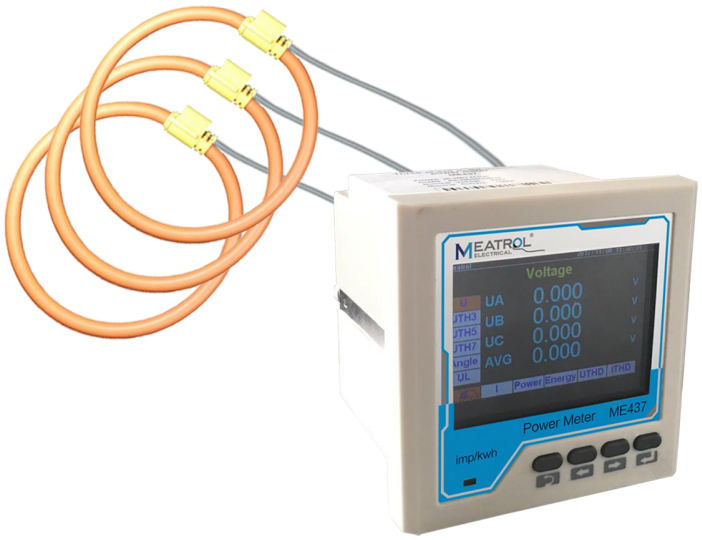
# ME437 Three-phase Power Meter




| Connectivity advantages | |
|---|---|
| MODEL | **ME437-SD** |
| Support Extra sensor | 333mV CT<br>Rogowski coil |
| Programmable digital output | Relay |
| I/O function | 1*digital output |
| Power | 85~265V AC/DC |
| Storage | 4GB SD card(Max 4GB)<br>(save intervals 1mins default) |

# Feature

| Specification | |
|---|---|
| Model | ME437 |
| Product component type | Multifunction power meter |
| Poles description | 3PH4W 3PH3W<br>1PH2W (L-N); 1PH2W(L-L);1PH3W(L-L-N) |
| Device application | Power analysis<br>Energy meter |
| Input type | External CT(333mV only)<br>And<br>External Rogowski coil |
| Display | 35 inch TFT screen display |
| Sampling rate | 8k samples per second |
| Mounting mode | Panel mounting |
| Harmonic | 52th Max |
| **Display characteristics** | |
| Feature | 3.5 Inch TFT screen display 320*480 |
| **Mechanical characteristics** | |
| Weight | 350g |
| Dimension | L*W*D:96*96*99mm |

# Display

| Maximum value measured | | |
|---|---|---|
| Parameter | Range | Resolution |
| Voltage | 0.001V<br>999.9V<br>999.9kV<br>999.9MV | 0.1 |
| Current | 999.9A<br>999.9kA | 0.1 |
| Power | 999.9kW<br>999.9MW | 0.1 |
| Power factor | 0.999 | 0.001 |
| THD | 99.9% | 0.1% |
| Energy | 999.9WH<br>999.9.KWH<br>999.9MWH<br>999.9GWH | 0.1KWH<br>0.01MKWH |

| Instantaneous rms Values | |
|---|---|
| Voltage | U，UTH2，UTH3，UTH4(Per Phase,AVG） |
| Current | I,ITHD2，ITHD3，ITHD4(Per Phase,AVG） |
| Power | P,FQ,S,PF(Per Phase,SUM） |
| Energy | EP,EFQ,ES,Freq(Per Phase,SUM）<br>**over 999.9MWh,value reset** |
| UTHD(%) | UTHD,THD2,THD3,THD4(Per Phase,AVG） |
| ITHD(%) | ITHD,THD2,THD3,THD4(Per Phase,AVG） |
| DPF | DPFa,DPFb,DPFc,AVG |
| **Update rate** | |
| Data acquisition rate | 400ms |
| Display update rate | 0.5s |
| **Calibration** | |
| Current | Per phase,all |
| Voltage | Per phase,all |
| Power factor | Per phase,all |
| Energy | Reset to “0” EP,EQ,ES all phase |
| **Pulse Output** | |
| Pulse rate changeable by rated current | Rated current :100A/500A/1000A/5000A<br>IMP/KWH :300/60/30/6 |

# MODBUS RS485

| Communication | |
|---|---|
| Transmission mode | RS485 port,Half duplex |
| RS485 link | 3 wires |
| Communication protocol | MODBUS RTU |
| **Settings** | |
| Communication address | 1 to 247 (default 1) |
| Baud rate(communication speed) | 1200 to 57600 baud (default 9600) |
| Parity | Even(default),Old,None |
| Data bit | 8 |
| Stop bit | 1 |

# Certificate

| Environmental conditions | |
|---|---|
| Operating temperature | -25℃ to +55℃ |
| Storage temperature | -40℃ to +85℃ |
| Humidity rating | 5 to 95% RH at 50℃(non-condensing) |
| Pullution degree | 2 |
| Overvoltage category | III,for distribution systems up to 277/480VAC |
| Dielectric withstand | As per IEC61010-1, Doubled insulated front panel display |
| Altitude | 3000m Max |
| IP degree of protection | IP20 conforming to IEC 60629 |
| Colour | White |
| Contractual warranty | 12months |
| **EMC** | |
| Electrostatic discharge | Level IV(IEC61000-4-2) |
| Immunity to radiated fields | Level III (IEC61000-4-3) |
| Immunity to fast transients | Level IV (IEC61000-4-4) |
| Immunity to surge | Level IV (IEC61000-4-5) |
| Conducted immunity | Level III (IEC61000-4-6) |
| Immunity to power frequency magnetic fields | 0.5mT (IEC61000-4-8) |
| Conducted and radiated emissions | Class B (EN55022 ) |
| **Standard compliance** | |
| EN 62052-11,EN61557-12,EN 62053-21,EN 62053-22,EN 62053-23,EN 50470-1,EN 50470-3, EN 61010-1,EN 61010-2,EN 61010-031 | |

# Specification

| | | |
|---|---|---|
| **Measurement accuracy** | | |
| Current | 0.5% from 1% to 120%(don't ensure accuracy when <10A) | |
| Rated current | 500A(0.5% from 10A to 600A)<br>3000A(0.5% from 30A to 3600A)<br>10kA(0.5% from 100A to 12kA) | |
| Rogwoski coil specification | 100A | MRC-16 |
| | 600A | MRC-36 |
| | 1000A | Y-FCT-200 or Y-FCT-350 or NRC-100 |
| | 3000A | NRC-150 or Y-FCT-510 |
| | 6000A | NRC-200 or Y-FCT-800 |
| Voltage | 0.2% from 80V to 400V(or 100 to 500V) | |
| Power factor | ±0.005 from 10% to 120% | |
| Active/Apparent Power | IEC62053-22 Class 0.5 | |
| Reactive power | IEC62053-21 Class 2 | |
| Frequency | 0.01% from 45 to 65Hz | |
| Active energy | IEC62053-22 Class 0.5s | |
| Reactive energy | IEC62053-21 Class 2 | |
| **Measurement arrange** | | |
| Measured voltage | 80V to 400V AC(or 100 to 500V) | |
| Frequency range | 50/60Hz | |
| **Input-current characteristics** | | |
| Primary current range | 100A | 0.5A to 120A |
| | 600A | 0.5A to 720A |
| | 1kA | 1A to 1200A |
| | 3kA | 3A to 3600A |
| | 6kA | 6A to 7200A |
| Measurement input range | $1/2^{25}$mV-333mV | |
| Permissible overload | 600mV for 10s/hours | |

| Control Power | |
|---|---|
| AC/DC | 85 to 265V AC/DC, 3.5W |
| **Output** | |
| Digital output | 1×digital output(2 ports) from 1pcs relay,rated 24V/800mA, 75mΩ max,<br>2.5kVrms insulation(controlled by Modbus)<br>Maximum Switching Power ：<br>0.5A, 125VAC<br>1A, 30VDC |
| **Wire diameter for terminals** | |
| Connections-terminals | Screw terminals 2.5mm$^2$,interval 5.08mm |
| **Alarm** | |
| Setting | U and I Each phase,AVG |
| Output form | Relay |

## Data Record

The power meter records data to SD card, the following table lists data record of the power meter.

| Record | |
|---|---|
| Record interval | 1s to 9999s（default 1min） |
| Record format | csv |
| Record capacity | Micro SD card 4GB（default） |
| | Store about 1K Bytes data each time |
| | record 8 years （1min & 4GB） |
| Record data | Date&time,<br>Voltage(V),UTHD(%),Current(A),ITHD (%),<br>ITHD3(%),ITHD5(%), ITHD7(%), ITHD11(%), ITHD13(%),<br>ITHD3(A), ITHD5(A), ITHD7(A), ITHD11(A), ITHD13(A)<br>Frequency(Hz), PF(power factor),<br>Active Power(W),Reactive Power(Var),Apparent Power(Va),<br>Active Energy(Wh),Reactive Energy(Varh),Apparent Energy(Vah)<br>Current Demand(A),Current Peak Demand(A)&Date<br>Total Active Power Deamnd(W)<br>Total Active Power Peak Deamnd(W)&Date<br>Total Reactive Power Deamnd(W)<br>Total Reactive Power Peak Deamnd(W)&Date<br>Total Apparent Power Deamnd(W)<br>Total Apparent Power Peak Deamnd(W)&Date |

## Other Characteristics

The following table lists other characteristics of the power meter:

| Characteristics | Description |
|---|---|
| **Reset** | |
| Minimum and maximum values | — |
| Peak demand values | — |
| Current demand calculation method | 1 to 60 minutes |
| Power demand calculation method | 1 to 60 minut |

## Port definition

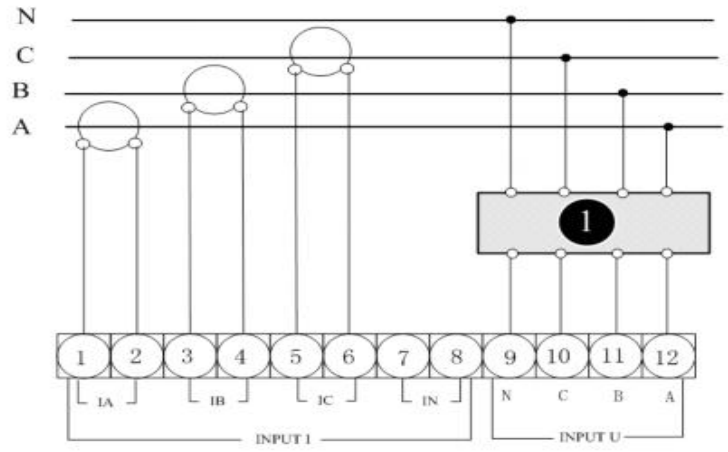
| Port number | Port name | Port function | Remarks |
|---|---|---|---|
| 1 | A | RS485 A | RS485 communication |
| 2 | B | RS485 B | |
| 3 | GND | RS485 GND | |
| 4 | P+ | Pulse output + | Pulse output |
| 5 | P- | Pulse output - | |
| 6 | RO | Relay output | Relay output |
| 7 | RI | Relay input | |
| 8 | L | POWER(+) | Power 85~265V AC/DC |
| 9 | N/C | N/A | |
| 10 | N | POWER(-) | |
| 11 | IA1 | A-phase current input positive | A-phase current |
| 12 | IA2 | A-phase current input negative | |
| 13 | IB1 | B-phase current input positive | B-phase current |
| 14 | IB2 | B-phase current input negative | |
| 15 | IC1 | C-phase current input positive | C-phase current |
| 16 | IC2 | C-phase current input negative | |
| 17 | Vn | N-phase voltage input | Voltage input |
| 18 | V3 | C-phase voltage input | |
| 19 | V2 | B-phase voltage input | |
| 20 | V1 | A-phase voltage input | |

# Wiring

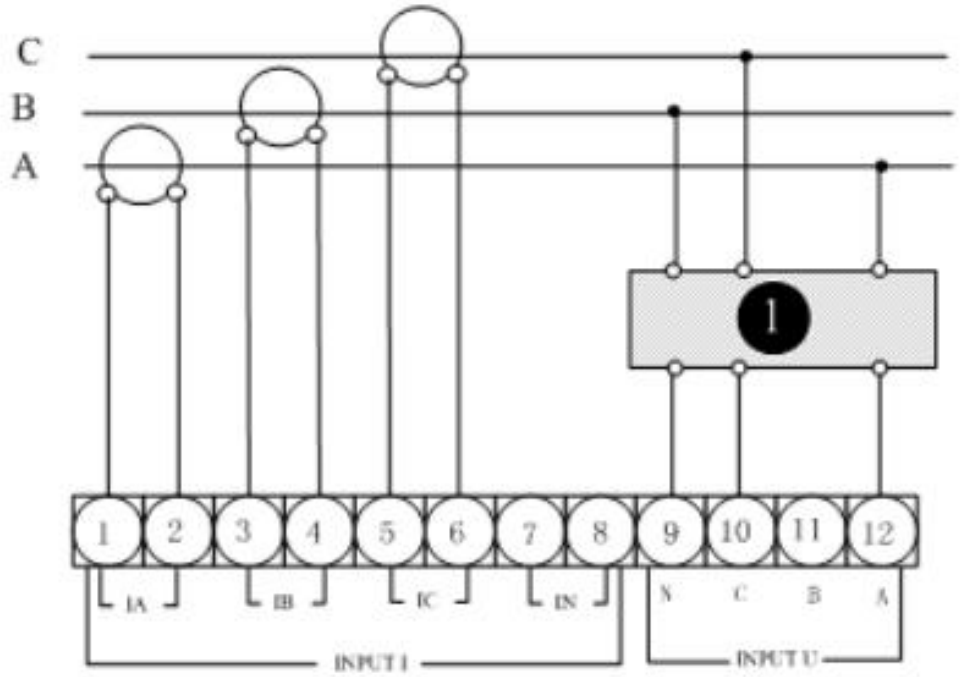
*：Rogowski coil secondary output voltage can not over 333mV rms.

^：CT must be voltage output,secondary output can not over 333mV rms.

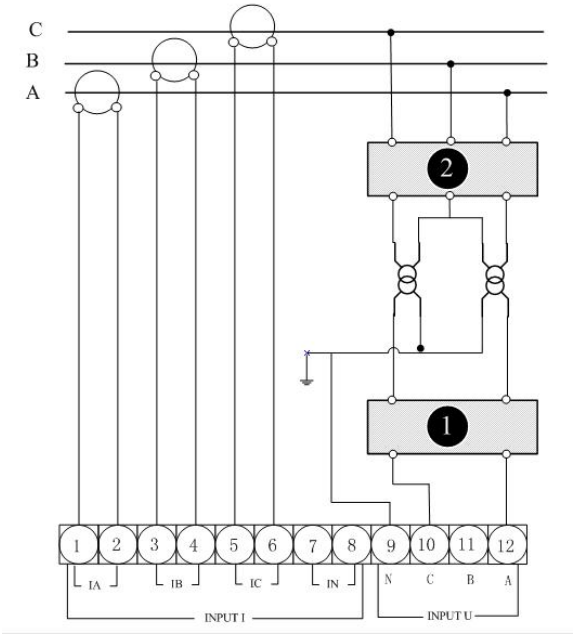
## 3PH4W no VT



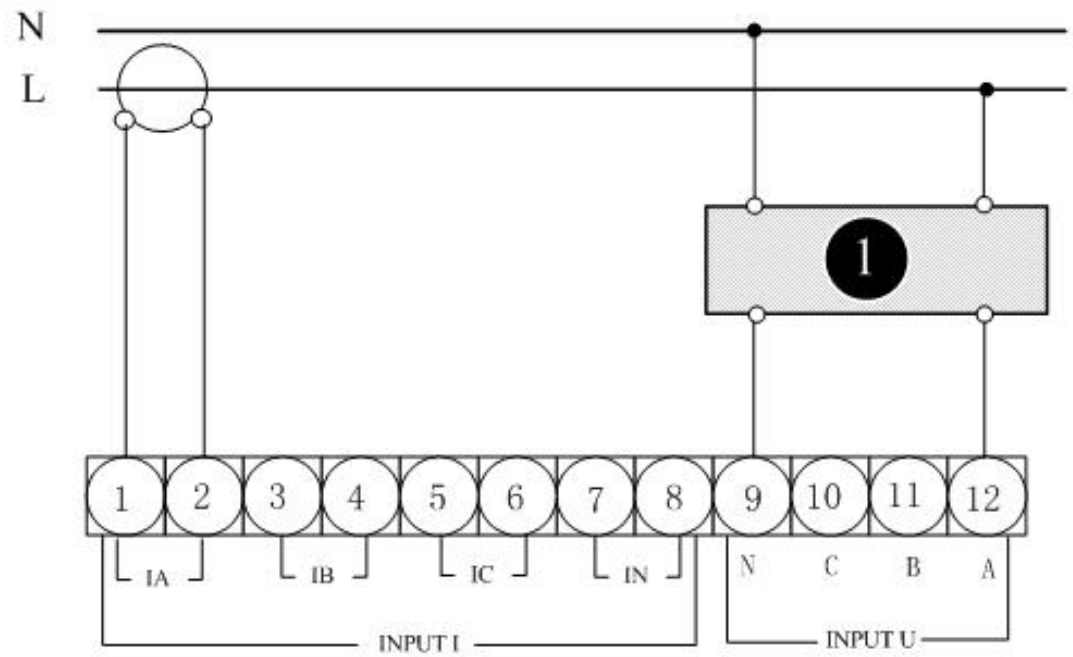

## 3PH3W no VT



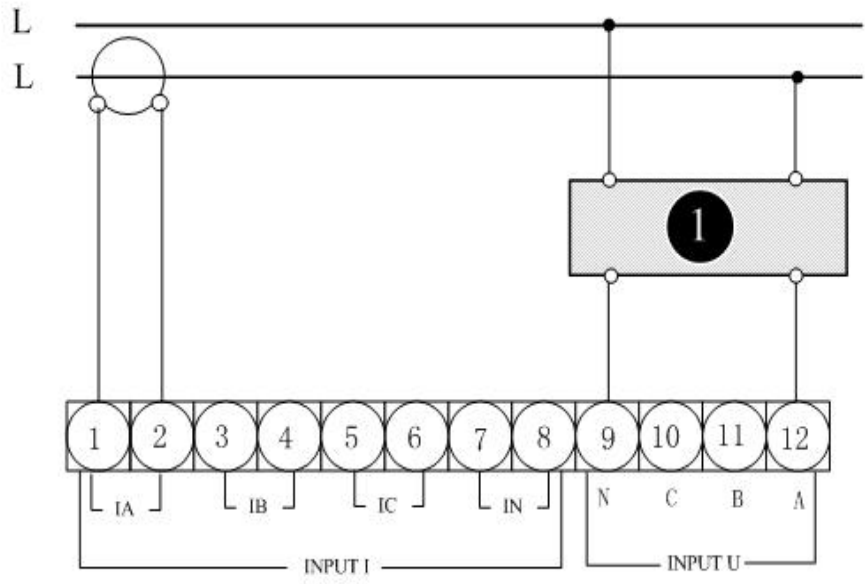
## 3PH3W with VT



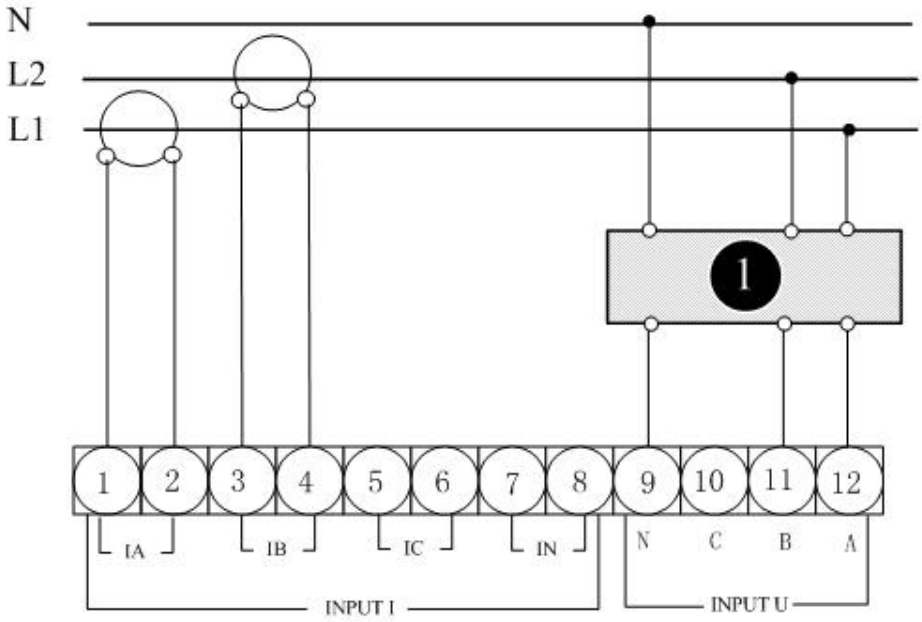

## 1PH2W L-N



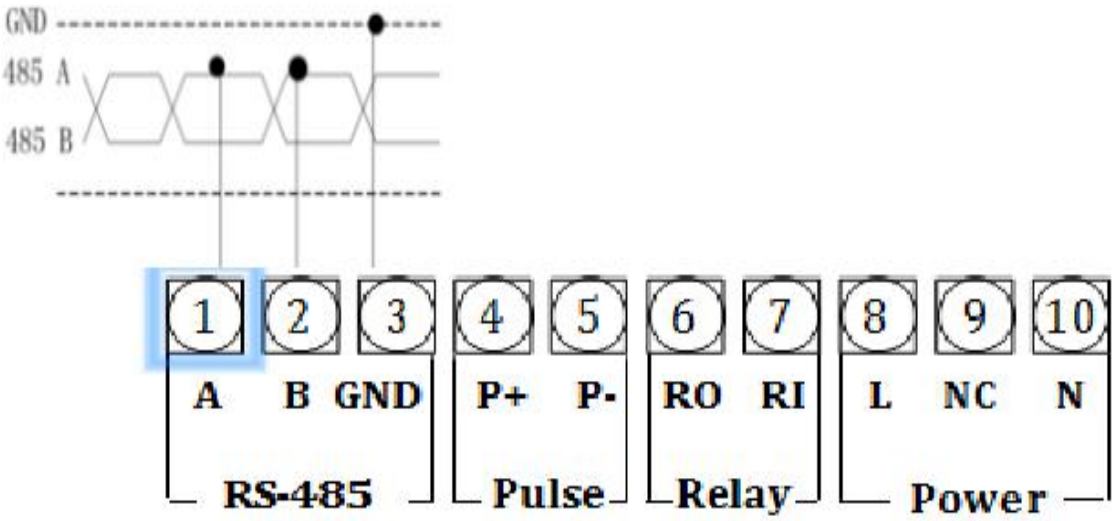
## 1PH2W L-L



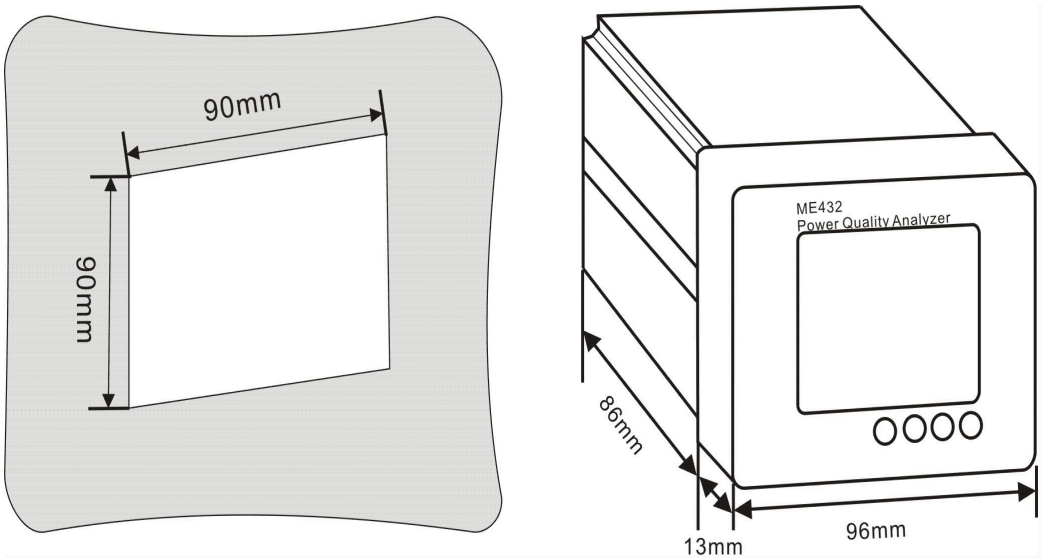

## 1PH3W L-L-N



## ModBus communication &output Wiring diagram



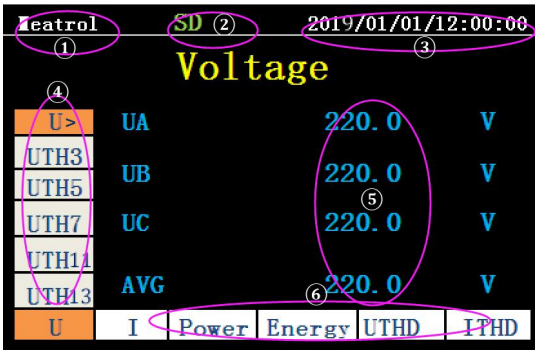

## Installation



Instructions of ME437

# Operating Instruction

## 1. Date display Interface




1、Company name

2、SD card state

**Green**: SD card working

**Red**: Do not find SD card

**Yellow**:SD card not working

3、Date and Time.

4、Secondary menu test data

5、The measurement data

6、From left to right,

Voltage---Current---Power---Energy---

Voltage harmonic---Current harmonic

**Instructions of key used**

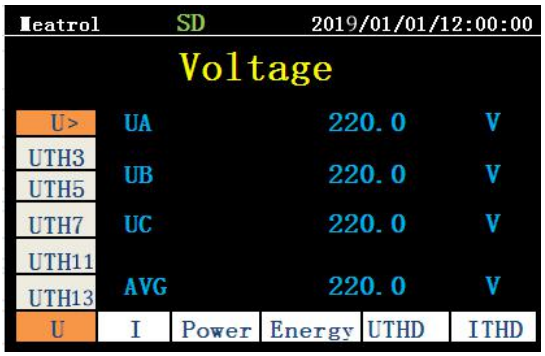

Instructions: long press is Left/Right, Click is Up/Down.

Switching main menus of measuring data: U→I, long press Left. I→U, long press Right.

Switching secondary menus of measuring dat-a:U→UTH2, click Down. UTH2→U, click Up.

Menu display and quit: click Menu/Quit, display menu. Click Menu/Quit again, exit menu, and enter the interface of measuring data.

## 2. Voltage display Interface




Left Area from top to bottom：

“U>” Voltage RMS value(Secondary interface)

“UTH3” X times Voltage harmonic RMS value

“UTH5” Y times Voltage harmonic RMS value

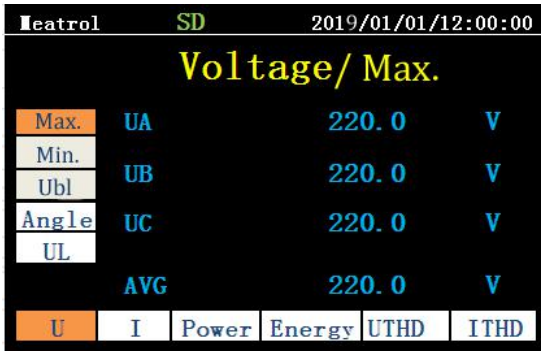
“UTH7” Z times Voltage harmonic RMS value

“UTH11” A times Voltage harmonic RMS value

“UTH13” B times Voltage harmonic RMS value

Voltage RMS value “U>” press **“Enter”** switch to Voltage Secondary interface

### 2.1 Voltage Secondary Interface




Left Area from top to bottom：

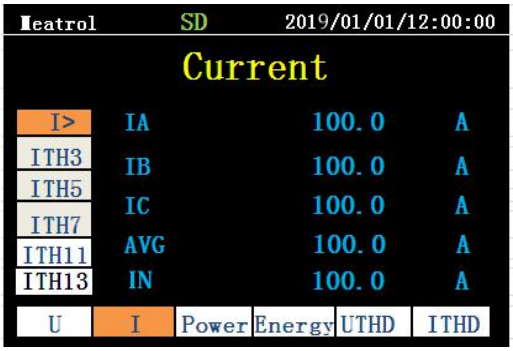
“Max.” Voltage Maximum value

“Min.” Voltage Minimum value

"Angle" Voltage Unbalance degree

"UL " Line Voltage value

**3. Current display interface**




Left Area from top to bottom:

"I>" Current RMS value(Secondary interface)

"ITH3" X times Current harmonic RMS value

"ITH5" Y times Current harmonic RMS value

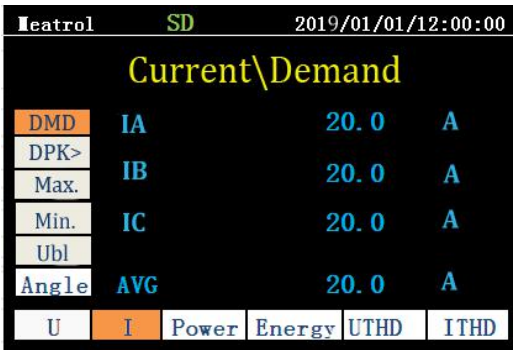
"ITH7" Z times Current harmonic RMS value

"ITH11" A times Current harmonic RMS value

"ITH13" B times Current harmonic RMS value

Current RMS value "U>" press **"Enter"** switch to Current Secondary interface

**3.1 Current Secondary interface**




Left Area from top to bottom:

"EMD" Current demand

"DPK>"Current Maximum demand(Third interface)

"Max." Current Maximum value

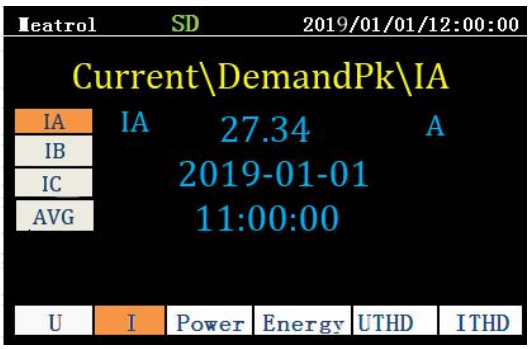
"Min." Current Minimum value

"Ubl" Current unbalance degree

"Angle" Current angle

Current Maximum demand(Third interface)(DPK>) press **"Enter"** to switch.

**3.1.1 Current Maximum demand(Third interface)**




Left Area from top to bottom:

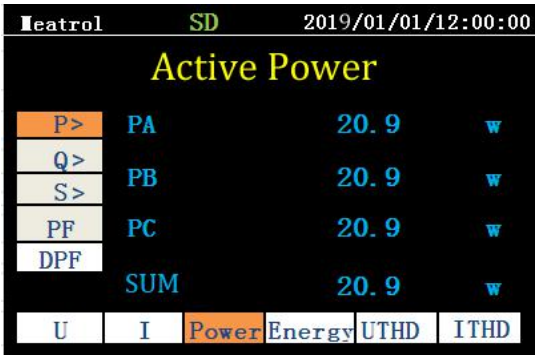
"IA" Phase A Current Maximum demand

"IB" Phase B Current Maximum demand

"IC" Phase C Current Maximum demand

"AVG" Total Average Current Maximum demand

**4.Power display interface**




Left Area from top to bottom:

Active Power(Secondary interface)

Reactive Power(Secondary interface)

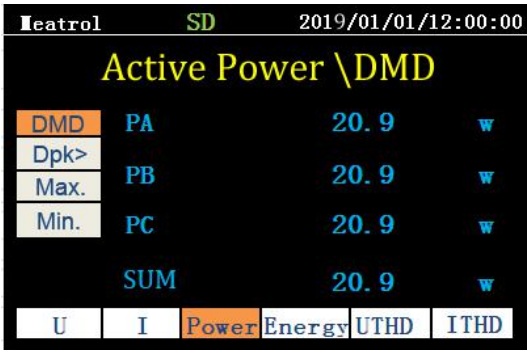
Apparent Power(Secondary interface)

Power Factor

Fundamental Power Factor

(Secondary interface) press **Enter** to switch

**4.1 Active Power(Secondary interface)**




Left Area from top to bottom:

"DMD" Active Power Demand

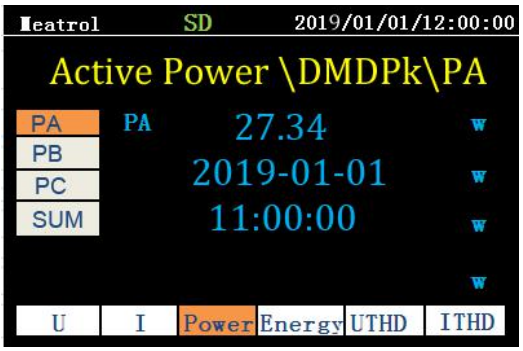
"Dpk>" Active Power Maximum Demand(Third interface)

"Max." Active Power Maximum Value

"Min." Active Power Minimum Value

"Dpk>" Active Power Maximum Demand(Third interface) press **Enter** to switch

**4.1.1 Active Power Maximum Demand(Third interface)**




Left Area from top to bottom:

"PA" Phase A Active Power Maximum Demand

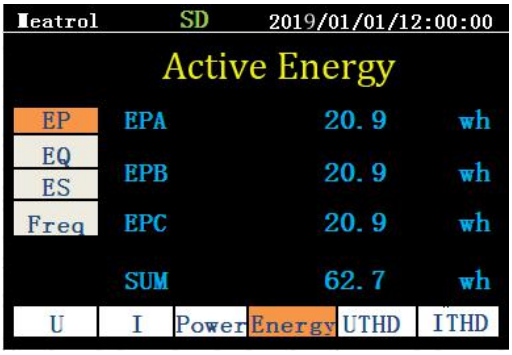
"PB" Phase B Active Power Maximum Demand

"PC" Phase C Active Power Maximum Demand

"SUM" Total phase Active Power Maximum Demand

**Noted:Reactive Power(Q>) and Apparent Power (S>) Interface is similar to above**

**5.Energy display interface**




Left Area from top to bottom:

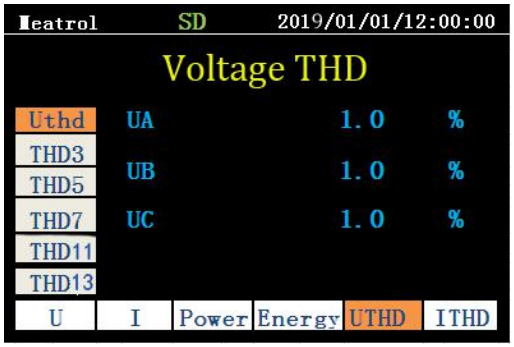
"EP" Active Energy

"EQ" Reactive Energy

"ES" Apparent Energy

"Freq" Frequency

**6.Voltage harmonic display interface**




Left Area from top to bottom:

"Uthd" Total Voltage harmonic percent

"THD3" X times Voltage harmonic percent

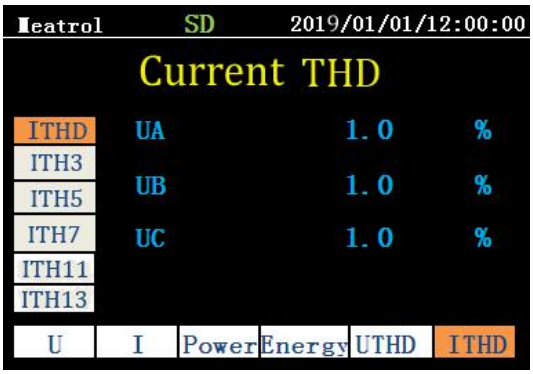
"THD5" Y times Voltage harmonic percent

"THD7" Z times Voltage harmonic percent

"THD11" A times Voltage harmonic percent

"THD13" B times Voltage harmonic percent

**7.Current harmonic display interface**




Left Area from top to bottom：

"ITHD" Total Current harmonic percent

"ITH3" X times Current harmonic percent

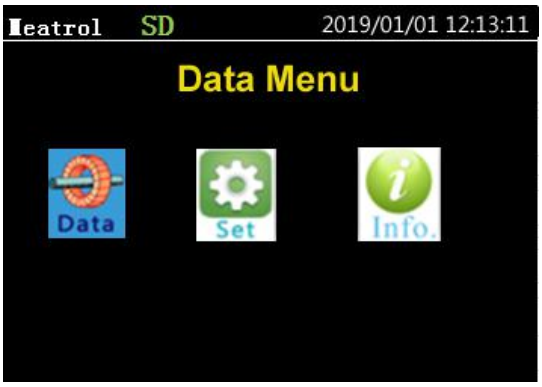
"ITH5" Y times Current harmonic percent

"ITH7" Z times Current harmonic percent

"ITH11" A times Current harmonic percent

"ITH13" B times Current harmonic percent

**8. Menu Interface**




Press "**Return**" to switch

Press "**Up/Down**" and "**Enter**" to choice "**Data**" "**Set**" or "**Info**"

**9. Setting Interface.**

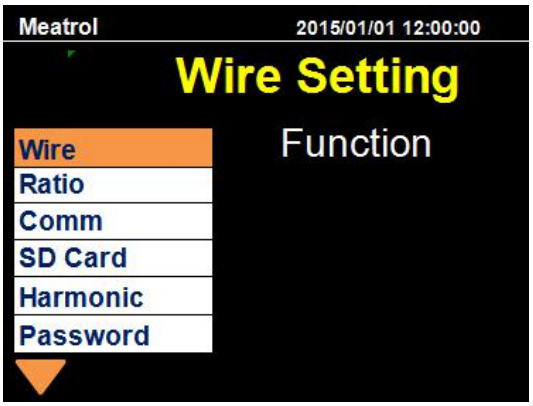

Enter "**Set**" on Menu interface.

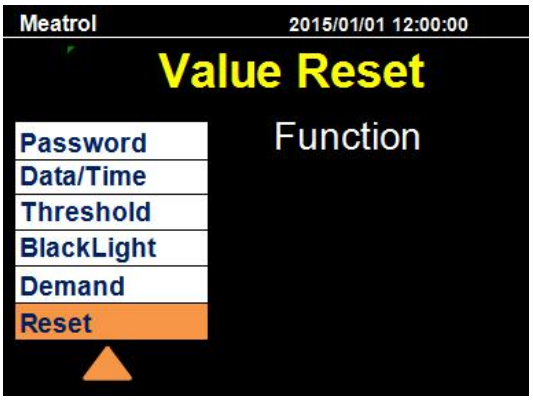
Enter Password(Low) :1000 (default)

Press Up/Down to change number.

Long press "Up/Down" to change display number position.

**9.1 System Setting Operation**




Left Area from top to bottom：

"Wire" Wiring setting

"Ratio" Rated current selection and VT ratio setting.

"Comm" MODBUS setting

"SD Card" SD card setting

"Harmonic" Harmonic times setting

"Password" Password change setting

"Date/Time" Date/Time change setting

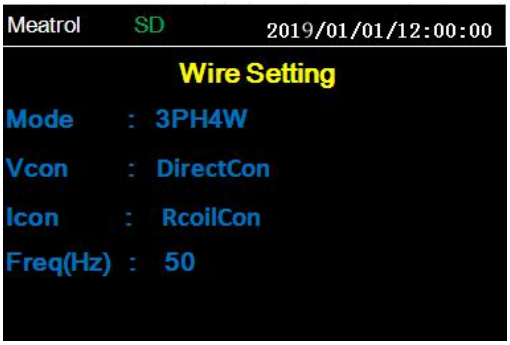
"Threshold" Voltage/Current threshold setting

"Backlight" Backlight adjust

"Demand" Demand setting

"Reset" Reset Energy/Min/Max value

**9.1.1 Wire setting**




Press Enter ,change to next line.

Press Up/Down,modify value on current line.

**"Mode" Choice wiring type**

"3PH4W" three phase 4 wire

"3PH3W" three phase 3 wire

"1PH2W_LL" single phase 2 wire L_L type

"1PH2W_LN" single phase 2 wire L_N type

"1PH3W_LLN" single phase 3 wire L_L_N type

**"Vcon" Select Voltage sensor connect or not**

"DirectCon" ： Voltage directly input.No VT

"3VT" ： 3pcs voltage sensor connect

**"Icon" Select Rogowski coil or CT connect**

"CTCon" ： 333mV Current Transformer connect

"RcoilCon" ： Rogowski coil connect directly(No integrator connect)

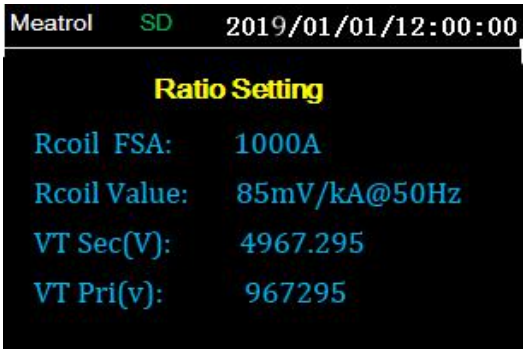
**"Freq" Choice frequency**

50Hz

60Hz

**Noted: Out of Wire setting interface,will have "Save Changes" notifications,must press "Enter" to Save modify.If press "Return",the modify can't be save.**

**9.1.2 Ratio Setting**




Press Enter ,change to next line.

Press Up/Down,modify value on current line.

Long press Up/Down,change display number position.

**Rcoil FSA**：Rated Current

100A/600A/1kA/3kA/6kA selection

**Rcoil Value**：each Rated current corresponding only one ratio of Rogowski coil,can't be change.

100A 50mV/kA@50Hz

600A 50mV/kA@50Hz

1kA 85mV/kA@50Hz

3kA 85mV/kA@50Hz

6kA 50mV/kA@50Hz

**VT sec**：Voltage sensor Secondary output value

**VT PRI**：Voltage sensor Primary input value

**Noted: If Choice RcoilCon in "Wire" setting,Then this interface will show Rogowski coil rated current selection.**

**If Choice "CTCon",this setting is setting CT primary and secondary**

**If Choice "DirectCon",the VT ratio setting will not display in this interface.**

**9.1.3 Setting of Comm**

Click Up/Down to select Comm, and Click Enter to


Long press Left/Right to switch displacement, click Up/Down to change value of figures, and Click Enter to set.

Note:

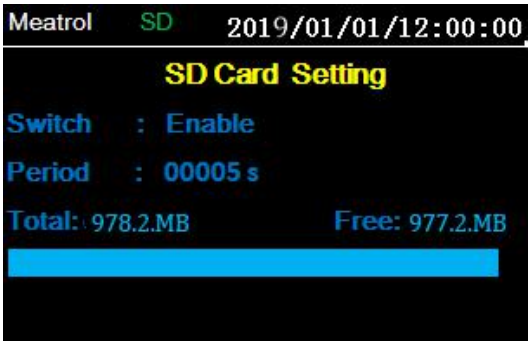
Address can be setted 1 to 247;

Baudrate is 1200-57600.

"Parity" select parity checking.

"EVEN" and "OLD" or "NONE"

**9.1.4 SD card setting**




Press **Enter** ,change to next line.

Press **Up/Down**,modify value on current line.

Long press **Up/Down**,change display number position.

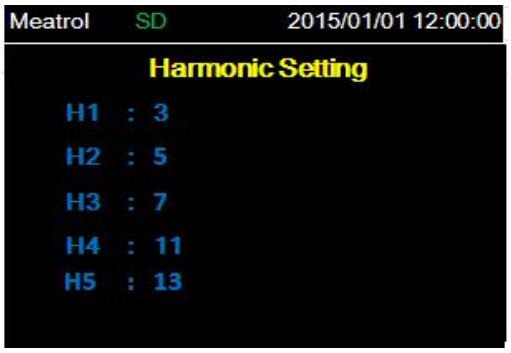
"Switch" choice Enable or Disable record function

"Enable" start record function

"Disable" stop record function.

"Period" setting record interval time.(from 1s to 99999s)

**9.1.5 Harmonic times setting**




Press **Enter** ,change to next line.

Press **Up/Down**,modify value on current line.

Long press **Up/Down**,change display number position.

Could measure 5 different times harmonic.

Setting times range: 2 to 52 times.

**9.1.6 Password setting**


Press **Enter** ,change to next line.

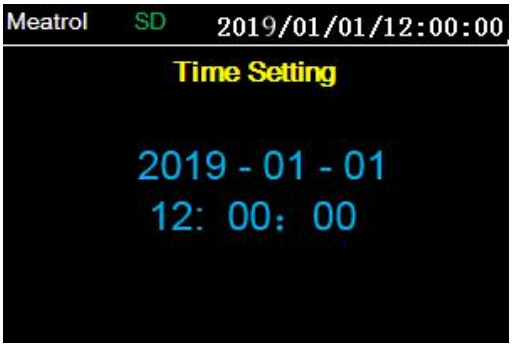
Press **Up/Down**,modify value on current line.

Long press **Up/Down**,change display number position.

Password default is 1000

Enter again "set" interface,should enter new password after modify.


#### 9.1.7 Date/Time Setting




Press **Enter** ,change to next line.

Press **Up/Down**,modify value on current line.

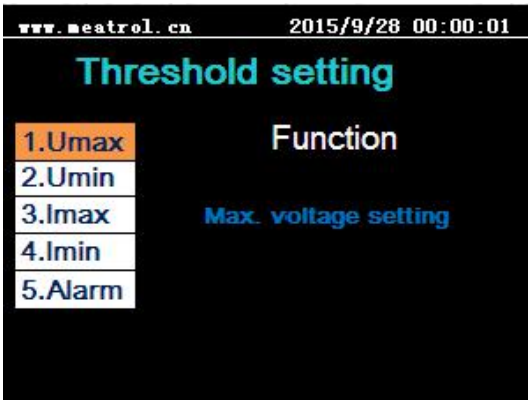
Long press **Up/Down**,change display number position.

#### 9.1.8 Setting of Threshold

Click Up/Down to select Threshold , and Click Enter to set.

First set the threshold of Umax, Umin, Imax, Imin; and then enable the Alarm.

Next chose to enable Buzzer.





#### 9.1.9 BackLight setting


**"Switch" choice back light mode.**

ON：back lights on always

KEY：Automatic back light off

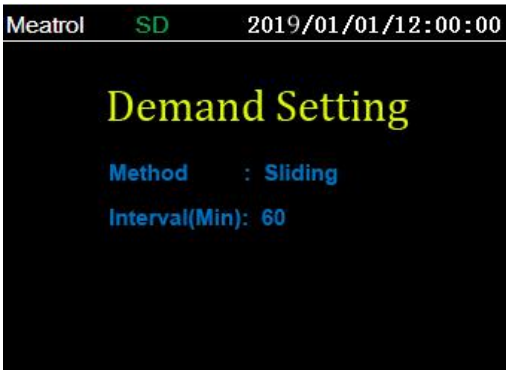
**"Period"** Setting Automatic back light off time

**"Backlight"** setting brightness from 1 to 9

**KEY principle:**

**can't detect any press operation after Period time, back light off.Any press operation,light on.**

#### 9.1.10 Demand setting




Press **Enter** ,change to next line.

Press **Up/Down**,modify value on current line.

Long press **Up/Down**,change display number position.

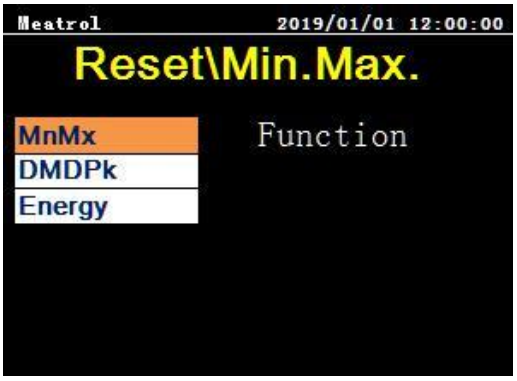
**"Method" choice demand type：**

Sliding：Time sliding mode

Fixed：Time fixed mode

**Interval（Min）**：from 1 to 60 minute

#### 9.1.11 Reset setting




Press **Enter** ,change to next line.

Press **Up/Down**,modify value on current line.

Long press **Up/Down**,change display number position

MnMx：Reset Minimum/Maximum value

DMDPk：Reset Maximum Demand value

Energy：Reset Energy

#### 9.2 Third menu of information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