EQUO Series
Sensor Network Server EQ100-E

Startup Guide

9200555-5F   ● ● ● ● ●

⚠ Read PRECAUTIONS FOR SAFE USE and PRECAUTIONS FOR CORRECT USE described in the Instruction Sheet before using the product.

Thank you for selecting OMRON product.
This guide describes the quick procedures and operational method to start up this product.
For further information, refer to the Instruction Sheet and the User's Manual in the Utility CD, both contained in the package.

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● **Meaning of marks**

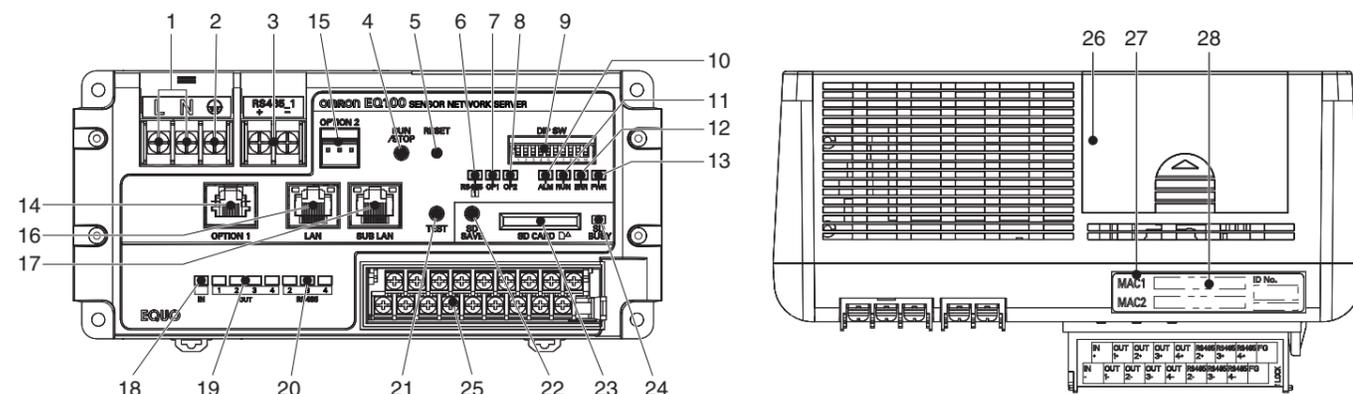| 🔍 CHECK! | Indicates advice on usage, or particularly important point for its function. | ⚠ Caution | Indicates precautions to be observed on operations. | 📖 | Indicates related manual page in which details are shown. |

Exterior features

No.	Indication	Name	Function
1	L, N	Power Supply Terminal (M3.5 screw)	To connect to 100 to 240 VAC power source.
2	⏚	Grounding Terminal (M3.5 screw)	To connect to ground wire. (Class-D earthed)
3	RS485_1	RS-485 Communications Port #1 Terminal (M3.5 screw)	To connect to RS-485-connected measurement device.
4	RUN/STOP	RUN/STOP Button	To switch between the setup and collecting statuses.
5	RESET	Reset Button	To restart after changing the setup.
6	RS485 1	RS485 Communications Port #1 Operation Indicator Light	To indicate an operation status of the RS-485 communications port #1.
7	OP1	OPTION1 Operation Indicator Light	(for future expansion)
8	OP2	OPTION2 Operation Indicator Light	(for future expansion)
9	DIP SW	Setup DIP Switch	To configure main body operation. (See EQ100 Instruction Sheet "Setup DIP Switch".)
10	ALM	Monitoring Alarm Indicator Light	To indicate a monitoring alarm status.
11	RUN	Collecting Status Indicator Light	To indicate an operation status of the main body such as setup and collecting statuses.
12	ERR	Instrument Alarm Indicator Light	To indicate an instrument alarm status.
13	PWR	Operation Status Indicator Light	To indicate a power supply status and an operation mode.
14	OPTION1	OPTION1 Connection Port	(for future expansion)
15	OPTION2	OPTION2 Connection Port	(for future expansion)
16	LAN	LAN Connection Port (RJ-45)	To connect a LAN cable for the upper level system and a LAN-connected measurement device. (Note 1)
17	SUB LAN	Sub-LAN Connection Port (RJ-45)	To connect a LAN cable for a LAN-connected measurement device (Note 1, 2)
18	IN	Input Status Indicator Light	Turns on when the general-purpose input is on.
19	OUT 1 to 4	Output Status Indicator Lights	The lights turn on when the general-purpose outputs 1 to 4 are on, respectively.
20	RS485 2 to 4	RS-485 Communications Port #2 to 4 Operation Indicator Lights	To indicate an operation status of the RS-485 communications ports #2 to 4.
21	TEST	Test Button	(for future expansion)
22	SD SAVE	SD Card Save Button	Press 1 sec. To output the collected data to the SD card.
			Press 5 sec. To reject the SD card.
23	SD CARD	SD Card Slot	To attach the SD card available for EQ100.
24	SD BUSY	SD Card Access Light	This light turns on when a writable SD card is attached.
25	(Note 3)	General input terminal, General output terminal #1 to 4, RS-485 Communications Port #2 to 4 terminal, FG terminal (M3 screw)	To connect to general input/output device and RS-485 connected measurement device.
26	—	Battery Compartment Cover	The memory backup battery is placed inside the cover.
27	—	MAC Address Label	On the label the MAC addresses of LAN/sub-LAN connection port are printed (12-digit hex. number).
28	—	SNC ID Label	SNC ID (6-digit hexadecimal number) is printed here.

Note 1) Straight/crossover cable can be automatically identified. A shielded cable of category 5 or higher is recommended.
Note 2) For stable communications, it is recommended that a LAN-connected measurement device should be connected to the sub-LAN connection port.
Note 3) For the main body indication, refer to the EQ100 Instruction Manual.


STEP 1 Checking the contents

- ☐ Main body … 1
- ☐ Instruction Sheet (English, Japanese, Chinese) … each 1
- ☐ Startup Guide (English(This doc), Japanese, Chinese) … each 1
- ☐ Memory backup battery (installed inside the top panel of the main body) … 1
- ☐ Notes for memory backup battery (attached on top of the main body) … 1
- ☐ LAN connector dustproof cover (attached) … 1
- ☐ Sub-LAN connector dustproof cover (attached) … 1
- ☐ OPTION1 connector dustproof cover (attached) … 1
- ☐ Dummy SD card for dustproof (attached to the SD card slot) … 1
- ☐ CD-ROM (containing chart display tool and related documentation) … 1

STEP 2 Preparing necessary items

For settings and operations
- ☐ SD card (up to 2 GB for SD card and 32 GB for SDHC card. SDXC card is not available. Class 2 or higher for speed class. FAT16 and 32 for file system) For writing EQ project file and saving collected data file.
- ☐ Computer (The provided software must be installed. A CD-ROM drive is required. An SD card slot or LAN port is required.)
- ☐ LAN cable (category 5 or higher), HUB for connecting upper system and LAN connected measurement device
- ☐ EQ100 User's Manual (included in the CD-ROM)

For operations
- ☐ DIN rail or screw: For mounting EQ100
- ☐ Measurement device (including accessories and option items)
- ☐ Twisted pair cable with shield: For connecting RS-485 connected measurement device

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STEP 3 Connecting memory backup battery (📖 EQ100 User's Manual "5. Installation and Wiring")

1 Remove the battery compartment cover at the top.
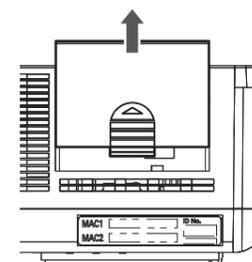
Remove the battery compartment cover by sliding the cover to the arrowed direction while pressing the non-slip section of the battery compartment cover.

2 Insert the connector into the socket.

Insert the connector into the socket at the main body side.
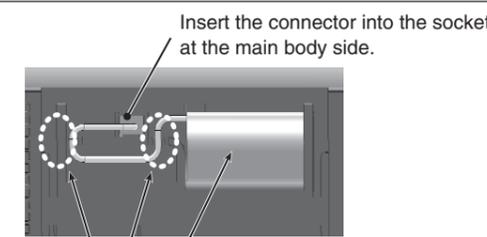
Place the battery and cable on the locations shown in the picture above.

**3 Close the battery compartment cover at the top.**

Reverse the procedure **1** to close the battery compartment cover.

4 Remove the caution label at the top.

Completely remove the memory backup battery caution seal.

⚠ **Caution**
- Be sure to remove the Notes for the memory backup battery labeled on the top of the main body before use. Otherwise the temperature inside the main body becomes high, resulting in malfunction.
- Before installing the main body, be sure to attach the memory back up battery. Otherwise proper data collecting may not be available upon blackout or power off, due to reset of the built-in clock, loss of on memory information, and/or loss of collected data of the latest 1 hour.

Battery caution label for memory backup
Battery compartment cover
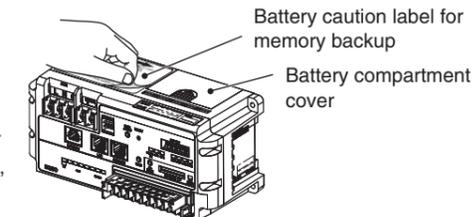
STEP 4 Installation (📖 EQ100 User's Manual "5. Installation and Wiring")

Secure the main body with the DIN rail or screws.

⚠ **Caution**
- For heat radiation, keep spaces of 30 mm or more for the top and bottom of this product.
- Install the product in the correct direction to improve heat radiation.

■ **DIN rail mounting**
(1) Unlock the DIN rail mounting pins on the back of the main body.
(2) Hook the product from the top side of the DIN rail.
(3) Press in the product to mount.
(4) Lock the entire DIN rail mounting pins.
   * Use three or more screws to mount the DIN rail.
   * DIN rail: PFP-50N (500 mm)/PFP-100N (1000 mm)

DIN rail
DIN rail mounting pin
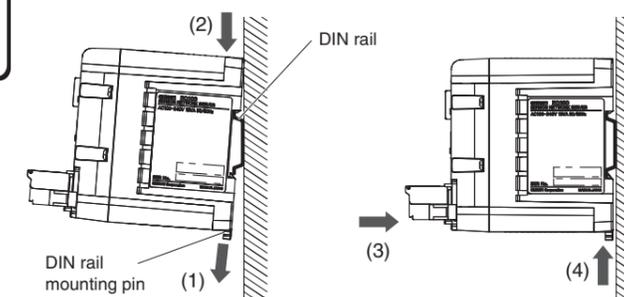
■ **Screw mounting**
To mount the product using screws, make mounting holes with the following sizes, attach the specified screws, and apply the appropriate tightening torque to mount the product. This product does not include the mounting screws. The screws must be acquired by the user.
Depending on the mounting conditions such as material and thickness of the place to mount, screw type and length may differ. Use proper screws based on the mounting conditions.
- Screw to use: M4
- Specified torque: 1.2 N·m

● **Screw mounting section**
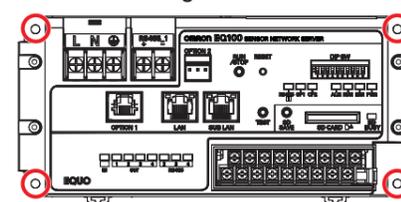
● **Mounting hole dimensions**

183±0.2
78±0.2
4-M4

(Unit: mm)
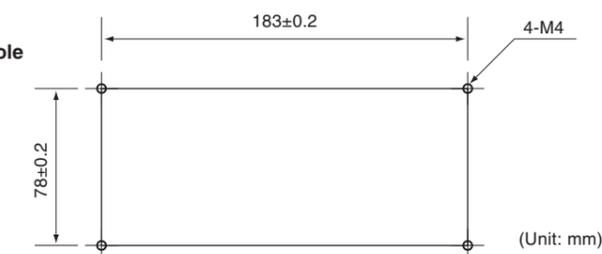
Setting the measurement device (EQ100 User's Manual "6. Setting and connecting measurement device")

Before connecting a measurement device to EQ100, main body setting for each measurement device must be configured. For main body setting of each measurement device, refer to corresponding instruction manual and user's manual, or user's manual of each setting tool.
For the connectable measurement device, read the latest EQ100 User's Manual.

■ Precautions on settings

▶ RS-485 connected measurement device

Communications setting items of all the measurement devices must be as follows:
- Communication speed: 9.6 kbps
- Data bit length: 7 bits
- Stop bit length: 2 bits
- Vertical parity: Even
- Protocol: CompoWay/F
The unit number of the measurement device must be unique within one port (the same number must not be used by other measurement device).
The communications settings shown above must be followed even when you connect the RS-485 connected measurement device that you use to EQ100.

▶ LAN-connected measurement device

Apply the device to the system manager in advance and decide IP addresses and subnet masks for EQ100 and all the LAN connected measurement devices.
On the main body setting of each measurement device, enter the specified IP addresses and subnet masks.
When you connect a LAN connected measurement device that you use to EQ100, make sure that it can communicate with EQ100.

▶ Wireless device

The wireless device collects measurement data through the wireless unit master. The setting tool is used to set the wireless master and wireless device and verify connections.
For details, refer to the user's manual of the wireless device.

> **CHECK!**
> For the measurement device with the main body settings completed, the following settings must be recorded. These are used to set EQ100 later on.
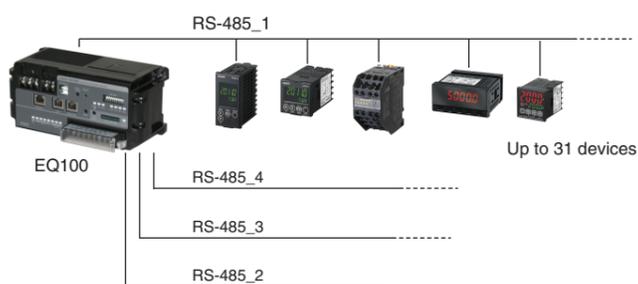> - RS-485 connected measurement device: Unit number, communication settings
> - LAN connected measurement device: IP address

Connecting the main body/measurement device (EQ100 User's Manual "6. Setting and connecting the measurement device")

Connect an RS-485-connected measurement device/LAN-connected measurement device to the EQ100 main body.

■ RS-485 connection

This product has four RS-485 communications ports for RS-485-connected measurement devices. Up to 31 devices can be connected to a port.

RS-485_1
EQ100
RS-485_4
RS-485_3
RS-485_2
Up to 31 devices

> **CHECK!** Each measurement device is identified with the RS-485 communications port number and unit number from EQ100. This information must be used when connecting to EQ100.
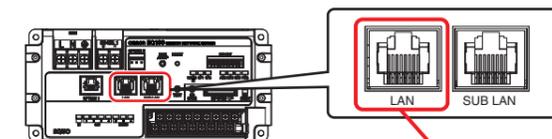
> **⚠ Caution**
> - The maximum transmission distance of RS-485 communications is 500 m.
> - To prevent malfunction, a shielded wire must be connected to the ground or FG terminal of the main body.
> - As each RS-485 communications port of EQ100 has the built-in terminal resistor, this product must be connected on one end of the terminal.
> - The terminal resister of 120 Ω (1/2 W) must be attached for the measurement device connected at the opposite end of EQ100.
> - The RS-485 cables must be wired through measurement devices in one loop. Branching and/or star wiring is not available.
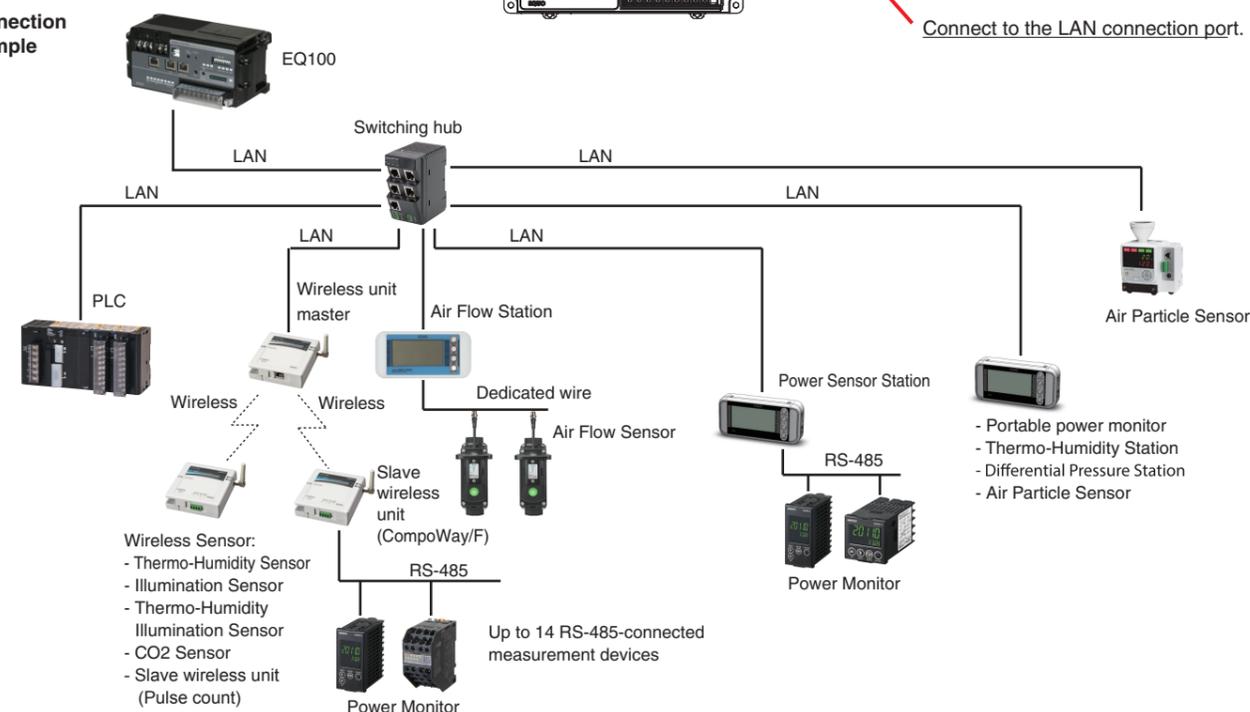
Maximum transmission distance: 500 m
1   2   ... Up to 31 devices
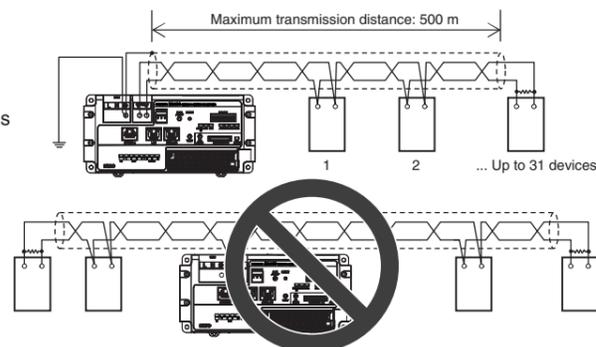
■ LAN-connected measurement device

Connect a LAN-connected measurement device to the LAN connection port of EQ100.

LAN   SUB LAN
Connect to the LAN connection port.

■ Connection example

EQ100
Switching hub
LAN
LAN
LAN
LAN
LAN
LAN
PLC
Wireless unit master
Air Flow Station
Air Particle Sensor
Wireless   Wireless
Dedicated wire
Air Flow Sensor
Power Sensor Station
- Portable power monitor
- Thermo-Humidity Station
- Differential Pressure Station
- Air Particle Sensor
Slave wireless unit (CompoWay/F)
RS-485
Wireless Sensor:
- Thermo-Humidity Sensor
- Illumination Sensor
- Thermo-Humidity Illumination Sensor
- CO2 Sensor
- Slave wireless unit (Pulse count)
RS-485
Up to 14 RS-485-connected measurement devices
Power Monitor
Power Monitor

■ Power wiring to the main body

Wiring must be conducted so that the power supply to the main body can be turned ON/OFF.
If one phase of the power source is grounded, the grounded phase must be connected to the grounding phase.
The grounding terminal must be class-D earthed (class-3 earthed in the older standards in Japan).

AC power supply 100 VAC to 240 VAC
Class-D earthed (Class-3 earthed)
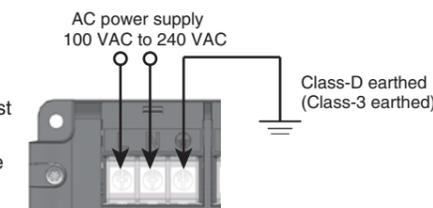
Installing EQ-Viewer (EQ-Viewer User's Manual "3. Installation and uninstallation")

Install the graph viewer tool EQ-Viewer included in the provided CD-ROM to the computer.

■ Operating environment

| Item	Description
OS	Windows 7, Windows 10, Windows Server 2008 R2, Windows Server 2012 R2
CPU, memory	Intel Core i3 2 GHz or equivalent, Memory 2 GB or more (32-bit), 4 GB or more (64-bit)
Disk capacity	10 GB or more
Monitor resolution	1024 x 768 or higher (16-bit color or higher)
.NET Framework	.NET Framework 3.5 SP1
Others	CD-ROM drive: For EQ-Viewer installation LAN port: For network connection with EQ100 SD card reader writer/SD card slot: For EQ project file (EQ100 setup file) writing Acrobat Reader 5.0 or Adobe Reader: For EQ100 User's Manual and EQ-Viewer User's Manual viewing

■ Installation

Start up the computer and log in as a user with the administrator's privilege. Inserting the provided CD-ROM into the CD-ROM drive displays the setup screen shown on the right. If the screen does not show up, execute [Setup.exe] in the CD-ROM drive.
Click [Installation] on the setup screen.
Complete installation according to the message shown on the screen.

> **CHECK!** Clicking the [User's Manual] button on the setup screen displays the list of the related document files. Read the EQ-Viewer User's Manual to set EQ-Viewer and create an EQ project.
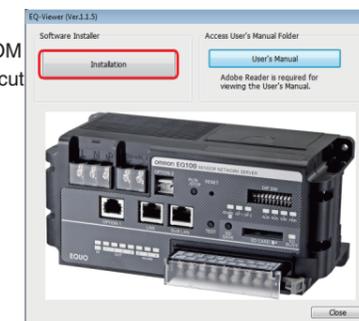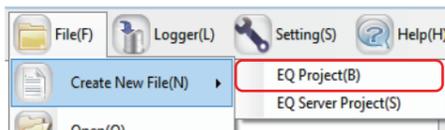
Use the setup/management tool EQ-Manager included in EQ-Viewer to create an EQ project that sets the operation of EQ100.
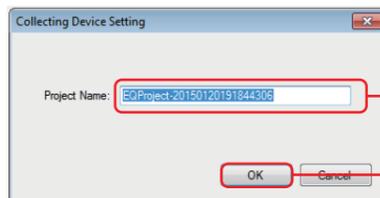
1 Start up EQ-Manager.

Double-click the EQ-Manager icon on the desktop, or from the Start button of the Windows, select [All programs] - [OMRON] - [EQ-Viewer] - [EQ-Manager] and launch EQ-Manager.

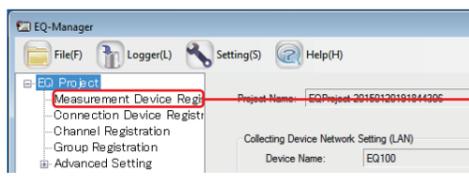### 2 From the toolbar. select [File] - [Create New File] - [EQ project].

3 Enter a project name on the [Collecting Device Setting] dialog.

A project name including the date of creation is set as an initial value.

Click [OK].

4 From the setting menu of the EQ project, select [Measurement Device Registration].

Select [Measurement Device Registration].

5 On the [Add Measurement Device] dialog, add the measurement device connected to EQ100.

Clicking [Add] on the bottom right of the screen displays the [Add Measurement Device] dialog.

6 Register EQ100 channels.

Selecting [Channel Registration] from the setup menu displays the list of channels that has been registered simultaneously on [Measurement Device Registration]. From the channel list of measurement devices registered on Procedure 5 of STEP 8, leave only the channels for which measurement data is collected and delete unnecessary channels.

Channels that have been registered on [Default Channel Registration] are displayed as a list.
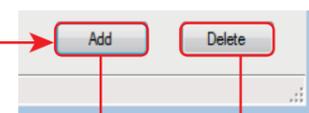
When you select the check box on the [Select] column and click the [Delete] button, the unnecessary channels can be deleted at once.

Clicking the [Add] button registers channels for each measurement device.

CHECK!
Channel names can be changed arbitrarily. You may change the name to the one that is easy to recognize.

[Add Measurement Device dialog — device KM20]
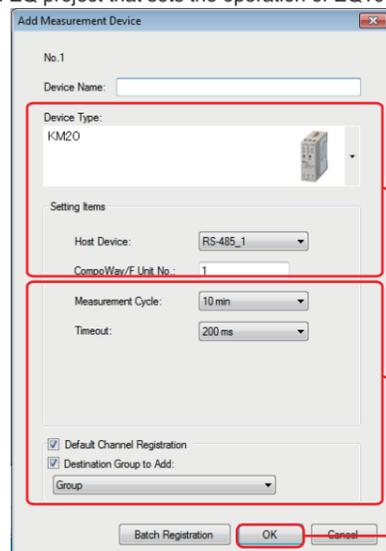
From the [Device Type] list, select an applicable measurement device.
For the RS-485-connected device, set the RS-485 communications port number of EQ100 and unit number of the measurement device connected on STEP 6.

The following items are not changed.
- [Measurement Cycle]
- [Timeout]
- [Default Channel Registration]
- [Destination Group to Add]

Clicking [OK] registers the device.

[Add Measurement Device dialog — device ZN-CTX21]
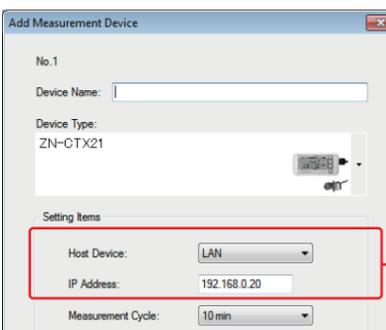
For LAN-connected measurement device, set [Host Device] to LAN and set the IP address of the measurement device.

Repeat the steps above as needed to register multiple devices.

⚠ Caution
- When connecting a wireless device, you need to execute [Connection Device Registration] before executing [Measurement Device Registration]. For details, refer to Chapter 4 of the EQ-Viewer User's Manual.
- When exceeding the upper limit of the number of group registrations, refer to Chapter 4 of EQ-Viewer User's Manual.

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7 Set the EQ100 main body.

■ Network settings

Set the network to connect EQ100 to the upper level system, computer or LAN-connected measurement devices.
On the setup menu, select [Advanced Settings] - [Network setting], and the [LAN] tab.
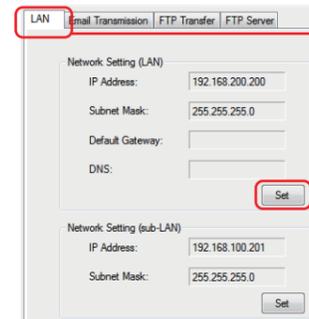
Click the tab to switch the setup screen.

Network setting of the LAN-connected port: On the dialog displayed by clicking [Set], enter the content of the network settings decided by the system administrator.
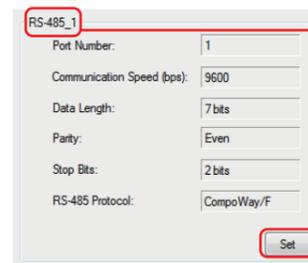
■ Checking RS-485 communications port

When connecting an RS-485-connected measurement device, check the settings of RS-485 ports 1 to 4. From the setup menu, select [Advanced Settings] - [RS485 Communications Port Settings].
Check that the setting contents of the RS-485 communications port that is connected to the measurement device is the same as the ones shown below.

RS-485 communications port number
- Communication speed (bps): 9600
- Data length: 7 bits
- Parity: Even
- Stop bit: 2 bits
- RS485 communications protocol: CompoWay/F

The setting contents can be changed by setting the dialog displayed by clicking [Set].

8 Save the EQ project into the computer.

Click [File] and select [Save].
On the [Save as] dialog enter a file name and click [Save].

CHECK!
If you do not specify the file name, the project name will be used as the file name.

Write the created EQ project file to EQ100 via SD card.
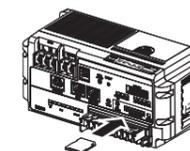
1 Save the EQ project file to the SD card.

Insert the SD card into the computer and create the "EQ_project" folder in the root folder of the SD card.
Copy the EQ project file to the created folder and then remove the SD card from the computer.

⚠ Caution
- Upper case and lower case characters must be set correctly for the "EQ_project" folder name.
- In the "EQ_project" folder, put only one EQ project file to be written.
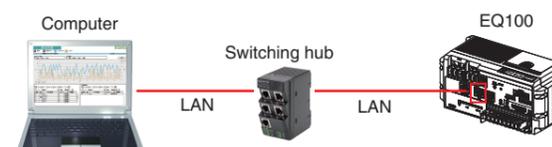
2 Insert the SD card into EQ100.

Insert the SD card into the SD card slot of EQ100 until it clicks.

3 Start up EQ100.

Set EQ100 setting dip switch SW7 and turn ON the power of EQ100.

SW7 = ON

Start up EQ100. After the operating status indication light flashes approximately 1 minute, the collecting status indication light turns ON and EQ project file will be written.

After the writing of the EQ100 project, the collecting status indication light on the front turns OFF and buzzer sounds for 4 seconds.

4 Remove the SD card.

Turn OFF the power of EQ100.
Remove the SD card and after setting the setting dip switch SW7 to OFF, turn ON the power of EQ100.

SW7 = OFF

On the computer, open the Web UI screen of EQ100.

1 Check that the computer and EQ100 are connected.

Computer — Switching hub — EQ100
LAN ——— LAN

2 Enter an IP address of EQ100 on the web browser.

http://192.168.200.200/

Enter the IP address of EQ100 here and press the [Return] key. (192.168.200.200 is the default value.)

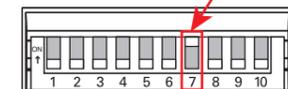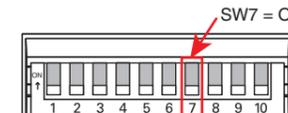### 3 Enter the user name and password.

As the security dialog is displayed, enter User name: admin, Password: admin (the password is displayed as "●●●●●").
The top page of the Web UI screen of EQ100 is displayed.

CHECK!
If you do not connect EQ100 to the existing network, set the IP address of the computer as follows:
- IP address: A unique IP address other than 192.168.200.200
- Subnet mask: 255.255.255.0
For detailed settings, refer to manuals of computer, etc.

STEP 11 Current time setting (📖 EQ100 User's Manual "9. Web UI Functions")

Set the current time to the built-in clock of EQ100 on the Web UI screen.

1 Select [Maintenance] - [System].

When you move the cursor on the [Maintenance] icon on the top of the screen, the screen menu of the lower level is displayed.

⚠ Caution As the battery is not attached to EQ100 at default, the time is not set, be sure to set the current time before starting data collecting.

2 Enter the current date and time and click [Settings].

Enter the current date and time on the [Clock] column and click [Execute].

Enter the current year, month, day, hour, minute and second.

Click [Execute].

STEP 12 Communication test (📖 EQ100 User's Manual "8. Communication Test and Collecting Start")

On the Web UI screen of EQ100, conduct the communication test for EQ100 and the measurement device. Firstly check that the power supplies of all the connected devices and measurement devices are turned ON. Display the Web UI screen as the same procedure as STEP10, and then from the icon on top of the screen, select [Maintenance] - [System].
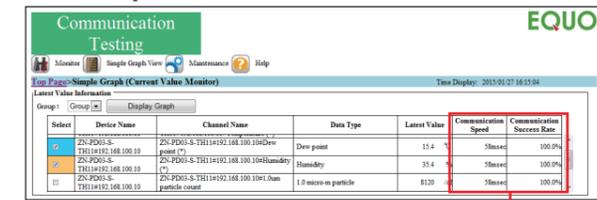
1 Start the communication test.

Click [Communication Test] on the [Main body operation] to start the communication test.

Click the [Communication test] button.

🔍 CHECK! - When the communication test starts, the status display on the top left of the screen changes to "Communication testing".
- To make sure that EQ100 can collect data steadily from the measurement device, a communication test must be conducted.

2 Check the communication status.

During communication test, from the icon at the top of the screen select [Simple Graph] - [Current Value Monitor], and check that [Communication Success Rate] of each measurement device is 100%.

Check the communication success rate and communication speed.

⚠ Caution Some devices do not show the communication status. For details, refer to the EQ100 User's Manual.

3 Exit the communication test.

From the icon at the top of the screen, select [Maintenance] - [System], click [Setup] on the [Main body operation] column to exit the communication test.

STEP 13 Collecting start (📖 EQ100 User's Manual "8. Communication Test and Collecting Start")

Transition the status of EQ100 from setup to collecting and start the measured data collecting. Display the Web UI screen of EQ100 as the same procedure on STEP10, and then select [Maintenance] - [System].

Click [Collecting] on the [Main Body Operation] to start collecting.

Click the [Collecting] button.

🔍 CHECK! When collecting starts, the status display at the top left of the screen changes to "Collecting".
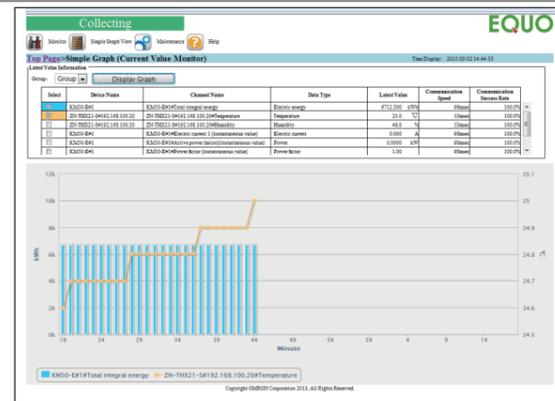
STEP 14 Graph display of the Web UI screen (📖 EQ100 User's Manual "9. Web UI Function")

When the collected data has been accumulated on EQ100, open the Web UI screen of EQ100 and display the simple chart.
Display the Web UI screen of EQ100 as the same procedure as STEP10.

From the icon at the top of the Web UI screen, select [Simple Graph] - [Graph View].
Setting the items for chart display and pressing the [Display] button displays the collected measured data as a chart.

🔍 CHECK! It is after approximately 20 minutes since the start of collecting that the first data is accumulated on EQ100.

Select the Graph Type and Disp. Period.

Select date, data type and channel.

## STEP 15 Creating/writing EQ server project files (📖 EQ-Viewer User's Manual "4. EQ-Manager Operation")

To display a chart for collected data, on which EQ100 performed logging, by using the display/analysis tool EQ-GraphViewer in EQ-Viewer, EQ server is required. Create an EQ server project that configures the EQ server, and write it to the EQ server.

1 Start up EQ-Manager according to STEP8.

2 From the toolbar, select [File] - [Create New File] - [EQ Server Project].

3 Enter a project name on the [EQ Server Setting] dialog.
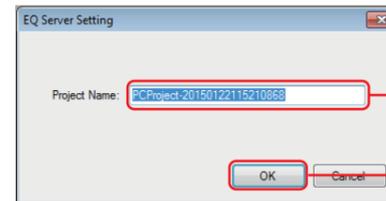
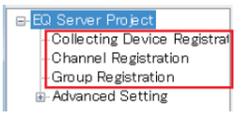A project name based on the created data, etc. is set as an initial value.

Click [OK].

The setup menu of the EQ server project is displayed.

EQ server project setup menu

4 Set the EQ server project.

Click each item of the setup menu to make settings on the screen.

Collecting Device Registration	Register EQ100 that is the collecting source of the EQ server. If there are multiple EQ100s, register them all.
Channel Registration	Utilize the registered data of the EQ project to register the channels of the EQ server project.
Group Registration	Group the channels to manage them. The groups can be categorized based on the area and organization.

5 Save the EQ server project to the computer.

From the toolbar, select [File] - [Save]. Enter the file name on the [Save as] dialog and then click [Save].

6 Write the EQ server project.

1. From the toolbar, click [Logger] - [Connect online] to connect to the EQ server. The IP address is fixed as "localhost".
2. From the toolbar, click [Logger] - [Write settings] to write the EQ server project to the EQ server.
3. From the toolbar, click [Logger] - [Start Logging] to start logging.
4. From the toolbar, click [File] - [Save] to save the written project file.

STEP 16 Chart display by EQ-GraphViewer (📖 EQ-Viewer User's Manual "5. EQ-GraphViewer")
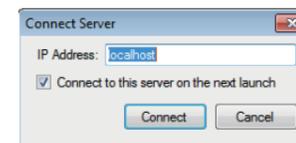
EQ-GraphViewer displays the chart for the summary data.

1 Start EQ-GraphViewer.

From the shortcut on the Windows desktop or start menu, launch EQ-GraphViewer. From the [File] menu of the toolbar, click [Connect Server].

⚠ Caution
After EQ server starts, it may take some time until the accumulation of the first summary data.

EQ server is in the same computer: Click the [Connect] button with [localhost] unchanged.
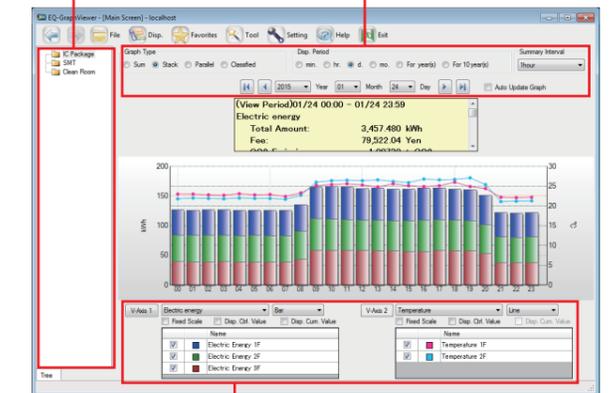
2 Select a channel group on the channel tree area.

3 Display the graph.

Specify bar chart type, data type (vertical axis unit), display channel, display period, summary unit, and display date to display the chart.

Channel tree area
Select the channel group.

Set the type, display period, summary unit and display date of the bar chart.

Set the data type (vertical axis unit) and display channel.

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