

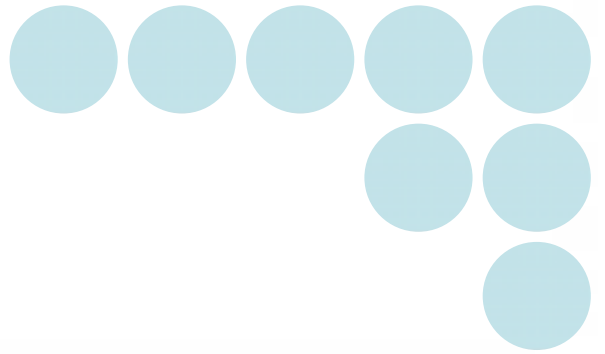
NEW

OMRON

Sensor Network Controller

Power Data Collection System

EW700-M20L



Visualize, **Monitor**, and Analyze Your Energy Usage



realizing

Easily Collect the Data Required to Save Energy

Notification of Changes to Promote Monitoring of Energy Usage



Visualize, Monitor, and Analyze

Until now, OMRON has focused on the measurement and visualization of wasted energy to promote energy-saving activities within factories.

To further promote saving energy, we believe that it is important to analyze where energy is wasted by focusing on and monitoring when changes occur in the visualized data.

The following three points are critical in promoting energy-saving activities.

Visualization - To measure and enable seeing wasted energy.

Monitoring - To collect and store data on changes in energy usage.

Analysis - To analyze data to find wasted energy usage in collected energy data.

These are achieved with the following energy-saving products.

Visualization is supported by KM-series Power Monitors and Power Sensors, which accurately measure and display standby and stopped power, as well as inverter power.

Monitoring is supported by the EW700 Sensor Network Controller, which collects visualized and measured data.

Analysis is supported by Dr. ECO, which monitors the data and determines where energy is wasted.

In particular, the EW700 Sensor Network Controller can collect and monitor a wide range of measured power data, further promoting energy conservation.

The EW700 is ideal for those who want to visualize power data in order to reduce energy consumption even further.

Main Features of the EW700-M20L

Up to 124 Power Sensors/Monitors can be connected to the EW700 Sensor Network Controller.

Even if the number of measurement points increases, measurement data can be reliably collected and stored.

The Sensor Network Controller can save data to SD cards or connect to a network, and is suitable for installation in essentially any environment.

It can also provide notification of changes in energy usage or problems in the factory with alarm outputs and email alerts.

Connect up to 124 KM-series Power Sensors/Monitors and other power sensors.

- Four RS-485 communications ports
31 nodes per port × 4 ports
- Measurement data can be collected at 1, 10, 30, or 60-minute intervals

All-in-one Sensor Network Controller

- Power supply and I/O ports are all provided in one unit.

The indicators show at a glance the status of the Controller and connected devices.

- Controller errors
- Missed data from connected devices



LAN Port with Web Server

- A LAN port can be connected to an in-house network.
- Easy configuration from your web browser.
- The Easy EW-Logger and Easy EW-Viewer can also be used while connected to the network.

SD Card Slot for SDHC Cards

- SD card: 2 GB max., SDHC card: 32 GB max.
- Built-in 256-MB memory

General-purpose I/O ports with alarm output

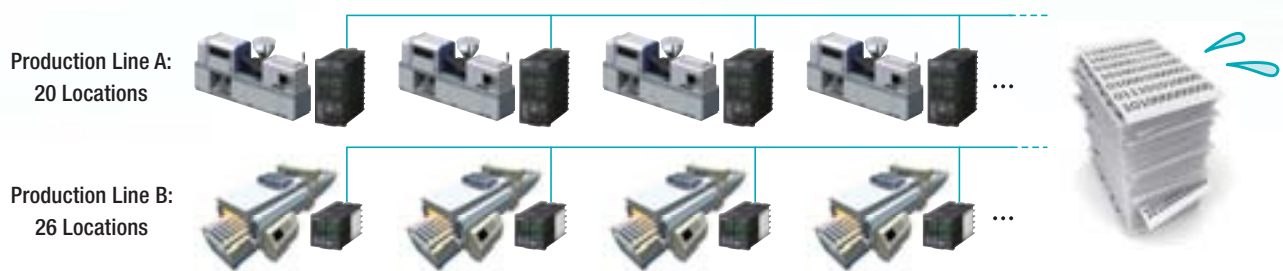
- Use four general-purpose output ports for alarm outputs.
- The general-purpose input port can accept integral power consumption pulse outputs from KM-series Power Sensors/Monitors.

Advanced Energy Savings with Onsite Solutions

Monitor Power Data in the Factory

1 Effective monitoring even if the number of measurement points increases.

As energy-saving measures are implemented on more and more production sites, the number of installed power sensors may also grow to tens and hundreds of units. Measured data from so many sensors can expand to an unmanageable amount.



Problem

Collecting data from all of the measurement points becomes a challenge and the large amount of data can become unmanageable.

Go to *Solution 1*.

2 It is important to know onsite when there are changes and problems with energy usage.

For example, it is often difficult to know if the power consumption of the entire production line has exceeded the target value, or if the instantaneous power of a particular device has reached the maximum value.



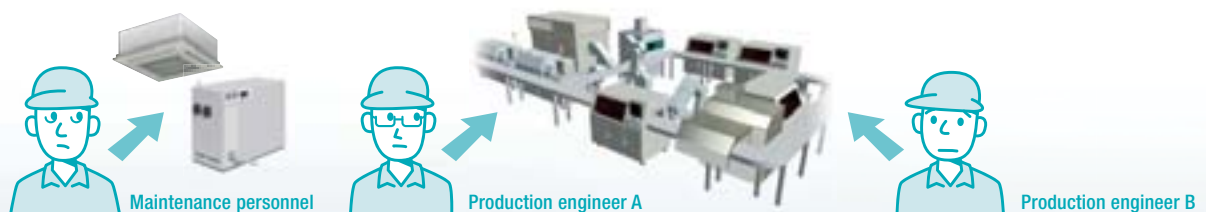
Problem

Without knowing the changes in energy usage onsite, rapid response is not possible.

Go to *Solution 2*.

3 Onsite personnel need to monitor the required measurement data.

But the type of energy data that is required depends on individual responsibilities. For example, maintenance personnel probably need to know the power consumption of a compressor or the airconditioning system, while the production engineers probably need to know the power consumption of the production line.



Problem

Effective measures are not possible unless personnel can get the information that they require.

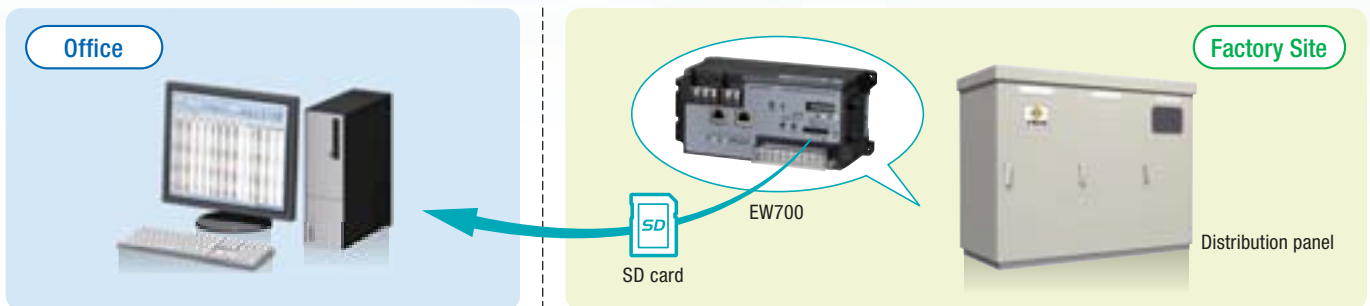
Go to *Solution 3*.

Solution 1

Effectively handle the increasing number of measurement points by moving from standalone systems to LAN-connected systems.

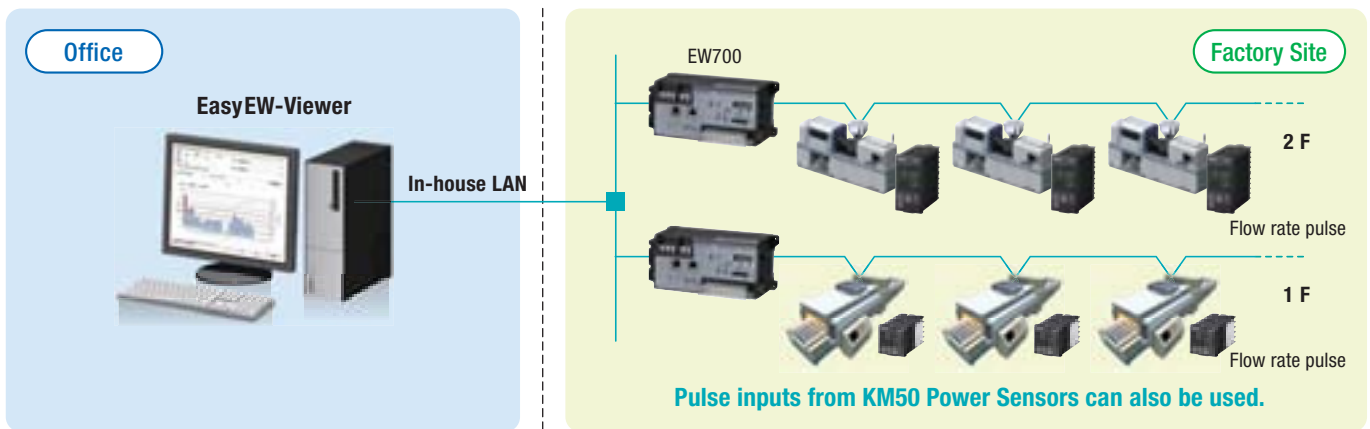
Standalone System

For a small number of measurement points, such as the main power lines in a distribution panel, the data can be taken from the factory site to the office using SD cards.



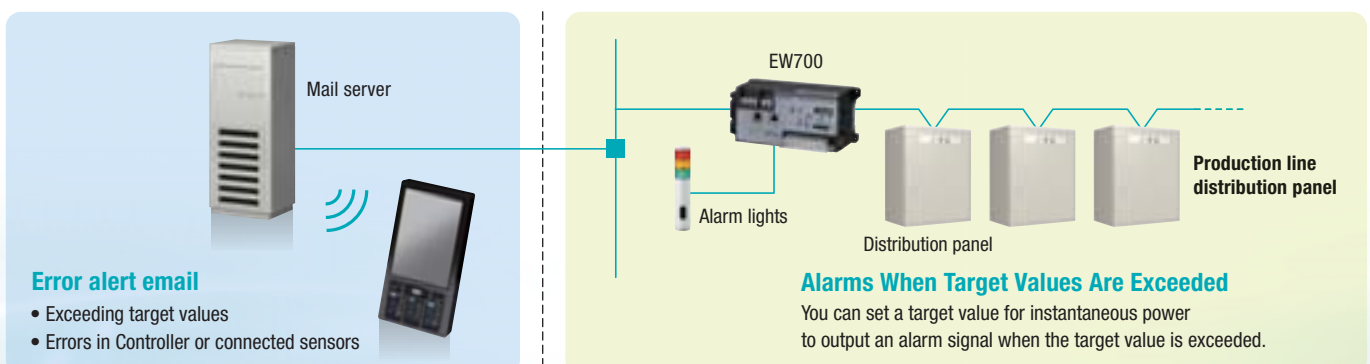
LAN Connection

Data is automatically transferred over a LAN network to effectively handle essentially any onsite increase in measurement points for power consumption, flow measurements, or other data.



Solution 2

Receive notification by email and alarm outputs.



Essential Software for Data Collection and Energy Usage Monitoring Available Free of Charge

Solution 3 Data required by your personnel can be collected automatically and displayed in graphs.

Software Role and System Configuration

Manager of Saving Energy

Graph of the entire factory

Graph Display Software
EasyEW-Viewer

Setup Software for Connected Sensors
EasyEW-Manager
Set up the measurement Sensors

LAN connection

Connect to the network for application.

Measurement data

Measurement data folders



Automatic Data Collection Software
EasyEW-Logger
Automatic data collection

RS-485 communications

Production Line A System Power

Manager of Production Line A

Graph of production area A

Graph Display Software
EasyEW-Viewer
Overall factory graph displays

EW700-(2)

Production Line B System Power

Manager of Production Line B

Graph of production area B

Graph Display Software
EasyEW-Viewer

EW700-(3)

Compressor System Power

Maintenance Manager

Compressor graph

Graph Display Software
EasyEW-Viewer

Setup Software for Connected Sensors

EasyEW-Manager

Setup Software for the KM-series Sensors (Measurement Sensors) Connected to the EW700

- The measurement Sensors that are connected to the EW700 can be set up.
- The setup data for many measurement Sensors can be saved and managed together in CSV files.

Communications Test



Time Settings



Detailed Settings

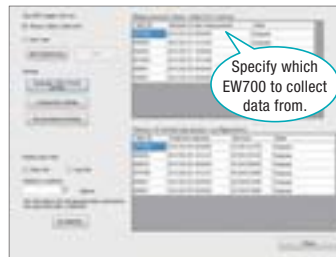


Automatic Data Collection Software

EasyEW-Logger

Software to Automatically Read EW700 Measurement Data to a Computer

- Files can be created to collect data from each EW700.
- Select manual collection or periodic collection.
- Select the collection interval for periodic collection.
- Even if the computer is turned OFF, collection resumes without missing any data when the computer is turned ON again.



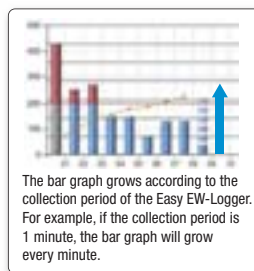
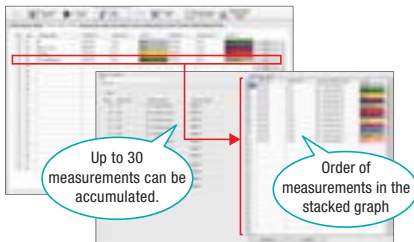
Graph Display Software

EasyEW-Viewer

Software to Display the Data from the EW700 in Graphs

- Power consumptions can be stacked freely in bar graphs.
- Historical graphs of active power, voltages, currents, and power factors can be displayed.
- Bar graphs and line graphs can be superimposed.
- A list of integral power consumption graphs or individual graphs can be displayed for each KM-series Sensor/Monitor, and target values can be set for the graphs.

Set the conditions for the items to display in the graphs.



Graph Lists



Instantaneous Value Table



Individual Graphs



Stacked Graphs



Measurements can be accumulated in groups and displayed in bar graphs.

System Requirements for Easy EW-series Software

Support for Many Languages

Select from the following five languages: Japanese, English, Korean, Chinese, and Taiwanese.

OS and service pack	Microsoft Windows XP (32-bit edition), SP3 or higher Microsoft Windows Vista (32-bit edition), SP2 or higher Microsoft Windows 7 (32-bit or 64-bit edition)	Processor	Intel® Core™ 2 Duo-series processor, 1.5 Gz or better, or the equivalent
Framework	.NET Framework 3.5 SP1 or higher	Memory	2 GB min. (Available memory: 500 MB min.)
Monitor	Resolution of 1,024 × 768 pixels or higher, high color (16-bit) or better, and full-color display	Required disk space	Example 1: Approx. 5.6 GB for one EW700, 30 channels of measurement items, 1-min measurement period, and 40-month backup period Example 2: Approx. 650 GB for ten EW700, 1,240 Sensors, 1-min measurement period, and 40-month backup period

And,

Find Wasted Energy Even Easier

Dr. ECO

Energy Saving Analysis Support Software (Sold Separately)

Refer to the catalog for Dr. ECO for details.

Catalog No. : N169-E1-01



Sensor Network Controller

EW700-M20L

Easily Collect and Store a Diverse Range of Power Data.



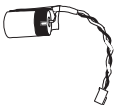
- Measurement Data Collected through RS-485 Communications.**
 The Controller is equipped with an RS-485 serial interface that supports the CompoWay/F communications protocol to periodically collect and save measurement data from the KM-series Power Sensors/Monitors. Data from up to 124 Power Sensors/Monitors and 200 channels can be measured (for 10-minute measurement interval).
- Pulse Measurements.**
 Pulse signals from can be counted by connecting to general input terminals on the EW700. The pulse count can be converted to a power consumption and periodically saved as measurement data.
- Save Data to SD Cards.**
 Measurement data that is saved in internal memory can be periodically and automatically output to SD/SDHC cards.
- Browser Interface.**
 The Controller can be accessed from the web browser of a computer through the Ethernet, to read the measurement data that is saved in internal memory, check operating status, change settings, and update firmware.
- Link to Host System.**
 Measurement data can be automatically read through the Ethernet and displayed in graphs on the computer using EasyEW-series software.
- Alert Contact Output.**
 The contacts of the general output terminals can be turned ON or OFF when the measurement value meets a preset condition.
- Send Email Alerts.**
 An alert message can be sent to a specified email address when the measurement value meets a preset condition or the operating status shows an error. You can register up to 10 patterns of days of the week and times in the email settings. You can register up to 10 email addresses for each pattern. The operating environment must be set up so that the EW700 can connect to an SMTP server. (Authentication is not supported.)

Ordering Information

Sensor Network Controller

Model
EW700-M20L

Accessories

Appearance	Name	Model
	Memory Backup Battery	CP1W-BAT01

Performance/Specifications

Item		EW700-M20L	
Rated voltage		100 to 240 VAC (–15% to 10%), 50/60 Hz	
Power consumption		15 W max.	
Maximum measurement capacity		Number of measurement channels: 200 channels for 10-minute measurement interval or 40 channels for 1-minute measurement interval	
Number of connected Sensors/Monitors		Up to 124 Sensors can be connected through RS-485	
Measurement interval		1 minute, 10 minutes, 30 minutes, and 60 minutes	
Communications interface	LAN port	1 port	
	RS-485	Number of ports	4
		Maximum number of connected Sensors/Monitors	31 nodes per port (31 nodes × 4 ports = 124 nodes per Controller)
		Terminating resistance	Built-in resistance (120 Ω)
		Baud rate	9.6 k, 19.2 k, and 38.4 kbps (default: 9.6 kbps)
		Data length	7 bits (Cannot be changed)
		Stop bit length	2 bits (Cannot be changed)
	Vertical parity	Even (Cannot be changed)	
Communications protocol		CompoWay/F	
Network functions		Host interface: HTTP Communications protocol: TCP/IP Application: SMTP (Authentication is not supported.)	
Ambient operating temperature		–10 to 55°C (with no condensation or icing)	
Storage temperature		–25 to 65°C (with no condensation or icing)	
Ambient operating humidity		25% to 85%	
Storage humidity		25% to 85%	
Weight		Approx. 700 g	
Degree of protection		IP20	
General input	Number of inputs	1 input	
	Rated input voltage	24 VDC ±10%	
	Input impedance	Approx. 2.2 kΩ	
	Input current	10 mA (TYP)	
	ON voltage/ON current	17.4 VDC, 8 mA min.	
	OFF voltage/OFF current	5.0 VDC, 1 mA max.	
	Input pulse width	5 ms min.	
General output	Number of outputs	4 outputs (independent)	
	Maximum load voltage	30 VDC	
	Maximum load current	50 mA/output	
	ON resistance	5 Ω max.	
Applicable memory cards		SD memory card (sold separately) of 2 GB max. or SDHC card (sold separately) of 32 GB max. Recommended: SanDisk Corporation (operating temperature: –25 to 85°C) Supported format: FAT32 *1	
Data storage capacity *2	Data storage capacity	Approx. 3 yr (for 200 channels measured at a 10-min interval)	
	SD memory card	Approx. 10 MB used per month (for 200 channels measured at a 10-min interval)	
Data protection		Lithium battery (Memory Backup Battery), Life: 5 yr (at ambient temperature of 23°C) (reference value)	
Indications		Status display with LED indicators	
Alert function		Alert output linked to general output and email alerts	
Installation		Screw mounting or DIN Track mounting	
Insulation resistance		20 MΩ min. (at 500 VDC) between AC terminals and FG terminals 20 MΩ min. (at 500 VDC) between AC terminals and IN/OUT, RS-485, LAN, and OPTION terminals 20 MΩ min. (at 500 VDC) between the ground and FG terminals and the OPTION terminal	
Dielectric strength		1,500 VAC for 1 min between AC terminals and FG terminals 1,500 VAC for 1 min between AC terminals and IN/OUT, RS-485, LAN, and OPTION terminals 500 VAC for 1 min between the ground and FG terminals and the OPTION terminal	
Vibration resistance		10 to 57 Hz with 0.075-mm single amplitude, 57 to 150 Hz with 9.8 m/s ² acceleration, 10 times for 8 minutes each in 3 directions	
Shock resistance		147 m/s ² , 3 times each in 6 directions (up/down, left/right, forward/backward)	

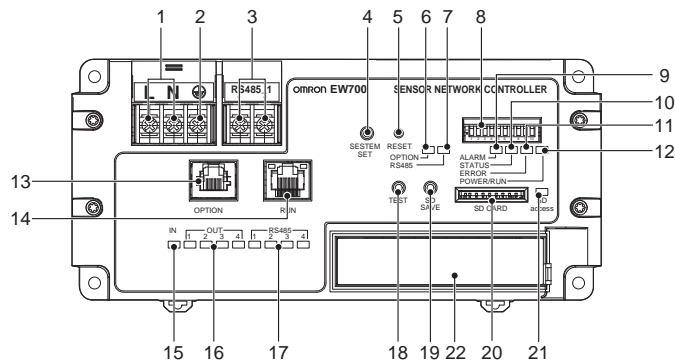
*1. Format the SD/SDHC cards using formatting software.
The formatting software can be found on the distribution page at the following URL.
http://www.sdcard.org/downloads/formatter_3/

*2. The capacity depends on the number of measurement channels and the measurement interval.

EW700-M20L

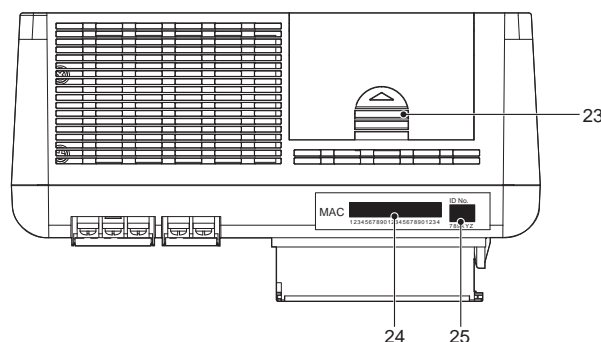
Part Names and Functions

Front View



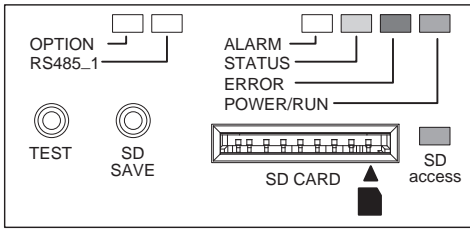
No.	Name	Label on Controller	Terminal specification	Function
1	Power supply terminals	L, N	M3.5 screws	100 to 240 VAC power supply is connected to these terminals.
2	Ground terminal	⊕	M3.5 screws	This terminal is connected to ground.
3	Sensor communications terminals 1	RS485_1	M3.5 screws	An RS-485 communications line (port 1) for connecting Sensors/Monitors is connected to these terminals.
4	System Set Button	SYSTEM SET		This button changes state between monitoring and setting.
5	Reset Button	RESET		This button is used to restart the Controller, for example after changing the settings.
6	Option port operation indicator	OPTION		(Reserved for future use.)
7	Sensor communications indicator 1	RS485_1		The communications status of the RS-485 communications line (port 1) for connecting the Sensors/Monitors is displayed.
8	DIP switch	DIP SW		This DIP switch is used to set the operating status of the Controller.
9	Alert indicator	ALARM		This indicator lights when an alert occurs.
10	Processing status indicator	STATUS		This indicator shows the processing status (monitoring or setting).
11	Device error indicator	ERROR		This indicator lights when an error occurs.
12	Power supply/operating status Indicator	POWER/RUN		This indicator shows the power supply status and operating status.
13	Optional Unit port	OPTION		(Reserved for future use.)
14	LAN port	LAN		The LAN cable is connected to this port. A shielded cable of category 5 or higher is recommended. (The cable type (straight or cross) is automatically detected.)
15	Input indicator	IN		This indicator is lit when the general input is ON.
16	Output indicators	OUT 1-4		This indicator is lit when the general output is ON.
17	Sensor communications indicator 2 to 4	RS485_2-4		The communications status of the RS-485 communications line (port 2, 3, 4) for connecting the Sensors/Monitors is displayed.
18	Test Button	TEST		(Reserved for future use.)
19	SD Card Save Button	SD SAVE		Use this button to save the measurement data on the SD card starting from the data that was last saved.
20	SD card slot	SD CARD		An SD card is inserted here if required.
21	SD Card access indicator	SD ACCESS		This indicator is lit while data is being read from or written to an SD card.
22	General Input, general output, and Sensor/Monitor communications terminals	Refer to information provided separately.	M3 screws	These terminals are connected to input devices, output devices, and the RS-485 communications lines (ports 2, 3, and 4) for connecting the Sensors/Monitors.

Top View



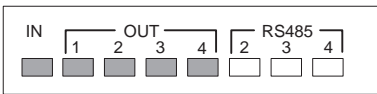
No.	Name	Label on Controller	Function
23	Battery compartment cover	-	The battery is stored behind this cover. Slide the cover backwards to remove it.
24	MAC address	-	The MAC address of the LAN port is printed here.
25	SNC ID	-	The SNC ID (6 hexadecimal digits) is printed here.

Indicators



Indicator	Color	Status	Description
POWER/RUN	Green	Lit	Operating normally.
		Flashing	Starting up.
		Slowly flashing	Operating in Safe Mode.
		OFF	Power supply is OFF.
ERROR	Red	Lit	Device Error. The device could not start properly.
		Flashing	The device could not operate properly because an installation, setting, or connection error occurred.
		Slowly flashing	Monitoring error occurred.
		Temporarily lit	A communications error occurred. (A non-fatal monitoring error was detected.)
STATUS	Green	Lit	Monitoring.
		Slowly flashing	Waiting for system to be established.
		OFF	Setting status.
ALARM	Yellow	Lit	Temporarily lit when alert occurs.
RS485_1	Yellow	Lit	Communications in progress on port 1 for RS-485.
OPTION	-	-	(Reserved for future use.)
SD ACCESS	Green	Lit	SD card is being read or written.

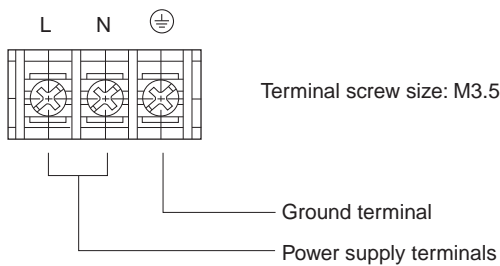
* Flashing: 0.5-second interval, Slowly flashing: 3-second interval.



Indicator	Color	Status	Description
IN	Orange	Lit	General input is ON.
OUT1	Green	Lit	General output 1 is ON.
OUT2	Green	Lit	General output 2 is ON.
OUT3	Green	Lit	General output 3 is ON.
OUT4	Green	Lit	General output 3 is ON.
RS485_2	Yellow	Lit	Communications in progress on port 2 for RS-485.
RS485_3	Yellow	Lit	Communications in progress on port 3 for RS-485.
RS485_4	Yellow	Lit	Communications in progress on port 4 for RS-485.

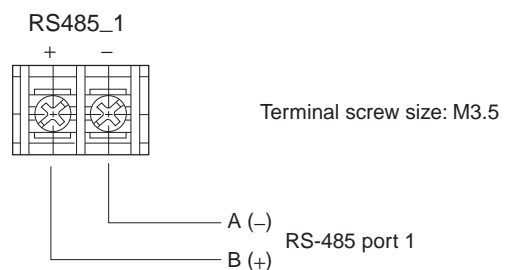
Names of Connectors and Terminals

Power supply terminals



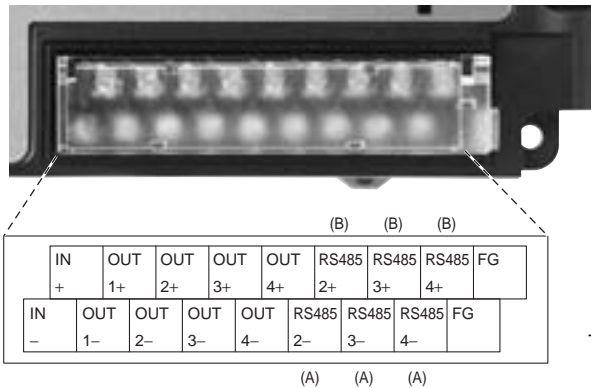
Name	Label on Controller	Description
Power supply terminals	L	Supply 100 to 240 VAC.
	N	
Ground terminal	⊕	Ground to a resistance of 100 Ω or less to increase noise resistance and avoid electric shock.

Sensor communications terminals 1



Name	Label on Controller	Description
Sensor communications terminals 1	RS485_1	+
		-
		Connect an RS-485 communications line for connecting Power Sensors/Monitors.

General Input, General Outputs, Sensor Communications Terminals 2 to 4 (Terminal Block)

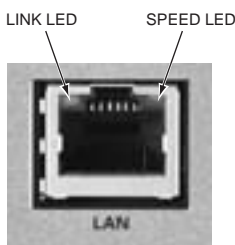


Terminal screw size: M3

Name	Label on Controller	Description
General input terminals	IN +	These are the general input terminals. Pulse output from Sensors/Monitors can be connected.
	IN -	
General Output terminals 1	OUT1 +	These are the general output terminals for port 1.
	OUT1 -	
General Output terminals 2	OUT2 +	These are the general output terminals for port 2.
	OUT2 -	
General Output terminals 3	OUT3 +	These are the general output terminals for port 3.
	OUT3 -	
General Output terminals 4	OUT4 +	These are the general output terminals for port 4.
	OUT4 -	
Sensor communications terminals 2	RS485_2 +	Connect an RS-485 communications line for connecting the Power Sensors/Monitors. (Port number: 2)
	RS485_2 -	
Sensor communications terminals 3	RS485_3 +	Connect an RS-485 communications line for connecting the Power Sensors/Monitors. (Port number: 3)
	RS485_3 -	
Sensor communications terminals 4	RS485_4 +	Connect an RS-485 communications line for connecting the Power Sensors/Monitors. (Port number: 4)
	RS485_4 -	

LAN port

A LAN cable for communicating with a host device, such as a computer, is connected to this port. Use a commercially available 10/100Base-T cable. (A shielded cable of category 5 or higher is recommended.) The cable type (straight or cross) is automatically detected.



Connector type: RJ-45

Indicator	Color	Status	Description
LINK	Green	Lit	The correct link was established normally.
		Flashing	Communications in progress.
SPEED	Orange	Lit	100 Mbps connection.
		OFF	10 Mbps connection or no connection.

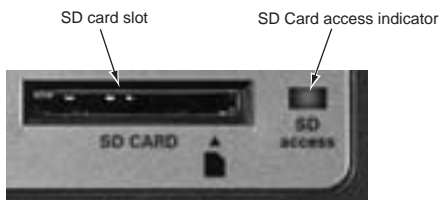
DIP switch



No.	Item	Setting	Remarks
1	(Do not use)	Always set to OFF.	
2	(Do not use)		
3	(Do not use)		
4	(Do not use)		
5	(Do not use)		
6	(Do not use)		
7	(Do not use)		
8	(Do not use)		
9	Setting and operating limit	ON	Changing settings from a web browser is prohibited. The SYSTEM SET Button is disabled.
		OFF	Changing settings from a web browser is allowed. The SYSTEM SET Button is enabled.
10	Startup Mode	ON	Start in Safe Mode.
		OFF	Start in Normal Mode.
			Any change in the setting of this pin is effective immediately.
			Set this pin before turning ON the power supply or resetting the Controller.

Note: All pins are set to OFF in the default settings.

SD card slot

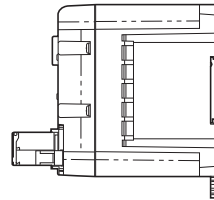
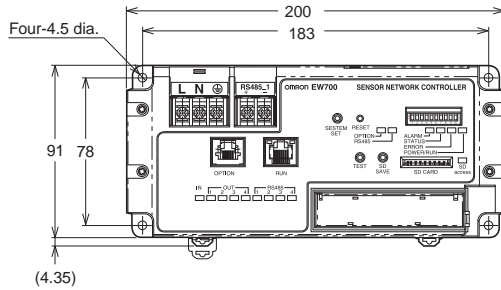
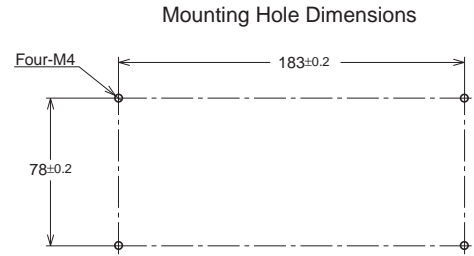
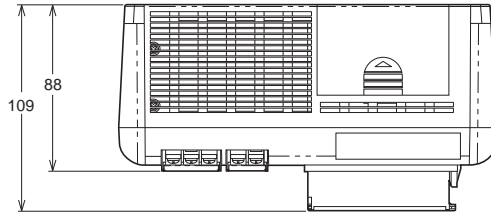


• Dummy Card

A dummy card is inserted when the device is shipped from the factory.

Remove the dummy card before inserting an SD card.

If you are not going to use an SD card, leave the dummy card inserted to prevent dust from entering the slot.



Connectable Sensors

The Sensors/Monitors that are listed in the following table can be connected to the RS-485 communications ports on the EW700.

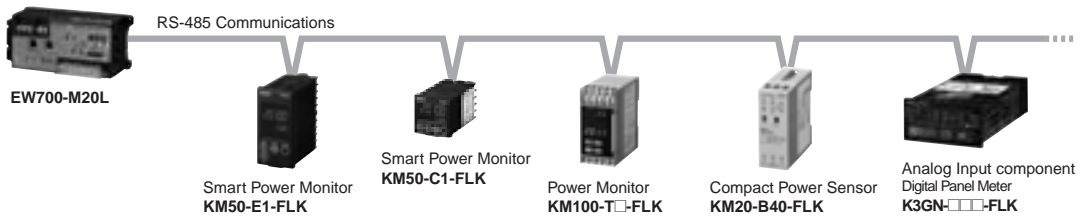
Series	Model	Remarks	Measured items									
			Power measurements *3	Pulse	Analog	Temperature						
KM20-B40	KM20-B40-FLK		yes									
KM50-C	KM50-C1-FLK		yes	yes		yes *1						
KM50-E	KM50-E1-FLK		yes	yes		yes *1						
KM100	KM100-T-FLK	Not support Memory Cards	yes									
	KM100-TM-FLK	Memory Card Function										
K3GN	K3GN-□□□-FLK 1 2 3	1. Pulse input		yes	yes	yes *2						
		<table border="1"> <tr> <td>N</td> <td>NPN input</td> </tr> <tr> <td>P</td> <td>PNP input</td> </tr> </table>					N	NPN input	P	PNP input		
		N					NPN input					
P	PNP input											
2. Analog input												
		3. Output										
		<table border="1"> <tr> <td>C</td> <td>Relay output</td> </tr> <tr> <td>T1</td> <td>NPN output</td> </tr> <tr> <td>T2</td> <td>PNP output</td> </tr> </table>	C	Relay output	T1	NPN output	T2	PNP output				
C	Relay output											
T1	NPN output											
T2	PNP output											

Note: All models use RS-485 communications.

*1. Simplified temperature measurements are made.

*2. A temperature sensor is required.

*3. "Power measurements" includes integral power consumptions, voltages, currents, and power factors. Refer to the datasheet for each product for details.



Installation

Installation Precautions

Consider the following information when installing the EW700 to increase reliability and maximize performance.

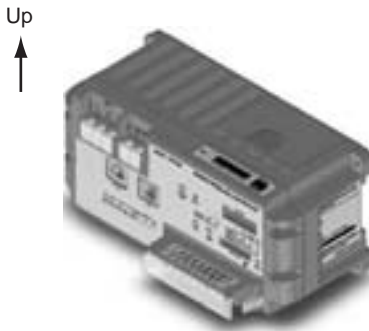
Installation Location

Do not install the Controller in the following locations.

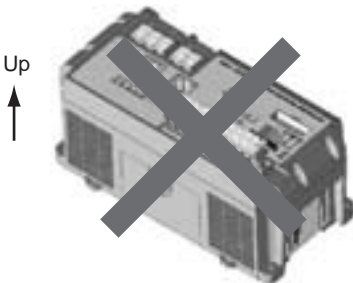
- Locations that are greatly affected by vibration or shock
- Outdoors or locations that are subject to direct sunlight, wind, or rain
- Locations subject to ambient temperatures outside -10 to 55°C
- Locations subject to relative humidity outside 25% to 85%
- Locations that are subject to rapid changes in temperature or humidity where condensation or icing may occur
- Locations that are affected by static electricity or noise
- Locations that are subject to corrosive gas (particularly sulfide or ammonia gas)
- Locations that are excessively dusty or dirty
- Locations that are subject to flooding or oil
- Locations that are affected by electric or magnetic fields
- Locations that are subject to splashing brine

Installation

- The Controller must be mounted in an upright position to provide proper cooling.



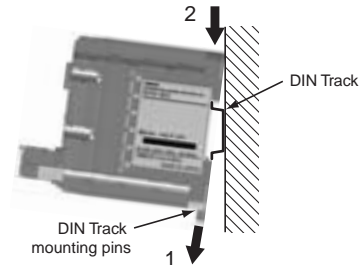
- Do not install the Controller in any of the following positions.



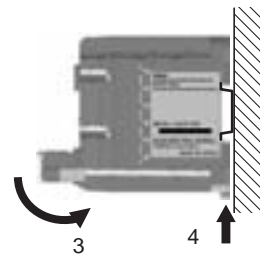
- Do not block the ventilation holes in or the areas around the product to ensure proper dissipation of heat.
- Leave a space of at least 30 mm above and below the Controller for heat dissipation.
- Do not install the Controller near equipment that generates a large amount of heat, such as heaters, transformers, or high-capacity resistors.

Installation in a Panel

- DIN Track mounting is normally used to mount the Controller in a panel.
- Before mounting the Controller on the DIN Track, connect the back-up battery for memory.
- Use the following procedure to mount the Controller to the DIN Track.
 1. Release the pins on the back of the Controller.
 2. Hook the Controller on the DIN Track at the top.



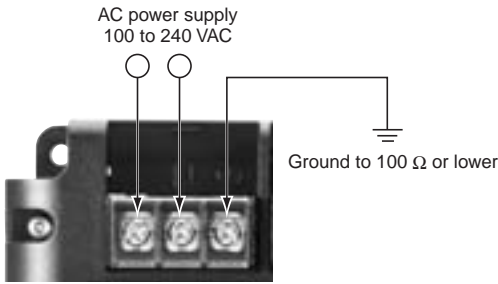
3. Push the Controller until it is mounted to the DIN Track.
4. All DIN Track mounting pins are locked.



- Secure each DIN Track with at least three screws.
 DIN Track: PFP-50N (500 mm),
 PFP-100N (1,000 mm)

Wiring

Power Line and Ground Line



AC power supply

- Supply 100 to 240 VAC.
- Keep voltage fluctuations within the specified range.

Power supply voltage	Allowable power supply voltage fluctuation
100 to 240 VAC	85 to 264 VAC

- If one power supply phase is grounded, connect the grounded phase to the N terminal.

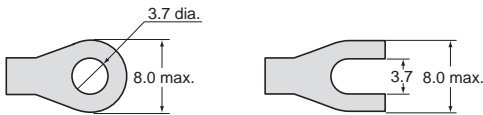
Grounding

- Connect the ground terminal to a resistance of 100 Ω or less.

Terminal Screws and Crimp Terminals

Terminal Screws	M3.5 screws with self-raising pressure plates
Recommended tightening torque	0.8 N•m

Recommended Crimp Terminals



Note

- Use crimp terminals that are suitable for the size of the terminal screws.

General I/O Terminals

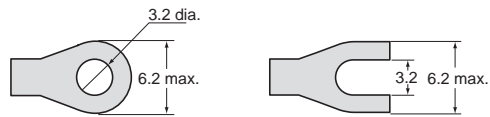
I/O Specifications

Check the I/O specifications of the general I/O terminals. In particular, do not apply a voltage that exceeds the rated input voltage to the input terminals, or a voltage that exceeds the maximum load voltage to the output terminals. Doing so may result in failure, damage, or fire. If there are positive and negative terminals, be sure to wire them correctly.

Terminal Screws and Crimp Terminals

Terminal Screws	M3 screws with self-raising pressure plates
Recommended power line wire size	AWG 22 to 18 (0.326 to 0.823mm ²)
Recommended tightening torque	0.5 N•m

Recommended Crimp Terminals



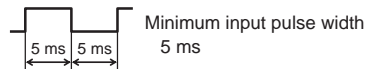
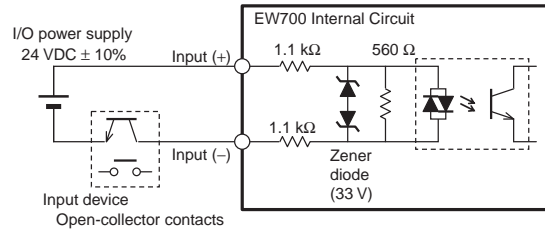
Note

- Use crimp terminals that are suitable for the size of the terminal screws.
- Tighten the terminal screws to the torque of 0.5 N•m.

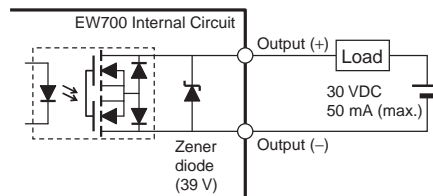
Input and Output Devices

Refer to the following information when selecting or connecting devices to connect to the general I/O terminals.

Example of Input Device and EW700 Internal Circuit



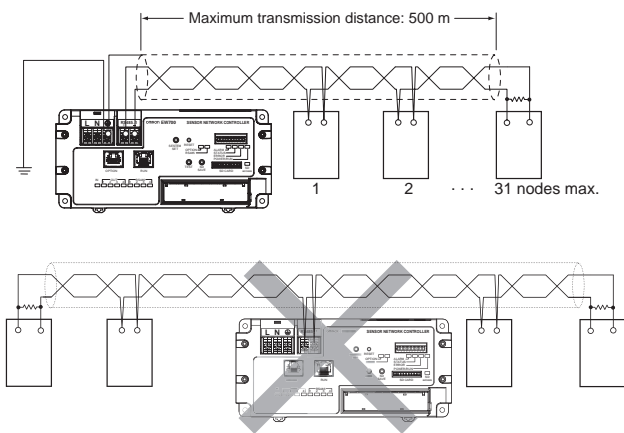
Example of Output Device and EW700 Internal Circuit



RS-485 Communications Wiring

Communications Line for Connecting Sensors

- The EW700 has four RS-485 communications terminal ports for communicating to the Sensors/Monitors.
- The maximum total cable length is 500 m.
- Up to 31 nodes can be connected to each port.
- Use twisted-pair cables with wires of at least AWG28 (0.081 mm²).
- To ground the shield, ground only one point at the end Controller to prevent malfunctioning.
- The RS-485 communications terminals on the Controller have built-in terminating resistance. Connect the communications line so that the Controller is at one end.
- Wire the RS-485 communications line across the Sensors/ Monitors.
Branching (star wiring) cannot be used.
- Attach terminating resistance of 120 Ω (1/2 W) to the device connected at the opposite end of the circuit from the Controller. (If there is terminating resistance built in to the device, enable it.)

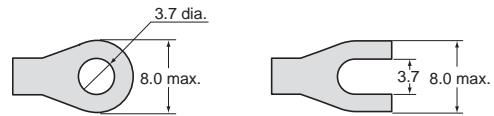


Terminal Screws and Crimp Terminals

Sensor communications terminals 1

Terminal Screws	M3.5 screws with self-raising pressure plates
Recommended power line wire size	AWG28 (0.081mm ²) min.
Recommended tightening torque	0.8 N•m

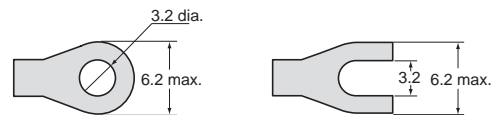
Recommended Crimp Terminals



Sensor communications terminals 2 to 4

Terminal Screws	M3 screws with self-raising pressure plates
Recommended power line wire size	AWG28 (0.081mm ²) min.
Recommended tightening torque	0.5 N•m

Recommended Crimp Terminals



Note

- The sizes of the terminal screws for Sensor/Monitor communications terminals 1 and Sensor/Monitor communications terminals 2 to 4 are different.
- Tighten the screws for Sensor/Monitor communications terminals 1 to a torque of 0.8 N•m.
- Tighten the screws for Sensor/Monitor communications terminals 2 to 4 torque of 0.5 N•m.
- Use crimp terminals that are suitable for the size of the terminal screws.

EW700-M20L

Browser Interface

From the web browser, Sensors/Monitors that are connected to the EW700 can be registered, alert conditions set, maintenance performed, and measurement data downloaded using the browser interface.

You can also output measurement data to an SD card.

A generic web browser from a computer can be used to modify the settings and perform maintenance for the EW700.



There are six displays, one for each function, that can be accessed from the web browser.


Item	Description
Top	The operating status of the Controller and links to other display are provided.
Device Settings	Settings for the EW700 and the Sensors/Monitors that are connected to the EW700 can be modified.
Latest Values	The latest measurement values are displayed.
Logging Information	Alert function log and error log are displayed.
Maintenance	The general output contacts can be operated and measurement data can be downloaded in CSV format.
Alert Settings	The alert can be set. The threshold value and alert output conditions can be set.







EasyEW-series Software

System Requirements

Item	Requirements
Operating system/ service pack	Microsoft Windows XP (32-bit edition), SP3 or later Microsoft Windows Vista (32-bit edition), SP2 or later Microsoft Windows 7 (32 or 64-bit edition) or later
Framework	.NET Framework 3.5 SP1 or later
Monitor	Resolution of 1,024 × 768 pixels or higher, High color (16-bit) or better, and full-color display
CPU	Intel® Core™2 Duo processor or better
Memory	2 GB min. (available memory: 500 MB min.)
Disk capacity	The following specifications assume that the maximum number of Sensors/Monitors are connected. EW700: 10 Controllers, Sensors/Monitors: 1,240 units, Measurement interval: 1-minute, Summary data retention: 40 months • Per Sensor/Monitor: Approximately 537 MB (562,850,400 bytes) • 1,240 Sensors/Monitors: Approximately 650 MB (697,934,496,000 bytes)

Safety Precautions

 CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.
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 CAUTION	
Electrical shock may occasionally occur. Always turn OFF the power supply before wiring the terminals.	
Fire or property damage may occasionally occur. Tighten terminal screws to the specified tightening torque. Recommended tightening torque M3 screws: 0.5 N•m. M3.5 screws: 0.8 N•m.	
Electrical shock, fire, or product failure may occasionally cause personal injury or physical damage. Do not allow pieces of metal or wire to enter the Controller.	
Destruction or rupture may occasionally occur. Make sure that the power supply voltage is within specifications.	
Electrical shock, minor injury, fire, or equipment malfunction may occasionally occur. Do not attempt to disassemble, modify, or repair the product.	

Precautions for Safe Use

To use the Sensor/Monitor Network Controller safely, observe the following precautions.

- Do not store, install, or use the product in the following locations.
 - Locations that are greatly affected by vibration or shock
 - Outdoors or locations that are subject to direct sunlight, wind, or rain
 - Locations where the specified range of temperature or humidity would be exceeded
 - Locations that are subject to rapid changes in temperature or humidity where condensation or icing may occur
 - Locations that are affected by static electricity or noise
 - Locations that are subject to corrosive gas (particularly sulfide or ammonia gas)
 - Locations that are excessively dusty or dirty
 - Locations that are subject to flooding or oil
 - Locations that are affected by electric or magnetic fields
 - Locations that are subject to splashing brine
- Always check the wiring and confirm that it is correct before turning ON the power supply.
Incorrect or improper wiring may result in electrical shock, injury, accidents, failure, or malfunction.
- Use power supplies and wires with suitable specifications for the power supply and the power supply for inputs and outputs.
Incorrect or improper wiring may result in electrical shock, injury, accidents, failure, or malfunction.
- For general input terminals, do not apply a voltage that exceeds the rating.
- Do not apply a voltage or connect a load to the general output terminals that exceeds the rated voltage or load.
- Use crimp terminals that are suitable for the size of the terminal screws.
- Check all terminal numbers before wiring.
- Do not touch conductive metal parts on the Controller while power is being supplied.
- Do not block the ventilation holes in or the areas around the product to ensure proper dissipation of heat.
- Do not install the Controller near equipment that generates a large amount of heat, such as heaters, transformers, or high-capacity resistors.
- Touch grounded metal to discharge any static electricity before touching the product.
- Implement safety measures, such as circuit breakers, against short-circuits of external wires.
- Connect a ground with a resistance of 100 Ω or less during installation work.
- Do not bend a cable past its natural bending radius or pull in it with excessive force.

Precautions for Correct Use

- Do not use solvents, such as paint thinners, to clean the product. Use commercially available alcohol instead.
- Make sure the rated voltage is reached within 2 s after the power is turned ON.
Otherwise, the product may not operate correctly.
- Do not remove the SD card from the Controller while data is being written to or read from the SD card (i.e., while the SD card access indicator is lit).
- Discharge any static electricity from your body by touching a grounded piece of metal before inserting or removing the SD card.
- Use an SD card that has an operating temperature range of –25 to 85°C or wider.
Contact the manufacturer of the SD card for the specifications of the SD card.
- The battery has a limited service life.
(Estimated service life: 5 years. The service life varies significantly depending on operating conditions.) Use the special batteries.
- Suitably dispose the Controller as industrial waste.