



index	Display content	Detailed Description
1	Real-time data	contain basic electrical parameters, total power data, time, etc.
2	Power Quality	contain demand, harmonics, voltage and current imbalance and so
3	Historical data	contains maximum and minimum value, etc
4	Phase sequence indication	Indicated A, B, C-phase value, AB, BC, CA three-line value and total reactive power, total apparent power and so on, N represents zero line
5	Measurement data type	Identifies the parameter name displayed in the current measurement data display area in alphabetical form : Voltage 'U' Current is 'I' Active power 'P' Reactive power 'Q' Apparent power 'S' Power factor 'PF' Frequency 'F' Demand 'DM' Harmonic 'HD' Unbalance 'UNB' Maximum 'Max' Minimum'Min', Temperature 'T' Meter operation time 'RTime' Load time "LTime" Two months ago "B Mon" Last month "L Mon" This month "T Mon" Yesterday "LDay" Today is "T Day" The day before yesterday "B Day"
6	Each phase of the load nature indication	Inductance symbol light: Indicates that it is an inductive load at this time, now, Q>0; Capacitance symbol light: Indicates that it is a capacitance load at this time, now, Q<0;
7	Negative sign	Display when the measured data is negative
8	Alarm	Display when there is alarm signal
9	Total load property indicindication	Inductance symbol light: Indicates inductive load at this time, $\Sigma Q > 0$ ; Capacitance symbol light: Indicates capacitive load at this time, $\Sigma Q < 0$ ;
10	Load quadrant indication	The quadrant of the system power is displayed in quadrant diagrams. The first quadrant $\Sigma P > 0$ and $\Sigma Q > 0$ , the second quadrant $\Sigma P < 0$ and $\Sigma Q > 0$ , the third quadrant $\Sigma P < 0$ and $\Sigma Q < 0$ , the fourth quadrant $\Sigma P > 0$ and $\Sigma Q < 0$ .
11	average value	Data show average
12	Electrical type indication	Imp : Forward electrical metric ; Exp : reverse electric metric ; Total : Absolute value , the sum of the absolute values of the forward electrical and reverse electrical metric ; Net : net electrical degrees , The absolute value of the difference between Forward electrical metric and reverse electric metric.
13	Communication indication	If two small computers sign are all faded, it means there is no communication message; two small computers sign all show means the communication transceiver is proper functioning.
14	Clock indication	When this sign light, it indicates area 17 displays time data.
15	Switch input status	When there is a digital display, it indicates that the corresponding loop switch is closed.
16	Relay output status	When there is a digital display, it indicates that the corresponding loop relay is closed.
17	Power and time area	Display a variety of electrical measurement data, real-time clock, parameter settings, etc.
18	Measurement data display area	Display the main measurement data: voltage, current, power, power factor, frequency, temperature, harmonic data, demand, maximum, minimum, parameter setting data, etc.
19	Each phase load histogram	Load : Load size display ; Directly indicate the percentage of the load current relative to the rated current in the form of a histogram,
20	Electrical parameter unit symbol	voltage : V , kV. Current : A , kA. Activepower : W , kW , MW. Reactive power:var, kvar, Mvar. Apparent power : VA , kVA , MVA. Frequency : Hz. Active electricity : kWh. Reactive electricity: kvarh ;

21:Time	22:Date	23:Running hours	24:Load time

In the "PQM" interface, press right key, the screen will display electric energy quality cyclically , as shown below:

1:Voltage harmonics	2:Current harmonics	3:Voltage imbalance rate	4:Current imbalance rate

When "HD" is on, you can use the down key or up key to see the three-phase voltage and current harmonic total distortion rate and 2 ~ 31 harmonic content. The upper left corner shows "U", for this parameter indicates a three-phase harmonic voltage, when display "I", for this parameter indicates a three-phase harmonic current, the first three lines show the total harmonic distortion and fractional harmonic content, the fourth line represents the current harmonic data type, the total harmonic distortion is displayed when "THD" is displayed, when "HR" is displayed, the data indicates the fractional harmonic content, 2 ~ 31 corresponds number of harmonics. In the "History" display interface, right-click to display the max or min value, press the down key to turn down or turn up with the up key to display the interface shown below. At the same time, the screen shows "MAX" characters on the left when the data is the maximum value, the data is the smallest left when the display "MIN" characters.

#### 4.3 parameter setting

Press the ENTER key to enter the password input interface, the default password is 6666. Press the ENTER key for confirmation after the password input. If input action is correct, the system will enter the parameter setting interface. If the input is wrong, it will return to the display interface of the measurement parameters.

Press UP key or DOWN key to switch the modifying parameters. Press the ENTER key to enter the parameter value modify state, and accompanied with flashing for modification of the characters. After the setting is completed, press the ENTER key to confirm the parameters changing. Then you can modify the next parameter, or you can also press LEFT button to exit the parameters modifying state, return to the measurement interface. When the user has no operation in 60 seconds in the parameters modifying state, the system will automatically return to the electrical parameter measurement display interface.

1:Wiring SYSS	2:Rated voltage	3:Rated current	4: Voltage transformation ratio Pt_U
5:Current ratio Ct_I	6:Meter address Adr	7:Baud rate bAUd	8:Data Format dAIA

#### 4.2 Operation display

There are five touch buttons on the front panel,the five keys are marked as key left , key up ,key down , right key , key enter . Through the operation of five keys can be achieved in different measurement data display and parameter settings.



Button name	Functional description
Left key	Switch the three major functions display interface: "Meter", "PQM", "History"; in the parameter setting state as "return" key.
Up key down key	In different function display interface, press the up or down key to cycle through all the parameters of present function. In the parameter setting mode , press up to increase the value of the modified bit in the parameter setting state. Press down to decrease the value of the modified bit.
Right key	During "Meter" display, press this key to cycle the energy data; In the"PQM" power quality display, pressing this button cycles display demand, the harmonics, voltage and current imbalance. Under "History" display, press this button to show the maximum minimum value. In parameter setting state, it is used to move the bits to be modified.
ENTER	Confirm to enter the programming state; in the parameter setting state, it is used to enter the menu, programming parameters and confirmation.

Measurement display menu structure as follows:

Press left button, the screen shows cyclically as following FIGS,

1:Meter measurement interface	2:PQM electric energy interface	3:History

In "Meter" interface, press key or key to display real-time measurement data in turn, as shown,

1:three-phase voltage average voltage	2:three-phase current zero-line current	3:line-voltage average voltage	4:three-phase active power and total

9:Backlight lighting time bLt	10:Demand sliding window time dnnD	11:Transfer project An	12:Date dAtE
13:Time tInE	14:Energy cleared EnyClr	15:The most value cleared CLr	16:Password PASS
17:VER Firmware version information	18:Pulse constant Pulse Const	19:Startup current threshold IST	

Note:It will display different No. according to different setting function .

parameter	Display	Default	implication
Password protection	PASS	6666	Used to protect non-staff to modify
Wiring method	SYSS	3Ln3CT	Three-phase four-wire system , 2LL2CT and Three-phase three-wire system
Rated voltage	Un	220	Could be set as 100、 220、 400
Rated current	In	5	Could be set as 1、 5、 10
Voltage ratio	Pt_U	1	Voltage transformer ratio : 1~9999
Current ratio	Ct_I	1	Current transformer ratio :1~9999
Communication address	Adr	1	The address of the meter when the network is in communication, 1~247
Baud rate	baud	9600	Communication Baud rate address 1200~38400
Data format	dAIA	81N	Data frame format : 8 data bits, a parity bit and one stop bit
Backlight lighting time	BLt	1	units : minute ; If set to 0, the backlight will never go out; set to other values, the light will go off after the setting time delay after the last key press.
Transmitting	An	Ua	3Ln3CT can be sent to the project: Ua,Ub,Uc, Ia,Ib,Ic, Uab,Ubc,Uca,Pa,Pb,Pc,P,Qa,Qb,Qc, Q,Sa,Sb,Sc,S,PFa,PFb,PFc,PF,F;2LL2CT and 2LL3CT can be sent to the project:Ia,Ib,Ic, Uab, Ubc, Uca, P, Q, S, PF, F;
System data	dAtE	Current date	Such as : 2012.05.08
System time	tInE	Current time	Such as : 09:35:20
Clear Electric energy	cLr Eny	Cleared	Used to clear the energy parameters.
Clear Max Min value	cLr MaxMin		Used to clear the maximum and minimum value
Firmware version	Ver		The firmware program version and date of the device
Pulse constant	Pulse Const	3200	Setting range400~9999
Startup current	IST	10	Setting range1~9999mA

#### 5.Communication

KPM53 multifunction meter provides MODBUS-RTU communication protocol, a start, 8-bit data bits, 1/0 parity, 1/2 stop bits. Each byte length is 11 bits. Supported baud rates: 1200, 2400, 4800, 9600, 19200, 38400. Factory default communication parameters: 9600, no parity, 1 stop bit. RTU mode format for each byte: 1 start bit + 8 data bits + 1 parity bit + 1 stop bit The format of the data frame is as follows: Address field + Command field + Data field + CRC check area

5:three-phase reactive powerand total	6:three-phase apparent powerand total	7:three-phase power factor and total	8:frequency
9:TEMP			

In the "Meter" interface, right-click to enter the electric energy and time query interface, press the right button continuously to display the interface as the following FIG shown. When the time and date are displayed, the clock pattern is displayed in the lower left corner of the screen. When the energy accumulated more than 99999999.9, the hexadecimal representation of the floating point number of the energy accumulated value is displayed, Findicates that the maximum display value is exceeded.

1:Import active energy	2:Export active energy	3:Absolute active energy	4:Net active energy
5:Positive reactive enery	6:Negative resctive energy	7:Absolute reactive energy	8:Net reactive energy
9:Phase A import active energy	10:Phase A export active energy	11:Phase A import reactive energy	12:Phase A export reactive energy
13:Phase B import active energy	14:BPhase B export active energy	15:Phase B import reactive energy	16:Phase B export reactive energy
17:Phase C import active energy	18:Phase C export active energy	19:Phase C import reactive energy	20:Phase C export reactive energy

Supported function codes			
DEC	HEX	definition	Operation description
01	0x01	Read relay output	Read one or more relay outputs
02	0x02	Read switch input	Read one or more switch input
03	0x03	Read register data	Read the value of one or more registers
05	0x05	Write a single relay output	Control all the way to close or disconnect the relay
06	0x10	Write multiple registers	Write multiple register data at a time

#### 6.Common malfunction Analysis

➤ Nothing is displayed after the unit is powered on

- Check if the supply voltage and other wiring are correct, also the supply voltage should be within the operating range

- Turn off the device and the host computer, and then reboot

➤ The device is not working properly after power on

- Turn off the device and the host computer, and then reboot

➤ Voltage or current readings incorrect

- Check if the wiring mode setting matches the actual wiring mode
- Check whether the voltage transformer (PT) and current transformer (CT) ratio are set correctly
- Check if GND is grounded properly
- Check if the shield is grounded
- Check if the voltage transformer (PT) and current transformer (CT) are intact

➤ The power or power factor reading is incorrect, but the voltage and current readings are correct

- Compare the voltage and current input of the actual wiring and wiring diagram, and check if the phase relationship is correct.

➤ RS-485 communication is not working properly

- Check whether the communication baud rate, ID and communication protocol settings of the host computer are consistent with the meter

- Please check the data bits, stop bits, parity settings and the host computer is consistent

- Check if the RS-232 / RS-485 converter is working properly

- Check if there are the problems in the entire communications network lines (Such as short circuit, open circuit, grounding, if the shield is properly grounded at one end, etc.)

- Turn off the device and the host computer, and then reboot

- If the communication line is longer, it is recommended to parallel connect a 100~ 200 Ω matching resistors at the end of the communication line.

**Note: If there are any unsolved problems, please contact our company's after-sales service department.**