T280

PM-314 AC Multi-loop Intelligent Power Collection and Monitoring Device

Installation and Operation Manual V1.3

Tecom Co., Ltd.

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1 Overview

The PM-314 AC multi-loop intelligent power collection and monitoring device is mainly used for full electrical parameter measurement of multiple loops and can be connected to up to 4 three-phase loops or 12 single-phase loops with current input at the same time. It can measure voltage and current, power, power factor and other parameters.

2 Product Model Functions

2.1 Meter Model Functions

Table 1 Meter Model Functions

Meter Model	Basic Functions
PM-314	Simultaneous access to 4 three-phase AC circuits, direct measurement of voltage, current, power, power factor, 6 switching inputs (2 active, 4 passive), 2 switching outputs, 1 RS485

2.2 Product Specific Functions

1、Up to 4 three-phase or 12 single-phase circuits with full electrical parameter measurement, external current transformer;

2、Monitor the individual phase voltage/current, zero sequence current, frequency;

3、Monitor the power of each phase, total power (active, reactive, apparent);

4、Monitor the power factor of each phase, total power factor, and four quadrant electrical energy statistics;

5、LCD display with storage of historical power data and historical alarm information:

a.History data is saved once a day at zero time by default, 1000 pieces storage of each data (total active energy, total active power, three-phase current).

b.The on-site storage interval for historical data is 15 minutes. 5000 pieces of each data (total active electric energy, total active power, three-phase current) stored in each circuit.

c.Monthly historical electricity data on meter reading days, with a storage quantity of 24 pieces.

d.Historical alarm information is stored in real-time, with a storage capacity of 500 pieces.

6、Support alarm outputs such as overvoltage, overcurrent, phase failure, DI linkage, etc;

7、Four passive switching inputs, two active switching inputs, and two switching outputs;

8、Standard configuration with one RS485 communication channel, Modbus-RTU protocol.

3 Mating Transformers

The current transformer has a crystal head interface, the primary side current is 50A-600A, if the current transformer is different, users can modify the current ratio through the meter interface or communication according to the actual use. Transformer as shown in Figure 1, Figure 2; supporting current transformer as shown in Table 2.

Figure 1

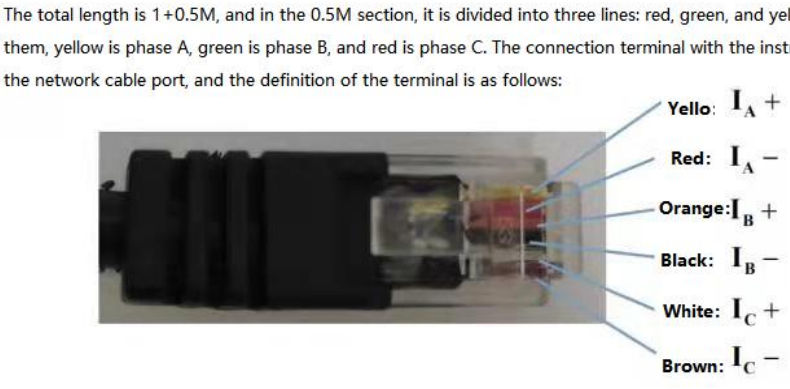


Figure 2

Table 2 PM-314 mating current transformers

Type	Ratio	Wire length	Accuracy	Installation method
AKH-0.66/W-9NY 50A/20mA	50A/20mA	（1+0.2）m	0.2 Class	Closed type, RJ interface
AKH-0.66/K-Φ10N 50A/20mA	50A/20mA	（1+0.2）m	0.5 Class	Split type, RJ interface
AKH-0.66 Z-3/*Φ15Y(1/0.5) 100A/50mA	100A/50mA	（1+0.5）m	0.2 Class	Closed type, trinity, RJ interface
AKH-0.66/W-12NY 100A/50mA	100A/50mA	（1+0.2）m	0.2 Class	Closed type, RJ interface
AKH-0.66/K-Φ16N 100A/50mA	100A/50mA	（1+0.2）m	0.5 Class	Split type, RJ interface
AKH-0.66/W-20Y 200A/50mA	200A/50mA	（1+0.5）m	0.2 Class	Closed type, RJ interface
AKH-0.66/K-Φ24N 200A/50mA	200A/50mA	（1+0.5）m	0.5 Class	Split type, RJ interface
AKH-0.66/W-20Y(1/0.5) 250A/50mA	250A/50mA	（1+0.5）m	0.2 Class	Closed type, RJ interface
AKH-0.66/W-30NY 250A/50mA	250A/50mA	（1+0.5）m	0.2 Class	Closed type, RJ interface
AKH-0.66/K-Φ24N 250A/50mA	250A/50mA	（1+0.5）m	0.5 Class	Split type, RJ interface
AKH-0.66-TD-Φ60-NY	400A/50mA	（1+0.5）m	0.2 Class	Closed type, RJ interface
AKH-0.66/K-Φ36N 400A/50mA	400A/50mA	（1+0.5）m	0.5 Class	Split type, RJ interface
AKH-0.66-TD-Φ60-NY	600A/50mA	（1+0.5）m	0.2 Class	Closed type, RJ interface
AKH-0.66/K-Φ36N 600A/50mA	600A/50mA	（1+0.5）m	0.5 Class	Split type, RJ interface

Note: Special transformers can be specifically consulted and contacted.

4 Technical Parameter

Table 3 Technical Parameter

Technical Parameter		Indicators
Input	Frequency	45～65Hz;
	Voltage	Rated value: AC 3×220V/380V；
		Overload: 1.2 times the rated value (continuous); 2 times the rated value/1 second;
		Power consumption: ≤ 0.5VA (per circuit);
	Current	Rated value: AC 20mA / 50mA
		Overload: 1.2 times the rated value (continuous); 10 times rated value/1 second;
		Power consumption: ≤ 0.5VA (per circuit);

Function	Communication		Modbus RTU protocol ; Baud 1200~38400
	Switch-ing	input	4 dry contact inputs, 2 active (AC 220V input)
		output	Output method: relay normally open contact output; Contact capacity: AC 250V/3A DC 30V/3A；
Measurement accuracy			Frequency 0.05Hz, voltage and current level 0.5, active energy level 1
Auxiliary power supply			AC/DC 85 to 265V; power consumption ≤ 10VA;
Security	power-frequency withstand voltage		>AC 2kV/1min;
	insulation resistance		Input and output terminals to casing>100M Ω;
Environment			Working temperature:-20℃～+60℃； Storage temperature:-40℃～+70℃； Relative humidity:≤ 95% without condensation; Altitude: ≤ 2500m;
Electromagnetic compatibility			Surge (impact) immunity test level 4;
			Electrostatic discharge immunity test level 3
			Electrical fast transient pulse group immunity test level 3

5 Outline dimensions and Installation Instructions

5.1 Shape and Installation Opening Dimensions (unit: mm)

Table 4 Meter Size

Type	Frame size		Shell size			Opening size	
	Width	Height	Width	Height	Depth	Width	Height
PM-314	96	96	86.5	86.5	77.8	88	88

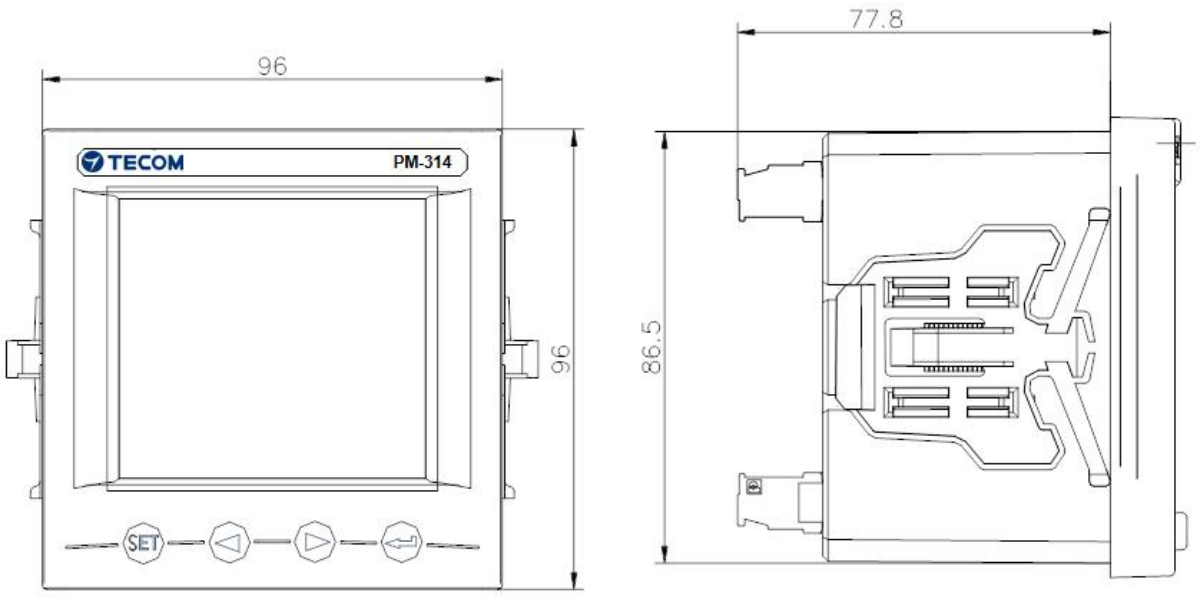


Figure 3 PM-314 Shape and Dimension

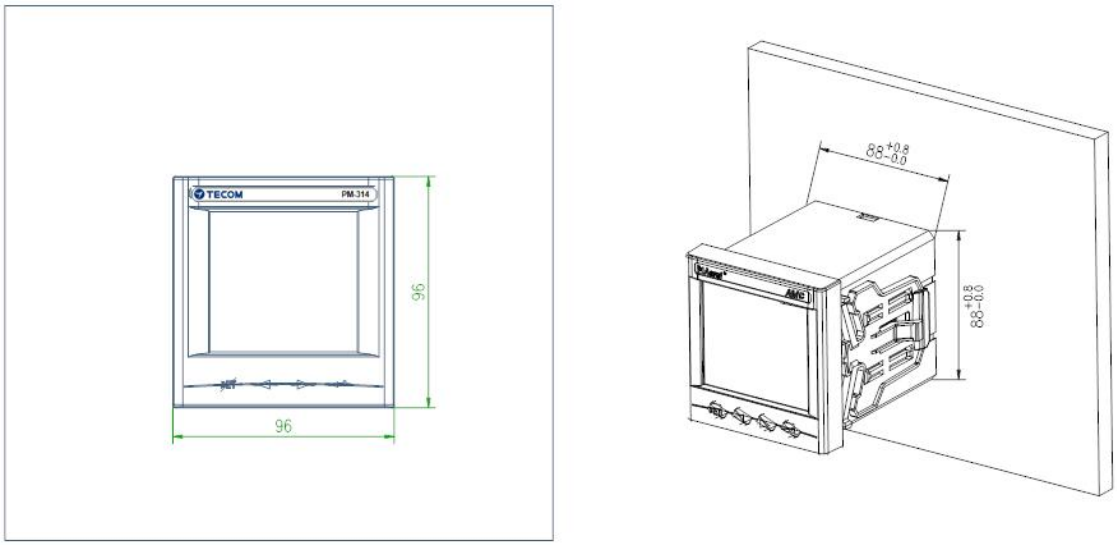


Figure 4 PM-314 Installation Size

5.2 Installation Method

1）Opening holes in fixed distribution cabinets;

2）Take out the instrument and remove the clip;

3）Install the meter into the installation hole from the front, as shown in Figure 5;

4）Insert the meter clip to secure the meter, as shown in Figure 6.

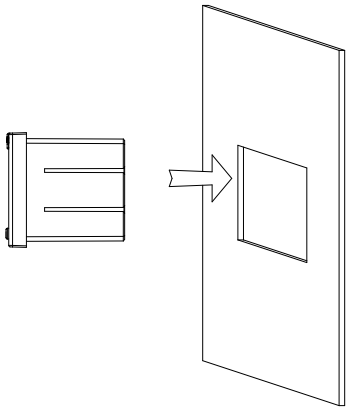


Figure 5

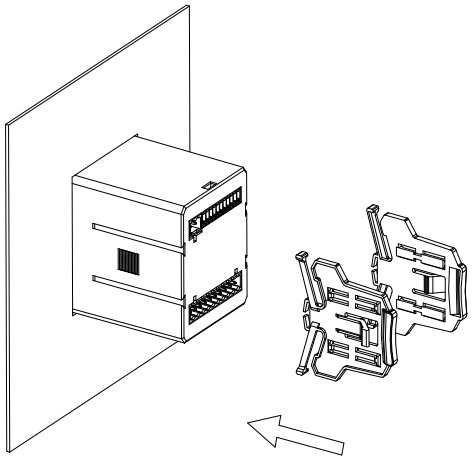


Figure 6

5.3 Wiring Instructions

The wiring terminals are shown in the following figure

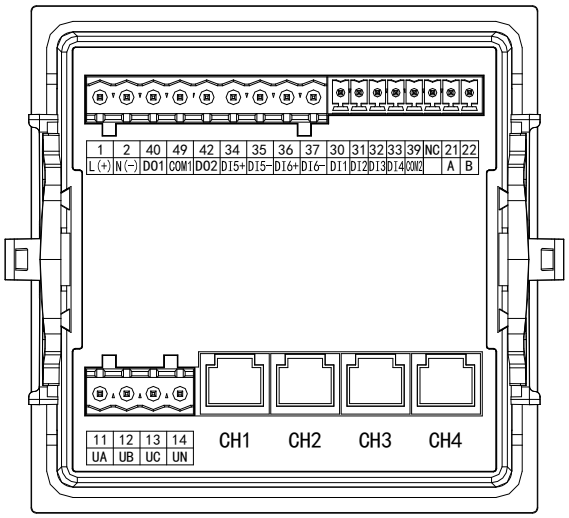


Figure 7 PM-314 wiring terminal diagram

Table 5 Terminal Description

Terminal number	Definition	Description	Remark
1	L(+)	Auxiliary power supply	AC/DC 85-265V
2	N(-)		
11	UA	Voltage input	AC 3*220V/380V
12	UB		
13	UC		
14	UN		
21	A	Communication	RS485 communication
22	B		
34	DI5+	**Active switching input**	**Two AC 220V mains or oil engine signal connections**
35	DI5-		
36	DI6+		
37	DI6-		
30	DI1	Switching input	Passive dry contact input
31	DI2		
32	DI3		
33	DI4		
39	COM2		
40	DO1	Relay output	Normally open contact output; Contact capacity: AC 250V/3A DC 30V/3A;
42	DO2		
49	COM1		
	CH1-CH4	Number of current circuits	CHx represents a three-phase current circuit, PM-314 connected to a maximum of four three-phase circuits

Wiring method (the diagram below shows the PM-314 as an example)

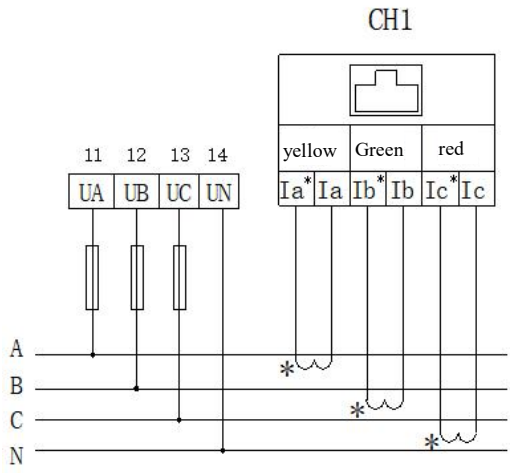


Figure 9 Direct connection of three-phase four wire voltage and current

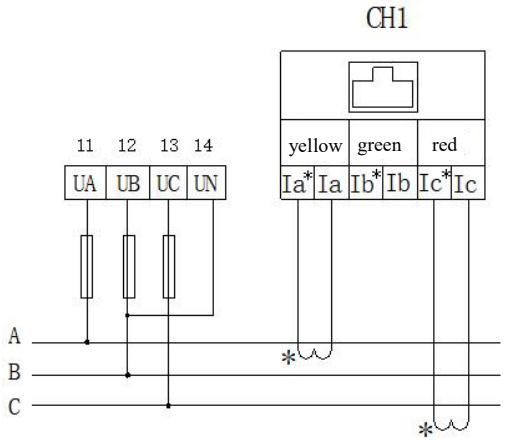


Figure 10 Direct connection of three-phase three wire voltage and current

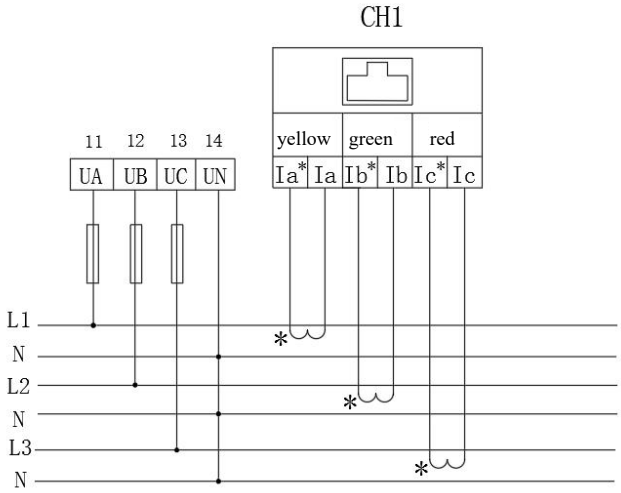


Figure 11 Direct connection of single phase voltage and current

Note: 1. Wiring method of CH2, CH3, CH4 refers to CH1;

2. When using single-phase dual wire, select 3P4L.

6 Operation Instructions

6.1 Panel and Key Function Instructions

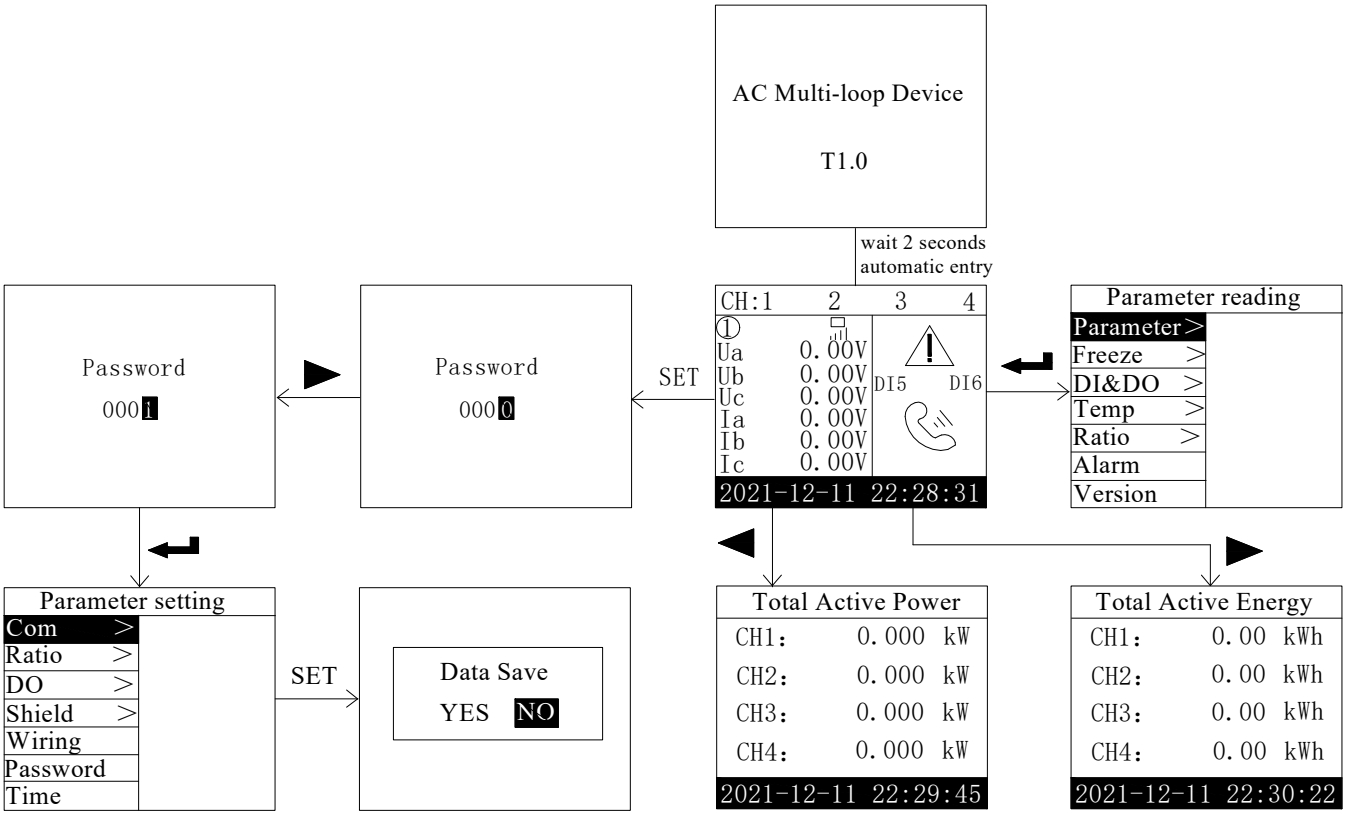
Panel diagram

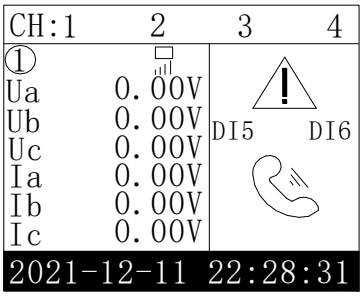
SET Key(SET)	In measurement mode, press this key to enter parameter setting mode. The instrument prompts for the password PASS. After entering the correct password (0001), parameter settings can be performed on the instrument; In parameter mode, pressing this key to save or not to save data can be used to return to the previous menu level;
Left click(◀)	In measurement mode, used to switch display items; In parameter setting mode, used for menu item selection and parameter digit switching selection
Right click(▶)	In measurement mode, used to switch display items; In parameter setting mode, it is used for selecting menu items and increasing the numerical values of each digit.
Enter key(↵)	In measurement mode, used for parameter viewing; In parameter setting mode, used for confirmation of menu item selection and parameter modification.

Note: The circuit has 4 channels (CH1-CH4). The following 6.2 to 6.4 instructions take the instrument of 4E3 as an example.

6.2 Power-up Operation And Display Instruction

After powering on, the startup interface displays as an AC Multi-loop Device; After waiting for 2s in the power-on interface, it will automatically enter the basic parameter display interface of the circuit: (1) Press SET to enter the password interface, press the right key to enter the password "0001", press Enter key to enter the parameter setting interface (the parameter setting options will be specifically described in 6.4), press SET to enter the data saving interface, and you can switch the cursor to choose whether to save or not with the Left and Right keys; (2) Press the Left key to enter the parameter display interface of total active power; (3) Press the Right key to enter the parameter display interface of total active energy; (4) Press Enter key to enter the Parameter reading screen (the Parameter reading options will be specified in 6.3). The operation flowchart is shown in the following figure.





CH1-CH4：4 circuits

（CH1：When displayed as white text on a black background,it indicates power display)

①：First circuit

▭：Platform connection(only available when the model is 4G or NB)

ıılı：Signal value(only available when the model is 4G or NB)

⚠：Alarm

DI5、DI6:Active input

（DI5：When displayed as white text on a black background,it indicates that active input has a signal）

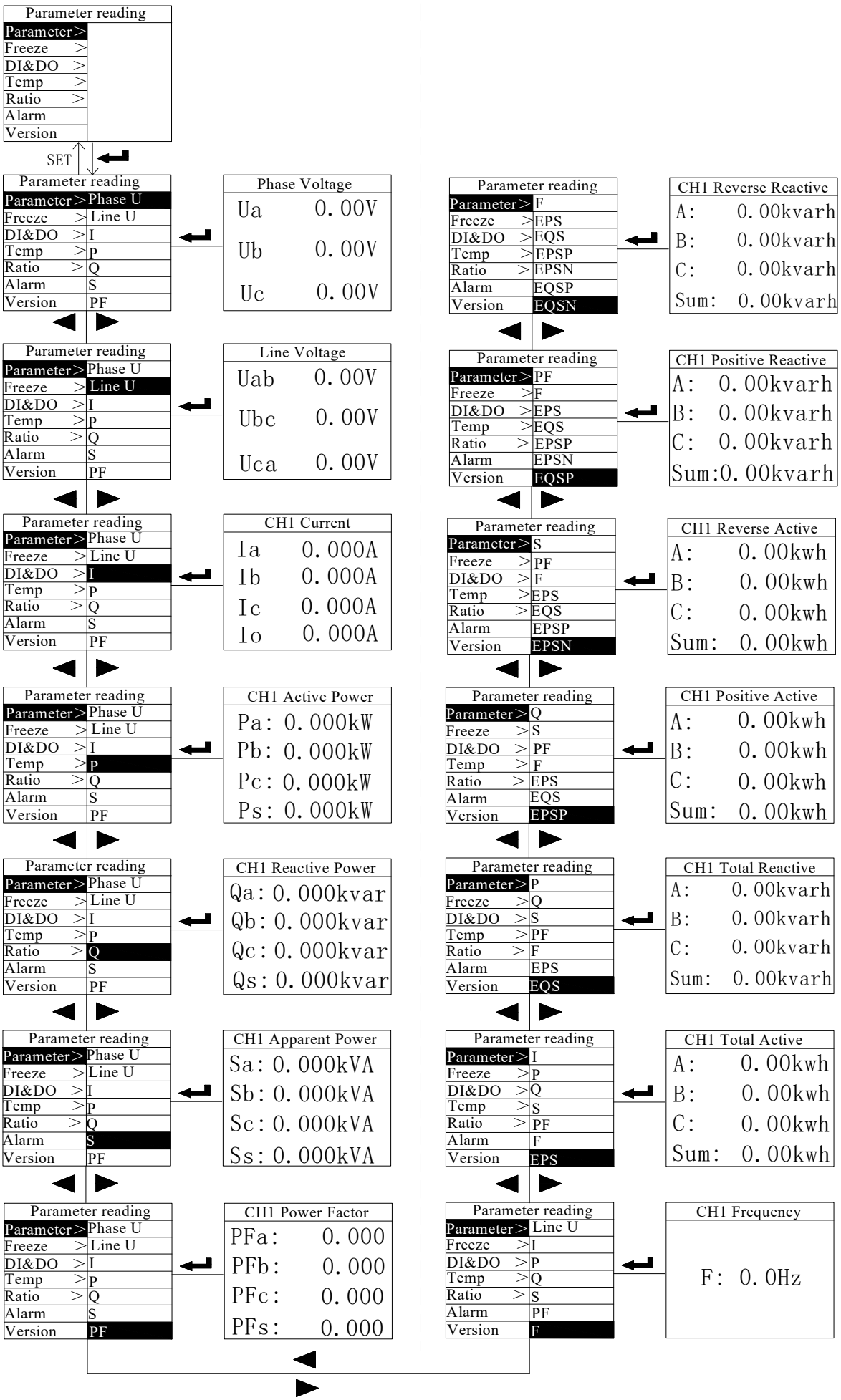
：RS485 communication

Note: 4G and NB functions are not available for PM-314.

6.3 Parameter reading interface Instruction

6.3.1 Parameter Instruction

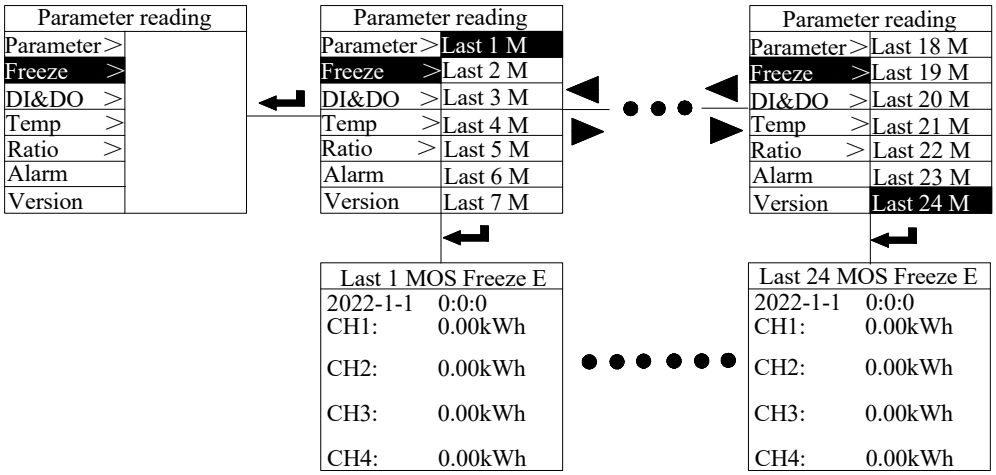
Enter the main interface, and the cursor is on the parameter by default. Press the Enter key to enter the parameter interface to view information; The electric parameter column contains phase voltage, line voltage, current, active power, reactive power, apparent power, power factor, frequency, total active, total reactive, positive active, reverse active, positive reactive, reverse reactive (users can view the specific information of each parameter through the Enter key and the Left and Right keys, and the default display is the first circuit).


Parameter reading
Parameter >
Freeze >
DI&DO >
Temp >
Ratio >
Alarm
Version
SET
Parameter reading
Parameter > Phase U
Freeze > Line U
DI&DO > I
Temp > P
Ratio > Q
Alarm S
Version PF
Phase Voltage
Ua 0.00V
Ub 0.00V
Uc 0.00V
Parameter reading
Parameter > Phase U
Freeze > Line U
DI&DO > I
Temp > P
Ratio > Q
Alarm S
Version PF
Line Voltage
Uab 0.00V
Ubc 0.00V
Uca 0.00V
Parameter reading
Parameter > Phase U
Freeze > Line U
DI&DO > I
Temp > P
Ratio > Q
Alarm S
Version PF
CH1 Current
Ia 0.000A
Ib 0.000A
Ic 0.000A
Io 0.000A
Parameter reading
Parameter > Phase U
Freeze > Line U
DI&DO > I
Temp > P
Ratio > Q
Alarm S
Version PF
CH1 Active Power
Pa: 0.000kW
Pb: 0.000kW
Pc: 0.000kW
Ps: 0.000kW
Parameter reading
Parameter > Phase U
Freeze > Line U
DI&DO > I
Temp > P
Ratio > Q
Alarm S
Version PF
CH1 Reactive Power
Qa: 0.000kvar
Qb: 0.000kvar
Qc: 0.000kvar
Qs: 0.000kvar
Parameter reading
Parameter > Phase U
Freeze > Line U
DI&DO > I
Temp > P
Ratio > Q
Alarm S
Version PF
CH1 Apparent Power
Sa: 0.000kVA
Sb: 0.000kVA
Sc: 0.000kVA
Ss: 0.000kVA
Parameter reading
Parameter > Phase U
Freeze > Line U
DI&DO > I
Temp > P
Ratio > Q
Alarm S
Version PF
CH1 Power Factor
PFa: 0.000
PFb: 0.000
PFc: 0.000
PFs: 0.000
Parameter reading
Parameter > F
Freeze > EPS
DI&DO > EQS
Temp > EPSP
Ratio > EPSN
Alarm EQSP
Version EQSN
CH1 Reverse Reactive
A: 0.00kvarh
B: 0.00kvarh
C: 0.00kvarh
Sum: 0.00kvarh
Parameter reading
Parameter > PF
Freeze > F
DI&DO > EPS
Temp > EQS
Ratio > EPSP
Alarm EPSN
Version EQSP
CH1 Positive Reactive
A: 0.00kvarh
B: 0.00kvarh
C: 0.00kvarh
Sum:0.00kvarh
Parameter reading
Parameter > S
Freeze > PF
DI&DO > F
Temp > EPS
Ratio > EQS
Alarm EPSP
Version EPSN
CH1 Reverse Active
A: 0.00kwh
B: 0.00kwh
C: 0.00kwh
Sum: 0.00kwh
Parameter reading
Parameter > Q
Freeze > S
DI&DO > PF
Temp > F
Ratio > EPS
Alarm EQS
Version EPSP
CH1 Positive Active
A: 0.00kwh
B: 0.00kwh
C: 0.00kwh
Sum: 0.00kwh
Parameter reading
Parameter > P
Freeze > Q
DI&DO > S
Temp > PF
Ratio > F
Alarm EPS
Version EQS
CH1 Total Reactive
A: 0.00kvarh
B: 0.00kvarh
C: 0.00kvarh
Sum: 0.00kvarh
Parameter reading
Parameter > I
Freeze > P
DI&DO > Q
Temp > S
Ratio > PF
Alarm F
Version EPS
CH1 Total Active
A: 0.00kwh
B: 0.00kwh
C: 0.00kwh
Sum: 0.00kwh
Parameter reading
Parameter > Line U
Freeze > I
DI&DO > P
Temp > Q
Ratio > S
Alarm PF
Version F
CH1 Frequency
F: 0.0Hz

Note: Temperature and Pulse functions are not available for PM-314.

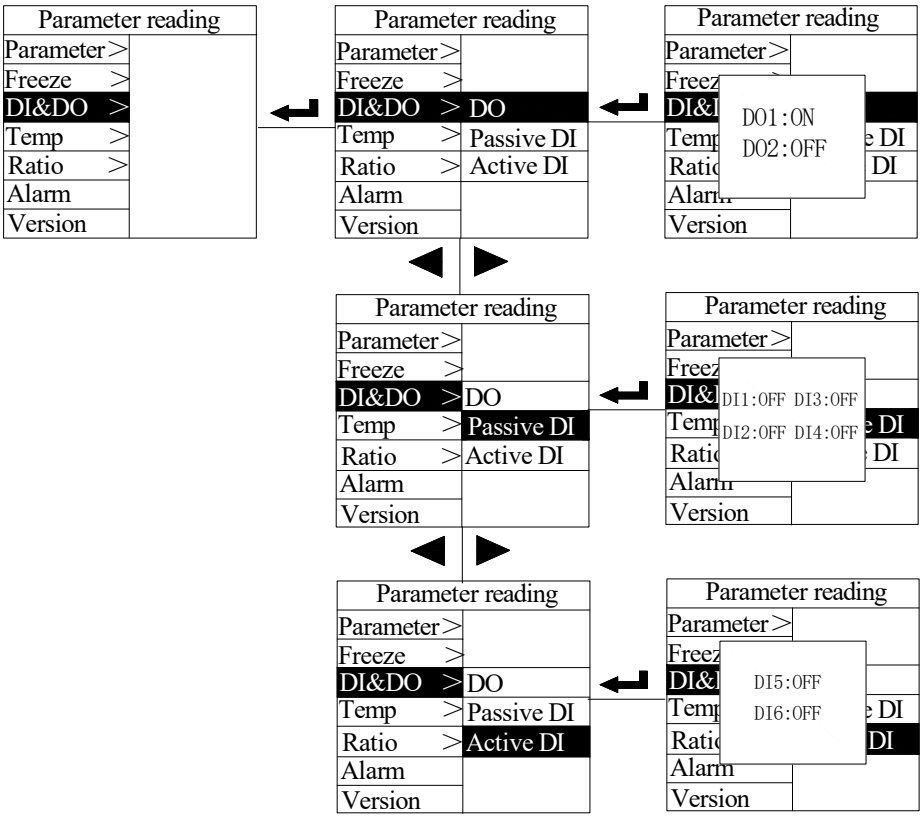
6.3.2 Freeze Instruction

Press the Left or Right key to move the cursor to the freeze interface, press the Enter key to enter the freeze interface to see the classification of the last January to the last 24 months, and press the Enter key to view the MOS freeze E records of each month. If there are records, the interface will display the records of the first to fourth circuits; If there are no records, the interface displays as No Records.



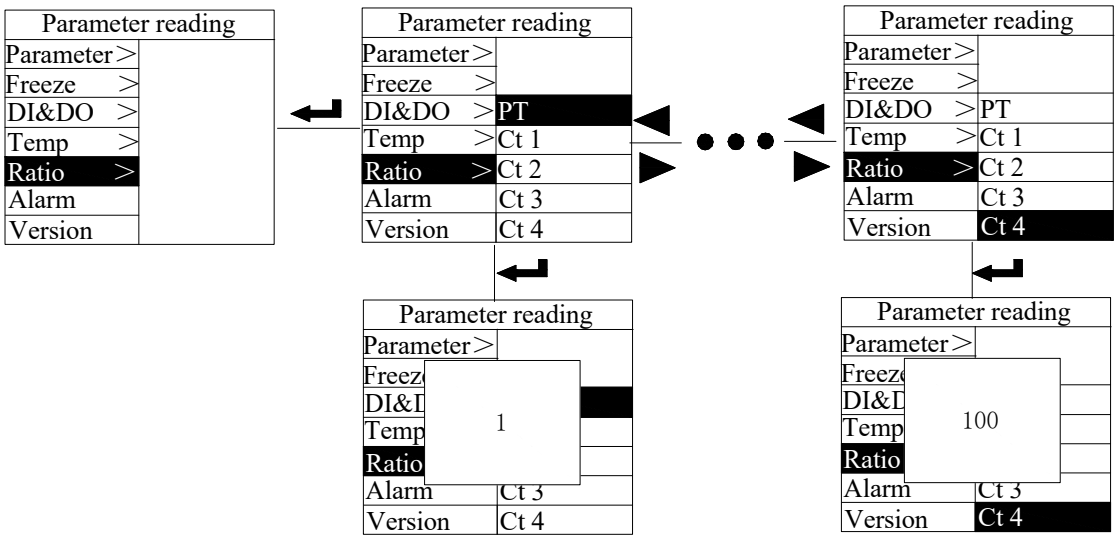
6.3.3 DI&DO Instruction

Press the Left or Right key, and the cursor will move to the DI&DO interface. Press the Enter key to see three categories: DO, passive DI, and active DI. Press the Left or Right key and the Enter key to see a pop-up window, which records the data of the DO1-DO2, DI1-DI4 and DI5-DI6.



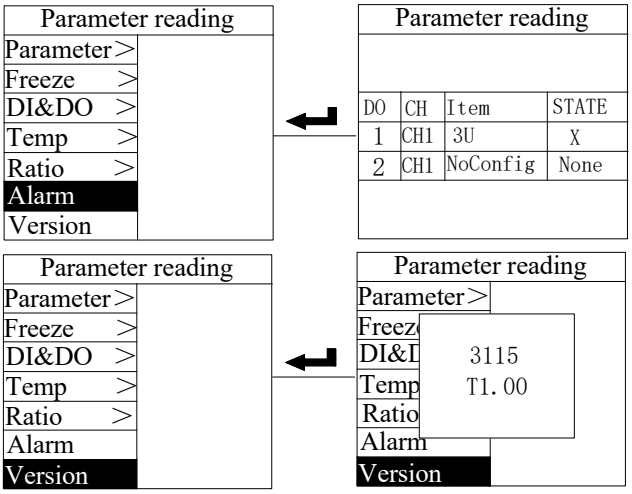
6.3.4 Ratio Instruction

Press the Left or Right key to move the cursor to the transformation ratio interface. Press the Enter key to see the five classifications: PT, CT1-CT4. Press the Enter key again to view the transformation ratios of each circuit. The default value is "1".



6.3.5 Alarm and Version Instruction

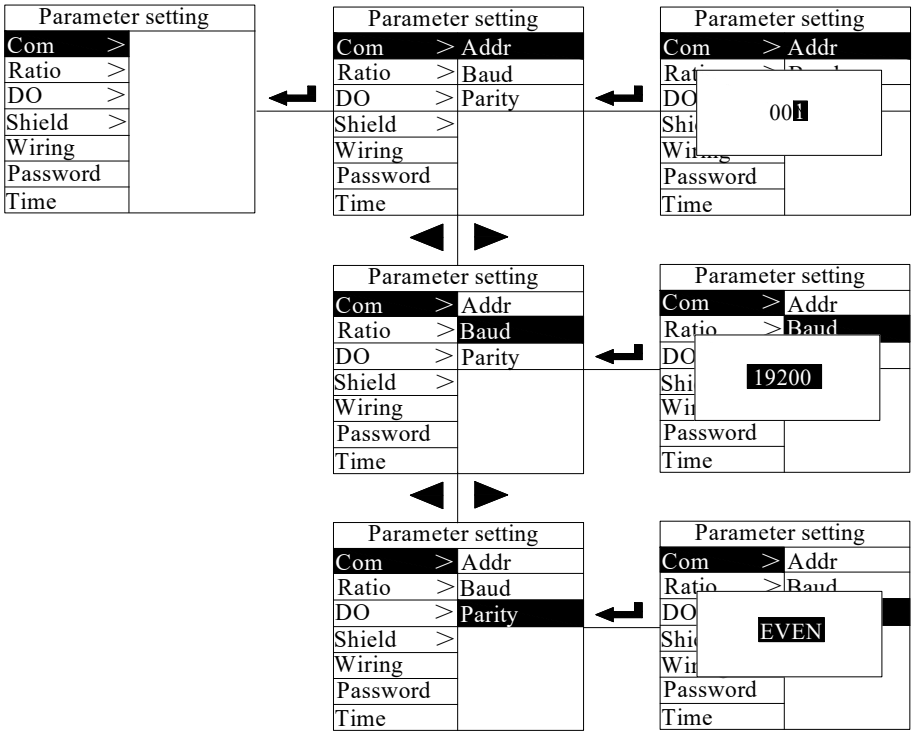
Press the Left or Right key to move the cursor to the alarm interface.Then Press the Enter key to directly view the alarm information.Press the Left or Right key to move the cursor to the version interface.Then Press the Enter key to view the program number and version number information directly.



6.4 Parameter Setting Instruction

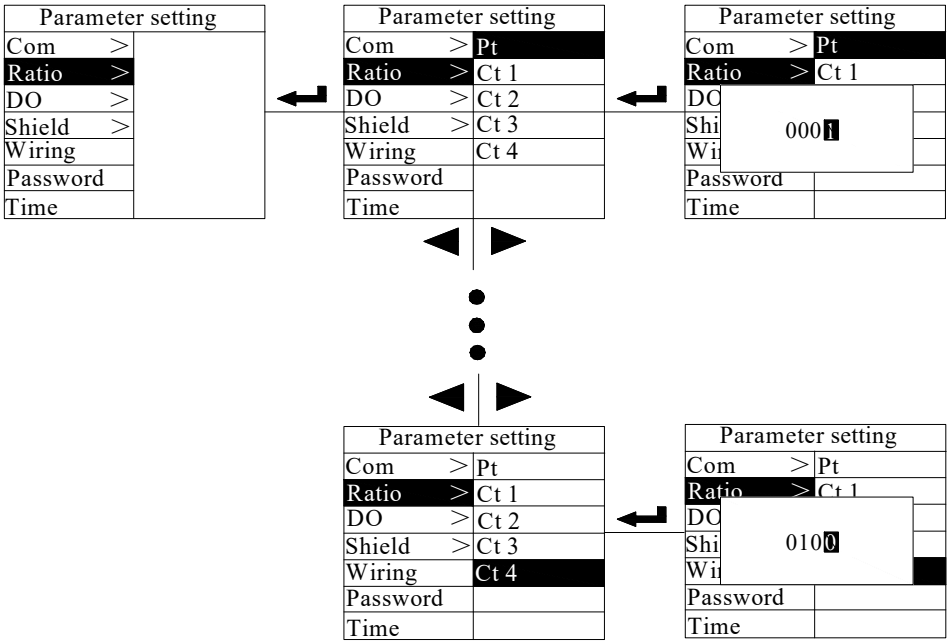
6.4.1 Communication Parameter Setting

Enter the parameter setting interface, the cursor stops at the communication setting by default, press the Enter key to see three types of address, baud and parity, and press the Enter key again to pop up various parameter interfaces that can be set; Press the Left and Right keys to switch the settings of address, baud and parity. The address can be set to 1-247; baud can be set to 1200, 2400, 4800, 9600, 19200, 38400; The parity can be set to EVEN (even parity), ODD (odd parity), or NONE (no parity).



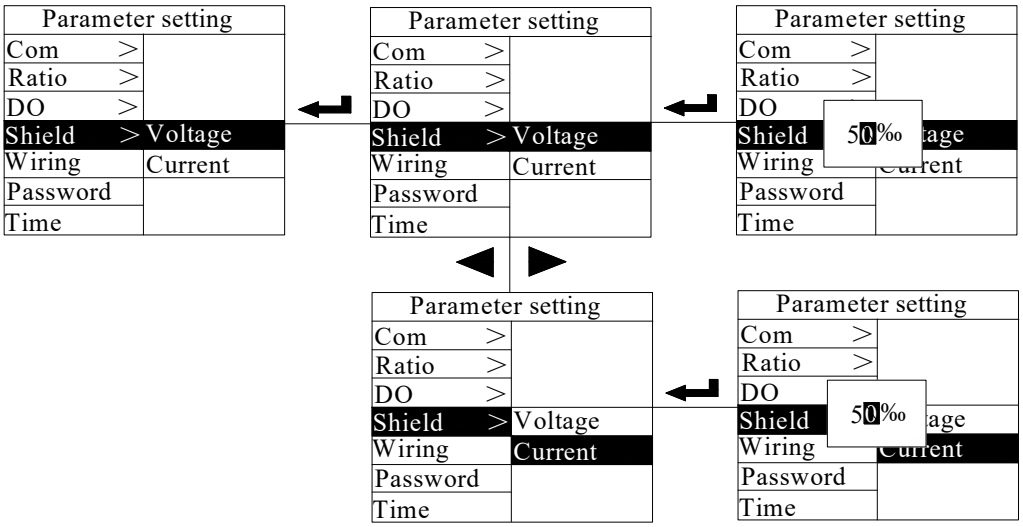
6.4.2 Ratio Parameter Setting

Press the Left or Right key to move the cursor to the ratio setting. Press the Enter key to view five types of ratio: Pt,Ct1-Ct4. Press the Enter key again to pop up various parameters that can be set. The default Pt ratio is 1, representing a phase voltage of AC 200V and a line voltage of AC 380V; The current ratio can be set according to the primary current method, for example, the transformer specification is 200A/50mA, the current transformation ratio is set to 200, the transformer specification is 50A/20mA, and the current transformation ratio is set to 125.



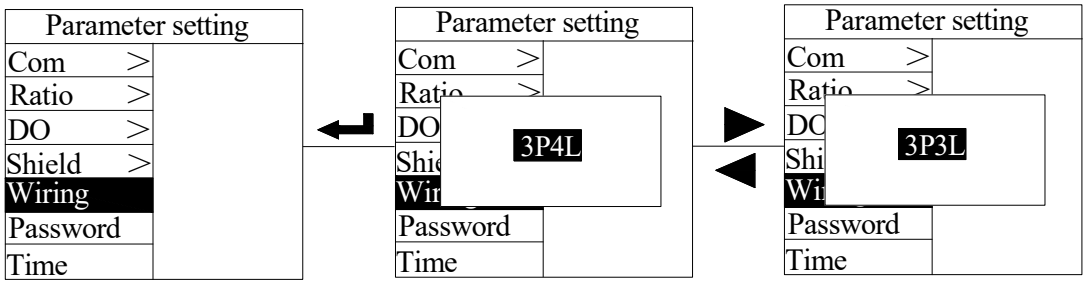
6.4.3 Shield Parameter Setting

Press the Left or Right key to move the cursor to the zero shield, press the Enter key to see the voltage and current, and then press the Enter key to set the voltage and current shield value to 50 ‰ by default.



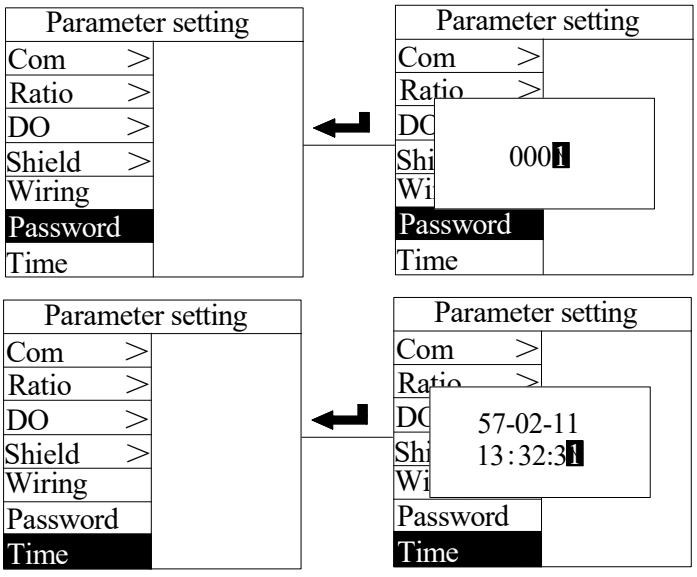
6.4.4 Wiring Method Setting

Press the Left or Right key to move the cursor to the wiring mode, press the Enter key to pop up the mode window that can be set, press the Left and Right key to switch the settings of 3P4L (three-phase four wire) and 3P3L (three-phase three wire) wiring modes.



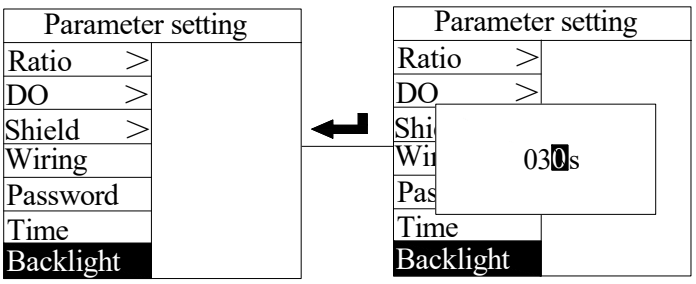
6.4.5 Password and Time Setting

Press the Left or Right key to move the cursor to the password setting or time setting. Press the Enter key to enter the password setting or time setting interface. The password can be set as 1-9999. The time can be set by using the Left and Right keys to set the year, month, day, hour, minute and second.



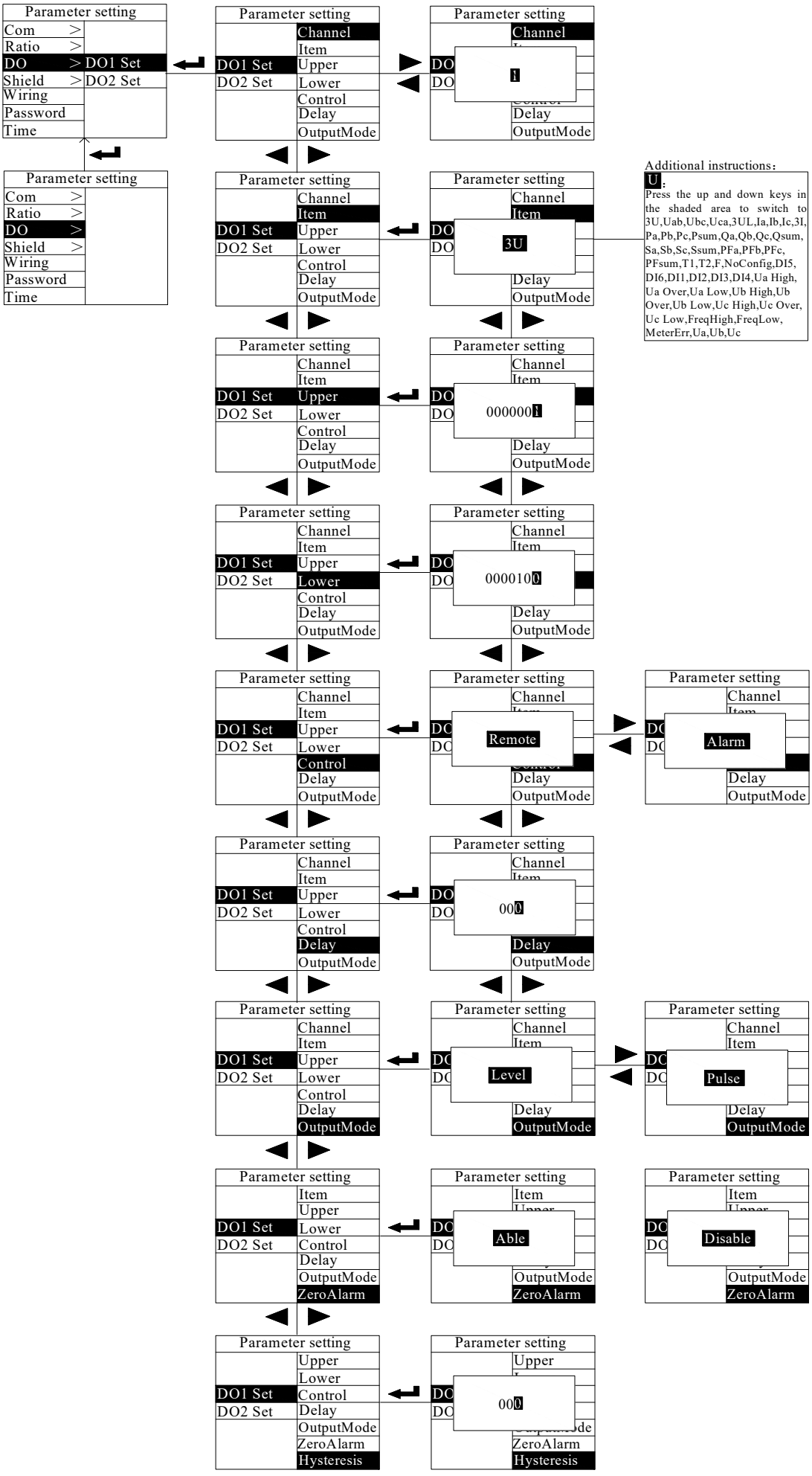
6.4.6 Backlight Time Setting

Press the Left or Right key to move the cursor to the backlight time. Press the Enter key to enter the backlight time setting interface. The backlight time can be set to 0-300s, and "0" means it is always on.



6.4.7 DO Parameter Setting

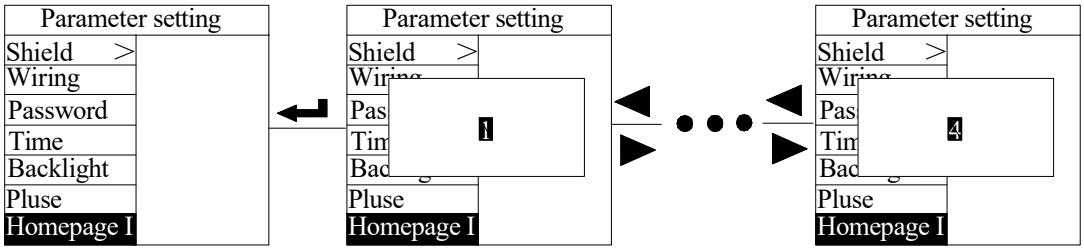
Press the Left or Right key to move the cursor to DO setting.Press the Enter button to see the DO1 set, DO2 set, press the Enter button to see nine types of alarm channel,alarm item,alarm upper limit,alarm lower limit,control,alarm delay, output mode, zero alarm enable, alarm hysteresis. Press the Enter key to pop up all kinds of settable parameters. The settable parameters of DO1 and D02 are the same. The mode can be set to remote control and alarm; The output can be set to two types: level (0 or 1) and pulse ; Delay can be set to 1-999; The initial setting of the alarm is not configured, and other settable contents are supplemented and explained in the following figure.


Parameter setting
Com
Ratio
DO
Shield
Wiring
Password
Time
DO1 Set
DO2 Set
Channel
Item
Upper
Lower
Control
Delay
OutputMode
1
3U
000000
0000100
Remote
Alarm
000
Level
Pulse
Able
Disable
Hysteresis
Additional instructions:
U:
Press the up and down keys in the shaded area to switch to 3U,Uab,Ubc,Uca,3UL,Ia,Ib,Ic,3I, Pa,Pb,Pc,Psum,Qa,Qb,Qc,Qsum, Sa,Sb,Sc,Ssum,PFa,PFb,PFc, PFsum,T1,T2,F,NoConfig,DI5, DI6,DI1,DI2,DI3,DI4,Ua High, Ua Over,Ua Low,Ub High,Ub Over,Ub Low,Uc High,Uc Over, Uc Low,FreqHigh,FreqLow, MeterErr,Ua,Ub,Uc

Note: T1 and T2 alarm function is not available for PM-314.

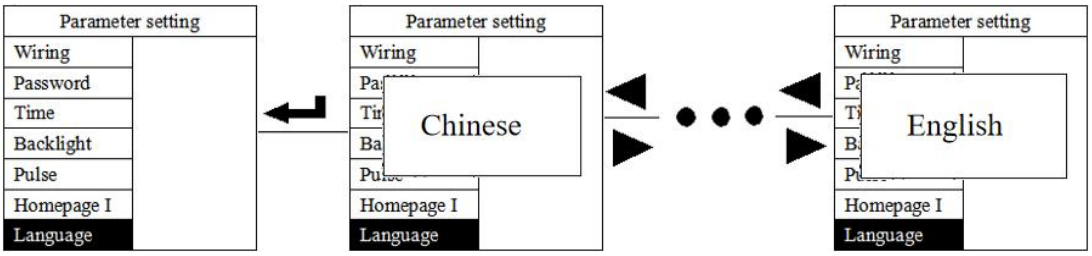
6.4.8 Home Page Current Setting

Press the Left or Right key to move the cursor to the homepage I, and press the Enter key to enter the current setting interface, which can be set as 1-4.



6.4.9 Language Setting

Press the Left or Right key to move the cursor to the language, and press the Enter key to enter the language setting interface, which can be set as Chinese or English.



7 Communication Instructions

Communication Address

Add	Decimal	Content	Data type	Bytes	Read/ write	Unit	Remark
0	0	Address	uint16_t	2	R/W		1-247
1	1	Baud rate	uint16_t	2	R/W		0：1200；1：2400； 2：4800； 3：9600； 4：19200；5：38400；
2	2	check bit	uint16_t	2	R/W		0: No parity 1: Odd parity 2: Even parity
3	3	Meter type	uint16_t	2	R/W		0：PM-314
4	4	Wiring Method	uint16_t	2	R/W		0：3P4L 1：reserve 2：3P3L
5	5	Number of circuit	uint16_t	2	R		4：4 circuits
6	6	On site storage time interval	uint16_t	2	R	minute	Default: 15 minutes
7	7	Meter time	uint16_t	2	R/W		Hex for example：0x00 0x15 ->0x00 Abandon year of 21
8	8		uint16_t	2	R/W		Hex for example：0x01 0x03-> Jan. 3rd
9	9		uint16_t	2	R/W		Hex for example：0x03 0x15->0x03 Abandon 21 o’clock

A	10		uint16_t	2	R/W		Hex for example：0x01 0x03 -> 1min 3sec
B	11	Protocol	uint16_t	2	R/W		0：Modbus
C	12	Page Countdown	uint16_t	2	R/W	second	Default：180 sec Max 65536 sec
D	13	Voltage zero shielding value	uint16_t	2	R/W		Default: 50 represents 50 per thousand. The range is from 3 to 99 per thousand
E	14	Current zero shielding value	uint16_t	2	R/W		Default: 50 represents 50 per thousand. The range is from 3 to 99 per thousand
F	15	Home page current display	uint16_t	2	R/W		1:Display the first current on the homepage
10	16	DO1 Alarm upper limit value	uint32_t	2	R/W		DO1 Alarm upper limit value >0
11	17						
12	18	DO1 Alarm lower limit value	uint32_t	2	R/W		DO1 Alarm lower limit value ≥0
13	19						
14	20	System Password	uint16_t	2	R/W		1-9999
15	21	Meter reading day	uint16_t	2	R/W		Hex for example：0x15 0x02 -> 21^{date} 02h
16	22	Meter number	uint32_t	2	R/W		
17	23						
18	24	DO2 Alarm upper limit value	uint32_t	2	R/W		DO2 Alarm upper limit value >0
19	25						
1A	26	DO2 Alarm lower limit value	uint32_t	2	R/W		DO2 Alarm lower limit value ≥0
1B	27						
1C	28	Backlight time	uint16_t	2	R/W	second	30 seconds by default, the range is (0-300)
1F	31	Rated voltage	uint16_t	2	R	V	Default：220V
20	32	Rated current	uint16_t	2	R	A	Default：100A
21	33	Rated frequency	uint16_t	2	R	Hz	Default：50Hz
22	34	DI1-6 state	uint16_t	2	R		1: on 0：off bit0:DI5 ;bit1:DI6 bit2:DI1 bit3:DI2 ;bit4:DI3 bit5:DI4
23	35	DO1-2 state	uint16_t	2	R		1: on 0：off bit0:DO1 ;bit8:DO2
24	36	DO1-2 control	uint16_t	2	W		1: on 0：off bit0:DO1 ;bit8:DO2
25	37	DO1_TOWER configuration	uint32_t	4	R/W		(Priority bit0 is the highest) Bit0: DI5; Bit1: DI6; Bit2: DI1; Bit3: DI2; Bit4: DI3; Bit5: DI4 Bit6: Ua voltage too high; Bit7: Ua voltage too high bit8: Ua voltage too low

26	38						Bit9: Ub voltage too high; Bit10: Ub voltage too high bit11: Ub voltage too low Bit12: Uc voltage too high; Bit13: Uc voltage too high bit14: Uc voltage too low Bit15: Frequency too high; Bit16: Low frequency bit17: Intelligent meter failure Bit18: reserved; Bit19: output (0: pulse 1: level); Bit20: Remote control or alarm mode selection (0: Remote control 1: Alarm) bit21 bit30: Pulse width (s)
27	39	DO2_TOWER configuration	uint32_t	4	R/W		(Priority bit0 is the highest) Bit0: DI5; Bit1: DI6; Bit2: DI1; Bit3: DI2; Bit4: DI3; Bit5: DI4 Bit6: Ua voltage too high; Bit7: Ua voltage too high bit8: Ua voltage too low Bit9: Ub voltage too high; Bit10: Ub voltage too high bit11: Ub voltage too low Bit12: Uc voltage too high; Bit13: Uc voltage too high bit14: Uc voltage too low Bit15: Frequency too high; Bit16: Low frequency bit17: Intelligent meter failure Bit18: reserved; Bit19: output (0: pulse 1: level); Bit20: Remote control or alarm mode selection (0: Remote control 1: Alarm) bit21 bit30: Pulse width (s)
28	40						
29	41	PT ratio	uint16_t	2	R/W		
2A	42	CT1	uint16_t	2	R/W		
2B	43	CT2	uint16_t	2	R/W		
2C	44	CT3	uint16_t	2	R/W		
2D	45	CT4	uint16_t	2	R/W		
2E	46	CT5	uint16_t	2	R/W		
2F	47	CT6	uint16_t	2	R/W		
30	48	CT7	uint16_t	2	R/W		Note: other type configuration
31	49	CT8	uint16_t	2	R/W		Note: other type configuration

Circuit 1-2 telemetry data：

Add	Decimal	Content		Data type	Bytes	Read/write	Unit	Remark
6A	106	1st Circuit	AB line AC voltage Uab	float	4	R	V	
6B	107							
6C	108		BC line AC voltage Ubc	float	4	R	V	
6D	109							
6E	110		CA line AC voltage Uca	float	4	R	V	
6F	111							
70	112		A-phase AC voltage Ua	float	4	R	V	

71	113							
72	114		B-phase AC voltage Ub	float	4	R	V	
73	115							
74	116		C-phase AC voltage Uc	float	4	R	V	
75	117							
76	118		A-phase AC current Ia	float	4	R	A	
77	119							
78	120		B-phase AC current Ib	float	4	R	A	
79	121							
7A	122		C-phase AC current Ic	float	4	R	A	
7B	123							
7C	124		Zero sequence current Io	float	4	R	A	
7D	125							
7E	126		Total power factor PF	float	4	R		
7F	127							
80	128		A-phase power factor PFa	float	4	R		
81	129							
82	130		B-phase power factor PFb	float	4	R		
83	131							
84	132		C-phase power factor PFc	float	4	R		
85	133							
86	134		Frequency F	float	4	R	Hz	
87	135							
88	136		Total active power psum	float	4	R	kW	
89	137							
8A	138		A-phase active power pa	float	4	R	kW	
8B	139							
8C	140		B-phase active power pb	float	4	R	kW	
8D	141							
8E	142		C-phase active power pc	float	4	R	kW	
8F	143							
90	144		Total reactive power qsum	float	4	R	kvar	
91	145							
92	146		A-phase reactive power qa	float	4	R	kvar	
93	147							
94	148		B-phase reactive power qb	float	4	R	kvar	
95	149							
96	150		C-phase reactive power qc	float	4	R	kvar	
97	151							
98	152		Total apparent power ssum	float	4	R	kVA	
99	153							
9A	154		A-phase apparent power sa	float	4	R	kVA	
9B	155							

9C	156		B-phase apparent power sb	float	4	R	kVA	
9D	157							
9E	158		C-phase apparent power sc	float	4	R	kVA	
9F	159							
A0	160		Total active energy eps	float	4	R	kWh	
A1	161							
A2	162		A-phase total active electrical energy epa	float	4	R	kWh	
A3	163							
A4	164		B-phase total active electrical energy epb	float	4	R	kWh	
A5	165							
A6	166		C-phase total active electrical energy epc	float	4	R	kWh	
A7	167							
A8	168		Total reactive energy eqs	float	4	R	kvarh	
A9	169							
AA	170		A-phase total reactive energy eqa	float	4	R	kvarh	
AB	171							
AC	172		B-phase total reactive energy eqb	float	4	R	kvarh	
AD	173							
AE	174		C-phase total reactive energy eqc	float	4	R	kvarh	
AF	175							
B0	176		Positive total active energy epsp	float	4	R	kWh	
B1	177							
B2	178		Positive A-phase total active energy of epap	float	4	R	kWh	
B3	179							
B4	180		Positive B-phase total active energy of epbp	float	4	R	kWh	
B5	181							
B6	182		Positive C-phase total active energy of epcp	float	4	R	kWh	
B7	183							
B8	184		Reverse total active energy epsn	float	4	R	kWh	
B9	185							
BA	186		Reverse A-phase total active energy epan	float	4	R	kWh	
BB	187							
BC	188		Reverse B-phase total active energy epbn	float	4	R	kWh	
BD	189							
BE	190		Reverse C-phase total active energy epcn	float	4	R	kWh	
BF	191							
C0	192		Positive total reactive power eqsp	float	4	R	kvarh	
C1	193							
C2	194		Positive A-phase total reactive power eqap	float	4	R	kvarh	
C3	195							
C4	196		Positive B-phase total reactive power eqbp	float	4	R	kvarh	
C5	197							

C6	198		Positive C-phase total reactive power eqcp	float	4	R	kvarh	
C7	199							
C8	200		Reverse total reactive power eqsn	float	4	R	kvarh	
C9	201							
CA	202		Reverse A-phase total reactive power eqan	float	4	R	kvarh	
CB	203							
CC	204		Reverse B-phase total reactive power eqbn	float	4	R	kvarh	
CD	205							
CE	206		Reverse C-phase total reactive power eqcn	float	4	R	kvarh	
CF	207							
D0	208	2nd Circuit	AB line AC voltage Uab	float	4	R	V	
D1	209							
D2	210		BC line AC voltage Ubc	float	4	R	V	
D3	211							
D4	212		CA line AC voltage Uca	float	4	R	V	
D5	213							
D6	214		A-phase AC voltage Ua	float	4	R	V	
D7	215							
D8	216		B-phase AC voltage Ub	float	4	R	V	
D9	217							
DA	218		C-phase AC voltage Uc	float	4	R	V	
DB	219							
DC	220		A-phase AC current Ia	float	4	R	A	
DD	221							
DE	222		B-phase AC current Ib	float	4	R	A	
DF	223							
E0	224		C-phase AC current Ic	float	4	R	A	
E1	225							
E2	226		Zero sequence current Io	float	4	R	A	
E3	227							
E4	228		Total power factor PF	float	4	R		
E5	229							
E6	230		A-phase power factor PFa	float	4	R		
E7	231							
E8	232		B-phase power factor PFb	float	4	R		
E9	233							
EA	234		C-phase power factor PFc	float	4	R		
EB	235							
EC	236		Frequency F	float	4	R	Hz	
ED	237							
EE	238		Total active power psum	float	4	R	kW	
EF	239							
F0	240		A-phase active power pa	float	4	R	kW	

F1	241							
F2	242		B-phase active power pb	float	4	R	kW	
F3	243							
F4	244		C-phase active power pc	float	4	R	kW	
F5	245							
F6	246		Total reactive power qsum	float	4	R	kvar	
F7	247							
F8	248		A-phase reactive power qa	float	4	R	kvar	
F9	249							
FA	250		B-phase reactive power qb	float	4	R	kvar	
FB	251							
FC	252		C-phase reactive power qc	float	4	R	kvar	
FD	253							
FE	254		Total apparent power ssum	float	4	R	kVA	
FF	255							
100	256		A-phase apparent power sa	float	4	R	kVA	
101	257							
102	258		B-phase apparent power sb	float	4	R	kVA	
103	259							
104	260		C-phase apparent power sc	float	4	R	kVA	
105	261							
106	262		Total active energy eps	float	4	R	kWh	
107	263							
108	264		A-phase total active electrical energy epa	float	4	R	kWh	
109	265							
10A	266		B-phase total active electrical energy epb	float	4	R	kWh	
10B	267							
10C	268		C-phase total active electrical energy epc	float	4	R	kWh	
10D	269							
10E	270		Total reactive energy eqs	float	4	R	kvarh	
10F	271							
110	272		A-phase total reactive energy eqa	float	4	R	kvarh	
111	273							
112	274		B-phase total reactive energy eqb	float	4	R	kvarh	
113	275							
114	276		C-phase total reactive energy eqc	float	4	R	kvarh	
115	277							
116	278		Positive total active energy epsp	float	4	R	kWh	
117	279							
118	280		Positive A-phase total active energy of epap	float	4	R	kWh	
119	281							
11A	282		Positive B-phase total active	float	4	R	kWh	

11B	283		energy of epbp					
11C	284		Positive C-phase total active energy of epcp	float	4	R	kWh	
11D	285							
11E	286		Reverse total active energy epsn	float	4	R	kWh	
11F	287							
120	288		Reverse A-phase total active energy epan	float	4	R	kWh	
121	289							
122	290		Reverse B-phase total active energy epbn	float	4	R	kWh	
123	291							
124	292		Reverse C-phase total active energy epcn	float	4	R	kWh	
125	293							
126	294		Positive total reactive power eqsp	float	4	R	kvarh	
127	295							
128	296		Positive A-phase total reactive power eqap	float	4	R	kvarh	
129	297							
12A	298		Positive B-phase total reactive power eqbp	float	4	R	kvarh	
12B	299							
12C	300		Positive C-phase total reactive power eqcp	float	4	R	kvarh	
12D	301							
12E	302		Reverse total reactive power eqsn	float	4	R	kvarh	
12F	303							
130	304		Reverse A-phase total reactive power eqan	float	4	R	kvarh	
131	305							
132	306		Reverse B-phase total reactive power eqbn	float	4	R	kvarh	
133	307							
134	308		Reverse C-phase total reactive power eqcn	float	4	R	kvarh	
135	309							

Circuit 3-4 telemetry data:

Add	Decimal	Content		Data type	Bytes	Read/write	Unit	Remark
136	310	3rd Circuit	AB line AC voltage Uab	float	4	R	V	
137	311							
138	312		BC line AC voltage Ubc	float	4	R	V	
139	313							
13A	314		CA line AC voltage Uca	float	4	R	V	
13B	315							
13C	316		A-phase AC voltage Ua	float	4	R	V	
13D	317							
13E	318		B-phase AC voltage Ub	float	4	R	V	
13F	319							
140	320		C-phase AC voltage Uc	float	4	R	V	

141	321							
142	322		A-phase AC current Ia	float	4	R	A	
143	323							
144	324		B-phase AC current Ib	float	4	R	A	
145	325							
146	326		C-phase AC current Ic	float	4	R	A	
147	327							
148	328		Zero sequence current Io	float	4	R	A	
149	329							
14A	330		Total power factor PF	float	4	R		
14B	331							
14C	332		A-phase power factor PFa	float	4	R		
14D	333							
14E	334		B-phase power factor PFb	float	4	R		
14F	335							
150	336		C-phase power factor PFc	float	4	R		
151	337							
152	338		Frequency F	float	4	R	Hz	
153	339							
154	340		Total active power psum	float	4	R	kW	
155	341							
156	342		A-phase active power pa	float	4	R	kW	
157	343							
158	344		B-phase active power pb	float	4	R	kW	
159	345							
15A	346		C-phase active power pc	float	4	R	kW	
15B	347							
15C	348		Total reactive power qsum	float	4	R	kvar	
15D	349							
15E	350		A-phase reactive power qa	float	4	R	kvar	
15F	351							
160	352		B-phase reactive power qb	float	4	R	kvar	
161	353							
162	354		C-phase reactive power qc	float	4	R	kvar	
163	355							
164	356		Total apparent power ssum	float	4	R	kva	
165	357							
166	358		A-phase apparent power sa	float	4	R	kVA	
167	359							
168	360		B-phase apparent power sb	float	4	R	kVA	
169	361							
16A	362		C-phase apparent power sc	float	4	R	kVA	

16B	363							
16C	364		Total active energy eps	float	4	R	kWh	
16D	365							
16E	366		A-phase total active electrical energy epa	float	4	R	kWh	
16F	367							
170	368		B-phase total active electrical energy epb	float	4	R	kWh	
171	369							
172	370		C-phase total active electrical energy epc	float	4	R	kWh	
173	371							
174	372		Total reactive energy eqs	float	4	R	kvarh	
175	373							
176	374		A-phase total reactive energy eqa	float	4	R	kvarh	
177	375							
178	376		B-phase total reactive energy eqb	float	4	R	kvarh	
179	377							
17A	378		C-phase total reactive energy eqc	float	4	R	kvarh	
17B	379							
17C	380		Positive total active energy epsp	float	4	R	kWh	
17D	381							
17E	382		Positive A-phase total active energy of epap	float	4	R	kWh	
17F	383							
180	384		Positive B-phase total active energy of epbp	float	4	R	kWh	
181	385							
182	386		Positive C-phase total active energy of epcp	float	4	R	kWh	
183	387							
184	388		Reverse total active energy epsn	float	4	R	kWh	
185	389							
186	390		Reverse A-phase total active energy epan	float	4	R	kWh	
187	391							
188	392		Reverse B-phase total active energy epbn	float	4	R	kWh	
189	393							
18A	394		Reverse C-phase total active energy epcn	float	4	R	kWh	
18B	395							
18C	396		Positive total reactive power eqsp	float	4	R	kvarh	
18D	397							
18E	398		Positive A-phase total reactive power eqap	float	4	R	kvarh	
18F	399							
190	400		Positive B-phase total reactive power eqbp	float	4	R	kvarh	
191	401							
192	402		Positive C-phase total reactive power eqcp	float	4	R	kvarh	
193	403							
194	404		Reverse total reactive power eqsn	float	4	R	kvarh	
195	405							

196	406		Reverse A-phase total reactive power eqan	float	4	R	kvarh	
197	407							
198	408		Reverse B-phase total reactive power eqbn	float	4	R	kvarh	
199	409							
19A	410		Reverse C-phase total reactive power eqcn	float	4	R	kvarh	
19B	411							
19C	412	4th Circuit	AB line AC voltage Uab	float	4	R	V	
19D	413							
19E	414		BC line AC voltage Ubc	float	4	R	V	
19F	415							
1A0	416		CA line AC voltage Uca	float	4	R	V	
1A1	417							
1A2	418		A-phase AC voltage Ua	float	4	R	V	
1A3	419							
1A4	420		B-phase AC voltage Ub	float	4	R	V	
1A5	421							
1A6	422		C-phase AC voltage Uc	float	4	R	V	
1A7	423							
1A8	424		A-phase AC current Ia	float	4	R	A	
1A9	425							
1AA	426		B-phase AC current Ib	float	4	R	A	
1AB	427							
1AC	428		C-phase AC current Ic	float	4	R	A	
1AD	429							
1AE	430		Zero sequence current Io	float	4	R	A	
1AF	431							
1B0	432		Total power factor PF	float	4	R		
1B1	433							
1B2	434		A-phase power factor PFa	float	4	R		
1B3	435							
1B4	436		B-phase power factor PFb	float	4	R		
1B5	437							
1B6	438		C-phase power factor PFc	float	4	R		
1B7	439							
1B8	440		Frequency F	float	4	R	Hz	
1B9	441							
1BA	442		Total active power psum	float	4	R	kW	
1BB	443							
1BC	444		A-phase active power pa	float	4	R	kW	
1BD	445							
1BE	446		B-phase active power pb	float	4	R	kW	
1BF	447							

1C0	448		C-phase active power pc	float	4	R	kW	
1C1	449							
1C2	450		Total reactive power qsum	float	4	R	kvar	
1C3	451							
1C4	452		A-phase reactive power qa	float	4	R	kvar	
1C5	453							
1C6	454		B-phase reactive power qb	float	4	R	kvar	
1C7	455							
1C8	456		C-phase reactive power qc	float	4	R	kvar	
1C9	457							
1CA	458		Total apparent power ssum	float	4	R	kVA	
1CB	459							
1CC	460		A-phase apparent power sa	float	4	R	kVA	
1CD	461							
1CE	462		B-phase apparent power sb	float	4	R	kVA	
1CF	463							
1D0	464		C-phase apparent power sc	float	4	R	kVA	
1D1	465							
1D2	466		Total active energy eps	float	4	R	kWh	
1D3	467							
1D4	468		A-phase total active electrical energy epa	float	4	R	kWh	
1D5	469							
1D6	470		B-phase total active electrical energy epb	float	4	R	kWh	
1D7	471							
1D8	472		C-phase total active electrical energy epc	float	4	R	kWh	
1D9	473							
1DA	474		Total reactive energy eqs	float	4	R	kvarh	
1DB	475							
1DC	476		A-phase total reactive energy eqa	float	4	R	kvarh	
1DD	477							
1DE	478		B-phase total reactive energy eqb	float	4	R	kvarh	
1DF	479							
1E0	480		C-phase total reactive energy eqc	float	4	R	kvarh	
1E1	481							
1E2	482		Positive total active energy epsp	float	4	R	kWh	
1E3	483							
1E4	484		Positive A-phase total active energy of epap	float	4	R	kWh	
1E5	485							
1E6	486		Positive B-phase total active energy of epbp	float	4	R	kWh	
1E7	487							
1E8	488		Positive C-phase total active energy of epcp	float	4	R	kWh	
1E9	489							
1EA	490		Reverse total active energy	float	4	R	kWh	

1EB	491		epsn					
1EC	492		Reverse A-phase total active energy epan	float	4	R	kWh	
1ED	493							
1EE	494		Reverse B-phase total active energy epbn	float	4	R	kWh	
1EF	495							
1F0	496		Reverse C-phase total active energy epcn	float	4	R	kWh	
1F1	497							
1F2	498		Positive total reactive power eqsp	float	4	R	kvarh	
1F3	499							
1F4	500		Positive A-phase total reactive power eqap	float	4	R	kvarh	
1F5	501							
1F6	502		Positive B-phase total reactive power eqbp	float	4	R	kvarh	
1F7	503							
1F8	504		Positive C-phase total reactive power eqcp	float	4	R	kvarh	
1F9	505							
1FA	506		Reverse total reactive power eqsn	float	4	R	kvarh	
1FB	507							
1FC	508		Reverse A-phase total reactive power eqan	float	4	R	kvarh	
1FD	509							
1FE	510		Reverse B-phase total reactive power eqbn	float	4	R	kvarh	
1FF	511							
200	512		Reverse C-phase total reactive power eqcn	float	4	R	kvarh	
201	513							

Circuit alarm information

Add	Decimalism	Content		Data type	Bytes	Read/ write	Unit	Remark
2CE	718	1st circuit	A-phase AC voltage Ua+ B-phase AC voltage Ub	uint16_t	1	R		Explanation of phase voltage alarm 00H: Normal 01H: Below lower limit 02H: Above upper limit (too high) 03H: Above upper limit (super high) 04H: Phase loss Frequency alarm description 00H: Normal 01H: Below lower limit 02H: Above upper limit Lightning protection
2CF	719		C-phase AC voltage Uc+ Input frequency	uint16_t	1	R		
2D0	720		Lightning arrester failure + lightning arrester circuit breaker disconnected	uint16_t	1	R		
2D1	721		Smart meter failure	uint16_t	1	R		
2D2	722	2nd circuit	A-phase AC voltage Ua+ B-phase AC voltage Ub	uint16_t	1	R		
2D3	723		C-phase AC voltage Uc+ Input frequency	uint16_t	1	R		
2D4	724		Lightning arrester failure + lightning arrester circuit breaker disconnected	uint16_t	1	R		

2D5	725		Smart meter failure	uint16_t	1	R		device alarm description 00H: Normal E2H: Lightning arrester failure Explanation of lightning arrester circuit breaker disconnect alarm 00H: Normal 05H: Switch disconnected Explanation of smart meter fault alarm 00H: Normal E3H: Smart meter failure
2D6	726	3rd circuit	A-phase AC voltage Ua+ B-phase AC voltage Ub	uint16_t	1	R		
2D7	727		C-phase AC voltage Uc+ Input frequency	uint16_t	1	R		
2D8	728		Lightning arrester failure + lightning arrester circuit breaker disconnected	uint16_t	1	R		
2D9	729		Smart meter failure	uint16_t	1	R		
2DA	730	4th circuit	A-phase AC voltage Ua+ B-phase AC voltage Ub	uint16_t	1	R		
2DB	731		C-phase AC voltage Uc+ Input frequency	uint16_t	1	R		
2DC	732		Lightning arrester failure + lightning arrester circuit breaker disconnected	uint16_t	1	R		
2DD	733		Smart meter failure	uint16_t	1	R		

8 Common Troubleshooting

Common fault analysis and troubleshooting

Fault content	Analysis	Remark
No display when powered on	Check if the power supply voltage is within the working voltage range	
Incorrect readings of voltage, current, energy, etc	Check if the voltage to current ratio setting is correct Check if the wiring mode setting is consistent with the actual situation Check if the Voltage transformer and current transformer are in good condition	
Incorrect power or power factor	Check if the wiring mode setting is consistent with the actual situation Check if the voltage and current phase sequence is correct Check if the wiring is correct	
Abnormal communication	Check if the address, Baud, check bit, etc. in the communication settings are consistent with the upper computer Check if the RS485 converter is normal Check if the protocol used by the instrument is correct Communication terminal connected in parallel with a resistance of over 120 ohms Check if the wiring is correct	

Front Panel	TECOM PM-314
Certificate of Approval	Q.C. PASS
Box Label	TECOM TECOM CO.,LTD. Model: PM-314 Q'TY: 1 Part No: 671-502698R 671-502698R H3F00001 RoHS QC PASS Made in China
Carton Label	TECOM TECOM CO.,LTD. Model: PM-314 Part No: 671-502698R Q'TY: 36 C/No.: / G.W: 17.77 KGW N.W.: 13.52 KGW RoHS QC PASS Made in China 202306280001 K2022122601100 S 1-1

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Model: PM-314
Part No: 671-502698R
Auxiliary Power supply: AC/DC 85-265V
Nominal voltage: AC 3×220/380V
Frequency: 45-65Hz
CT: 50mA
11604141590001
671-502698R H3F00001
User Manual</td></tr>
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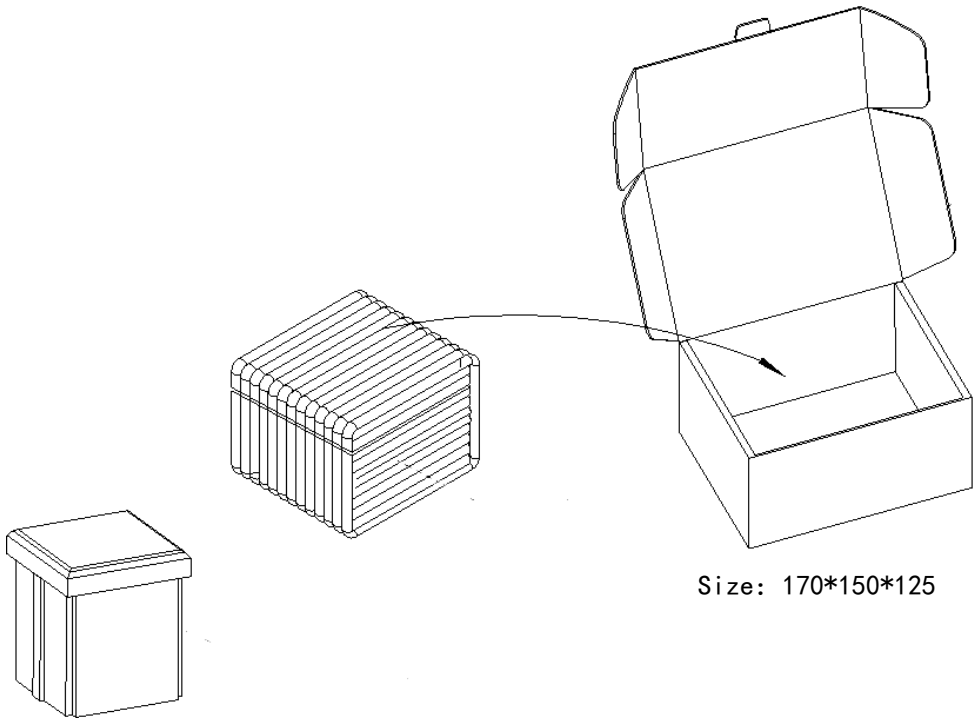
Shipping Terminal</td><td> 
Transparent Bracket*2</td></tr>
<tr><td colspan="3"> 
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