350

# ADW300 Wireless metering instruments

## Installation instructions V1.1

Jiangsu Acrel Electric Manufacturing Co., Ltd

# Declaration

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we reserve the right to modify the product specifications described in the manual without prior notice. Please contact the local agent to know the current specification of this product before ordering.

Manual Revision Record

| date | legacy version | new version | remark |
|---|---|---|---|
| 2020/3/2 | | V1.0 | 1.Version 1; |
| 2020/4/27 | V1.0 | V1.1 | 1. options increased by 4G<br>2. Address and remark errors 2. fix register address table<br>3. Added temperature range and residual current range description |

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# 1 General

ADW300 wireless metering instrument is mainly used to measure the three-phase active power of low-voltage network, which has the advantages of small volume, high precision and rich function, and has many optional communication modes, which can support wireless communication modes such as RS485 communication and Lora、2G、NB、4G, and increase the current sampling mode of external transformer, so as to facilitate users to install and use in different situations. can be flexibly installed in the distribution box to realize the requirements of sub-electric energy metering, operation and maintenance supervision or power monitoring for different areas and different loads.

# 2 Product Model Specifications and Functional Features

## 2. 1 ADW300 Naming rules for wireless metering instruments

| Model | Description |
|---|---|
| ADW300 | Wireless measuring meter |
| None | Internal CT |
| W | External Split core CT |
| LR | LoRa wireless communication |
| 2G | GPRS wireless communication |
| NB | NB-IOT |
| 4G | 4G wireless communication |
| K | 4DI/2DO |
| C | RS485(Modbus-RTU) |
| T | 4 Channels temperature |
| L | 1 Channel residual current |

## 2. 2 ADW300 Features of Wireless Metering Instrument

Feature 1 ADW300 Main Function

| Function | Function declaration |
|---|---|

| | |
|---|---|
| Display | LCD（Digital） |
| Electricity metering | Active power metering (positive and reverse), four-quadrant reactive power |
| electrical measurement | Voltage, current, power factor, frequency, active power, reactive power, apparent power |
| Harmonic Function | Total harmonic content and times harmonic content （2～31st） |
| pulse output | Active pulse output |
| Three-phase imbalance | Voltage and current imbalance |
| Temperature measurement function | A、B、C、N four channel Temperature Measurement （Optional T） |
| DI/DO | 4DI,2DO（Optional K） |
| residual current | 1 residual current measurement（Optional L） |
| LED indicator | Pulse indicator |
| External transformer | External split core transformer (optional W) |
| Electric reference alarm | undervoltage, overvoltage, undercurrent, undercurrent, underload, etc. |
| Communication | Infrared communication |
| | RS485 Interface （Optional C） |
| | 470MHz Wireless transform（Optional LR） |
| | GPRS Wireless communication（Optional 2G） |
| | NB-IOT Wireless communication（Optional NB） |
| | 4G Wireless communication（Optional 4G） |

# 3 Technical parameters

## 3.1 Electrical specification

Sheet 2 ADW300 Electrical specification

| | | |
|---|---|---|
| Voltage input | Rated voltage | 3×57.7/100V, 3×220/380V, 3×380/660V, 3×100V, 3×380V, 3×660V |
| | Reference frequency | 50Hz |
| | Power consumption | Each phase<0.5VA |
| Current input | Input current | 3×1(6)A ; 3×1(6)A（ADW300W）, 3×20(100)A（ADW300W） |
| | Starting current | 1‰Ib(0.5S 级), 4‰Ib(1 级) |
| | Power consumption | Each phase<1VA |
| Auxiliary power supply | Power supply | AC 85~265V |
| | Power consumption | <2W |
| Measurement | Standard | GB/T17215.322-2008, GB/T17215.321-2008 |

| | | |
|---|---|---|
| performance | Active power accuracy | Class 0.5S（ADW300）, Class 1（ADW300W） |
| | Temperature accuracy | ±2℃ |
| Pulse | Pulse length | 80±20ms |
| | Pulse constant | 6400imp/kWh , 400imp/kWh |
| Communication | Wireless | 470MHz wireless transform , open space distance : 1km; 2G; NB |
| | Infrared communications | Fixed baud rate 1200 |
| | Interface | RS485(A、B) |
| | Medium | STP |
| | Protocol | MODBUS-RTU、DL/T 645-07 |

## 3.2 Environment condition

Sheet 3 ADW300 Environment condition

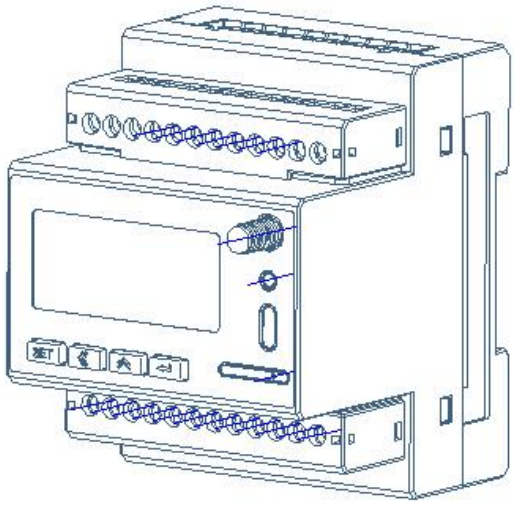
| | | |
|---|---|---|
| Temperature range | Work temperature | -25℃~55℃ |
| | Storage temperature | -40℃~70℃ |
| Humidity | | ≤95%（no condensation ） |
| Altitude | | <2000m |

## 4 Dimensions and installation instructions (Unit：mm)

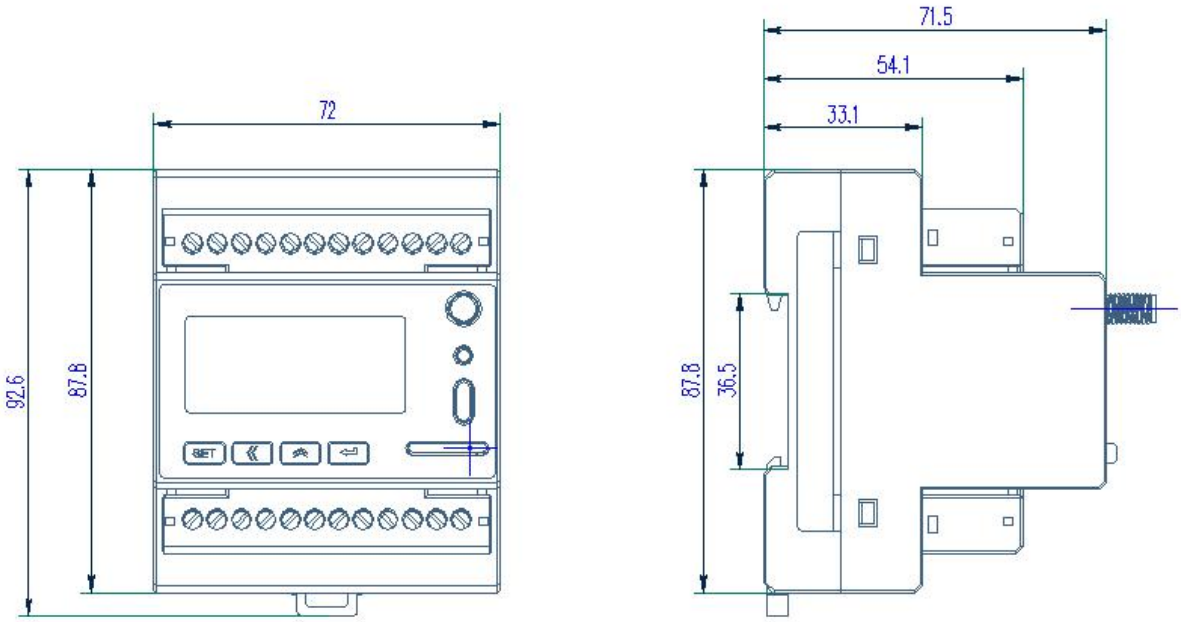
## 4.1 Shape size(Unit：mm)

Sheet 4 ADW300 Matched Residual Current Transformer Specification & Size

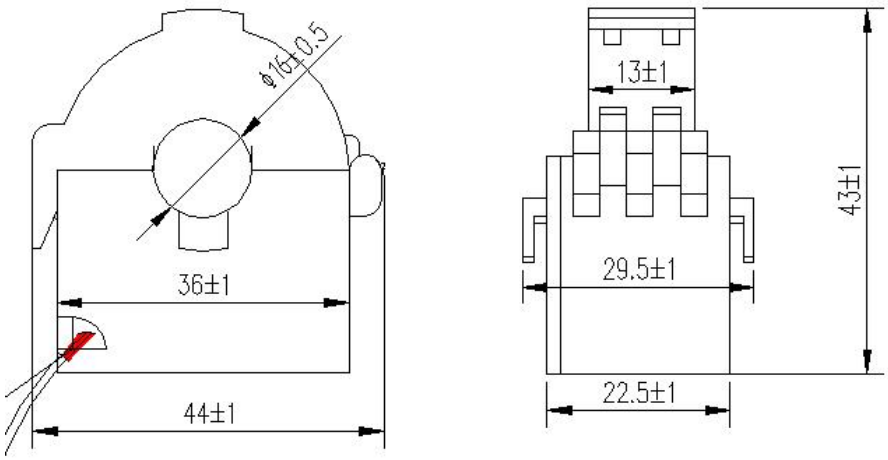
| Type | Rated Current In | Internal aperture Φ mm | External aperture Φmm | Weight |
|---|---|---|---|---|
| AKH-0.66L45 | 16～100A | 45 | 76 | 0.18 |
| AKH-0.66L80 | 100～250A | 80 | 120 | 0.42 |
| AKH-0.66L100 | 250～400A | 100 | 140 | 0.50 |
| AKH-0.66L150 | 400～800A | 150 | 190 | 1.32 |
| AKH-0.66L200 | 800～1500A | 200 | 240 | 1.94 |



Graph 1 ADW300impression drawing

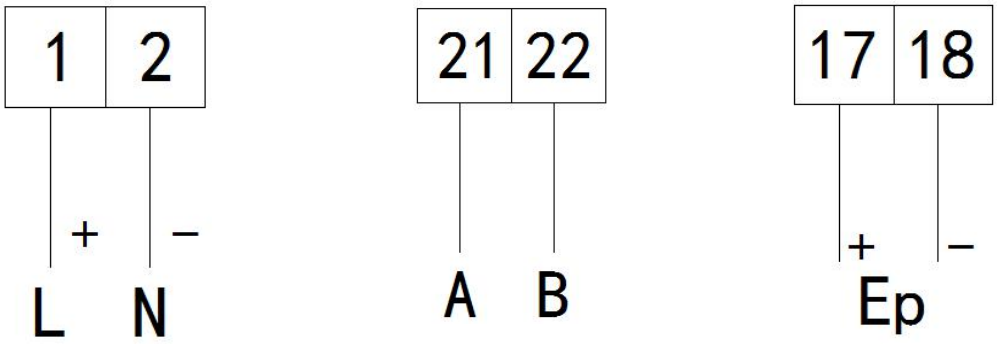



Sheet 2 ADW300 dimensional drawing



Graph 3 ADW300W Matching transformers HCT16K-FJ dimensional drawing

## 4.2 Power terminal, RS485 communication terminal, pulse output terminal

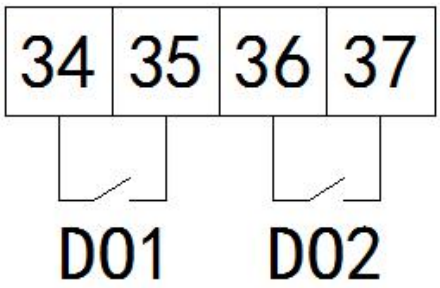



auxiliary power　　communication interface　　Pulse port

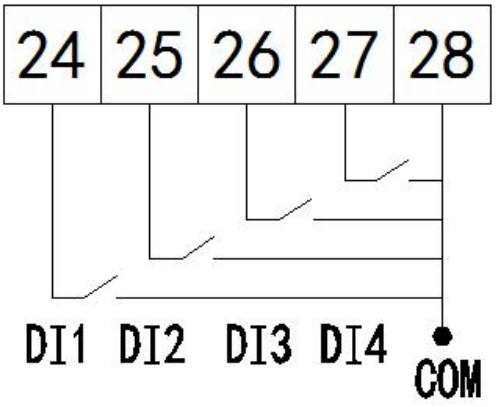
## 4.3 Switch input/output terminals

Switch input is all using switch signal input mode, the instrument is equipped with 12 V of working power supply, no external power supply. When the outside is turned on or off, the on or off information is collected through the instrument switch input module and displayed locally through the instrument. switch quantity input can not only collect and display the local switch information, but also realize the remote transmission function through the RS485 of the instrument, that is ," remote signal "function.

Switch output is relay output, can realize "remote control" and alarm output.

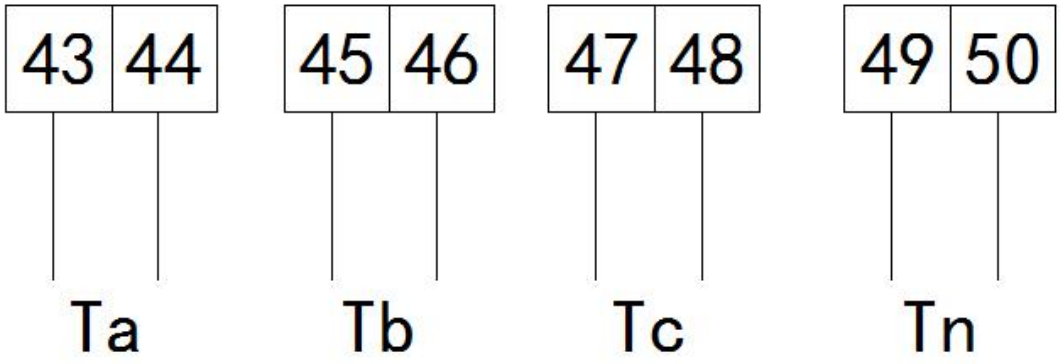



Switching output

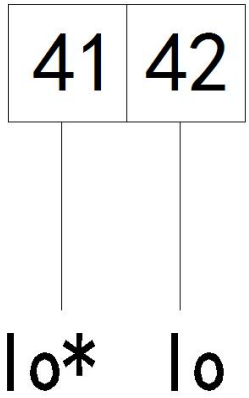



Switching input

## 4.4 Temperature measurement, leakage current terminal




Temperature input

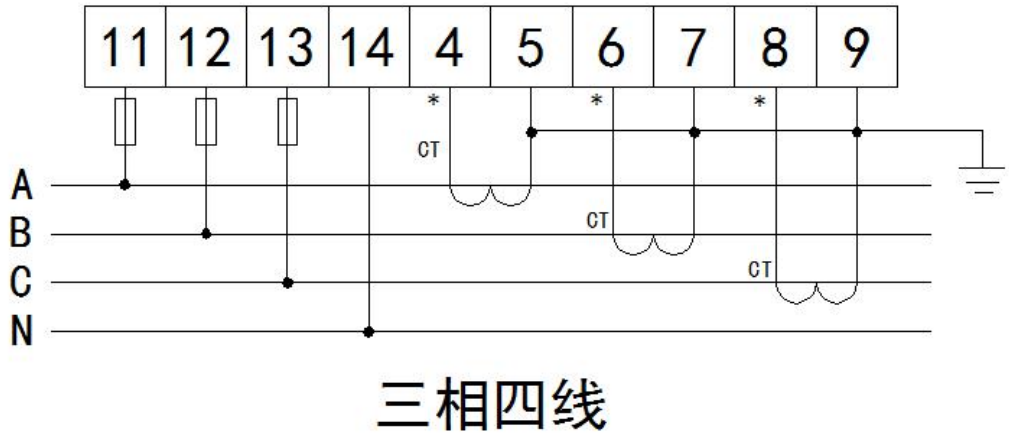



Leakage input

## 4.5 Wiring instructions

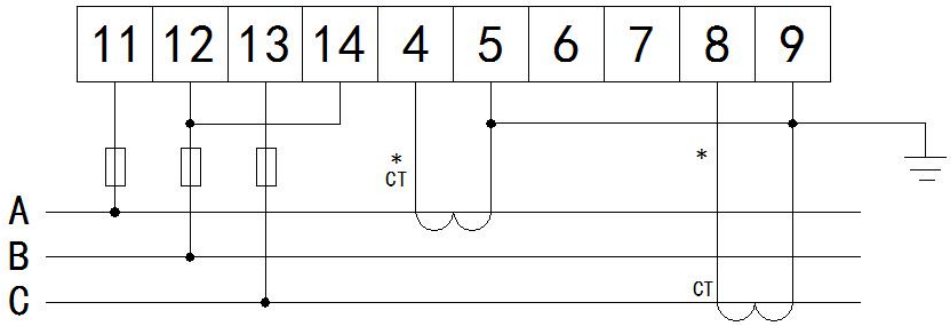
ADW300 and ADW300W can be connected by three-phase four-wire current transformer, three-phase three-wire current transformer, three-phase four-wire current transformer and three-phase three-wire current transformer.

### 4.5.1 ADW300 Wiring instructions



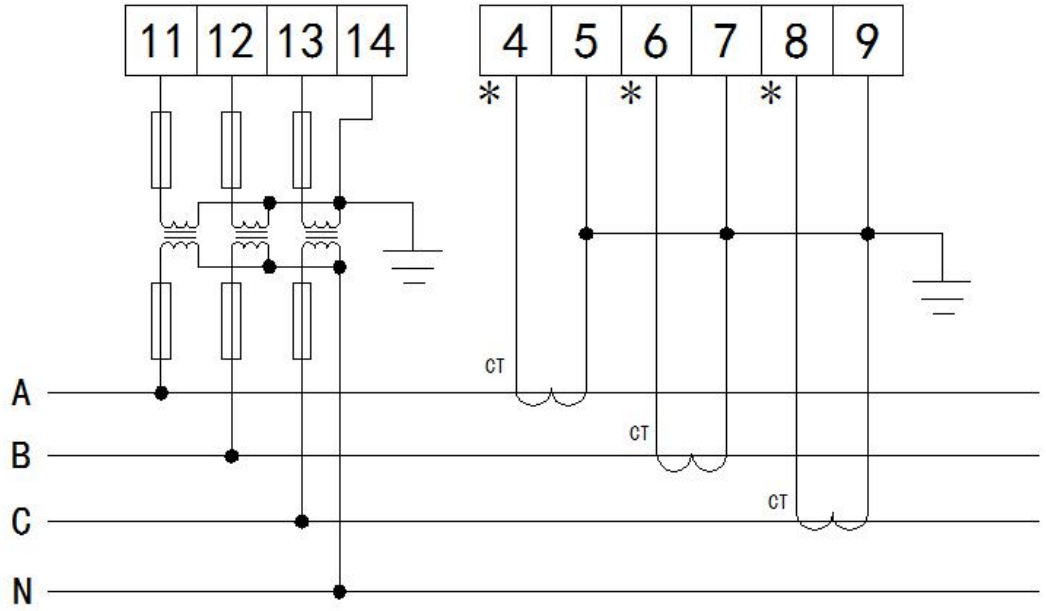

三相四线

3P4W

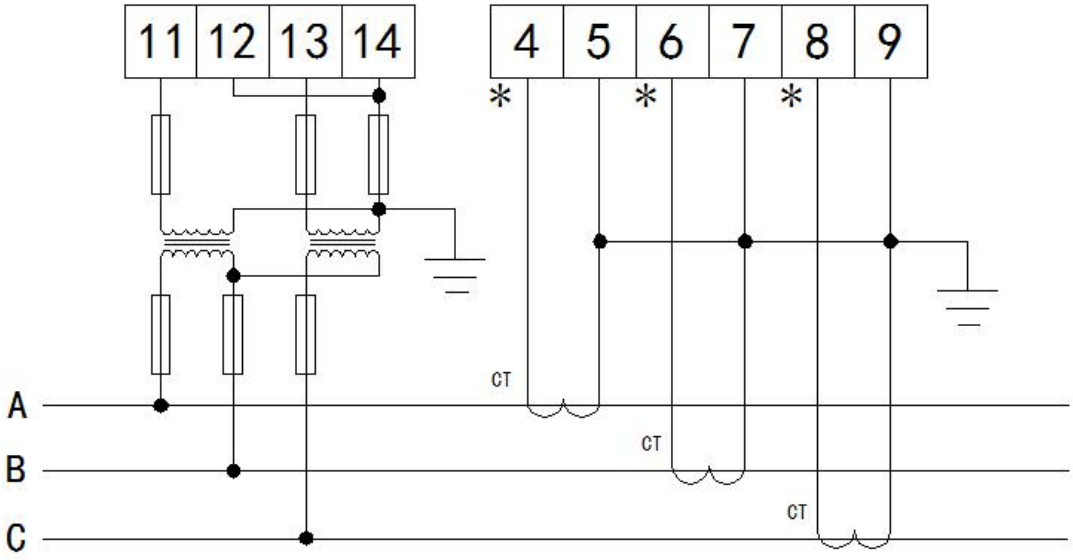



三相三线 3P3W

Voltage PT access：

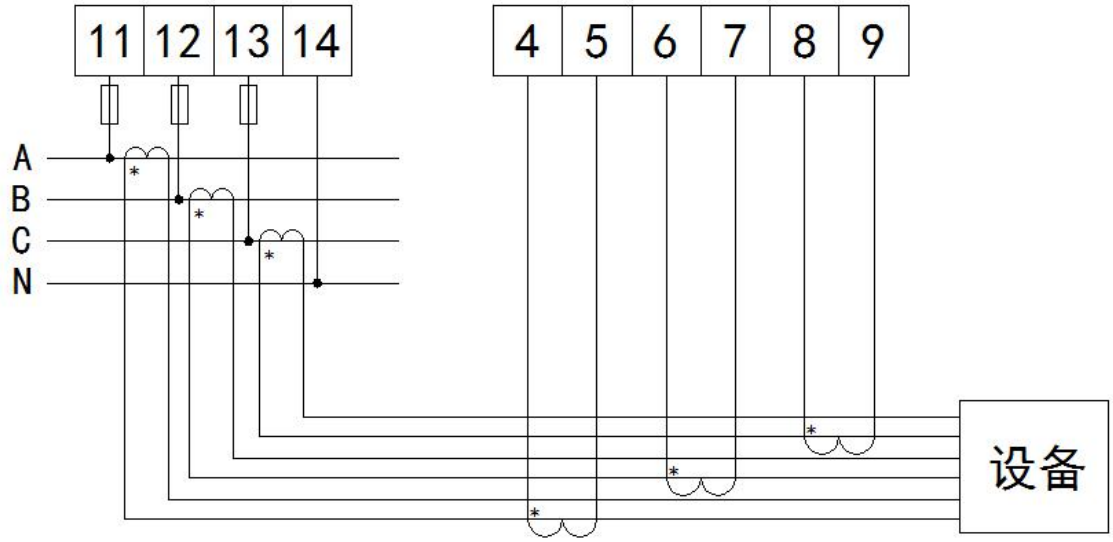



三相四线 3P4W

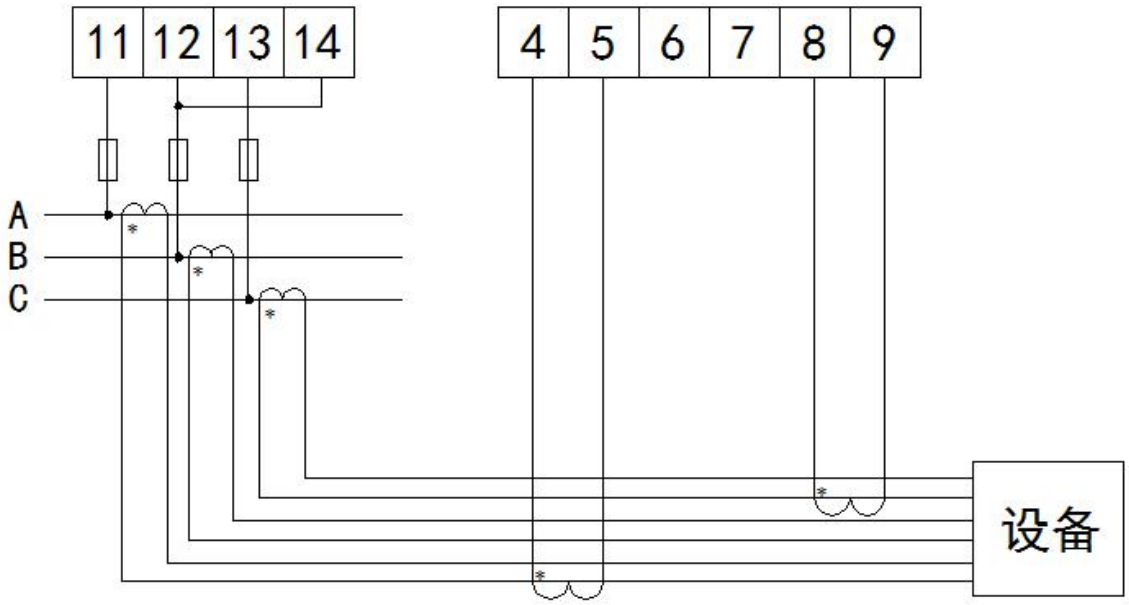



三相三线 3P3W

### 4.5.2 ADW300W Wiring instructions




三相四线 3P4W




三相三线 3P3W

## 5 Main functional features

### 5.1 Measuring function

The full power parameters can be measured including voltage U、 current I、 active power P、 reactive power Q、apparent power, power factor, phase angle between voltage and current Φ、voltage

imbalance, current imbalance, frequency F、31 subharmonic, parity total harmonic content and total harmonic content. where voltage U retain 1 decimal, frequency F retain 2 decimal, current I retain 3 decimal, power P retain 4 decimal, phase angle Φ retain 2 decimal, imbalance △ retain 2 decimal

Example: U = 220.1V, f = 49.98HZ, I = 1.999A, P = 0.2199KW, Φ= 60.00°, △=0.00%

Support 4 way temperature measurement range :-40~99℃, accuracy ±2.

Residual current detection, initial range :0~1000 mA, can set range multiple (1~60)

## 5.2 Measurement function

Can measure current combined active power, forward active power, reverse active power, inductive reactive power, capacitive reactive power, as seen in the electric energy

## 5.3 Time sharing function

Each of the two time slots can be divided into 4 time zones per year with 12 day slots and 4 rates (F1、F2、F3、F4 peak flat valley). The basic idea of time-sharing billing is to use electric energy as a commodity, using economic leverage, high electricity price in peak period and low electricity price in low period, so as to cut the peak and fill the valley, improve the quality of electricity consumption and improve the comprehensive economic benefit.

## 5.4 Demand function

Relevant concepts of requirements are as follows:

| | |
|---|---|
| Demand | The average power measured in the demand period is called the demand |
| maximum demand | The maximum demand in a specified time zone is called the maximum Demand |
| Slip difference time | From any time, the method of recursively measuring demand by time less than the period of demand is called slip differential demand. Time of recursion is time of slip |
| Demand period | Time intervals for continuous measurement of equal average power, also known as window time |

The default demand period is 15 minutes and the slip time is 1 minute

Can measure 8 kinds of maximum demand namely A/B/C three-phase current, forward active power, reverse active power, inductive reactive power, capacitive reactive power, apparent power maximum demand and

the time when the maximum demand occurs.

Display real-time eight requirements namely A/B/C three-phase current, forward active, reverse active, inductive reactive, capacitive reactive, apparent power requirements.

## 5.5 Historical Power Statistics Function

Energy statistics for December's history (including 4 quadrants, per rate)

## 5.6 Switching Input and Output Function

here are 2 switch quantity output ,4 switch quantity input, switch quantity output is relay output, can realize "remote control" and alarm output. switch quantity input can not only collect and display the local switch information, but also realize the remote transmission function through the RS485 of the instrument, that is ," remote signal "function.

## 5.7 Wireless communication function

ADW300 support 470 MHz of LORA communications ,2 G、NB and 4 communications. A specific agreement on G、NB、4G 2 communication can be obtained by contacting the relevant personnel of our company.

# 6 Communications instruction

## 6.1 Communications protocol

This instrument adopts MODBUS-RTU agreement or DL/T645 protocol. Please refer to the relevant agreement standard for the specific agreement format.

## 6.2 MODBUS Communication

When communicating with Modbus protocol, the function code of read data command is 03 H, the function code of write data command is 10 H..
The specific register address table is as follows:

| Original Address | Data Name | Length (bytes) | Read/ write | Remark |
|---|---|---|---|---|
| 0000H | Communication Address | 2 | R/W | 1～247 |
| 0001H | Baud Rate | 2 | R/W | 1：1200bps |

| | | | | |
|---|---|---|---|---|
| | | | | 2：3400bps<br>3：4800bps<br>4：9600bps |
| 0002H | Spread frequency factor | 2 | R/W | 6~12 |
| 0003H | Channel setting | 2 | R/W | 0-45(The same primary station as the channel) |
| 0004H | High: verification mode, low: stop bit | 2 | R/W | High :0- no verification ,1- even verification ,2- odd verification, low :0-1 stop bit ,1-2 stop bit |
| 0005H | Save | | | |
| 0006H | Pulse constant | | | |
| 0007H | Backlight Time | | | |
| 0008H | Password | | | |
| 0009H~000CH | Save | | | |
| 000DH | Current specifications | | | |
| 000EH | Voltage ratio | | | |
| 000FH | Current ratio | | | |
| 0010H | N Phase Temperature | 2 | R | Shaping symbols<br>Unit 0.1℃ |
| 0011H~0013H | Time Date (seconds, minutes, hours, days, months, years) | | | |
| 0014H | A phase voltage | 2 | R | Integral<br>1 decimal place is reserved, and the data obtained in units V( divided by 10 is the actual data. The following data decimal places are processed in this way) |
| 0015H | B phase voltage | 2 | R | |
| 0016H | C phase voltage | 2 | R | |
| 0017H | AB phase voltage | 2 | R | |
| 0018H | BC line voltage | 2 | R | |
| 0019H | CA line voltage | 2 | R | |
| 001AH | A phase current | 2 | R | Integral , UnitA<br>Keep 3 decimal places |
| 001BH | B phase current | 2 | R | |
| 001CH | C phase current | 2 | R | |
| 001DH | The sum of three-phase current loss | 2 | R | |
| 001EH | A Phase active power | 4 | R | Integral symbol<br>UnitkW<br>Keep 3 decimal places |
| 0020H | B Phase active power | 4 | R | |
| 0022H | C Phase active power | 4 | R | |
| 0024H | Total active power | 4 | R | |
| 0026H | A Phase reactive power | 4 | R | Integral symbol |

| | | | | |
|---|---|---|---|---|
| 0028H | B Phase reactive power | 4 | R | UnitkVar<br>Keep 3 decimal places |
| 002AH | C Phase reactive power | 4 | R | |
| 002CH | Total reactive power | 4 | R | |
| 002EH | A Phase apparent power | 4 | R | Integral<br>UnitKVA<br>Keep 3 decimal places |
| 0030H | B Phase apparent power | 4 | R | |
| 0032H | C Phase apparent power | 4 | R | |
| 0034H | Total apparent power | 4 | R | |
| 0036H | A Phase power factor | 2 | R | Integral<br>Keep 3 decimal places |
| 0037H | B Phase power factor | 2 | R | |
| 0038H | C Phase power factor | 2 | R | |
| 0039H | Total power factor | 2 | R | |
| 003AH | DI status | 2 | R | shaping<br>Bit0：DI1<br>Bit1：DI2<br>Bit2：DI3<br>Bit3：DI4 |
| 003BH | Power Frequency | 2 | R | Integral 3 decimal places |
| 003CH | Combined total active power | 4 | R | Integral<br>UnitkWh<br>Keep 3 decimal places |
| 003EH | Forward active power | 4 | R | |
| 0040H | Reverse active power | 4 | R | |
| 0042H | Forward reactive power | 4 | R | Integral , UnitkVarh<br>Keep 3 decimal places |
| 0044H | Reverse reactive power | 4 | R | |
| 0046H | A phase total electrical energy | 4 | R | Integral<br>UnitkWh<br>Keep 3 decimal places |
| 0048H | A Phase positive active power | 4 | R | |
| 004AH | A phase reverse active energy | 4 | R | |
| 004CH | A Phase positive reactive power | 4 | R | Integral , UnitkVarh<br>Keep 3 decimal places |
| 004EH | A phase reverse reactive power | 4 | R | |
| 0050H | B phase total electrical energy | 4 | R | Integral<br>UnitkWh<br>Keep 3 decimal places |
| 0052H | B phase positive active power | 4 | R | |
| 0054H | B instead of active energy | 4 | R | |
| 0056H | B phase forward reactive power | 4 | R | Integral , UnitkVarh<br>Keep 3 decimal places |
| 0058H | B phase reverse reactive power | 4 | R | |
| 005AH | C phase total electrical energy | 4 | R | Integral<br>UnitkWh |

| | | | | |
|---|---|---|---|---|
| 005CH | C phase positive active power | 4 | R | Keep 3 decimal places |
| 005EH | C phase reverse active energy | 4 | R | |
| 0060H | C phase positive reactive power | 4 | R | Integral , UnitkVarh<br>Keep 3 decimal places |
| 0062H | C phase reverse reactive power | 4 | R | |
| 0064H | Maximum active power demand for the month | 4 | R | Integral , UnitKW<br>Keep 3 decimal places |
| 0066H~0067H | Occur time | 4 | R | minute、hour、day、month |
| 0068H | Maximum reverse active power requirement for the month | 4 | R | Integral , UnitkVar<br>Keep 3 decimal places |
| 006AH~006BH | Occur time | 4 | R | minute、hour、day、month |
| 006CH | Maximum demand for forward reactive power for the month | 4 | R | Integral , UnitkVar<br>Keep 3 decimal places |
| 006EH~006FH | Occur time | 4 | R | minute、hour、day、month |
| 0070H | Maximum reverse reactive power requirement for the month | 4 | R | Integral , UnitkVar<br>Keep 3 decimal places |
| 0072H~0073H | Occur time | 4 | R | minute、hour、day、month |
| 0074H | A phase voltage total distortion rate | 2 | R | Total distortion rate of split voltage and current Integral<br>Keep 2 decimal places |
| 0075H | B phase voltage total distortion rate | 2 | R | |
| 0076H | C phase voltage total distortion rate | 2 | R | |
| 0077H | A phase current total distortion rate | 2 | R | |
| 0078H | B phase current total distortion rate | 2 | R | |
| 0079H | C phase current total distortion rate | 2 | R | |
| 007AH | A phase voltage times harmonics(2-31st) | 2×30 | R | Current Phase 2~31 Harmonic Content shaping<br>Keep 2 decimal places |
| 0098H | B phase voltage times harmonics(2-31st) | 2×30 | R | |
| 00B6H | C phase voltage times harmonics(2-31st) | 2×30 | R | |
| 00D4H | A phase current times harmonics(2-31st) | 2×30 | R | Current Phase 2~31 Harmonic Content shaping<br>Keep 2 decimal places |
| 00F2H | B phase current times harmonics(2-31st) | 2×30 | R | |
| 0110H | C phase current times | 2×30 | R | |

| | | | | |
|---|---|---|---|---|
| | harmonics(2-31st) | | | |
| 012EH | A phase fundamental wave voltage | 2 | R | Integral ， UnitV<br>Keep 1 decimal places |
| 012FH | B phase fundamental wave voltage | 2 | R | |
| 0130H | C phase fundamental wave voltage | 2 | R | |
| 0131H | A phase harmonic voltage | 2 | R | |
| 0132H | B phase harmonic voltage | 2 | R | |
| 0133H | C phase harmonic voltage | 2 | R | |
| 0134H | A phase fundamental wave current | 2 | R | Integral ， UnitA<br>Keep 2 decimal places |
| 0135H | B phase fundamental wave current | 2 | R | |
| 0136H | C phase fundamental wave current | 2 | R | |
| 0137H | A phase harmonic current | 2 | R | |
| 0138H | B phase harmonic current | 2 | R | |
| 0139H | C phase harmonic current | 2 | R | |
| 013AH | A phase fundamental wave active power | 4 | R | Integral symbol, UnitkW<br>Keep 3 decimal places |
| 013CH | B phase fundamental wave active power | 4 | R | |
| 013EH | C phase fundamental wave active power | 4 | R | |
| 0140H | Total active power of fundamental wave | 4 | R | |
| 0142H | A phase reactive power of fundamental wave | 4 | R | Integral symbol, UnitkVar<br>Keep 3 decimal places |
| 0144H | B phase reactive power of fundamental wave | 4 | R | |
| 0146H | C phase reactive power of fundamental wave | 4 | R | |
| 0148H | Total reactive power of fundamental wave | 4 | R | |
| 014AH | A phase harmonic active power | 4 | R | Integral symbol, UnitkW<br>Keep 3 decimal places |
| 014CH | B phase harmonic active power | 4 | R | |
| 014EH | C phase harmonic active power | 4 | R | |
| 0150H | Total harmonic active power | 4 | R | |
| 0152H | A phase harmonic reactive power | 4 | R | Integral symbol, UnitkVar<br>Keep 3 decimal places |
| 0154H | B phase harmonic reactive | 4 | R | |

| | | | | |
|---|---|---|---|---|
| | power | | | |
| 0156H | C phase harmonic reactive power | 4 | R | |
| 0158H | Total harmonic reactive power | 4 | R | |
| 015AH | Current forward active demand | 4 | R | Integral , UnitkW<br>Keep 3 decimal places |
| 015CH | Current reverse active power demand | 4 | R | |
| 015EH | Current forward reactive power demand | 4 | R | Integral , UnitkVar<br>Keep 3 decimal places |
| 0160H | Current reverse reactive power demand | 4 | R | |
| 0162H | Voltage imbalance | 2 | R | shaping<br>Unit0.01% |
| 0163H | Current imbalance | 2 | R | |
| 0164H | A phase temperature | 2 | R | Shaping Symbol<br>Unit0.1℃ |
| 0165H | B phase temperature | 2 | R | |
| 0166H | C phase temperature | 2 | R | |
| 0167H | Time Zone Schedule Number / Time Zone Date: Day | 2 | R/W | Time area tables |
| 0168H | Time Zone Date: Month/Time Zone Schedule Number | 2 | R/W | |
| 0169H | Time zone date: day/time zone date: month | 2 | R/W | |
| 016AH | Time Zone Schedule Number / Time Zone Date: Day | 2 | R/W | |
| 016BH | Time Zone Date: Month/Time Zone Schedule Number | 2 | R/W | |
| 016CH | Time zone date: day/time zone date: month | 2 | R/W | |
| 016DH | Time 1 Rate / Time 1 Start: minute | 2 | R/W | 1#time period Schedule |
| 016EH | | 2 | R/W | |
| 016FH | Start of Time 2: minute / Start of Time 2:hour | 2 | R/W | |
| 0170H | Time 3 Rate / Time3 Start: minute | 2 | R/W | |
| 0171H | Start of time period 3: Hour/Time period 4 Rate Number | 2 | R/W | |
| 0172H | Start of time period 4:minute/Start of time | 2 | R/W | |

| | | | | |
|---|---|---|---|---|
| | period 4:: hour | | | |
| 0173H | Time 4 Rate / Time 5 Start: minute | 2 | R/W | |
| 0174H | Start of time period 5:: hour /Time period 6 Rate Number | 2 | R/W | |
| 0175H | Start of Time period 6 : minute /Start of Time period 6: hour | 2 | R/W | |
| 0176H | Time period 7 Rate Number/ Start of Time period 7 : minute | 2 | R/W | |
| 0177H | Start of Time period 7 : hour /Time period 8 Rate Number | 2 | R/W | |
| 0178H | Start of Time period 8 : minute/Start of Time period 8 : hour | 2 | R/W | |
| 0179H | Time period 9 Rate Number/Start of Time period 9 : minute | 2 | R/W | |
| 017AH | Start of Time period 9 : hour/Time period 10 Rate Number | 2 | R/W | |
| 017BH | Start of Time period 10 : minute/Start of Time period 10 : hour | 2 | R/W | |
| 017CH | Time period 11 Rate Number/Start of Time period 11: minute | 2 | R/W | |
| 017DH | Start of Time period 11 : hour/Time period 12 Rate Number | 2 | R/W | |
| 017EH | Start of Time period 12: minute/Start of Time period 12 : hour | 2 | R/W | |
| 017FH | Time period 13 Rate Number/Start of Time period 13: minute | 2 | R/W | |
| 0180H | Start of Time period 13 : hour/Time period 14 Rate Number | 2 | R/W | |
| 0181H | Start of Time period 14: minute/Start of Time period 14 : hour | 2 | R/W | |
| 0182H | Rate number for time | 2 | R/W | 2# time period Schedule |

| | | | | |
|---|---|---|---|---|
| | period 1 /Start of Time period 1: minute | | | |
| 0183H | Start of Time period 1: hour/Rate number for time period 2 | 2 | R/W | |
| 0184H | Start of Time period 2: minute/Start of Time period 2: hour | 2 | R/W | |
| 0185H | Rate number for time period 3 /Start of Time period 3: minute | 2 | R/W | |
| 0186H | Start of Time period 3: hour/Rate number for time period 4 | 2 | R/W | |
| 0187H | Start of Time period 4: minute/Start of Time period 4: hour | 2 | R/W | |
| 0188H | Rate number for time period 5 /Start of Time period 5: minute | 2 | R/W | |
| 0189H | Start of Time period 5: hour/Rate number for time period 6 | 2 | R/W | |
| 018AH | Start of Time period 6: minute/Start of Time period 6: hour | 2 | R/W | |
| 018BH | Rate number for time period 7 /Start of Time period 7: minute | 2 | R/W | |
| 018CH | Start of Time period 7: hour/Rate number for time period 8 | 2 | R/W | |
| 018DH | Start of Time period 8: minute/Start of Time period 8: hour | 2 | R/W | |
| 018EH | Rate number for time period 9 /Start of Time period 9: | 2 | R/W | |

| | | | | |
|---|---|---|---|---|
| | minute | | | |
| 018FH | Start of Time period 9: hour/Rate number for time period 10 | 2 | R/W | |
| 0190H | Start of Time period 10: minute/Start of Time period 10: hour | 2 | R/W | |
| 0191H | Rate number for time period 11 /Start of Time period 11: minute | 2 | R/W | |
| 0192H | Start of Time period 11: hour/Rate number for time period 12 | 2 | R/W | |
| 0193H | Start of Time period 12: minute/Start of Time period 12: hour | 2 | R/W | |
| 0194H | Rate number for time period 13 /Start of Time period 13: minute | 2 | R/W | |
| 0195H | Start of Time period 13: hour/Rate number for time period 14 | 2 | R/W | |
| 0196H | Start of Time period 14: minute/Start of Time period 14: hour | 2 | R/W | |
| 0197H | Current total Active sharp power | 4 | R | Integral , UnitkWh Keep 2 decimal places |
| 0199H | Current Total Active Peak Power | 4 | R | |
| 019BH | Current Total Active Flat Power | 4 | R | |
| 019DH | Current total active valley power | 4 | R | |
| 019FH | Current forward active sharp power | 4 | R | |
| 01A1H | Current forward active peak power | 4 | R | |
| 01A3H | Current forward active flat power | 4 | R | |
| 01A5H | Current forward active valley power | 4 | R | |

| | | | | |
|---|---|---|---|---|
| 01A7H | Current reverse active sharp power | 4 | R | |
| 01A9H | Current reverse active peak power | 4 | R | |
| 01ABH | Current reverse active flat power | 4 | R | |
| 01ADH | Current valley active sharp power | 4 | R | |
| 01AFH | Current forward reactive sharp power | 4 | R | Integral , UnitkVarh<br>Keep 2 decimal places |
| 01B1H | Current forward reactive peak power | 4 | R | |
| 01B3H | Current forward reactive flat power | 4 | R | |
| 01B5H | Current forward reactive valley power | 4 | R | |
| 01B7H | Current reverse reactive sharp power | 4 | R | |
| 01B9H | Current reverse reactive peak power | 4 | R | |
| 01BBH | Current reverse reactive flat power | 4 | R | |
| 01BDH | Current reverse reactive valley power | 4 | R | |
| 01BFH | wireless signal strength | 2 | R | Symbol shaping |
| 01C1H | residual current | 2 | R | shaping<br>UnitA<br>Keep 3 decimal places |
| 01C2H | DO1 | 2 | R/W | shaping<br>Bit0 valid |
| 01C3H | DO2 | 2 | R/W | shaping<br>Bit0 valid |

## 6.3 Alarm function related settings

| start address | Name of data item | Length (bytes) | Read/ write | remark |
|---|---|---|---|---|
| 01EBH | Alarm status | 2 | R | bit0: Over voltage alarm<br>bit1: Under voltage alarm<br>Bit2: Over current alarm<br>Bit3: Undercurrent Alarm<br>Bit4: Overpower alarm<br>Bit5: Under power alarm<br>Bit6:DO1 Alarm output<br>bit7:DO2 Weather Alarm output |

| | | | | |
|---|---|---|---|---|
| | | | | Bit8:A phase current loss alarm<br>Bit9:B phase current loss alarm<br>Bit10:C phase current loss alarm<br>Bit11:A phase voltage loss alarm<br>Bit12:B phase voltage loss alarm<br>Bit13:C phase voltage loss alarm<br>Bit14: Phase Sequence Error Alarm |
| 01D0H | Alarm Allowable Bit | 2 | R/W | Bit0: Overvoltage Alarm Allowable Bit<br>Bit1: Underpressure Alarm Allowable Bit<br>Bit2: Overcurrent Alarm Allowable Bit<br>Bit3: Undercurrent Alarm Allowable Bit<br>Bit4:Overpower Alarm Allowable Bit<br>Bit5:Low Power Alarm Allowable Bit |
| 01D1H | Over voltage alarm threshold | 2 | R/W | shaping<br>Unit0.1V |
| 01D2H | Over voltage alarm delay | 2 | R/W | shaping<br>Unit0.01S |
| 01D3H | Under voltage alarm threshold | 2 | R/W | shaping<br>Unit0.1V |
| 01D4H | Over voltage alarm delay | 2 | R/W | shaping<br>Unit0.01S |
| 01D5H | Overcurrent alarm threshold | 2 | R/W | shaping<br>Unit0.01A |
| 01D6H | Overcurrent Alarm Delay | 2 | R/W | shaping<br>Unit0.01S |
| 01D7H | Undercurrent alarm threshold | 2 | R/W | shaping<br>Unit0.01A |
| 01D8H | Delay of Undercurrent Alarm | 2 | R/W | shaping<br>Unit0.01S |
| 01D9H | Overpower alarm threshold | 2 | R/W | shaping<br>Unit0.001kw |
| 01DAH | Over power alarm delay | 2 | R/W | shaping<br>Unit0.01S |

| | | | | |
|---|---|---|---|---|
| 01DBH | Low power alarm threshold | 2 | R/W | shaping<br>Unit0.001kw |
| 01DCH | Delay of Underpower Alarm | 2 | R/W | shaping<br>Unit0.01S |
| 01DDH | DI1 initial status | 2 | R/W | 0:normally open<br>1:normal close |
| 01DEH | DII programming | 2 | R/W | 0:noassociationDO<br>1:associationDO1<br>2:associationDO2 |
| 01DFH | DI2 initial status | 2 | R/W | 0:normally open<br>1:normally close |
| 01E0H | DI2 programming | 2 | R/W | 0:noassociationDO<br>1:associationDO1<br>2:associationDO2 |
| 01E1H | DI3 initial status | 2 | R/W | 0:normally open<br>1:normally close |
| 01E2H | DI3 programming | 2 | R/W | 0:noassociationDO<br>1:associationDO1<br>2:associationDO2 |
| 01E3H | DI4 initial status | 2 | R/W | 0:normally open<br>1:normally close |
| 01E4H | DI4 programming | 2 | R/W | 0:noassociationDO<br>1:associationDO1<br>2:associationDO2 |
| 01E5H | DO1 Output mode | 2 | R/W | 0:electrical level<br>1:pulse |
| 01E6H | DO1 association content | 2 | R/W | 0:normal DO<br>1:Total failure<br>2:Total failure+DI1+DI2<br>3:DI1<br>4:DI2<br>5:DI1+DI2 |
| 01E7H | DO1output pulse width | 2 | R/W | 0:无<br>1:1S<br>2:2S<br>3:3S<br>4:4S<br>5:5S |
| 01E8H | DO2 Output mode | 2 | R/W | 0: electrical level<br>1:pulse |
| 01E9H | DO2association content | 2 | R/W | 0:Normal DO<br>1:Total failure<br>2:Total failure+DI1+DI2<br>3:DI1 |

| | | | | |
|---|---|---|---|---|
| | | | | 4:DI2<br>5:DI1+DI2 |
| 01EAH | DO output pulse width | 2 | R/W | 0:none<br>1:1S<br>2:2S<br>3:3S<br>4:4S<br>5:5S |

## 6.4 Historical data storage

Last 12 month power reading is as follows:

| Interval first address (high byte) | Historical data type |
|---|---|
| 48-53H | Last January -Last December |

| Interval first address (low byte) | Data type |
|---|---|
| 00H | Date and time of recording |
| 03H | Total active power of historical combination |
| 05H | Total active power in history |
| 07H | Historical reverse total active power |
| 09H | Historical forward reactive power total |
| 0BH | Historical reverse reactive power total |
| 0DH | A phase combined active power total |
| 0FH | A phase positive active power total |
| 11H | A phase forward and reverse total active power |
| 13H | A phase positive reactive power |
| 15H | A phase negative reactive power |
| 17H | B phase se combined active power total |
| 19H | B phase positive active power total |

| | |
|---|---|
| 1BH | B phase negative active power total |
| 1DH | B phase positive reactive power |
| 1FH | B phase negative reactive power |
| 21H | C phase combined active power total |
| 23H | C phase positive active power total |
| 25H | C phase negative active power total |
| 27H | C phase positive reactive power |
| 29H | C Total reactive power |
| 2BH | Current total Active sharp power |
| 2DH | Current total Active peak power |
| 2FH | Current total Active flat power |
| 31H | Current total Active valley power |
| 33H | Current total positive Active sharp power |
| 35H | Current total positive Active peak power |
| 37H | Current total positive Active flat power |
| 39H | Current total positive Active valley power |
| 3BH | Current total negative Active sharp power |
| 3DH | Current total negative Active peak power |
| 3FH | Current total negative Active flat power |
| 41H | Current total negative Active valley power |
| 43H | Current Positive Reactive sharp power |
| 45H | Current Positive Reactive peak power |
| 47H | Current Positive Reactive flat power |
| 49H | Current Positive |

| | |
|---|---|
| | Reactive valley power |
| 4BH | Current Negative Reactive sharp power |
| 4DH | Current Negative Reactive peak power |
| 4FH | Current Negative Reactive flat power |
| 51H | Current Negative Reactive valley power |

## 6.5 Extreme Data Storage

**Maximum record:**

| Interval first address (high byte) | Interval first address (high byte) |
|---|---|
| 04 | Monthly records of extrema and occurrence time |
| 05 | Record of extrema and occurrence time of last month |
| 06 | Last February Extreme Value and Time Record |
| 07 | Last March Extreme Value and Time Record |

| Interval offset address (low byte) | Data type |
|---|---|
| 00 | A phase Voltage Max occurrence time record |
| 03 | B phase Voltage Max occurrence time record |
| 06 | C phase Voltage Max occurrence time record |
| 09 | AB line voltage max and occurrence time record |
| 0C | BC line voltage max and occurrence time record |
| 0F | CA line voltage max and occurrence time record |
| 12 | A phase voltage max and occurrence time record |
| 15 | B phase voltage max and occurrence time record |
| 18 | C phase voltage max and occurrence time record |
| 1B | Three-phase current vector and maximum and time of occurrence record |
| 1E | A phase active power max and time of occurrence record |
| 22 | B phase active power max and time of occurrence record |
| 26 | C phase active power max and time of occurrence record |
| 2A | Total active power max and time of |

| | |
|---|---|
| | occurrence record |
| 2E | A phase reactive power max and time of occurrence record |
| 32 | B phase reactive power max and time of occurrence record |
| 36 | C phase reactive power max and time of occurrence record |
| 3A | Total reactive power max and time of occurrence record |
| 3E | A phase apparent power max and time of occurrence record |
| 42 | B phase apparent power max and time of occurrence record |
| 46 | C phase apparent power max and time of occurrence record |
| 4A | A phase total apparent power max and time of occurrence record |

**Minimum record:**

| Interval first address (high byte) | Historical data type |
|---|---|
| 04 | Monthly records of extrema and occurrence time |
| 05 | Record of extrema and occurrence time of last month |
| 06 | Last 2 month Extreme Value and Time Record |
| 07 | Last 3 month Extreme Value and Time Record |

| Interval offset address (low byte) | Data center |
|---|---|
| 4E | A phase Voltage Minimum occurrence time record |
| 51 | B phase Voltage Minimum occurrence time record |
| 54 | C phase Voltage Minimum occurrence time record |
| 57 | AB line voltage Minimum and occurrence time record |
| 5A | BC line voltage Minimum and occurrence time record |
| 5D | CA line voltage Minimum and occurrence time record |
| 60 | A phase voltage Minimum and occurrence time record |
| 63 | B phase voltage Minimum and occurrence time record |
| 66 | C phase voltage Minimum and occurrence time record |
| 69 | Three-phase current vector and minimum and time of occurrence record |

| | |
|---|---|
| 6C | A phase active power minimum and time of occurrence record |
| 70 | B phase active power minimum and time of occurrence record |
| 74 | C phase active power minimum and time of occurrence record |
| 78 | Total active power minimum and time of occurrence record |
| 7C | A phase reactive power minimum and time of occurrence record |
| 80 | B phase reactive power minimum and time of occurrence record |
| 84 | C phase reactive power minimum and time of occurrence record |
| 88 | Total reactive power minimum and time of occurrence record |
| 8C | A phase apparent power minimum and time of occurrence record |
| 90 | B phase apparent power minimum and time of occurrence record |
| 94 | C phase apparent power minimum and time of occurrence record |
| 98 | Total apparent power minimum and time of occurrence record |

**Note: The record length of each extreme value and occurrence time is 3 words, and the data arrangement refers to the following table:**

| Register address | Event | Data Type | Remark |
|---|---|---|---|
| 0400H | A Phase Voltage Max and Time Record | Extreme Data Specific Data | Specific data type and decimal reference 6.2 address table |
| 0401H | | time of occurrence by minute, hour | High byte is minute |
| 0402H | | time of occurrence by day, month | High byte is hour |

# 7 Common Troubleshooting

## 7.1 Instrument rs485 network communication failure.

Recommendation: Please confirm whether the rs485 connection is loose or ab, and then check the table through the key parameters such as address, baud rate, check whether the correct setting

## 7.2 Instrument wireless communication failure.

Test suggestion: please use USB turn 485 serial port line to connect with instrument RS485 interface first, read the table parameters through communication, confirm that the table parameters are the same as the upper master station wireless configuration (channel and spread spectrum factor), if different, please modify the instrument wireless parameters and the master station after re-test; if the same, it may be too far from the master station or serious interference, at this time can try to use the external sucker antenna, or consider the nearest new wireless master station, re-test.