KPM75

Power Quality Analysis Meter Instruction Manual V1.1

⚠ Danger and Warning

The device may only be installed by professionals.
Caused any malfunction due to not follow the instructions in this manual, Manufacturers will not bear any responsibility.

⚠ Electric shock, burning and explosion

- Devices can only be qualified by the staff to install and maintain.
- Before any operation on the Devices, should be isolated from the voltage input and power supply, and the secondary windings of all current transformers are Short circuit.
- Verify that the device is live before operation.
- All mechanical parts and covers should be restored in place before the device is energized.
- Device in use should provide the correct voltage.

Not pay attention to these precautions may cause serious injury.

1.Outline

1.1 Function introduction

The KPM75 Power Quality Analyzer is designed using advanced microproces-sors and digital signal processing technology. The comprehensive three-phase power measurement, display, energy accumulation, power quality analysis, fault alarm, digital input relay output and network communication are integrated. With strong anti-interference ability, it can still work stably in places with serious elect-romagnetic interference.

1.2 Application

Measurement&Monitor energy parameter of distribution system.
Collect energy consumption data that cost center analysis needs.
Limit monitoring alarm(such as overvoltage, power consumption).
Power quality analysis.
Green building or DCS system data measurement.

1.3 Function Features

Measuring three-phase phase/line voltage,three phase current, positive/ neg -ative sequence voltage, positive/ negative sequence current, active/reactive power,active/reactive energy,power factor, frequency and other 30 kinds of basicparameters.
Measure& show monthly average power factor, accurately grasp the use of monthly reactive power.
0.5S level two-way four-quadrant power statistics and multi-rates statistics.
Demand statistic and record the Max.
Working time, load time statistics.
Fifty of voltage swells, dips and interruptions can be recorded
Support up to 63 harmonic calculation,total harmonic distortion rate calculation, imbalance rate,the current K-factor calculation.
Calculation of short-term flicker and long-term flicker values of voltage and extremes of fluctuation
Standard 1 channel RS485 interface, Modbus protocol, Scalable Profibus-DP communication module
Expandable 4-way DI
Expandable 4 -way DO
Expandable 1 -way 4-20mA analog output
Expandable 1 -way passive optical coupler collector active pulse output
Expandable 1 -way PT100 temperature input.
256 points/cycle voltage,current sampling,high measurement accuracy.
160*160 lattice large LCD screen , Micro-backlit display , Large viewing angles and in bright light environment is still good visual effect.

2、Technical Parameters

2.1 Environmental conditions

Operating temperature: -25℃ ~ +70℃
Storage temperature: -30℃ ~ +75℃
Relative humidity: 5% ~ 95% No condensation
Altitude :3000 meters below

2.2 Rated parameters

Device working power supply: AC 85~265VAC , DC 100~30V
Rated AC data
Phase voltage: 57V/220V/400V
AC current: 5A or 1A(Order description)
Frequency：50Hz
Switch input：Internal 24VDC DC power supply ,40ms debounce time switch output.
Small high power relays：
Contact capacity: 250VAC/5A,30VDC/5A
Power consumption
AC voltage loop: < 0.5VA / phase (rated)
AC current loop： < 0.75VA / phase (5A)
AC current loop： < 0.25VA / phase (1A)
Device power supply circuit: <3VA
Overload capacity
AC voltage loop :1.2 times the rated voltage,Continuous operation,2 times the rated voltage,Allow 10S
AC current loop: 1.2 times the rated voltage,Continuous operation,20 times the rated voltage,Allow 1S

Parameter	Accuracy	Resolution	Parameter	Accuracy	Resolution
Voltage	±0.2%	0.01V	Active energyr	0.2S	0.01KWh
Current	±0.2%	0.01A	Active energy	2%	0.1Kvarh
Active power	±0.5%	0.1W	Frequency	0.02%	0.01Hz
Reactive power	±2.0%	0.1var	Temperature	1℃	1℃
Power meter	±1.0%	0.001			

3.Selection and Installation

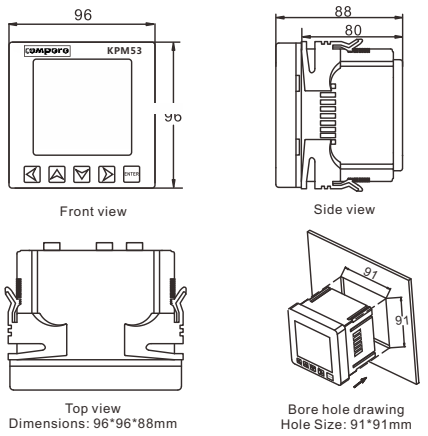
3.1 Selection criteria

KPM 75 □-□

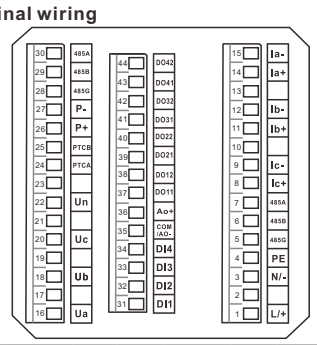
- Rated parameters
  Default：Rate current 5A，measuring range 0~6A
  1：Rate current 1A，measuring range 0~1.2A
- Extention Function
  K-4 way switch input　R-4 way relay output
  T-1 way temperature input　P-ProfiBus-DP communication
  A-1 path 4~25mA output
- Product series
- Compere Power Meter

Example:KPM75T-1:Rate current 380V/1A,1 way temperature input,Power quality analysis meter.

3.2 Shape and hole size



3.3 Terminal wiring



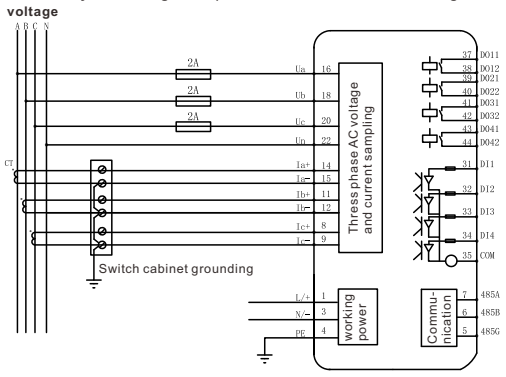
Index	Mark	Define	Index	Mark	Define	Index	Mark	Define
1	L/+	positive	16	Ua	A-phase voltage	31	D11	Switch input 1
2			17			32	D12	Switch input 2
3	N/-	negative	18	Ub	B-phase voltage	33	D13	Switch input 3
4	PE	Ground	19			34	D14	Switch input 4
5	485G	Communi cation screen ground	20	Uc	C-phase voltage	35	COM AO-	Switch input common port Analog output negative
6	485B	RS485 negative	21					
7	485A	RS485 positive	22	Un+	Neutral voltage	36	AO+	Analog output positive
8	Ic+	C phase current into line	23			37	DO11	Relay output 1 positive
9	Ic-	C phase current outlet	24	PTCA	Temperat ure input positive	38	DO12	Relay output 1 negative
10			25	PTCB	Temperat ure input negative	39	DO21	Relay output 2 positive
11	Ib+	B phase current into line	26	P+	Pulse output positive	40	DO22	Relay output 2 negative
12	Ib-	B phase current outlet	27	P-	Pulse output negative	41	D031	Relay output 3 positive
13			28	485G	Communic ation screen ground	42	D032	Relay output 3 negative
14	Ia+	A phase current into line	29	485B	RS485 negative	43	DO41	Relay output 4 positive
15	Ia-	A phase current outlet	30	485A	RS485 positive	44	D042	Relay output 4 negative

Note: Terminals 5, 6, 7 is standard RS485; Terminals 28, 29, 30 is spare Rs485.

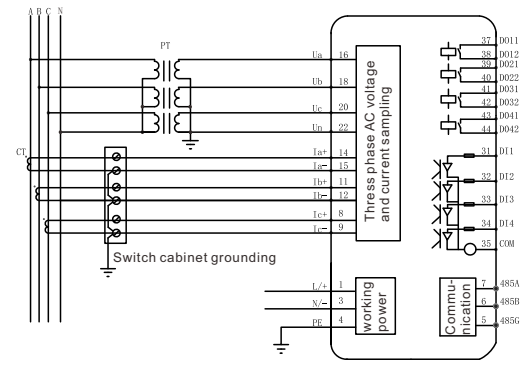
3.4 Typical wiring

KPM75 provides star system and triangular system wiring mode,the com-mon wiring mode is as follows:

3.4.1Star system wiring mode (Suitable for 400/690V and more high voltage

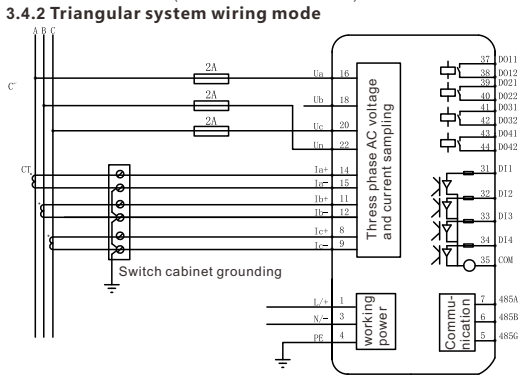


Four wire star system : Direct wiring that without voltage transformer (PT) (The device is set to 3Ln3Ct)

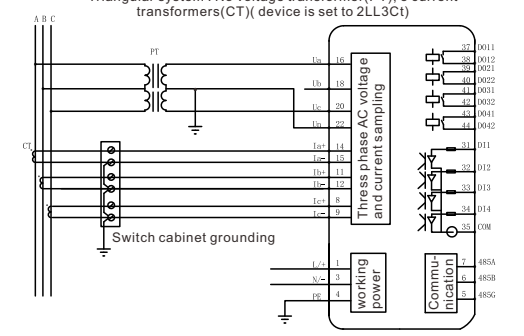


Four wire star system: Three voltage transformers(PT)are used.
(The device is set to 3Ln3Ct)

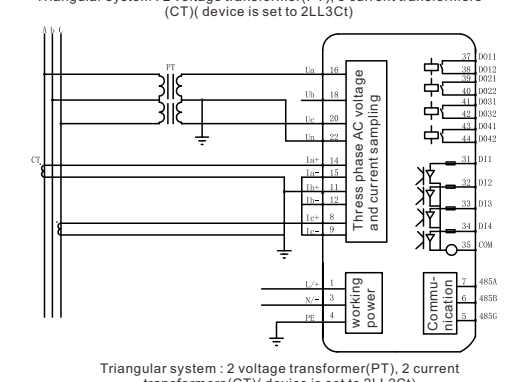
3.4.2 Triangular system wiring mode



Triangular system : No voltage transformer(PT), 3 current transformers(CT)(device is set to 2LL3Ct)



Triangular system : 2 voltage transformer(PT), 3 current transformers (CT)(device is set to 2LL3Ct)

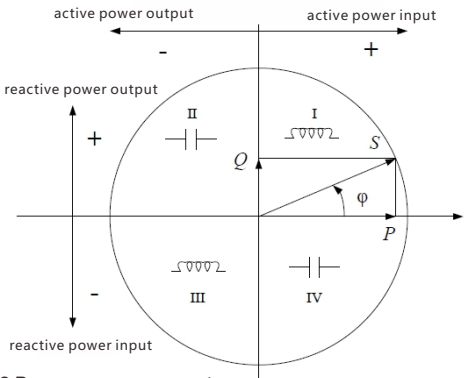


Triangular system : 2 voltage transformer(PT), 2 current transformers(CT)(device is set to 2LL2Ct)

4. Function Description

4.1 Power symbol

KPM75 provides bidirectional power calculation, power and power factor polarity indication as shown in the figure.

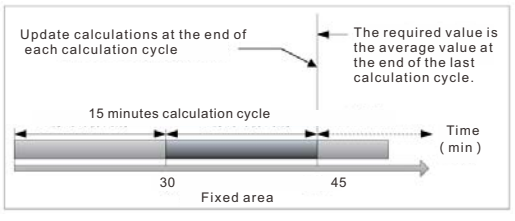


4.2 Power measurement

The KPM75 Power Quality Analyzer uses an advanced microprocessor and digital signal processing technology. The comprehensive three-phase power measurement, display, energy accumulation, power quality analysis, fault alarm, digital input, relay output and network communica-tion are integrated. With strong anti-interference ability, it can still work stably in places with serious electromagnetic interference.

4.3 Demand

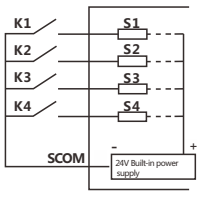
Power systems often charge fees based on the user's power consumption (in the form of active energy) and the peak power level (in the form of active power). Demand is the average power over a certain time interval.
The KPM75 uses a common slip demand algorithm to calculate the demand.



Slip time: time interval for recursive measurement of maximum demand, which can be selected in 1.2.3.5.10.15.30min.
Demand cycle: Setting range 1~15 slip times.
Max Demand: Max Demand since Operation.

4.4 Switch input

KPM75 provide 4channel switch input, used to detect the circuit breaker position signal, switch position signal and other status information. DC24V power supply is provided inside the equipment, when the scene requires a binary input function, external access passive contact signal, when the exter-nal contact closed, the corresponding switch input state is also turned on.



4.5 Relay output

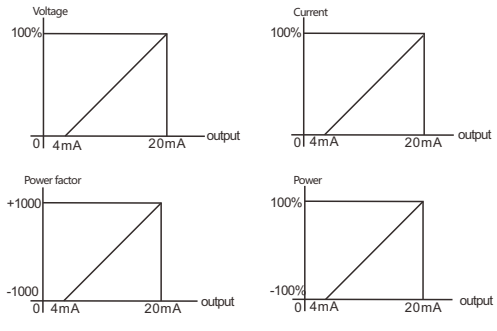
KPM75 provides two relay actions, the user to identify the relay is in the remotecontrol or control alarm. Different control mode, the relay action mode is different.
Remote control:
Relay through the communication with the command to control by the PC or PLC.
Limit alarm control:
The relay is controlled by an electrical parameter inside the meter as a respon-se to a set point control alarm condition.
The two relays action mode as follows
Remote control:
By accepting a PC or PLC command, relay closes. The relay status will remain on still the PC or the PLC will issue a release command, or the meter power loss.
Limit alarm control:
When the alarm signal of the trigger relay is generated, relay action.Until the alarm condition of all trigger relays disappears or the meter is out of order,the relay is released. If the meter recovers the power and the alarm condition per-sists, the relay will act again.

4.6 Pulse

KPM75 provides active/reactive energy metering, 1 active energy pulse out-put function, and adopts optocoupler open collector output. The method of energy accuracy inspection refers to the national measurement.
Regulations: standard table of pulse error comparison methods.
Electrical characteristics: Open collector voltage VCC ≤ 48V, current Iz ≤ 50mA.
Pulse constant: 3200imp/kWh. Its significance is: when the meter accumulates 1kWh, the number of pulse outputs is 3200, and it is necessary to emphasize that the 1kWh is the secondary side energy data of electric energy. In the case of PT and CT, the relative N pulse data corresponds to the primary side power is:
N/3200 × voltage transformation ratio × Current ratio(kWh)
Application examples
The external pulse counting device assumes that the number of pulses collected during a period of length T is N, and the instrument input is: 10kV/100V, 400A/5A, then the meter energy accumulation during this period is:N/3200×100× 80kWh

4.7. Analog output

Analog output 4mA corresponds to the lower limit of the measuring range and 20mA corresponds to the upper limit of the measuring range. When the range is exceeded, the transmitting current increases linearly. The maximum effective output is 120% of the measuring range, the maximum output current is 24mA, and the maximum load resistance is 400 ohms.
The transmission curve is as follows:



Instruction: P=(Px-12)× PE× CT× PT/8, Px is actual measured value of the analog, unit: mA, PE is corresponding rated power value, unit: W, the PE values corresponding to different voltage levels are different.
Details as follow:
220V/5A: Pe=3300W　220V/1A: Pe=660W
100V/5A: Pe=1500W　100V/1A: Pe=600W
Note: PE=Rated voltage× Rated current when transmitting single-phase power.

5.Operating instructions

5.1 Operating display

There are five touch keys on the front panel, from left to right the five touch buttons are [◄][▲][▼][►][Enter] .The display of different measurement data and the setting of parameters can be realized through the operation of five keys.

Button name	Functional description
Left button	Switch the three functions display interface: "Meter", "PQM", "MAX&MIN", "History"; use "return" button in parameter setting state.
Up button Down button	In different function display interface, press the upor down button to cycle through all the parameters of the function item; press the up button in the parameter setting state to increase the value of the modified bit, and press the button to reduce the value of the modified bit. .
Right button	In the "PQM" power quality display item, press this button to cycle through the demand, harmonics, voltage and current unbalance, etc.; in the parameter setting state, it is used to move the bit to be.
Enter button	Enter programming state; used to enter menu, programming parameters and confirmation in parameter setting state.

The menu of measurement display structure is as follows
Press [◄] key, it will cycle as shown below:

1:Meter measurement interface	2: PQM Power Quality Interface
<Meter 16- 6-27 17:58:49 PhsU(V): I(A): Ua 220.0 Ia 5.000 Ub 220.0 Ib 5.000 Uc 220.0 Ic 5.000 AVG 220.0 In 0.000 LineU(V): F(HZ): Uab 380.0 50.00 Ubc 380.0 Ucb 380.0 AVG 380.0 ENTER	<PQM 16- 6-27 17:58 U-deviation: Ua:0.000V-d:-100.0% Ub:0.000V-d:-100.0% Uc:0.000V-d:-100.0% F-deviation: F:0.000Hz-d:-50Hz ENTER

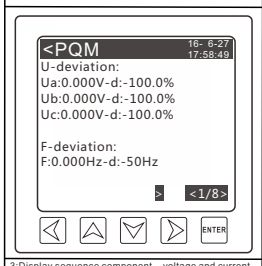
3: MAX&MIN value display interface	4: History historical data display interface
<MAX&MIN 16- 6-27 17:58:49 MAX: Ua: 230.2 Ub: 230.5 Uc: 230.1 MIN: Ua: 0.000V Ub: 0.000V Uc: 0.000V ENTER	<History 16- 6-27 17:58:49 This Mon: EPT:00000002.5kWh EQT:00000003.5kvarh JEP :00000002.5kWh JEQ :00000003.5kvarh FEP :00000000.0kWh FEQ :00000000.0kvarh PEP :00000000.0kWh PEQ :00000000.0kvarh GEP :00000000.0kWh GEQ:00000000.0kvarh ENTER

5.2 In the "Meter" function display item, press[▲]or[▼]key to display the realtime measurement data in turn. When the measurement data (excluding energy data) is greater than 9999, the unit of the measured data is displayed before the "k", such as kW; When it is greater than 99999999, "M" is displayed, such as "MW".as the picture shows:

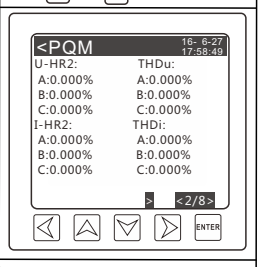
1: Display three phase voltage, current, line voltage and frequency	2: Displays three-phase and total active power, reactive power, apparent power and power factor
<Meter 16- 6-27 17:58:49 PhsU(V): I(A): Ua 220.0 Ia 5.000 Ub 220.0 Ib 5.000 Uc 220.0 Ic 5.000 AVG 220.0 In 0.000 LineU(V): F(HZ): Uab 380.0 50.00 Ubc 380.0 Ucb 380.0 AVG 380.0 ENTER	<Meter 16- 6-27 17:58:49 P(W): Q(var): Pa 1100 Qa 0.000 Pb 1100 Qb 0.000 Pc 1100 Qc 0.000 Pt 3300 Qt 0.000 S(VA): PF: Sa 1100 PFa 1.000 Sb 1100 PFb 1.000 Sc 1100 PFc 1.000 St 3300 PFt 1.000 ENTER
3:Export and import active/reactive energy statistics display, POS: Forward, REV: Reverse, NET: Net, TOT: When the combined value is greater than 99999999.9, the display is no longer refreshed.	4: Multi-rate energy value display: JEP (Q) T: total tip has (no) power, FEP (Q) T: total peak has (no) power, PEP (Q) T: total level (no) Power energy, GEP(Q)T: Total (un)power energy
<Meter 16- 6-27 17:58:49 EP Meterage: POS:00000000.0kWh REV:00000000.0kWh NET:00000000.0kWh TOT:00000000.0kWh EQ Meterage: POS:00000000.0kvarh REV:00000000.0kvarh NET:00000000.0kvarh TOT:00000000.0kvarh ENTER	<Meter 16- 6-27 17:58:49 Multi_rate: JEPT:00000000.0kWh JEQT:00000000.0kvarh FEPT:00000000.0kWh FEQT:00000000.0kvarh PEPT:00000000.0kWh PEQT:00000000.0kvarh GEPT:00000000.0kWh GEQT:00000000.0kvarh ENTER
5: Meter running time and load time statistics	
<Meter 16- 6-27 17:58:49 Time statistics: Runtime: 00000Day08Hour23Min Loadtime: 00000Day05Hour20Min ENTER	

5.3 Press [>] in the "PQM" interface to cycle through different power quality,as shown below

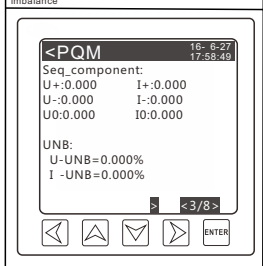
1: Display three-phase voltage deviation and frequency deviation



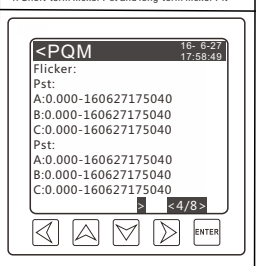
2: Display voltage, current 63 harmonics and distortion rate, press [v] and [^] to view



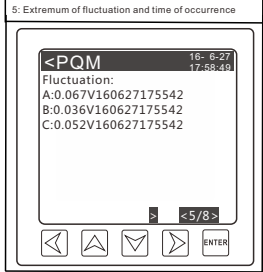
3:Display sequence component, voltage and current imbalance



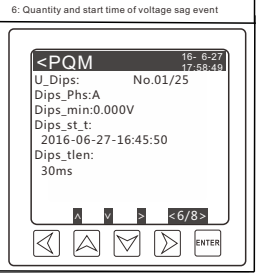
4: Short-term flicker Pst and long-term flicker Plt



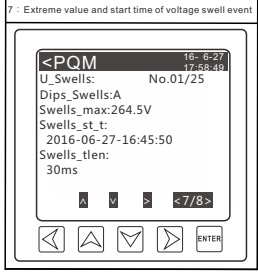
5: Extremum of fluctuation and time of occurrence



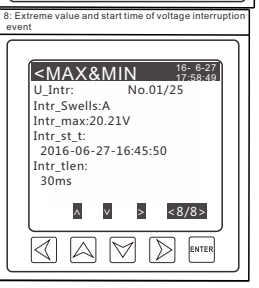
6: Quantity and start time of voltage sag event



7 : Extreme value and start time of voltage swell event

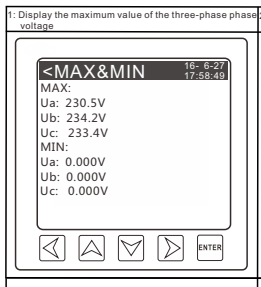


8: Extreme value and start time of voltage interruption event

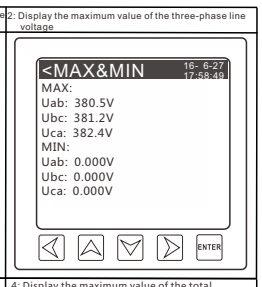


5.4 On the most value query display interface of "MAX&MIN",press the [v] to scroll down or use the [^] to scroll through the screen as shown in the following figure. Each page shows the maximum and minimum values of the measured data at the same time. As shown below:

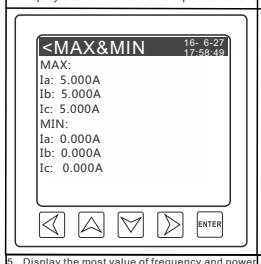
1: Display the maximum value of the three-phase phase voltage



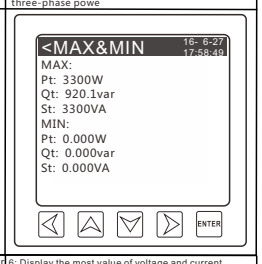
2: Display the maximum value of the three-phase line voltage



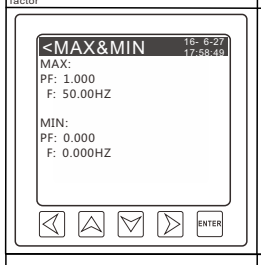
3: Display the value of the three-phase current



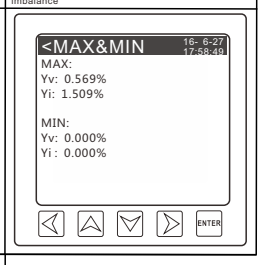
4: Display the maximum value of the total three-phase powe



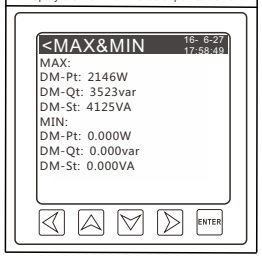
5 Display the most value of frequency and power factor



6: Display the most value of voltage and current imbalance

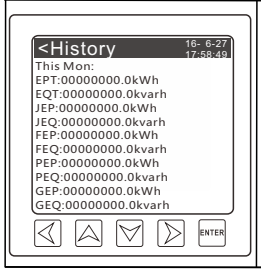


7: Display the maximum value of power demand

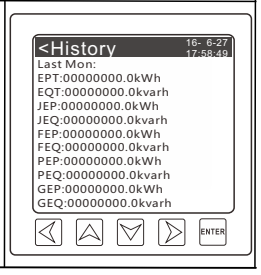


5.5 In the "History" history data display interface, press [v] to scroll down or use [^] to scroll through the interface as shown in the following figure. Among them, EPT - total active energy, EQT - total reactive energy, JEP - active energy, JEQ - sharp reactive energy, FEP - peak active energy, FEQ - peak reactive energy, PEP - level active energy, PEQ - none Power Energy, GEP-Valley Active Energy, GEQ-Valley Energy.

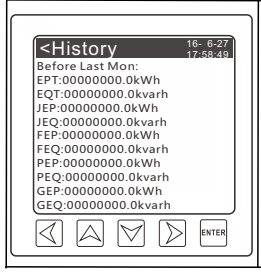
1: Multi-rate energy statistics for this month



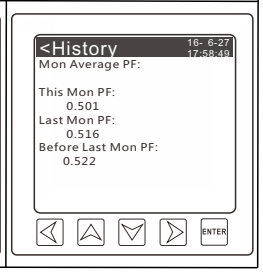
2: Multi-rate energy statistics last month



3: Multi-rate energy statistics two months ago



4: Monthly average power factor

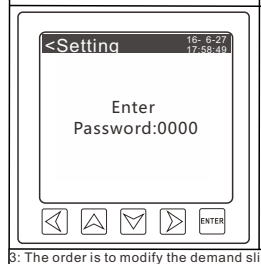


5.6.Parameter setting

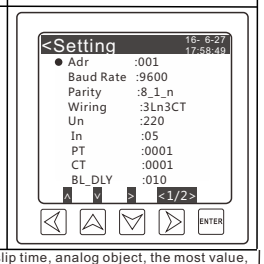
Press the [ENTER] key to enter the password input interface on the measurement interface. The default password is 6666.Press [ENTER] key to confirm after the password is entered. If the input is correct, enter the parameter setting interface. If the input is incorrect, it will continue to display the password input interface. Press the [<] key to exit the programming interface.

In the parameter setting interface, press [v] key to scroll down or use [^] key up could switch the parameter item to be modified. Press the [ENTER] key to enter the modification status of the parameter size, accompanied by the flashing of the modified character. After the modification, press the [<] key to exit the parameter modification status at the same time and return to the measurement interface. There are two pages in the setup page, you can press [>] key to switch. When the user does not press any key within 30 seconds under the modified state of the parameter, it will automatically return to the measurement display interface of the electrical parameter.

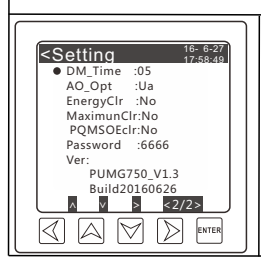
1: Password input interface



2: In order are the address, baud rate, parity bit, wiring, voltage rating, current rating, voltage ratio, current ratio, backlight delay modification



3: The order is to modify the demand slip time, analog object, the most value, power zero and password.



5.7. Factory default value

parameter	Display character	Defaults	meaning
Protect password	Password	6666	Used to protect non-staff personnel to modify instrument parameters
Wiring	Wiring	3Ln3CT	Three-phase four-wire system, 2LL2CT and 2LL3CT are three-phase three-wire system
Rated voltage	Un	220	Can be set to 100, 220, 400
Rated current	In	5	Can be set to 1, 5, 10
Voltage transformation ratio	PT	1	Voltage transformer ratio (1~9999)
Current ratio	CT	1	Current transformer ratio (1~9999)
mailing address	Adr	1	Instrument address for network communication (1~247)
Baud rate	Baud_Rate	9600	Communication baud rate 1200~38400bps
Data Format	Parity	8_1_n	Data frame format: 8 data bits, 1 effect bit, 1 stop bit
Backlight lighting time	BL_DLY	001	Unit: minutes; if set to 0, the backlight will never go out; when setting other values, the duration without keys
Demand slip time	DM_Time	05	1~99, unit: minute
Transfer project	AO_Opt	Ua	Three-phase four-wire variable delivery items: Ua Ub Uc Ia Ib Ic Uab Ubc Uca Pa Pb Pc Pt Qa,Qb,Qc,Qt,Sa,Sb,Sc,St,PFa,PFb,PFc,PF,F Three-phase three-line variable delivery items: Ia, Ib, Ic, Uab, Ubc, Uca, P, Q, S, PF, F
Power clear	EnergyClr	No	Used to clear meter energy values
The value is cleared	MaximunClr	No	Used to clear the current maximum and minimum
Power quality events cleared	PQMSOEClr	No	Used to clear sudden surges, dips, interruptions and other events

6. Communication

KPM75 power quality analyzer power meter provides MODBUS-RTU communication protocol, a start, 8-bit data bits, 1/0 parity bit, 1/2 stop bits, each byte length of 11 bits.

Supported baud rates: 1200, 2400, 4800, 9600, 19200, 34800bps.

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

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
16	0x10	Write multiple registers	Write multiple register data at a time

6.1 Relay output control and status read

This area stores the relay status. The user can read the current status using the Modbus protocol 01H function code and use the function code 05H to control the output.

address	parameter	Range of values	type of data	Read and write attributes
0000H	Relay1 (DO1)	1=ON,0=OFF	Bit	R/W
0001H	Relay2 (DO2)	1=ON,0=OFF	Bit	R/W
0002H	Relay3 (DO3)	1=ON,0=OFF	Bit	R/W
0003H	Relay4 (DO4)	1=ON,0=OFF	Bit	R/W

6.1.1 Read relay output status (function code 01H)

Request data frame: Read the status of Relay1.

Addr	Fun	Start Reg hi	Start Reg lo	Reg Num hi	Reg Num lo	CRC1 6 hi	CRC16 lo
01H	01H	00H	00H	00H	02H	xxH	xxH

Response Data Frame: The slave responds to the host's data frame. Contains slave address,function code,number of data byte,relay status data,and CRC check.Each relay in the data packet occupies one bit (1=ON,0=OFF). The first bit of the first byte is the lowest byte of the first byte. Address the relay state value, the rest of the order to the high order, useless bits filled with 0.

Read the contents of the digital output status response example.

Addr	Fun	Byte count	Data	CRC16 hi	CRC16 lo
01H	01H	01H	03H	11H	89H

Data byte content (Relay1&Relay is closed)

Bit7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	0	0	0	0	0	1	1

6.1.2 Relay control (function code 05H)

Note that the control relay is separated in the state of 0x0000, 0xFF00 is closed.Request data frame:

Addr	Fun	DO addr hi	DO addr lo	Value hi	Value lo	CRC1 6 hi	CRC1 6 lo
01 H	05 H	xx	xx	AAH	55H	xxH	xxH

Response data frame:

Addr	Fun	DO addr hi	DO addr lo	Value hi	Value lo	CRC1 6 hi	CRC1 6 lo
01 H	05 H	xx	xx	AAH	55H	xxH	xxH

6.2 Read switch input status (function code 02H)

Query data frame:This function allows the user to obtain the status of ON/OFF(1=ON,0=OFF) of the switch input DI.In addition to the slave address and the function field, the data frame needs to included the initial address and the number of Dis to be read in the data field. The address of DI in KPM75 starts at 0000H (DI1=0000H,DI2=0001H . . . and so on).The switch input terminals DI1 to DI4 correspond to Bit0 to Bit3.

The following example shows the state of the DI1 to DI2 read from the slave address 01

Addr	Fun	DI start reg hi	DI start reg lo	DI num hi	DI num lo	CRC1 6 hi	CRC1 6 lo
01 H	02 H	00H	00H	00H	04H	xx	xx

Response Data Frames: The response contains the slave address, function code, number of data, packet and CRC check, each bit in the packet occupies one bit (1 = ON, 0 = OFF), the least significant bit of the first byte is the addressed DI1 value.The rest are arranged in order of high, and the unused bits are filled with 0.

The following table shows an example of a read switch status (DI1 =ON,DI2 =ON) response.

Addr	Fun	Byte count	Data	CRC16 hi	CRC16 lo
01H	02H	01H	03H	E1H	89H

The meaning of each bit in Data

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	0	0	0	0	0	1	1

6.3 System parameters read and write

This area stores system parameters related to equipment work, including parameters such as communication, connection mode, voltage transformation ratio,and current transformation ratio, which can be read using the Modbus protocol 03H function code or using the 10H function code setting.

Address	Parameters	Range of values	Type
0000H	Password protection	0 ~ 9999	Word
0001H	Modbus Address	Modbus MailingAddress:1 ~ 247	Word
0002H	Baud Rate and check mode	Baudrate (Bit0~7) :0 :1:24002:4800 3 :9600 4:19200 5:38400, data Format (Bit8~+) : 0 : 8,1,n 1:8,1,e 2:8,1,o	Word
0003H	Voltage to variable ratio	1 ~ 9999	Word
0004H	Current to variable ratio	1 ~ 9999	Word
0005H	Wiring method	0 ~ 2 0 :3LN 3CT Three-phase four-wire 1 :2LL 2CT three-phase 2CT 2 :2LL 3CT three-phase 3CT	Word
0006H	Transmitter settings	0 ~ - (three-phase four-wire) in turn, three-phase voltage, three-phase current, three-phase line voltage, active power, reactive power, apparent power, power factor, frequency. 0 ~ Ten (three-phase third-line) in turn, three-phase wire pressure, three-phase current, total active power, total reactive energy, total apparent power, power factor, frequency.	Word
0007H	Backlight lit time	0 ~ - (min)0: never extinguished;	Word
0008H	Keep		
0009H	Maximum minimum value Clear method	0 : Never clear 1: Day cleared,2: Month cleared	Word
000BH	Clear Maximum small value	Command word 0xaa78, clears the maximum minimum value immediately	Word
000CH	Clear All power	Command word 0x5578, Clean power immediately	Word
000DH	Device fault Indication	0: no fault 1: Faulty Bit0: Clock Failure Bit1: ferroelectric data Failure	Word

6.4 Basic Measurement Parameters Area

The basic measurement area mainly measures basic voltage, current,power, power factor,etc.analysis of sequence quantity and imbalance,voltage and current imbalance in the power grid is an important parameter to measure power quality.Demand is calculated using the slip algorithm,which is to set a window time, which is the calculation period of the demand.The window slides once every minute,and the demand value is updated once.

All parameters in this area are real-time measurement parameters,which are read using the Modbus protocol 03H function code and are read-only.The data format is floating-point data.The data in this area has been multiplied by the ratio,which is a real-time data measured at one time.

Address	Parameter	Data type	Unit
0030H	Phase voltage Ua	Floating point	V
0032H	Phase voltage Ub	Floating point	V
0034H	Phase voltage Uc	Floating point	V
0036H	Line voltage Uab	Floating point	V
0038H	Line voltage Ubc	Floating point	V
003AH	Line voltage Uca	Floating point	V
003CH	Phase current Ia	Floating point	A
003EH	Phase current Ib	Floating point	A
0040H	Phase current Ic	Floating point	A
0042H	Split-phase active power Pa	Floating point	W
0044H	Split-phase active power Pb	Floating point	W
0046H	Split-phase active power Pc	Floating point	W
0048H	System active power Psum	Floating point	W
004AH	Split-phase reactive power Qa	Floating point	var
004CH	Split-phase reactive power Qb	Floating point	var
004EH	Split-phase reactive power Qc	Floating point	var
0050H	System reactive power Qsum	Floating point	var
0052H	Split-phase apparent power Sa	Floating point	VA
0054H	Split-phase apparent power Sb	Floating point	VA
0056H	Split-phase apparent power Sc	Floating point	VA
0058H	System apparent power Ssum	Floatingpoint	VA
005AH	Split-phase power factor PF1	Floating point	
005CH	Split-phase power factor PF2	Floating point	
005EH	Split-phase power factor PF3	Floating point	
0060H	System power factor PF	Floating point	
0062H	System frequency F	Floating point	HZ
0064H	Positive sequence voltage U1	Floating point	V
0066H	Negative sequence voltage U2	Floating point	V
0068H	Positive sequence current value I1	Floating point	A
006AH	Negative sequence current value I2	Floating point	A
006CH	Voltage unbalance Yv	Floating point	%
006EH	Current imbalance Yi	Floating point	%
0070H	Active demand	Floating point	W
0072H	Reactive demand	Floating point	var
0074H	Apparent demand	Floating point	VA
0076H	Temperature	Floating point	℃
0078H	Three-phase average phase voltage	Floating point	V
007AH	Three-phase average line voltage	Floating point	V
007EH	Zero-sequence voltage value U0	Floating point	V
0080H	Zero-sequence current value I0	Floating point	A

6.5 Other parameters

For reading of other parameters,please refer to<KPM75 power quality analysis instrument MODBUS-RTU communication protocol _V1.0>

7. Common malfunction Analysis

➢ **Nothing is displayed after the unit is powered on**

• Check that the supply voltage and other wiring are correct and that 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), current transformer (CT)ratio is set correctly

•Check that GND is properly grounded

•Check that the shield is grounded

•Check the voltage transformer(PT) current transformer(CT) is intact

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

• Comparison of the actual input voltage and current wiring and wiring diagram, to check whether the correct phase relationship

➢ **RS-485 communication is not normal**

• 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 that the RS-232/RS-485 converter is working properly

• Check whether the problem entire communications network lines (shortcircuit, open circuit, grounding, shielding in a single properly grounded, etc.)

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

• The communication line length is recommended to connect approximately 100 to 200 ohm matching resistors at the end of the communication line

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

8. Contact

Henan Compere Smart Technology CO., LTD.
Telephone:+86-371-86181681
Fax:+86-371-67890037
Web:www.compere.com/en/home
Address:No.41 Dongming Road, Zhengzhou, Henan, China

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