

EQUO Series  
Power Sensor Station  
ZN-KMX21-□

OMRON

Thank you for selecting OMRON product.  
This guide describes the quick procedures and operational method to start up this product.  
For further information, refer to the Instruction Sheet in the package and a user's manual.

Start-Up Guide

1897609-3C

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

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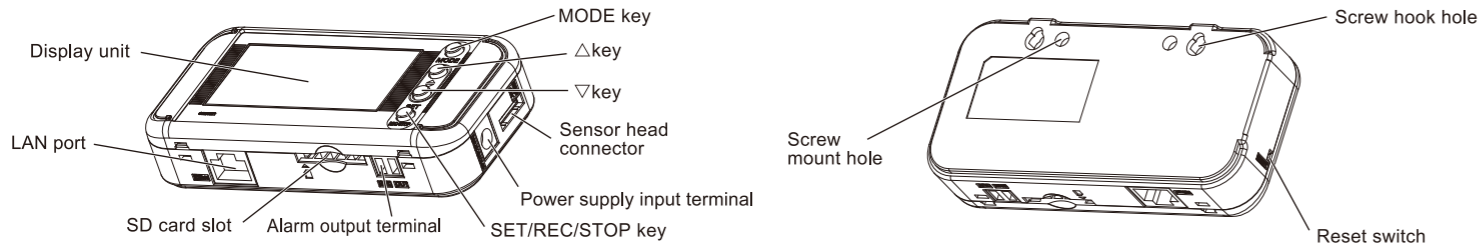
STEP 1 Checking the contents

- Main Unit 1
- AC Adapter or DC Cable 1
- Power Sensor Station Cable 1
- Alarm Output Connector 1
- Instruction Sheet 1
- Start-Up Guide (This document) 1

STEP 2 Preparing necessary items

- Power Sensor/Monitor
  - Power Monitor KM100
  - Compact Power Sensor KM20-B40
  - Smart Power Monitor KM50-C/E
  - Power Monitor KM-N1-FLK, KM-N2-FLK, KM-N3-FLK
- When recording the measured data into the device
  - SD memory card (SDHC compatible)  
HMC-SD291 (2 GB) (Recommended SD card)
- In the case of network connections
  - LAN Cable, HUB for LAN Supporting 10BASE-T and 100BASE-TX
  - SD memory card (SDHC compatible)  
HMC-SD291 (2 GB) (Recommended SD card)

Exterior features



Control unit

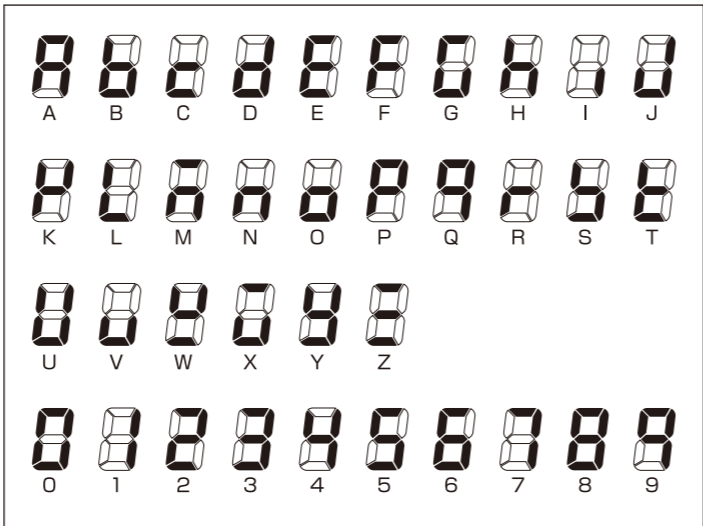
Name	Main functions
MODE key	Switch operating modes. Release an alarm or an error (press and hold). Cancel settings before fixing.
Item selection key Δ key	Move up the setting items. Change display screens. Change setting values (increasing).
Item selection key ∇ key	Move down the setting items. Change display screens. Change setting values (decreasing).
SET/REC/STOP key	Fix setting values etc. Start/stop record (press and hold). Send the recorded data into the SD card.

Display unit



Display	Meaning and operation when turned ON
	An integrated power consumption reset interval is set. The setting is OFF when this is not displayed.
≡	Communication via LAN cable is in process.
LAN	A LAN cable is connected and network communication is ready.
REC	Data is being recorded in the internal memory.
SD	An SD memory card is inserted. Blinking: The SD card is being accessed.
ALM	The total sum of integral power consumptions have exceeded the upper threshold value.
→	Power is supplied.
Hi	Indicates the upper limit threshold value.
MAX	Indicates the maximum momentary power total sum.
MIN	Indicates the minimum momentary power total sum.
AVE	Indicates the average momentary power total sum.
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.

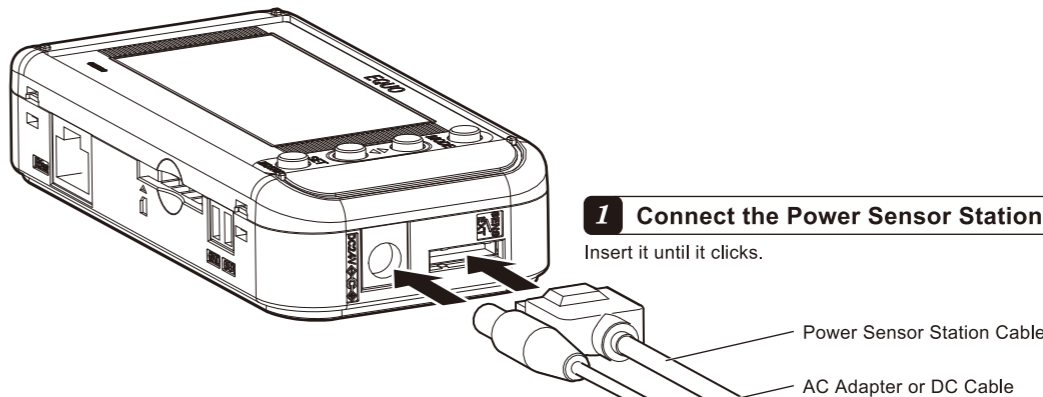
Character display list



Major messages displayed

Display	Character strings	Display	Character strings	Display	Character strings
CYCLE	CYCLE	TIME	TIME	RING	RING
UNIT	UNIT	OFF	OFF	INT H	INT H
REC	REC	ON	ON	RESET	RESET
INTEG	INTEG	DISP	DISP	DONE	DONE
INIT	INIT	NORM	NORM	DATA	DATA
ETC	ETC	IP	IP	SEN	SEN
RESTR	RESTR	SUB	SUB	NO SD	NO SD
BCKUP	BCKUP	RATE	RATE	SDLCK	SDLCK
CLOCK	CLOCK	CONV	CONV	HARD	HARD
YEAR	YEAR	UTOFS	UTOFS	TOTAL	TOTAL
MONTH	MONTH	REREC	REREC		
DAY	DAY	CONT	CONT		

STEP 3 Connecting the Power Sensor Station cable and turning the power ON

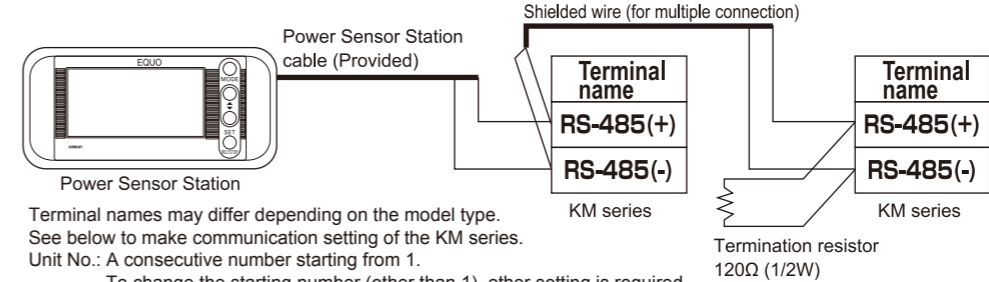


1 Connect the Power Sensor Station cable.

Insert it until it clicks.

2 Connect the Power Sensor Station cable to the Power Sensor/Monitor (KM Series) (sold separately).

Connect the y-shaped crimp terminal of the cable to the RS-485 terminal of the Power Sensor/Monitor (KM Series).



Power Sensor Station

Terminal names may differ depending on the model type.  
See below to make communication setting of the KM series.  
Unit No.: A consecutive number starting from 1.  
To change the starting number (other than 1), other setting is required.

Baud rate: 38400 bps  
Data bit length: 7-bit  
Stop bit length: 2-bit  
Vertical parity: even

•Communication settings for KM series  
(Sensors with default settings require unit number setting from the second one or later.)

KM50-C/E (Baud rate example: 38400 bps)  
After power-ON, hold the MODE key to enter "Setting Mode". In "Setting Mode", press the Enter key to enter "Communication Setting Mode", and then change the baud rate from 9.6 Kbps (default) to 38.4 Kbps.

KM20-B40 (Baud rate example: 38400 bps)  
Turn ON the number 2 and 3 pins of the DIP switch (COMMUNICATION SETTING SW).

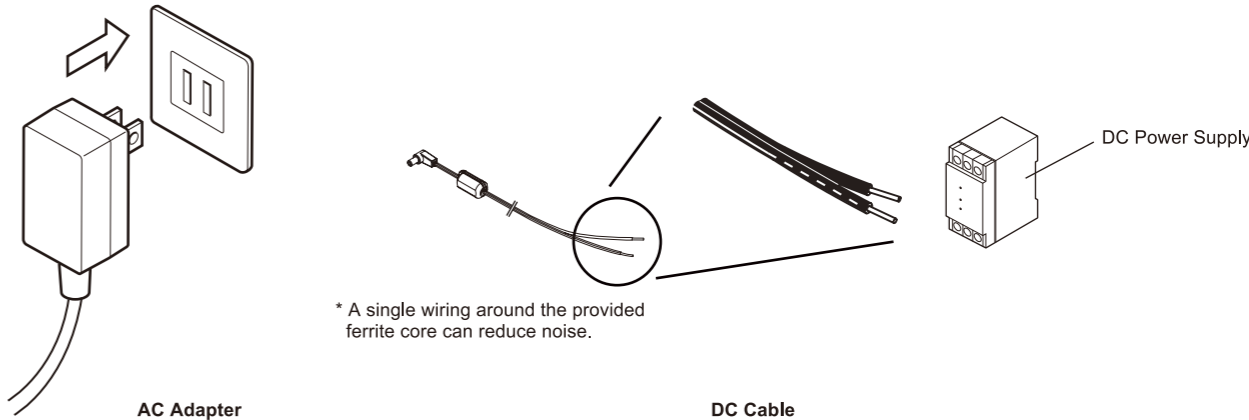
KM100 (Baud rate example: 38400 bps)  
After power-ON, hold the level key to enter "Setting Level". Press the level key in "Setting Level" and then change the baud rate from 9.6 Kbps (default) to 38.4 Kbps.

For details on usage of the Power Sensor/Monitor (KM series), refer to the corresponding manual.

3 Connect the AC adapter or DC cable plug to the power supply input terminal.

Note: Only the provided AC adapter must be used when using AC power supply.  
Only the provided DC cable must be used when using DC power supply.

4 Connect the AC plug of the AC adapter to an outlet when using AC power supply.  
To use DC power supply, connect the white-lined wire of the DC cable to the power input (24 VDC) and the non-lined wire to 0V.



\* A single wiring around the provided ferrite core can reduce noise.

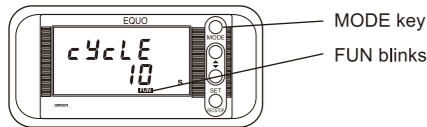
5 When the power is turned ON, the product is set in the free-run status (data acquisition enabled) and displays the measured value.

## STEP 4 Setting measurement conditions

Set the number of Power Sensors/Monitors (KM series) connected to the Power Sensor Station. Measurement condition can be set in FUN mode.

### 1 Press the MODE key to blink "FUN".

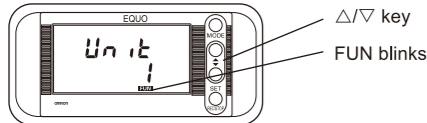
If FUN is already blinking, this operation is not necessary.



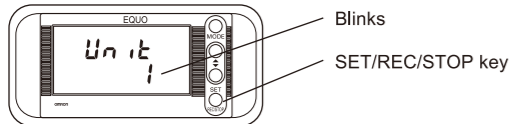
### 2 Set UNIT (number of Sensors connected) of the Power Sensor/Monitor (KM series).

If the lower line shows "5", the number of the Sensors has been set to 5 so that procedures (2) to (4) are not required.

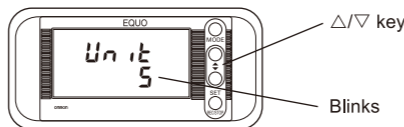
(1) Press the  $\Delta/\nabla$  key until "UNIT" is displayed in the upper line.



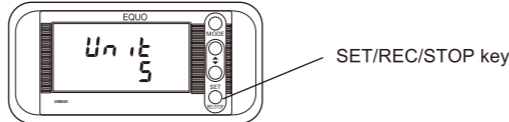
(2) Press the SET/REC/STOP key to blink the lower line.



(3) Press the  $\Delta/\nabla$  key until "5" is displayed in the lower line.



(4) Press the SET/REC/STOP key to confirm the number of connecting Sensors to 5.



A reset interval of the integral power consumption can be set by displaying "INTEG" in the upper line of the display. For example, if you set the interval to 30 min, the integral power consumption will be reset at 30-minute intervals such as 0:00 to 0:30, 0:30 to 1:00, 1:00 to 1:30. The initial value is set to OFF (no reset).

## STEP 5 Installing Station Utility

Install Station Utility in advance.

Station Utility consists of a setting tool, logging tool and data display tool.

### Product requirements

OS: Windows XP (32-bit)/Windows Vista (32-bit)/Windows 7 (32-bit/64-bit)

CPU: Intel (x86) compatible processor, 1.5 GHz or higher

Memory: 1 GB or more (2 GB or more recommended)

Display: Resolution 1024x768 or more, 65,535 colors (16-bit color) or more

HDD: A minimum of 30 MB free space is required to install Station Utility.

LAN port (supporting 10BASE-T and 100BASE-TX) : For network connections

SD card reader and writer/SD card slot : For unit recorded data reading

### Installation

Installation data is downloaded in a PC from following URL.



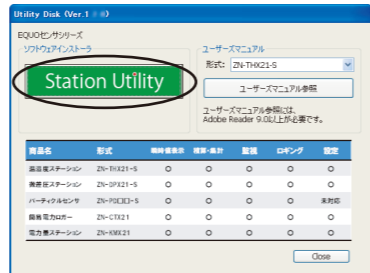
<http://www.fa.omron.co.jp/station-u-e>

When Setup.exe in the installation data is executed, the right screen is indicated.

Press the "Station Utility" button to start installation.

Follow the instructions displayed on the screen.

Installation should be implemented by an authorized user such as a system administrator.

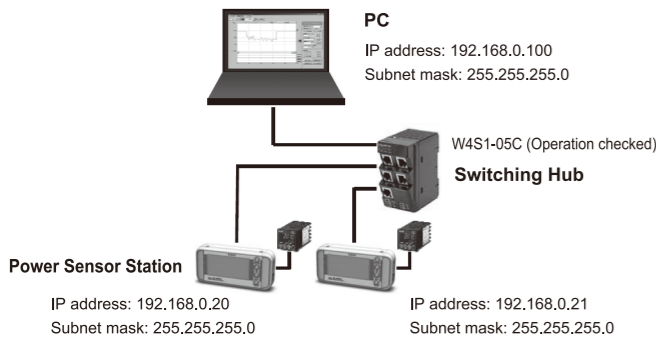


## STEP 6 Network connections

When connecting Power Sensor Station and PC via network, network connection setting is required.

Be sure to perform network connection setting of the Power Sensor Station unit before connecting the LAN cable.

### Connection Example



### Setting Example

PC IP address	192.168.0.100
IP address of the Power Sensor Station	(Unit 1) 192.168.0.20 (Factory default) (Unit 2) 192.168.0.21 (Change from the factory default)
Subnet mask	255.255.255.0 (Factory default)

### Note

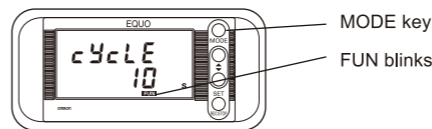
- Before establishing network connection, be sure to understand LAN networking concepts.
- When connecting Power Sensor Stations via network, establish the dedicated LAN network.
- When using in-house network or LAN network that has already been established, contact your network administrator as there may be limitation or rules on available IP addresses. In such case, operation of Power Sensor Station or supplied PC software cannot be guaranteed.
- Be sure that IP addresses of the PC and Power Sensor Station do not overlap. The IP addresses of the 4th segment (IP4) must be different on all devices even when operating with subnet mask other than 255.255.255.0.

## Making unit settings

Make settings on the Power Sensor Station in FUN mode.

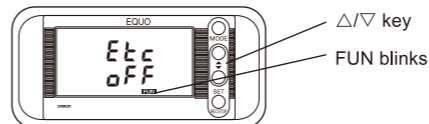
### 1 Press the MODE key to blink "FUN".

If FUN is already blinking, this operation is not necessary.

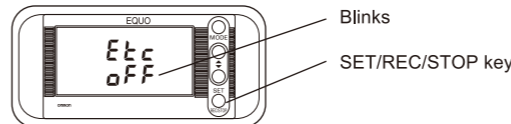


### 2 Display "ETC" in the upper line and set the lower line to "DISP".

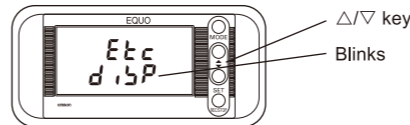
(1) Press the  $\Delta$  or  $\nabla$  key until "ETC" is shown in the upper line.



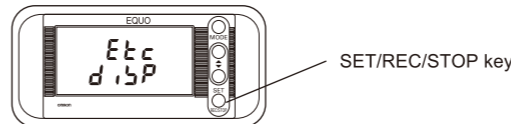
(2) Press the SET/REC/STOP key to make the display in the lower line blink.



(3) Press  $\Delta/\nabla$  key until [DISP] is displayed at the lower row.



(4) Press the SET/REC/STOP key to confirm [DISP].



### 3 Display "IP" in the upper line in the same way as step 2, and set the lower line to "DISP".

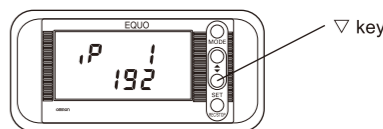
### 4 Set the IP address.

The factory default is set to "192.168.0.20".

Change it to "192.168.0.21".

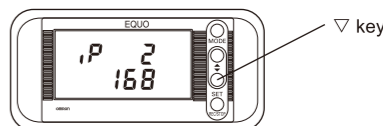
(1) Apply "IP" to "DISP". Then, press the  $\nabla$  key to display "IP1".

If "192" is not displayed, change the value referring to the changing "IP 4" example shown later.



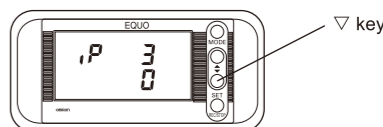
(2) Press the  $\nabla$  key to display "IP2".

If "168" is not displayed, change the value referring to the changing "IP 4" example shown later.



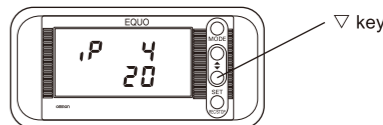
(3) Press the  $\nabla$  key to display "IP3".

If "0" is not displayed, change the value referring to the changing "IP 4" example shown later.

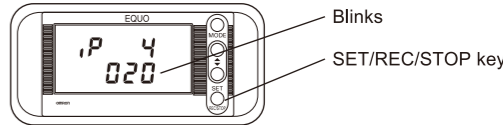


(4) Press the  $\nabla$  key to display "IP4".

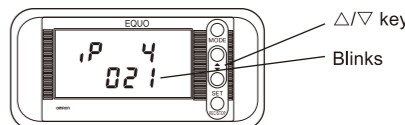
Change "20" to "21".



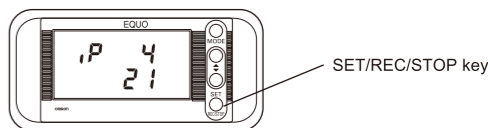
(5) Press the SET/REC/STOP key. "20" in the lower line blinks.



(6) Press the  $\nabla$  or  $\Delta$  key to change the value to "21".



(7) Press the SET/REC/STOP key. The value is applied.



### 5 Set SUB 1 to 4 (subnet mask) in the same way as step 4.

Use "255.255.255.0" (Factory default) for subnet mask.

To change the subnet mask, contact your network administrator.

### 6 Press the MODE key. The unit is reset.

The unit is connected through the new IP address after restart.

## Making PC settings

Refer to the Power Sensor Station User's Manual for the PC IP address setting.

User' s Manual is downloaded in a PC from following URL.



<http://www.fa.omron.co.jp/products/family/3080/download/manual.html>

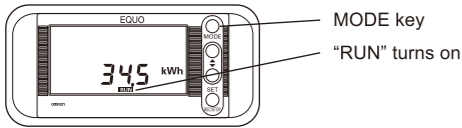
## STEP 7 Data Record

Measured values can be recorded into the Power Sensor Station unit and a PC.

### When recording measured data in the Power Sensor Station

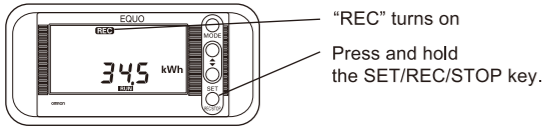
#### 1 Press the MODE key to turn "RUN" ON.

If RUN is already on, this operation is not necessary.

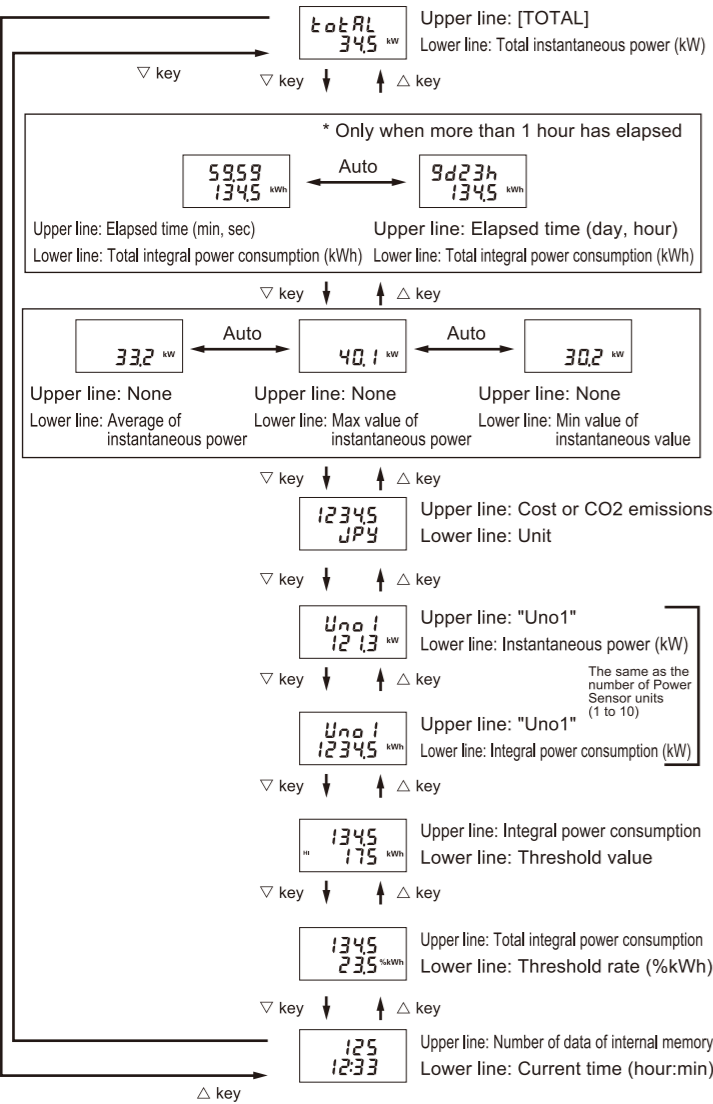


#### 2 Press and hold the SET/REC/STOP key (for 3 seconds or longer) to start recording.

During recording, "REC" is turned ON.  
Data is recorded in the internal memory.



#### 3 You can change the display contents with the △ and ▽ keys.



### When acquiring data to a PC

Use Station Utility to acquire the measured data to the PC from a Power Sensor Station connected via network.  
Refer to the Station Utility User's Manual for the procedure of data acquisition.

## List of Power Sensor Station setting items

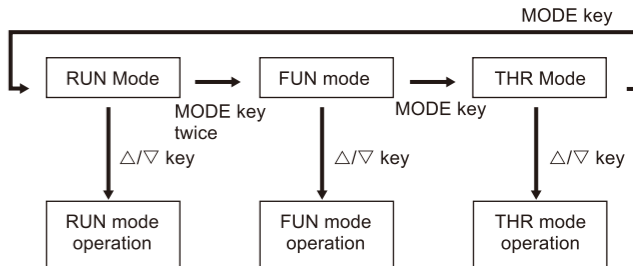
For details, refer to the User's Manual.

### Operating Modes

The Power Sensor Station has three Operating Modes.  
Measurement and recording are performed in RUN Mode.

Mode	Name	Display	Description
RUN	Measurement execution mode	"RUN" turns ON	Performs measurement
FUN	Function setting mode	"FUN" blinks	Sets various parameters.
THR	Threshold setting mode	"THR" blinks	Sets conditions for alarm output.

Change of operating modes is executed by the MODE key.  
Press the MODE key twice to change the mode from RUN to FUN.  
For other cases, press the MODE key once.  
Press the △ key/▽ key to display the detailed screen.  
During recording into the device, transition from RUN mode to other modes is disable.

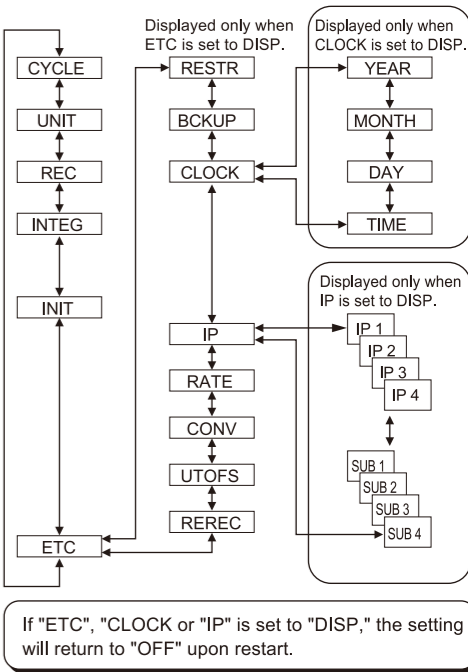


### FUN mode

Settings regarding measurement and recording functions can be made in FUN mode.

Display items	Setting items	Contents	Factory default
CYCLE	Record interval	Sets the update intervals of measured values. 1s (second)/2s/5s/10s/20s/30s/1 min (minute)	10s
UNIT	The number of Power Sensor/Monitor units to connect	Specifies the number of Power Sensor/Monitor units to be connected. 1 to 31	1
REC	Recording mode	Specifies the operation when the internal memory becomes full. CONT/RING	CONT
INTEG	Integrated power reset interval	Specifies the time interval for integrated power measurement. OFF/30min (minute)/1h (hour)/24h	OFF
INIT	Return to the factory default.	Press and hold the SET/REC/STOP key to start initializing. If the operating mode is changed with the MODE key after displaying DONE, the device is reset and starts again.	-
ETC (At DISP)	RESTR	Reading the setting data from the SD memory card	-
	BCKUP	Writing the setting data on the SD memory card	-
	CLOCK (At DISP)	YEAR Year MONTH Month DAY Day TIME Hour: Minute	Cannot be initialized with INIT.
	IP (At DISP)	IP IP1 to IP4 SUB SUB1 to SUB4	192.168.0.20 255.255.255.0
	RATE	Rate/CO2 conversion rate setting	Specifies the rate/CO2 conversion value. 00.000 to 99.999
	CONV	Conversion unit setting	Specifies the unit of the rate/CO2 conversion value setting (RATE). JPY (yen)/USD (U.S. dollar)/EUR (Euro)/CNY (Chinese yuan)/ KRW (Korean won)/CO2 (CO2 emissions per kWh)
	UTOFS	Unit No. offset	Specifies the starting (offset) unit number set for the Power Sensor/Monitor units to be connected. To use the unit numbers from No.10 to No.15, for example, "10" is set for the offset number (this setting item), while "6" is set for the number of Power Sensor/Monitor units to be connected (UNIT).
	REREC	Power failure REC restoration	Specify if the Power Sensor Station writes data and resumes recording after restart in the event of a power failure during recording.
	ETC		

Use the △ key/▽ key to move among the setting items, and fix it with the SET/REC/STOP key.



If "ETC", "CLOCK or "IP" is set to "DISP," the setting will return to "OFF" upon restart.

### THR Mode

In THR mode, a threshold value for alarm output is set. When measurement is performed in RUN mode, if a measured value exceeds the threshold value, "ALM" is turned ON and alarm output becomes ON condition.  
(Alarm output will be unavailable if both items are set to 0.)

Display items	Setting items	Description	Factory default
INT H	Upper limit of integral power consumption threshold value more than kWh	"ALM" and alarm output will turn ON when the measured integral power consumption is higher than the set value. 0 kWh to 99999 kWh	0kWh

Use the △ key/▽ key to move among the items, and fix them with the SET/REC/STOP key.

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Suitability for Use: Refer to Suitability for Use in the Instruction Sheet .....

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