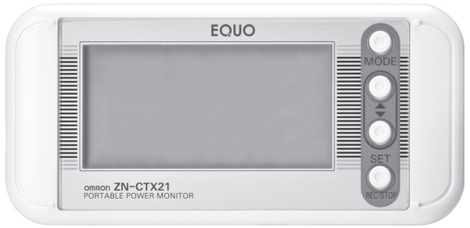
OMRON

Model **ZN-CTX21-□**

Portable Power Monitor

INSTRUCTION SHEET

Thank you for selecting OMRON product. This sheet primarily describes precautions required in installing and operating the product. Before operating the product, read the sheet thoroughly to acquire sufficient knowledge of the product. For your convenience, keep the sheet at your disposal.



3730498-5H

● Perchlorate regulations by the State of California, USA

This product uses a lithium battery that contains perchlorate that is regulated by California State Law. Appropriate measures must be taken to comply with regulations.
For details, refer to the URL as below:
www.dtsc.ca.gov/hazardouswaste/perchlorate

PRECAUTIONS ON SAFETY

● Meanings of Signal Words

⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant property damage.
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.

● Meaning of Precaution Symbols

	● Mandatory Requirement Indicates a general mandatory requirement.
	● Prohibition Indicates general prohibition.
	● Electric Shock Warning Warns against an electric shock under specific conditions.
	● Explosion Warning Warns against an explosion under specific conditions.
	● Disassembly Prohibition Indicates the possibility of accidents such as an electric shock caused by unit disassembly.

● Warning Indications

⚠ WARNING	
The mounting magnets provided with the product have strong magnetism. If the product is mounted using these magnets, anyone wearing a heart pacemaker must not operate the product; or the product must not be in proximity of such a person.	
This product contains lithium batteries. Serious injury may occur due to fire or explosion. Do not attempt to disassemble the product, deform it by applying pressure, heat it in a high temperature (100ºC°C or more), or burn it for disposal.	
The sensor head connector and the CT input circuit are not insulated. Do not connect the dedicated CT terminal and connection cable directly to AC or DC power supply. Extensive property damage, minor or moderate injury may be caused by the electrical flow through the product, if they are connected directly to AC or DC power supply.	

⚠ CAUTION	
A minor or moderate injury or property damage may occur due to explosion. Do not use the product in an environment containing an inflammable or explosive gas.	
An electric shock may occur. Do not replace the batteries when the unit is clamped to a conductor for measurement.	
An electric shock may occur. Do not remove or insert a sensor head from/to the connector with the unit clamped to a conductor for measurement.	
An electric shock may occur. Make sure that the power of a conductor to be measured is turned OFF before clamping or detaching the unit to/from the conductor. Or wear insulating gloves if the power is not turned OFF.	
An electric shock may occur. Do not touch the terminal sections of the unit and the conductor to be measured when the unit is clamped to the conductor.	
An electric shock or minor injury as well as fire or unit malfunction may occur. Do not attempt to disassemble, repair or modify the product.	

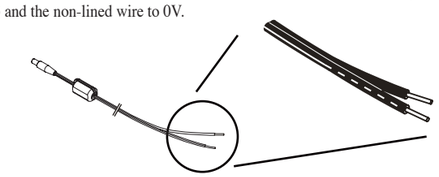
PRECAUTIONS FOR SAFE USE

Observe the following precautions to ensure safe operation.
- Do not install the product in the places subject to exposure to water, oil, or chemical splashes.
- Only the provided AC adapter (not other) must be used when using AC power supply.
- If a voltage that exceeds the rated voltage is applied to the AC adapter, smoking may occur. Do not connect a power supply that exceeds the rated voltage. In a situation where a voltage higher than the rating is applied, use protective equipment so that the power supply voltage does not exceed the rated voltage.
- Dispose of the product as industrial waste.
- Use batteries correctly, only after reading and being familiarized with the precautions provided by the manufacturer.
- Do not let the product drop or subject it to a shock, which may cause its damage or malfunction. Use screws to secure the product when mounting it on the wall. Stop using the product if it has been applied with a strong impact.
- When inserting or removing an SD card, the AC adapter, alarm output cable, or sensor connector, securely hold the product to prevent it from dropping and being damaged.
- Do not bring the product close to magnetic products (e.g. magnetic cards), sensitive electronics equipment (e.g. computers or clocks), when the product is attached with the mounting magnets.
- Small pieces may be chipped off the mounting magnets when they are attracted to the surface. Make sure the pieces do not enter the eyes. Consult a medical doctor if this happens.
- When using the mounting magnets to install the product, take caution not to allow a finger to be caught between the product(s) and the magnetic surface.
- Do not install the product at a high place when using the mounting magnets.
- Apply an appropriate load to the alarm output terminals to prevent possible smoking.
- If liquid crystal leaks due to a damage to the LCD panel, take caution not to allow it to contact your skin, to be inhaled or swallowed. If it has contacted your skin or entered your mouth, seek medical attention.
- Do not touch the Portable Power Monitor terminals as well as the sensor head connector and the dedicated CT terminal when the unit is clamped to a conductor for measurement.
- The product cannot be used for measurement of the secondary circuit of an inverter.
- Take anti-static electricity measures (e.g. touching grounded metal object) when handling the product.
- Only the dedicated CT and connection cable specified by OMRON must be used.
  Dedicated CT: ZN-CTS□1-□A, ZN-CTM□1-□A

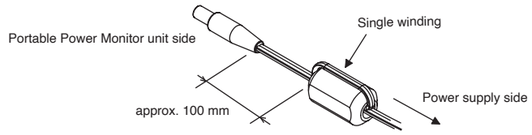
PRECAUTIONS FOR CORRECT USE

1. Avoid installing the product in the following places:
- Places exceeding the rated ambient temperature
- Places exposed to extreme temperature changes (where condensation occurs)
- Places subject to relative humidity exceeding the rated humidity range
- Places subject to corrosive or flammable gases
- Places subject to mist, droplets, coarse particles, fiber, salt, metal dust, or large amount of particles
- Places subject to direct shock or vibration
- Places subject to direct sunlight
- Places subject to exposure to water, oil, or chemical splashes
- Places subject to strong magnetic field or electric field
- Outdoors

2. Wiring
- Wire the product cable separately from high-voltage or power lines. Placing them in the same wiring or the same duct may cause induction, resulting in the product malfunction or damage.
- Make sure that the I/O terminals are inserted or removed with the power turned OFF. Doing this with the power ON may result in a failure.
- When using a DC cable, connect the white-lined wire of the cable to the power input (24 VDC ± 3%) and the non-lined wire to 0V.



- Use a ferrite core to reduce the noise to/from other device when supplying power to the unit via a DC cable. To use the provided DC cable, attach the provided ferrite core as shown below.



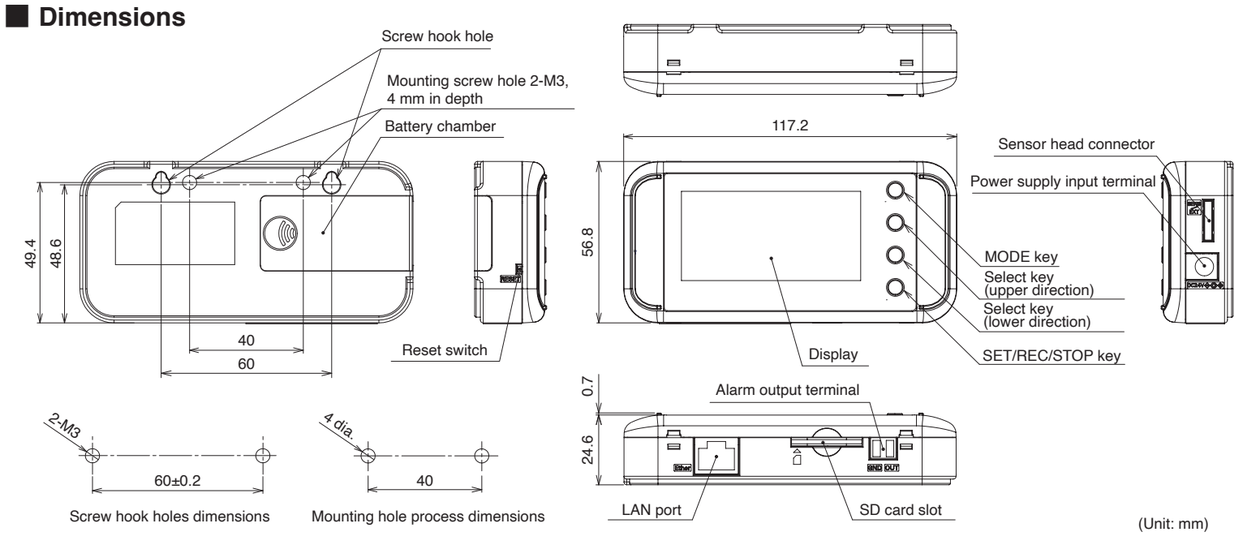
3. Battery use
- Do not mix new and old batteries, or ones of different types or manufacturers. Doing so may result in the product malfunction.
- Do not install batteries in wrong polarities.
- Always attach the battery cover during use. OMRON cannot be responsible for the product performance, if the batteries accidentally drop off the product due to the unattached battery cover.
- Remove the batteries when they are not used for a long time.
- Used batteries remaining installed for a long time may leak and corrode in the product.
- Do not disassemble or throw the battery into the fire.
- When the battery level is low, the product may repeatedly restart. If this happens, replace the batteries with new ones.
- When using network connection mode, use an external power source because the battery drains faster.

4. Battery disposal
- Battery disposal must follow the guidelines provided by local governments. Dispose of batteries in compliance with the relevant local regulations.

5. Mounting screw holes
- The screw holes provided on the product are M3 and 4 mm deep. Do not screw deeper than 4 mm, which may damage the product.

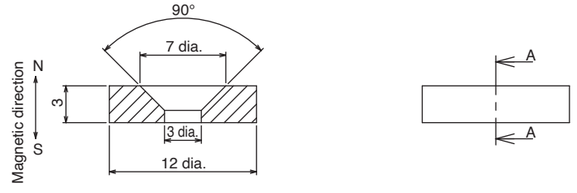
6. Measurement
- Provide a distance of 20mm or more between the dedicated CT and the product when the mounting magnets are used. Otherwise, measurement may be affected by the magnetism and therefore, may not be correct.
- Correct settings must be made specifically according to the object to be measured.
- This product is not categorized as "a specified measuring instrument" officially approved by an organization specified in relevant measurement acts. Therefore, the measured data provided by this product cannot be used for official energy certificates.

■ Dimensions



(Unit: mm)

■ Mounting Magnet Dimensions



Overview and Features

Connected to the dedicated CT (separately sold), ZN-CTX21-□ provides momentary power and integrated power values converted from the measured current using pre-specified voltage and power factor. Display and recording of values as well as various measurement settings are also possible with this Portable Power Monitor unit.

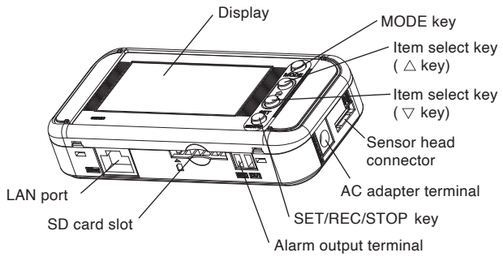
● Display and judgment output

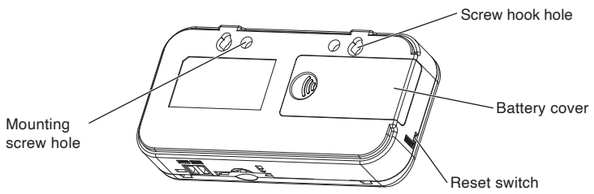
Display of the measured temperature/humidity and time can be switched with the ▲ and ▼ keys. Also, you can set the integrated power as the monitoring target to output an alarm from the output terminal when the value exceeds the threshold.

● Data output and viewing

Measurement values can be recorded to the unit's internal memory and the recorded measurement values can be stored into the SD card.
The data recorded are time, current value, instantaneous power and integrated power.
SD card : Data is in CSV format.
Measured values collected on multiple sensors can be displayed as a graph and combined as a single file by using the PC software that can be downloaded from the product page.

Names and Functions



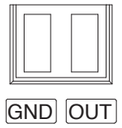


Name	Function
MODE key	Switches operating modes
	Releases error and alarm (holding)
	Cancels during settings
Item select key (△ key)	Moves setting items (upper direction)
	Switches display screens (reverse direction)
	Changes the setting value (increasing)
Item select key (▽ key)	Moves the setting items (lower direction)
	Switches the display screens (forward direction)
	Changes the setting value (decreasing)
SET/REC/STOP key	Confirms the setting value
	Starts/stops record (holding)
	Saves recorded data to the SD memory card.
Mounting screw hole	Used to secure screws (M3x4 mm female hole)
Screw hook hole	For screw head hook
Battery cover	Battery chamber cover
Reset switch	Restarts the unit.*

* Used when the unit cannot be recovered from an error status or for other emergency reset.

Alarm Output Specifications

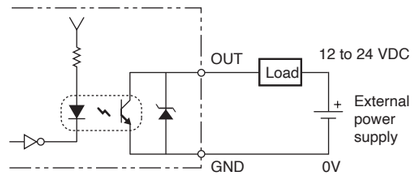
● Terminals



Terminal names are inscribed on the unit.
(1) OUT
Judgment result allocated in THR mode is output.
(2) GND
Common terminal.

● Output Specifications

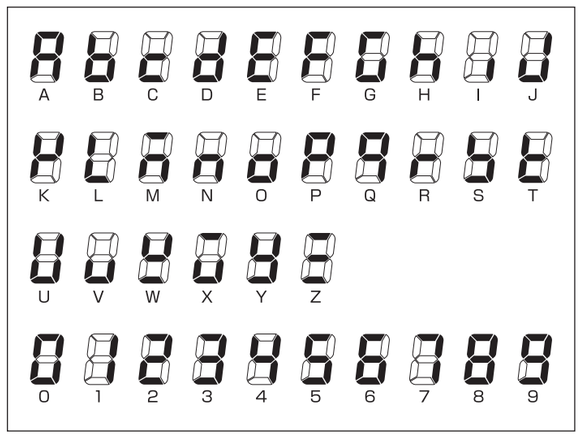
Do not directly connect the external power supply between OUT and GND.
Be sure to connect the load.

External power supply voltage	12 to 24 VDC ±10%
Load current	45 mA max.
ON residual voltage	1.2 V max.
OFF leakage current	0.1 mA max.
Internal circuit diagram	

Display Unit

Display	Meaning and operation when turned on
	Integral power consumption reset interval is set. The setting is OFF when it is not displayed.
⇌	Communication with LAN cable.
LAN	LAN cable is connected and network communication is possible.
REC	Recording data into the internal memory. Recording start wait using timer when blinking.
SD	SD card has been inserted. SD card is being accessed while light blinking.
ALM	An integrated power consumption has exceeded the specified upper threshold value.
	Power is supplied.
	The battery level is shown in 4 levels. Replace the batteries when this is blinking. This indication is not available when the measurement mode (MODE) is in NORM or HISPD.
Hi	Indicates the upper limit threshold value.
MAX	Indicates the maximum momentary power value.
MIN	Indicates the minimum momentary power value.
AVE	Indicates the average momentary power value.
RUN	The unit is currently operating in RUN mode.
FUN	The unit is currently operating in FUN mode.
THR	The unit is currently operating in THR mode.

7-segment Display List



Ratings

Item \ Model	ZN-CTX21-□
Connectable sensor	ZN-CTS□1-□A, ZN-CTM□1-□A
Display	7-seg. 5-digit 2-step LCD display, auxiliary information indicator displays
Recording Interval	1 s/2 s/5 s/10 s/20 s/30 s/1 min. *1
Operation Function	Momentary power, Integrated power consumption *2
Measurement Mode	Normal mode, Sleep mode *3, High-speed logging mode
Recording Mode	Continue mode*4, Ring mode*5
External Output	Alarm output (Photocoupler output) *6
Memory Capacity (Internal)	Internal memory: approx. 6500 data items (The number of channels is 1)
Memory Capacity (External)	SD card(SDHC support, measured value saving/set value saving and reading) Recommended SD card: HMC-SD292(2GB)/HMC-492(4GB)(manufactured by OMRON) *7
Power Supply	DC input: 24 VDC ± 10%; AC adapter: 100 to 240 VAC/50 to 60 Hz; Batteries: Two AAA batteries*8
Current Consumption	80 mA max. (AC adapter used)
Battery Life *9	Approx. 1 week *10
Operating Temperature	Battery Supply: -10°C to 60°C (no condensation or icing) AC Adapter: 0°C to 40°C (no condensation or icing)
Operating Humidity	20 to 85%RH (no condensation or icing)
Storage Humidity/Temperature	-15°C to +60°C, 20 to 85%RH (no condensation or icing)
Insulation Resistance	20 MΩ (500 VDC)
Withstand Voltage	1000 VAC, 50/60 Hz, 1 min.: Between the case and current input circuit
Vibration Resistance	With mounting screws: 10 to 150 Hz, 0.7 mm double amplitude, acceleration: 50 m/s2 for each in X, Y and Z directions for 80 min. With mounting magnets: 10 to 55 Hz, 0.3 mm double amplitude, acceleration: 20 m/s2 for each in X, Y and Z directions for 50 min.
Shock Resistance	150 m/s² in 6 directions (+/-X, +/-Y, and +/-Z directions), 3 times each *11
Material	ABS
Degree of Protection	IP30
Mounting	Magnet mounting, screw mounting, hook, free standing
Weight (in Package)	Approx. 500 g
Accessories	Instruction Sheet (This sheet), Startup Guide Mounting Magnets*12, Alarm Output Connector*13, AC Adapter*14, *15, DC Cable*15, and Ferrite Core*15

*1: In high-speed logging mode, 60 Hz and 50 Hz are recorded with 83 ms and 100ms respectively.
*2: Momentary power and integrated power values are converted from the measured current. Correctly specify the number of used channels, applicable measurement target circuit, CT type, frequency, voltage and power factor.
*3: The display turns OFF after 10 seconds of no user operation and recovers by a key operation when SLEEP mode is specified. LAN cannot be used when sleep mode is specified.
*4: Automatically writes the data to the SD memory card when the internal memory reaches its capacity and continues recording until the SD card memory capacity reaches its limit. The unit stops operation if there is no SD memory card inserted when the internal memory reaches its capacity. (Recording can be resumed after inserting an SD memory card and outputting the data to it at a press of button.)
*5: Continues the recording of the latest measured values until the internal memory reaches its capacity. (If the internal memory capacity exceeds the capacity, data is overwritten from the oldest one in the memory.)
*6: Output when the integrated power upper limit specified in THR mode is exceeded. An alarm output is not available in SLEEP mode.
*7: When using third party SD card, please use industrial SD card (flash memory is SLC type) with high reliability and durability. Available SD card is SD standard or SDHC standard, Class 4 or higher, (SDXC standard can not be used) You must contirm the operation third party SD card yourself.
*8: Nickel-metal hydride cells or alkaline dry cells can be used. Manganese battery cells cannot be used.
*9: Battery life varies depending on the measurement environment, recording interval, operation mode as well as the battery type and performance.
*10: Conditions: Two AAA nickel-metal hydride cells; Sleep mode; Continue mode; Recording interval: 1 s; SD memory card: HMC-SD292; and Operation temperature: 23°C
*11: The installation place must be free from physical shock when using mounting magnets.
*12: Already installed on the product by factory default.
*13: OMRON's XW4B-02B1-H1 connector.
*14: This provided AC adapter must be used.
*15: An AC adapter is provided in the ZN-CTX21 package; and a DC cable and ferrite core are included in the ZN-CTX21-A package.

Unit Measurement Specifications

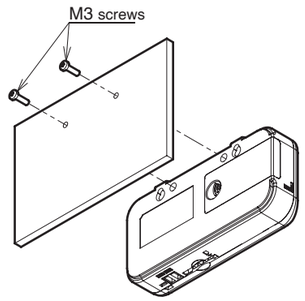
Primary side rated current		Dedicated CT (5 A/50 A/100 A/200 A/400 A)
Primary side allowable input current		120% of rated current (Continue)
Accuracy	Current	±2.0%FS±1 digit (Ambient temperature 23°C, rated input, rated frequency) *1
Measurement target frequency		50 Hz/60 Hz
Recording values		Current value, instantaneous power, integrated power consumption
Applicable circuit		Single phase two-wire, single phase three-wire, three-phase three-wire, three-phase four-wire

*1 An error of the dedicated CT is not included.

■ Mounting

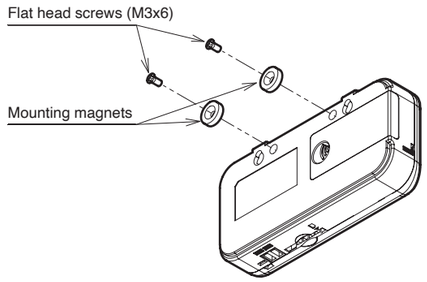
This product is precision equipment. Be careful not to drop the product when mounting it.
Do not drop the product or apply strong impact to the product.
If strong impact is applied to the product, stop using the product.

1. When using mounting screw holes

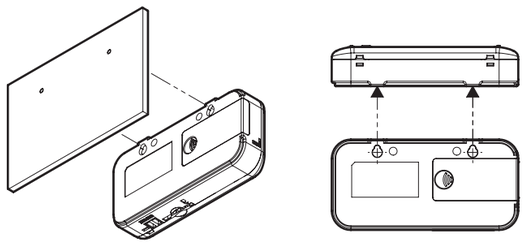


The unit screw hole depth is 4 mm. Be careful not to tighten the screw for more than 4 mm.

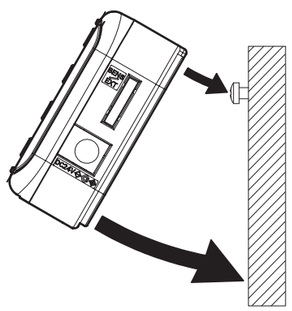
The product can be mounted with magnet by mounting mounting magnets to the screw hole. (tightening torque: 0.4 N/cm to 0.6 N/cm)
Do not stress to the sensor head cables, when mounting the magnet. The magnets are originally attached to the unit. Separate the unit and the dedicated CT at least 20 cm when using the mounting magnets.

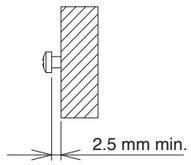


2. When using screw hook holes



There are two hook holes below the convex section of the upper unit. Use M3 screws to hook the screw head on the screw hook holes. Set an interval of 2.5 mm or more between the bottom of the screw head and the wall surface.





Enlarged view of the hook screw

3. Floor installation
Use the product on a desk, etc.
Be careful of the installation location not to drop the product.

4. Connecting the dedicated sensor head (ZN-CTS□□, ZN-CTM□□)

- Insert the connector (male) of the dedicated Head into the Sensor Head connector (female) at the right side of the main unit until it clicks. When carrying the unit with the dedicated sensor head mounted, hold the unit to prevent an excessive force from being applied to the connection cable.
- Before connecting the dedicated sensor head, read the instruction sheet of the dedicated CT.

5. Inserting the SD card

Insert an SD card into the SD card connector at the bottom of the unit. Insert it with the terminal side of the SD card to the front side of the unit.

6. Mounting the alarm output terminal

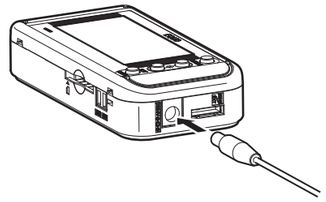
Connect OUT and GND to the load according to the output specifications. Insert the signal line to the alarm output connector and tighten it with flathead screwdriver.

7. Turning ON the power supply

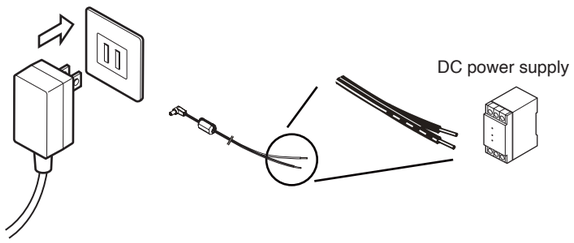
Supply power externally or place batteries in the battery chamber of the unit.

- External power supply

(1) Insert the plug of the AC adapter or DC cable into the power supply input terminal of the unit.



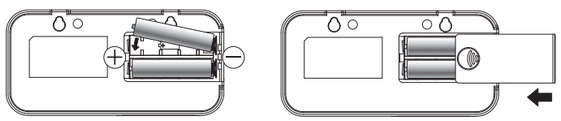
(2) For AC adapter, connect the AC plug into an outlet (100 VAC to 240 VAC). For DC cable, connect the cable with white line to the power supply (24 VDC±10%) and cable without a line into the 0 V.



AC adapter DC power supply

- How to activate power when using batteries

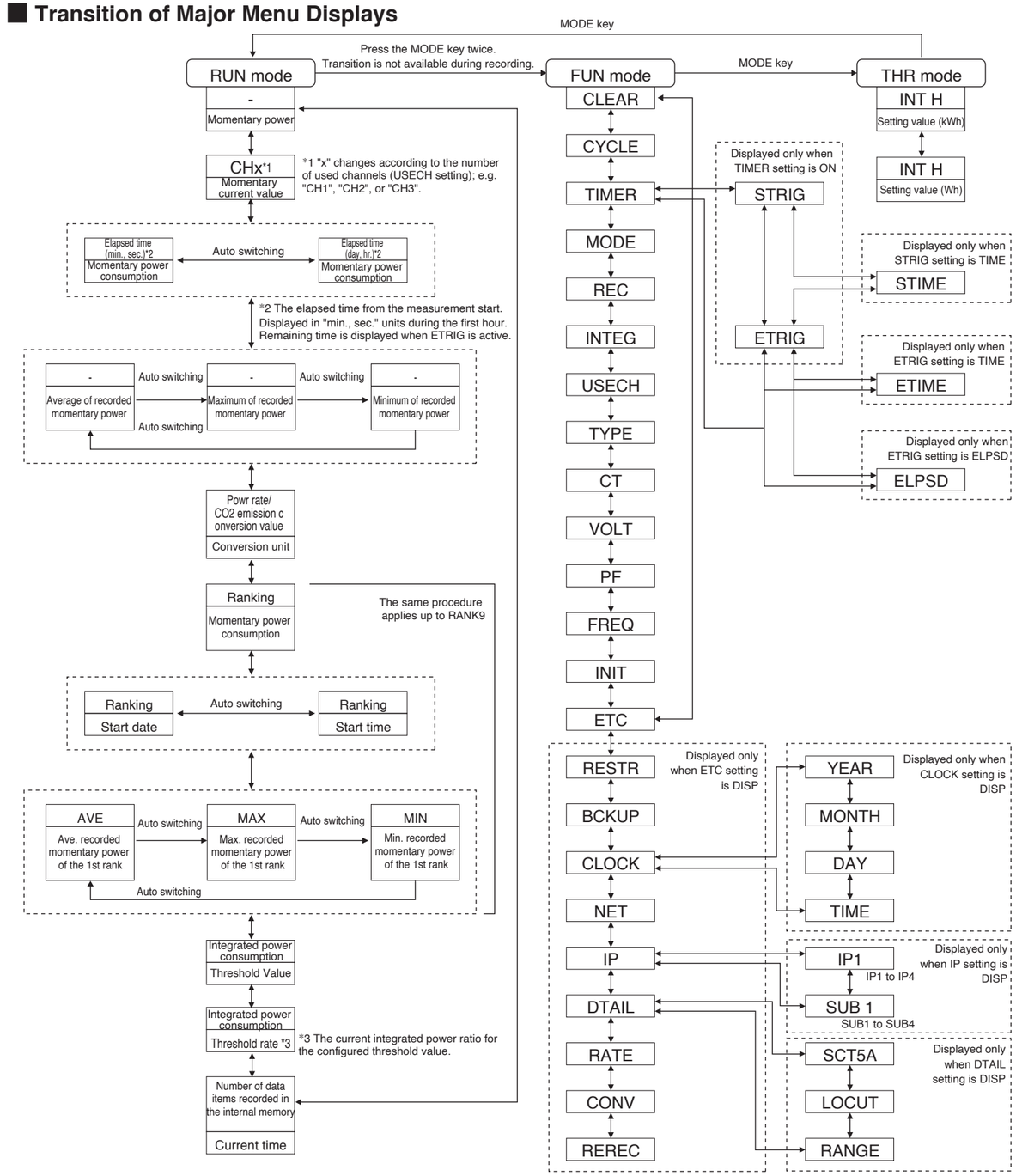
Remove the battery cover at the back of the unit and mount the batteries with care over battery polarity. After inserting the batteries, mount put the battery cover back. Set measurement operating mode to SLEEP when using batteries.



Mounting the batteries Putting the battery cover back

- For details on connecting to a conductor, refer to the instruction manuals of the sensor heads.

■ Transition of Major Menu Displays



■ Major Error Displays and Countermeasures

Display	Overview	Description
E1100	Recorded data writing failure	Failed to write recorded data to the SD memory card. Insert a write-enabled SD card. Hold the MODE key for 3 seconds or more to cancel the error display.
E3000	No SD memory card inserted	An SD memory card is not inserted. Insert a write-enabled SD card. Hold the MODE key for 3 seconds or more to cancel the error display.
E3001	Unable to access the SD memory card	The SD memory card cannot be accessed due to the battery voltage drop. Replace the batteries or connect to the AC adapter. Hold the MODE key for 3 seconds or more to cancel the error display.
E3002	Write-protected SD memory card	The SD memory card is write-protected. Replace it with a write-enabled one. Hold the MODE key for 3 seconds or more to cancel the error display.
E3003	SD card recognition error	Failed to recognize the SD card. Insert a normal SD memory card. Hold the MODE key for 3 seconds or more to cancel the error display.
E5000	Invalid setting file data	The setting data in the SD memory card is invalid e.g. an invalid model type or setting values. Hold the MODE key for 3 seconds or more to cancel the error display.
E5001	Setting file writing failure	Failed to write setting files to the SD memory card. Insert a write-enabled SD card. Hold the MODE key for 3 seconds or more to cancel the error display.
E5002	Setting file reading failure	There is no setting files contained in the SD memory card. Replace it with an SD memory card with setting files. Hold the MODE key for 3 seconds or more to cancel the error display.
HARD	Hardware error	There may be a failure on the hardware. Please contact the distributor or OMRON representative office.

List of Major Setting Items

● Operation mode

Mode	Item	Description
RUN	Measurement execution mode	Performs measurement/recording.
FUN	Function setting mode	Sets various parameters.
THR	Threshold setting mode	Performs condition settings regarding alarm outputs.

● FUN mode

Item	Overview	Description	Setting range	Default
CLEAR	Clear ranking information	Deletes the recorded ranking information. Press the SET/REC/STOP key twice to delete it.	-	-
CYCLE	Recording interval setting	Sets an recording interval of the measured value.	1s/2s/5s/10s 20s/30s/1min	1s
TIMER	Timer setting	Sets whether making the timer setting.	OFF/ON	OFF
MODE	Measurement operation mode setting	Sets measurement operation mode. The sensor unit restarts after confirming the setting value. Set to SLEEP for battery operation.	NORM/SLEEP/ HISPD	SLEEP
SLEEP	Power saving operation mode	Deletes the display after no operation for a certain period of time.	-	-
NORM	Normal operation mode	The remaining battery power cannot be detected in this mode. Use an external power supply.	-	-
HISPD	High-speed logging mode	Records measurement values at the shortest intervals. (50 Hz: 100 ms, 60 Hz: 83.3 ms)	-	-
REC	Recording operation mode setting	Sets operation for a case in which the internal memory capacity reaches the limit during recording.	CONT/RING	CONT
CONT	Continue mode	Outputs a recorded value to the SD card and continues recording when the internal memory capacity reaches the limit during recording.	-	-
RING	Ring mode	Overwrites a recorded value to the SD card and continues recording when the internal memory capacity reaches the limit during recording.	-	-
INTEG	Setting of reset interval of integrated power consumption	Sets a reset interval of the integrated power consumption. The integrated power consumption is reset for each set time and the data of that period is used as ranking data. When the setting is changed, the ranking data is cleared and the sensor unit restarts.	OFF/30 min 1 h/24 h	OFF
USECH	Setting of the number of channels	Sets the number of channels used.	1CH/2CH/3CH	1CH
TYPE	Applicable circuit setting	Sets the method of circuit to be measured.	3P4 (3-phase 4-wire) 3P3 (3-phase 3-wire) 1P3 (1-phase 3-wire) 1P2 (1-phase 2-wire)	3P3
CT	Dedicated CT type setting	Sets the type of the connected dedicated CT.	5 A/50 A/100 A/ 200 A/400 A	100 A
VOLT	Voltage setting	Sets the voltage of measurement power.	1.0 to 9999.9 (V)	220 (V)
PF	Power factor setting	Sets the power factor of measurement power.	0.01 to 1.00	0.8
FREQ	Frequency setting	Sets the frequency of measurement power.	50 Hz/60 Hz	50 Hz
INIT	Setting initialization	Initializes the unit setting to the factory default value. Holding the SET/REC/STOP key starts initialization. Changing measurement operation mode with the MODE key after DONE is displayed initializes the settings and the unit restarts.	-	-
ETC	Display setting for other items	Sets whether displaying other setting items.	OFF/DISP	OFF
RESTR	Read setting data	Recovers the setting from the SD card in which the setting data of the sensor unit is stored. Insert the SD card and hold the SET/REC/STOP key. Writing completes when DONE is displayed.	-	-
BCKUP	Write setting data	Writes the setting data of the sensor unit to the SD card as a backup. Insert the SD card and hold the SET/REC/STOP key. Writing completes when DONE is displayed.	-	-
CLOCK	Time setting	Sets whether displaying the time setting item.	OFF/DISP	OFF
NET	Network function setting	Sets whether using the network function.	OFF/ON	OFF
IP	IP address display setting	Sets whether performing IP address setting.	OFF/DISP	OFF
DTAIL	CT item display setting	Sets whether performing CT-related setting.	OFF/DISP	OFF
SCT5A	Rated primary side current value setting	Sets 5A CT ratio and sets the ratio of conversion to the primary side current value.	5 to 9999	5
LOCUT	Lowcut function setting	Sets a value to forcibly make the current measurement value to 0.	0.1 to 19.9	0.6
RANGE	Measurement range setting	Sets the measurement range.	NORM/AUTO	AUTO
RATE	Rate conversion setting	Sets the conversion coefficient to convert the integrated power consumption to rate.	0.000 to 99.999	0
CONV	Conversion unit setting	Sets the conversion unit.	JPY/USD/EUR CNY/KRW/CO2	JPY
REREC	Power failure REC restoration	Sets whether writing data and starting recording at next startup after power shutdown during recording.	OFF/ON	OFF

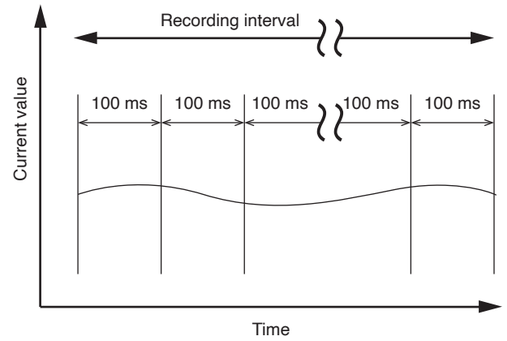
● THR mode

Displayed item	Overview	Setting range	Default
INT H (Unit: kWh)	Upper threshold setting of the integrated power consumption (kWh or more)	1 to 99999	0
INT H (Unit: Wh)	Upper threshold setting of the integrated power consumption (less than kWh)	1 to 999	0

Measurement Operation Mode and Measurement Algorithm

● Normal mode

Calculates the effective value of the current value per 100 ms within the recording intervals to calculate the power consumption as the measurement value.



* It is the effective value per 83.3 ms for 60 Hz measurement.

Battery Life

Battery life varies depending on the recording interval setting. Refer to the following battery life table and the battery operation period when setting the recording interval.
Conditions: Two AAA nickel-metal hydride batteries; the number of connected channels: 1; SLEEP mode; Continue mode; recording interval: 1s; SD card (HMC-SD291) is used; ambient temperature: 23°C

Recording interval	Battery life
1 second	Approx. 7 days
2 seconds	Approx. 12 days
5 seconds	Approx. 20 days
10 seconds	Approx. 25 days
20 seconds	Approx. 29 days
30 seconds	Approx. 30 days
1 minute	Approx. 32 days

* The table above only shows representative values. The actual battery life depends on the measurement environment, recording interval, measurement mode as well as the type and performance of the SD memory card and batteries to use.

Recording Interval and Internal Memory

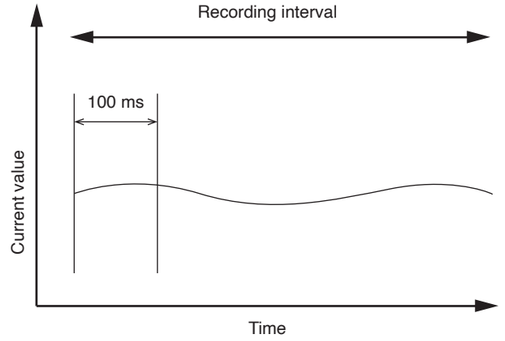
The possible internal memory recording time varies as shown below depending on the recording interval setting.
(A longer hour of recording is possible by using an SD memory card.)

Measurement mode (NORM or SLEEP)		
Recording interval	Possible internal memory recording time (1CH)	Possible internal memory recording time (3CH)
1 second	Approx. 1 hr. 45 min.	Approx. 1 hr. 15 min.
2 seconds	Approx. 3 hr. 30 min.	Approx. 2 hr. 30 min.
5 seconds	Approx. 8 hr. 45 min.	Approx. 6 hr. 15 min.
10 seconds	Approx. 17 hr. 30 min.	Approx. 12 hr. 30 min.
20 seconds	Approx. 1 day 11 hr.	Approx. 1 day 1 hr.
30 seconds	Approx. 2 days 4 hr. 30 min.	Approx. 1 days 13 hr. 30 min.
1 minute	Approx. 4 days 9 hr.	Approx. 3 days 3 hr.

Measurement mode (HISPD)		
Frequency	Possible internal memory recording time (1CH)	Possible internal memory recording time (3CH)
50Hz	Approx. 11 min. 30 sec.	Approx. 8 min. 5 sec.
60Hz	Approx. 9 min. 35 sec.	Approx. 6 min. 40 sec.

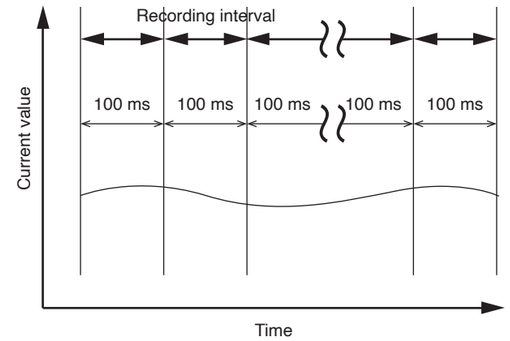
● Sleep mode

Calculates the effective value of the first 100 ms within the recording intervals to calculate the power consumption as the measurement value in the section.



● High-speed logging mode

Calculates and records the effective value and power consumption of the current value per 100 ms.



* It is the effective value per 83.3 ms for 60 Hz measurement.

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.

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

■ **OMRON Canada Inc.**
1675 Trans Canada Route Suite 105,
Dorval, Quebec H9P 1J1, Canada

D Ⓥ May, 2025