

HYFW Energy Meter

User Manual

(V2.0)



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

HYFW is an advanced, smart DIN rail energy meter. It is widely used in energy distribution sites, energy management systems and intelligent on-line monitoring systems of different industries.

Function:

Measuring Electric Parameters:

three-phase voltage, three-line voltage, three-phase current, zero-sequence current, active power, reactive power, apparent power

Power Quality Analysis:

voltage unbalance, current unbalance, voltage deviation, frequency deviation, voltage qualification rate

Electrical Safety Guarantee:

off-limit alarm (under voltage, over voltage, over current, over temperature)(4 channels of temperature detection with RJ45 interface), 1 channel of leakage detection

Energy Management:

demand, multi-tariff, four quadrant energy, active energy, reactive energy

Multiple Communication Interfaces:

1 RS485(MOBBUS RTU), baud rate: 1200~9600bps (settable)

Built in 4G/GPRS/LoRa modules(optional)

SOE:

8*digital input/output messages; 64*alarm messages; 32*fault messages; 2*off-power messages; 14*other event records(power-on, parameter modification etc..)

Other Function:

2.0 inch 320*240 color LCD screen

2 DI 2 DO

Energy pulse

Chapter 2 Specifications

2.1 Input Voltage

Reference Voltage: 3×220V/380VAC (low voltage) 57.7/100VAC(high voltage)

Voltage Range: 0.6Un~1.2Un

2.2 Input Current

Reference Current: 100mA

Leakage: 20mA~10A

2.3 Temperature

Temperature Range: -20°C~180°C

2.4 Frequency Measurement

Frequency Measuring Range: 45~55Hz (the default is 50Hz)

2.5 Measuring Accuracy

Voltage/Current: Class 0.2

Active Energy: Class 0.5S

Leakage: 5%

Power Factor: 1%

Active/Reactive/Apparent Power: Class 0.5

Reactive Energy: Class 2S

Temperature: $\pm 1^{\circ}\text{C}$

2.6 Power Supply

Power Supply: AC85~265V(45 ~ 65HZ)

Power Consumption: <5W

2.9 Working Condition

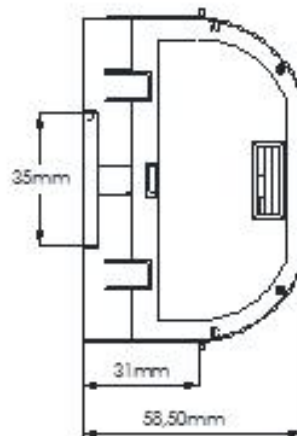
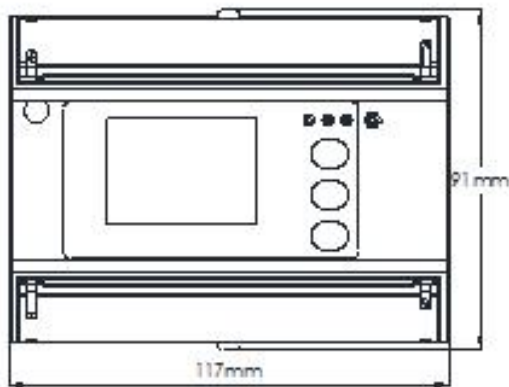
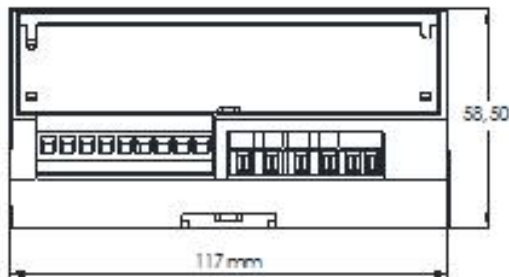
Operating Temperature: $-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$

Storage Temperature: $-40^{\circ}\text{C} \sim +75^{\circ}\text{C}$

Relative Humidity: 5% ~ 95%(non-condensing)

Chapter 3 Dimensions & Installation

3.1 Overall Dimension (unit: mm)



Model No.	Dimension(mm)		
	L.	W.	H.
HYFW	117	91	58.5

3.2 Installation Method

Installation Environment: HYFW should be installed in a dry and dust free environment. Avoid exposing meter to excessive heat, radiation and high electrical noise sources.

Install Method: DIN rail Mounting (35mm)

Chapter 4 Terminals

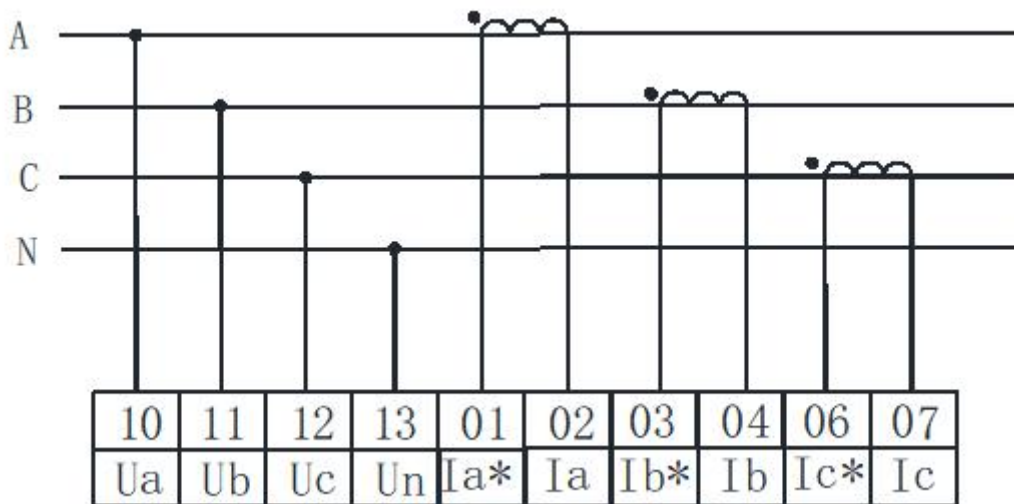
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Ia*	Ia	Ib*	Ib	NC	Ic*	Ic	Io*	Io	Ua	Ub	Uc	Un	N/-	L/+

Upper Row of Terminals

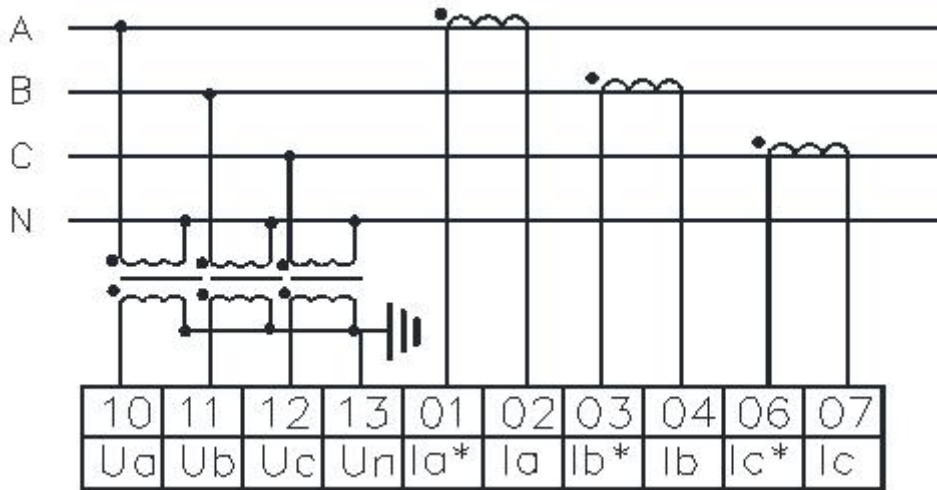
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
1NO	2NO	COM	PB+	PB-	NC	A	B	NC	DI1	DI2	DICOM	P+	P-	T1	T2	T3	T4
2*Relay			POWERBUS			RS485			DI			Pulse		Temperature (RJ45)			

Lower Row of Terminals

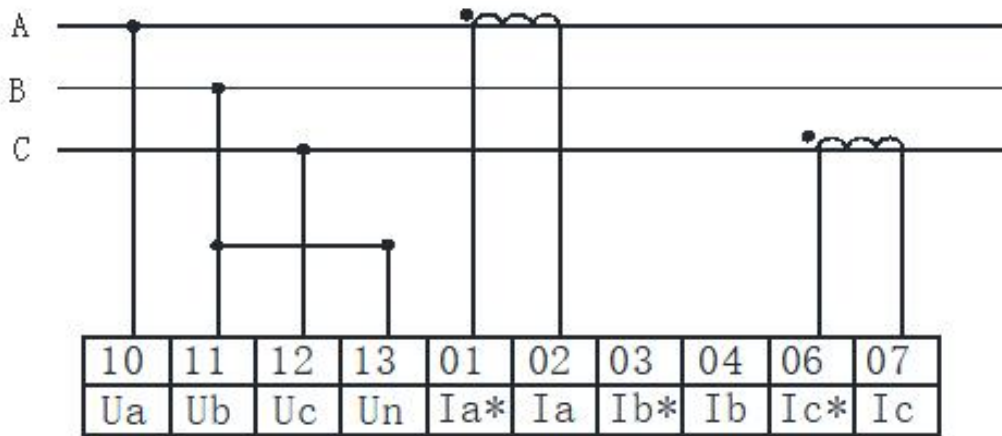
Chapter 5 Typical Wiring



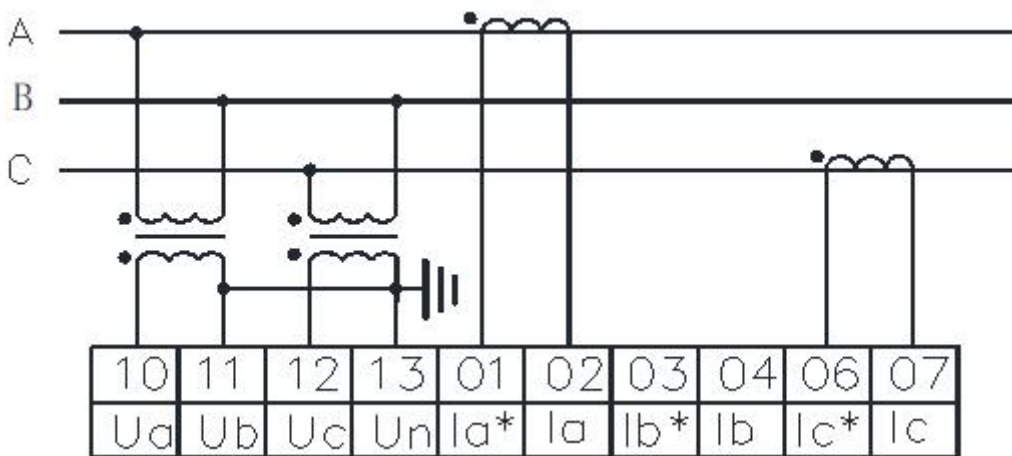
3P4W(CT connection no PT)



3P4W(CT&PT connection)

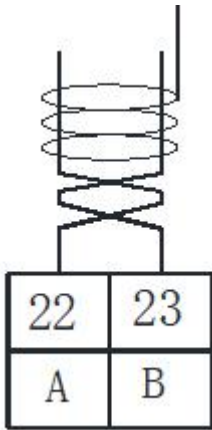


3P3W(CT connection no PT)

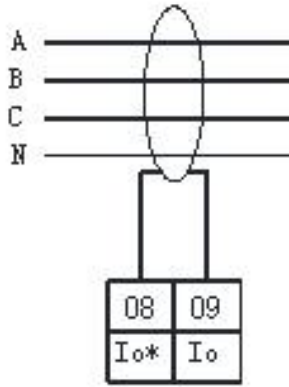


3P3W(CT&PT connection)

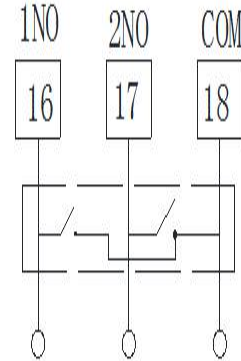
RS485 Interface



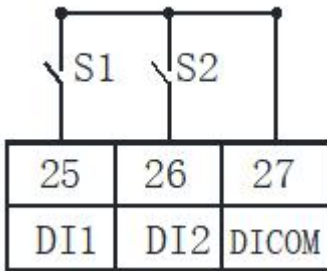
Interface of Leakage



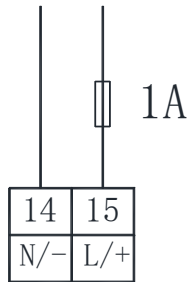
Relay



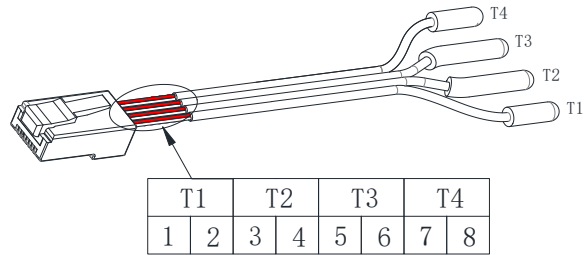
DI



Power Supply

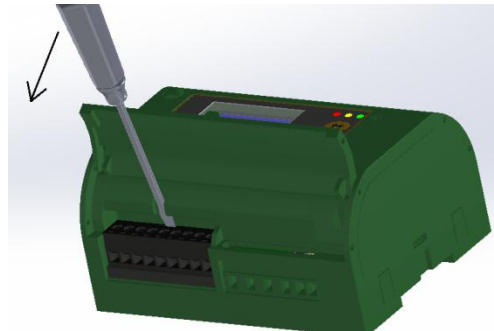
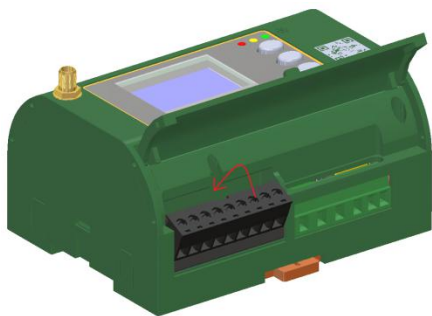


Temperature Sensor



Current Terminals Installation

HYFW current terminal adopts pluggable lock connector, which is convenient for the installation. When installing, insert the terminal head connector into the terminal seat at a 60° angle, and then force it into the terminal seat. When it needs to be pulled out, use a flat-blade screwdriver (spindle diameter of 3mm) to insert into the gap of the terminal base, and pull the terminal head connector out.



Chapter 6 Buttons & Display Interfaces

6.1 Parameter Inquiry

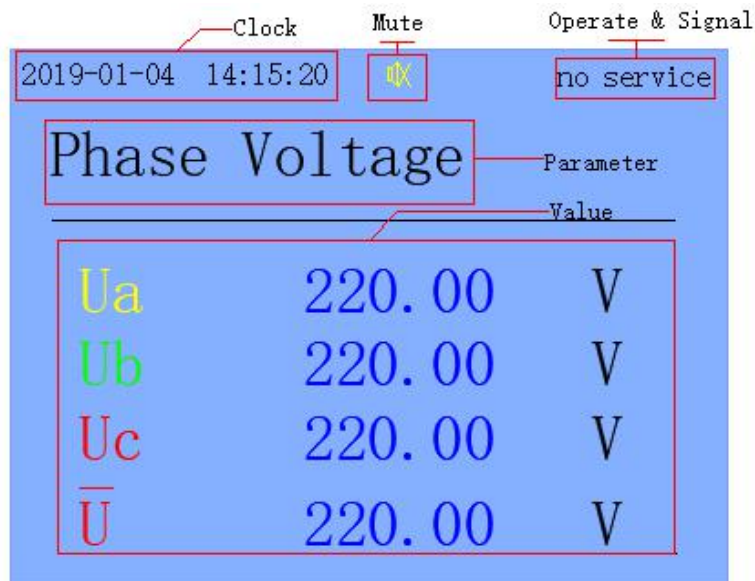
Button	Parameter Inquiry
←	cycle display of each energy value
↑	cycle display of power, power factor, frequency
确定 Confirm/ 消音 Mute	Short press: voltage(L-L,L-N) ,current, leakage,temperature, DI, DO etc Long press: eliminate alarm sound
↑ + 确定 Confirm/ 消音 Mute	Enter/Quit the harmonic display interface
← + ↑	Self check function

6.2 Parameter Setting

Button	Parameter Setting
← + 确定 Confirm/ 消音 Mute	Enter parameter setting interface or return the parameter inquiry interface
←	Short press: digital shift; Long press: give up the changes and return to the previous interface
↑	digital shift or add 1
确定 Confirm/ 消音 Mute	Save the changes and enter the next interface

6.3 Interfaces

After power on, it will display our company logo, then enter the parameter interfaces.
If there is no operation for 30s, the screen will be extinguished.



1) Parameter Query

A. Press the button "确定 Confirm/消音 Mute" to cyclically display interfaces of phase voltage, line voltage, current, leakage, temperature.

2019-01-04 14:15:27 静音 no service

Voltage(L-N)

Ua	220.00	V
Ub	220.00	V
Uc	220.00	V
\bar{U}	220.00	V

Voltage(L-N)

2019-01-04 14:15:27 静音 no service

Voltage(L-L)

Ua-b	380.01	V
Ub-c	380.00	V
Uc-a	380.01	V
\bar{U}	380.01	V

Voltage(L-L)

2019-01-04 14:15:27 静音 no service

Current

Ia	1.100	A
Ib	1.100	A
Ic	1.100	A
\bar{I}	1.100	A

Current

2019-01-04 14:15:30 静音 no service

Leakage

0.100 A

Leakage

2019-01-04 14:15:35 静音 no service

Temperature

T1	25.5	°C
T2	25.7	°C
T3	25.6	°C
T4	25.6	°C

Temperature

2019-01-04 14:15:36 静音 no service

Digital Input

DI1	Disconnection
DI2	Connection

Digital Input

2019-01-04 14:15:39 静音 no service

Phase Sequence Normal

	ab	bc	ca
U-U	0	120	240
U-I	0	0	0
I-I	0	120	240

Phase Sequence

2019-01-04 14:15:36 静音 no service

Relay

Relay I	Disconnection
Relay II	Connection

Relay

2019-01-04 14:15:36 静音 no service

Zero Sequence

Uo	0.00	V
Io	0.000	A

Zero Sequence

2019-01-04 14:15:35 静音 no service

Load Properties

Resistive Load

Load properties

B. Press button " ↑ " to cyclically display interfaces of total power, active power, reactive power, apparent power, power factor, frequency.

2019-01-04 14:16:20 静音 no service

Total power

P	0.000	kW
Q	0.000	var
S	0.000	kVA
PF	0.000	

2019-01-04 14:16:25 静音 no service

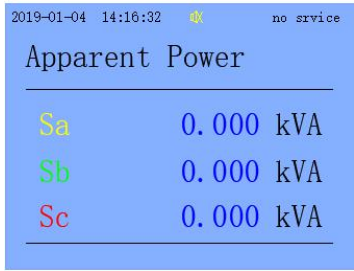
Active Power

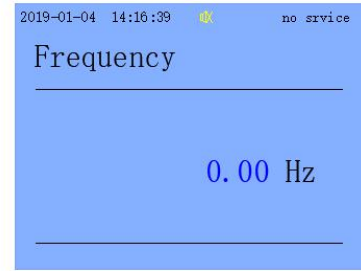
Pa	0.000	kW
Pb	0.000	kW
Pc	0.000	kW

2019-01-04 14:16:27 静音 no service

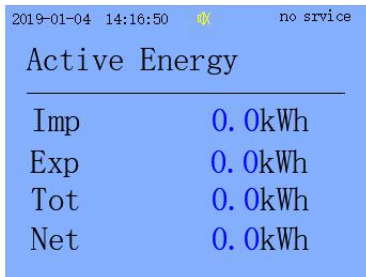
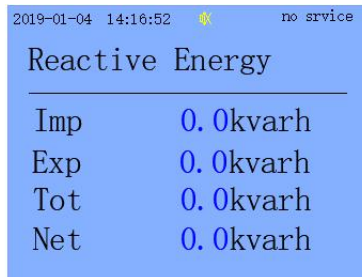
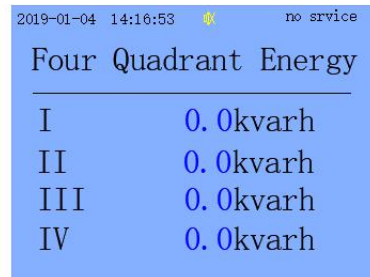
Reactive Power

Qa	0.000	kvar
Qb	0.000	kvar
Qc	0.000	kvar

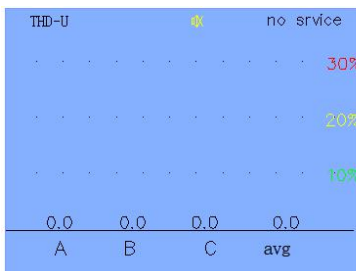
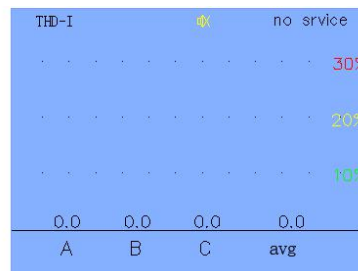
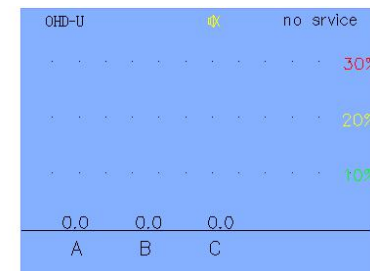
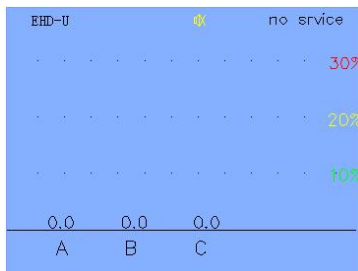
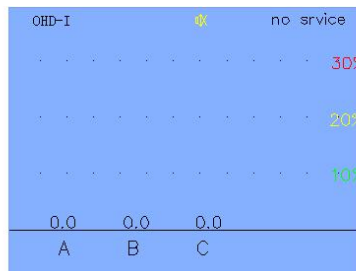
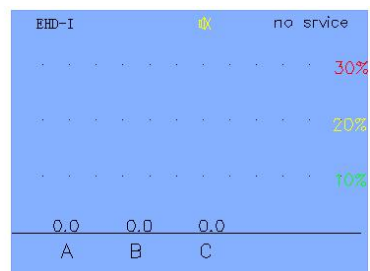
Total Power

Apparent Power
Active Power

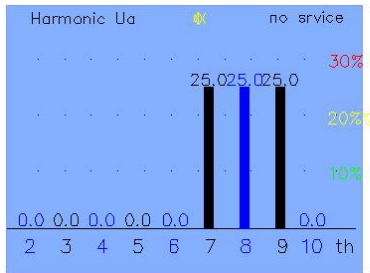
Power Factor
Reactive Power

Frequency

C. Press buttons "◀" to cyclically display interfaces of active energy, reactive energy, export reactive energy.

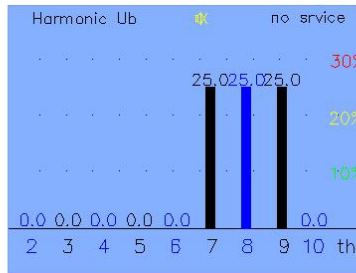

Active Energy
Import
Export
Total
Net Value

Reactive Energy
Import
Export
Total
Net Value

Four-Quadrant Energy

D. Press the buttons "↑" and "确定 Confirm/消音 Mute" simultaneously to enter harmonic display interfaces, and press "◀" can check the harmonic of 2-10th, 11-19th, 29-31th.

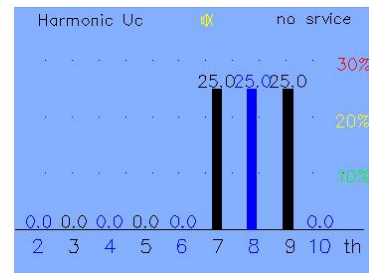

The THD of Voltage

The THD of Current

Odd average harmonic of voltage

Even average harmonic of voltage

Odd average harmonic of current

Even average harmonic of current



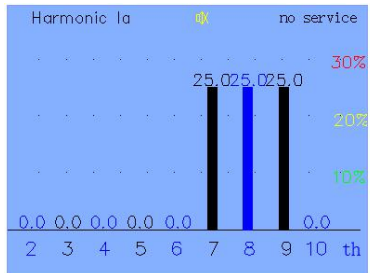
Harmonic of Ua



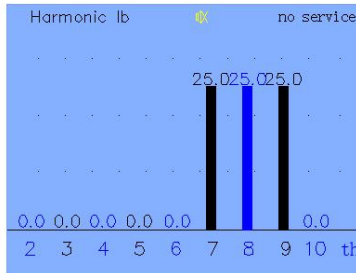
Harmonic of Ub



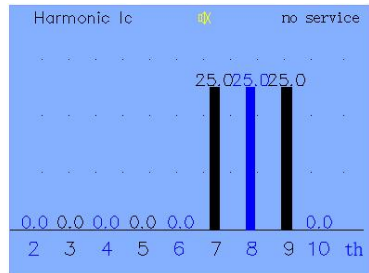
Harmonic of Uc



Harmonic of Ia



Harmonic of Ib

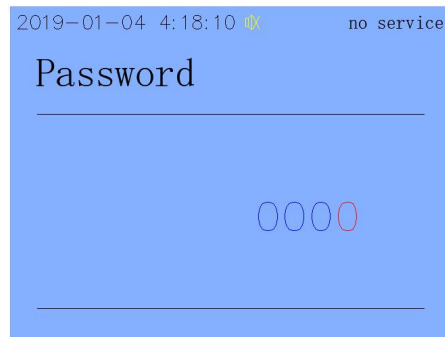


Harmonic of Ic

E. Press the buttons "↑" and "←" simultaneously to enter the system self-check mode: whether the indicator light, buzzer and LCD display are normal

2) Parameter Setting

A. Press the buttons "←" and "确定 Confirm/消音 Mute" simultaneously to enter parameter setting interfaces. Firstly, please input the password(the default is 0000). The button "←" will be used for digital shift.



After inputting the password, it will enter the setting menu. Press button "↑" to move the cursor. Then please select the relative item according to your need. Then please the button "确定 Confirm/消音 Mute" to enter the setting interface.



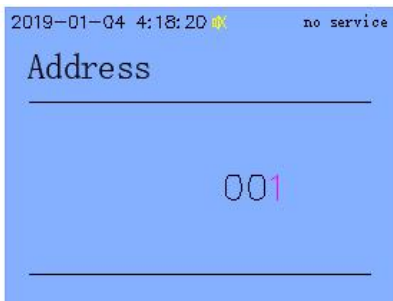
Communication(RS485 parameters)



Address setting range: 1~247

Parity Bit:8n1, 8o1, 8e1

Baud Rate Setting Range: 1200,2400,4800,9600



Address

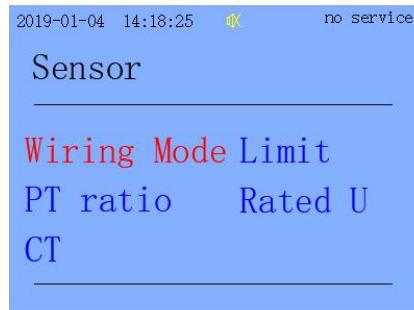


Parity Bit



Baud Rate

Sensor Setting

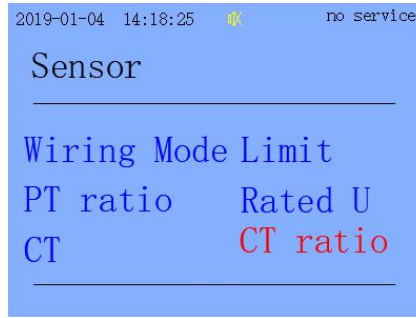


Wiring Mode: 3P4W, 3P3W

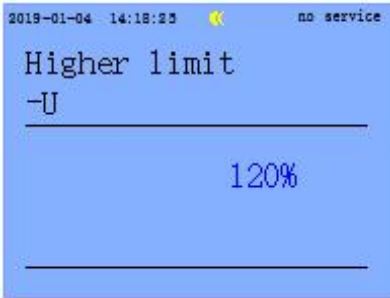
PT Ratio: 1~9999

CT Ratio:5A、30A、80A、150A、200A、250A、400A、600A、800A、1000A、1500A、2000A、3000A are optional. The default is 150A or 5A.

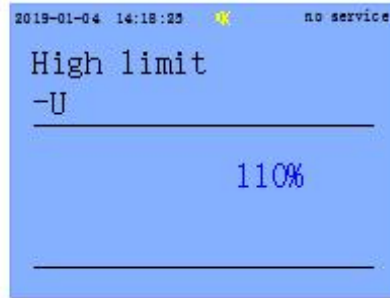
If the CT is 5A type, we also need to set the **CT ratio** in the red in the sensor setting interface.



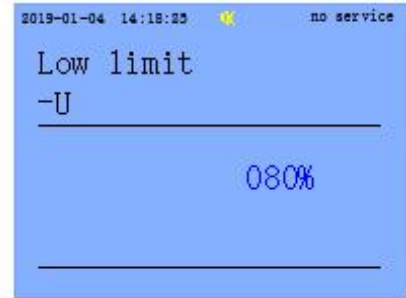
Limit Value: upper/ultimate upper limit for voltage, current, leakage, temperature;
 lower/ultimate lower limit for voltage, current, leakage, temperature;



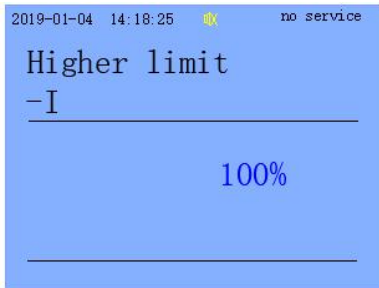
Ultimate Upper Limit of Voltage



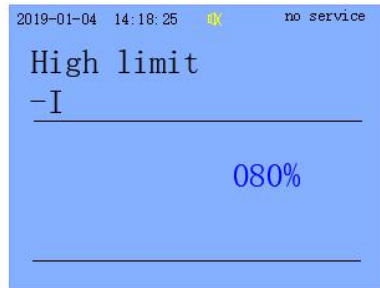
Upper Limit of Voltage



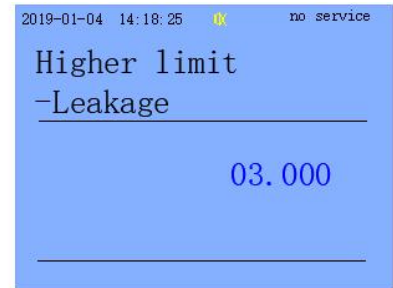
Lower Limit of Voltage



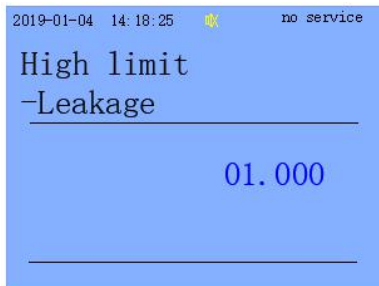
Ultimate Upper Limit of Current



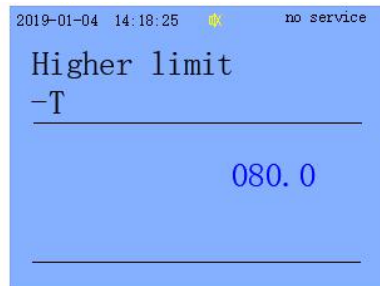
Upper Limit of Current



Ultimate Upper Limit of Leakage



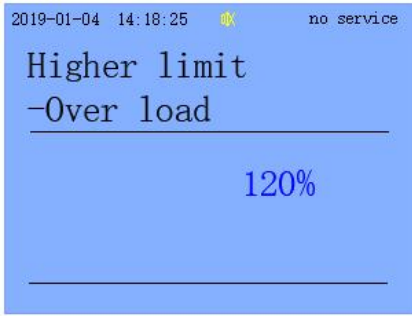
Upper Limit of Leakage



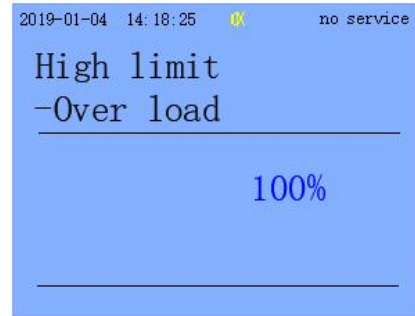
Ultimate Upper Limit of Temperature



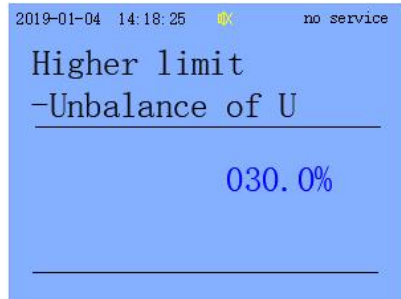
Upper Limit of Temperature



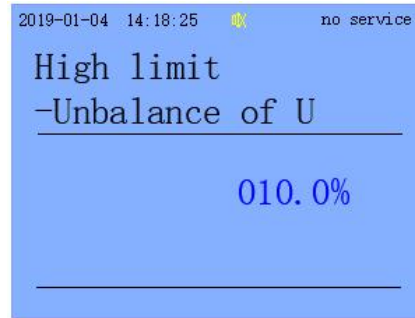
Ultimate Upper Limit of Over Load



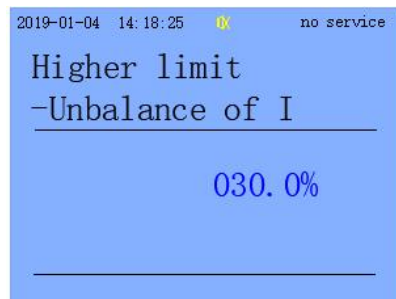
Upper Limit of Over Load



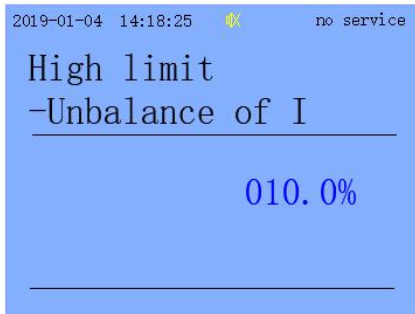
Ultimate Upper Limit of Voltage Unbalance



Upper Limit of Voltage Unbalance



Ultimate Upper Limit of Current Unbalance



Upper Limit of Current Unbalance

Rated Voltage: can be set as 220/380V(low voltage), 57.7/100V(high voltage)

Relay Setting

It can be correlated voltage, current, leakage, temperature, and it can be correlated one parameter or multiple at the same time.

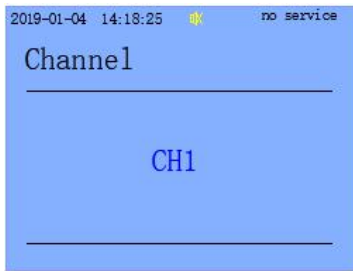


Wireless Communication Parameter Setting

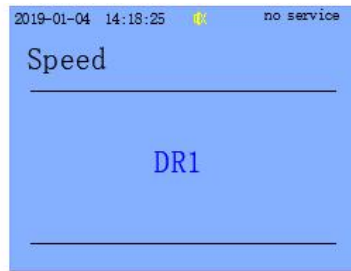
The wireless version: 2G/4G/NB/LoRa

LoRa Version

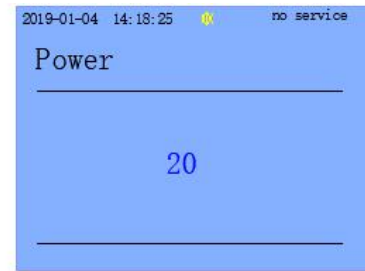
Parameters: Channel, Speed, Power



Channel

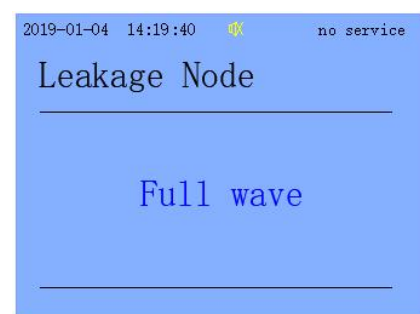
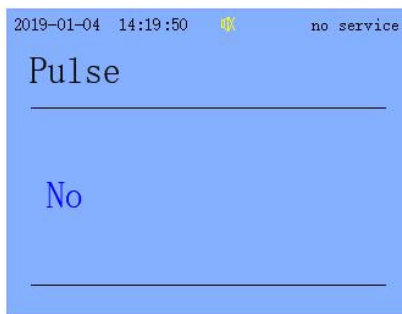
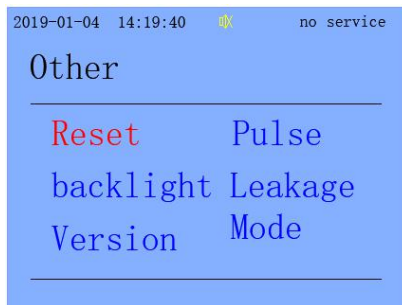


Speed



Power

Other



It refers to select the leakage value mode, full wave leakage & fundamental leakage are optional, the default is full wave leakage.

Chapter 7 Indicators

Name	Colour	Description
Alarm 报警	Red	When there is over limit, the red light will be on. When in pulse mode, the light will be pulse indicator
Fault 故障	Yellow	Fault
Normal 正常	Green	When it works well, the green light will be on
Buzzer 蜂鸣器		When there is alarm, it will sound alarm for a long time. When there is a fault, it will sound intermittently at a fixed frequency

Chapter 8 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 9 Contact Us

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