold: +33.0000 °C
Current position +33.5000°C

Alarm released e-mail

Checking E-mail when the Number of Modules Changes

The e-mail when a change occurs such as when there is a power failure to the module, or when the module base is disconnected.

(Example)

Subject: Alarm e-mail
Message: 2353 LAN Module

Data and time: 2005/09/26 11:55:13
Message: Temperature 1
ID model: 53.02 2302
Status: Added

Subject: Alarm e-mail
Message: 2353 LAN Module

Module added e-mail

Subject: Alarm e-mail
Message: 2353 LAN Module

Data and time: 2005/09/26 11:53:30
Message: Temperature 1
ID model: 53.02 2302
Status: Deleted

Subject: Alarm e-mail
Message: 2353 LAN Module

Module deleted e-mail

9.5 Setting the Network Alarm Light for the DN-1000 Series

Network alarm light settings are enabled when only the "IP address" and "Subnet mask" are set from their default factory settings.
For details, see the manual for the network alarm lights.

Note
Although you can use the other functions, do not change the following two points.
(1) Command access setting for the command password
Use when the setting is invalid.
(2) Command access setting for the user name is "root"
For 2353 LAN Module (or 2354 Memory Module), logon with the user name "root".

9.6 Other Important Points

Be sure to note the following points when receiving alarm evaluation result notifications by e-mail or network alarm light.

(1) Regarding the interval between monitoring and sending time

- Alarm event/release is monitored every second, and you are notified when there is a change in the alarm status.
- E-mails for abnormalities in ranges are monitored and sent at the recording intervals for each module. E-mails when the number of modules changes are monitored and sent every second regardless of the recording interval for each module.

(2) Regarding starting and stopping alarm notifications

- When [Start recording] is executed, alarm notification is enabled.
- Alarm evaluations for the module are stopped when "Stop recording" is executed, and neither mail sending nor alarm lights are controlled. When [Start recording] is executed again, alarm evaluation is restarted.
- E-mails will be sent, when the number of modules changes, even while it is not recording.

(3) Regarding restarting the measurement module when alarm notification is set

When alarm notification settings are sent, the 2353 LAN Module (or the 2354 Memory Module) and the measurement module are restarted. When sending settings while "recording", data is not recorded for the few seconds during sending.

(4) Regarding times when e-mail is not sent normally

Check the following content when e-mail is not sent normally.

- When a router, or a gateway, etc. are present between "2353 LAN Module (or 2354 Memory Module) and the mail server", they cannot communicate unless 2353 LAN Module (or 2354 Memory Module) are set as the "Default gateway".
- Check that the network address etc. for Mail Settings are set correctly.
  The network address etc. differ depending on the network used. For details regarding the settings, contact your network administrator.
- Depending on the type of SMTP server, there are those which require authentication before sending.
  In that case, you need to set "POP Before SMTP". (Does not support APOP)
- For in-house networks, there may be various security restrictions in place.

Examples	Points to Check
Cannot connect to the server even though the mail server name is correct	• Are there restrictions in place for accessing the mail server? • Restrictions may be applied to DNS name resolution. Set the SMTP/POP server directly by IP address.
Cannot send to external addresses, but can send to in-house addresses	• Restrictions may be applied to mail sending. Contact your network administrator.

9.7 Specifications

Basic specifications

Product medium	CD-R(1)
Supplied accessories	Instruction manual (1)
Software Configuration	LAN module mail (or 2354 Memory Module) additional function software

Computer System Requirements

Hardware	CPU 1 GHz or higher
Operating system	Windows 2000/XP/Vista/7
Memory	512 MB or more
Display	Resolution 1024 x 768 dots, 65536 colors or more
Hard disk	At least 30 MB of free space (for software installation) When .NET Framework 2.0 is not installed, approximately 500 MB alternates are necessary Alternates are necessary for saving recording data (500 MB or more recommended)
Interfaces	COM port, LAN
Application	Microsoft Excel (necessary when using the report editing function)

Function specifications

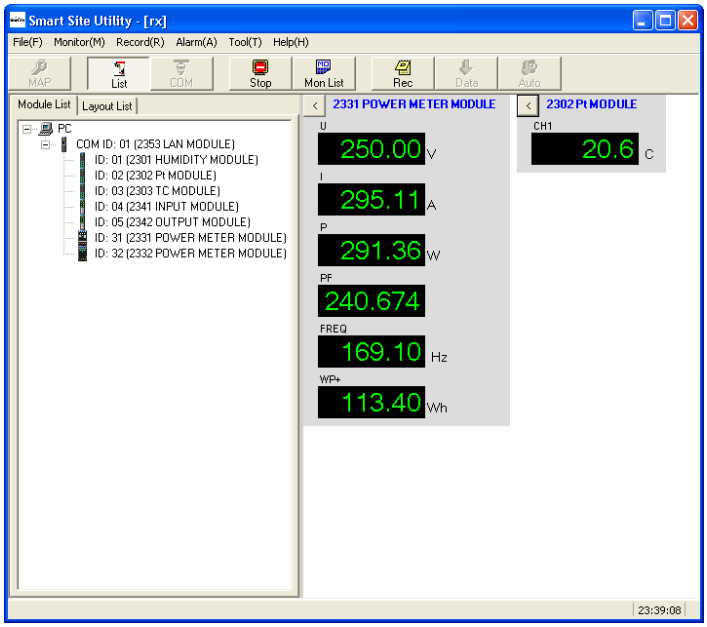
When 2353 LAN Module (or 2354 Memory Module) setting functions for an e-mail sending function are added to 9768 Smart Site Utility Pro, the following functions are enabled in the LAN module (or memory module).
* For the 2353 LAN module, the firmware version in the main unit must be 2.35 or later.

E-mail sending function	1. E-mail destination address • Up to 20 e-mail addresses can be registered • Number of e-mail addresses that can be sent to one time: You can send to up to four e-mail addresses from among the registered addresses • Number of characters that can be set in an address: Up to 50 single-byte characters 2. E-mail sending trigger When the following event occurs, mail sending can be performed in the measurement module connected to 2353 LAN Module (or 2354 Memory Module) with CAN BUS • When the number of measurement modules changes (deleted and added) • In measurement items for measurement modules when an alarm status occurs and is released by alarm evaluation * For one 2353 LAN Module, up to 80 measurement items can be registered as monitoring targets for mail sending 3. Comment Number of characters that can be set in a comment: Up to 20 characters 4. Supported protocols SMTP, POP Before SMTP 5. Send test mail Send a test mail for 9768 SmarteSite Utility Por operations
Network alarm light control	When an alarm occurs/is released, an optional command can be sent to the network alarm lights for the measurement item set as a monitoring target by using the mail sending function

9768-03 Modbus server Option

10

The monitor data of the Smart Site Utility can be acquired with Modbus communication via the Modbus server.
Refer to technical manuals on Modbus protocol for details.

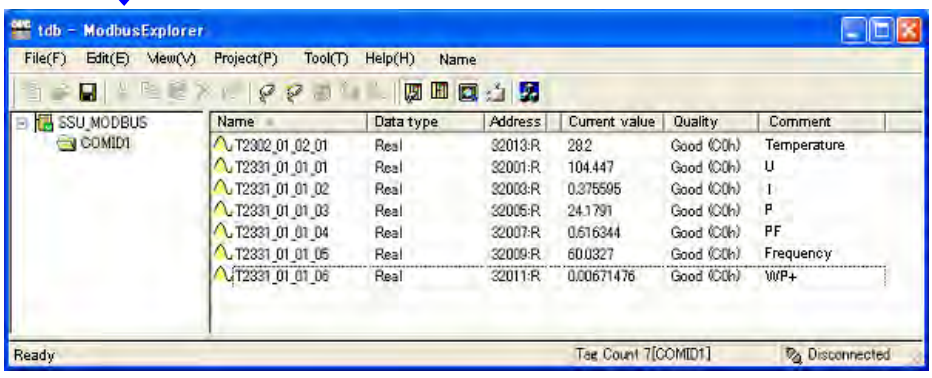


Smart Site Utility

⇩

Modbus TCP

⇩



(E.g.) External application: Takebishi Corp.'s Device Xplorer

10.1 Install the Modbus server option

NOTE

The 9768 Smart Site Utiliy Pro needs to be installed in the computer to be installed. Please install the 9768 Smart Site Utiliy Pro first.

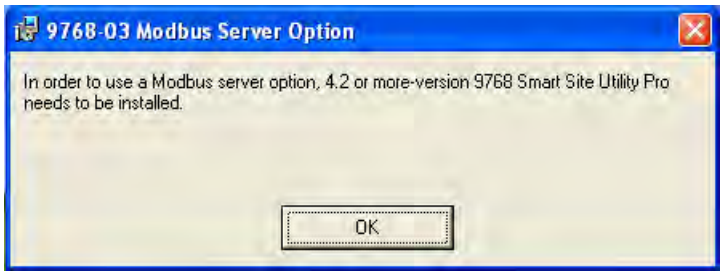
❖ 1.2 "Installation" (page 4)

Procedure

1. **Insert the 9768-03 Modbus Server Option CD-R into the computer, and open up setup.exe in the CD-R's Server folder.**

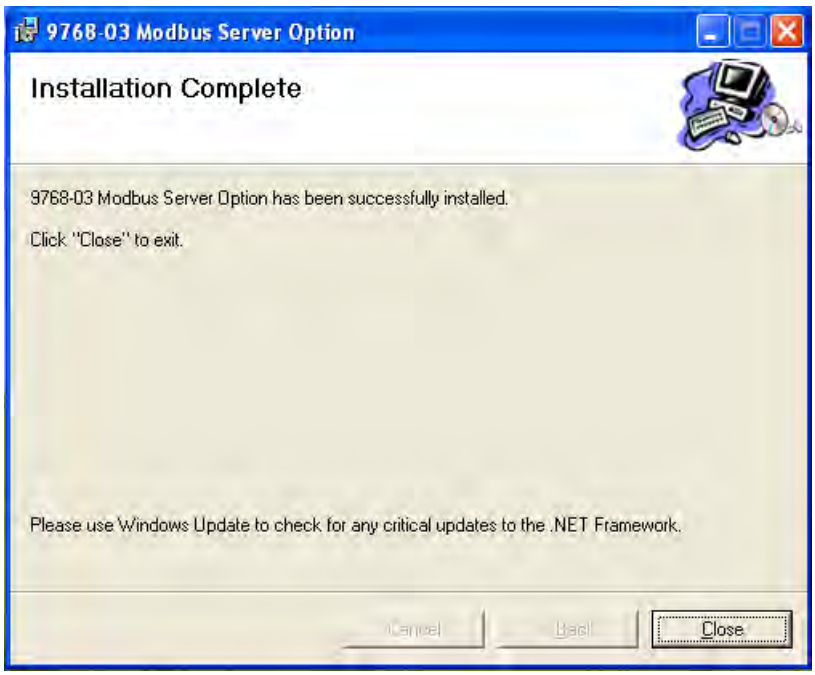
   Run installation as an administrator.

2. **The following screen will appear when the 9768 SMART SITE UTILITY PRO is not installed in the computer. Press [OK] to end the installation.**



   Once the 9768 Smart Site Utility Pro has been installed, open up setup.exe again.

3. **Follow the installation steps on the screen until the following screen to show that installation is complete appears.**



10.2 About Modbus address and data format

There are types of data – the Analog Input (AI) and the I/O Data (DI).
The Modbus addresses are allocated to the linked space according to the COM ID/ MODULE ID in the module list from new to old.
Refer to the address map file later on which data is allocated to which address.

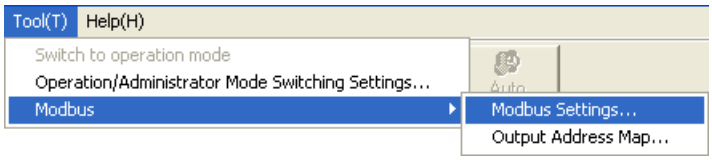
Types of data	Contents
Layout saving	• Acquire from Input Register (30001-39999) • Data format is single-precision floating point (float) using a continuous register 2-word format. • Order of the upper and lower data in the 2-word can be set when saving is started.
I/O Data (DI) **(Bit data for 2341/ 2342 input/ output modules)**	• Acquire from Input Status (10001-19999)

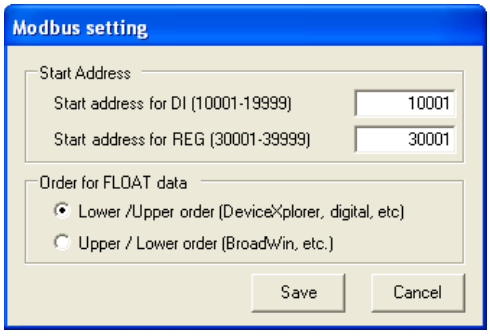
10.3 Operate the Modbus server

NOTE Carry out the whole system construction with Smart Site Utility and check that the [Monitor] is functioning properly.

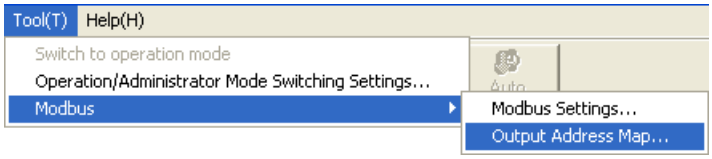
Procedure

1. **Carry out the various settings for Modbus.**
Select [Tools] – [Modbus] – [Modbus Settings] from the menu to open up [Modbus settings] and set the start address and FLOAT data sequence.
Click [Save] to save the settings and close the screen.

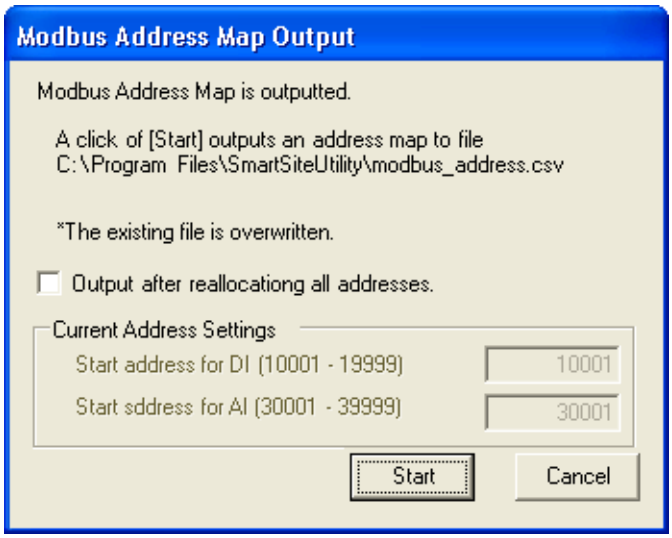




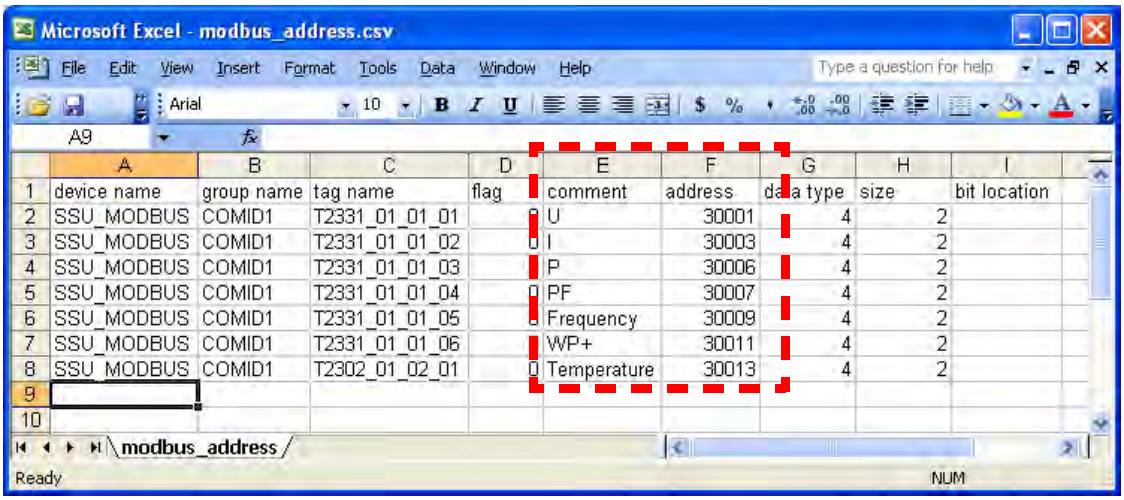
2. **Output the Modbus address map file.**
Refer to this file to see which data is allocated to which address.
Select [Tools] – [Modbus] – [Output Address Map] from the menu.



3. **To change the start address, enable the [Output after reallocating all addresses] then set the start address.**



4. **When [Start] is clicked, the address map will be created in the Smart Site Utlitiy install folder as the file name “modbus_address.csv”.**



	A	B	C	D	E	F	G	H	I
1	device name	group name	tag name	flag	comment	address	data type	size	bit location
2	SSU_MODBUS	COMID1	T2331_01_01_01	0	U	30001	4	2	
3	SSU_MODBUS	COMID1	T2331_01_01_02	0	I	30003	4	2	
4	SSU_MODBUS	COMID1	T2331_01_01_03	0	P	30006	4	2	
5	SSU_MODBUS	COMID1	T2331_01_01_04	0	PF	30007	4	2	
6	SSU_MODBUS	COMID1	T2331_01_01_05	0	Frequency	30009	4	2	
7	SSU_MODBUS	COMID1	T2331_01_01_06	0	WP+	30011	4	2	
8	SSU_MODBUS	COMID1	T2302_01_02_01	0	Temperature	30013	4	2	
9									
10									

(Example) Address map file

5. **Start the Smart Site Utility [Monitor].**

NOTE When the [Monitor] does not function, monitor values acquired with Modbus communication will not be refreshed.

10.4 Notes on Modbus communication

Take note of the following when using Modbus communication.

(1) Address map file output

Carry out the address map file output only after the system construction has completed.
Deleting or changing the settings after the address map file output may cause the address to deviate and not function properly.

(2) Deleting and adding modules

- When a module is deleted from the module list, the address used by the deleted module cannot be used.
- The same address cannot be used even when the deleted module is retrieved.
- Use a blank address when adding a new module.
  * When the [Output after reallocating all addresses] is enabled and the address map is output on the [Modbus address map output] screen, an address that was made unavailable by module deletion will become available again.

10.5 Specifications

Basic specifications

Product medium	CD-R(1)
Supplied accessories	Instruction manual (1)
Software Configuration	Addition software for Modbus server function

Computer System Requirements

Hardware	CPU 1 GHz or higher
Operating system	Windows 2000/XP/Vista/7 .NET Framework 2.0 Internet Explorer 5.01 or more
Memory	512MB or more
Display	Resolution 1024 x 768 dots, 65536 colors or more
Hard disk	At least 30 MB of free space (for software installation) When .NET Framework 2.0 is not installed, approximately 500 MB alternates are necessary Alternates are necessary for saving recording data (500 MB or more recommended)
Interfaces	COM port, LAN
Application	9768 Smart Site Utility Pro 4.2 or more (Necessary when using server option) Microsoft Excel 2000/2000/2003 (necessary when using the report making function)

Function specifications

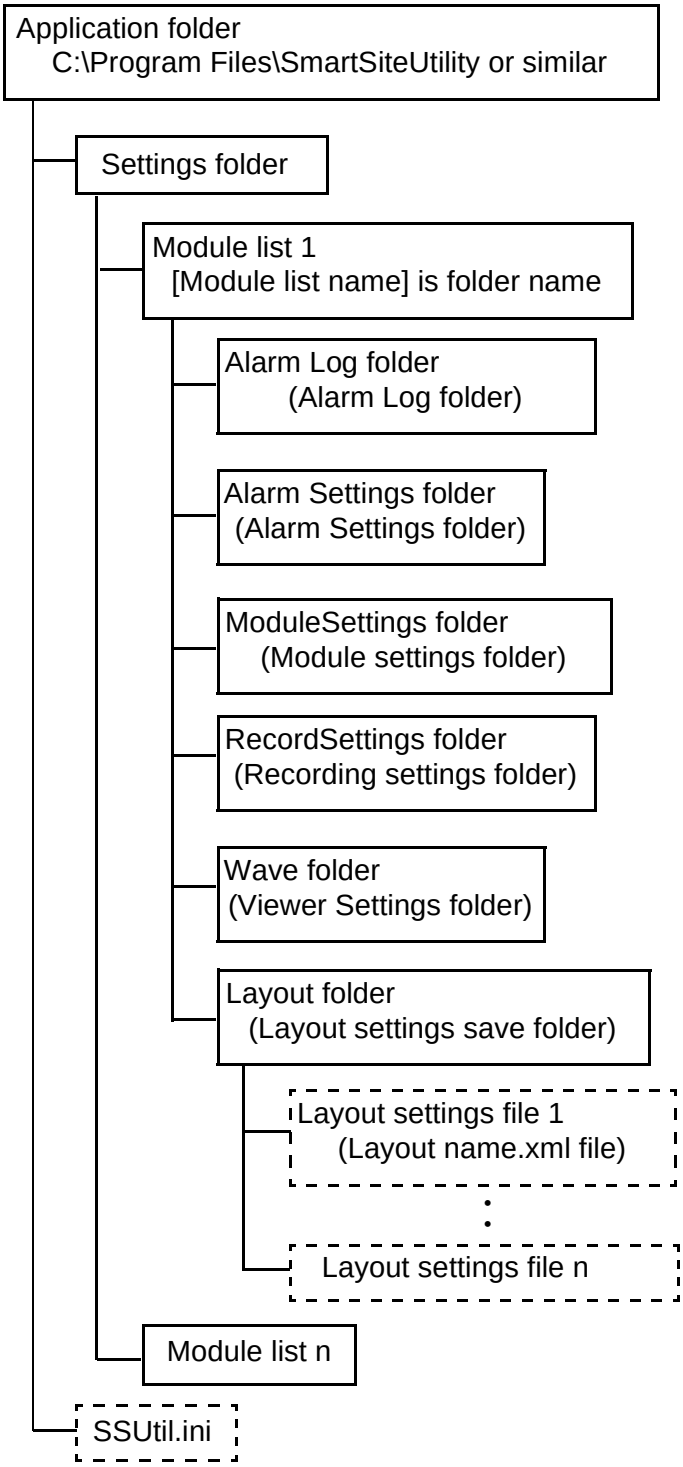
Modbus server functions are available with the 9768 Smart Site Utility Pro, and acquiring measurement values (monitor values) of the measurement modules using other applications through Modbus/ TCP communication is also possible.

Modbus Server Functions	1. Modbus Address • Allocated to the linked space according to the COM ID/MODULE ID in the module list from new to old. • Start address of the Analog Input (AI) can be set within the range of 30000-39999. • Start address of the I/O Data (DI) is fixed at 10000-19999. • Condition of the address map can be outputted to the file 2. Sequence of FLOAT data of analog data (lower/upper order & upper/lower order) can be specified.

Appendix

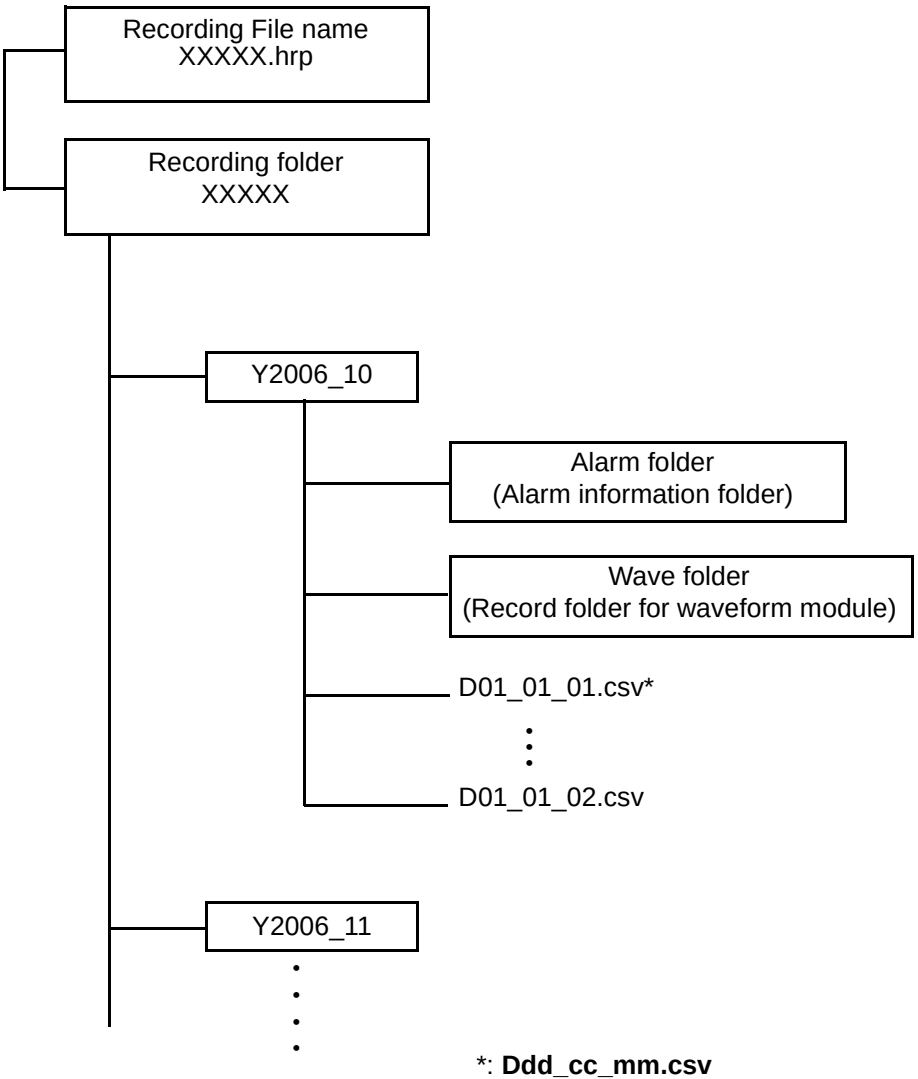
Appendix 1 Smart Site Utility Settings Folder Configuration

- The various settings for the Smart Site Utility are saved in folders with the following configuration.
- To copy the settings, copy the [**Settings**] folder and [**SSUtil.xml**].



Appendix 2 Recording folder configuration for Smart Site Utility

Recorded data for Smart Site Utility is saved by using the following configurations.



*: **Ddd_cc_mm.csv**
dd : Date (fixed at 2 digits)
cc : COM ID (fixed at 2 digits)
mm : Module ID (fixed at 2 digits)

Appendix 3 Number of Wireless Relay Steps

1. Frequency Assignments

(1) Frequency Band

The 2351 Air Module has 48 individual frequencies between Model 2426 MHz and Model 2473 MHz with 1 MHz separation in each frequency. One band consists of 24 frequencies in the 48 frequencies for select/operate. See the table below for the exact frequency assignments.

(2) Frequency Allocation

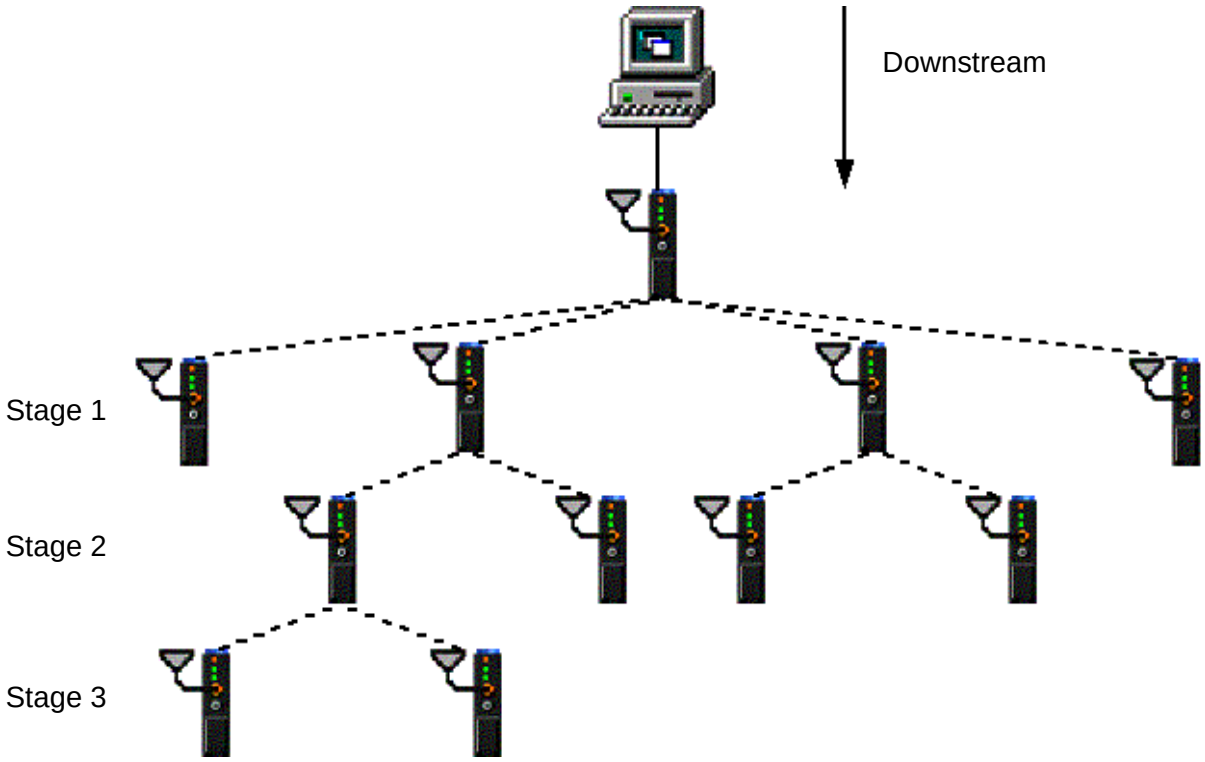
24 Frequency are assigned each frequency band (01,and 02) with 1 MHz separation. If 1 MHz adjacent frequency separation is utilized in a same area, the possibility of adjacent channel interference exists because the difference of reception signal level between the desired signal and undesired leakage from the adjacent channel. Therefore, more than 2 MHz separation operation is recommended.

Freq. No.	Freq. (MHz)	
	01 Band	02 Band*
0	2426	2450
1	2427	2451
2	2428	2452
3	2429	2453
4	2430	2454
5	2431	2455
6	2432	2456
7	2433	2457
8	2434	2458
9	2435	2459
10	2436	2460
11	2437	2461
12	2438	2462
13	2439	2463
14	2440	2464
15	2441	2465
16	2442	2466
17	2443	2467
18	2444	2468
19	2445	2469
20	2446	2470
21	2447	2471
22	2448	2472
23	2449	2473

*Both France and Spain are band limited, please use 02 Band for operation.

Appendix 4 Wireless Transmission Stages

- The practical limit for wireless transmission stages is 6. Above this number, response will become too slow for efficient use. (The software allows for a maximum of 20 stages.)
- The maximum number of wireless modules is 89 in total.
- Up to 88 wireless modules can be connected to the first stage.
- Except for one unit connected to the computer via a wired connection, downstream relay with a 2-way split is possible.



Appendix 5 Cannot Communicate with LAN

If you cannot communicate with LAN, check the following items.

Is the cable connected correctly?

- You need to use a cross cable when performing a one-to-one connection from the computer to a 2353 LAN Module (or 2354 Memory Module).
- Use a straight cable when connecting through a hub.
- With the straight to cross conversion of the accesories of the 9642 LAN cable, the short cable becomes the cross cable, and the male terminal of the straight cable is converted to the female. Also, even if it is intended to connect to the terminal, a loose connection may occur. Try disconnecting and then reconnecting the cable.

Is the computer IP address set correctly?

You can use the following procedure to search for the computer's network interface IP address, the subnet mask, and the gateway address.

For Windows 2000
Open the command prompt from the Start menu [Programs (P)] - [Accessories] - [Command Prompt]. Enter [ipconfig/all] and press the [Enter] key.

For Windows XP
Open the command prompt from the Start menu [All Programs (P)] - [Accessories] - [Command Prompt]. Enter [ipconfig/all] and press the [Enter] key.

If it is not set correctly

1. From the Start menu, select [Settings (S)] - [Control Panel (C)].
2. Double-click the Network icon to call the Network Properties.
3. Set the IP address again.

Is the IP address for 2353 LAN Module (or 2354 Memory Module) set correctly?

Perform individual initial settings after constructing the LAN module (or memory module) system configuration in MAP editor.

❖ For details on initial settings for the LAN module (or memory module), see 3.1.2 "Setting the LAN system" (page 13)

Is the [LINK LED] for 2353 LAN Module lit green (the [LINK LED] for 2354 Memory Module is yellow)?

When performing LAN communication for 2353 LAN Module, the LED [LINK/Rx] on the front of the unit is lit green. (The LED [LINK/Rx] for 2354 Memory Module is lit yellow.) If it is not lit, the LAN cable connection may be loose, so try disconnecting and then reconnecting the cable.

Can you communicate between the computer and the 2353 LAN Module (or 2354 Memory Module)?

You can check communication between the computer and 2353 LAN Module (or 2354 Memory Module) by sending a ping command from the computer. However, when connecting via the Internet, you may not be able to confirm communication depending on the router settings.

For Windows 2000
Open the command prompt from the Start menu [Programs (P)] - [Accessories] - [Command Prompt]. Enter ping <IP address for which you want to check communication> and then press the [Enter] key.

For Windows XP
Open the command prompt from the Start menu [All Programs (P)] - [Accessories] - [Command Prompt]. Enter ping <IP address for which you want to check communication> and then press the [Enter] key.

(Example) When the LAN module (or 2354 Memory Module) IP address is 192.168.1.2. Enter ping 192.168.1.2 <Enter>.
If the following message appears on the screen, communication was successful. time means the time that communication took.

Pinging 192.168.1.2 with 32 bytes of data:
Reply from 192.168.1.2: bytes=32 time<10ms TTL=32
Reply from 192.168.1.2: bytes=32 time<10ms TTL=32
Reply from 192.168.1.2: bytes=32 time<10ms TTL=32
Reply from 192.168.1.2: bytes=32 time<10ms TTL=32

If the following message appears, communication was not completed successfully. Check the cable connection and the IP address settings again.

Reply from 192.168.1.1: Host is down.
Reply from 192.168.1.1: Destination host unreachable.
Request timed out

Appendix 6 LAN Terminology

IP address

In the TCP/IP protocol used by 2353 LAN MODULE (or 2354 memory module), the IP address is used to identify individual equipment. A numerical value of 32 bits is used in IP version 4 (IPv4), which is currently in general use. Usually, this is expressed by decimal numbers such as 192.168.1.1 at each octet (eight bits), separated by a ".".

Subnet mask

The IP address has two roles, as the network section showing which network (subnet) the equipment belongs to, and as the host section that specifies the equipment in the subnet.
To show the range of this network and host section, an identifier called a subnet mask is introduced. Expressed in a numerical value of 32 bits, where 1 corresponds to the network section and 0 corresponds to the host section.
For example, if there are 24 bits in the first half of the network section, the remaining 8 bits are the host section.
11111111 11111111 11111111 00000000
This is written as a hexadecimal number (0xffffff00) or an IP address of the same decimal number (255.255.255.0).
Also, when the IP address and the net mask are expressed as a group, it is written as 192.168.1.1/24. The "24" after the "/" shows that the net mask is 24 bits, in short 255.255.255.0 is displayed.

Allocating IP Address

Managed by an organization known an RIR (Regional Internet Registry), so that each piece of equipment should have a unique (original) IP address.
Usually, the allocation of IP addresses is carried out by the NIC (Network Information Center) of each country which controls the allocation of IP addresses on a national scale.
10.0.0.0/8 10.0.0.0 to 10.255.255.255
The range is defined by RFC1597 as a private IP address.
Although private IP addresses can be used freely, a restriction is applied that it is not allowed direct connection from the internet.
When the computer and the equipment are connected 1 to 1 by using a cross cable, and a closed network environment that only uses a HUB is constructed, select the IP address from among these.
However, because bits for the host section are used and the address for all ones are used as a broadcast address displaying all hosts present on the subnet, IP addresses for all zeros cannot use bits for the host section for IP addresses for equipment as network addresses where the subnet is displayed.
For example, in the network 192.168.1.0/24, the address 192.168.1.255 indicates all equipment connected to the subnet 192.168.1.0.
Then, 254 IP addresses of 192.168.1.1 to 192.168.1.254, except for 192.168.1.0 and 192.168.1.255 can be used in this subnet.

Gateway

A gateway is equipment that connects different networks together.
When communicating with equipment with a different network address, you need to specify the IP address of the equipment connected with the different network address to establish the communication route for the gateway. Equipment inside the same subnet changes to the same settings.
This does not need to be set when communicating only with equipment in the network section (subnet section) e.g. when a 2353 LAN Module (or 2354 Memory Module) are connected 1 to 1 with the computer.

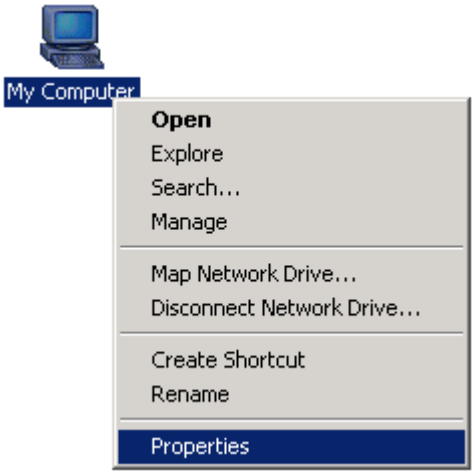
DNS (Domain Name System)

With the TCP/IP protocol, individual equipment is identified by an IP address, but these can be very difficult for people to remember. And so we allocate a host name as a character string which takes the place of the IP address.
It then becomes necessary to convert both the host name and IP address of the equipment on the network. DNS is used for this system.
When a DNS server is operational on a network, you can specify the communication partner by name by specifying the IP address for the DNS server.

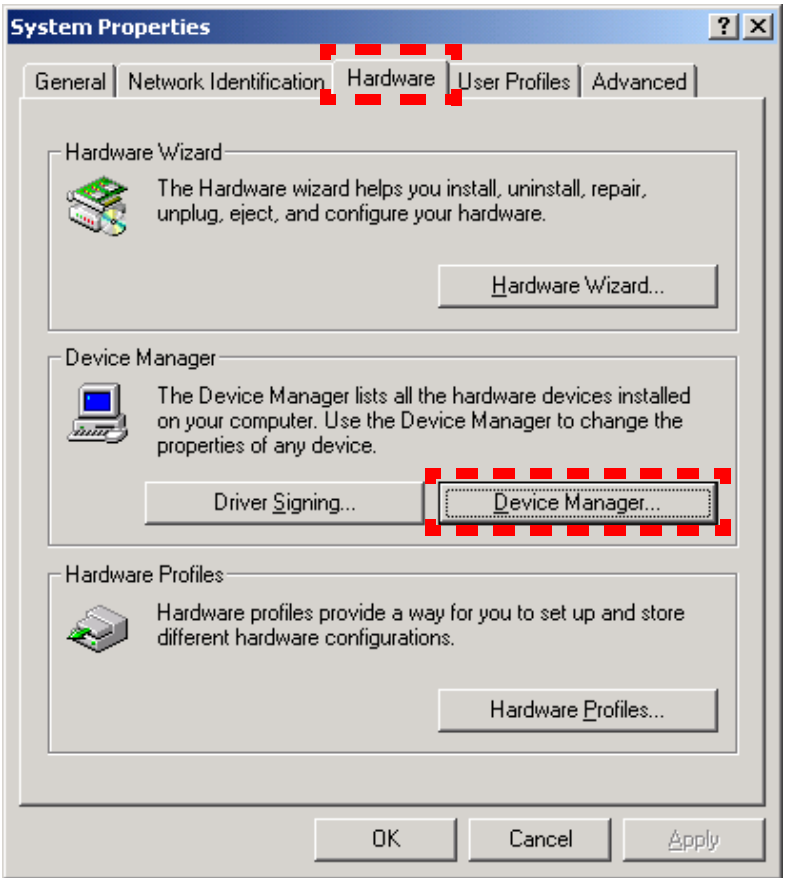
Appendix 7 Checking Method for Communication Port

For Windows 2000

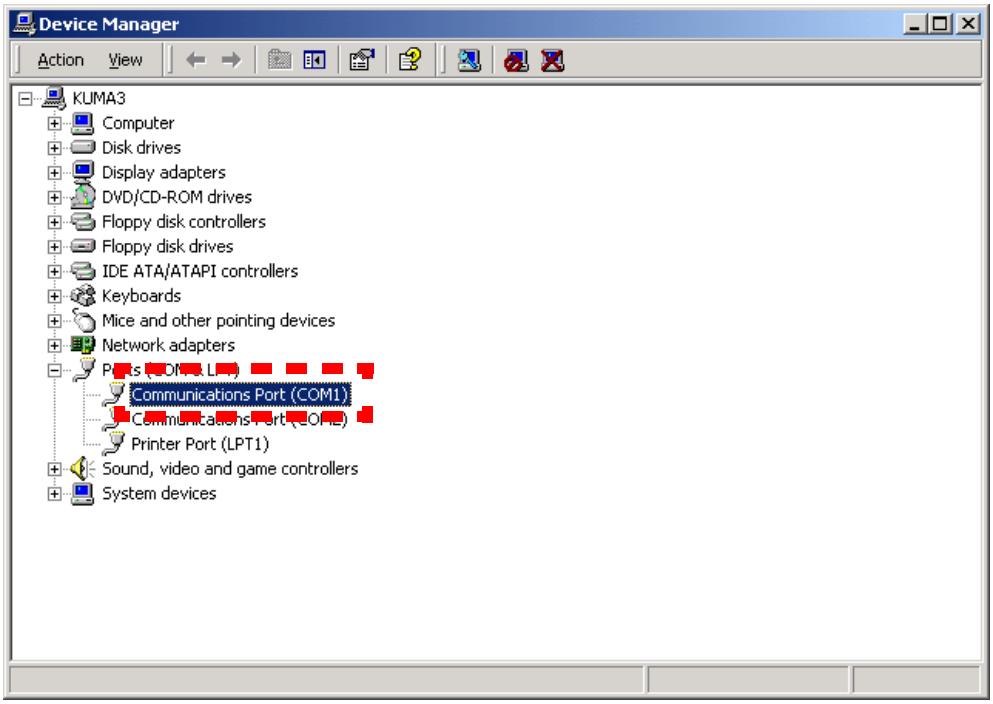
1. Right-click on [My Computer], and then select [Properties].



2. The [System Properties] dialog box opens.
Select the [Hardware] tab, and then click [Device Manager].

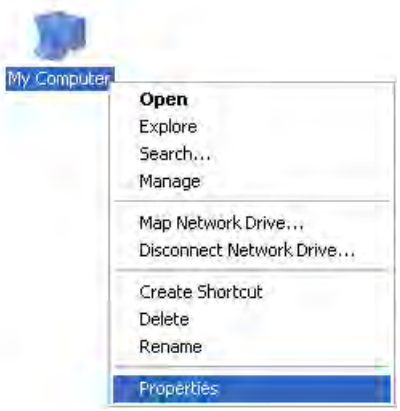


3. **The communication port under [Ports (COM & LPT)] display the communication port for the computer. (COM1 in the example screen)**

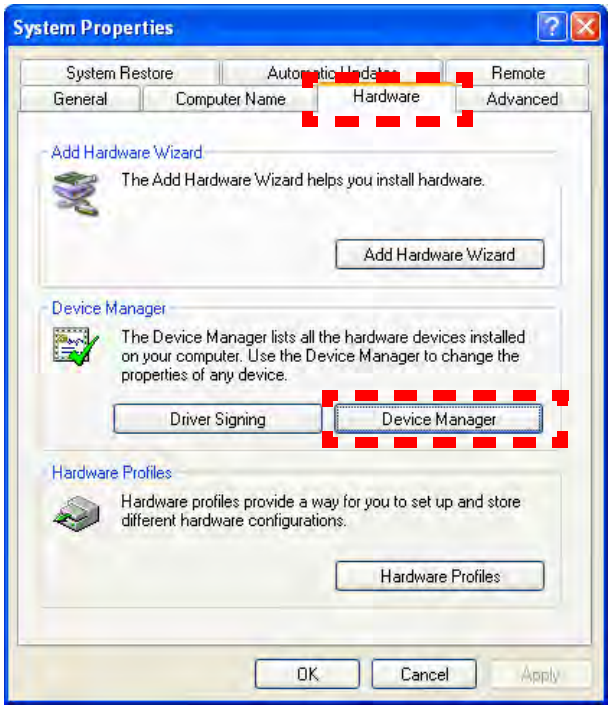


For Windows XP

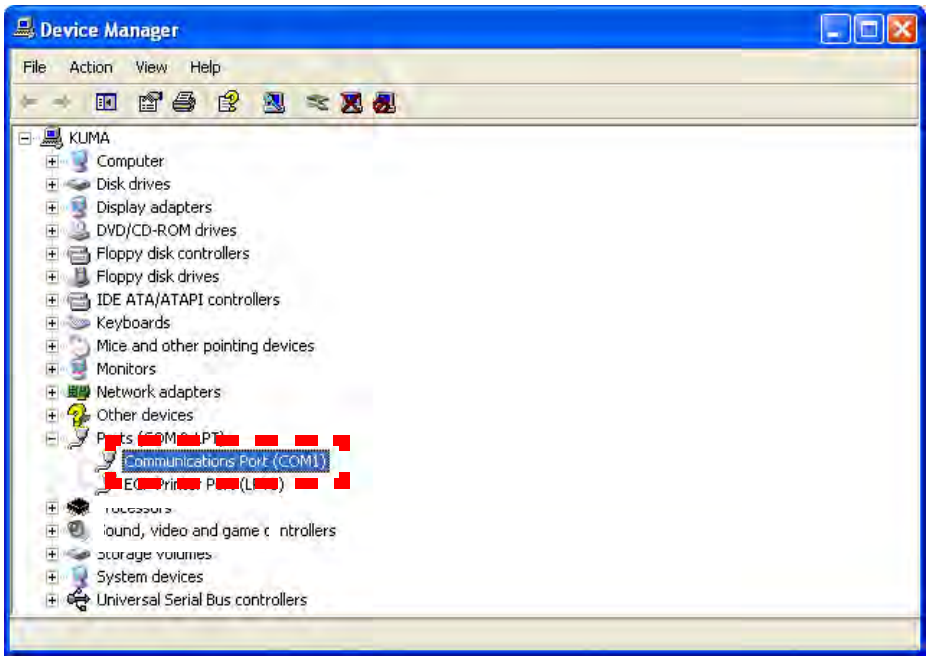
1. **Right-click on [My Computer], and then select [Properties].**



2. **The [System Properties] dialog box opens.**
Select the [Hardware] tab, and then click [Device Manager].



3. **The communication port under [Ports (COM & LPT)] display the communication port for the computer. (COM1 in the example screen)**

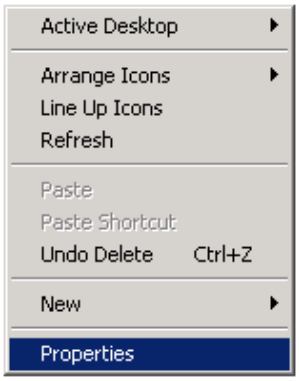


Appendix 8 Canceling Standby and Hibernation Functions

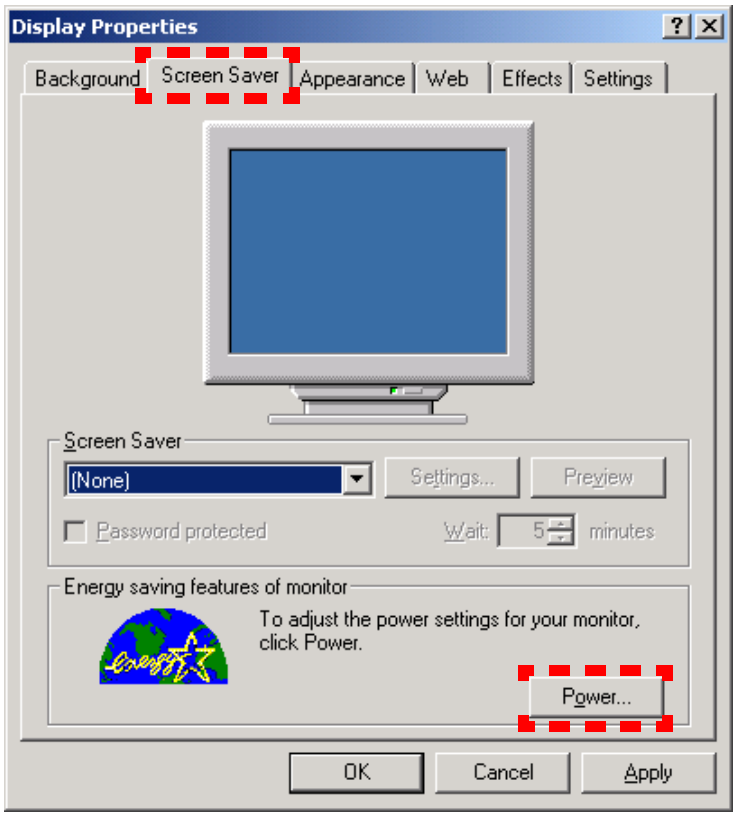
Note
If you cannot cancel the standby or hibernate functions even after completing the following procedures, change the settings by referring to the manual of the computer you are using.

For Windows 2000

1. **Right-click the Desktop, and then select [Properties].**



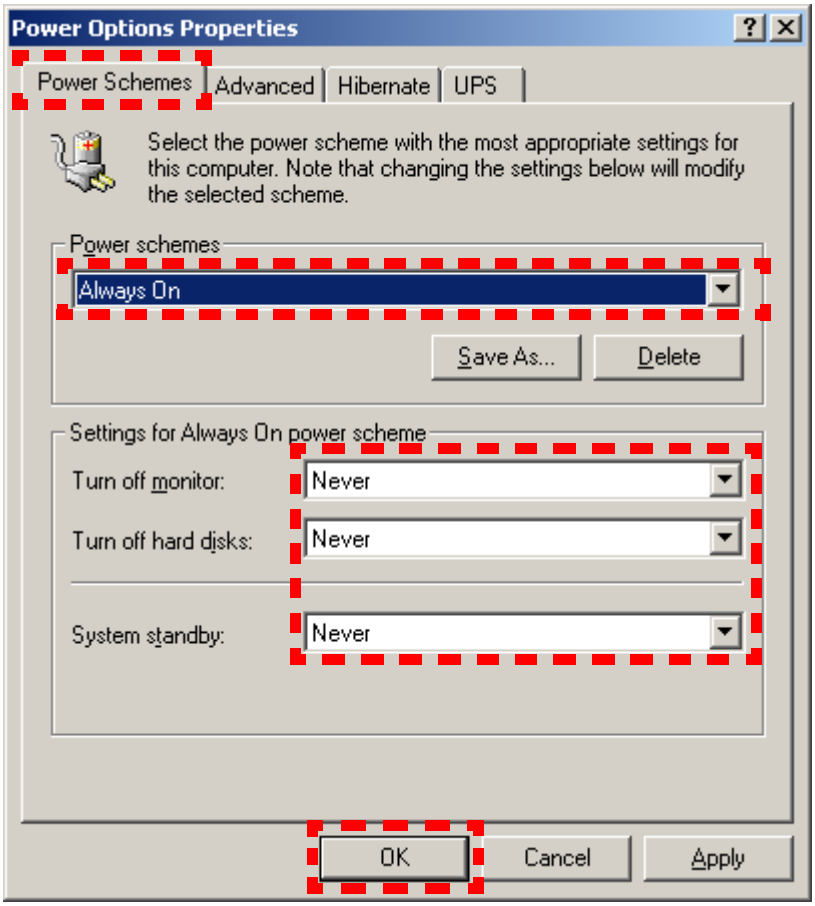
2. **The [Display Properties] dialog box opens.**
Select the [Screen Saver] tab, and from [Monitor power] click the [Power...] button.



3. The [Power Options Properties] dialog box opens. Select the [Power Schemes] tab, and then from [Power schemes] select [Always On].

Check that the following three items are set to [Never], and then click [OK].

- [Turn off hard disks]
- [System standby]
- [System hibernate]

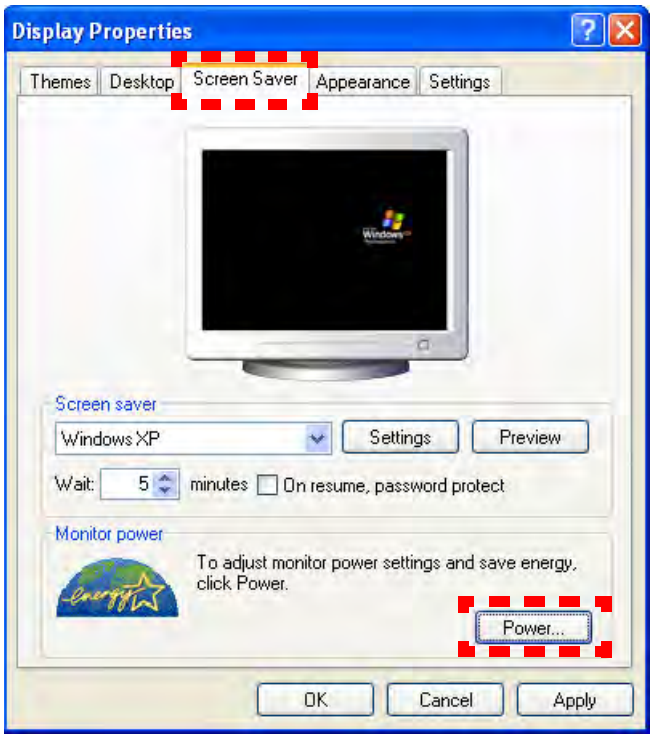


4. To return to the [Display Properties] dialog box, click [OK].

For Windows XP

1. **Right-click the Desktop, and then select [Properties].**

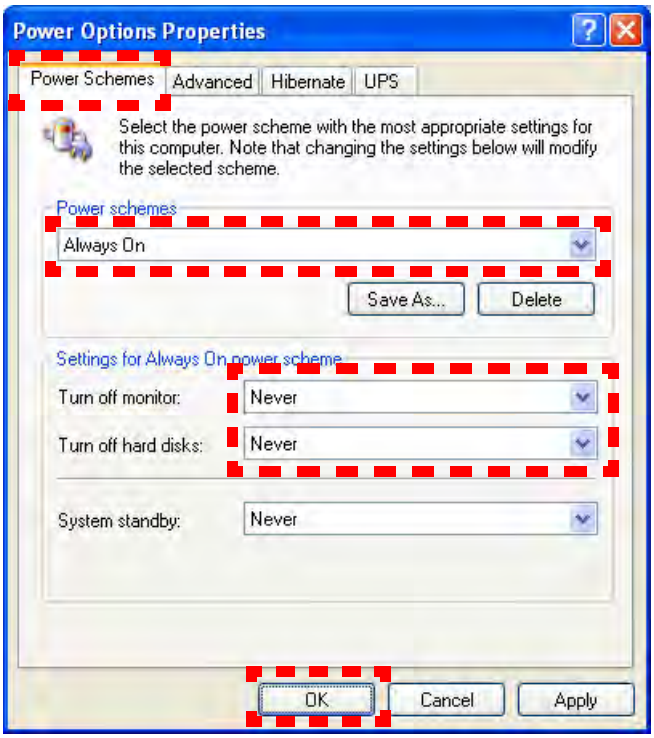
2. **The [Display Properties] dialog box opens.**
Select the [Screen Saver] tab, and from [Monitor power] click the [Power...] button.



3. The [Power Options Properties] dialog box opens. Select the [Power Schemes] tab, and then from [Power schemes] select [Always On].

Check that the following two items are set to [Never], and then click [OK].

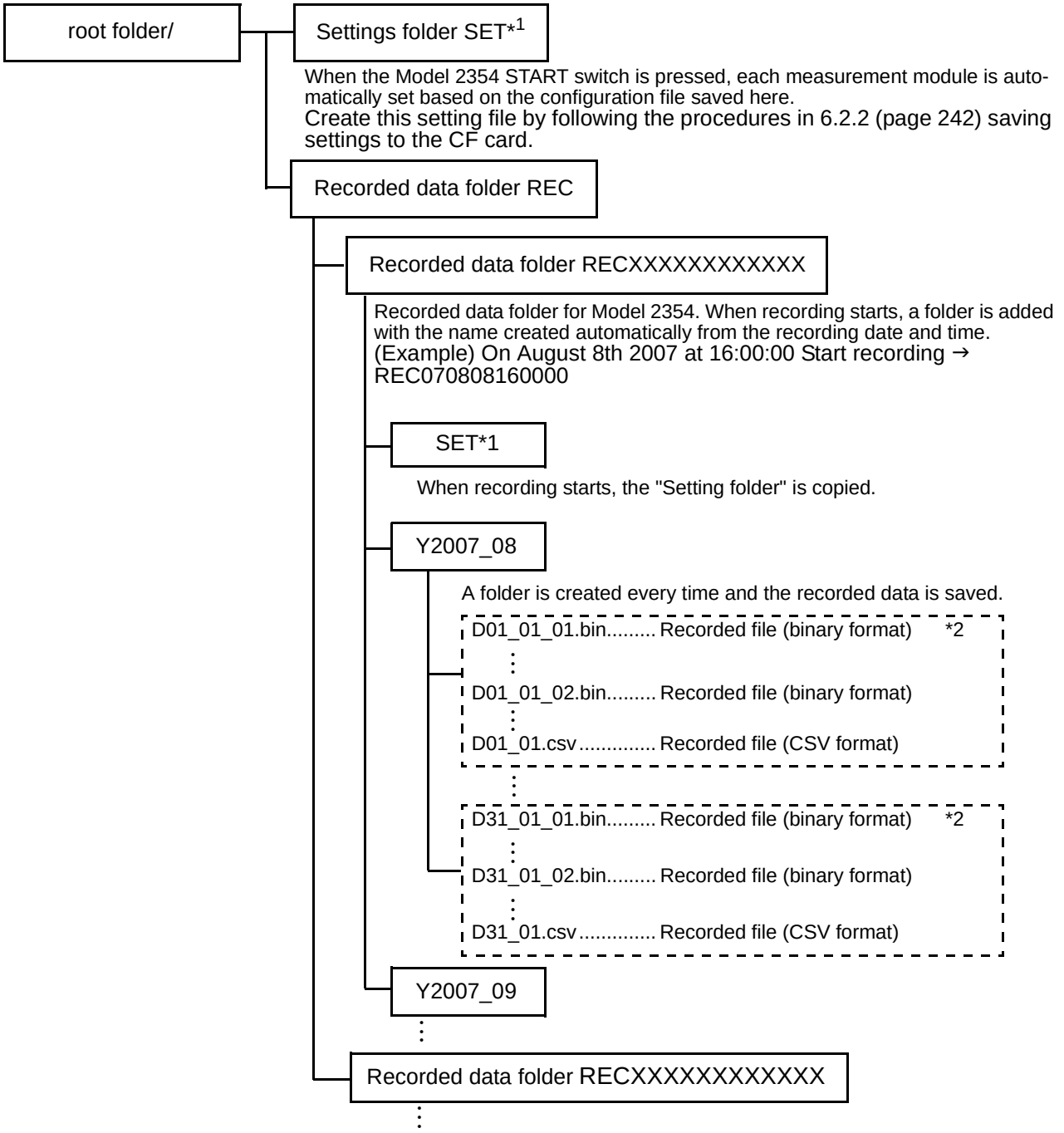
- [Turn off hard disks]
- [System standby]



4. To return to the [Display Properties] dialog box, click [OK].

Appendix 9 CF card

Files are saved to the CF card used with Model 2354 in the following configurations.



Note

*1: In the SET folder, there are setting files which the Model 2354 refers to in recording.
Please pay close attention to file operations because, if the SET folder and other files are damaged, there are times when you may not be able to continue recording and important recorded data may be lost.

*2: 1 file for 1 module for recording files in binary format is saved daily, and 1 file in CSV format is saved daily.
File name Ddd_cc_mm.bin and Ddd_cc.csv dd; date (fixed at 2 digits), cc; COM ID (fixed at 2 digits), and mm; Module ID (fixed at 2 digits)

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1104

Edited and published by Hioki E.E. Corporation
Technical Support Section

Printed in Japan Printed on recycled paper