

OMRON

EQ100-E

Sensor Network Server

EN INSTRUCTION SHEET

Thank you for purchasing the EQ100. This manual describes the functions, performance, and application methods needed for optimum use of the product.

Please observe the following items when using the product.

- Before using the product, thoroughly read and understand this manual to ensure correct use.
- Keep this manual in a safe location so that it is available for reference whenever required.



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PRECAUTIONS ON SAFETY

● Meanings of Signal Words



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. Additionally, there may be severe property damage.



Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or there may be property damage.

● Warning Signs



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



Personal injury or physical damage may occur due to electric shock, fire or malfunction. Do not put metal pieces or inductor chips into the product.



Electric shock may occur. Always make sure that the power is turned OFF before wiring the terminal unit or replacing the battery.



Breakdown or explosion may occur. Use a power supply of the specified voltage.



Electric shock, fire or malfunction may occur. Do not try to disassemble, repair, or modify the product.



PRECAUTIONS FOR SAFE USE

Observe the following precautions to ensure safe operation.

- 1) Do not store and manage, install, or use the product in any of the following ways.
 - In a place with large vibrations or which is greatly influenced by shocks
 - Outdoors or in a place directly exposed to sunlight, or exposed to wind and rain
 - In a place at a temperature and humidity outside the specification range
 - In a place with great changes in temperature and humidity, or where there is a possibility of condensation
 - In a place affected by static electricity or noise
 - In a place with corrosive gas (particularly sulfide gas or ammonia gas)
 - In a place with a lot of dust or iron powder
 - In a place which is flooded or covered in oil
 - In a place with splashing salt water
- 2) Before using the device, you must check the wiring before connecting it to the power. Not doing so may result in electrocution, faults, accidents, injury, or incorrect operation due to incorrect wiring.
- 3) Use an appropriate electrical power source and wiring to connect the product to an electrical power source and in/output. Not doing so may result in electrocution, faults, accidents, injury, or incorrect operation due to incorrect wiring.
- 4) Do not use voltage greater than the standard one for generic input terminals.
- 5) Do not use voltage and do not connect a load greater than the standard for generic input terminals.
- 6) Carry out wiring by using a solderless terminal which appropriate fits the size of the terminal screw size.
- 7) Do not block the air ventilation holes of this product and the area surrounding them, in order to allow heat to be emitted.
- 8) Do not install this product near to machines which emit large amounts of heat (heaters, transformer, large capacity resistors, etc.)
- 9) In installation work, Type D earthing (Type 3 earthing) must be used.
- 10) Be sure to firmly secure the product with DIN rail or screw mounting before use.

PRECAUTIONS FOR CORRECT USE

- 1) Be sure to mount screws and terminal screws to the main body with the specified torque.
- 2) When connecting to a power source, make the power reach the rated voltage within 2 seconds. Not doing so may result in this product not functioning correctly.
- 3) The battery has a finite life. (Indicated life of 5 years: This may vary greatly depending on the usage conditions.) You must use batteries specific for this product.
- 4) The memory backup battery is a consumable item. When the battery's remaining capacity becomes low, the device alarm light (ERR) turns on and the battery must be replaced to new one.
- 5) Attach a new battery within five minutes from turning off the power. Otherwise the data cannot be retained.
- 6) If you do not use the product for a long period of time, remove the battery. This should prevent battery consumption and a failure due to leak.
- 7) Do not use thinner-type products when cleaning. Please use a commercially-available alcohol.
- 8) Dispose of this product in accordance with local and national disposal regulations.

■ Specifications

Rated Supply Voltage	100 to 240 VAC 50/60 Hz
Allowable Range	85 to 264 VAC 50/60 Hz
Power Consumption	15 VA or less
Operation Ambient Temperature	-10 to 55°C (no freezing and condensation)
Storage Temperature	-25 to 65°C (no freezing and condensation)
Operation Ambient Humidity	25 to 85% RH
Storage Humidity	25 to 85% RH

■ Performance

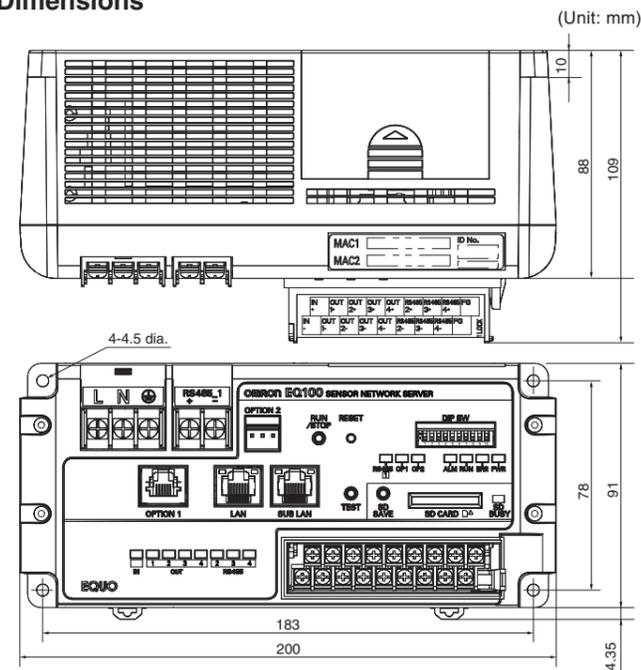
Insulation Resistance	Between power terminals and FG terminal: 20 MΩ or higher (500 VDC megger) Between power terminals and general input, general outputs #1 to 4, RS-485 communications ports #1 to 4, LAN, sub-LAN, OPTION1, and OPTION2: 20 MΩ or higher (500 VDC) Between ground, FG terminal and OPTION1, OPTION2: 20 MΩ or higher (500 VDC)
Withstand Voltage	Between power terminals and FG terminal: 1500 VAC for 1 minute Between power terminals and general input, general outputs #1 to 4, RS-485 communications ports #1 to 4, LAN, sub-LAN, OPTION1, OPTION2: 1500 VAC for 1 minute Between ground, FG terminal and OPTION1, OPTION2: 500 VAC for 1 minute
Vibration Resistance	10 to 150 Hz: Half amplitude of 0.1 mm, acceleration of 15 m/s ² , for each of 3 axes of 8 minutes × 10 sweeps
Shock Resistance	150 m/s ² 6 directions of up, down, right, left, forward, and back, 3 times each
Weight	Approx. 0.7 kg
Degree of Protection	IP20
Supported Memory Card	SD card (optional, up to 2 GB), SDHC card (optional, up to 32 GB) Recommended Product: SanDisk's (with an operation temperature range from -25 to 85°C) Supported Format: FAT 16 for SD card, FAT32 for SDHC card SDXC card is not supported and cannot be used.
Data Protection	Lithium battery life: 5 years (reference value, at ambient temperature of 23°C)

General-purpose Input	Inputs	1 input
	Input voltage	10.2 to 26.4 VDC
	Input impedance	Approx. 2.2 kΩ
	Input current	12 VDC/5 mA (TYP), 24 VDC/10 mA (TYP)
	ON voltage	10.2 VDC min.
	OFF Voltage	5.0 VDC max.
General-purpose output	Input pulse width	5 ms min.
	Outputs	4 outputs (independent)
	Maximum load voltage	30 VDC
	Maximum load current	50 mA/output
	ON resistance	5 Ω max.

■ Accessories

- Instruction Sheet (This manual)
- Startup Guide
- Memory backup battery (installed inside the top panel of the main body)
- Memory backup battery caution label (attached on top of the main body)
- LAN connector dustproof cover (attached)
- Sub-LAN connector dustproof cover (attached)
- OPTION1 connector dustproof cover (attached)
- Dummy SD card for dustproof (attached to the SD card slot)
- CD-ROM (containing chart display tool and related documentation)

■ Dimensions

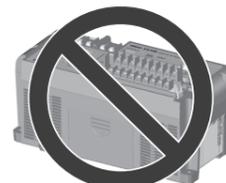


■ Mounting

- Be sure to remove the main body top cover to attach the battery before mounting.
- Be sure to remove the caution label on the upper surface of the main body after attaching the battery.
- Due to heat radiation of the main body, keep spaces of 30 mm or more for the top and bottom of the body.
- Install the main body in the correct direction to improve heat radiation.



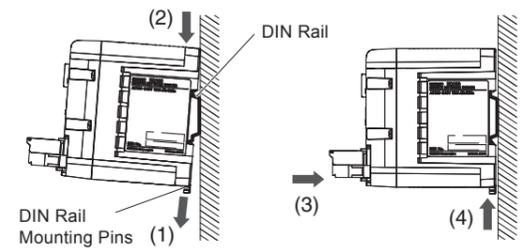
Correct direction



Wrong direction

● DIN Rail Mounting

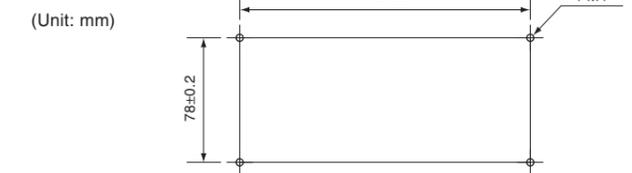
- ① Unlock the DIN rail mounting pins on the back of the EQ100.
- ② Hook the product from the top side of the DIN rail.
- ③ Press in the product to mount.
- ④ Lock the entire DIN rail mounting pins.



- Use three or more screws to mount the DIN rail.
- DIN rail: PFP-50N (500 mm), PFP-100N (1000 mm)

● Screw Mounting

To mount the product using screws, make mounting holes with the following sizes, attach the specified screws and flat washers, and apply the appropriate tightening torque to mount the product. This product does not include the mounting screws. The screws must be acquired by the user. Depending on the mounting conditions such as material and thickness of the place to mount, screw type and length may differ. Use proper screws based on the mounting conditions.



■ Related Documents

Document name	Catalog No.	Printed material	CD-ROM	Website
Instruction Manual (This manual)	2286837-8	Yes	No	Yes
Startup Guide	2286970-6	Yes	No	Yes
EQ100 User's Manual	KANC-708	No	Yes	Yes
EQ-Viewer User's Manual	KANC-710	No	Yes	Yes

- EQ-Viewer is a graph display tool provided with this product.
- For the latest documents, please download them from our website.

Registered Trademarks

SD logo, SDHC logo and SDXC logo are registered trademarks of SD-3C and LLC.

Suitability for Use

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

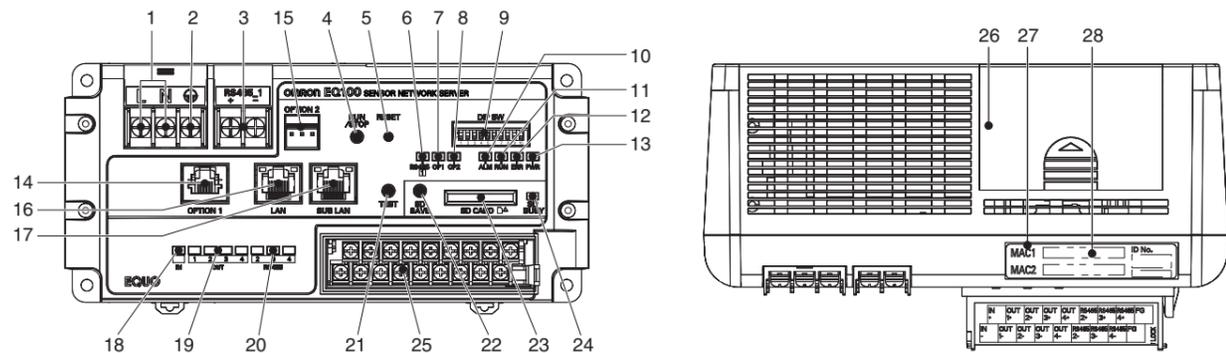
See also Product catalog for Warranty and Limitation of Liability.

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D 9 Jul, 2013

Part Names



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

Note 1) Straight/crossover cable can be automatically identified. A shielded cable of category 5 or higher is recommended.

Note 2) For stable communications, it is recommended that a LAN-connected measurement device should be connected to the sub-LAN connection port.

Setup DIP Switch

No.	Item	ON	OFF	Remarks
1 to 6	(Not used)			
7	Write an EQ project file (Note)	Written with SD card	Written through LAN	Set before turning on the power or resetting.
8	Update firmware	Updated with SD card	Updated through LAN	Set before turning on the power or resetting.
9	Limit RUN/STOP button	RUN/STOP button disabled	RUN/STOP button enabled	Can be set any time.
10	Startup Mode	Started up under safe mode	Started up under normal mode	Set before turning on the power or resetting.

Note) An EQ project file is used to set operations of the EQ100. For details, refer to "EQ100 User's Manual" (Catalog No.: KANC-708F).

- All switches are set to OFF by default.
- Always set to ON only one of the setup DIP switches SW7, SW8, and SW10. Do not set two or more switches ON.

SD Card and Recorded Data Storage

- An SD card is not included in this product. Purchase a commercial SD card that is compatible with this product. The recommended product is listed on "Performance" in this document.
- The retention period of data convergence in the EQ100's internal memory is one week. The recorded data older data than one week are overwritten by newly recorded data from the oldest one.
- To keep the recorded data older data than one week to the EQ100, insert a compatible SD card to the SD card slot and enable the SD card output function. For details, refer to "EQ100 User's Manual" (Cat. No.: KANC-708F).

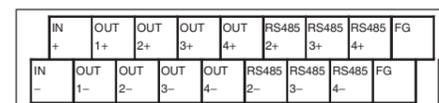
Standards	SD	SDHC	SDXC
Mark			
Max. capacity	2 GB	32 GB	2 TB
File system	FAT16	FAT32	exFAT
Use on EQ100	Yes	Yes	No

Indicator

Name	Color	Status (Note)	Description
PWR	Green	ON	Operating under normal mode
		Flashing	Processing activation
		Special flashing	Operating under safe mode
		OFF	No power supply
ERR	Red	ON	Failure: An error occurred and cannot be activated.
		Flashing	An error occurred upon installation/setup/ connection and the device cannot work properly.
		Temporary ON	A continuously processed error is detected.
		OFF	No error occurred
RUN	Green	ON	Recording data
		Long flashing	Preparing data recording
		OFF	Under setup, communication testing
ALM	Yellow	ON	Monitoring alarm occurred
		OFF	No monitoring alarm occurred

Connection Terminals

General-Purpose Input/Output, RS-485 Communications Port #2 to 4 Terminals, FG Terminal

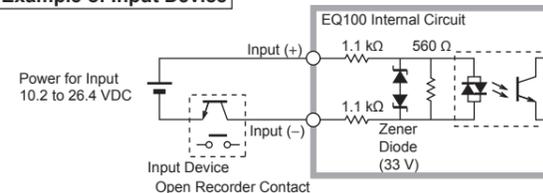


- Use a crimping terminal that fits to the M3 screw to connect the general-purpose input/output terminal, RS-485 communications port #2 to 4 terminals, and FG terminal.



- Make sure to apply the following torque to the terminal screws. Recommended tightening torque (M3 terminal): 0.5 N·m
- Use wiring of 22 to 18 AWG to connect to general-purpose input/output terminal or FG terminal.

Example of Input Device



Name	Color	Status	Description
SD BUSY	GN	ON	A writable SD card is inserted to the SD card slot.
		OFF	No SD card is inserted to the slot or an SD card is ejected.
RS485 [1]	YL	ON	RS-485 communications port #1 is under operation.
RS485 [2]	YL	ON	RS-485 communications port #2 is under operation.
RS485 [3]	YL	ON	RS-485 communications port #3 is under operation.
RS485 [4]	YL	ON	RS-485 communications port #4 is under operation.
IN	OR	ON	The general-purpose input is on.
OUT [1]	GN	ON	The general-purpose output 1 is on.
OUT [2]	GN	ON	The general-purpose output 2 is on.
OUT [3]	GN	ON	The general-purpose output 3 is on.
OUT [4]	GN	ON	The general-purpose output 4 is on.

Note) Flashing: Cycle of 0.25 seconds
Long flashing: Cycle of 3 seconds
Special flashing: Repeating flashing and on periodically
Temporary On: On only upon the applied status

Power Supply Terminal

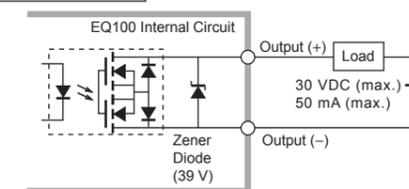


- Use a crimping terminal that fits to the M3.5 screw to connect the supply terminal and RS-485 communications port #1 terminal.



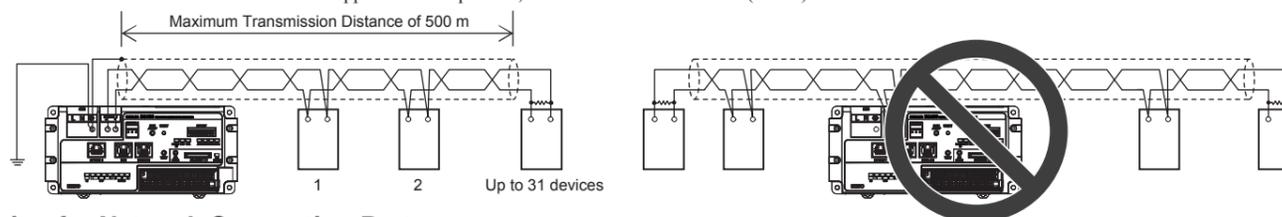
- Make sure to apply the following torque to the terminal screws. Recommended tightening torque (M3.5 terminal): 0.8 N·m
- For the RS-485 communications cable, use a 24 to 14 AWG shielded twisted-pair cable.

Example of Output Device



Wiring for RS-485 Communications Port

- This product has four RS-485 communications ports for RS-485-connected measurement devices.
- Up to 31 measurement devices can be connected to one port.
- The maximum transmission distance is 500 m for RS-485 communications.
- To prevent malfunction, a shielded wire must be connected to the ground or FG terminal of the main body.
- The RS-485 communications port terminal of the EQ100 has the built-in terminal resistor. The RS-485 communications port cable must be attached so that this product should be on one end of the terminal.
- The RS-485 cables must be wired through measurement devices in one loop. Branching and/or star wiring is not available.
- For a device that is connected to the circuit end opposite to this product, a terminal resistor of 120 Ω (1/2 W) must be attached.



Wiring for Network Connection Port

- This product has two network connection ports: LAN and sub-LAN.
- The LAN/sub-LAN connection ports both support 10BASE-T/100BASE-TX. Observe the limitations of each standard (cable type, cable length, number of connected devices and cascade connection of a repeater hub).
- When connecting to an existing network such as in-house LAN, the product must be connected to the LAN connected port.

Network connection port	LAN connected device		
	Upper-level system	Computer (For Web UI function)	Measurement device
LAN	Yes	Yes	Yes
Sub-LAN	No	Yes	Yes

Settings

When setting the product, install EQ-Viewer included in the provided CD-ROM and use the setup & management tool EQ-Manager included in EQ-Viewer. For installation of EQ-Viewer, refer to "EQ-Viewer User's Manual" (Cat. No.: KANC-710), for the settings using EQ-Manager, refer to "EQ-Viewer User's Manual" (Cat. No.: KANC-710) and "EQ100 User's Manual" (Cat. No.: KANC-708F). For the settings of each measurement device, refer to the corresponding user's manual.