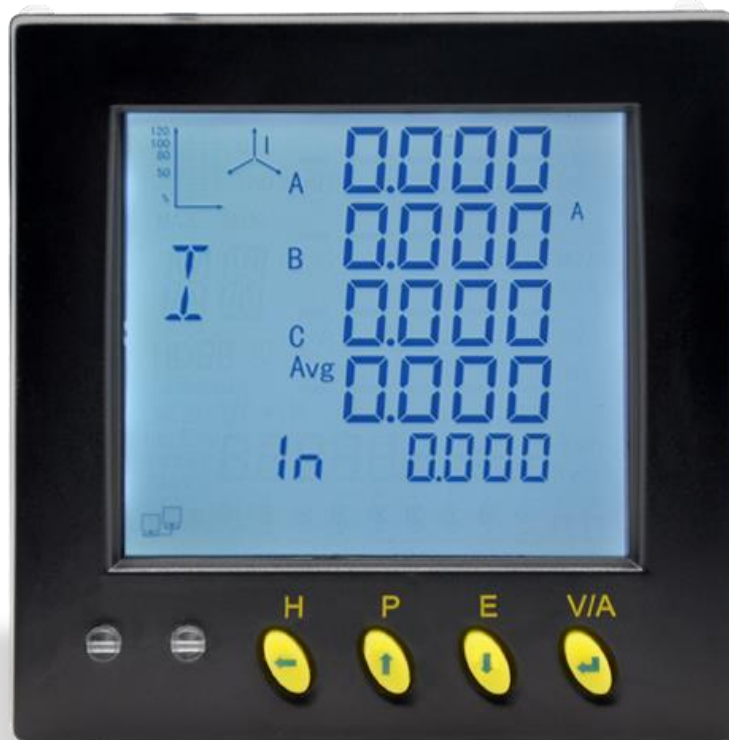


DZ81-MS3UI5C

Energy Meter

User Manual

(V1.0)



Heyuan Intelligence Technology Co., Ltd

IMPORTANT DECLARATIONS

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Please read this manual carefully before the product is operated. And once you start operating the meter, you'll be considered to have read this manual and accept all our terms. Heyuan shall not be responsible or liable for any damages or injuries caused by improper meter installation and/or operation.

Attention: the following symbols in this manual refer to meanings as follows



Electric Shock Symbol: Carries information about procedures which must be followed to reduce the risk of electric shock and danger to personal health



Safety Alert Symbol: Carries information about circumstances which if not considered may result in injury or death

The meter must be installed and operated by one who has experience with high-voltage devices or has qualifications. Please connect the meter to correct voltage before operating the meter. Please install and use the meter according to the user manual. Heyuan shall not be responsible or liable for any damages or injuries caused without following the instructions in the user manual.

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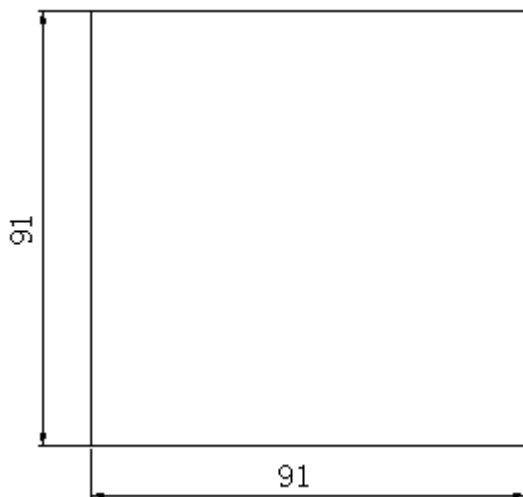
Chapter 1 Meter Overview

DZ81-MS3UI5C is an advanced, smart networked multifunctional energy meter. It is widely used in power distribution sites, energy management systems and intelligent monitoring systems of different industries. It can measure all parameters: three phase voltage, current, line voltage, zero-sequence current, zero-sequence voltage, active power, reactive power, apparent power, power factor, frequency, bidirectional active / reactive energy, total active/reactive energy metering, 2~31 times harmonic analysis.

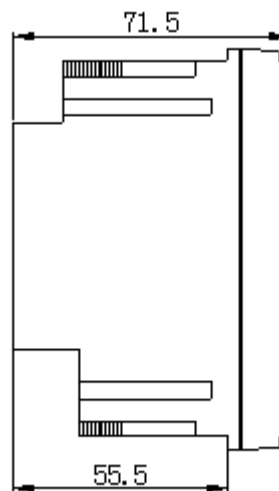
Display:LCD

Chapter 2 Specifications

2.1 Dimension (unit: mm)



Cut Out Size: Unit (mm)



Side View: Unit(mm)

2.2 Installation (unit: mm)

This series of products should be installed in a dry and dust free environment, and avoid exposing to excessive heat, radiation and high electrical noise source. The meters can be installed into a standard panel cutout of switch cabinet.

- A. Remove the clips from the meter and insert the meter into the cutout from the front side. Make sure that the screen is at the front of the panel.
- B. Install clips on the back side of the meter and secures tightly to ensure the meter is affixed to the panel.

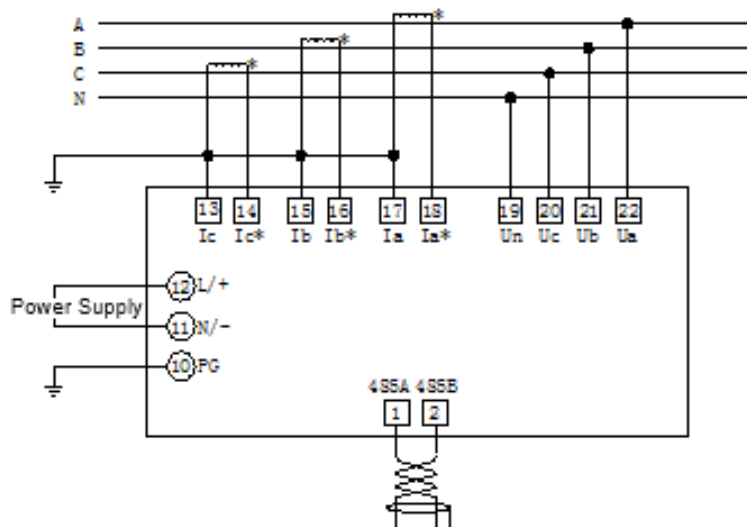
2.3 Technical Parameters

| Technical Parameters-MS3UI5C | | |
|------------------------------|---------------|--|
| Accuracy Class | | Voltage: 0.2; Current: 0.2; Frequency: 0.05 Hz; Power Factor: 0.5 |
| | | Active Power: 0.5; Reactive Power: 0.5; Apparent Power: 0.5 |
| | | Active Energy: 0.5S/1; Reactive Energy: 2 |
| Input | Rated Value | Voltage: 100V/400V; Current: 1A/5A |
| | Overload | Voltage: Sustained Overload: 1.2 times of the rated value Momentary Overload: 2 times of the rated value Current: Sustained Overload: 1.2 times of the rated value Momentary Overload: 2 times of the rated value |
| | Frequency | 45-60Hz |
| Functional Module | Pulse output | 1 |
| | Interface | 1*RS485; Modbus communication protocol; Baud rate: 1200-19200bps |
| | DI | 4 DI |
| Power Supply | Working Range | AC: 85-265V; DC: 85-300V |
| | Consumption | < 3W |
| Working Condition | Temperature | Operating: -20°C~+70°C Storage: -40°C~+80°C |
| | Humidity | Relative Humidity: <93% (place without corrosive gas) |
| | Altitude | <4000m |
| Cut-out size | | 91×91mm |
| Installation | | Panel installation |

2.4 Wiring

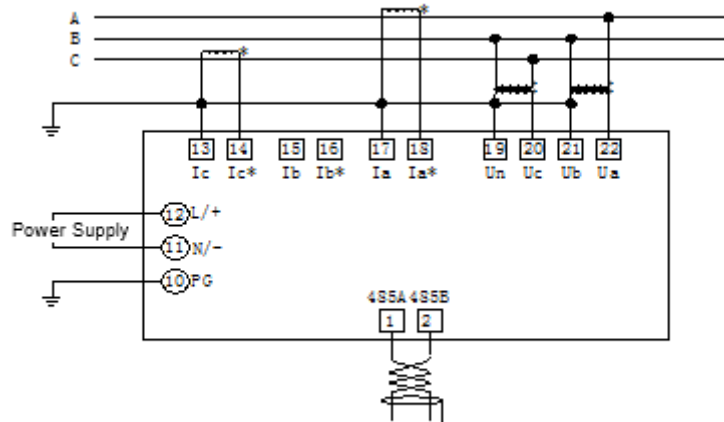
2.4.1 Voltage, current, input terminal wiring instruction

A Three-phase four-wire connection (3LN, 3CT)



The 3-Phase 4-Line wiring mode is commonly used in low voltage electric distribution power systems. The UL(voltage wiring mode) parameter should be set as 3Ln, the IL(current wiring mode) parameter should be set as 3C at the parameter setting interface.

B Three-Phase Three-Line open Delta Mode (2LL, 2CT)

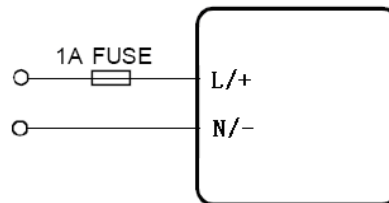


2PT open delta wiring mode is often used in high voltage systems. For this mode, the UL (the voltage wiring mode) should be set as “2LL”, and the IL (the current wiring mode) should be set as “2C” at the parameter setting interface.

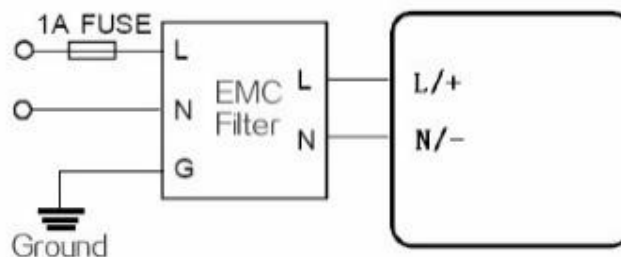
2.4.2 Power supply, communication interface, and Digital input

A. Power Supply

The power supply for this meter is AC 85-265V (45-55Hz) or DC 85-300V. Terminals for the power supply are (L/+,N/-). The typical power supply wiring is as followed:



If the quality of power is poor or there is an EMI problem, it's recommended to equip an EMC filter in the auxiliary power supply loop. The mode of wiring is as followed.

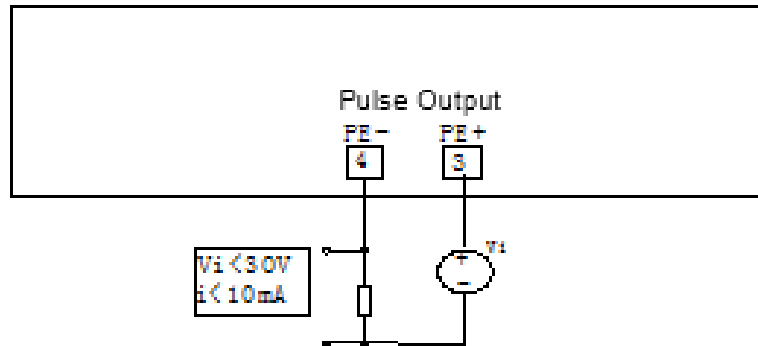


B. Communication Interface

This meter support RS485 serial communication and the ModbusRTU protocol. Terminals

for wiring are 485A, 485B. The transmission medium of RS485 is shielded twisted pair (STP). And the RS485 interfaces also can be used to the devices maintenance and upgrading.

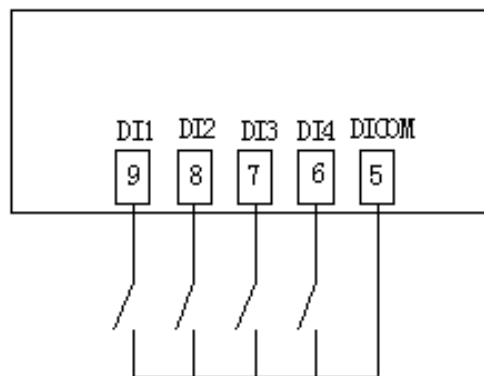
C. Energy Pulse Output Wiring Mode



Energy Pulse Output (Pulse Constant is 9600):
 The terminal PE-/PE+ are used for active energy pulse output.

D. Digital Input

Digital Input (Extension function): wiring mode as shown below, the actual number of digital input depends on the actual energy meter model.



Chapter 3 Meter Display and Basic Operation

There are four buttons on the front panel, labeled H, P, E and V/A from left to right. It can be used for displaying different measuring data and setting parameters through the four buttons.

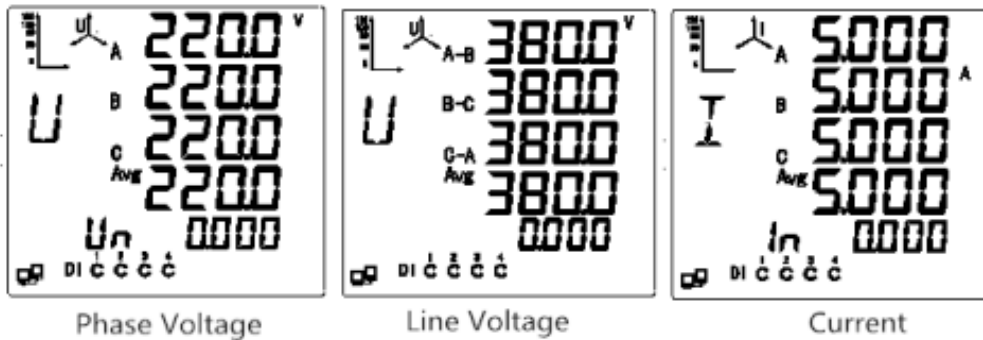
Introduction: Perform the following button operation, the meter displays the measured parameters. Different module of energy meters have different display items, even some items won't be displayed.

Therefore, the user should operate according to the specific conditions of the energy meters during use.

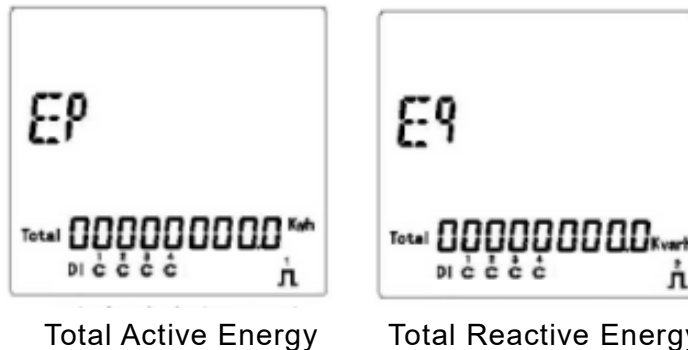
3.1 Parameters Display

(1) Phase Voltage, Line Voltage and Current

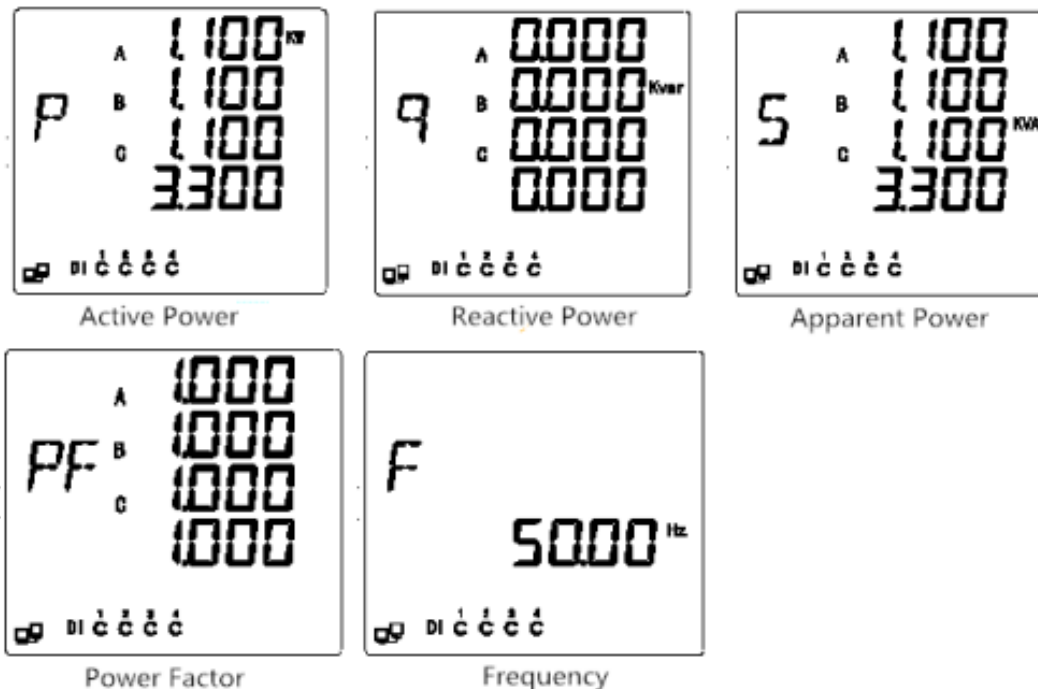
Press button "V/A", it will display the values of phase voltage, line voltage and current circularly.



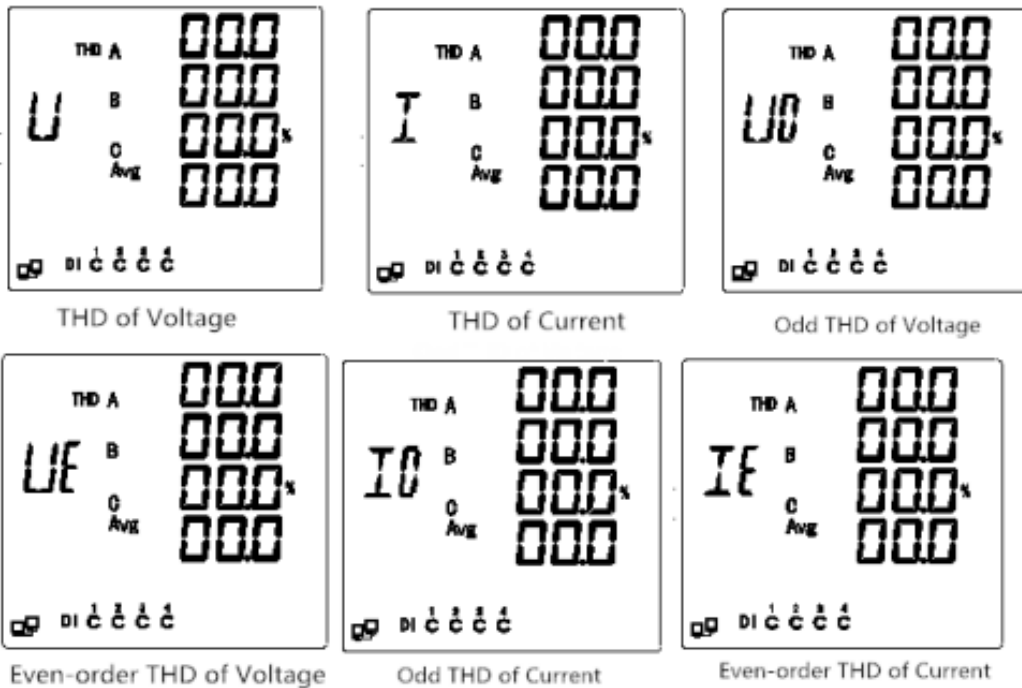
(2) Press button "E", it will display the values of energy parameters circularly.



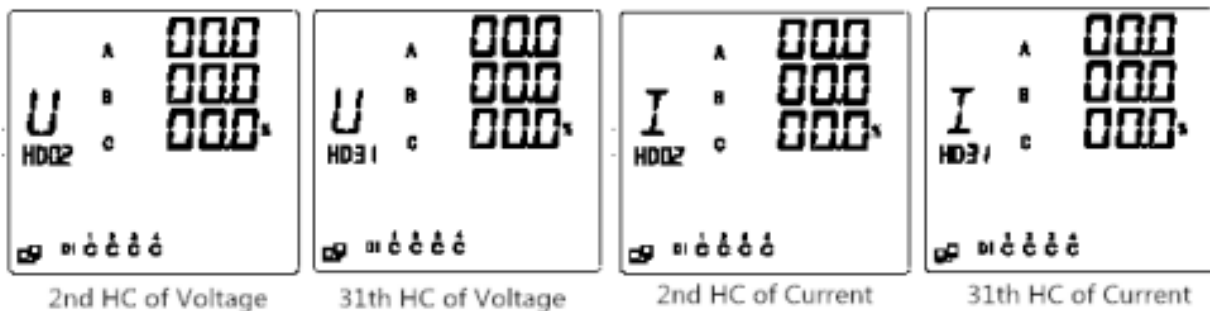
(3) Press button "P", it will display the values of power parameters circularly.



(4) Press button "H", it will display the total harmonic distortion(THD) of voltage or current circularly.



Press “H” or “E”, the meter will display the 2nd~31st HC(harmonic content). The harmonic order will increase from 2nd to 31st by one each time P is pressed. And the harmonic order will decrease by one each time E is pressed. And press “H” or “E” again, it will the parameter display interface of voltage & current.



3.2 Parameters Setting Operation

3.2.1 System Parameter Setting

Press “H” and “V/A” simultaneously at any display interface of metering data, it will enter the system setting interface.

At the setting mode:

The button “H” is used for digital shift. It can edit one digit shift left each time, and the digit will be flashing.

The button “P” is used to plus 1, i.e., the flashing digit will be plus 1 when pressing “P” each time.

If the flashing digit is 9, then press “P” and the digit will become 0.

The button “E” is used to minus 1, i.e., the flashing digit will minus 1 when pressing “E” each time. If the flashing digit is 0, then press “E” and the digit will become 9.

The button “V/A” is used to confirm the setting and turn to the next setting interface.

If press “H” and “V/A” simultaneously at any setting interface, it will quit the setting interface and turn to the display interface of metering data.

Password Inquiry

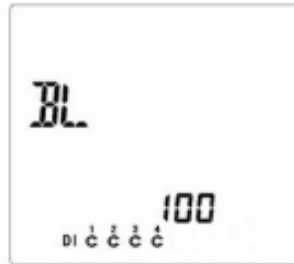
(1) Press “H” and “V/A” simultaneously at any display interface of metering data, it will enter password setting interface. The default password is 0000. If the password is not correct, press button “V/A”, the meter will be still in the password inquiry page, and an alarm icon (⚠) will flash in the lower-left corner. If the password is correct, it will enter the next setting interface.



Password Input Interfaces

(2) Back-light Time Setting

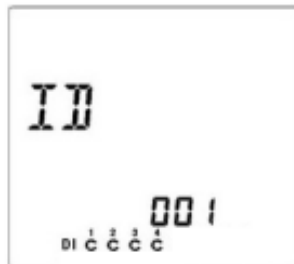
“BL” interface is the page of backlight time setting. At this page, the user can see and set the backlight time, the setting range is 1-999. After the setting, press “V/A” to confirm and enter the next setting interface.



Back-light Time Setting

(3) Meter ID Setting

At this page the user can see and set the address of meter, the range is 1-247, after setting, press “V/A” to confirm and enter the next setting interface.



Meter ID Setting

(4) Communication Parameters Setting

“CM ” interface is used for setting the RS485 communication parameters.

The default communication parameter setting is 9600-n81.

The baud rate can be set as 9600, 4800, 2400.

The communication parameter can be set as "8n1", "8o1", "8e1".

Parity: n (no parity), o (odd parity), e (even parity)

Data bits: 8 Stop bit: 1

After the setting, please press "V/A" to confirm and enter the next setting interface.



Serial Port 0 Setting Interfaces

(5) Voltage Connection Method Setting

"UL" interfaces is the setting interfaces of voltage wiring mode, and we can see the voltage wiring mode of the energy meter in this interfaces

There are 3 kinds of voltage connection methods optional as follows (by pressing button P or E to choose):

3Ln (Three-phase four-wire 3PT connection)

2Ln (Three-phase four-wire 2PT star (Y) connection)

2LL (Three-Phase Three-Line open delta (Δ) connection)

After the setting, please press "V/A" to confirm and enter the next setting interface.



Voltage Wiring Mode

(6) Current Connection Method Setting

"IL" is the current wiring mode setting interfaces, we can see the connection mode of the meter in this interfaces.

There are 3 kinds of voltage connection methods optional as follows (by pressing button P or E to choose):

3C (with 3 CTs)

2C (This mode of connection is used for the balanced three-phase circuits, and it's capable to calculate I_b according to "Kirchhoff's laws". The current input mode of the meter should be set to 2C)

1C (this mode of connection is used for the balanced three-phase circuits, and we only need to measure I_a , $I_a=I_b=I_c$)

After the setting, please press "V/A" to confirm and enter the next setting interface.

7)PT & CT Ratio

The setting range is 1~9999.

It should be noted that the product of PT ratio and CT ratio is less than 300 000.
After the setting, please press "V/A" to confirm and enter the next setting interface.

Setting Example:

If the PT ratio is 10kV/100V, the parameter of PT ratio should be set as 100
(the parameter of PT ratio = $10\ 000 / 100 = 100$).

Note: the set of CT ratio is as the same as the PT ratio.

After the setting, please press "V/A" to confirm and enter the next setting interface.



PT Ratio Setting Interfaces CT Ratio Setting Interfaces

Chapter 4 After-sales Service

Product Warranty

1. The product warranty period is one year.
2. The company is responsible for free maintenance or exchange within one-year warranty period.
3. The cost of the components and freight shall be charged for improper meter installation and/or operation.
4. Over the warranty period, part of the maintenance cost according to actual situation will be charged.

Service Guarantee

1. Product technical consulting and quality complaints will be replied within 12 hours.
2. Solutions for quality complaints will be provided within 24 hours.
3. Except statutory holidays and force majeure.

Chapter 5 Contact Us

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