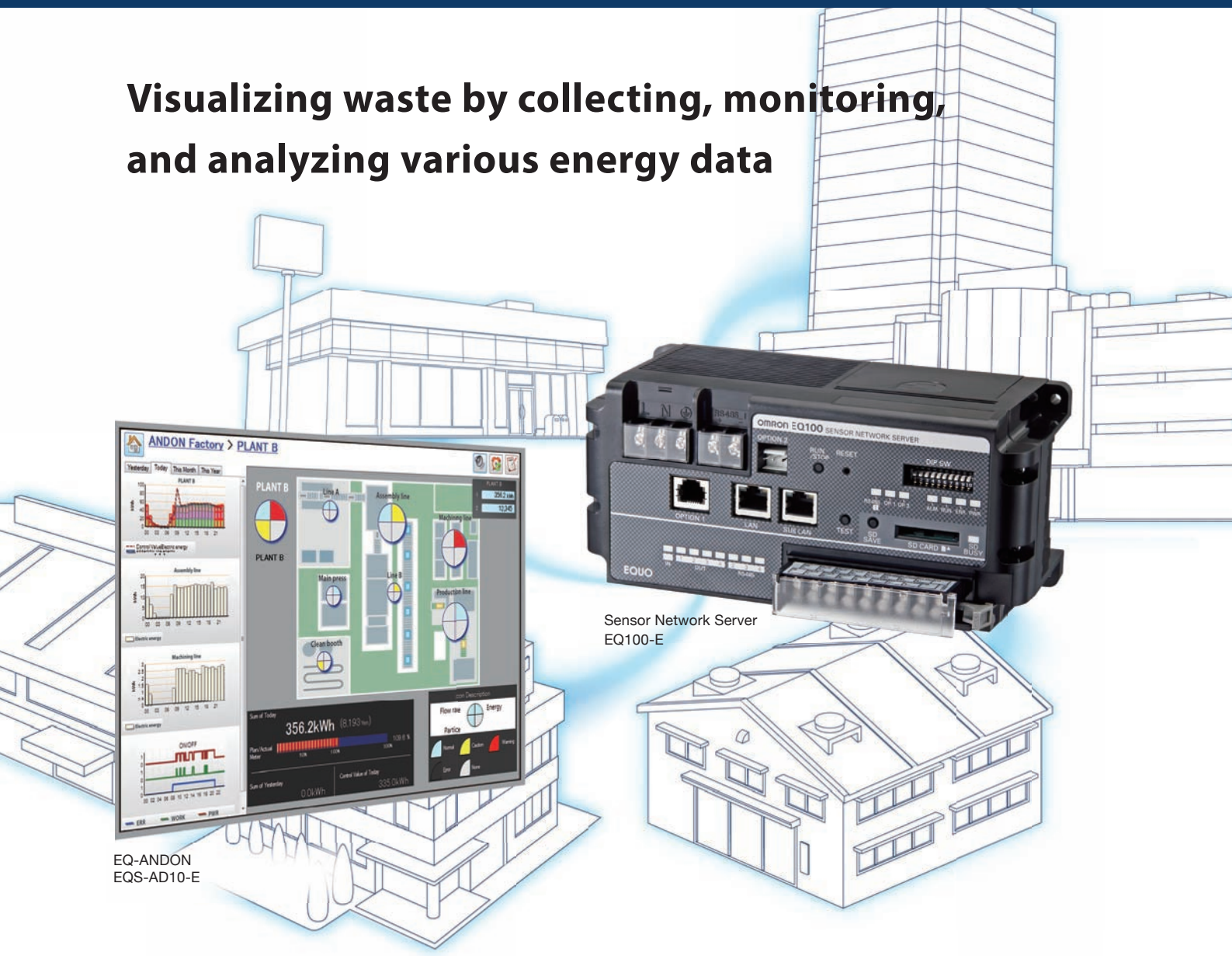
Energy-Saving Support Device
Data Collection Device
Monitoring & Analysis Software

Data Capture Equipment & Monitoring/Analyzing Software | Data Collection / Monitoring & Analysis

Visualizing waste by collecting, monitoring, and analyzing various energy data



EQ-ANDON
EQS-AD10-E

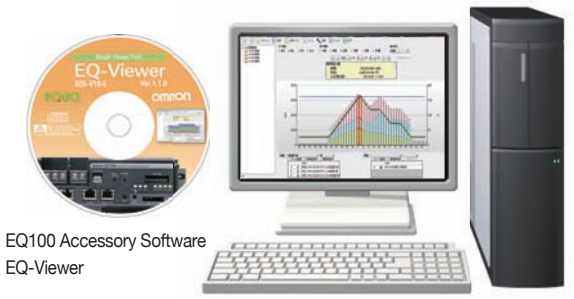
Sensor Network Server
EQ100-E

Definitive Energy Data Collection System

Unitary monitoring can be realized by collectively sensing power consumption, quality, and environmental data.
A visualization system for maximizing energy efficiency can be constructed in various places from manufacturing sites to buildings.

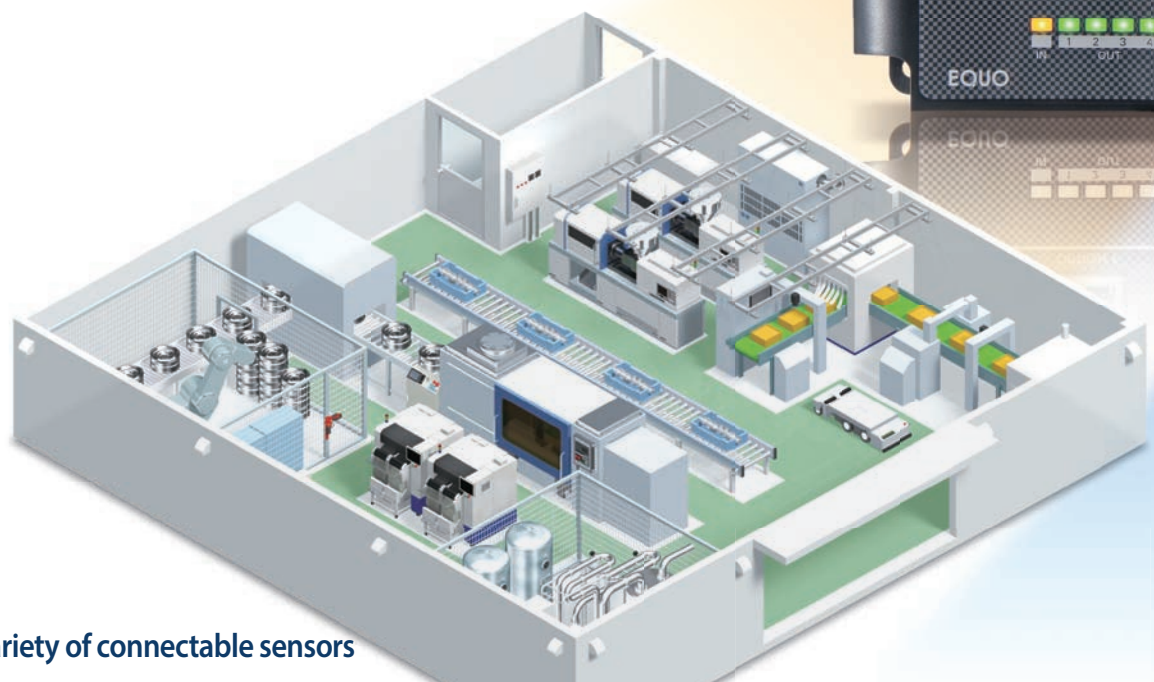
For people who want to begin visualization with a small investment

Graphs can be displayed with the accessory visualization software.
Measurement types and locations can also be extended freely.



EQ100 Accessory Software
EQ-Viewer

P.4



A wide variety of connectable sensors

Production information

Machine Automation Controller
NJ/NX1P2-series*2

Programmable Controller
CJ1/CJ2-series

Power Sensors

Power
Smart Power Monitor
KM-N1-FLK

Power
Power Monitor
KM-N2-FLK

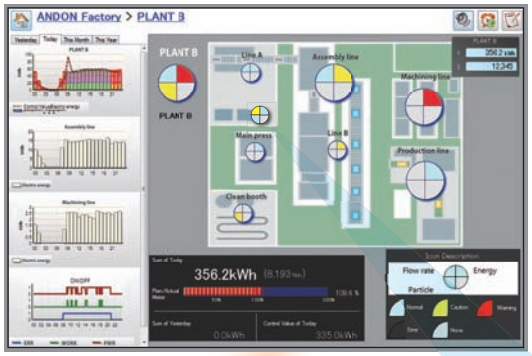
Power
Power Monitor
KM-N3-FLK

Power
Smart Power Monitor
KM50-□1-FLK

Particle
Air Particle Sensor
ZN-PD□□-S

Temperature/Humidity
Air Thermo Station
ZN-THX21-S

*2. Enable the memory used for CJ-series Units. EQ100 collects data from the memory used for CJ-series Units.

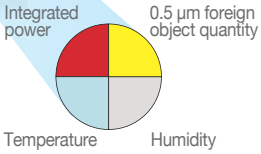


EQ-ANDON
EQS-AD10-E

Japanese, English, and Chinese languages are supported

For people who want to satisfy both energy saving and quality improvement

Waste and abnormalities at the site can be monitored continuously and unitarily by using EQ-ANDON, enabling you to work together for improvements.



An abnormality is notified by the monitoring icon.

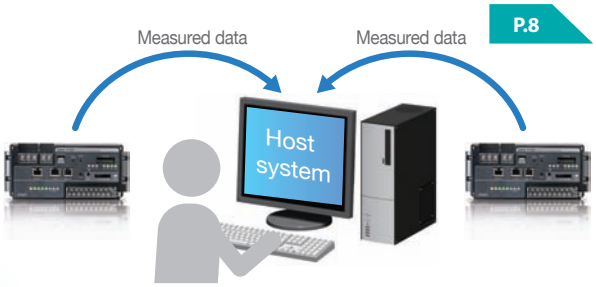
P.6

Sensor Network Server
EQ100-E

For people who want to connect EQ100 to their own system

The EQ100 significantly reduces the designing man-hours on the host system side by collecting environment data such as electric power, temperature, and humidity in a lump.

P.8



Differential Pressure
Differential Pressure Station
ZN-DPX21-S

Temperature/Humidity
Thermo-Humidity Sensor
WZ-STH01*1

Illuminance
Light Intensity Sensor
WZ-SL01*1

Temperature/Humidity Illuminance
Thermo-Humidity Light Intensity Sensor WZ-STHL01*1

CO2
CO2 Sensor
WZ-SCD01*1

Pulse
Pulse Sensor
WZ-SP01*1

Pulse Analog
Digital Panel Meter
K3GN-□□□□-FLK
K3HB-□□□-FLK3A□□□

Temperature Analog
Temperature Controller
E5□C

Quality/Environment Sensor

*1.The wireless unit WZ-series is used only in Japan.

Utilization Scene 1

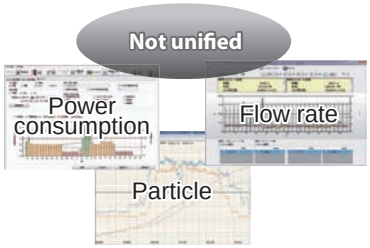
For people who want to begin visualization with a small investment

The accessory visualization soft and freely extend measurement

Do you have any of the following problems when you begin visualization?

We cannot secure the budget for visualization. Is it possible for us to try it more easily?

Some data have been visualized; however, visualization software is not unified.



The accessory software realizes a flexible visualization system of electric power, temperature/

1 Visualization software is attached for free.

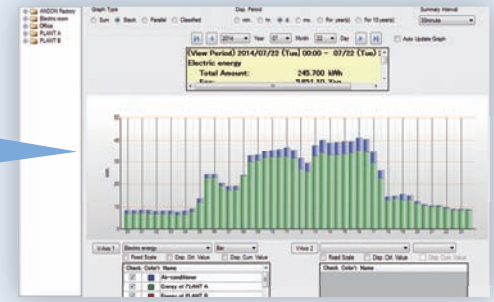
Japanese, English, and Chinese languages are supported

Measured data can be displayed with easy-to-see graphs by using visualization software attached to the EQ100.

2 Data such as power consumption, temperature/humidity, and air flow rate can be measured simultaneously.

Facility managers visualize the power consumption of the entire building.

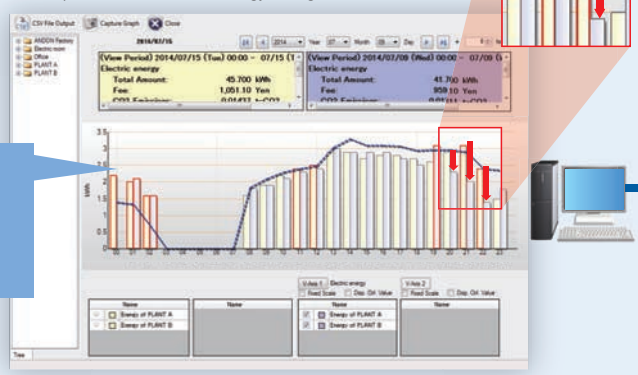
Facility managers and on-site personnel can display graphs from their respective standpoints.



EQ100-E Accessory Software "EQ-Viewer"

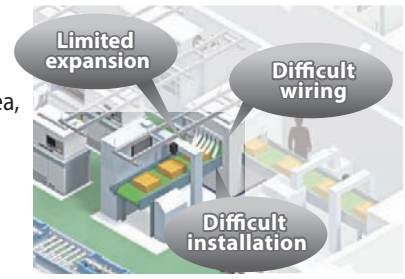
On-site personnel visualize the energy-saving effect of devices

The comparison function makes you notice waste.



ware enables you to easily perform a setup, locations and types.

We want to expand the visualization area, but it is not easy.



humidity, air flow rate, etc. in accordance with the site.

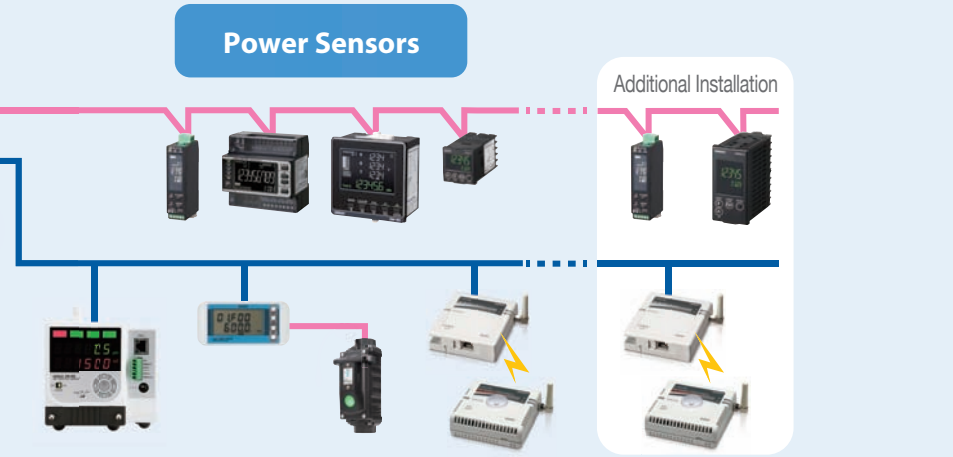
Data of not only electric power but also temperature/humidity, air flow rate, and particles can be simultaneously collected by connecting sensors which act to grasp the status of the manufacturing site.

3 System expansion by utilizing wireless sensors*

The system can be freely expanded in accordance with the changes on the site, such as installing additional sensors, and changing measurement locations due to the introduction of wireless units*.

Abundant sensors capable of measuring various data

EQ100-E



If wiring is difficult, use a wireless unit* to eliminate wiring.

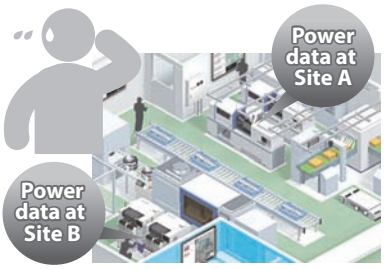
*The wireless unit WZ-series is used only in Japan.

Utilization Scene 2
For people who want to satisfy both
energy saving and quality improvement

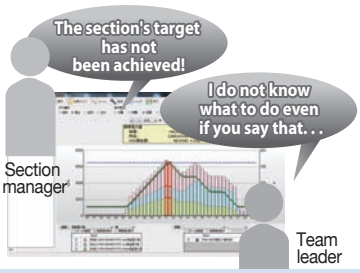
Waste and abnormalities at the unitarily by using EQ-ANDON,

Do you have any of the following problems when you are moving ahead with energy-saving

Data have not been utilized effectively because they are dispersed on the site.



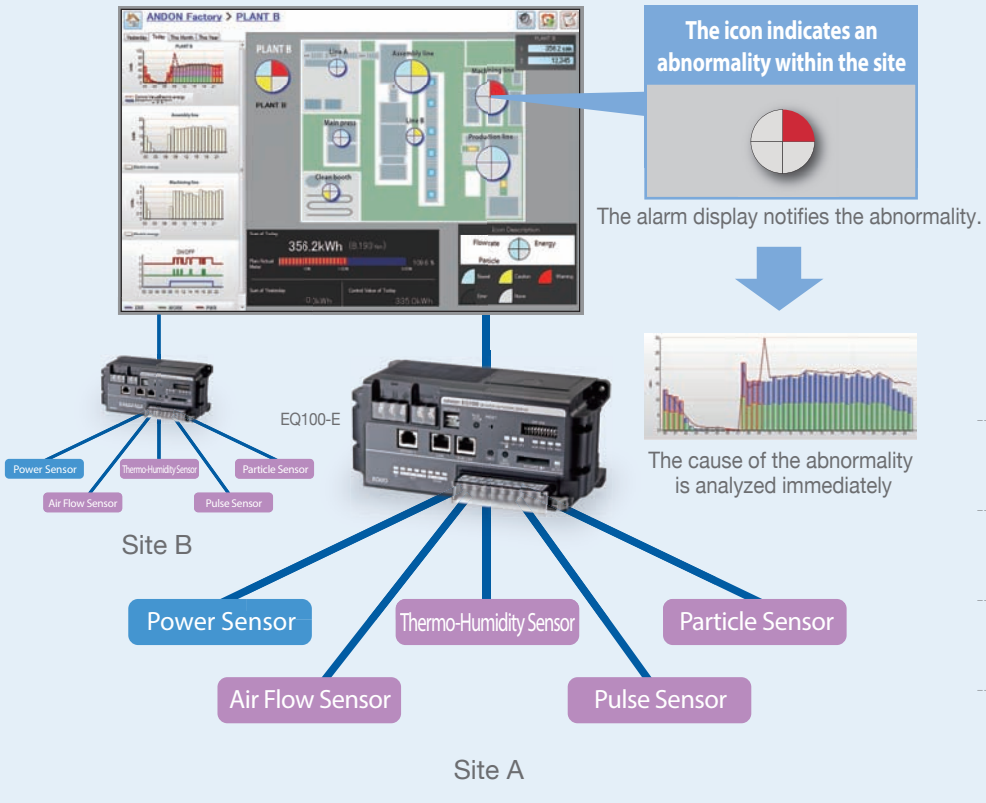
Problems cannot be shared among people with different job positions or roles even though the same data are shown.



Waste and abnormalities at the manufacturing site can be monitored continuously and unitarily by

1 Unitarily visualize dispersed data

Not only power consumption but also quality and productivity which are important at the manufacturing site can be unitarily monitored on the site layout drawing.
Where and what kind of waste or abnormality is occurring can be grasped quickly.



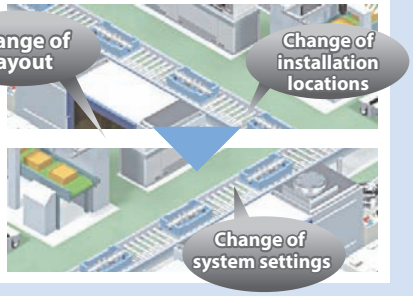
2 A person who wants to see canview only information he/she wants to view.

Hierarchical display anyone working at the site can view

sitecan be monitored continuously and enabling you to maximize energy efficiency.

initiatives?

Changing the system is a hard work when switching or expanding the line.



using EQ-ANDON, enabling you to work on improvement activities.

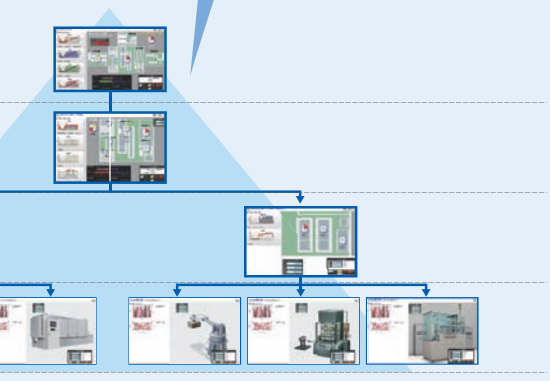
Monitoring in accordance with the job position and role can be performed by the hierarchical structure synchronized with the organization. All staff can work together on improvement activities by sharing targets and progress information.

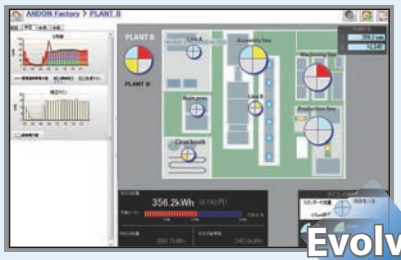
3

Evolves the way how to show data in accordance with layout changes and energy-saving initiatives.

The system can be easily updated even if the energy-saving operation or the initiative level advances.
You can flexibly change the screen layout in accordance with the expansion of production facilities at the manufacturing site and the change in production lines.

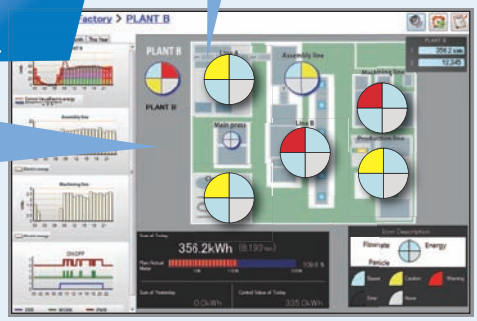
Monitoring can be performed using screens and targets in accordance with the job position.





Evolved

Management areas and monitoring icons can be added easily.



Just replace the screen to change the layout for switching the line.

Utilization Scene 3

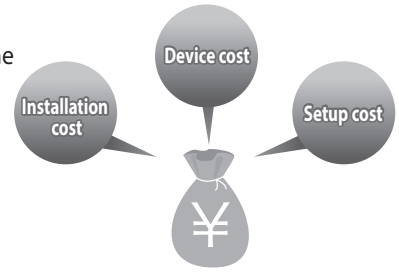
For people who want to

connect EQ100 to their own system

The EQ100 significantly reduces host system by collecting multiple

Do you have any of the following problems when you want to connect to an energy management

We want to reduce the costs related to the system.



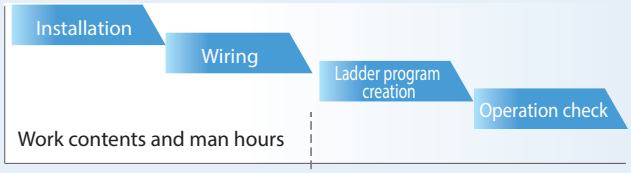
We want to concentrate on the system design on the host system side.

Easy to collect energy data corresponding to the site and interwork with the host system through

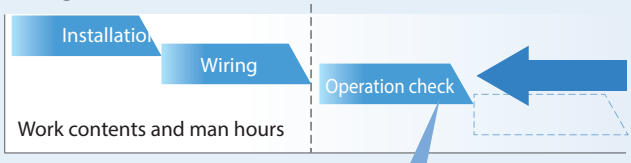
1 Ladder-less (PLC not required) significantly reduces system construction costs.

The PLC ladder programming is not required because the EQ100 can collect on-site energy data easily, and therefore system construction costs can be significantly reduced.

Using PLC



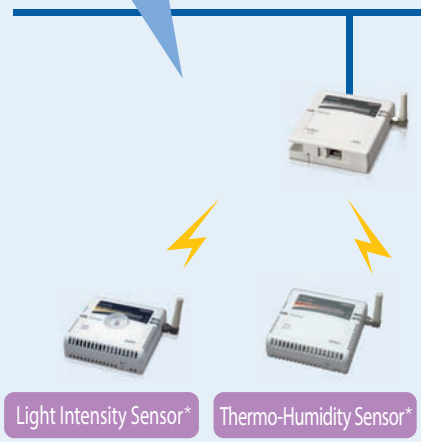
Using EQ100



Measured data can be collected from various sensors only by setting the EQ100.

2 The data measurement and collection system can be constructed easily.

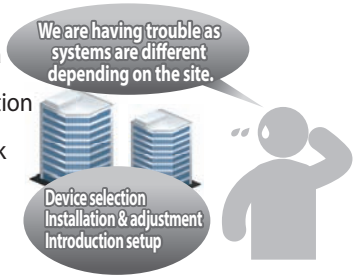
Sensors can be freely selected in accordance with the scale of the site, and the system can be easily constructed.



the designing man-hours on the side of the data in a lump.

system or an existing system?

We want to have the data measurement and collection system to easily interwork with the host system.

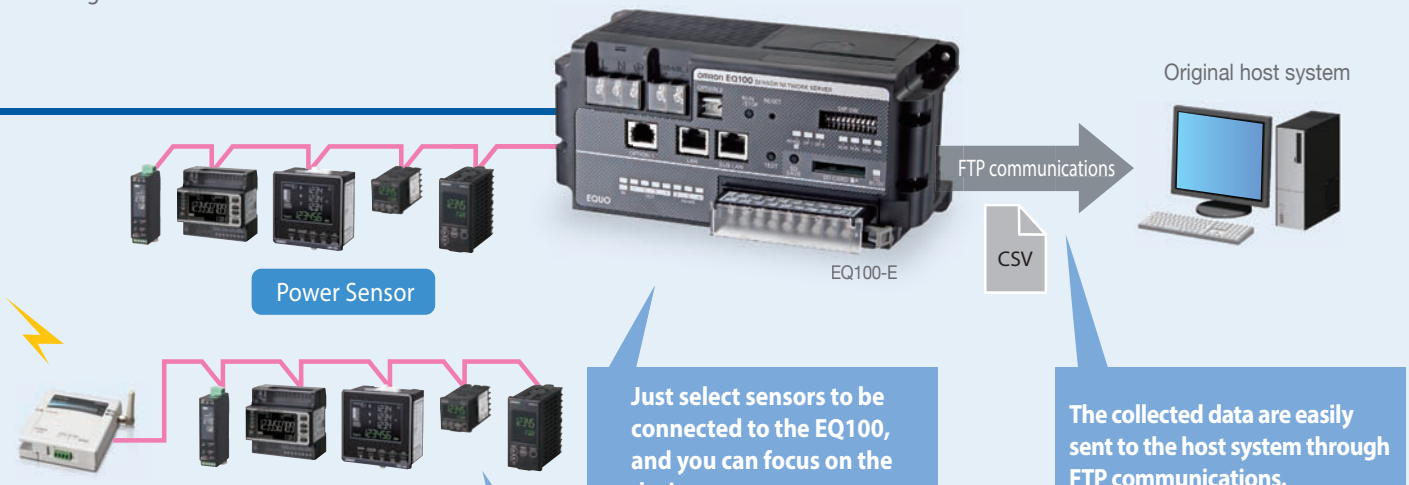


FTP communications.

An ideal system for the site can be constructed by freely selecting sensors connectable to the EQ100.
Not only power consumption sensors but also environmental sensors can be selected, and the man-hours for installation can be reduced because they can be connected wirelessly by using wireless units.*

3 Data linkage through FTP communications

CSV files can be periodically transferred to the host system through FTP communications, making it easy to realize data linkage with the host system.



Just select sensors to be connected to the EQ100, and you can focus on the design.

The collected data are easily sent to the host system through FTP communications.

Wireless connection can be realized in combination with wireless units.*

*The wireless unit WZ-series is used only in Japan.

EQ100-E
Features

Easily installable and variously

A variety of power sensors and quality/environment sensors can be connected to the EQ100.
Large-volume data gathering capabilities enable the collection and accumulation of the measured data.

Connectable to a variety of sensors

A variety of sensors including power consumption, air flow rate, pulse, analog, temperature/humidity, and particle sensors can be connected.

Extensive connection ports

4 RS-485 communication ports, 2 LAN ports, 1 general-purpose input point, and 4 general-purpose output points

Either CompoWay/F or Modbus RTU can be selected for each communication port

Large-volume data gathering capabilities

500 measurement channels, 1/5/10/30/60 minutes collection intervals, 224 connectable sensors (LAN: 100 units / RS-485: 124 units)

Data can also be stored on an SD card

If the network connection is not possible, measured data can be stored on an SD card, enabling operation over a long period.

Arithmetic processing of measured data can be performed

Arithmetic processing of basic units can be performed from the power consumption and production quantity, and the processing of the power consumption during operation can also be performed from the information related to power consumption and facility operating state.

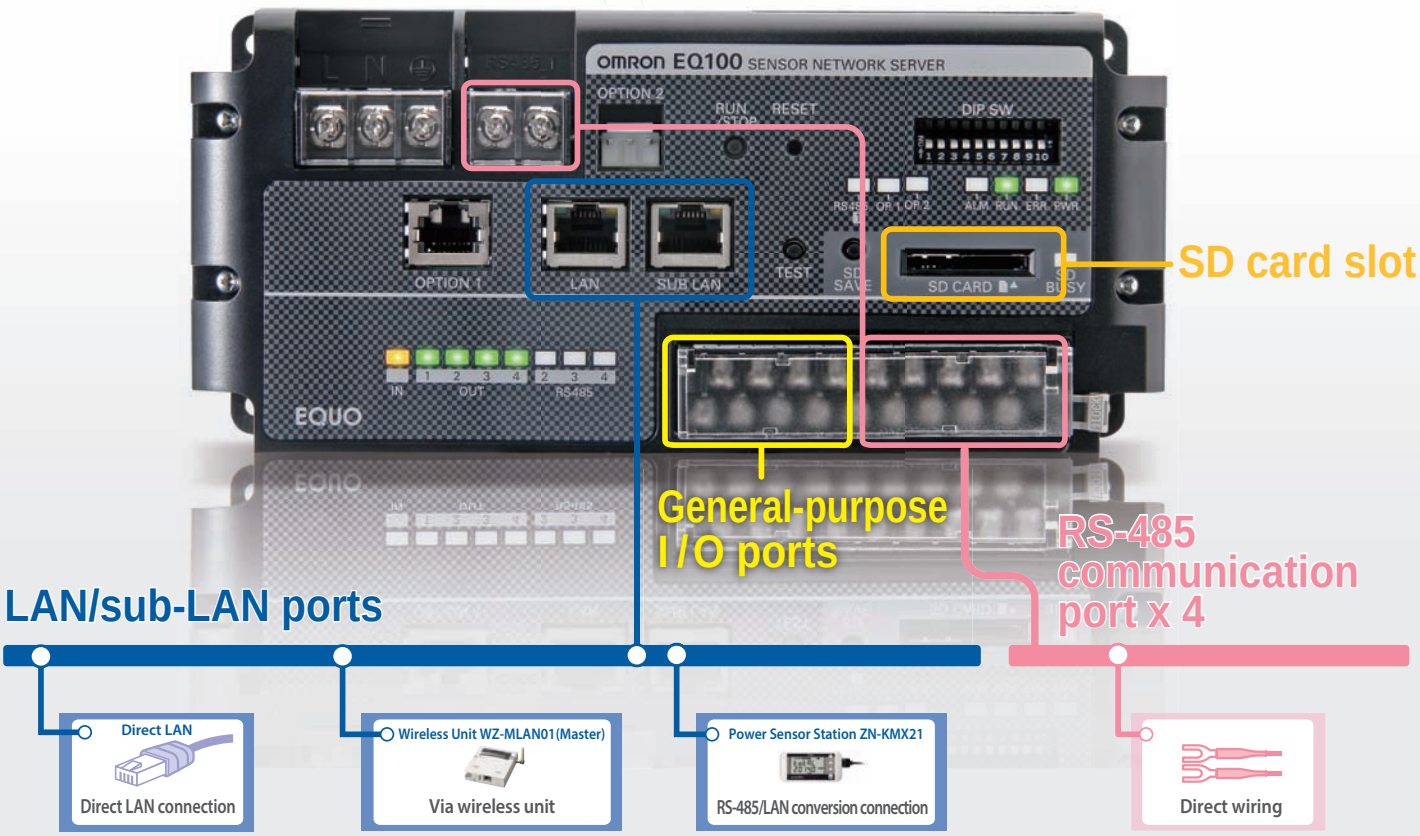
Web browser function

Simple graphs, operating state, and communicating state with sensors can be displayed in your web browser.

Japanese, English, and Chinese languages are supported

FTP communication function

Measured data can be sent from EQ100 to the FTP server in an arbitrary timing (10/30 minutes or 1/6/12/24 hours).



*The wireless unit WZ-series is used only in Japan.

connectable sensor network server

Sensors (measurement devices) connectable to EQ100/EQ-ANDON and their connection methods

Sensor Type	Sensor Name	Measurement Type										Connection Method				
		Electric Power	Pulse	ON/OFF	Analog	Particle	Pressure	Temperature/ Humidity	Illumination	CO2	Equipment Status	Directly via EQ-ANDON	Via EQ100			
												LAN	LAN			RS-485
												Direct	Direct*3	Wireless*4	KMX*5	
Power Sensor	Smart Power Monitor KM-N1-FLK	●												●	●	●
	Power Monitor KM-N2-FLK/KM-N3-FLK	●												●	●	●
	Smart Power Monitor KM50-□1-FLK	●	●											●	●	●
	Smart Power Monitor Multiple Circuit Type KM1	●	●	●										●		●
Power Monitor	Portable Power Monitor ZN-CTX21	●											●			
Environment Sensor	Air Particle Sensor ZN-PD□□-S					●		●*5					●	●		
	Air Thermo Station ZN-THX21-S							●					●			
	Differential Pressure Station ZN-DPX21-S						●						●			
Wireless Environment Sensor*8	Thermo-Humidity Sensor WZ-STH01							●						●		
	Light Intensity Sensor WZ-SL01								●					●		
	Thermo-Humidity Light Intensity Sensor WZ-STHL01							●	●					●		
	CO2 Sensor WZ-SCD01									●				●		
	Pulse Sensor WZ-SP01		●											●		
Other Sensors	Condition Monitoring Device K6CM/K6PM										●	●				
	Condition Monitoring Device K7GE/K7TM/K7DD										●					●
	IO-Link Products (Connection via IO-Link master) NXR-ILM08C-EIT											●				
	Digital Panel Meter K3GN-□□□□-FLK K3HB-□□□-FLK3A□□□		●	●	●*8			● Temperature only						●		●
	Temperature Controller E5□C				●			● Temperature only						●		●
	Modbus Device															●
Controller	Machine Automation Controller NJ/NX1P2-series*7 Programmable Controller CJ1/CJ2-series*1												●			

*1 CPU unit with a built-in EtherNet/IP port or EtherNet/IP unit is needed. *2 Air thermo sensor ZN-TH11-S is needed separately.

Notes on connection methods in the LAN columns

*3 Devices that can be directly connected to EQ100's LAN port.

*4 Sensors other than wireless environment sensors can be connected to the wireless master unit when connected to the wireless slave unit WZ-SRS01 through RS-485.

*5 These sensors are connected to EQ100's LAN port by converting the protocol from RS-485 to LAN with the Power Sensor Station ZN-KMX21.
When connecting to LAN via KMX, not all the measured data from the connected KM-series can be collected. For details, refer to EQ100's User's Manual.

*6 For details of sensor types, refer to the User's Manual of EQ-ANDON or EQ-Viewer.

*7 Enable the memory used for CJ-series Units.EQ100 collects data from the memory used for CJ-series Units.

*8 K3HB does not support ON / OFF.

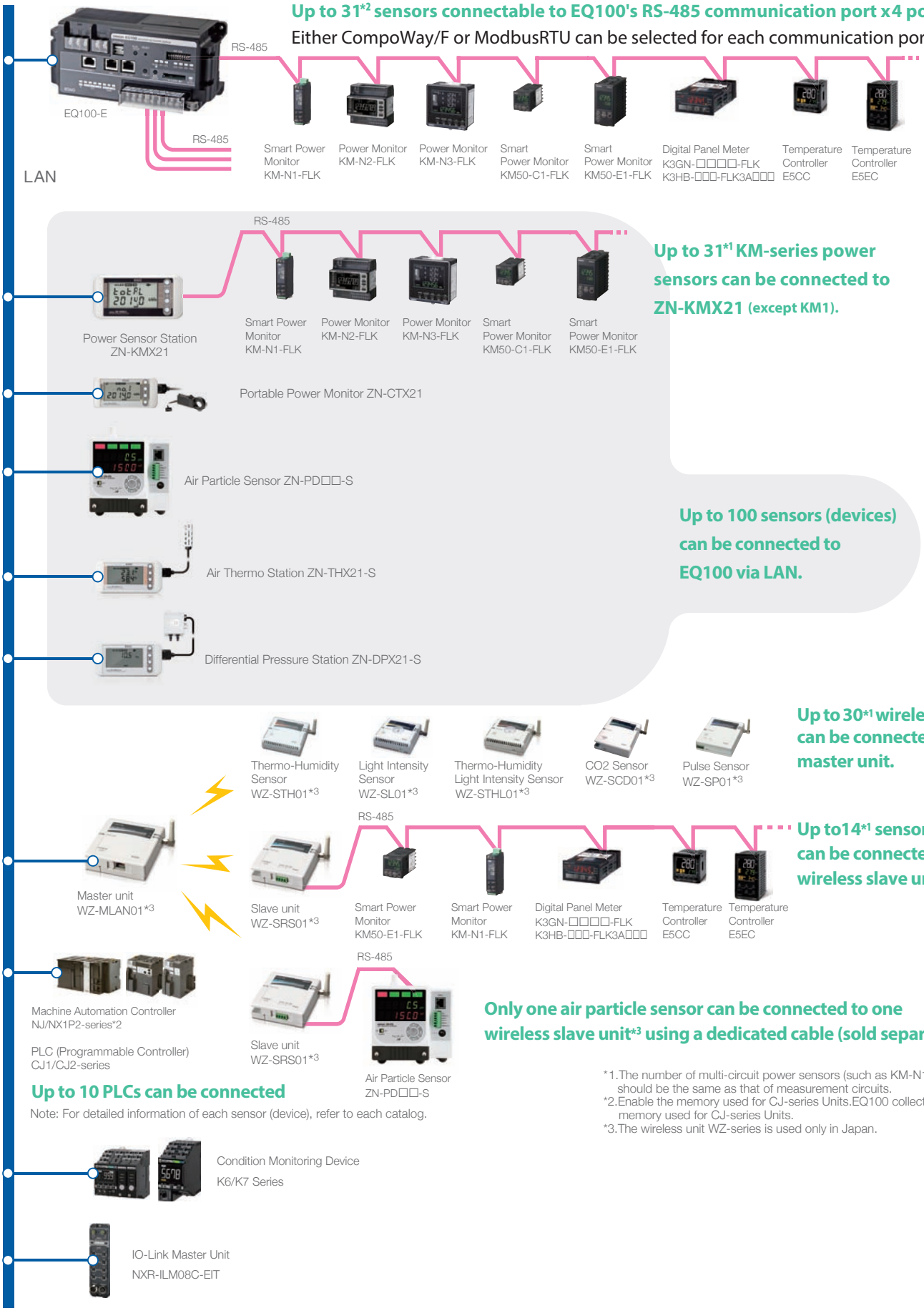
*9 The wireless unit WZ-series is used only in Japan.

EQ100-E

Connection Configuration

A variety of connectable sensors and

Connection methods and the maximum number of connectable sensors (measurement devices)



Note: For detailed information of each sensor (device), refer to each catalog.

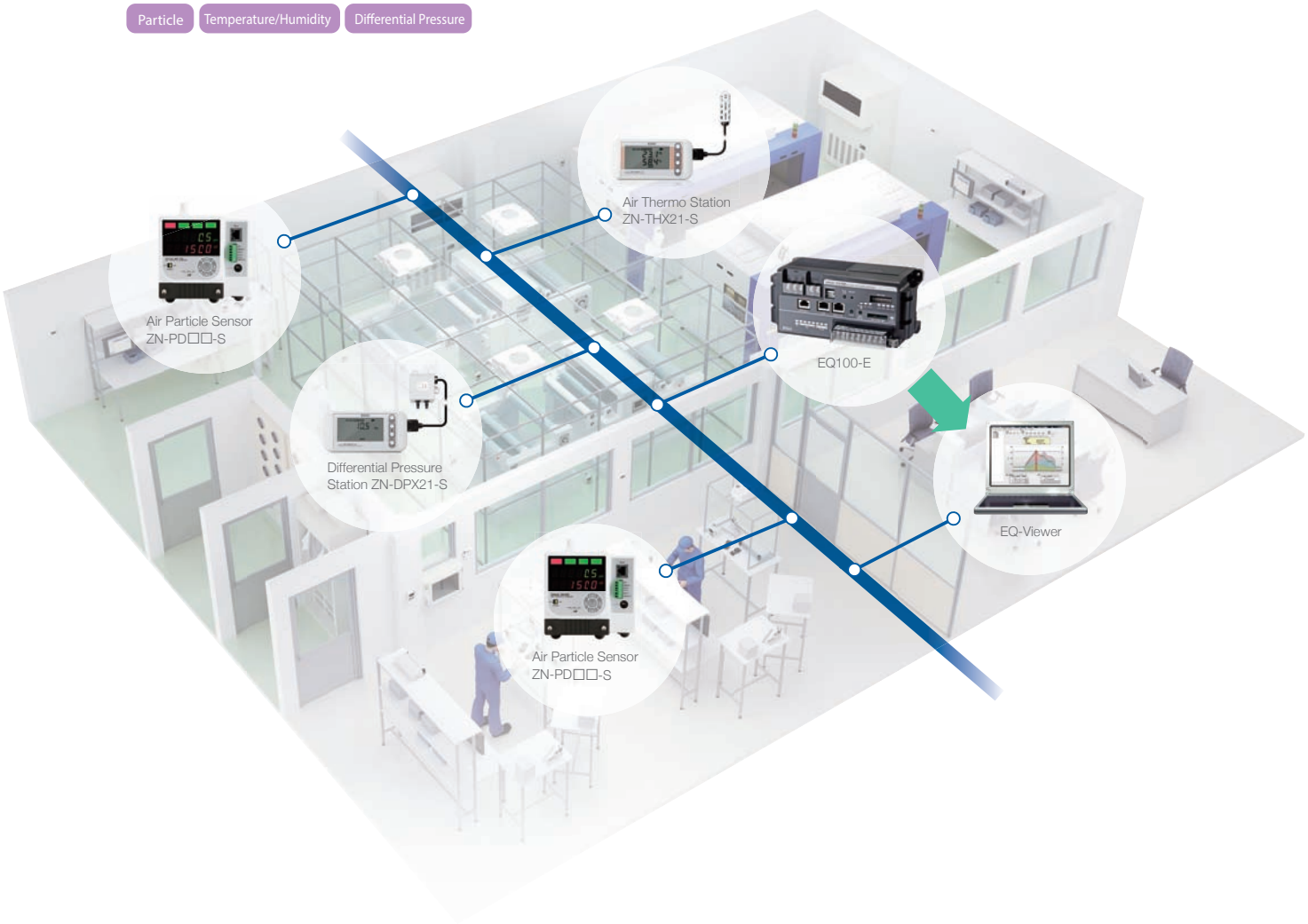
*1.The number of multi-circuit power sensors (such as KM-N1/N2/N3) should be the same as that of measurement circuits.
*2.Enable the memory used for CJ-series Units.EQ100 collects data from the memory used for CJ-series Units.
*3.The wireless unit WZ-series is used only in Japan.

flexible LAN and wireless[*3] connection methods

Sensor Connection Examples

For a clean booth

Particle | Temperature/Humidity | Differential Pressure



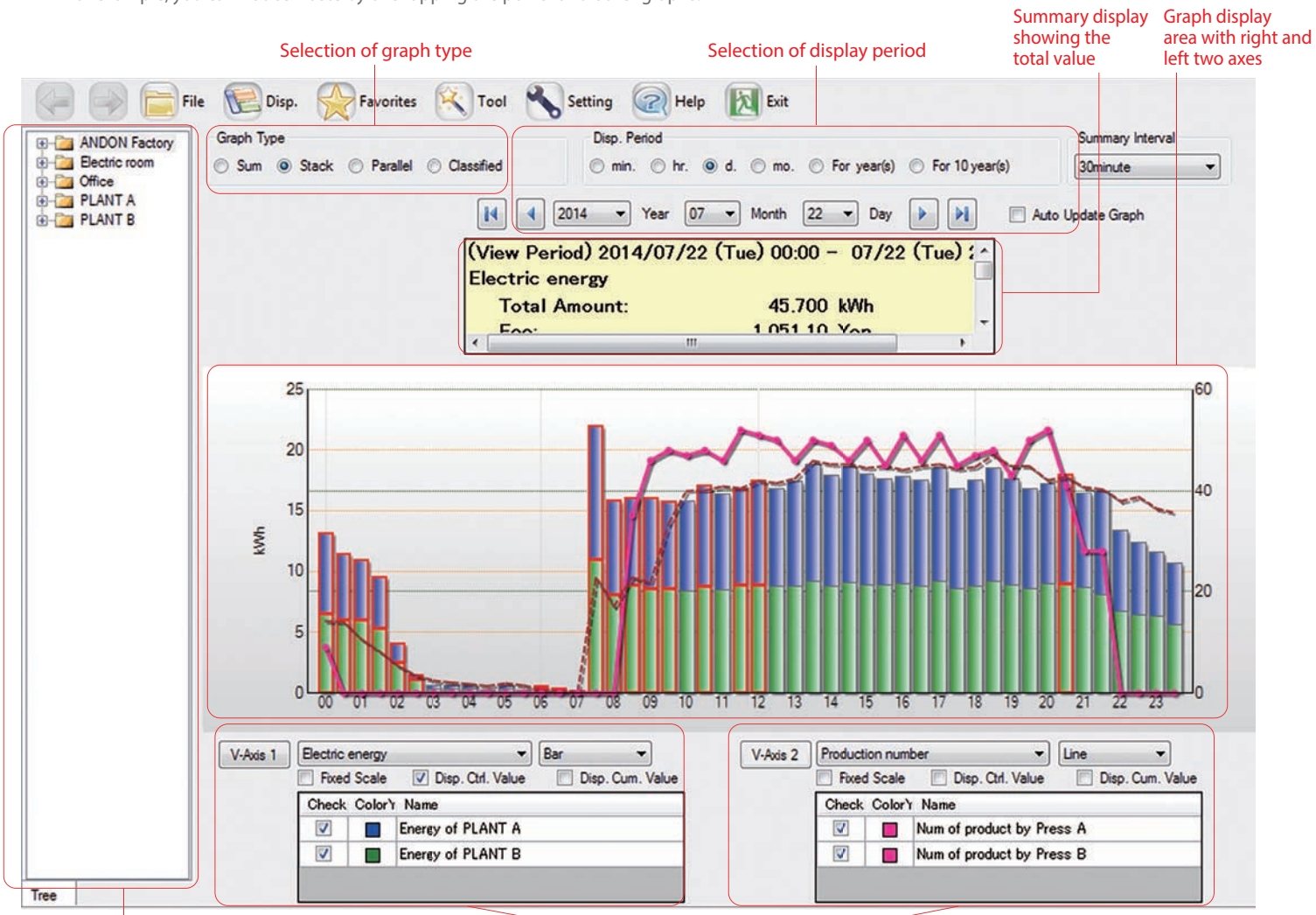
Easy visualization and analysis of

EQ100 Accessory Visualization Software

Japanese, English, and Chinese languages are supported

EQ-Viewer

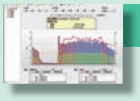
Graph types and display periods can be selected and changed, and items to be displayed on the right and left vertical axes can be selected and changed.
For example, you can notice waste by overlapping the power and other graphs.



EQ100

Visualization by EQ-Viewer

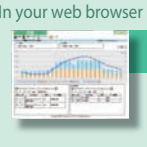
By using PC software



Visualization by EQ-Viewer (EQ100 accessory software)

This software can collect and summarize the measured data of the EQ100 to realize detailed graph displays and analysis.

In your web browser



Visualization in your web browser (EQ100's function)

Data can be easily visualized by using the Internet browser's function.

Functional upgrade

Measured data and setting data are inherited.

EQ-ANDON

Visualization + Continuous monitoring/analysis

Visualization and continuous monitoring by using EQ-ANDON

Continuous and unitary monitoring can be realized by further expanding the EQ-Viewer's function.
Data can be confirmed in the hierarchical structure for all personnel and for each person-in-charge, and information necessary for improvements can be shared.

P.16~21

Note: For differences between EQ-Viewer and EQ-ANDON (sold separately), refer to the data sheet on page 28.

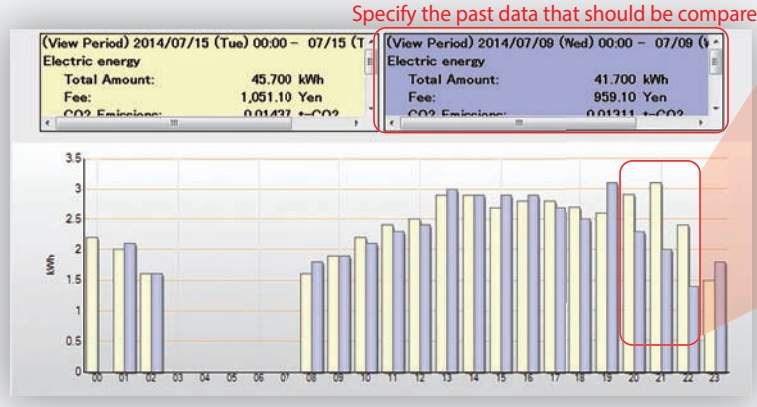
energy data collected by the EQ100

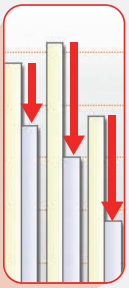
Useful Functions for Analyses

Comparison with Past Data

Data can be compared between before and after the implementation of energy-saving measures.

Specify the past data that should be compared.



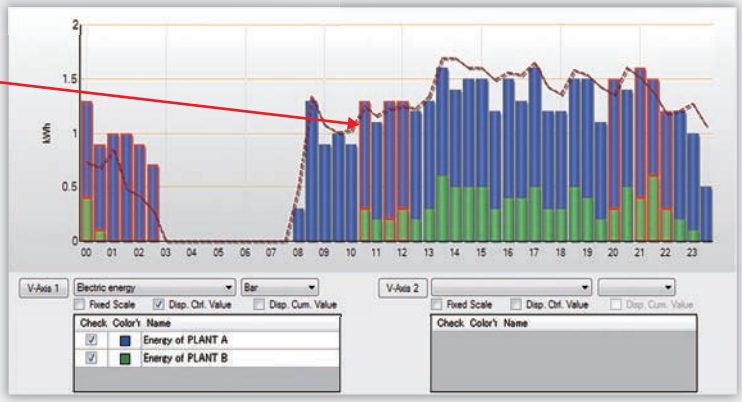


You can understand that the reduction effect has been realized.

Target value setting for each time zone

The target management can be performed not only on a peak basis but also on an hour basis by setting the target value for each time zone.

Any time zone exceeding the target value can be immediately recognized as the zone is displayed in a bar chart surrounded by a red frame.



Accumulated Value Display

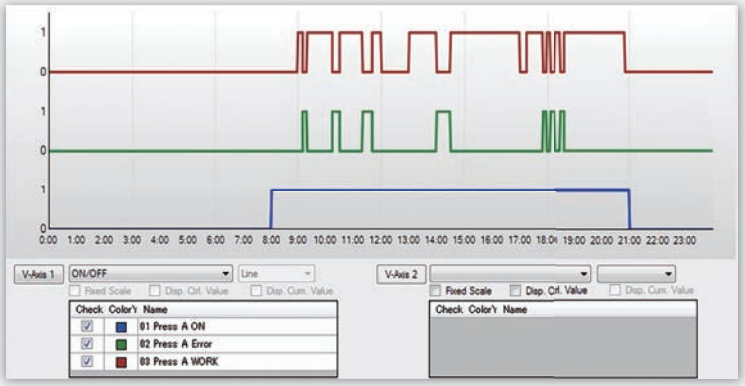
Both the transition of target values in hours and the accumulated value can be confirmed.

The transition of sum totals for one day can be grasped by the accumulated value.

"Transition of target values in hours (Changes at every hour can be recognized.)
Accumulated value (The sum total of the day can be grasped.) "

ON/OFF display of the device

The states of the device such as power-ON, under-operation, and error-occurrence can be recognized.



EQ-ANDON
Features

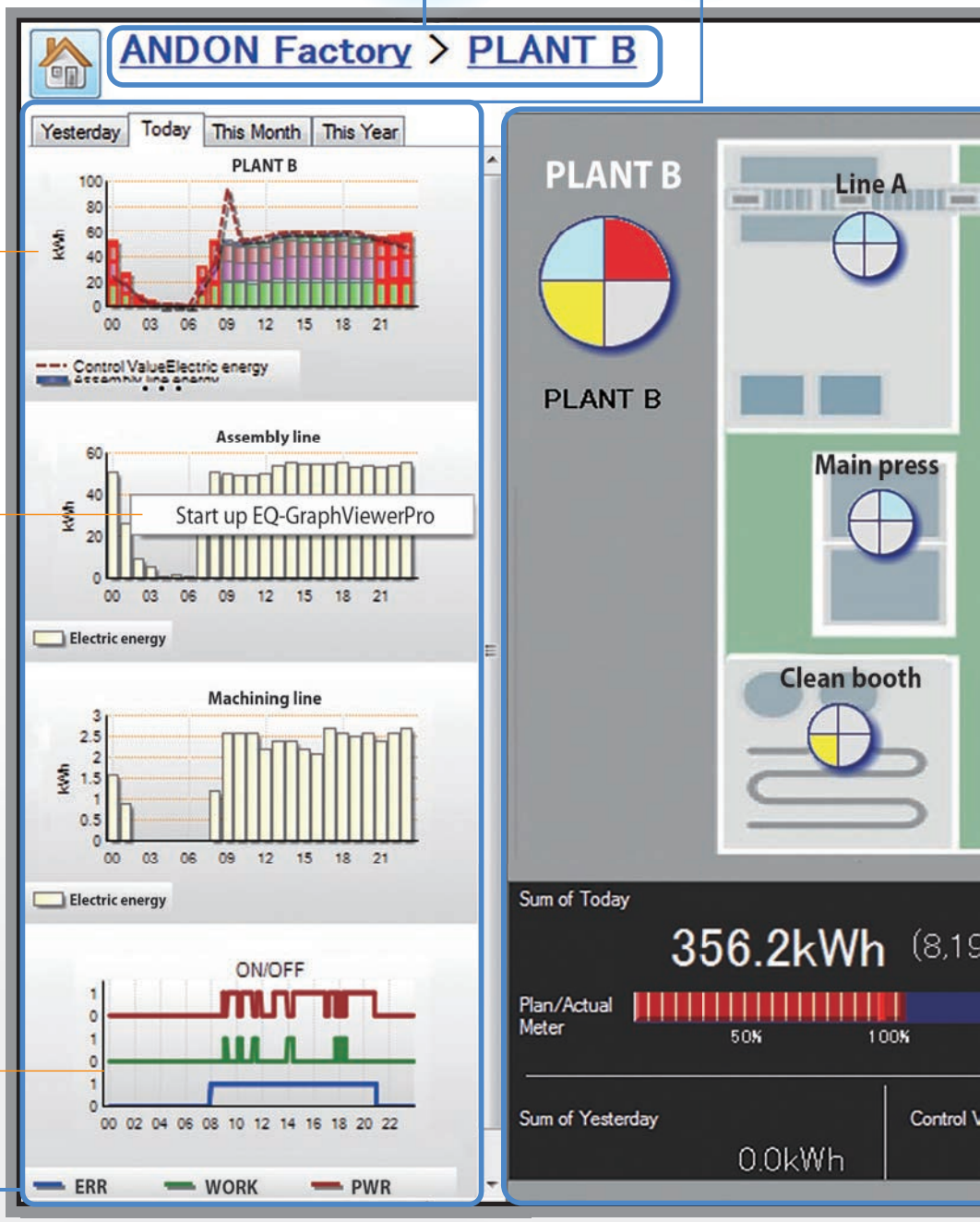
Can clearly glance where and which

The measured data at each device collected and accumulated by the EQ100 can be unitarily compared,analyzed, and monitored by using EQ-ANDON.

Japanese, English, and Chinese languages are supported

Your desired location can be viewed.
Hierarchical display switching area

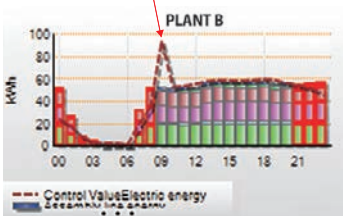
Trends can be viewed.
Graph display area



Target values are automatically calculated and input.

The target value can be automatically input after multiplying the actual value by the rate.

Set the target as minus 10% over the same period of the previous year.

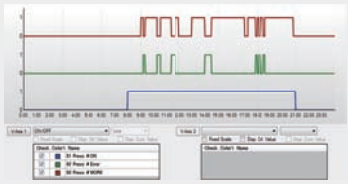


The graph display software enables a detailed analysis.

Detailed analysis can be made by activating the graph display software from the specified graph.

Power ON or OFF of the device can be easily monitored.

The states of the device such as power-ON, under-operation, and error-occurrence can be displayed using a timing chart.



Display number of graph
Maximum15

② **Check the error part using the graph display.**

The usage of EQ-ANDON is easy.

Each sensor (measurement device)

Each sensor (measurement device)

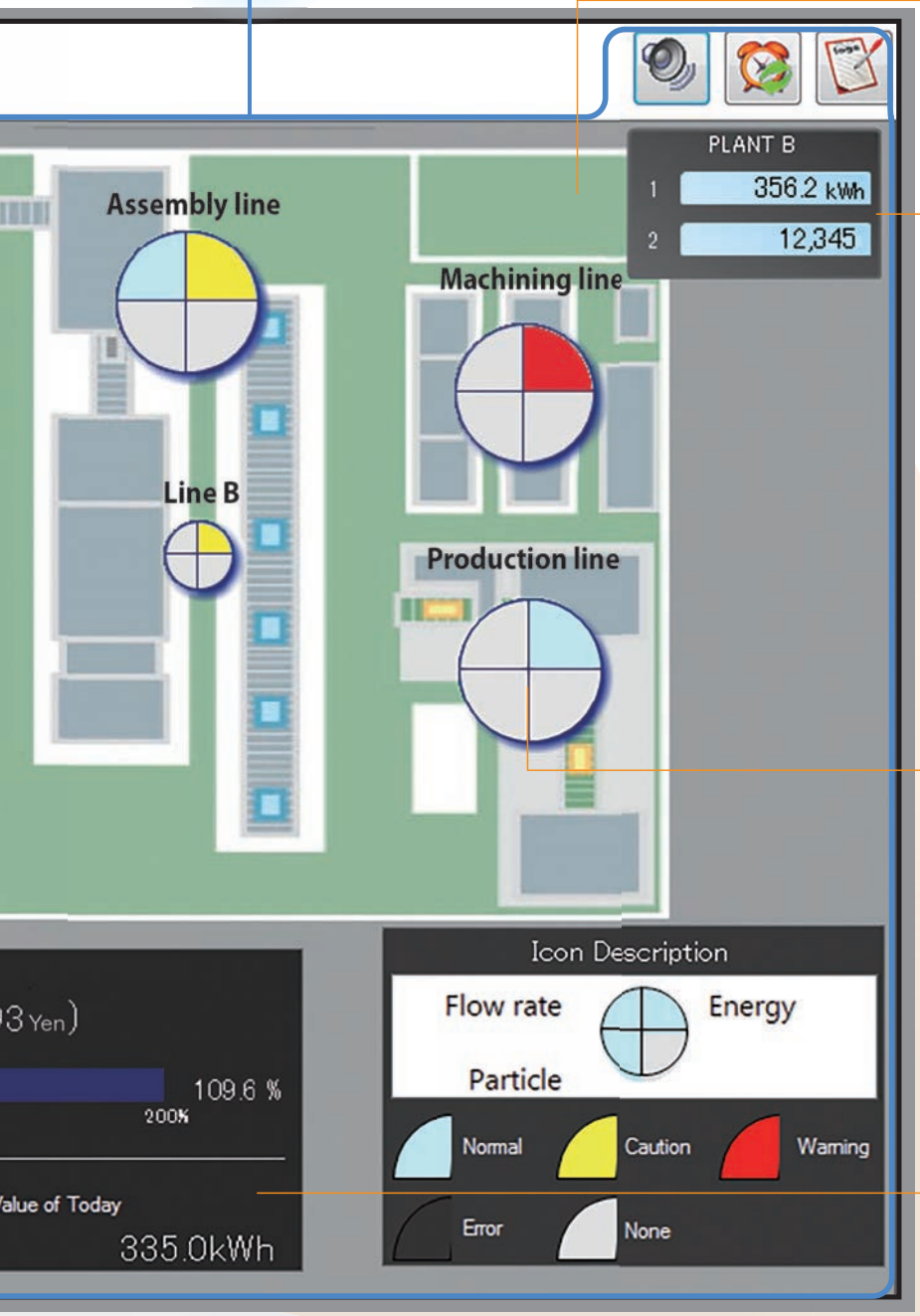
Each sensor (measurement device)

Up to 64 EQ100 units connectable

alarm has occurred.

Easy to recognize the alarm occurrence

Icon display area



① An abnormality is found by the icon display.

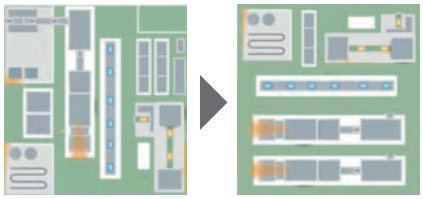
Just check the error part indicated by EQ-ANDON.

Target values are automatically calculated and input.

The target value can be automatically input after multiplying the actual value by the rate.

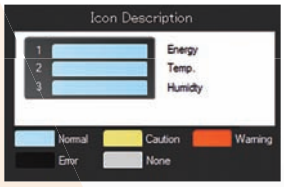
Easy to change the site layout

The screen can be easily created.Just paste the image of the floor map and place each icon on it. You can deal with changes in the production line layout by customizing this screen.
The system status can be grasped at a glance because the screen can be designed in accordance with the site.



The current value can be grasped at a glance.

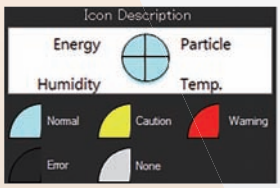
The current value of the information you want to monitor can be displayed.



Current value icon

Alarm occurrence can be recognized at a glance.

The alarm location and type can be quickly recognized at the time of alarm occurrence.

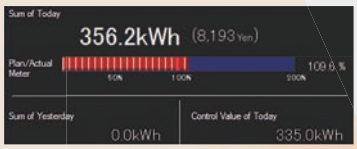


Monitoring icon

* The measuring object is an example. You can make arbitrary expressions.

The performance (progress level) can be grasped at a glance.

It can be checked at any time whether the target can be achieved or not at the present pace.

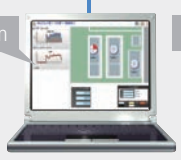


Performance icon

ECO Manufacturing Support Tool "EQ-ANDON"

Server PC, "EQ Server"

Client PC



Up to 10 client PCs connectable

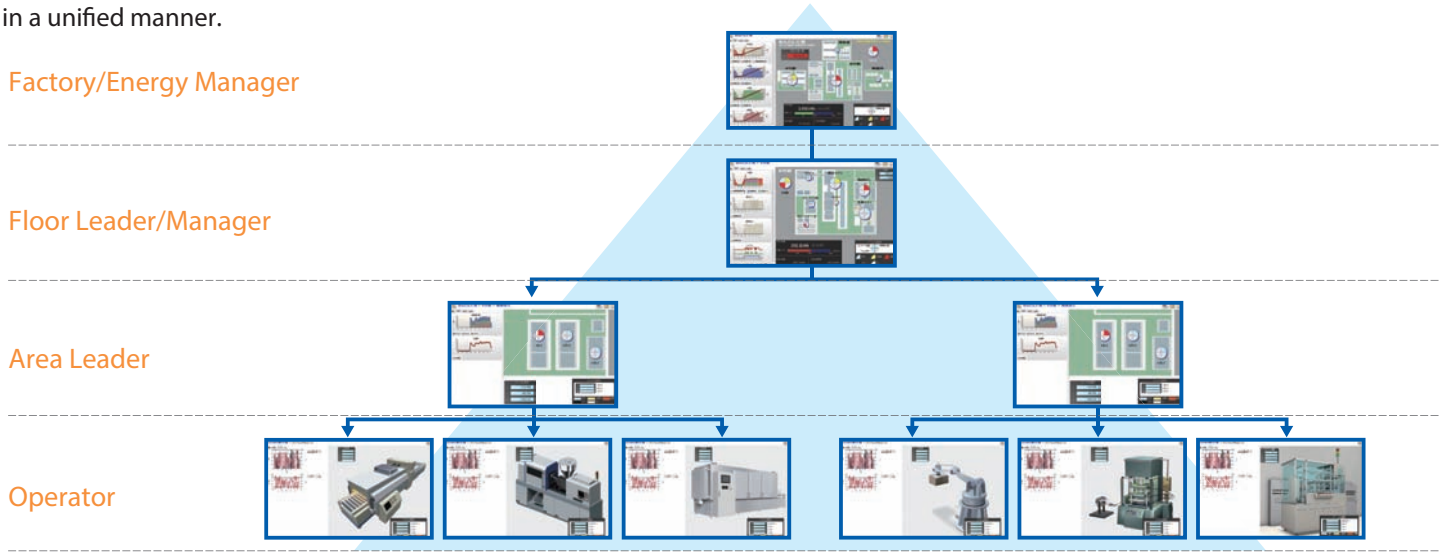
EQ-ANDON

Hierarchical Structure

All-participating-type communication function by which people who want to

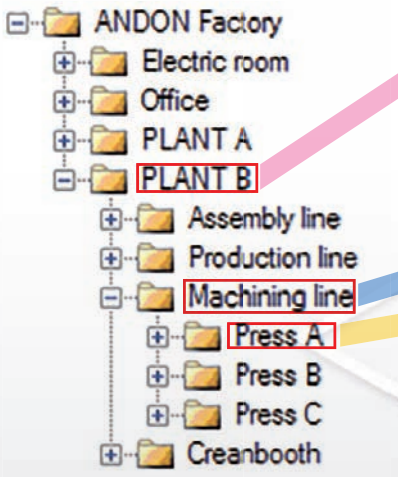
Hierarchy screens can be selected and displayed freely.

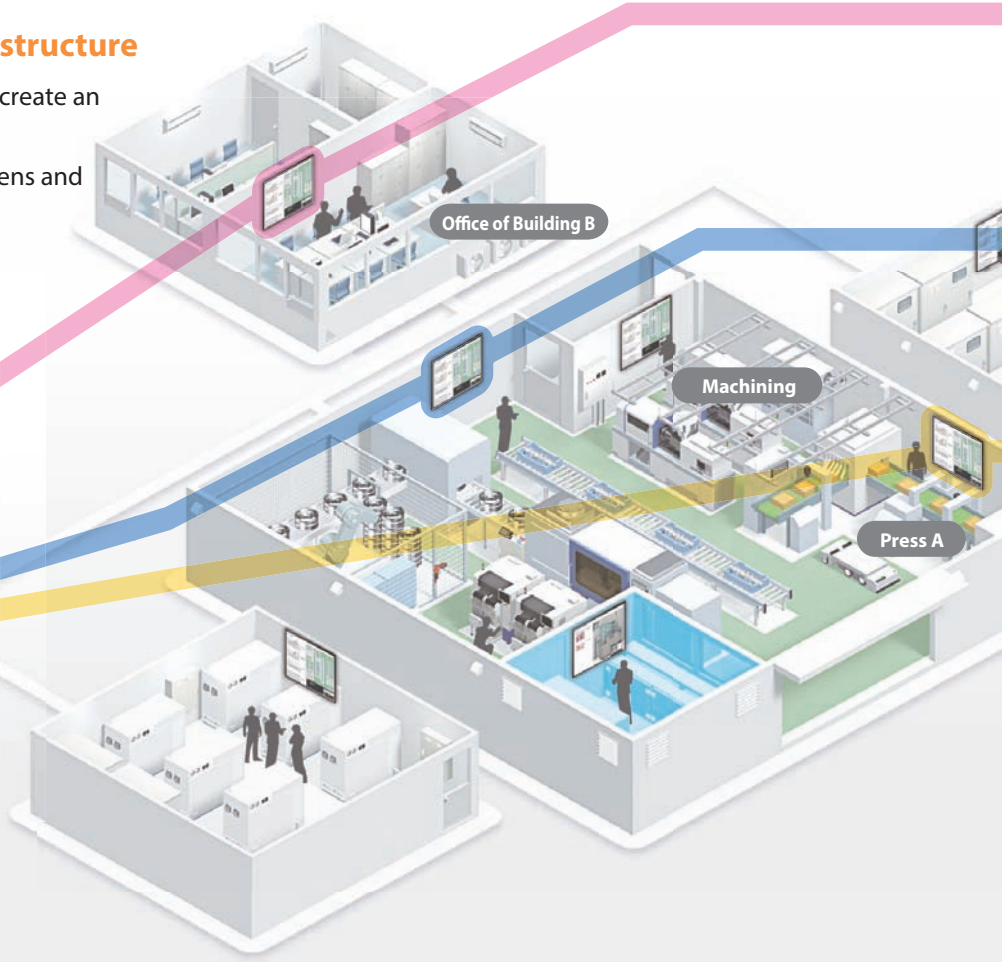
The hierarchical structure enables to confirm any site situation.The hierarchical screen suitable for the purpose of a person who wants to view from the factory manager to the operator in the site can be displayed.Because the same source data are referred to even if the displayed screen is different, discussions to confirm details can be smoothly carried out, and collaboration among multiple departments can be promoted, and consequently improvement efforts can be made at the organization level in a unified manner.



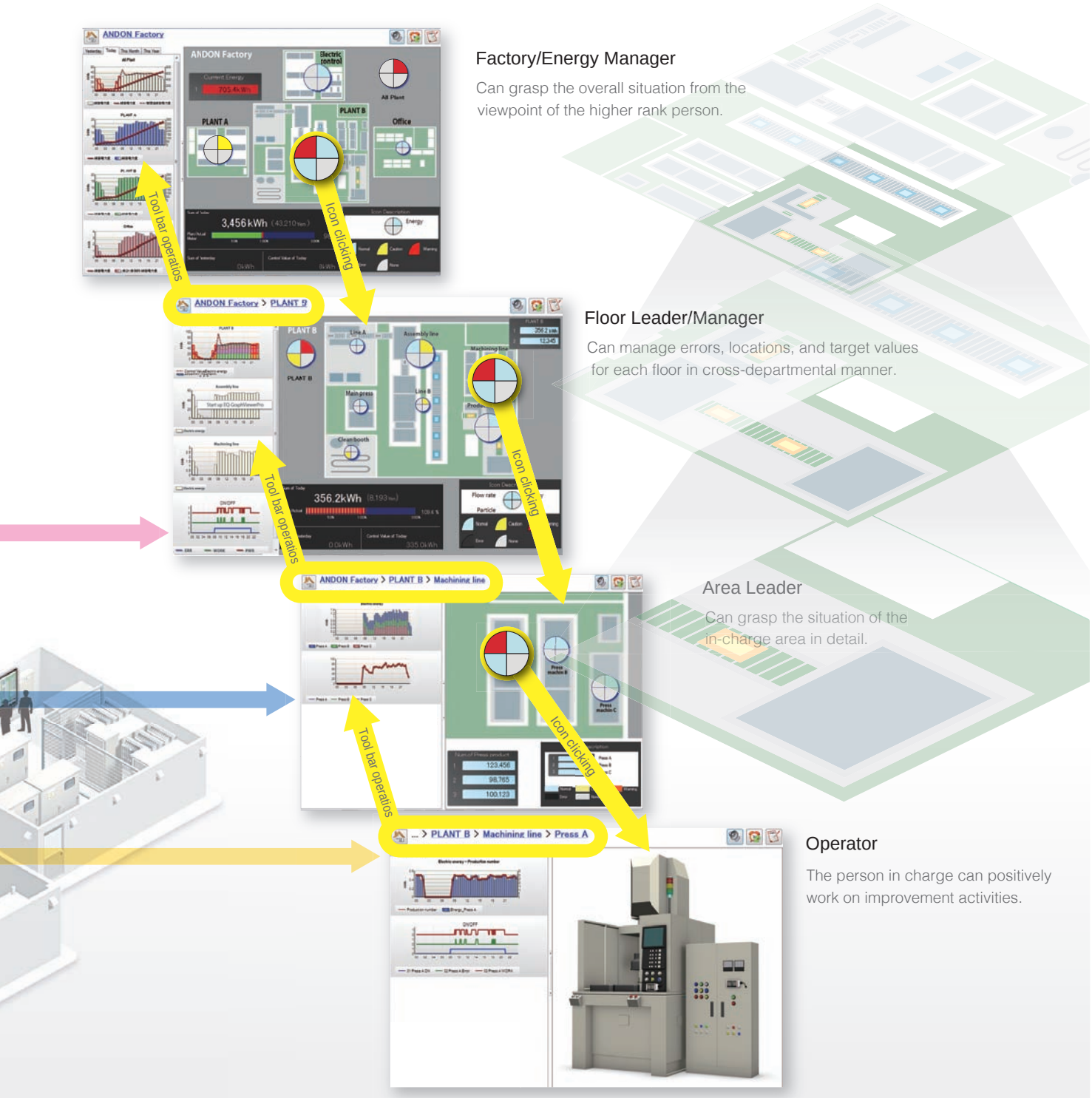
Registration in the hierarchical structure

To provide a hierarchical structure display, create an arbitrary hierarchical structure in advance.
This will enable you to register display screens and target values for each level of a hierarchy.





can be realized with the "hierarchy selection" view can freely confirm their desired places.



Factory/Energy Manager

Can grasp the overall situation from the viewpoint of the higher rank person.

Floor Leader/Manager

Can manage errors, locations, and target values for each floor in cross-departmental manner.

Area Leader

Can grasp the situation of the in-charge area in detail.

Operator

The person in charge can positively work on improvement activities.

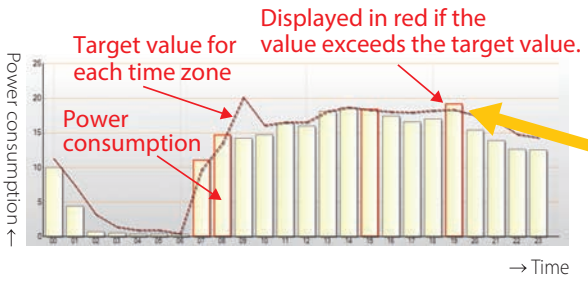
EQ-ANDON
Application Examples

Waste or abnormalities can be and unitary monitoring.

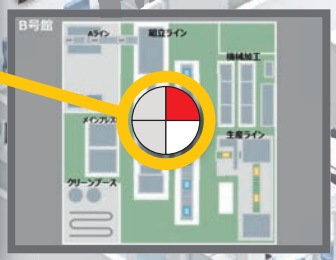
Major visualization and countermeasure examples by using EQ-ANDON

Setting and monitoring the target value per time zone

Because the production quantity is the same as that of yesterday, you can investigate the cause by setting the amount of electricity by 90% of yesterday's result, and grasping the time zones where the targets have not been achieved.

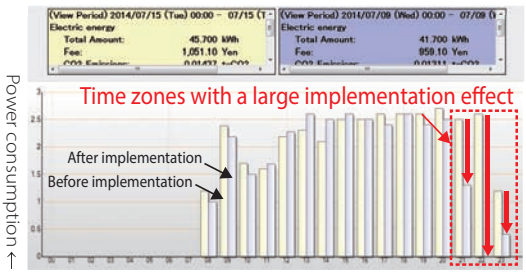


Office



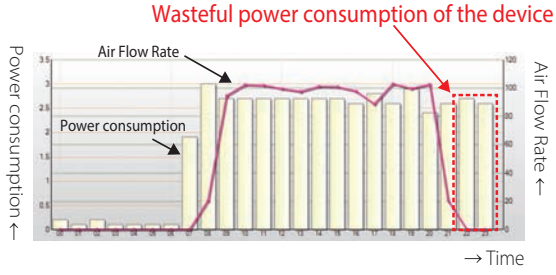
Grasp of the implementation effect of energy-saving measures

With this function enabling the comparison with the past, you can grasp the implementation effect of energy-saving measures at a glance.



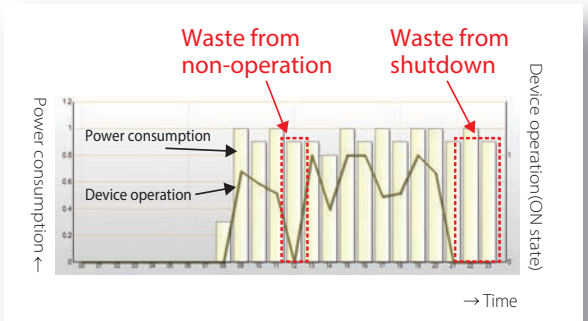
Discovery of waste in operating the compressor and production device

You can notice that the production device is uselessly operating though the compressor has stopped supplying air.



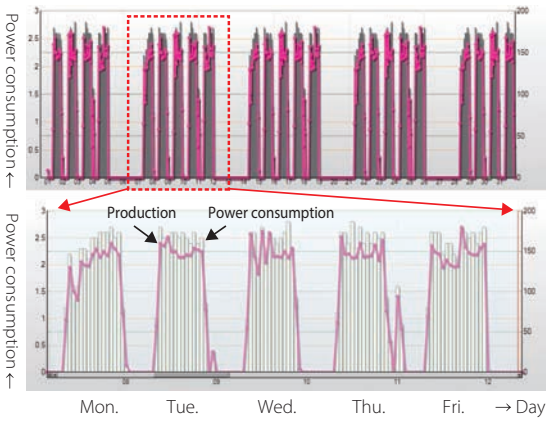
Compressor Room

noticed by alerts issued by continuous



Discovery of waste of power consumption from the device's operating state

By overlapping the graphs of the device's operating state and the power consumption, you can notice the waste at the time of non-operation or shutdown.



Grasping the trend

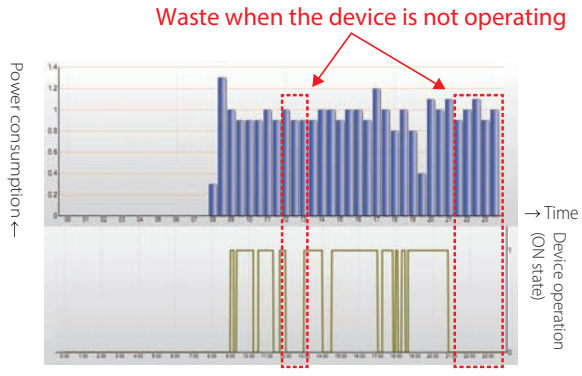
By looking at the trend for one week by enlarging a part of the one-month display, you can grasp the trend where the production volume and the electricity amount are large on weekends.

Distribution Board Room

Assembling Floor

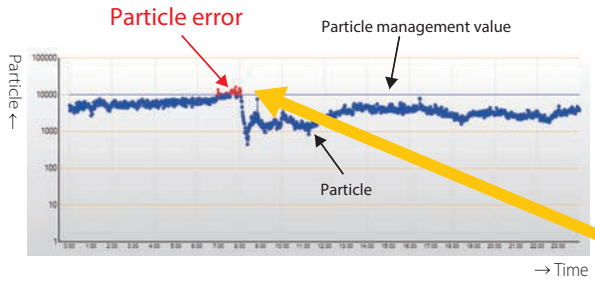
Comparison between ON/OFF of the device and power consumption

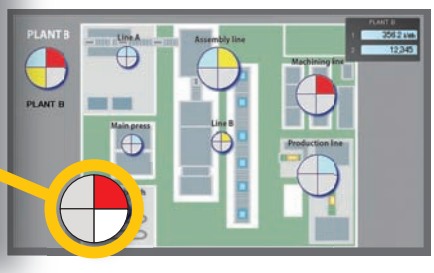
By comparing the ON/OFF graph of the device with the power consumption graph thereof, you can notice the waste when the device does not operate during lunch time.



Particle error

The icon display shows that particle transition has exceeded the management value.





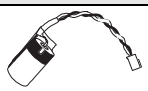
Sensor Network Server EQ100-E

Type/Standard Price

Main Unit

Shape	Name	Model
	Sensor Network Server	**EQ100-E**

Options

Shape	Name	Model	Remarks
	Battery for Memory Backup	**CP1W-BAT01**	One piece is attached to the main unit.

Specification/Performance

Hardware Specifications

Items			Details
Power Supply Voltage			100-240 VAC (-15 to +10%), 50/60 Hz
Power Consumption			15 VA or less
Maximum No. of Measurement Devices		**LAN**	100 units (In case of a measurement device that can be connected with LAN directly, there are restrictions to the connection method.) *1
		RS-485	124 devices (31 devices x 4 ports)
Maximum No. of Measurement Channels			500 channels (There are restrictions depending on the type of the measurement device and the collection interval.)
Collection Interval			1/5/10/30/60 minutes
Communication Interface	**LAN**	**No. of Ports**	2 ports (one LAN port and one sub-LAN port)
		Interface	10BASE-T/100BASE-TX
		Connector	RJ-45 Cross/Straight Automatic Judgment
	RS-485	**No. of Ports**	4 Ports
		Communication Protocol	CompoWay/F, Modbus RTU
		Maximum No. of Connected Devices	31 devices per port (Total: 31 devices x 4 ports = 124 devices)
		Terminating Resistor	Incorporated (120 Ω)
		Communication Speed	9.6/19.2/38.4 kbps (at the time of shipment from factory: 9.6 kbps)
		Data Bit Length	7/8 bits (when shipped from factory: 7 bits)
		Stop Bit Length	1/2 bits (when shipped from factory: 2 bits)
		Vertical Parity	None/Even/Odd (when shipped form factory: Even)
General-Purpose Input	**No. of Input Points**		One Point (Pulse Input)
	Input Pulse Width		5 ms or more
	Rated Input Voltage		12-24 VDC, -15% to +10%
	Input Impedance		Approx. 2.2 kΩ
	Input Current		12 V/5 mA (TYP), 24 V/10 mA (TYP)
	ON/OFF Voltage		10.2 VDC or more/5.0 VDC or less
General-Purpose Output	**No. of Output Points**		Four Points (Monitoring Alarm Output)
	Maximum Load Voltage/Current		30 VDC/50 mA/Point
	ON Resistor		5 Ω or less
Display			Display of Operating/Abnormal/Collection State and Monitoring Alarm Display of Operating State of RS-485 Communications/General-Purpose I/O
Operation Buttons			RUN/STOP Button, RESET Button, and TEST Button
DIP Switch			DIP Switch for Setting
SD Drive			SD Card Drive, SD SAVE Button, and SD BUSY Display
Insulation Resistance *2			Between power terminals and FG terminal: 20 MΩ or higher (500 VDC, megger) Between power terminals and general-purpose input, general purpose outputs 1 to 4, RS-485 communications ports 1 to 4, LAN, sub-LAN, OPTION 1, and OPTION 2 Together: 20 MΩ or higher (500 VDC) Grounding: Between FG terminal and OPTION 1/OPTION 2: 20 MΩ or higher (500 VDC)
Withstand Voltage *2			Between power terminals and FG terminal: 1500 VAC for one minute Between power terminals and general-purpose input, general purpose outputs 1 to 4, RS-485 communications ports 1 to 4, LAN, sub-LAN, OPTION 1, and OPTION 2 Together: 1500 VAC for one minute Grounding: Between FG terminal and OPTION 1/OPTION 2: 500 VAC for one minute
Vibration Resistance *2			10 to 150 Hz: Half amplitude of 0.1 mm, acceleration of 15 m/s^2, sweep 8 min. x 10 times for each direction of 3 axes

Items	Details
Shock Resistance *2	150 m/s^2, 6 directions of up, down, right, left, front and back, 3 times each
Operating Ambient Temperature/Humidity *2	-10 to +55°C / 25-85%RH (no freezing and condensation)
Storage Ambient Temperature *2	-25 to +65°C (batteries are excluded)
Storage Humidity *2	Relative Humidity 25-85%RH
Protective Structure	IP20
Supported Memory Card	SD card (optional, up to 2 GB), SDHC card (optional, up to 32 GB) Supported Format: FAT16/FAT32 *3 Recommended Product: HMC-SD492(4GB), HMC-SD291(2GB) *4 If you are using a third-party card, SD card for industrial use is recommended.
Data Protection of Internal Volatile Memory	Lithium battery, five-year life (reference value, at ambient temperature of 23°C)
Built-in Clock	Supporting leap years from 2010 to 2099 Precision: ±40 sec/month (at ambient temperature of 23°C)
Mounting	Screw or use DIN rail to mount it
Weight	Approx. 0.7 kg
Accessories	Operation Manual, Startup Guide Memory backup battery (stored inside the top panel of the EQ100-E) CD-ROM (containing graph software EQ-Viewer and manual)

*1. The number of connectable measurement devices is different depending on the connection method. For details, refer to the User's Manual.
The measurement device means the device connected with EQ100-E to measure data, such as each sensor or PLC.
*2. When an SD card is not inserted
*3. The SDXC card is not supported and cannot be used.
If the SD/SDHC is not formatted, use the format software to format it.
For the SD card formatting software distribution site, refer to the following URL.
https: //www.sdcard.org/jp/downloads/formatter_4/
*4. Orders for HMC-SD291 will be accepted until the end of March 2022.

Software Specifications

Items		Details
Operation Mode	Normal Mode	Modes when operated normally
	Safe Mode	Modes when recovering from disasters or maintaining the device
Logging Function		The logging function is configured with collected data and event logs. Collected data: The data collected from measurement devices are saved in the internal memory. Event Log: Log of EQ100-E monitoring alarm, device alarm, and internal events are saved in the internal memory as event log.
Setup Function		The setup file needed for EQ100-E can be created using EQ-Manager included in the accessory software. The setup file can be written in EQ100-E from EQ-Manager, a web screen, or the SD card in which the setup file is stored.
Time Synchronization	Synchronization with EQ Server	EQ100-E synchronizes time with the EQ Server (PC used as a server).
	Synchronization with SNTP Server	EQ100-E synchronizes time with the SNTP server.
Network Connection		LAN connection port: The connectable functions/devices are as follows: A host system (EQ server, EQ-Manager, SMTP server, SNTP server, FTP server, and FTP client), a personal computer (web browser), and measurement device Sub-LAN connection port: Connectable functions/devices are as follows: Measurement devices, personal computers (web browser)
Web Function (Japanese, English, and Chinese languages are supported)		You can confirm operating condition, operate the EQ100-E, view simple graphs, and perform maintenance through a web browser on a computer connected to the LAN or sub-LAN connection port. The operation channel cannot be displayed as a graph.
Taking Out Internal Data File		The following four methods are available:
	(1) Collecting by EQ Server	The EQ server collects the collected data and event logs stored in the EQ100-E internal memory via the network.
	(2) Operations on Web UI Screen	The collected data or event logs stored in the EQ100-E internal memory is downloaded to the personal computer by operations on the Web UI screen.
	(3) SD Card Output	Any of the following operations outputs the collected data and log files stored in the EQ100-E internal memory to an SD card. • Pressing the SD card save button on the EQ100-E front side • Web UI operations: SD card data output operations If the SD card output setting is configured as "Yes" by EQ-Manager, the collected data stored in the EQ100-E internal memory is saved on an SD card once a day.
	(4) FTP Transfer	FTP server and FTP client functions are available. • FTP server function: Acquires the collected data files stored in the EQ100-E internal memory via an FTP client and the collected data on an SD card attached to EQ100-E or an event log. • FTP client function: Sends collected data files stored in the EQ100-E internal memory to the FTP server from EQ100-E.

Items		Details
Monitoring Alarm	Function	Alarm is set off when collected data exceeds the upper or lower limit. Output to a general-purpose output terminal is available as well.
	Email Notification	Function: Monitoring Alarm Email
	Log to Internal Memory	Monitoring alarm occurrence is saved into the internal memory. The event log can be checked on the Web UI screen and outputted as an event log file.
	Status Indication	The monitoring alarm indicator is turned ON.
Device Alarm Detection	Function	Detects a device failure, setup/status failure, device failure, communication failure, or monitoring process failure.
	Email Notification	Function: Device alarm notification email
	Status Indication	Lighting, blinking, blinking in long cycles, temporary lighting of the device alarm indicator lamp
	Log to Internal Memory	An occurred device alarm is saved into the internal memory. It can be outputted as an event log file.
Contact Output	Function	An alarm can be outputted through the general-purpose output terminal when the monitoring condition is met.
Email Notification	Function	• Monitoring alarm notification email: Sent upon a monitoring alarm occurrence. • Device alarm notification email: Sent upon an occurrence of a device failure or an abnormality of setup/status, device, communications, or monitoring process of EQ100-E. • Periodic alarm: An e-mail with the main text is written by the user is sent at a specified time. • Test email: Sent by Web UI operations to check the email notification settings or the state of communications with the SMTP server. **Note :** The SMTP function with email transmission authentication supports: • POP before SMTP • POP before SMTP(APOP) • SMTP AUTH PLAIN • SMTP AUTH CRAM-MD5
Maintenance Function	Communication Test	Communications with connected measurement devices are continuously performed to check stability of the communications with measurement devices. Collected data are not saved.
	Clock Setting	The time is configured for the built-in clock of the EQ100-E.
	General-Purpose Output	The general-purpose output terminals of the main unit are operated ON or OFF.
	FTP Test Transfer	FTP transfer from the EQ100 to the FTP server is tested.
	Firmware Update	The firmware of the EQ100-E is updated. The firmware can be updated by any of the following methods: • By Web UI operations, the firmware is transferred from the PC to EQ100-E to update. • By inserting an SD card containing the firmware to EQ100-E to update the firmware.

Sensor (measurement device) types and maximum number of measurement channels

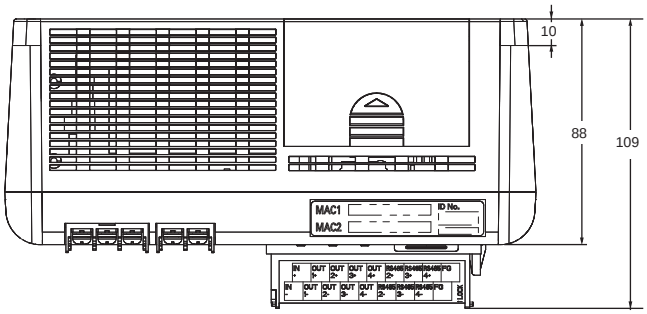
Connection Methods	Connection Types	Connectable Sensor Types	Maximum No. of Connected Devices *3	Maximum No. of Measurement Channels *1	
				Collection Interval: one minute	Five minutes or more
RS-485 *4	RS-485 Connected Sensor	Power Sensor Other Sensors	124 devices (31 devices/port x 4 ports	160 channels (40 channels/port)	500 channels (200 channels/port)
LAN	LAN Connection Sensor	Power Logger Environment Sensor	100 devices	500 channels	500 channels
	Sensor via Wireless Unit Slave		30 devices *2 (14 sensors/slave unit)	40 channels	120 channels
	Wireless Environment Sensor		30 devices *2	Follow the restrictions on the number of connected devices.	
	PLC	CJ-Series NJ/NX1P2-Series	10 devices	500 channels	500 channels
Pulse Input		-	One point	One channel	One channel
Operation Channel	This channel is obtained by treating the measurement channel by arithmetic processing.		-	100 channels	100 channels

*1. The maximum number of measurement channels of EQ100-E is 500, including all sensors (measurement devices) and operation channels.
*2. One slave device of wireless sensor is calculated as one device regardless of the number of master devices connected with LAN and the number of connected relay devices.
*3. No. of connected KM-N1-FLK devices = No. of measurement circuits (No. of the measurement circuits set on the power sensor main unit), No. of connected KM1 devices = No. of units (No. of master and slave devices)
*4. For RS-485 connection, either CompWay/F or ModbusRTU can be selected for each communication port.

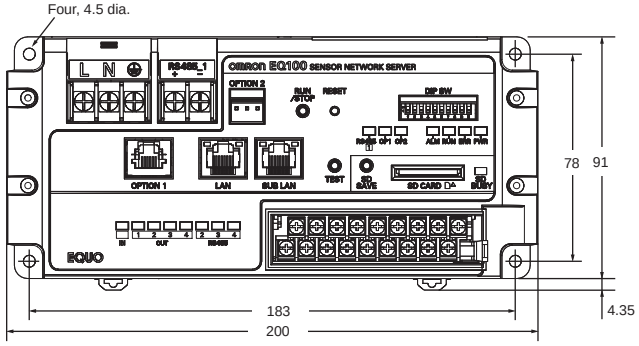
External Dimensions

(Unit: mm)

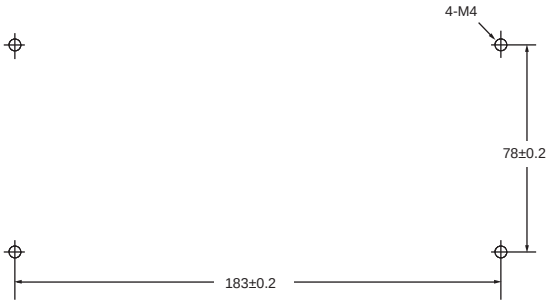
■ Top



■ Front



■ Mounting Hole Processing Dimensions



Use correctly.

⚠ Alarm

A lithium battery is used for memory backup.
Do not disassemble, apply pressure for deformation, heat beyond 100°C, and/or burn it.
Otherwise serious injury may occasionally occur due to fire and/or explosion.

A human injury or a physical failure may occur due to electrical shock, fire, or breakdown.
Avoid the product from being contaminated with any chips of metal part or conductor.

⚠ Caution

There is a possibility of electric shock.
Be sure to turn OFF the power before wiring to the terminal block or replacing the battery.

There is a possibility of breakdown or explosion.
Use power supply voltage within the specified range.

There is a possibility of electric shock, fire, or breakdown.
Do not disassemble, repair, or alter the product.

EQ-ANDON EQS-AD10-E

Type/Standard Price

Main Unit

Shape	Name	Model
	ECO Manufacturing Support Tool EQ-ANDON	**EQS-AD10-E**

Note : This is the price for one-server license. For the sales price, contact your business connection.

Operating Environment

The operating environment of the PC needed to use EQ-ANDON in a comfortable environment is as follows:

Items	Specification
Supported OS (Required environment)	Windows 10 32bit/64bit, Windows 11, Windows Server 2016, Windows Server 2019
CPU	Intel Core i3 or equivalent with a speed of 2 GHz or higher
Memory	2 GB (32-bit OS) or more / 4 GB (64-bit OS) or more
Screen Size	Resolution of SXGA (1280 x 1024 pixels), HIGH color 16-bit or more (full color environment recommended)
HDD	Server PC Capacity for installation: 1 GB or more free space Data storage capacity: 400GB (Standard capacity at one-minute collection intervals with 1000 channels for three years) Installation capacity of client PC: 500 MB or more free space
DVD-ROM drive	For installation use
SD Card Reader/Writer / SD Card Slot	Use it when writing a project file to EQ100-E via an SD card. Use it when reading the data output to an SD card by EQ100-E into the EQ server offline.
.NET Framework	4.8
Adobe Reader	For viewing manuals
Ethernet port's transmission speed	100 Mbps or more
Operating Port No. (LAN)	4211 (if the same port is used by other software, EQ-ServerService cannot run)

Note: Windows' touch panel function is not supported.

Specification/Performance

Items	Details	Specification
No. of connected channels	**Maximum No. of connected channels of EQ100-E**	64
No. of registerable channels	**Maximum No. of collectable channels**	5000 (at five-minute or more collecting intervals) / 1000 (at one-minute collecting intervals)*1
Collection Interval	**Interval at which EQ server collects data from EQ100-E**	1/5/10/30/60 minutes
Group	**Maximum No. of channels registerable to one group**	50 channels
	Maximum No. of group layers	5 layers
Operation channels registerable to the EQ server	**No. of registerable operation channels**	500
	No. of channels available to create one operation channel	20
	No. of summarization channels available to create one operation channel	2
Data Type	**No. of registrable data types**	100
Language	**Select at installation**	Japanese / English / Chinese
Accessories		Start-up Guide, License Certificate

*1. No. of channels is the sum of operation channels and collection channels in addition to measurement channels. For details, refer to the User's Manual.

Software Configuration

When EQ-ANDON is installed, the following software is installed.

Software Name	Function	Server PC	Client PC
EQ-Andon	Monitoring Tool	○	○
EQ-GraphViewerPro	Display & Analysis Tool	○	○
EQ-Manager	Setup & Management Tool	○	
EQ-ServerService	Collection & Logging Tool	○	
EQ Converter Manager EQ Converter Service	EW700 *1 and EQ100-E/ EQS-AD10-E Data Compatibility Tool *2	○	

Note : When building as a system, one PC for the server and up to ten PCs for the client can be connected. The server PC operates as the EQ server.
*1. Have been discontinued at the end of September 2023.
*2. For details, refer to the User's Manual.

Software Specifications

EQ-Andon

Items	Details	Specification
Monitoring Screen Area	Background Image Format	An image file of the BMP, JPEG, GIF, or PNG format can be displayed.
	Icon Display	The monitoring, current value, and performance icons can be displayed. Up to 50 icons can be displayed.
Graph Display Area	No. of Graphs Displayed	Up to five graphs up to 15 graphs EQ-GraphViewerPro can be started from the displayed graph.
	Graph Switching	Today/yesterday (select the unit from 1/30/60 minutes), this month (day), or this year (month) can be switched.
Screen Display Function	Layer Group Switching	Can be switched to the layer group being displayed arbitrarily.
	Alarm Sound Switching	ON/OFF of the alarm sound can be switched. WAV is usable for the file format of the alarm sound.
	Newest Alert State Display	Alert can be switched to the newest state.
	Event History Display	The occurrence time and details of an alert can be displayed. This is updated at ten-minute intervals. The operating state and communication failure of the EQ server can also be displayed.
Monitoring Interval	Icon Updating Interval	Select 10/20/30 seconds or 1/2/5/10 minutes.
	Graph Updating Interval	Select 1/2/5/10 minutes.
Time Limit	Interval to reset monitoring	Select 30 minutes or one hour.

EQ-GraphViewerPro

Items	Details	Specification
Graph Display Function	Graph Types	Sum total/stack/parallel/classified can be selected as graph type.
	Horizontal Axis	Minute/hour/day/month/year/ten years can be selected as display period. For the respective display periods, the following can be selected as summarizing unit. Minute (not summarized), hour (per minute), day (select unit from one minute, 30 minutes, or one hour), month (select unit from 30 minutes, one hour, or one day), year (select unit from one day or one month), 10 years (select unit from one month or one year)
	Vertical Axis	Right and Left Two Axes Display Bar and line graphs can be switched separately on the right and left sides. Fixed scale, ON/OFF of management value display, and ON/OFF of accumulated value can be selected.
	Maximum No. of displayable channels	50 for each vertical axis
Graph Automatic Updating	Updating Interval	Updated data are displayed at one-minute intervals by enabling the automatic updating.
Other Functions	Comparison of Past Data	The current graph can be compared with a graph from the past.
	Tile Vertically	Up to 20 graphs can be tiled vertically by aligning the horizontal axes.
	Graph Output	A list of the graphs being displayed can be printed, output to a file, or output to the clipboard.
	Data Output	A list of the graphs being displayed can be printed, output to a file, or output to the clipboard.
	CSV Output	A graph can be output to a CSV file by selecting a period or a channel.
	Favorite	A graph to be viewed quickly can be displayed by registering it as favorite.

EQ-Manager

Items	Details	Specification
File	EQ Project	Create the setup file needed for EQ100-E
	EQ Server Project	Create the setup file needed for EQ server
Setup File	Read/Write	The EQ100-E and EQ servers' setup files (EQ project and EQ server project) can be read/written, respectively.
Logger	Online	The EQ100-E/EQ server can be connected or disconnected online.
	Logging	The start/end of logging of the EQ100-E/EQ server can be specified.
	Communication Test	The start/end of communication test with the EQ100-E/EQ server can be specified.
EQ Project	Measurement Device Registration	Register the types, names, and collection intervals of the measurement devices connected with EQ100-E.
	Channel Registration	Register the channels measured.
	Group Registration	Register the layers of the group displayed on the Web screen.
	Advanced Settings	Set the monitoring condition, operation channels, and communication condition.
EQ Server Project	Collection Device Registration	Register the collection intervals and names of the EQ100-E connected with the EQ server.
	Channel Registration	Register the channels collected.
	Group Registration	Register the layers of the group displayed by EQ-GraphViewerPro and EQ-Andon.
	Monitoring Screen Settings	Paste the image of the monitoring screen to the unit monitored and register each icon.
	Advanced Settings	Set up the monitoring condition and operation channels.
	CSV Import	The CSV file output by EQ100-E can be imported.
	General-Purpose CSV Import	The general-purpose CSV file can be imported.

EQ-ServerService

Items	Function Description
Collection Function	EQ100-E's collected data are obtained from EQ100-E via LAN.
Logging/Database	Summarize the obtained collected data and save the summarized data in the database. The summarized data are supplied to EQ-GraphViewerPro and EQ-Andon.
Monitoring Function	Data are monitored under the specified monitoring condition and the result is supplied to EQ-Andon.

Note : The EQ server means the PC in which the server software of EQ-ANDON is installed.

System comparison between EQ-ANDON and EQ-Viewer (accessory software of EQ100-E)

Items		Specification/Function	EQ-ANDON	EQ-Viewer
System Configuration		Server PC	One unit	One unit
		Client PC	Up to ten units are operable.	Same as on the left
		Maximum No. of connectable EQ100-E units	64 units	10 units
Monitoring Tool (EQ-Andon)		Monitoring Function	EQ-Andon	×
Display/Analysis Tool (EQ-GraphViewerPro)		Name	EQ-GraphViewerPro	EQ-GraphViewer
		Tile Vertically Function	○	×
		Summary Calculation as Specifying Range	○	×
		Layer Display	5 layers	One Layer
Setup/Management Tool (EQ-Manager)	EQ Server Project	Maximum No. of collectable channels	5000 (at five-minute or more collection intervals)	2000 (at five-minute or more collection intervals)
		Maximum No. of Registerable Operation Channels	500	×
		No. of channels available to create one operation channel	20	×
	EQ Project (per EQ100-E)	Maximum No. of Registerable Channels	500	Same as on the left
		Maximum No. of Registerable Operation Channels	100	Same as on the left
		No. of channels available to create one operation channel	16	Same as on the left
		No. of registrable data types	100	Same as on the left
		Maximum No. of group channels registrable to one group: 50, Same as on the left	50	Same as on the left

Note 1 : The EQ server project is the setup file to set the environment usable as a system.
Note 2 : The EQ project is the setup file to set the condition of the device connected with each EQ100-E.

Type

Main Unit

Shape	Name	Model	Attaching Form
	Graph Display Tool EQ-Viewer	**EQS-V10-E**	Attached to EQ100-E

Operating Environment

Items	Specification
Supported OS (Required environment)	Windows 10 32bit/64bit, Windows 11, Windows Server 2016, Windows Server 2019
CPU	Intel Core i3 or equivalent with a speed of 2 GHz or higher
Memory	2 GB (32-bit OS) or more / 4 GB (64-bit OS) or more
Screen Size	Resolution of 1024 x768 pixels or more, HIGH color 16-bit or more (full color environment is recommended)
HDD	Capacity to install server PC:1 GB or more free space Data storage capacity: 400 GB (Standard capacity at one-minute collection intervals with 1000 channels for three years) Installation capacity of client PC: 500 MB or more free space
CD-ROM drive	For installation use
SD Card Reader/Writer / SD Card Slot	Use it when writing a project file to EQ100-E via an SD card. Use it when reading the data output to an SD card by EQ100-E into the EQ server offline.
.NET Framework	4.8
Adobe Reader	For viewing manuals
Ethernet port's transmission speed	100 Mbps or more
Operating Port No. (LAN)	4211 (if the same port is used by other software, EQ-ServerService cannot run)

Note: Windows' touch panel function is not supported.

Specification/Performance

Items	Details	Specification
No. of connected channels	**Maximum No. of connected channels of EQ100-E**	10
No. of registerable channels	**Maximum No. of collectable channels**	2000 (at 5 min. or more collection intervals) / 1000 (at one-minute collection intervals)
Collection Interval	**Interval at which EQ server collects data from EQ100-E**	1/5/10/30/60 minutes
Group	**Maximum No. of channels registerable to one group**	50 channels
	Maximum No. of group layers	One Layer
Language	**Select at installation**	Japanese/English/Chinese
Data Type	**No. of registrable data types**	100

Software Configuration

When EQ-Viewer is installed, the following software is installed.

Software Name	Function
EQ-GraphViewer	Display & Analysis Tool
EQ-Manager	Setup & Management Tool
EQ-ServerService	Collection & Logging Tool
EQ Converter Manager EQ Converter Service	EW700 *1 and EQ100-E/EQS-AD10-E Data Compatibility Tool *2

Note : If using the PC as a client, only EQ-GraphViewer is used.
*1. Have been discontinued at the end of September 2023.
*2. For details, refer to the User's Manual.

EQS-V10-E

Software Specifications

EQ-GraphViewer

Items	Details	Specification
Graph Display Function	Graph Types	Sum total/stack/parallel/classified can be selected as graph type.
	Horizontal Axis	Minute/hour/day/month/year/ten years can be selected as display period. For the respective display periods, the following can be selected as summarizing unit. Minute (not summarized), hour (per minute), day (select unit from one minute, 30 minutes, or one hour), month (select unit from 30 minutes, one hour, or one day), year (select unit from one day or one month), 10 years (select unit from one month or one year)
	Vertical Axis	Right and Left Two Axes Display Bar and line graphs can be switched separately on the right and left sides. Fixed scale, ON/OFF of management value display, and ON/OFF of accumulated value can be selected.
	Maximum No. of displayable channels	50 for each vertical axis
Graph Automatic Updating	Updating Interval	Updated data are displayed at one-minute intervals by enabling the automatic updating.
Other Functions	Comparison of Past Data	The current graph can be compared with a graph from the past.
	Graph Output	A list of the graphs being displayed can be printed, output to a file, or output to the clipboard.
	Data Output	A list of the graph being displayed can be printed, output to a file, or output to the clipboard.
	CSV Output	A graph can be output to a CSV file by selecting a period or a channel.
	Favorite	By registering the displayed graph as favorite, it can be displayed and viewed quickly.

EQ-Manager

Items	Details	Specification
File	EQ Project	Create the setup file needed for EQ100-E
	EQ Server Project	Create the setup file needed for EQ server
Setup File	Reading/Writing	Both the EQ100-E and EQ servers' setup files (EQ project and EQ server project) can be read/written, respectively.
Logger	Online	The EQ100-E/EQ server can be connected or disconnected online.
	Logging	The start/end of logging of the EQ100-E/EQ server can be specified.
	Communication Test	The start/end of communication test with the EQ100-E/EQ server can be specified.
EQ Project	Measurement Device Registration	Register the types, names, and collection intervals of the measurement devices connected with EQ100-E.
	Channel Registration	Register the channels measured.
	Group Registration	Register the groups displayed on the Web screen.
	Advanced Settings	Set the monitoring condition, operation channels, and communication condition.
EQ Server Project	Collection Device Registration	Register the collection intervals and names of the EQ100-E connected with the EQ server.
	Channel Registration	Register the channels collected.
	Group Registration	Register the groups displayed by EQ-GraphViewer.
	CSV Import	The CSV file output by EQ100-E can be imported.

EQ-ServerService

Items	Function Description
Collection Function	EQ100-E's collected data are acquired from EQ100-E via LAN.
Logging/Database	The acquired collection data are summarized, and the summarized data on the EQ server are saved in the database. The summarized data are supplied to EQ-GraphViewer.

* The EQ server means one personal computer operating as the server of EQ-Viewer.

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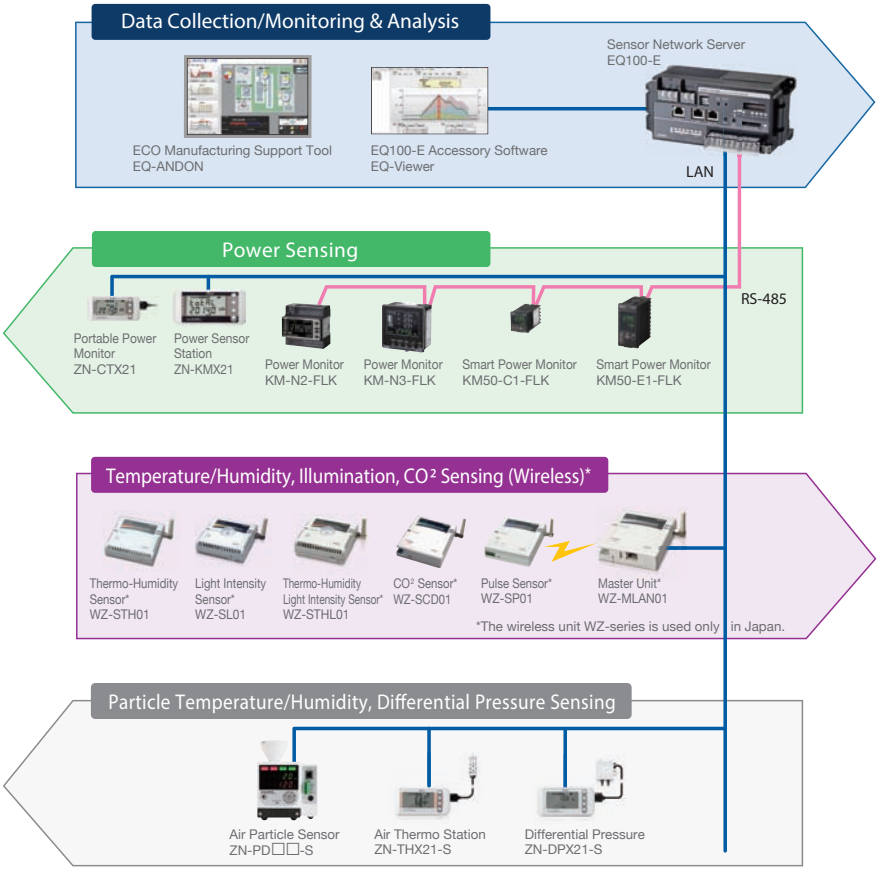
Introduction of OMRON's energy saving support equipment catalog

Data Collection/ Monitoring & Analysis Software
Catalog No.E470-E1

Portable Power Monitor ZN-CTX21
Power Sensor Station ZN-KMX21
Catalog No. E419-E1

Power Monitors KM-N2/KM-N3
Catarog No. N213-E1

Environmental Sensor
Catalog No.E411-E1



Note: Do not use this document to operate the Unit.

OMRON Corporation **Industrial Automation Company**

Kyoto, JAPAN **Contact : www.ia.omron.com**

Regional Headquarters

OMRON EUROPE B.V.
Wegalaan 67-69, 2132 JD Hoofddorp
The Netherlands
Tel: (31) 2356-81-300 Fax: (31) 2356-81-388

OMRON ELECTRONICS LLC
2895 Greenspoint Parkway, Suite 200
Hoffman Estates, IL 60169 U.S.A.
Tel: (1) 847-843-7900 Fax: (1) 847-843-7787

OMRON ASIA PACIFIC PTE. LTD.
438B Alexandra Road, #08-01/02 Alexandra
Technopark, Singapore 119968
Tel: (65) 6835-3011 Fax: (65) 6835-3011

OMRON (CHINA) CO., LTD.
Room 2211, Bank of China Tower,
200 Yin Cheng Zhong Road,
PuDong New Area, Shanghai, 200120, China
Tel: (86) 21-6023-0333 Fax: (86) 21-5037-2388

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