

**AT100Y**  
**Digital Single-Phase**  
**Multifunction Meter**  
**User's Manual**  
**V1.0**



Hangzhou Antin Power Technology Co., Ltd

## Declarations

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## **Chapter 1 Product Overview**

### **1.1 Product Introduction**

This series of multi-function power meter is an ideal equipment for power monitoring. The meter has the function of measuring current, voltage, frequency, active power, reactive power, apparent power, positive and negative active power, positive and negative reactive power, power factor, etc. simultaneously. This series of multifunctional power meters can replace many traditional analog or digital measuring instruments (such as ammeter, voltmeter, power meter, power factor meter, frequency meter, etc.), which can greatly reduce the system cost, facilitate the field wiring, and improve the reliability of the system. Multi-function power monitor is equipped with a serial port, allowing connection to an open structure computer network; application of Modbus communication protocol, convenient for computer programming settings or reading data.

### **1.2 Product Features**

- Calculation of single-phase power parameters
- Modular design for flexible configuration of individual functions
- Adjustable voltage-current ratio
- Parameter setting password lock, power off permanent save
- Support RS-485 communication, MODBUS-RTU protocol
- Adopt AC/DC dual-purpose power supply, high and low voltage isolation
- Segmented liquid crystal display

- Easy installation and wiring

### 1.3 Product Parameters

<b>Measurement and metrology</b>	
Voltage	Single phase voltage
Current	Single phase current
Active power	Single-phase active power
Reactive power	Single-phase reactive power
Apparent power	Single-phase apparent power
Power factor	Single-phase power factor
Frequency	45-60Hz
<b>Electricity metering</b>	
Active energy	Forward/reverse active energy
Reactive energy	Forward/reverse reactive energy
<b>Communication function</b>	
Communication protocols	MODBUS-RTU
Communication method	RS485

## Chapter 2 Technical Specifications

### 2.1 Technical Parameters

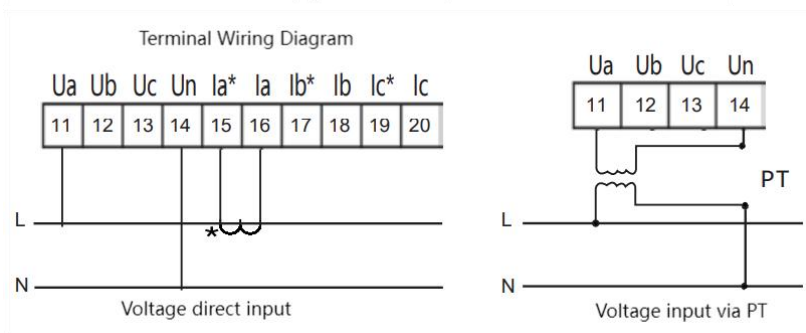
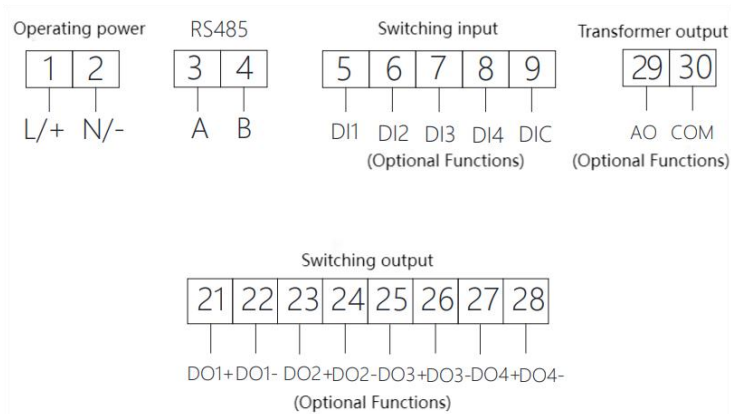
Technical Parameters	norm
Applicable networks	Single-phase two-wire

Operating power		Voltage range	AC/DC85~265V ; DC18V~72V(Optional)
		Power wastage	<5VA
Accuracy Class			Reactive 1 level, the rest 0.5 level
Input	Voltage	Rating	AC 100V、220V、400V
		Power wastage	<0.4VA/Phase
		(electrical) impedance	$\geq 200k\Omega$
	Current	Rating	AC 5A(0.02A-6A)
		Power wastage	<0.2VA/Phase
		(electrical) impedance	$\geq 0.1\Omega$
	Frequency		45Hz~65Hz
Switching input		Dry Contact Input, Opto-Isolated	
Output	Switching output	Relay output; any power alarm can be set, default remote control	
	Analog output	0~20mA/0~5V(can be set arbitrarily)	
	Digital communication	RS485/Modbus-RTU	

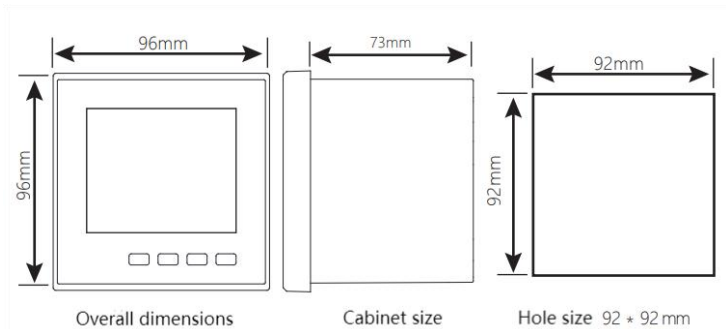
	interface	
	Pulse output	1~2 power pulses, four-quadrant power metering
EMC electromagnetic compatibility test	Electrostatic discharge immunity test	GB/T 17626.2-2006 : Test level 4, test voltage 8kV
	Radio Frequency Electromagnetic Field Immunity Test	GB/T 17626.3-2006 : Test level 3, test field strength 10V/m
	Rapid transient pulse group test	GB/T 17626.4-2008 : Test level 2, current voltage 1kV, other 500V
	Surge (shock) immunity test	GB/T 17626.5-2008 : Test level 4, test voltage 4kV
	Conducted Nuisance Immunity Test for RF Field Induction	GB/T 17626.6-2008 : Test level 3, test field strength 10V/m
	Immunity tests for voltage dips, short-term interruptions and voltage variations	GB/T 17626.11-2008 : Current and voltage test error qualified
	Shock wave immunity test	GB/T 17626.12-1998 : Class B ITE test, pass



## 2.2 Wiring Diagram







## 2.3 Outline/opening dimensions and installation drawings



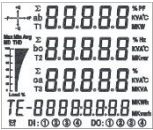

## Chapter 3 Operating Instructions

### 3.1 Key Description

 <p>Bs</p>	<p>Bs key: Return to the previous menu. It is used as a shift key to move the blinking bit during parameter setting if it is in the last level menu.</p>
 <p>Up</p>	<p>Up key: View the previous screen display of the power, setup, select the previous option in the same level menu or type in the value when the value is incremented.</p>
 <p>Dn</p>	<p>Dn key: View the next screen display of the power, setup, select the next option in the same level menu or type in the value when the value decreases.</p>

 <p>St</p>	<p>St key:Go to the next level menu. In the parameter setting, if in the last level menu, as save and return to the upper - level menu; the current menu for the password input menu, to determine whether the password is correct, correct then enter the next - level menu, otherwise, return to the upper - level menu.</p>
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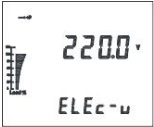

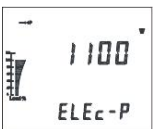
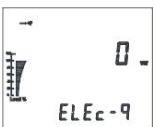
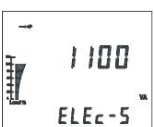
### 3.2 Launch Interface


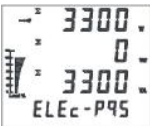
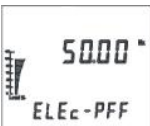
	<p>The startup interface displays all the segment codes on the full screen, and the interface stays for 1s, which is used to detect whether the LCD screen can display normally.</p>
	<p>In the initial interface state, use the "Up" and "Dn" buttons to select the interface to display the power parameter.</p>

### 3.3 Battery Level Inquiry


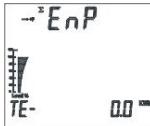
Under the initial display interface, through "Up" and "Dn" keys, select the power interface, electric energy interface or other extended parameter interface to be displayed, and after the query is completed, through "Bs", "Bs", "Bs", "Bs", "Bs" and "Bs". When the query is completed, use "Bs" key to return to the first interface.


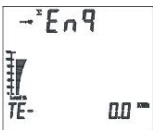
## 3.3.1 Electricity parameter query

	In the initial interface state, the voltage interface is displayed by default.
	Press the "Dn" key to display the current.
	Press the "Dn" key to display the active power.
	Press the "Dn" key to display the reactive power.
	Press the "Dn" key to display the apparent power.

	<p>Press the "Dn" key to display the power factor.</p>
	<p>Press "Dn" to display active power, reactive power and apparent power.</p>
	<p>Press "Dn" to display the system frequency.</p>

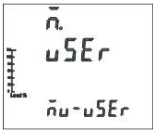
### 3.3.2 Electricity Parameter Inquiry


	<p>In the system frequency screen, press the "Dn" key to display the positive total active energy.</p>
	<p>Press the "Dn" key to display the reverse total active energy.</p>

	<p>Press the "Dn" key to display the total positive reactive energy.</p>
	<p>Press the "Dn" key to display the reverse total reactive energy.</p>

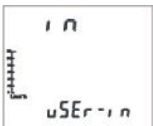
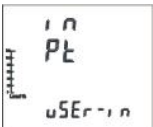

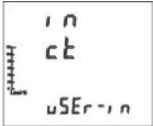
### 3.4 User parameter settings


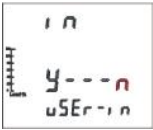
Under the initial display interface, press "St" key continuously and "Dn" key continuously to find the menu item of user setting, as shown in the following figure, press "St" key to enter the user password input interface to complete the password input, increase or decrease the number through "Up" key and "Dn" key, and shift the number blinking through "Bs" key. Press the "St" key to enter the user password input interface to complete the password input, through the "Up" key and "Dn" key to increase or decrease the number, and through the "Bs" key to shift the number blinking, the factory initial password is The initial factory password is "0001".

	<p>In the initial interface, press the "St" key, and then press the "Dn" key continuously to find the user setting menu item.</p>
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	<p>Press "St" key, the password input interface will be displayed, as shown in the left figure, input the correct setup parameter to enter the setup parameter interface, the factory initial password is 0001.</p>
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### 3.4.1 Power parameter setting






	<p>Enter the user parameter setting interface, press the "Dn" key to find the power parameter setting menu item interface, as shown in the left figure.</p>
	<p>Press the "St" key to display the electric parameter setting option interface, through the "Up" and "Dn" keys, find the PT ratio setting menu item, as shown in the left figure.</p>
	<p>Press the "St" key to display the PT ratio parameter setting interface, as shown in the left figure, through the digital increase and decrease key and "Bs" shift key to set the desired PT ratio value (setting value: 1-5000).</p>
	<p>Press the "St" key to return to the electrical parameter setting option interface, and use the "Up" and "Dn" keys to find the CT ratio setting menu item.</p>

	<p>Press the "St" key to display the CT ratio parameter setting interface, as shown in the left figure, through the digital increase and decrease key and "Bs" shift key to set the desired CT ratio value (setting value: 1-5000).</p>
	<p>After setting, press "St" to confirm the setting, press "Bs" continuously to select "y" blinking, and press "St" to confirm the setting. Press "Bs" key continuously to select "y" blinking, and press "St" key to confirm to save the parameter.</p>

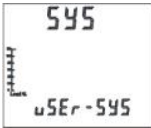
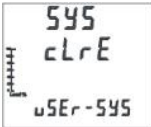


### 3.4.2 Communication parameter setting

	<p>Enter the user parameter setting interface, press the "Dn" key to find the communication parameter setting menu item interface.</p>
	<p>Press the "St" key to display the communication parameter option screen, use the "Up" and "Dn" keys to find the communication address setting menu item.</p>
	<p>Press the "St" key to display the communication address setting interface, and use the "Up" and "Dn" keys to set the desired communication address value (setting value: 1-253).</p>






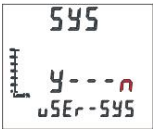
	<p>Press the "St" key to return to the communication parameter option interface, and use the "Up" and "Dn" keys to find the communication baud rate menu item.</p>
	<p>Press the "St" key to display the baud rate setting interface, and set the desired communication baud rate through the "Up" and "Dn" keys (setting options: 4800/9600/9600). 19200).</p>
	<p>Press the "St" key to return to the communication parameter option interface, and use the "Up" and "Dn" keys to find the communication verification setting menu item.</p>
	<p>Press the "St" key to display the parity parameter setting interface, and set the desired parity bit (setting value: no/even/odd) through the "Up" and "Dn" keys.</p>
	<p>After setting, press "St" to confirm the setting, press "Bs" continuously to select "y" blinking, and press "St". Press "Bs" key continuously to select "y" blinking, and press "St" key to confirm the saving parameters.</p>

## 3.4.3 Power zero setting

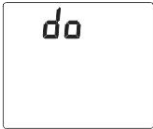
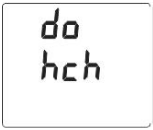
	<p>Enter the user parameter setting interface, press the "Dn" key to find the system parameter setting menu item interface.</p>
	<p>Press the "St" key to display the system parameter setting interface, and use the "Up" and "Dn" keys to find the menu item of power clearing.</p>
	<p>Press "St" key to display the interface of power zero setting, and use "Up" and "Dn" key to switch "yes". Press "Up" and "Dn" to switch between "yes" and "no", select "yes".</p>
	<p>After setting, press "St" to confirm the setting, press "Bs" continuously to select "y" blinking, and press "St" to confirm the setting. Press "Bs" key continuously to select "y" blinking, and press "St" key to confirm to save the parameter.</p>

## 3.4.4 Backlight delay time setting

	<p>Enter the user parameter setting interface, press the "Dn" key to find the system parameter setting menu item interface.</p>
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	<p>Press the "St" key to display the system parameter setting interface, through the "Up" and "Dn" keys, find the backlight delay menu item.</p>
	<p>Press "St" key to display the backlight delay time setting interface, the default is 60S delay time, through the "Up" and "Dn" keys, set the desired backlight delay time (when the time is 60S). (When the time is set to 0, the backlight is always on).</p>
	<p>After setting, press "St" to confirm the setting, press "Bs" continuously to select "y" blinking, and press "St". Press "Bs" key continuously to select "y" blinking, and press "St" key to confirm the saving parameters.</p>

### 3.4.5 Parameter setting for open volume

	<p>Enter the user parameter setting interface, press the "Dn" key, and find the menu item of parameter setting interface.</p>
	<p>Press the "St" key to display the open volume setting options screen, and use the "Up" and "Dn" keys to find the upper limit return parameter setting menu item.</p>


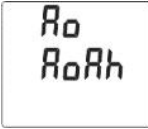



	<p>Press "St" key to display the upper limit return parameter setting interface, use "Up" and "Dn" keys to set the upper limit return value (default is 0.9: i.e., the action value is 0.9% of the set value). 0.9 times of the set value).</p>
	<p>Press the "St" key to return to the output setting option interface, and use the "Up" and "Dn" keys to find the lower limit return parameter setting menu item.</p>
	<p>Press "St" key to display the lower limit return parameter setting interface, use "Up" and "Dn" keys to set the lower limit return value (default is 1.1: i.e., the action value is the same as the set value). 1.1 times of the set value).</p>
	<p>Press the "St" key to return to the output setting options screen, and use the "Up" and "Dn" keys to locate the DO1 output setting menu item.</p>
	<p>Press the "St" key to display the DO1 output parameter setting interface, the default is DO1 output parameter channel selection menu item.</p>
	<p>Press the "St" key to display the DO1 parameter channel setting interface, use the "Up" and "Dn" keys to set the desired channel parameter (setting value: UH/UL/IH/UH). IL is optional; no is remote control output).</p>





	<p>Press the "St" key to return to the DO1 output parameter setting interface, and use the "Up" and "Dn" keys to find the DO1 parameter setting menu item.</p>
	<p>Press the "St" key to display the parameter setting option interface, use the "Up" and "Dn" keys to set the DO1 channel parameters (setting value: change based on the default parameter value, such as). The upper limit value of voltage is 250V by default).</p>
	<p>Press the "St" and "Bs" keys to return to the output setting options screen, and then press the "Up" and "Dn" buttons to select "Up" and "Dn". Use the "Up" and "Dn" buttons to locate the DO2 open volume setting menu item.</p>
	<p>Press the "St" key to display the DO2 output parameter setting interface, the default is the DO2 output parameter channel selection menu item.</p>
	<p>Press the "St" key to display the DO1 parameter channel setting interface, use the "Up" and "Dn" keys to set the desired channel parameter (setting value: all power parameters are optional;). no is remote control output).</p>

	<p>Press the "St" key to return to the DO2 output parameter setting interface, and use the "Up" and "Dn" keys to find the DO2 parameter setting menu item.</p>
	<p>Press the "St" key to display the parameter setting option interface, use the "Up" and "Dn" keys to set the parameters of DO2 channel (setting value: change based on the default parameter value, such as). The lower voltage limit value is 150V by default).</p>
	<p>After setting, press "St" to confirm the setting, press "Bs" continuously to select "y" blinking, and press "St" to confirm the setting. Press "Bs" key continuously to select "y" blinking, and press "St" key to confirm to save the parameter.</p>

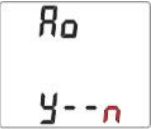
### 3.4.6 Transmission parameter setting

	<p>Enter the user parameter setting interface, press "Dn" key to find the parameter setting menu item interface.</p>
	<p>Press the "St" key to display the variable output setting option interface, and use the "Up" and "Dn" keys to find the variable output channel setting menu item.</p>




	<p>Press the "St" key to display the channel setting interface of transmitter parameters, and set the required channel parameters by using the "Up" and "Dn" keys (setting value: all power parameters are optional).</p>
	<p>Press the "St" key to display the variable output setting option interface, and use the "Up" and "Dn" keys to find the variable output upper limit setting menu item.</p>
	<p>Press the "St" key to display the upper limit setting interface of the variable output, and set the desired upper limit value parameter through the "Up" and "Dn" keys (setting value: 4-20; default 20). ).</p>
	<p>Press the "St" key to return to the variable output setting option interface, and use the "Up" and "Dn" keys to find the variable output lower limit setting menu item.</p>
	<p>Press "St" key to display the lower limit setting interface of variable output, set the desired lower limit value parameter by "Up" and "Dn" keys (setting value: 4-20; default 4). The lower limit value parameter can be set by "Up" and "Dn" keys (setting value: 4-20; default 4).</p>


	<p>Press the "St" key to return to the variable transmission setting option interface, and use the "Up" and "Dn" keys to find the variable transmission channel parameter upper limit setting menu item.</p>
	<p>Press "St" key to display the upper limit setting interface of variable transmission parameter, through "Up" and "Dn" keys, set the required parameter (setting value: change based on the default parameter value, such as variable transmission parameter). (Setting value: change based on the default parameter value, e.g., the upper limit value of variable transmission is 230V by default).</p>
	<p>Press the "St" key to return to the variable transmission setting option interface, and use the "Up" and "Dn" keys to find the lower limit setting menu item of the variable transmission channel parameters.</p>
	<p>Press "St" key to display the lower limit setting interface of variable transmission parameter, through "Up" and "Dn" keys, set the required parameter (setting value: change based on the default parameter value, such as variable). (Setting value: change based on the default parameter value, e.g. the default value of lower limit of variable transmission is 0.0V).</p>



	<p>After setting, press "St" to confirm the setting, press "Bs" continuously to select "y" blinking, and press "St" to confirm the setting. Press "Bs" key continuously to select "y" blinking, and press "St" key to confirm to save the parameter.</p>
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### 3.4.7 User Password Setting

	<p>Enter the user parameter setting interface, press the "Dn" key to find the system parameter setting menu item interface.</p>
	<p>Press the "St" key to display the system parameter setting interface, and use the "Up" and "Dn" keys to find the user password menu item.</p>
	<p>Press the "St" key to display the user password setting interface, and use the "Up" and "Dn" keys to set the desired new user password.</p>

	<p>After setting, press "St" to confirm the setting, press "Bs" continuously to select "y" blinking, and press "St" to confirm the setting. Press "Bs" key continuously to select "y" blinking, and press "St" key to confirm to save the parameter.</p>
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\*Note: The power parameters corresponding to the open output and variable output are all quadratic values, i.e., the voltage range is 0-400V; the current range is 0-5A.

**Liquid Crystal Segment Code English Correspondence  
Table**

1	2	3	4	5	6	7	8	9	0	A	B
1	2	3	4	5	6	7	8	9	0	A	b
C	D	E	F	G	H	I	J	K	L	M	N
C	d	E	F	G	H	,	J	K	L	n̄	n
O	P	Q	R	S	T	U	V	W	X	Y	Z
o	P	q	r	s	t	u	v	w	x	y	z

## After-sales service

1. If the user does not understand the description in the manual during installation and commissioning, please contact the aftersales team.
2. The company's technology is ready to answer product-related questions.
3. The problems arising in the use of the product will be replied within one working day.
4. Our company has a one-year free warranty for the above products from the date of sale.

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Technical descriptions are subject to change without notice

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