EM600

POWER MONITORING & CONTROL UNIT

Operation Manual

EM600A/EM600B/EM600C/EM600D/EM600E/EM600F

Table of Contents

1. Overview

1.1. EM600 function

EM600 is a intelligent electricity meter for low-voltage systems (6kV-35kV and 0.4kV) intelligent device, which combines data acquisition and control functions in one, with a single-loop measurement and calculation of the basic exchange of electricity, electrical measure cumulative, 2 to 15 times harmonic monitoring, one-way transmission output 4 ~ 20mA DC functions. EM600 provides the communication interface with computer monitoring system, support RS485 interface MODBUS communication protocol. Device shape shown in Figure 1.1.1.

Figure 1.1.1 EM600 device Dimensions

1.2. EM600 features

1.2.1. EM600 has powerful data acquisition and processing functions

- Support of three-phase three-wire and three-phase four-wire optional feature, a three-phase voltage, phase current, neutral current, total active power, total reactive power, each phase active and reactive power, power factor, each phase of the power factor, the system frequency, the total active power measurement, total reactive power measurement, 2 to 15 times harmonics share of each phase active and reactive power measurement, voltage and current components share the fundamental RMS voltage, RMS current fundamental and

other measurement and calculation functions.

- Have a way 4 ~ 20mA DC transmission output.
- Can view or modify the operating parameters at any time.

1.2.2. Safety, reliability

EM600 uses a variety of anti-jamming measures in the design process, capable of stable operation of the power system environment. Electrostatic discharge immunity in line 3; electrical fast transient burst immunity in line 3; Surge Immunity in line 3; panel Protection class IP50, housing Protection class IP20.

1.2.3. Small size, easy installation

EM600 dimensions conform DIN96 × 96 standard housing depth 60mm, using self-locking panel mounting institutions, no screws to install. Compact size and simple installation make EM600 disassembly is very convenient.

1.2.4. System Wiring convenient and flexible

Wiring system has three-phase four-wire 3CT (3P4W + 3CT), three-phase four-wire 1CT (3P4W + 1CT), three-phase three-wire 3CT (3P3W + 3CT), three-phase three-wire 2CT (3P3W + 2CT), three phase three-wire 1CT (3P3W + 1CT).

1.2.5. Display intuitive, easy to operate

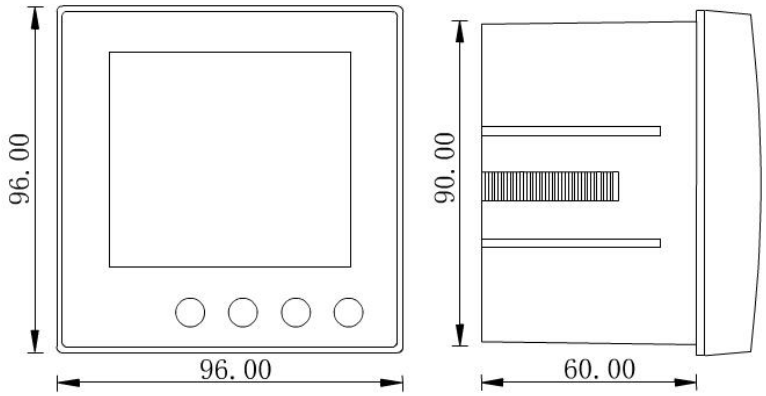
EM600 uses special large-size LCD module can display various information, with bright backlight, the operator under poor lighting conditions can be accurately read the data. Humane mode of operation, the operator can grasp in a short time. Read data and parameter setting operation is simple.

2. Install wiring and configuration

This chapter details the installation of EM600 method, wiring and configuration, please read carefully before installation.

2.1. Dimensions and installation

2.1.1. Mechanical dimensions of the device



Front view Lateral view

Figure 2.1.1.1 EM600 Device size Figure (Unit: mm)

2.1.2. Installation

EM600 using panel-mounted, fixed switch counter board:

- Panel hole size Figure 2.1.2.1:

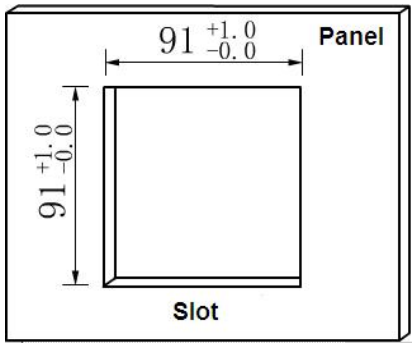


Figure 2.1.2.1 panel hole size (unit: mm)

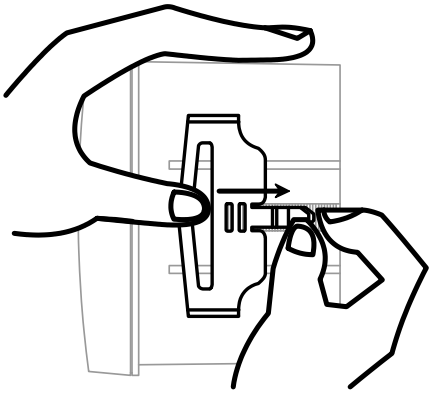


Figure 2.1.2.2 Removing installation card

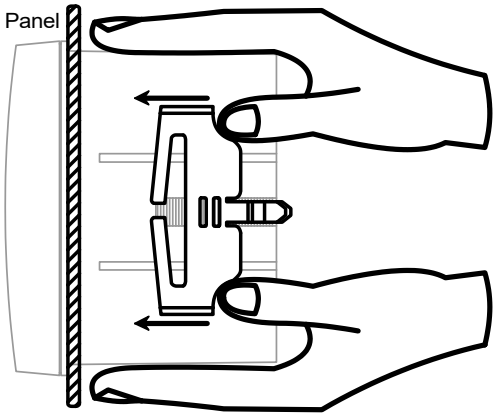


Figure 2.1.2.3 fixed by installing the card

- After taking into account the length of wire, the panel should have a depth of 100 mm for

receiving devices. Actual installation, generally requires some space the rear (at least 130 mm × 130 mm × 100 mm) to facilitate installation and wiring.

- First device installed on both sides of the card is removed, as shown in Figure 2.1.2.2, with the index finger and thumb of one hand the fixed head gently lift (lift force is not too large, otherwise it may cause gland rupture), the thumb of the other hand in the direction of the arrow shown in the figure by pushing, you can remove the clamp. When installed, the device at the front panel push into the mounting hole, and then along the rear of the device from the trench will be installed on Can. Figure 2.1.2.3, his hands were holding down the top and bottom sides of the device, two thumb top ends of the clip, even before the direction of the arrow to push hard to make the panel clamp tight squeeze. The last two cards are installed to complete the installation, the device will be firmly fixed on the panel.

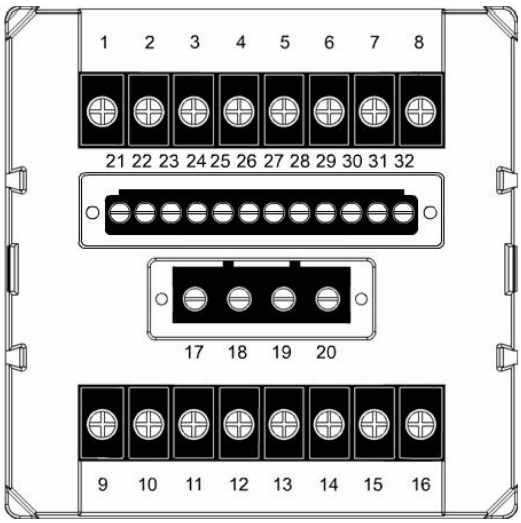
2.1.3. Installation Precautions

- This product is no user-adjustable components, do not open during installation.
- Do not live working.
- Run should meet the ambient temperature at -5 ℃ ~ 55 ℃, 0 to 95% humidity, atmospheric pressure between 70kPa ~ 106kPa. Avoid the device is placed in a strong source of interference, radiation, heat and dust near many places.

2.2. Wiring and Configuration

2.2.1. Terminals definition

A total of four sets of back of EM600 terminals, terminal diagram shown in Figure 2.2.1.1:



Terminal diagram of Figure 2.2.1.1

Terminal definition is as follows:

Voltage input	U1	1	Communications	RS+	17
	U2	2		RS-	18
	U3	3		NC	19
	Un	4		SHLD	20
Power supply	NC	5	Relay output	NC	21
	L/+	6		NC	22
	N/-	7		NC	23
	PE	8		NC	24
Current input	I11	9	Transmission output	NC	25
	I12	10		AO+	26
	I21	11		AO-	27
	I22	12	Switch input	DI1	28
	I31	13		DI2	29
	I32	14		DI3	30
	I41	15		DI4	31
	I42	16		DICOM	32

Table 2-1

Note:① EM600 apparatus according to each specific model (see Appendix C. ordering), the corresponding function does not have the corresponding terminal is empty (NC).

② When using the AC power module terminals to 6,7 L, N or DC power. When using a DC power supply module, the 6th terminals to No. +24,7 terminal to GND. In the three-phase four-wire system, Un access common terminal voltage; in the three-phase three-wire system, Un access to the B-phase voltage. DI input for digital shorthand Digital Input, RL relay output Relay Output shorthand, NC, said air terminals. The transmitter output is self-powered mode, AO + current output positive, AO- current output negative.

2.2.2. Electrical Wiring

- **Three-phase four-wire system 3CT**

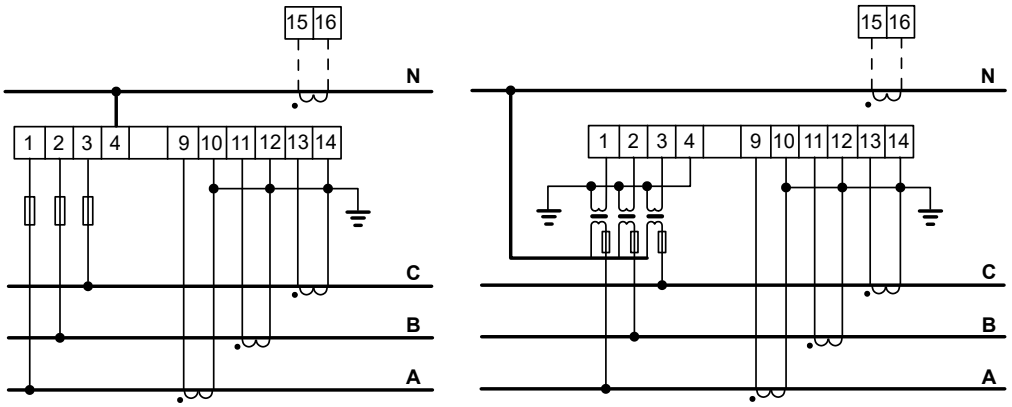


Figure 2.2.2.1 3P4W + 3CT wiring diagram

- **Three-phase four-wire system 1CT**

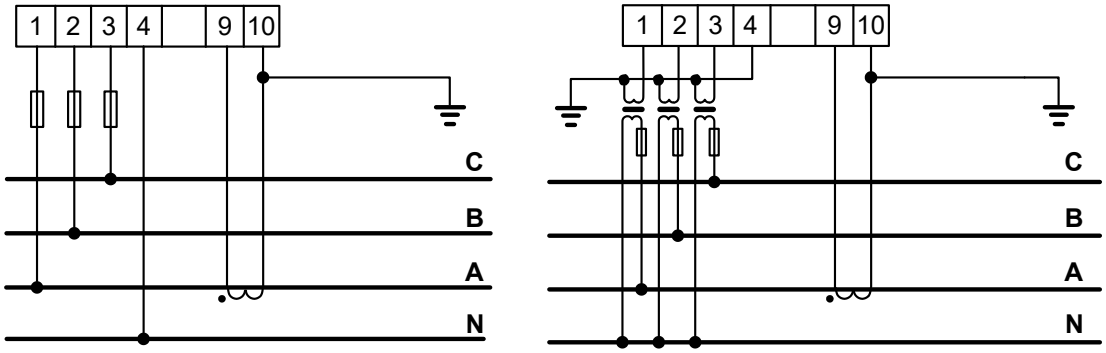


Figure 2.2.2.2 3P4W + 1CT wiring diagram

- **Three-phase three-wire 3CT**

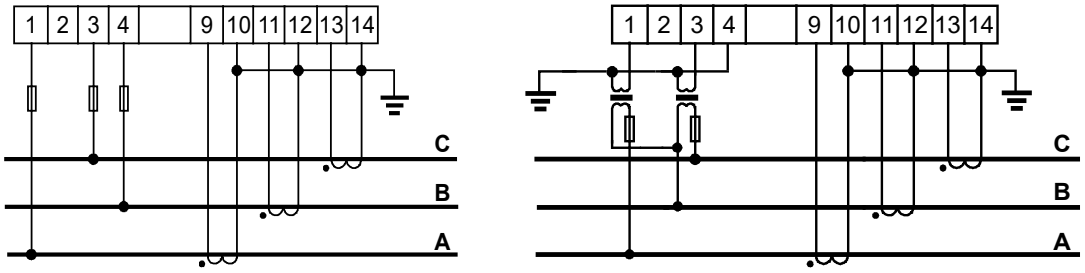


Figure 2.2.2.3 3P3W + 3CT wiring diagram

- **Three-phase three-wire 2CT**

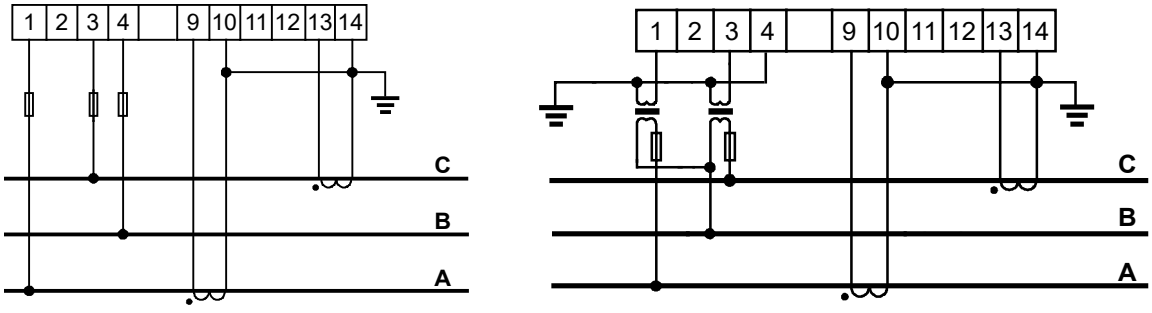


Figure 2.2.2.4 3P3W + 2CT wiring diagram

- **Three-phase three-wire 1CT**

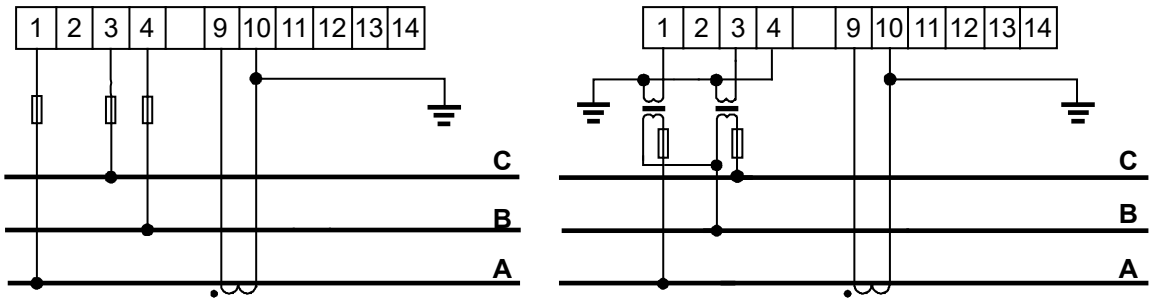


Figure 2.2.2.5 3P3W + 1CT wiring diagram

2.2.3. Communication connection

- Linear connection

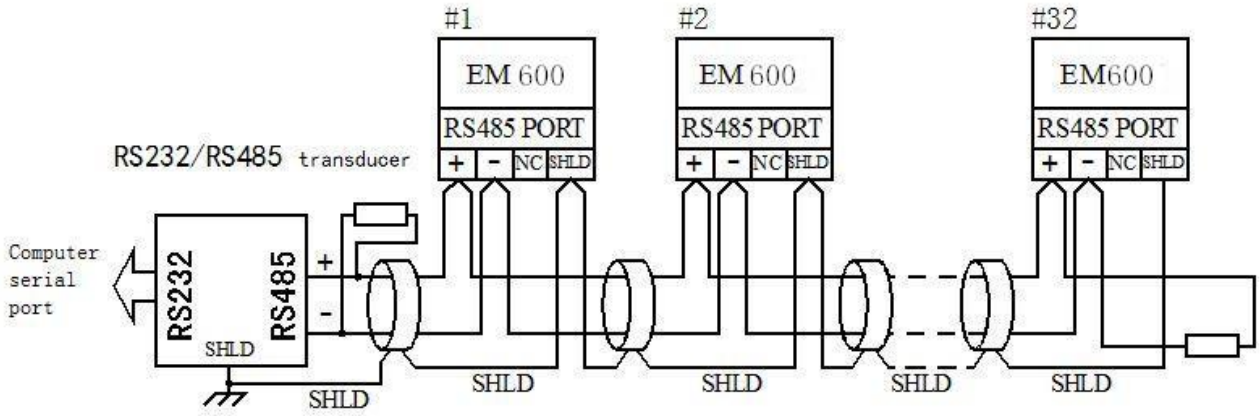


Figure 2.2.3.1 RS485 linear connection wiring diagram

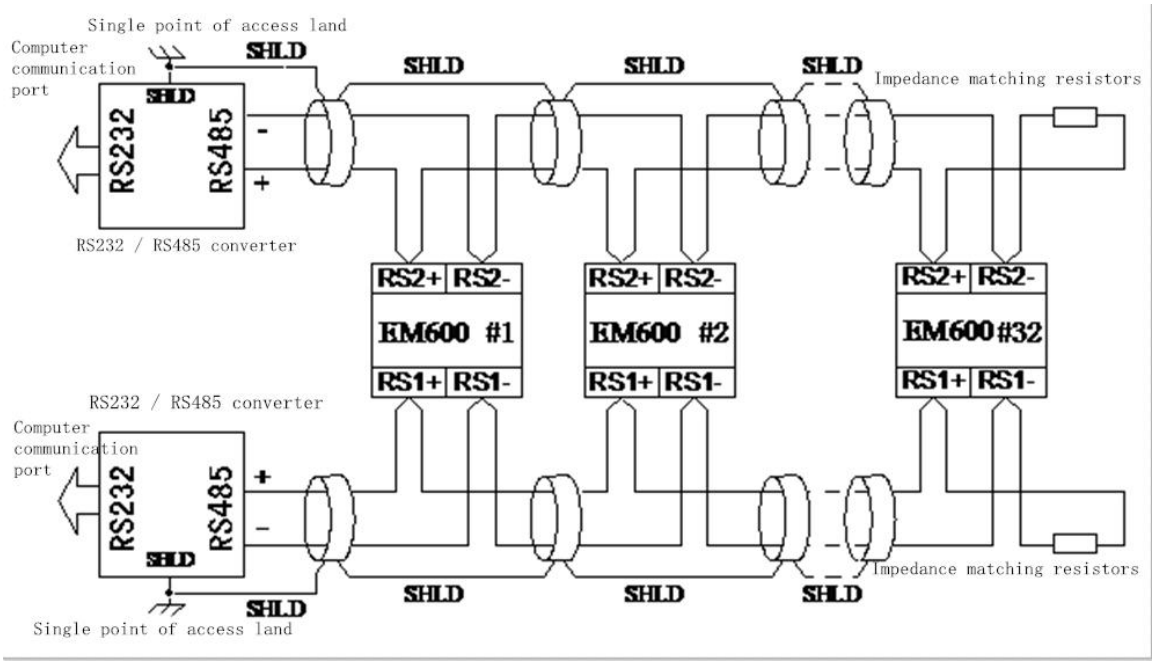


Figure 2.2.3.2　2-way RS485 communication when the linear connection wiring diagram

Note: EM600 Online shaped connection should consider impedance matching resistor is about 100 ~ 120Ω.

2.2.4.　DC transmitter output wiring

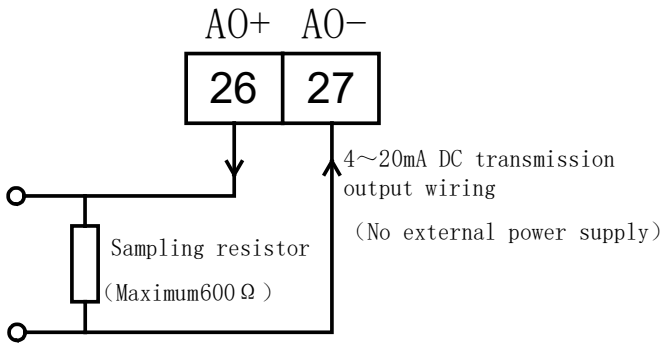


Figure 2.2.4.1 DC transmitter output wiring diagram

2.2.5.　Wiring Precautions

- Sectional area of the wire access device should be met: the current line cross-sectional area of not less than 2.5 mm^2, voltage wire cross-sectional area of not less than 1.0 mm^2.
- Communication lines must be shielded twisted pair, communication lines RS485 +, RS485- can not be reversed.
- Voltage power supply and serial access lines insurance should fuse 2A.
- To reduce the impact of current at startup, it is recommended each power cord does not exceed 40 devices.
- When the communication link using the linear connection, should be separately access lines 100 to 120 ohm termination resistor between the communication cable is located at the beginning and end of RS485 + and RS485- terminals.
- Baud rate is 9600bps, the cable length <1200 m.
- Transmitter output maximum load includes a line resistance, the wiring should pay attention to.

3. Operating Instructions

This chapter details the EM600 interface, including how to read the data, set the relevant parameters, and soft reset operation.

Note: EM600 device, depending on each specific model (see Appendix C. ordering), the corresponding function does not have the corresponding interface is not displayed.

3.1. The screen display and button operation

EM600 panel consists of a LCD screen and four buttons composition, intuitive display, simple operation. Here is the explanation of the LCD screen and the related field is lit all the time.

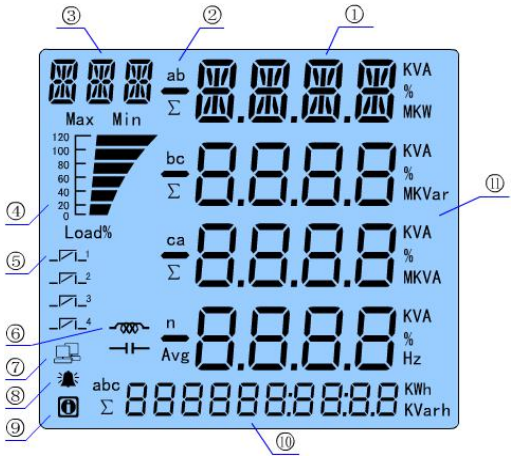


Figure 3.1.1 LCD schematic

NO.	Display content	Description
1	Four rows of 8 in the data display field	Display the measuring data, which include: current, voltage, power, power factor, frequency, harmonic occupancy and THD.
2	ab bc ca n ∑ ∑ ∑ Avg	The “a“, “b“, “c“ denotes a ,b and c phase respectively; “∑“denotes summation; “Avg” denotes average; “-” denotes minus; “n” denotes zero-sequence
3	Three 88 at the top left corner	The denotes the meaning of current display interface: “U” denotes voltage, “I” denotes current, denotes power factors, “ H-U” or “ H-I” denotes harmonic voltage or harmonic current, “SOE” denotes Sequence Of Events, “PAR” denotes parameter reading, “SET” denotes setup.
4	Load size indication 	The percentage of real load current and the rating load current.
5	Switch instructions: open  Close  Pulse count indicates:	Switch logo represents a state corresponding to 4-way switch inputs (divided or combined). Pulse count logo indicates that the corresponding switch input port for pulse counting mode.
6	Load character identifier 	Inductance identifier(upper) indicate inductive load Capacitance identifier(below) indicate capacitive load
7	Communication status identifier 	Display this identifier indicates the communication work in normal Does not display this identifier indicate the communication out of work
8	Alarm identifier 	Display this identifier indicates that off-limit alarms are detected and did not reset.
9	SOE logo 	Show this logo indicates that the memory had SOE records do not show that the memory is no SOE records.
10	10 little 8 in data accumulated display field	Display electric energy, pulse number and time.
11	Units: **kVA** **MkW** **%** **MkVar** **MkVA** **Hz** **kWh** **kVarh**	Represents the unit of measurement data: current A, kA; voltage V, kV; active power W, kW, MW; reactive power var, kVar, MVar; apparent power VA, kVA, MVA; frequency Hz; Percentage; active power measure kWh, reactive power measurement kvarh.

Table 3-1 LCD Display Description

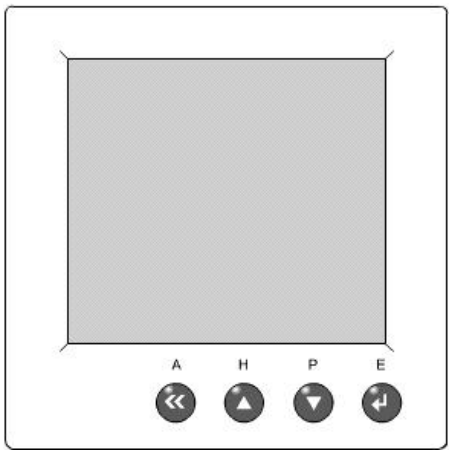


Figure 3.1.2 Key schematic

(From left to right are the A key, H bond, P key, E key)

EM600 mode of operation is divided into two one-touch mode, and key combinations.

Touch mode only in one of the four buttons to operate the display device used to complete all monitoring data:

- A single key - the measurement data is displayed: the voltage, current, power factor, power, frequency measurements.
- Single-H bond - harmonic data is displayed: the harmonic distortion and the harmonic share information.
- Single P key - displays the operating parameters: Display system operating parameters, system time.
- Single E key - the cumulative amount of time display: the cumulative amount of display area measure active power, reactive power measurement, time (minutes and seconds) and so on.

Key combination mode is defined by E keys and key combinations, one of the other three actions:

- A key combination E with: for reset operations and other special features.
- Combination E and H keys: used to modify local parameters.
- E combination with the P key: used to query the device memory SOE records.

Entry and exit combined mode of introduction:

In Touch display mode, simply press the function key combination and then release, you can enter the corresponding function key combination, you can use the key combination again to exit and resume-touch function key combination to enter the pre-show screen.

3.2. The data is read(Non-SOE)

3.2.1. Display of measurement data

In either press A one-touch display, the measurement data display area will show the measured data. Each time you press the A key turning down a screen, the first screen automatically returns to the screen after the last one. The cumulative amount of the display area (the lower row of small) remains unchanged.

First screen: display phase voltage Ua, Ub, Uc and phase voltage average UAvg.

As shown on the right: Ua = 115.2V; Ub = 115.4V; Uc = 115.3V; UAvg = 115.3V;

The dotted line surrounds part of the system information, has displayed in all-touch display page. At right, its meaning is: the actual load current of 40% -60% of the rated load current; normal communications transceivers; inductive load.

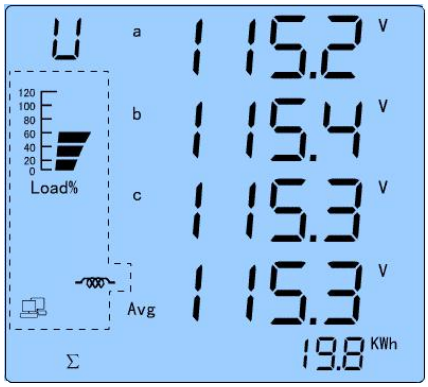


Figure 3.2.1.1 Three-phase phase

The cumulative amount of display area shows the current measure of the absolute value of the total active power 19.8kWh

Press E to toggle its display does not affect the content of measurement data display area, which is described in detail in section 3.2.4.

Note: Only when the three-phase four-wire system wiring for the display of this page, or else on this page is not displayed.

Second screen: display of three-phase currents Ia, Ib, Ic and three-phase current average IAvg.

As shown on the right: Ia = 2.803A; Ib = 2.802A;

Ic = 2.801A; IAvg = 2.802A.

Figure 3.2.1.2 Three-phase phase

Third Screen: Display the line voltage Uab, Ubc, Uca, line voltage average U Avg.

At right: Uab = 176.4V; Ubc = 176.6V;

Uca = 176.5V; UAvg = 176.5V.。

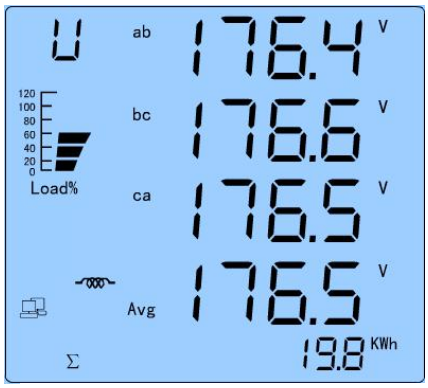


Figure 3.2.1.3 three-phase line

The fourth screen: display of three-phase currents Ia, Ib, Ic, zero-sequence current In.

At right: Ia = 2.518A; Ib = 2.520A;

Ic = 2.519A; In = 0.089A.

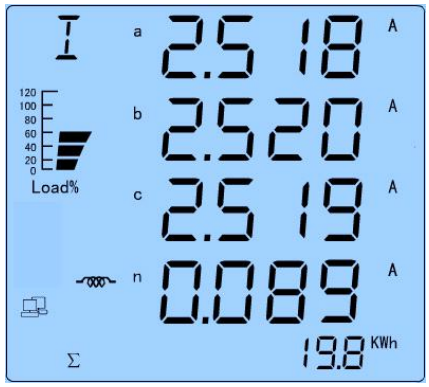


Figure 3.2.1.4 three-phase linecurrent display

Fifth Screen: When wiring for the three-phase four-wire system, the display of each phase power factor PFa, PFb, PFc and total power factor PF.

At right: PFa = 0.520; PFb = 0.520; PFc = 0.520; PF = 0.520.

When the wiring for the three-phase three-wire system, only the total power factor, such as the right: PF = 0.520.

Note: PF power factor symbol follows the IEC symbol statute.

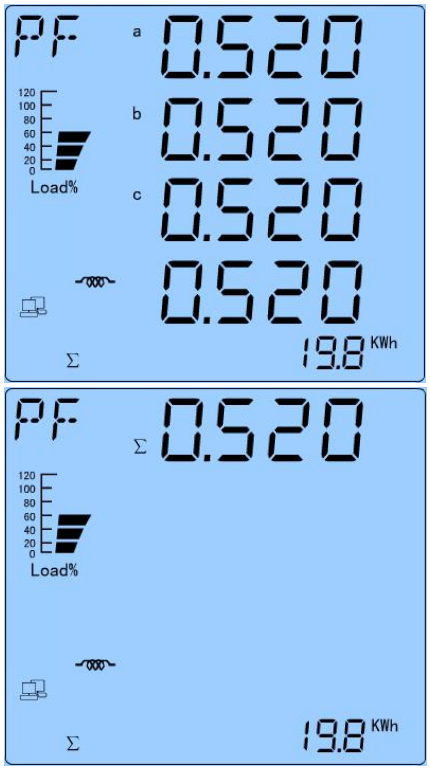


Figure 3.2.1.5 Power Factor show

Sixth screen: Displays the total active P Σ, total reactive power Q Σ, total apparent power S Σ, frequency F.

At right: P Σ = 0.460kW; Q Σ = 0.846kvar;

S Σ = 0.963kVA; F = 50.00Hz.

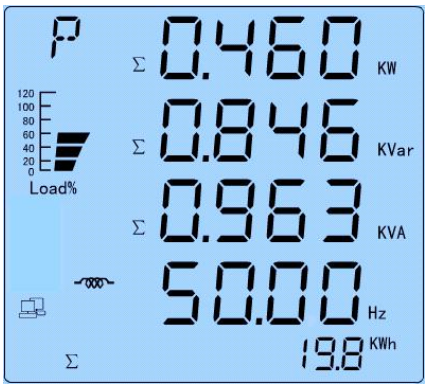


Figure 3.2.1.6 Total power parameters and frequency

Seventh screen: Display A phase active power Pa, A-phase reactive power Qa, A phase apparent power Sa, frequency F.

At right: Pa = 0.153kW; Qa = 0.282kvar;

Sa = 0.321kVA; F = 50.01Hz.

Note: This page is displayed only when the wiring is only a three-phase four-wire system, otherwise this page is not displayed.

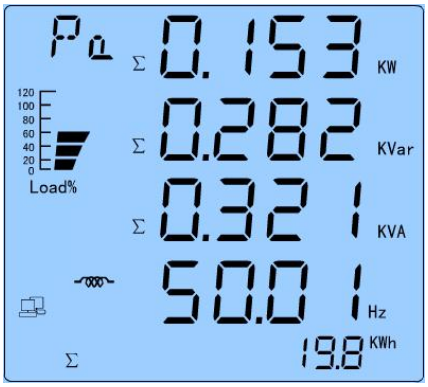


Figure 3.2.1.7 A phase power parameters and frequency

Eighth Screen: Display B phase active Pb, B-phase reactive power Qb, B-phase apparent power Sb, frequency F. Similar to the seventh screen display.

Note: This page is displayed only when the wiring is only a three-phase four-wire system, otherwise this page is not displayed.

Ninth Screen: Display C-phase active power Pc, C phase reactive power Qc, C phase apparent power Sc, frequency F. Similar to the seventh screen display.

Note: This page is displayed only when the wiring is only a three-phase four-wire system, otherwise this page is not displayed.

3.2.2. Display harmonic distortion and harmonics

In either mode Press H-touch display, the display area of the display parameters harmonic distortion, harmonics, etc., each time you press the H key turning down a screen, the screen automatically after the last return to the first screen.

First screen: display three-phase voltage total harmonic distortion. Upper left corner of the screen

H-U that THD-U.

When the wiring is set when the three-phase four-wire, three-phase phase voltage Ua, Ub, Uc of THD, as the right:

THD_U_a＝0.6%； THD_U_b＝0.6%；

THD_U_c＝0.6%；

When the wiring is set to three-phase three-wire system, the three-phase line voltage Uab, Ubc, Uca of THD, as the right:

THD_U_{ab}＝0.6%； THD_U_{bc}＝0.6%；

THD_U_{ca}＝0.6%；

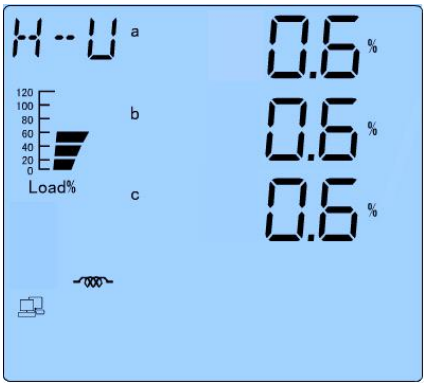


Figure 3.2.2.1 Three-phase phase voltage THD

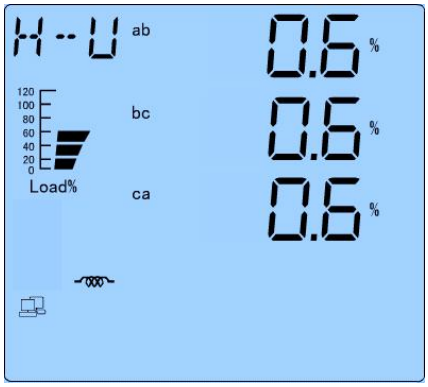


Figure 3.2.2.2 three-phase line voltage THD

Second screen: display of three-phase current, zero-sequence current total harmonic distortion. H-I left corner of the screen that THD-I.

Phase current Ia, Ib, Ic and zero sequence current In the THD, as the right:

THD_I_a＝0.6%； THD_I_b＝0.6%；

THD_I_c＝0.6%； THD_I_n＝0.6%；

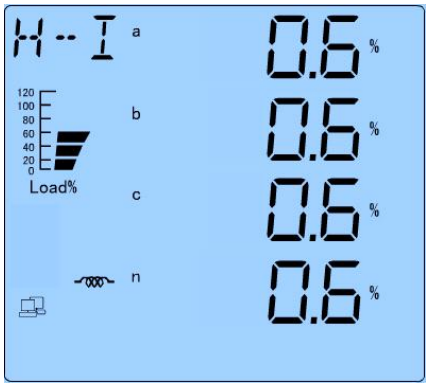


Figure 3.2.2.3 phase current, zero-sequence current THD

Third Screen: Display odd-phase voltage harmonic distortion. HUO left corner of the screen that THD-U-O.

When the wiring is set when the three-phase four-wire, three-phase phase voltage Ua, Ub, Uc odd THD, as the right:

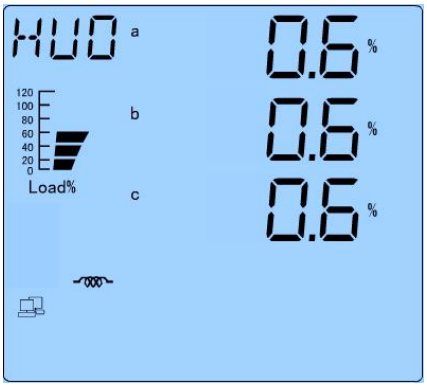


Figure 3.2.2.4 odd three-phase phase voltage THD

$THD\_O\_U_a$=0.6%； $THD\_O\_U_b$=0.6%；

$THD\_O\_U_c$=0.6%；

When the wiring is set to three-phase three-wire system, the three-phase line voltage Uab, Ubc, Uca odd THD, as the right:

$THD\_O\_U_{ab}$=0.6%； $THD\_O\_U_{bc}$=0.6%；

$THD\_O\_U_{ca}$=0.6%；

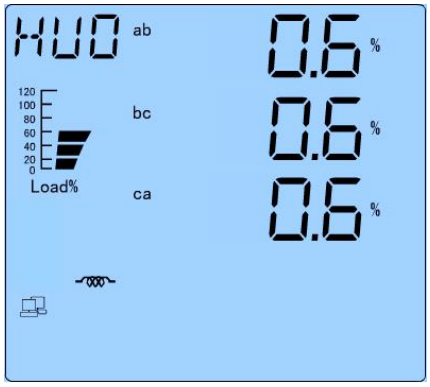


Figure 3.2.2.5 odd three-phase line voltage THD

The fourth screen: display three-phase current odd harmonic distortion. Upper left corner of the screen HIO that THD-I-O.

Phase current Ia, Ib, Ic odd THD, as the right:

$THD\_O\_I_a$=0.5%； $THD\_O\_I_b$=0.5%；

$THD\_O\_I_c$=0.5%； $THD\_O\_I_n$=0.5%；

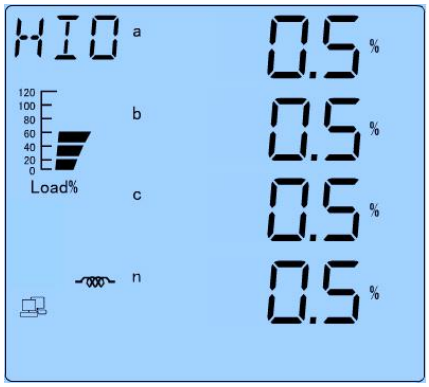


Figure 3.2.2.6 odd phase current THD

The fifth screen: display three-phase voltage even harmonic distortion. Upper left corner of the screen that HUE THD-UE, the screen display is similar with the third screen.

Sixth screen: display of three-phase currents even harmonic distortion. Upper left corner of the screen HIE that THD-IE, the screen display is similar with the fourth screen.

Seventh Screen: Display of the fundamental rms phase voltage three-phase. Upper left corner of the screen H-U that harmonic voltage; the bottom of the screen displays the harmonic frequency '01', that is fundamental.

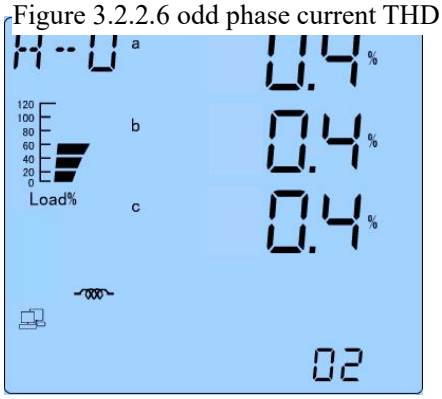


Figure 3.2.2.7 Three-phase two-phase voltage harmonics share

Screen eighth and twenty-one screen: turn the display of three-phase voltage harmonics 2 to 15 share (percentage relative to the fundamental content, Harmonic Percent). Upper left corner of the screen that is harmonic voltage H-U, the bottom of the screen displays the number of harmonics.

When the wiring is set when the three-phase four-wire, three-phase phase voltage Ua, Ub, Uc the second harmonic share, as the right:

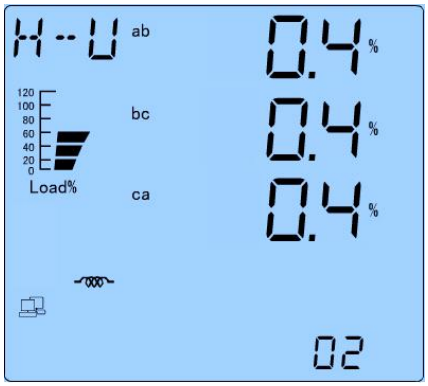


Figure 3.2.2.8 two-phase line voltage harmonics share

HP_2_U_a=0.4%; HP_2_U_b=0.4%;

HP_2_U_c=0.4%;

Twenty second screen: Display of the fundamental rms phase current and zero-sequence current. Upper left corner of the screen that harmonic current H-I; the bottom of the screen displays the harmonic frequency '01', that is fundamental.

Twenty third screen to 36 screen: 2 to 15 times in order to display three-phase current harmonic share (relative to the percentage of the fundamental, Harmonic Percent). Upper left corner of the screen that harmonic current H-I; the bottom of the screen displays the number of harmonics.

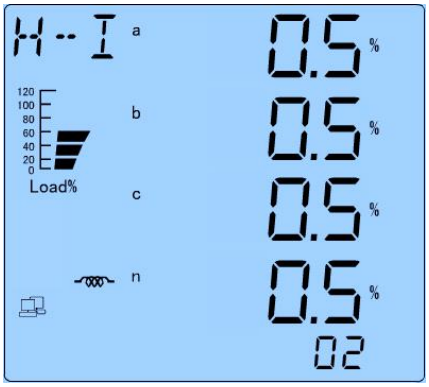


Figure 3.2.2.9 2nd harmonic phase current share

Phase current Ia, Ib, Ic and zero sequence current In the second harmonic share, as the right:

HP_2_I_a=0.5%; HP_2_I_b=0.5%;

HP_2_I_c=0.5%; HP_2_I_n=0.5%;

3.2.3. Display operating parameters

Press the P button to display the operating parameters or the time on the screen in any way a one-touch display, each time you press the P key turning down one screen, the screen again after the last press the P key automatically returns to the first screen.

First screen: communication parameters

The upper left corner of the screen displays "PAR" word indicates the parameter (parameter), the top screen displays the word "COMM" said the newsletter. At right: Address No. 16, the baud rate is 9.6k, a transmission format code.。

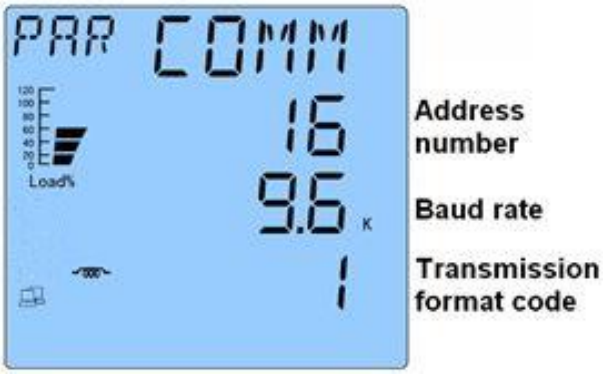


Figure 3.2.3.1 Communication Parameters

Transmission format code explanation:

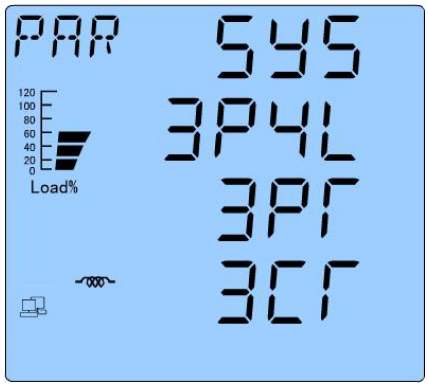
Transmission format code	Explanation
0	1 start bit, 8 data bits, no parity, 2 stop bits
1	1 start bit, 8 data bits, even parity, 1 stop bit
2	1 start bit, 8 data bits, odd parity, 1 stop bit
3	1 start bit, 8 data bits, no parity, 1 stop bit

Note: The factory default, mailing address is 254, the baud rate is 9.6k, transmission format code is 0.

Second screen: System Wiring

The upper display shows "SYS" word means that the system wiring.

At right: The system wiring for the three-phase four-wire system, 3PT, 3CT.



3.2.3.2 system wiring diagram

Note: The factory default is 3P4L, 3PT, 3CT.

Third Screen: PT ratio

The upper display shows "PT" word represents PT ratio.

At right: PT secondary side rated 100V, PT primary side rated 35000V.

Note: The factory default values, PT primary side rated at 220V, PT secondary side rated at 220V.

Figure 3.2.3.3 PT ratio

The fourth screen: CT ratio

The upper display shows "CT" said the CT ratio words.

At right: CT secondary side rated 5A, CT primary side rated 100A.

Note: The factory default, CT primary side rated 5000A, CT secondary side rated 5A.

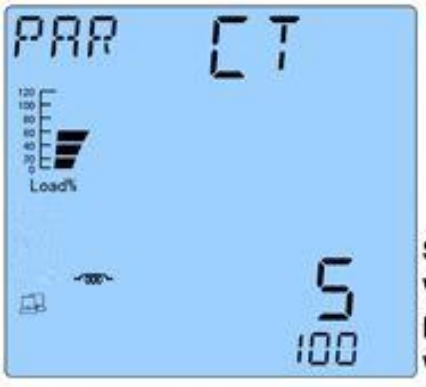


Figure 3.2.3.4 CT ratio

Fifth Screen: CT0 (zero sequence CT) ratio

The upper display shows "CT0" word represents CT0 ratio.

At right: CT0 secondary side rated 5A, CT0 primary side rated 100A.

Note: The factory default values, CT0 primary side rated 5000A, CT0 secondary side rated 5A.

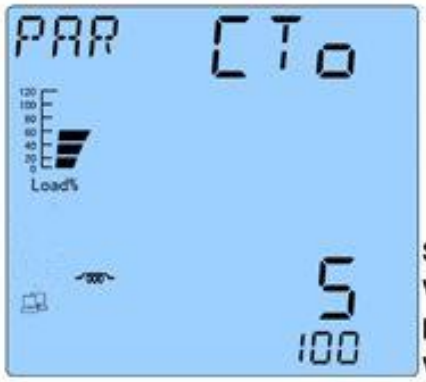


Figure 3.2.3.5 CT0 ratio

Sixth screen: input mode

The upper display shows "I - M" word represents the input mode.

Figure 3.2.3.6: 2 input mode.

Input Mode 1: 1 to 4 for the digital inputs.

Input Mode 2: 1,2 road for the digital inputs, 3, 4-way for the pulse counter input.

Note: The factory default input mode 1.

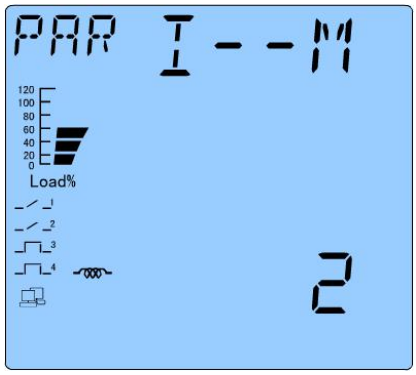


Figure3.2.3.6 Input Mode

Seventh screen: Output mode

The upper display shows "O - M" word represents the output mode.

Figure 3.2.3.7: Output mode 1.

Output mode 1: Relay output for pulse output. That is, after receiving the closing command, the junction is closed, a certain time delay (relay output pulse width, see parameter setting eighth screen) after disconnecting.

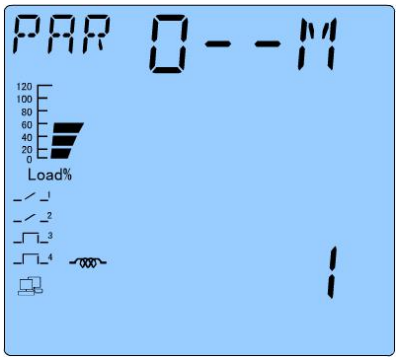


Figure3.2.3.7 Output mode

Output Mode 2: Relay output is self-sustaining. That is, after receiving the closing instructions, the output node is closed; after receiving the opening command, the output node is disconnected.

Note: The factory default value, the output mode to 1.

Eighth screen: relay output pulse width

The upper display shows "RL-T" word, said relay output pulse width in milliseconds.

Figure 3.2.3.8: Relay output pulse width is 2000 milliseconds.

Note: The factory default, the relay pulse width is 2000 milliseconds. Only when the output mode is selected as mode 1, which relay output is pulsed in order to enter this page.

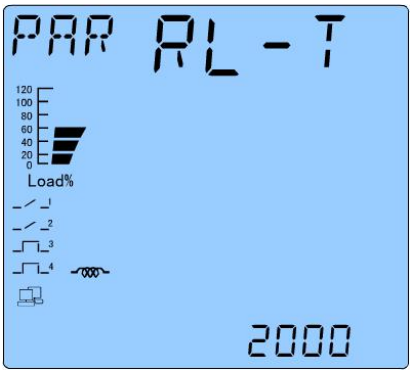


Figure3.2.3.8 relay output pulse width

Ninth Screen: backlit time

The upper display shows "Ld-T" word represents the backlight illumination time, in minutes.

At right: backlit time is 30 minutes, that is not the key within 30 minutes of continuous backlight automatically turns off.

When time is 0:00 backlit, indicating the backlight is on.

Note: The factory default, backlit time of 5 minutes.

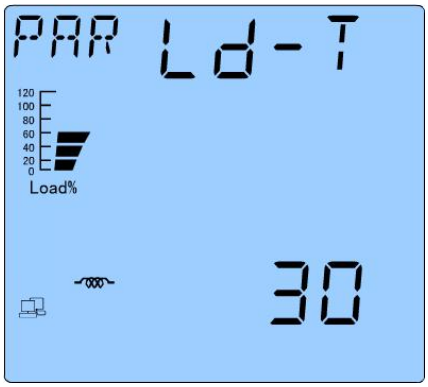


Figure 3.2.3.9 backlight illumination time

Tenth screen: transmitter output

The upper display shows "AO" word indicates the transmitter output.

At right: The first line shows 0 is unidirectional (expressed as a two-way), and the second line shows 9 shows the transmitter output associated with the A-phase current, third line represents the range 6.000 to 6.000A.

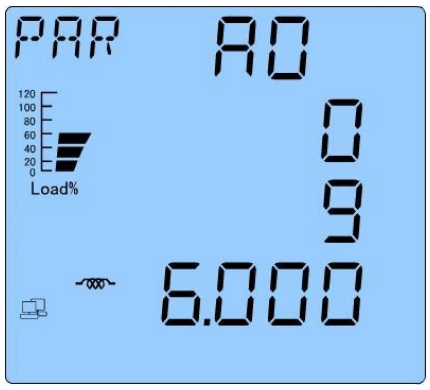


Figure 3.2.3.10 transmitter output

Note: The default value is associated with A transmitter output phase current, range 6.000A, unidirectional. Parameter Meaning see "Parameter Settings" Seventeenth screen.

Eleventh screen: System Time

The upper display shows "TIME" word represents the system time.

At right: The time is displayed as at 16:19 on December 10 2004.

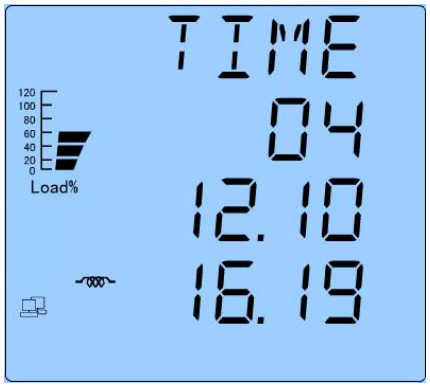


Figure 3.2.3.11 System Time

Twelfth screen: software and hardware version number

The top left of the screen to display "VER" word represents the version number.

As the right:"H 4.0" represents the hardware version is version 4.0;

"S 4.0" means the software version number is version 4.0.

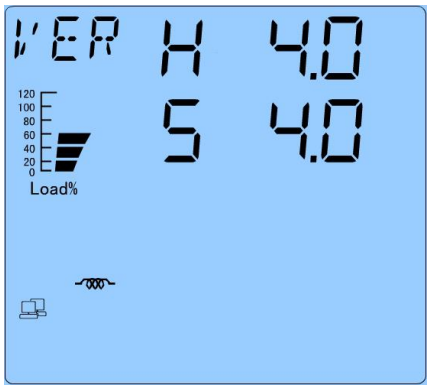


Figure 3.2.3.12 software and hardware version number

3.2.4. Cumulative amount display area and a variety of electrical measurement clock

Running the measurement data (ie A key) display mode press the E key, the cumulative amount of the display area (the lower row of small) will display the total active power measurement, measure the total reactive power, active power measurement of each phase, each phase reactive power metrics and system time. Each time you press the E key turning in the display area on a screen, the measurement data display area (four rows of large) remains unchanged.

First screen: display the absolute value of active power measurement Ep

At right,E_p＝31. 8 kWh.

Figure 3.2.4.1 absolute value of active power measurement

Second screen: display the absolute value of reactive power measurement Eq

At right,E_q＝21.6 kVarh.

Figure 3.2.4.2 absolute value of reactive power measurement

Third Screen: A phase active power measure the absolute value of Epa

At right,E_{pa}＝10. 6 kWh.

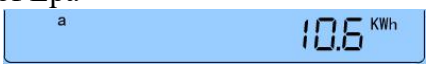


Figure 3.2.4.3 A phase active power measure the absolute value

Fourth Screen: B-phase active power measure the absolute value Epb. Similar to the third screen display.

The fifth screen: C-phase active power measure the absolute value Epc. Similar to the third screen display.

Sixth screen: A phase reactive power measure the absolute value Eqa.

Figure 3.2.4.4 A-phase reactive power measure the absolute value

At right,E_{qa}＝7.2 kVarh.

Seventh screen: B-phase reactive power measure the absolute value Eqb. Similar sixth screen display.

Eighth screen: C-phase reactive power measure the absolute value Eqc. Similar sixth screen display.

Ninth screen: first road pulse count

Left part of the screen, "" logo will begin to flash, indicating that the first road pulse. As shown, the bottom of the screen 71 represents 71 pulses.

Figure 3.2.4.5 first road pulse count

Note: Only when the input mode is selected as mode 2, namely 1,2 way to switch input, 3, 4 inputs for pulse counting when the page is displayed, otherwise the page is not displayed.

Tenth screen: The second way pulse count

Left part of the screen, "" logo will begin to flash, indicating that the second path pulse. As shown, the bottom of the screen 83 represents 83 pulses.

Figure 3.2.4.6 second way pulse count

Note: Only when the input mode is selected as mode 2, namely 1,2 way to switch input, 3, 4 inputs for pulse counting when the page is displayed, otherwise the page is not displayed.

Eleventh screen: Show Time

Press the "hours: minutes: seconds" format display time.

As shown on the right is: 23:18:47.

Figure 3.2.4.7Time Display

3.3. Parameter Setting

In the one-touch display, press E and H keys, will enter the parameter setting mode, the upper left corner of the screen displays the word "SET".

3.3.1. Introduction of each key parameter setting mode

- A key is used to activate the current settings page, but where the position cursor flashing

display, each time you press the A key to move the cursor right one. After activation Press H or P keys to position the cursor where the subtraction operation.

- H key to add a key figure where each time the cursor position are incremented.
- P key is minus one key each time the figure which the cursor decremented.
- E ENTER key parameters, when a screen parameter setting is complete, press the E key parameter validation, then the top of the screen - the word "Y N", press A to select Y or N's. When Y is selected press E to set the parameters are stored, while the entry into force; N parameter is selected press the E key, the current setting is not stored.

3.3.2. Each parameter setting screen

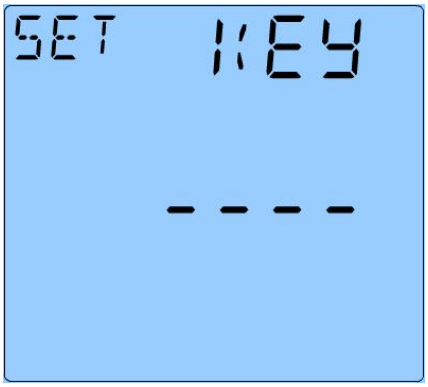


Figure 3.3.2.1 inquiry page password protection

Starting interface parameter setting mode for password confirmation. Every time you enter the parameter setting mode are first prompted to enter the password, the password is displayed as "----", as shown in Figure 3.3.2.1. A total of four passwords, ranging from 0000 to 9999, the factory default is 0000. Press A to toggle between four digit password to cycle selection, press H or P key to electoral positioning subtraction operations, ranging from 0 to 9, press E to confirm the entry is complete. Parameter settings can only confirm the password, or to stay on this page.

When entering the parameter setting screen, such as the current page parameter setting is complete, press the E key above the screen will be prompted whether to store the current set parameters, as shown in Figure 3.3.2.2. "Y" representative of YES, that set of parameter storage, "N" on behalf of NO, that is not storage parameters. Press the A button can be "Y" or "N" option, press E to confirm.

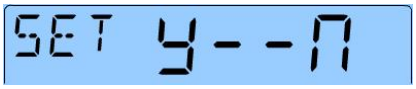


Figure 3.3.2.2 is stored Tips

After selecting the "Y" and press the E key to confirm, such as setting the legal parameters, it stores the current parameters; if not legal, the top screen shows "ERR" word prompts, as shown in Figure 3.3.2.3, and the parameter is not stored. A key point can be re-set parameters, in accordance with the E key scroll.

Figure 3.3.2.3 parameter setting illegal tips

Note: No matter in which the parameter setting screen page, press the E and H keys will exit the parameter setting mode, enter the parameter total storage interface, as shown in Figure 3.3.2.4, press the A button can be "Y" (parameter storage to E2PROM, power-down save) or "N" (parameters stored in the data RAM, power-down does not save) the selection, press the E key to confirm and exit the parameter total storage interface, return-touch display. In the parameter setting page, if not press the A button to activate the current settings page, or activation of the current page and did not press H or P keys to modify the parameters, then press the E key to scroll directly to the current page of the parameters are not stored. If no key is pressed within 10 minutes, the screen will automatically return to the One-Touch display mode.

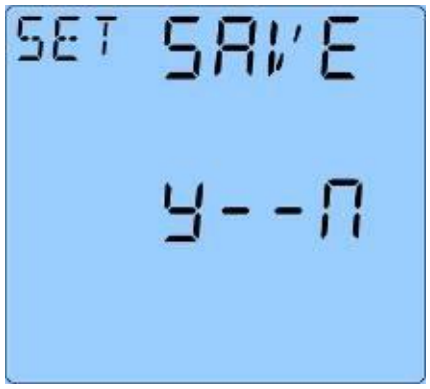


Figure 3.3.2.4 Parameter save tips

The first parameter settings screen: Communication parameter setting page

This interface is used to set the EM600 mailing address, baud rate and transmission format. The top of the screen displays the word "COMM", indicates that the current page is the communication parameters settings page.

Mailing address range is 1 to 254; baud total 0.6k, 1.2k, 2.4k, 4.8k, 9.6k, 19.2k, 38.4kbps seven to choose from transmission format code total 0,1,2,3 four alternative (see 3.2.3 show the specific meaning of the operating parameters, the first screen).

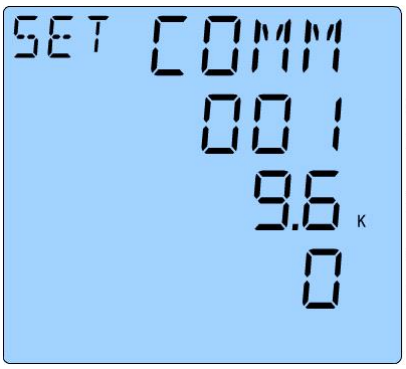


Figure 3.3.2.5 Communication parameter setting page

The second parameter setting screen: System wiring set

This page is used to set the system's wiring. The top of the screen displays the word "SYS", indicates that the current page to the system wiring Settings page.

Figure 3.3.2.6 system wiring setup page

There are five options:

Mode 1: 3P4L 3PT 3CT

Mode 2: 3P4L 3PT 1CT

Mode 3: 3P3L 3PT 3CT

Mode 4: 3P3L 3PT 2CT

Mode 5: 3P3L 3PT 1CT

The third parameter settings screen: PT Set

This page is used to set the PT primary side and secondary side voltage rating of rated voltage. The top of the screen displays the word "PT", indicates that the current page is PT Settings page.

PT secondary side of the rating range of 100V ~ 220V, PT primary side rated range of 100V ~ 35000V.

Figure 3.3.2.7 PT settings page

The fourth parameter settings screen: CT settings

This page is used to set the primary and secondary rated current value of CT rated current. The top of the screen displays the word "CT", indicates that the current page for CT settings page.

CT secondary rated current of 1A and 5A There are two to choose from, the range of the primary CT rated current of 1A ~ 5000A.

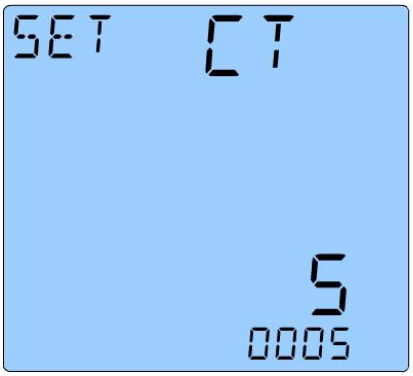


Figure 3.3.2.8 CT settings page

Note:1. When the product when the rated current is 1A, CT secondary side should be set to 1; when the product is rated current 5A, CT secondary side should be set to 5.

2. The primary side of the rated current value can not be less than the rated current value on the secondary side.

The fifth parameter settings screen: CT0 (zero sequence CT) settingsThis page is used to set CT0 rated current value of the primary and secondary rated current value. The upper display shows the word "CT0", indicates that the current page is CT0 Settings page.

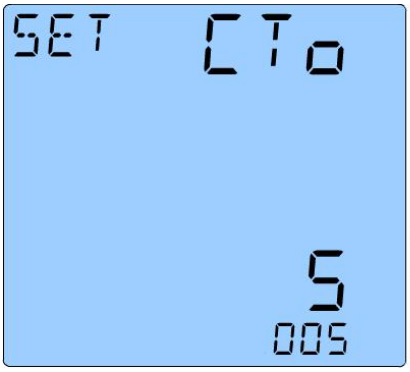


Figure 3.3.2.9 CT0 settings page

Total Ratings CT0 secondary side 1A and 5A two options, CT0 ratings range from one side 1A ~ 5000A.

Note: 1. When the product when the rated current is 1A, CT secondary side should be set to 1; when the product is rated current 5A, CT secondary side should be set to 5.

2. The primary side of the rated current value can not be less than the rated current value on the secondary side.

The sixth parameter settings screen: Input mode settings

This page is used to set the four-way switch input mode induration point. As shown, the top of the screen shows "I - M" word that represents the current page to input mode settings page.

There are 1 and 2, two input modes to choose from.

Mode 1: 1 to 4 for the digital inputs.

Mode 2: 1,2 road for the digital inputs, 3, 4-way for the pulse counter input.

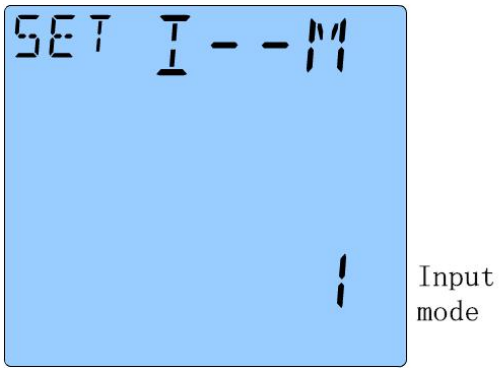


Figure 3.3.2.10 Input mode settings

The seventh parameter settings screen: Output mode settings

This page is used to set the relay output mode. As shown, the top of the screen displays "O - M" word that represents the current page output mode settings page.

There are two output modes 1 and 2 are available.

Mode 1: relay output for pulse output.

Mode 2: Relay output is self-sustaining.

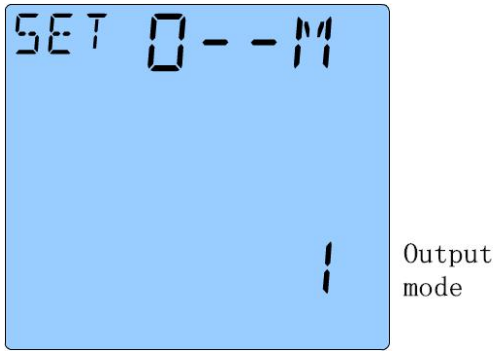


Figure 3.3.2.11 Output mode settings

Eighth parameter setting screen: Relay output pulse width setting

When the relay is set to pulse output mode, this page is used to set the output pulse width. As shown, the top of the screen displays the word "RL-T" in order to make prompt.

Range of the pulse width is 50 ms to 20000 ms.

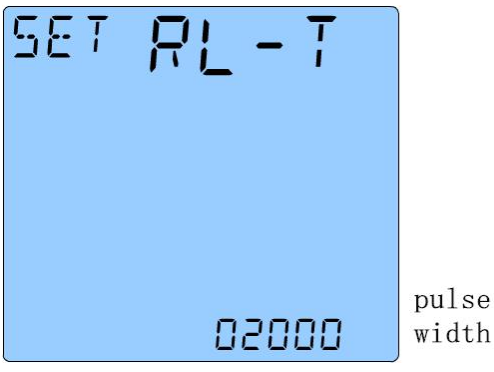


Figure 3.3.2.12 Relay output pulse width setting

Note: Only when the output mode is selected as mode 1, which relay output is pulsed in order to enter this page, otherwise this page is not displayed.

Figure 3.3.2.13 backlight time settings page

Ninth parameter settings screen: backlit time setting

This page is used to set the backlight illumination time. The upper display shows "Ld-T" word that represents the current page as a backlight time settings page.

Backlight time range is from 0 to 30 minutes, when set to 0, the backlight is on.

Tenth parameter settings screen: System Time Settings

This page is used to set the system time. The upper display shows the word "TIME", indicates that the current page to the system time settings page.

At right, is expressed as at 16:19 on December 10 2004, the number of seconds the default is 0.

Figure 3.3.2.14 System Time Settings Page

Eleventh parameter setting screen: password protection

This page is used to set the system password protection. The top of the screen displays the word "KEY", indicates that the current page is password protected settings page.

Has set a password will be displayed on the screen, password ranging from 0 to 9999.

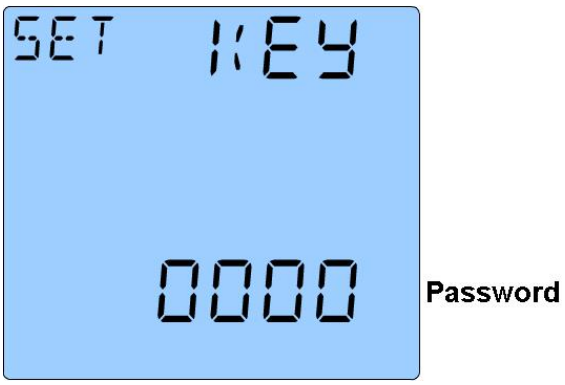


Figure 3.3.2.15 password protection settings page

Note: The parameters are used to set and reset the password.

Twelfth parameter setting screen: The first road remote pulse base setting

This page is used to set up the first road remote pulse base. As shown, the top of the screen displays "PULS" (PULSE) words indicating pulse remote base set, the left part of the

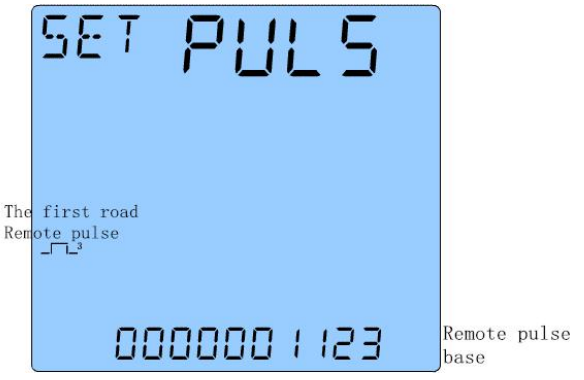


Figure 3.3.2.16 The first road remote pulse base setting

screen displays "$\sqcup\sqcap\sqcup^3$," said the first road remote pulse. The current base will appear in the next row, range: 0 to 4294967295.

Note: Only when the input mode is selected as mode 2, that the way to switch input 1,2 3,4 road for pulse input to enter the page count, otherwise this page is not displayed.

Parameter setting screen thirteenth: The second road remote pulse base setting

This page is used to set the second road remote pulse base. Left part of the screen displays "$\sqcup\sqcap\sqcup^4$," said the second road remote pulse. Methods of operation and display screen similar to the twelfth. After completing all of the parameter setting, press the E key to return to the first screen.

Fourteenth parameter setting screen: total active power measurement base settings

This page is used to set the total active power measurement base, such as the right. The top of the screen displays "ENGY" (ENERGY), said the measure is set to power, the bottom right of the screen displays "kWh" is expressed as active power measurement, " Σ " represents the total. Measure electrical current base will be displayed in the next row.

Range 0 to 99999999.9.

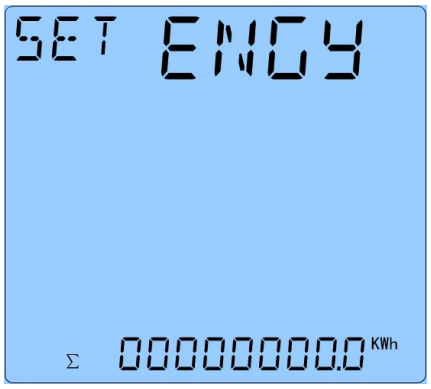


Figure 3.3.2.17 measure total active power base settings page

Fifteenth parameter settings screen: a measure of the total reactive power base settings

This page is used to set the total reactive power measurement base. Bottom right of the display "kVarh" expressed as reactive power metrics. Similar methods of operation and the ninth-screen display.

Parameter setting screen sixteenth to eighteenth : A, B, C phase active power measurement base setting is used to set the base phase active power measurement.

Note: only when the wiring for the three-phase four-wire system displays only the page.

Nineteenth to twenty-first parameter setting screen: A, B, C phase reactive power measurement base setting is used to set the phase reactive power measurement base.

Note: only when the wiring for the three-phase four-wire system displays only the page.

Twenty second parameter setting screen: transmission output settings

This page is used to set the transmitter output parameters. The top of the screen displays the word "AO", said the setup page for the current output of the transmitter.

The first row represents one / two way: 0 for a one-way, 1-way;

The second line of 01 positions associated with the type of display, the table below;

Figure 3.3.2.18 transmission output settings page

The third line indicates that the corresponding electrical parameters of the range, the range of the transmitter output is used to set the amount of the associated measurement range, which corresponds to the maximum value of the secondary side.

One-way / two-way: 0 for a one-way, 1-way. Only active power, reactive power, power factor, frequency can be set to two-way. When set to a one-way time, 4mA represents 0,20mA expressed full scale. When set to two-way, 4mA indicates a negative range, 20mA represents a positive range. Example 1: When PT is set to 690V / 100V, CT is set to 600A / 5A, if the associated transmission output type is active, the range is set to 0.600kW, which corresponds to one side of the scale Ai = 0.6 * 690/100 * 600 / 5 = 496.8kW. If set to one-way, the output 4mA, said 0kW, 20mA output, said 496.8kW, 12mA output represents 248.4kW; if set to a two-way, the output 4mA, said -496.8kW, 20mA output, said 496.8kW, 12mA output represents 0kW.

Example 2: If the type is associated with the transmission output frequency, when set to one-way, the range is set to 55.00Hz, the output 4mA represent 0Hz, 20mA output, said 55Hz, 12mA output represents 27.5Hz; when set to a two-way, real-scale range is 50Hz ± range, if the range is set to 05.00Hz, the output 4mA, said 45Hz, 20mA output, said 55Hz, 12mA output represents 50Hz.

Associated type which is used to set the associated transmission output measurements, the table below.

Range is used to set the range of the transmitter output measurements association.

Association	Description	The secondary side of	Remark

type		the maximum range of electrical parameters	
1	Associate U_{ab}	999.9V	Unidirectional
2	Associate U_{bc}	999.9V	Unidirectional
3	Associate U_{ca}	999.9V	Unidirectional
4	Associate Line voltage average		
5	Associate U_{an}	999.9V	Unidirectional
6	Associate U_{bn}	999.9V	Unidirectional
7	Associate U_{cn}	999.9V	Unidirectional
8	Associate Phase voltage average		
9	Associate I_a	9.999A	Unidirectional
10	Associate I_b	9.999A	Unidirectional
11	Associate I_c	9.999A	Unidirectional
12	Associate Current average		
13	Associate I_n	9.999A	Unidirectional
14	Associate F	99.99Hz	One-way / two-way
15	Associate PF	9.999	One-way / two-way
16	Associate P	9.999kW	One-way / two-way
17	Associate Q	9.999kvar	One-way / two-way
18	Associate S	9.999kVA	Unidirectional
19	Associate PF_a	9.999	One-way / two-way
20	Associate PF_b	9.999	One-way / two-way
21	Associate PF_c	9.999	One-way / two-way
22	Associate P_a	9.999kW	One-way / two-way
23	Associate P_b	9.999kW	One-way / two-way
24	Associate P_c	9.999kW	One-way / two-way
25	Associate Q_a	9.999kvar	One-way / two-way
26	Associate Q_b	9.999kvar	One-way / two-way
27	Associate Q_c	9.999kvar	One-way / two-way
28	Associate S_a	9.999kVA	Unidirectional
29	Associate S_b	9.999kVA	Unidirectional
30	Associate S_c	9.999kVA	Unidirectional

After completing all of the parameter setting, press the E key to return to the parameter setting of the first screen.

3.4. The local operation

In Touch display mode, press the E key and the A key to enter the local mode of operation, the upper left corner of the screen displays OPR (OPERATE).

Note: No matter in what local operator interface screen, press the E and A keys will exit the local operating mode and return to one-touch display mode, the current page of the operation is not performed; if you do not press the A button to activate the current operation page, this when you

press the E key to scroll directly. If no key is pressed within 10 minutes, it will automatically return to the One-Touch display mode.

3.4.1. Local Operation Features

In local operation mode, you can:

Control relay points, co-operation

Clear SOE, remove electrical measurement base, remove the accumulated value of the operating pulse count;

System reset operation.

3.4.2. Each local operation screen presentation

Starting interface for local operation mode password confirmation, each time you enter the local operating modes are first prompted for a password, the password is displayed as "----", as shown in Figure 3-4-1. A total of four passwords, ranging from 0000 to 9999, the factory default is "0000." To enhance privacy, only the password is set bit digital display, the other bits are displayed as "-." After entering the complete press E to confirm, if you enter the correct password to enter the local operation of the first screen, otherwise stay on this page.

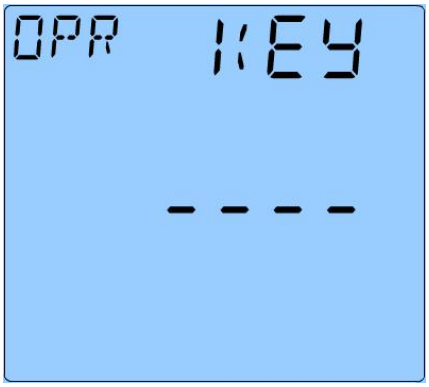


Figure 3.4.2.1 inquiry page password protection

Local operation of the first screen: first relay output operation

This page is used to set the first relay switching status. The top of the screen shown in Figure display the word "OUT", expressed as a relay output operation, the central display shows "1" indicates the first road.

Figure 3.4.2.2 first relay operation

A key after pressing relay state "OP" blinking, press H or P keys for "OP" or "CL" option. "OP" that is "OPEN" said the relay points operation, "CL" namely "CLOSE" said the co-operation of the relay.

Note: When the relay output is set to pulse output, you can not select the "OP", only select for

"CL".

After selecting relay status, press E to confirm the current operation will be prompt. "Y" on behalf of YES, that confirm the local operation, "N" on behalf of NO, that is not local operation. Press the A button can be "Y" or "N" option, press E to confirm.

Figure 3.4.2.3 confirm local operation

Select "N" and press E to confirm, does not operate relay. Press E to select Y, the relay does not operate immediately, but first check the current status of the relay: Relay is not as current action, then the relay will be operated; current relay is action, the relay will not operate while the top of the screen show "ERR" words and actions fail. Then press the E key will turn to the next screen; press the A button to reset the relay status.

Figure 3.4.2.4 relay local operation fails

Local operation of the second screen: second relay output operation

This page is used to set the second relay switching status., the top of the screen displays the word "OUT", expressed as a relay output "2" indicating the second path.

Methods of operation and the first channel is identical to the secon operation of the first path.

Figure 3.4.2.5 second relay operation

Local operation of the third screen: Clear SOE

This page is used to clear the SOE records. The upper left corner of the screen displays "CLR" (CLEAR) clears the top of the screen displays the word "SOE" clears the SOE.

If do not want to clear SOE, press E to skip this screen; To clear, press the A key, the screen changes as shown. Select "Y" that YES, sure to clear SOE, select "N" that is NO, not cleared SOE.

Figure 3.4.2.6 Clear SOE

Figure 3.4.2.7 Be sure to clear the screen

Local operation fourth screen: Clear electric measure the cumulative value

This page is used to clear the cumulative value of all electrical measurements. The upper left corner of the screen displays "CLR" (CLEAR) clears the top of the screen displays "ENGY" (ENGERY) word clears electrical measurement base.

Clear electric measure the cumulative value of the same SOE operations and cleanup operations.

Figure 3.4.2.8 remove electrical measurement base

Local operation of the fifth screen: Clear the cumulative value of the pulse count

This page is used to clear the accumulated value of the pulse. The upper left corner of the screen displays "CLR" (CLEAR) clears the top of the screen displays "PULS" (PULSE) word clears pulse base.

SOE same base operations and remove the accumulated value of the clear pulse operation.

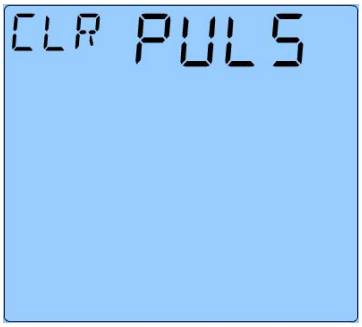


Figure 3.4.2.9 cleared away pulse base

Note: Only when the input mode is selected as mode 2, that the way to switch input 1,2 3,4 road for pulse input to enter the page count, otherwise this page is not displayed.

Local operation Sixth screen: System Reset

This page is used to reset the system. The upper left corner of the screen displays "RST" (RESET), said reset the top of the screen shows "SYS" (SYSTEM) represents the system.

Same system reset operation and cleanup SOE base of operations.

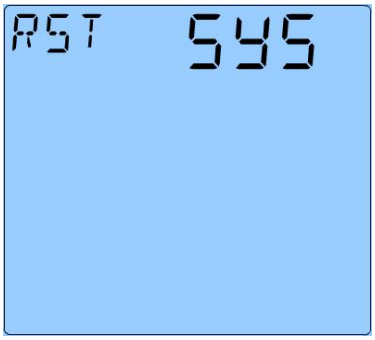


Figure 3.4.2.10 system reset

3.5. SOE inquiry

3.5.1. SOE Features

In Touch display mode, press the E key and the P key to enter the SOE query mode, the upper left corner of the screen displays the word "SOE", as a reminder. EM600 can record up to 32 SOE event,

arranged in the order of their occurrence.

Note: If no key is pressed within 10 minutes, it will automatically return to the One-Touch display mode.

3.5.2. Query operation for SOE

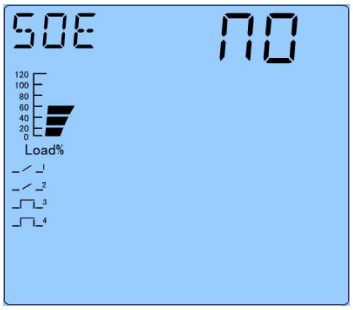


Figure 3-5-1 record without SOE

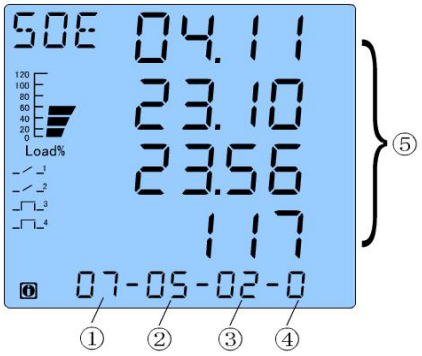


Figure 3-5-2 SOE records

If the memory is no SOE records, SOE mode after entering a query, the top screen displays "NO", as shown in Figure 3-5-1. If there SOE records in memory, then the lower left corner of the screen displays "ⓘ" logo, after entering a query SOE mode, as 3-5-2:

① Total SOE event (maximum 32). At present, a total of Figure 7 are recorded events.

② current event being viewed. As shown, currently being viewed for the first five events.

③ types of events: the following table.

Type number	Type Description
1	Switch input 1 displacement event
2	Switch input 2 displacement event
3	Switch input3 displacement event
4	Switch input 4 displacement event

④ state events. 0 represents a single point of information to the state by the combined points; a single point of information on behalf of the state by the assigned together.

⑤ represents the time the event occurred. 3-5-2, as shown in Figure 2 digital inputs to score from close displacement occurred in at 10:23:56 on November 23rd, 2004 117 milliseconds.

If there are multiple SOE event, according to H (▲) key or P (▼) button up and down to view.

NOTE: If cleared by local operation in memory of all SOE event, then the lower left corner of

the screen, "" mark disappears.

4. Transport and Storage

When the product transportation needs in the packaging conditions, transport and unpacking process should not be subject to severe vibration and shock. Device should be stored in their original packaging, save locations should clean environment, ambient temperature does not exceed -30 ℃ ～+ 80 ℃, relative humidity less than 95% (non-condensing), non-corrosive gases in the air and mold.

Appendix

A. The factory default parameter values

No.	Parameter name	Defaults	Remark
1	Communication parameters COMM	254，9.6k，0	Mailing Address No. 254; baud rate is 9600bps; transmission format: 1 start bit, 8 data bits, no parity, 2 stop bits.
2	SYS system wiring	1	Three-phase four-wire system 3P4W
3	The primary voltage rating	220	Unit:V
4	Secondary side voltage rating	220	Unit:V
5	Primary current rating CT1	5000	Unit:A
6	Secondary current rating CT2	5	Unit:A
7	One side of the zero-sequence	5000	Unit:A
8	The secondary side of the	5	Unit:A
9	IO input Mode	1	Said the four-way switch input
10	IO output mode	1	Expressed as a pulse-type relay output
11	Relay output pulse width	2000	2000ms
12	4 ~ 20mA transmitter output	9	A correlation phase current (Ia)
13	Transmitter output associated	6.000	6.000A
14	Backlight illumination time	5	Unit: minutes
15	Password protection	0000	

B. Technical Specifications

- **Standard**

GB/T 13729-2002	Remote terminal equipment	
GB/T17626.2-2006	Electrostatic discharge immunity test	Level 3
GB/T17626.4-2008	Electrical fast transient burst immunity test	Level 3
GB/T17626.5-2008	Surge immunity test	Level 3

Operating parameters

There are two working power: AC 85VAC ~ 265VAC / 85VDC ~ 265VDC, power consumption <5W;

DC power supply 24VDC ± 20% input ripple coefficient of less than 5%, power consumption <3W;

Relay outputs: 2, 250V / 5A AC or 30V / 5A DC;

DC transmission output: 1 channel, 4 ~ 20mA isolated output, the maximum load 600Ω;

Analog Sampling rate: 64 points / cycle;

Supports connection: three-phase four-wire system 3CT, 1CT and three-phase three-wire 3CT, 2CT, 1CT;

Interface Operation: Supports online modifications module address, baud rate, setting parameters, local control, display all measured and calculated data;

LCD Monitor: Segmented LCD, sight 67mm × 60mm;

Display update rate: <1 second;

RS485 communication: Modbus protocol support, the communication speed (600,1200,2400,4800,9600, 19200,38400bps (custom)), the maximum capacity of 32 nodes;

Communication Response time: 20ms (9600bps);

Use of the environment: -25 ℃ ~ + 70 ℃;

Storage Temperature: -30 ℃ ~ + 80 ℃;

Humidity: 95% non-condensing;

Insulation to DL478, vibration consistent with GB7261-87, anti comply GB6162;

Protection class: panel IP50, housing IP20.

Monitoring Specifications:

Tracking the frequency range: 45 ~ 65Hz (resolution 0.02Hz);

Acquisition part Accuracy: (U, I) 0.2 级;

The accuracy of the calculation part: (P, Q, S) 0.5 级;

Switch status collection: 4, the passive node optical isolation (isolation voltage 1500VDC) input;

Switch status debounce time: 60 ms;

Switch status acquisition resolution: ≤2ms;

SOE: can record 32 SOE, non-volatile;

Energy pulse counter input: switch status input multiplexing;

The minimum pulse width pulse count: 10ms;

Pulse count storage: Records range from 0 to 655 362, non-volatile;

Relay output type: normally keep or pulse output (closing time can be set, the range of 50 ~ 20000ms);

Transmitter output accuracy: (U, I) 0.5 级;

PT Rated input: the secondary standard 220V or 100V (input continuous overload to 1.25 times the rated value); the primary 100V ~ 35000V;

CT Rated input: secondary side 5AAC or 1AAC (continuous overload to 2 times rated), **indicating the demand for the type of ordering,** one side 1A ~ 9999A.

C. Ordering Information

功能/型号	EM600A	EM600B	EM600C	EM600D	EM600E	EM600F	EM600I
Three-phase phase voltage	■	■	■	■	■	■	■
Three-phase line voltage	■	■	■	■	■	■	■
Three-phase current	■	■	■	■	■	■	■
Zero sequence current	■	■	■	■	■	■	■
Power Factor	■	■	■	■	■	■	■
Frequency	■	■	■	■	■	■	■
Active / reactive power	■	■	■	■	■	■	■
Active / reactive power measurement	■	■	■	■	■	■	■
4-way switch input			■	■	■	■	
2 relay outputs				■	■		
2 to 15 harmonics					■	■	■
1 channel transmitter output 4 ~ 20mA DC	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Large-screen LCD	■	■	■	■	■	■	■

RS485 communication		■	■	■	■	■	■
RS485 communication		Optional	Optional	Optional	Optional	Optional	Optiona l

When ordering, indicate the need for relevant standards (corresponding to the nameplate)

✧ Power Standard configuration: 85 ~ 265V AC or 85 ~ 265V DC, 5W; optional: 24V DC ± 20%, 3W.

✧ CT rated standard input: 5A, continuous overload 2 times; optional input: 1A, continuous overload 2 times.

EM600/E10/201503/1000C/EN

Technical notes, subject to change without notice.

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