# ME435 Poly-phase Handheld Power Meter

| Connectivity advantages | |
|---|---|
| Model | ME435 |
| Support Extra sensor | 3pcs BNC terminal 333mV CT<br>3pcs BNC terminal 320mV current clamp<br>3pcs BNC terminal Rogowski coil |
| Storage | 4GB SD card(Max 4GB)<br>(save intervals 1mins default) |
| Power | 4*AA battery(wroking time: approx 7 hours)<br>Or USB Type-C |

## Feature

| Specification | |
|---|---|
| Model | ME435 |
| Product component type | Handheld poly-phase 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 Rogowski coil<br>External CT(333mV only) |
| Display | 3.5 inch TFT screen display |
| Sampling rate | 8k samples per second |
| Harmonic | 52th Max |
| **Mechanical characteristics** | |
| Weight | 350g |
| Dimension | L*W*D:21.5*10*3.5CM |

## Power Meter Characteristics

The power meter measures currents and voltages and reports real-time RMS values for all 3-phases and neutral. In addition, the power meter calculates power factor, realpower, reactive power, and more.

The following sections list the metering characteristics of the power meter.

## Real-Time Measuring

The following table lists the metering characteristics of the power meter for the real-time measurement:

| Characteristics | Description |
|---|---|
| Current | Per phase, neutral, and average of 3 phases |
| Voltage | L-L, L-N, and average of 3 phases |
| Frequency | 45...65 Hz |
| Active power | Total and per phase (signed) |
| Reactive power | Total and per phase (signed) |
| Apparent power | Total and per phase(signed) |
| Power factor (True) | Total and per phase<br>0.000 to 1 (signed) |
| Angle | Voltage angle,Current angle |
| Current unbalance | Per phase, most unbalanced of 3 phases |
| Voltage unbalance | most unbalanced of 3 phases |

## Minimum/Maximum Values

When any one-second real-time reading reaches its highest or lowest value, the power meter saves the minimum and maximum values in its nonvolatile memory.

From the power meter display, you can:

• view all min./max. values since the last reset and the reset date and time.

• reset min./max. values.

All running min./max. values are arithmetic minimum and maximum values. For example, the minimum phase A-N voltage is the lowest value in the range from 0 to 999.9GV that has occurred since last reset of the min./max. values.

The power meter provides time stamping for all minimum/maximum values.

The following table lists the minimum and maximum values stored in the power meter:

| Characteristics | Description |
|---|---|
| Current | Per phase and average |
| Voltage | per phase and average |
| Active power | Per phase and total |
| Reactive power | Per phase and total |
| Apparent power | Per phase and total |

## Demand Readings

The power meter provides the following demand readings.

| Characteristics | Description |
|---|---|
| Current | Per phase and average |
| Active, reactive, apparent power | Per phase and Total |
| **Peak Demand Values** | |
| Current | Per phase and average |
| Active, reactive, apparent power | Per phase and Total |

## Demand Calculation Methods

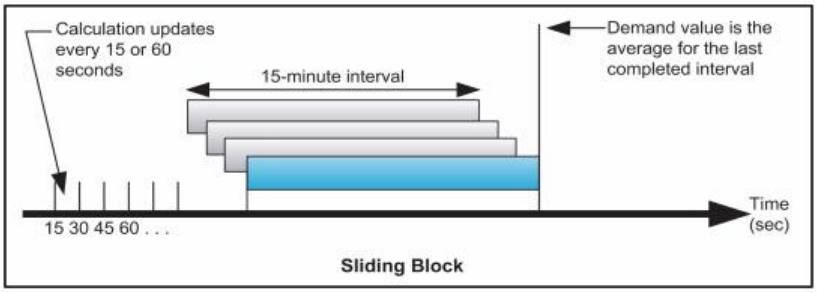
Power demand is the energy accumulated during a specified period divided by the length of the period. Current demand is calculated using arithmetical integration of the current RMS values during a time period, divided by the length of the period. How the power meter performs this calculation depends on the selected method. To be compatible with electric utility billing practices, the power meter provides block interval power/current demand calculations.

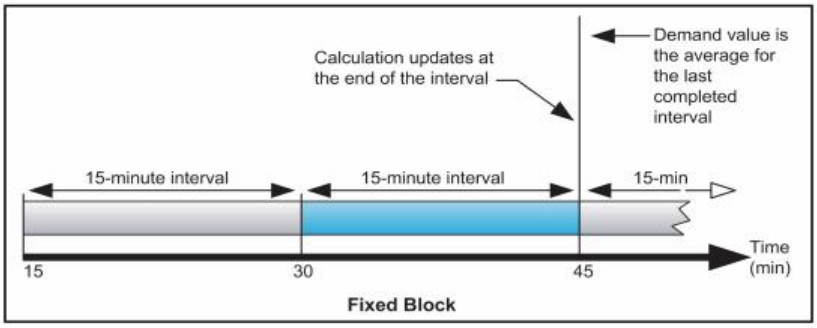
For block interval demand calculations, you select a block of time (interval) that the power meter uses for the demand calculation and the mode the meter uses to handle he interval. 2 different modes are possible:

• Fixed block - Select an interval from 1 to 60 minutes (in 1 minute increments). The power meter calculates and updates the demand at the end of each interval.

• Sliding block - Select an interval from 1 to 60 minutes (in 1 minute increments). For demand intervals less than 15 minutes, the value is updated every 15 seconds. For demand intervals of 15 minutes and greater, the demand value is updated every 60 seconds. The power meter displays the demand value for the last completed interval.

The following figures illustrate the 2 ways to calculate demand power using the block method. For illustration purposes, the interval is set to 15 minutes.




## Peak Demand

In nonvolatile memory, the power meter maintains a maximum operating demand value called peak demand. The peak is the highest value (absolute value) for each of these readings since the last reset.

You can reset peak demand values from the power meter display. You should reset peak demand after changes to basic power meter setup such as power system configuration.

## Energy Readings

The power meter calculates and stores Per phase and total energy values for active,reactive, and apparent energy.

You can view energy values from the display. The resolution of the energy value automatically changes from kWh to MWh to GWh (kVAh to MVARh to GWh).

The energy values automatically resets to 0 when it reaches the limit of 999.9GWh,999.9GVAh, or 999.9GVARh.

The following table lists the energy readings from the power meter:

| Characteristics | Description |
|---|---|
| **Energy values** | |
| Active energy | 0 to 999.9GWh<br>Auto reset to 0 in case of over limit |
| Reactive energy | 0 to 999.9GVARh<br>Auto reset to 0 in case of over limit |
| Apparent energy | 0 to 999.9GVAh<br>Auto reset to 0 in case of over limit |

## Power Quality Analysis Values

The power quality analysis values use the following abbreviations:

• Fundamental phase current rms: I1

• Fundamental phase voltage rms: V1

• RMS of up to three harmonics of phase current:

Ix, Iy, Iz, x, y, z = 2, 3,…, N

• RMS of up to three harmonics of phase voltage:

Vx, Vy, Vz, x, y, z = 2, 3,…, N

•Total harmonic distortion of the phase current

$$(THD)_I = \frac{\sqrt{I^2 - I_1^2}}{I_1}$$

• Total harmonic distortion of the phase voltage

$$(THD)_V = \frac{\sqrt{V^2 - V_1^2}}{V_1}$$

• Harmonic distortion of up to three harmonics on the phase current

$$HD_{I_x} = \frac{I_x}{I_1}, \text{x} = 2, 3, \ldots, \text{N}$$

$$HD_{I_y} = \frac{I_y}{I_1}, \text{y} = 2, 3, \ldots, \text{N}$$

$$HD_{I_z} = \frac{I_z}{I_1}, \text{z} = 2, 3, \ldots, \text{N}$$

• Harmonic distortion of up to three harmonics on the phase voltage:

$$HD_{V_x} = \frac{V_x}{V_1}, \text{x} = 2, 3, \ldots, \text{N}$$

$$HD_{V_y} = \frac{V_y}{V_1}, \text{y} = 2, 3, \ldots, \text{N}$$

$$HD_{V_z} = \frac{V_z}{V_1}, \text{z} = 2, 3, \ldots, \text{N}$$

THD provides a measure of the total distortion present in a waveform. THD is the ratio of harmonic content to the fundamental and provides a general indication of the quality of a waveform. THD is calculated for both voltage and current.

The following table lists the power quality values of the power meter:

| Characteristics | Description |
|---|---|
| THD | X,Y,Z,A,B(5 times each time) Per phase current,total (percent and rms value)<br>X,Y,Z,A,B(5 times each time)Per phase voltage,total (percent and rms value) |

## 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 |

| 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 60529 |
| 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** | | |
| Rated current<br>(5 level selectable) | 100A(0.5% from 10A to 120A)<br>600A(0.5% from 10A to 720A)<br>1000A(0.5% from 10A to 1200A)<br>3000A(0.5% from 30A to 3600A)<br>6000A(0.5% from 60A to 7200A) | |
| Rogwoski coil connect setting | 100A (50mV/kA@50Hz=60mV/kA@60Hz) | MRC-16 |
| | 600A (50mV/kA@50Hz=60mV/kA@60Hz) | MRC-36 |
| | 1000A(85mV/kA@50Hz=102mV/kA@60Hz) | Y-FCT-200 or Y-FCT-350 or NRC-100 |
| | 3000A(85mV/kA@50Hz=102mV/kA@60Hz) | NRC-150 or Y-FCT-510 |
| | 6000A(50mV/kA@50Hz=60mV/kA@60Hz) | NRC-200 or Y-FCT-800 |
| ST08 current clamp | 5A | 0.5% (100mA～5A) 1%(10mA～100mA) |
| | 10A | 0.5% (100mA～10A) 1%(10mA～100mA) |
| CTs connect setting | Primary setting: | from 1A to 999999A |
| | Secondary setting: | from 0.001mV to 333mV |
| Voltage | 0.2% from 60V to 500V | |
| Power factor | ±0.005 | |
| Active/Apparent Power | IEC62053-22 Class 0.5 | |
| Reactive power | IEC62053-24 Class 2 | |
| Frequency | 0.01% from 45 to 65Hz | |
| Active energy | IEC62053-22 Class 0.5s | |
| Reactive energy | IEC62053-24 Class 2 | |
| **Input-current characteristics** | | |
| Primary current range | 100A 0.5A to 120A<br>600A 0.5A to 720A<br>1kA 1A to 1200A<br>3kA 3A to 3600A<br>6kA 6A to 7200A | |
| Measurement input | $1/2^{25}$mV-333mV | |
| Permissible overload | 600mV for 10s/hours | |
| **Power Supply** | | |
| Power | 4*AA battery(working time: approx. 7hours) | |
| | USB Type-C | |
| **power consumption** | | |
| Screen Backlight On | 1100mW | |
| Screen Backlight Off | 900mW | |
| **Wire diameter for terminals** | | |
| Current input | BNC connector | |
| Voltage input | Banana plug | |
| DC power supply | DC 5.5*2.1 plug | |

## Port definition

| Port number | Port name | Port function | Remarks |
|---|---|---|---|
| 1 | IA | A-phase current input | Current input |
| 2 | IB | B-phase current input | |
| 3 | IC | C-phase current input | |
| 4 | UN | N-phase voltage input | Voltage input |
| 5 | UC | C-phase voltage input | |
| 6 | UB | B-phase voltage input | |
| 7 | UA | A-phase voltage input | |
| 8 | Power | USB Type-C | USB Type-C |
| 9 | Micro SD | SD card | Take out(in) SD card |

## Accessories

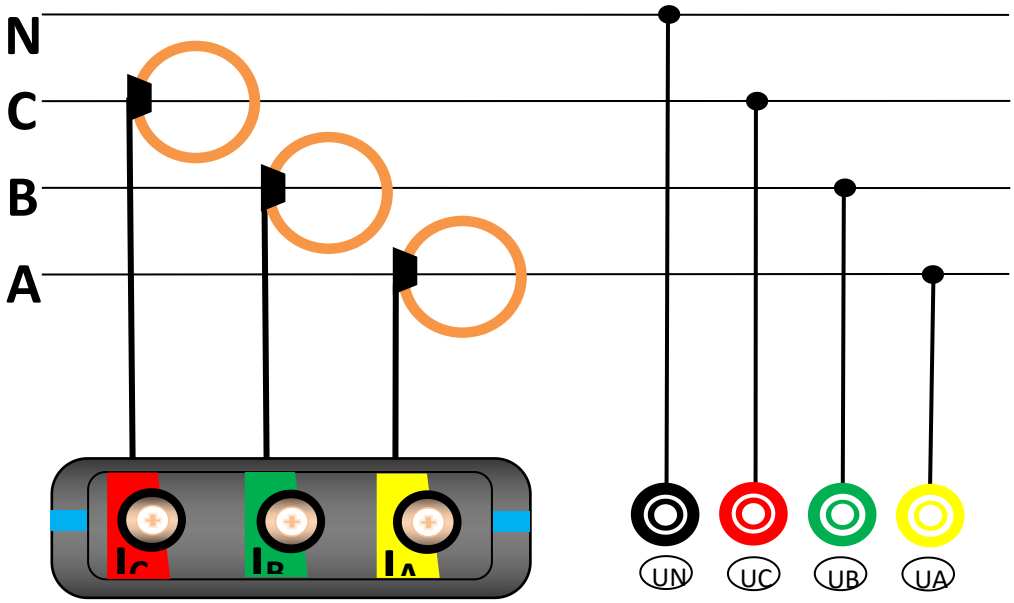
| Accessories | |
|---|---|
| Voltage wires | 4pcs voltage clamp wires with banana plug (2 meters,1.5mm²) |
| Adaptor | 85-265 AC to 9V DC adaptor |
| SD card | 1GB |
| Remark | **Rogowski coil and AA battery not included** |

# Wiring

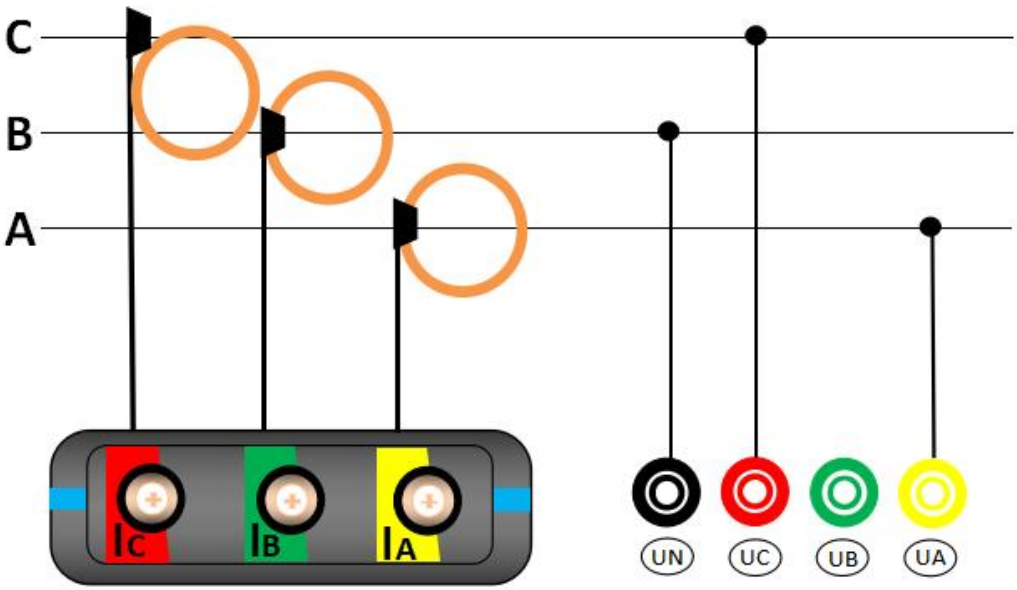
*：Rogowski coil secondary output voltage can not over 333mV rms.

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

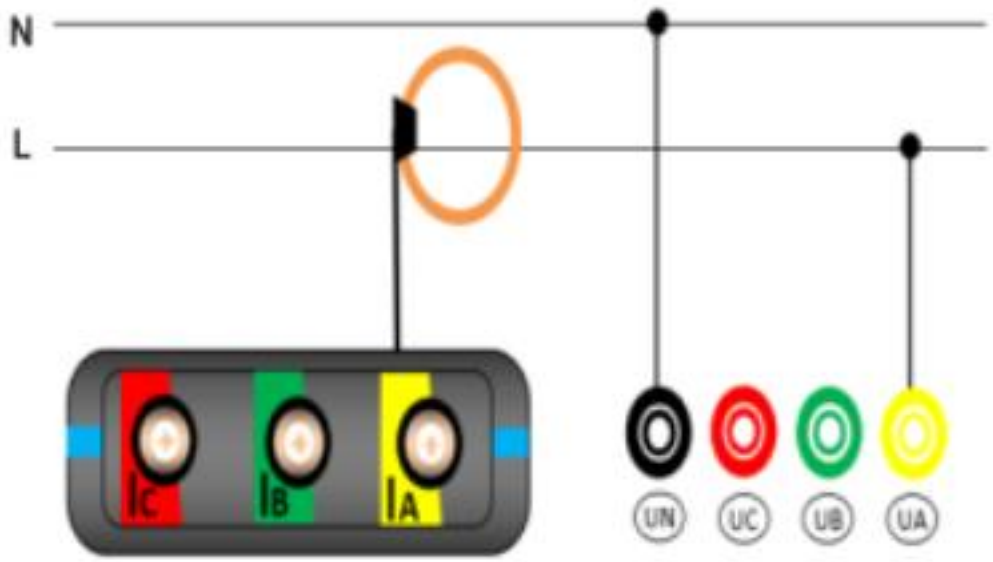
## 3PH4W



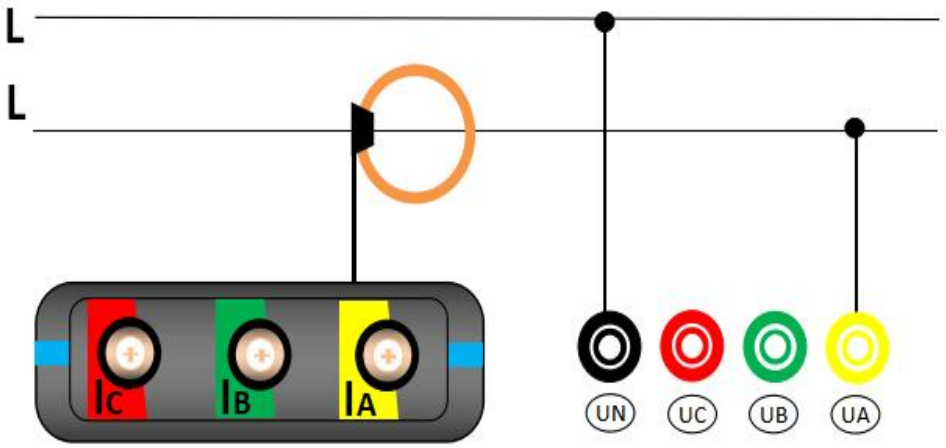

## 3PH3W



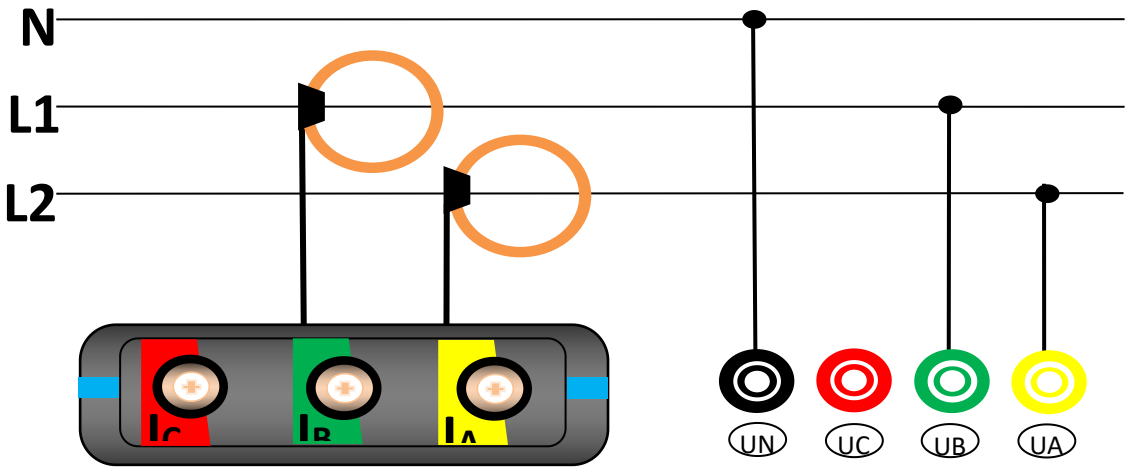
## 1PH2W L-N




## 1PH2W L-L



## 1PH3W L-L-N




## Installation

### Current input

### Voltage input

## Battery

## Power and SD Card

# Meter operation

## Introduction

The power meter features a panel with TFT LCD, a graphic display, and contextual menu buttons for accessing the information required to operate the power meter and modify parameter settings.

The Navigation menu allows you to display, configure, and reset parameters

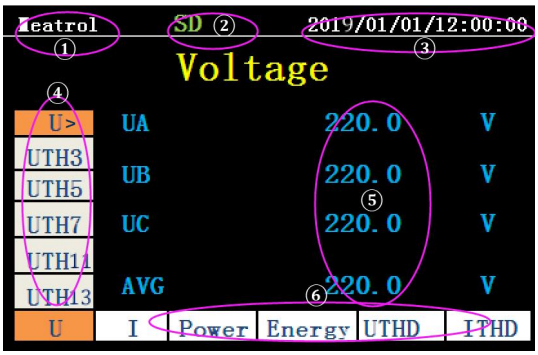
## Configuration mode

The default factory settings are listed in the following table:

| Function | Factory settings |
|---|---|
| Wiring | 3PH4W;<br>VT Direction connection;<br>3 Rcoils on I1, I2, and I3<br>50Hz |
| Ratio | Rcoil FSA=1000A<br>VT ratio=NA |
| SD Card | Switch=ENABLE<br>Period=60s |
| Harmonic | H1=3<br>H2=5<br>H3=7<br>H4=9<br>H5=11 |
| Password(Low) | 1000 |
| Date/Time | - |
| BackLight | Switch=ON<br>Period=60s<br>Backlight=5 |
| Demand | Method: sliding block;<br>Interval: 15 minutes |

# Interface

### 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

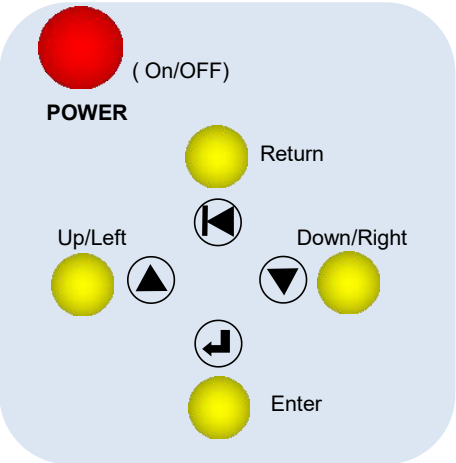
③ Date and Time.

④ From left to right,

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

Voltage harmonic---Current harmonic

Button:




Area ④switch by "Up/Down"

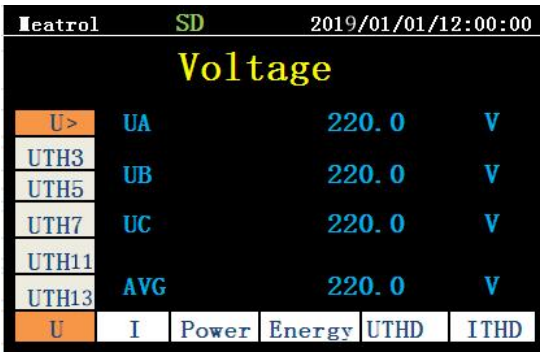
Area ⑥swtich by long press "Left/Right"

Menu or Exit switch by "Return"

Enter secondary swtich by "Enter"

**Noted:** After entering the subinterface, long press the up and down key can't switch the bottom item, you need to return to the main interface to switch

### 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

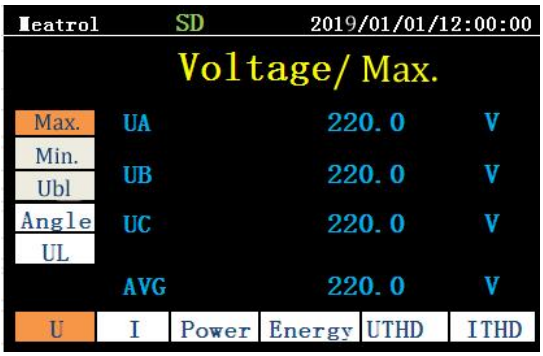
"UTH7" Z times Voltage harmonic RMS value

"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:

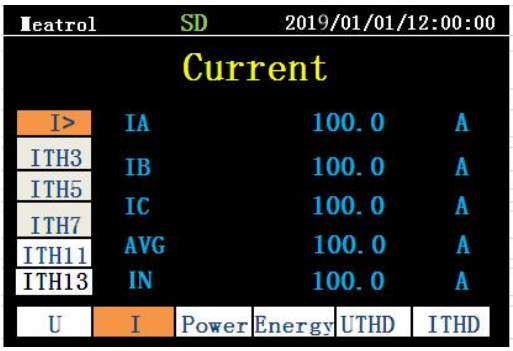
"Max." Voltage Maximum value

"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

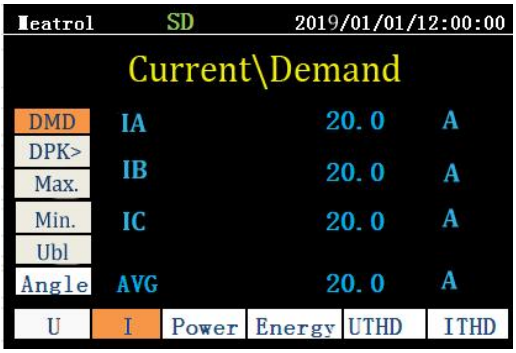
"ITH7" Z times Current harmonic RMS value

"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

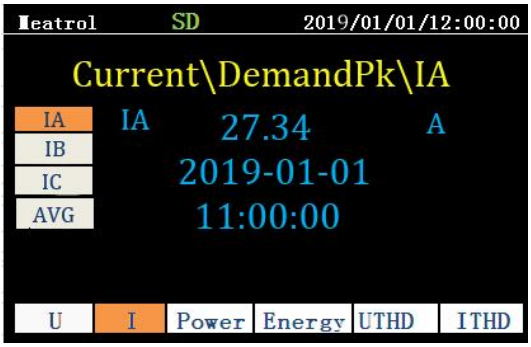
"Min." Current Minimum value

"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:

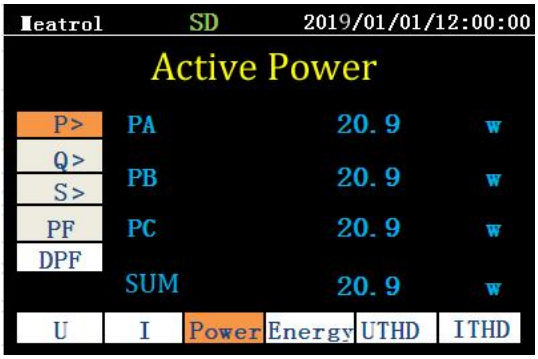
"IA" Phase A Current Maximum demand

"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)

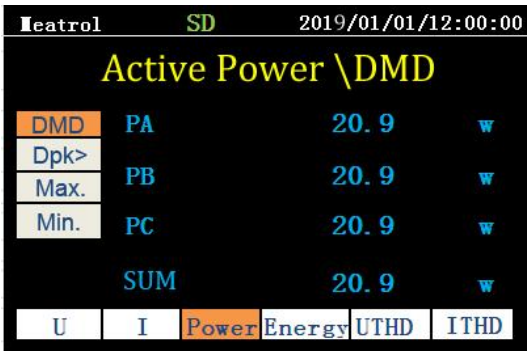
Apparent Power(Secondary interface)

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

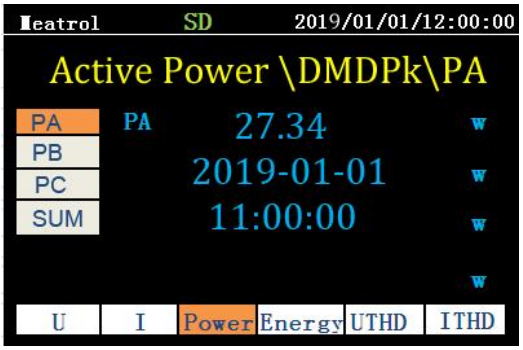
"Dpk>" Active Power Maximum Demand(Third interface)

"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

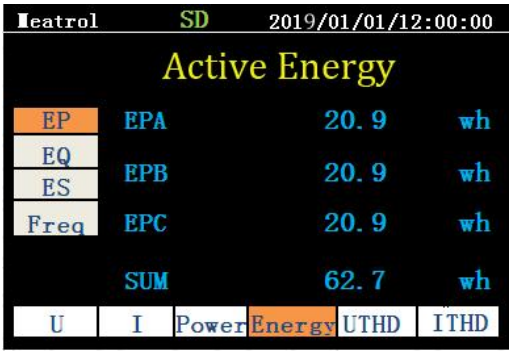
"PB" Phase B Active Power Maximum Demand

"PC" Phase C Active Power Maximum Demand

"SUM" Total phase Active Power Maximum Demand

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

**5. Energy display interface**




Left Area from top to bottom:

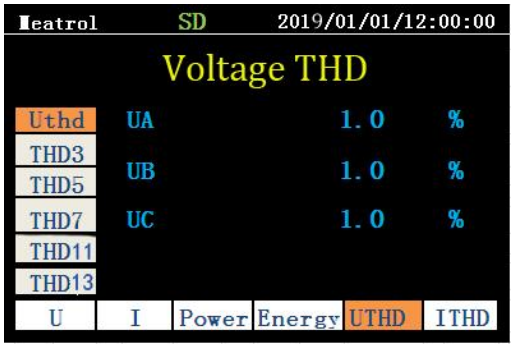
"EP" Active Energy

"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

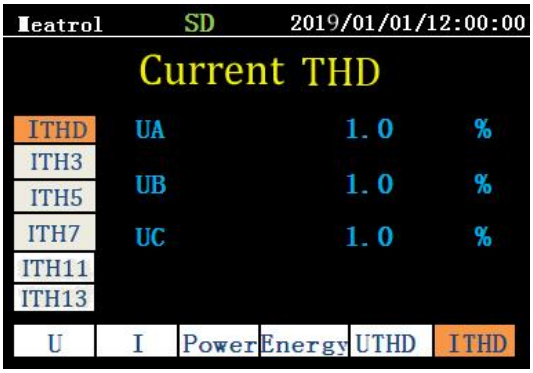
"THD5" Y times Voltage harmonic percent

"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

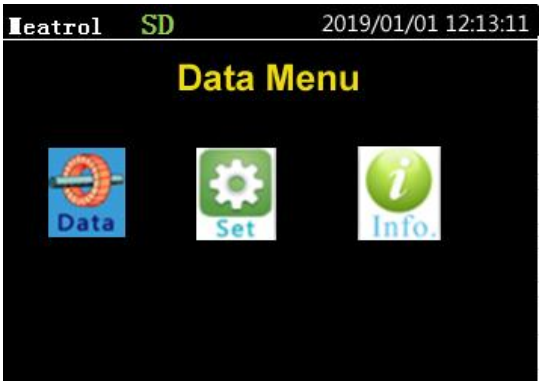
"ITH5" Y times Current harmonic percent

"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.**

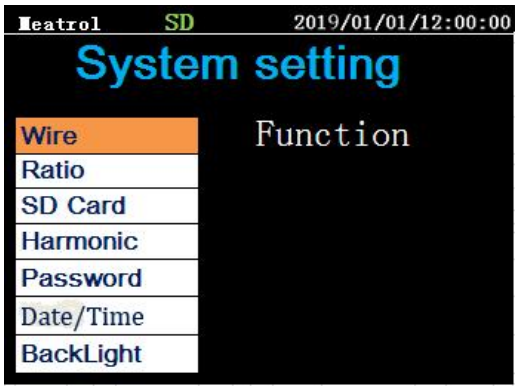
Enter "**Set**" on Menu interface.

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.

"SD Card" SD card setting

"Harmonic" Harmonic times setting

"Password" Password change setting

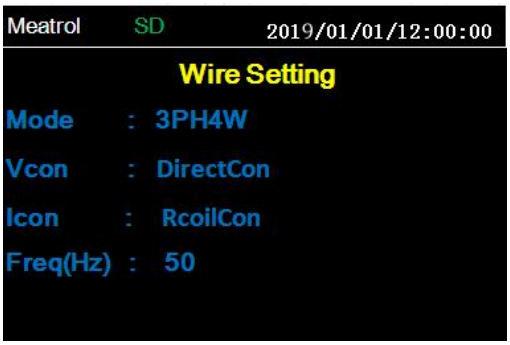
"Date/Time" Date/Time change setting

"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)

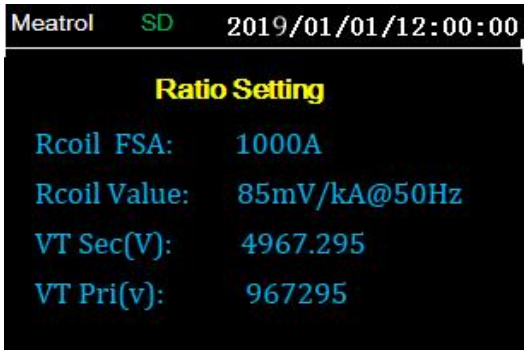
**"Freq" Choice frequency**

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

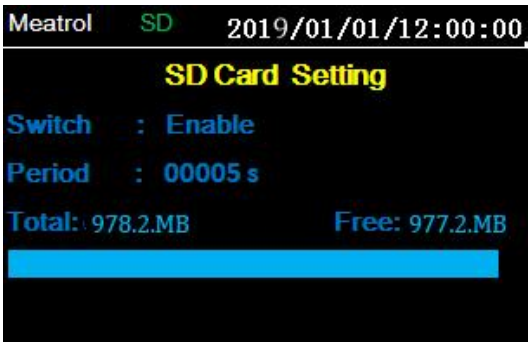
**VT PRI**：Voltage sensor Primary input value

**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 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.

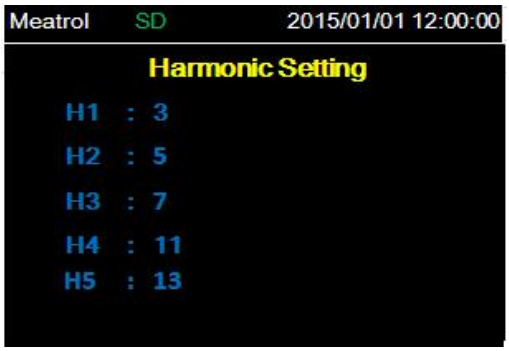
"Switch" choice Enable or Disable record function

"Enable" start record function

"Disable" stop record function.

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

**9.1.4 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.

**9.1.5 Password setting**

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

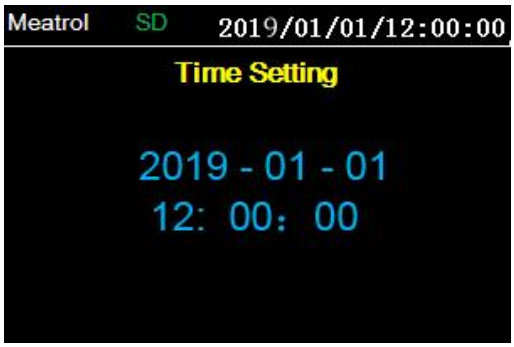
Press **Up/Down**,modify value on current line.

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

Password default is 1000

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

**9.1.6 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.

**9.1.6 BackLight setting**

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

ON：back lights on always

KEY：Automatic back light off

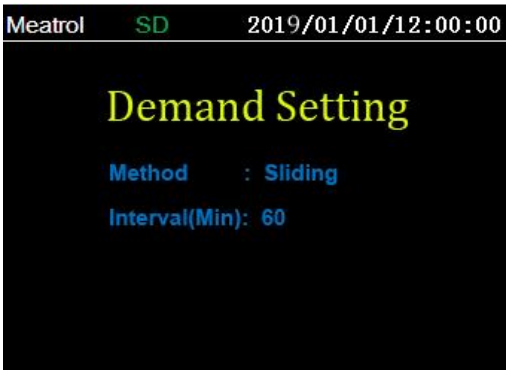
**"Period"** Setting Automatic back light off time

**"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.**

**9.1.7 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

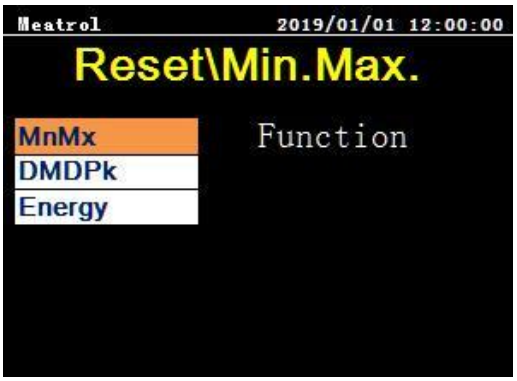
Fixed：Time fixed mode

**Interval（Min）**：from 1 to 60 minute

# Revision History

| Version | Date | Change | By |
|---|---|---|---|
| V4.1 | 2026/8/31 | 1.Correct the reference standard for reactive power energy measurement from the incorrect IEC 62053-21 Level 2S to IEC 62053-24 Level 2S.<br>2. The pollution prevention classification reference standard is amended from 60629 to 60529. | Elysian |

**9.1.8 Reset setting**




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

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

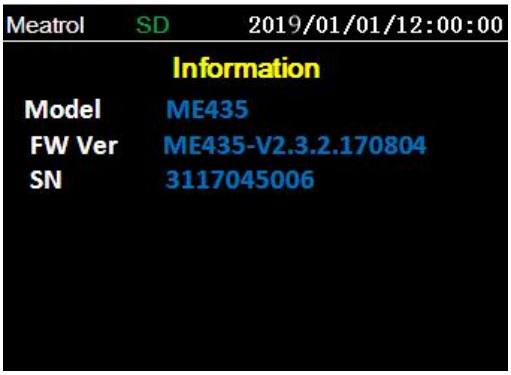
Long press **Up/Down**,change display number position

MnMx：Reset Minimum/Maximum value

DMDPk：Reset Maximum Demand value

Energy：Reset Energy

**10. "Info" interface**




Info interface is used for display the information

Model：meter Model No.

FW Ver：Meter Firmware version Number

SN: Series Number

**SHANGHAI PINYAN M&C TECHNOLOGY CO., LTD.**

Tel: +86 021 64850006

Fax: +86 021 64850006

E-mail: info@meatrol.cn

Website:www.meatrol.cn

Unit 55, No.2155, Lianhua south Road, Minhang District, Shanghai, China（201109）

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