ME631 Three-phase Power Meter

Connectivity advantages	
MODEL	**ME631**
Support Extra sensor	333mV CT Rogowski coil
Programmable digital output	Alarm 3 Tariff
I/O function	1*relay output
Power	85~265V AC/DC
Rogwoski coil specification	85mV/kA@50Hz±0.5%

Feature

Specification	
Model	ME631

Product component type	Multifunction power meter
Poles description	3PH4W 3PH3W 1PH2W (L-N) 1PH2W(L-L) 1PH3W(L-L-N)
Device application	Power analysis Tariff meter
Input type	External CT(333mV only) External Rogowski coil
Display	2.0 inch TFT screen display
Sampling rate	8k samples per second
Mounting mode	Clip-on
Mounting support	DIN rail
Harmonic	52th Max
Display characteristics	
Dimensions (VA)	39mm x 32mm
Display resolution	220 x 170 dots
Mechanical characteristics	
Weight	212g
Dimension	L*W*D:76*95*71mm

Display

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

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） **over 999.9GWh,value reset**
UTHD(%)	UTHD,THD2,THD3,THD4(Per Phase,AVG）
ITHD(%)	ITHD,THD2,THD3,THD4(Per Phase,AVG）
Update rate	
Data acquisition rate	400ms
Display update rate	0.5s
Energy storage interval (prevent losing energy when power off)	10mis(default)
Calibration	
Current	Per phase,all
Voltage	Per phase,all
Power factor	Per phase,all
Energy	Reset to “0” EP,EQ,ES all phase
Record （if order please add -SD in model No.	
Record interval	1s to 9999s（default 1min）
Record format	csv
Record capacity	1GB（default） record 3.5years in default
Record data	Voltage(V),UTHD(%),Current(A),ITHD(%),Frequency(Hz),PF(power factor),Active Power(KW),Reactive Power(KVar),Apparent Power(KVa), ActiveEnergy(KWh),Reactive Energy(KVarh),Apparent Energy(KVah)

Communication	
Transmission mode	RS485 port,Half duplex
RS485 link	2 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	

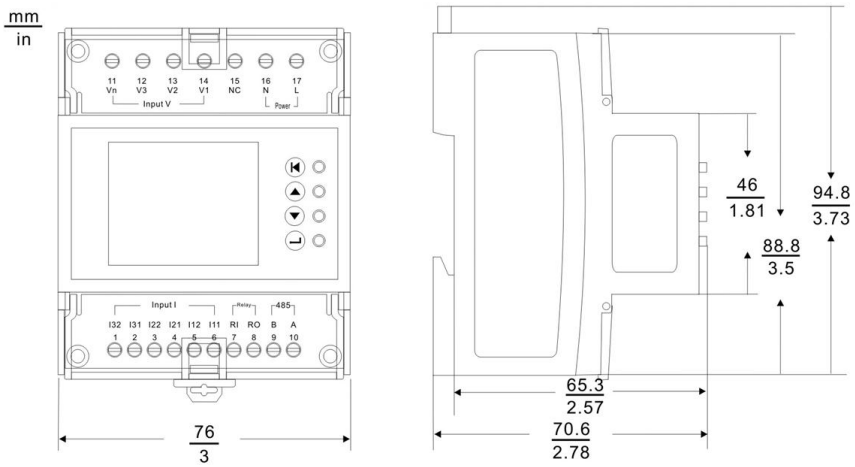
Specification

Measurement accuracy	
Current	0.5% from 1% to 120%(don't ensure accuracy when <10A)
Rated current	500A(0.5% from 10A to 600A) 3000A(0.5% from 30A to 3600A) 10kA(0.5% from 100A to 12kA)
Rogwoski coil specification	85mV/kA@50Hz±0.5%
Voltage	0.2% from 100V to 500V(L-L and L-N)
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	100V to 500V AC
Frequency range	50/60Hz
Input-current characteristics	
Primary current range	Adjustable from 0.1A to 9999A
Measurement input range	$1/2^{25}$mV-333mV
Permissible overload	600mV for 10s/hours
Control Power	
AC/DC	85 to 265V AC/DC, 3W
Output	
Digital output	1×digital output(2 ports)(controlled by Modbus) 2.5kVrms insulation Maximum Switching Power ： 10A, 277VAC 10A, 28VDC
Wire diameter for terminals	
Connections-terminals	Screw terminals 2.5mm^2,interval 5.08mm
Alarm	
Setting	U and I Each phase
Output form	Buzzer,Relay

Port definition

Port number	Port name	Port function	Remarks
1	I32	C-phase current input negative	C-phase current
2	I31	C-phase current input positive	
3	I22	B-phase current input negative	B-phase current
4	I21	B-phase current input positive	
5	I12	A-phase current input negative	A-phase current
6	I11	A-phase current input positive	
7	RI	Relay input	Relay output
8	RO	Relay output	
9	B	RS485 B	RS485 communication
10	A	RS485 A	
11	Vn	N-phase voltage input	Voltage input
12	V3	C-phase voltage input	
13	V2	B-phase voltage input	
14	V1	A-phase voltage input	
15	NC	Not Connected	Not Connected
16	N	POWER(-)	Power 85~265V AC/DC
17	L	POWER(+)	

Dimensions



Wiring

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

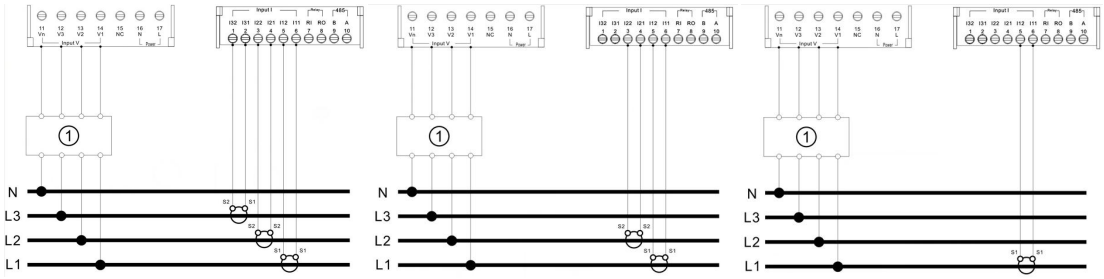
^：CT must be voltage output,secondary output can not over 333mV rms.

❶ 500mA fuses and disconnect switch

❷ VT primary fuses and disconnect switch

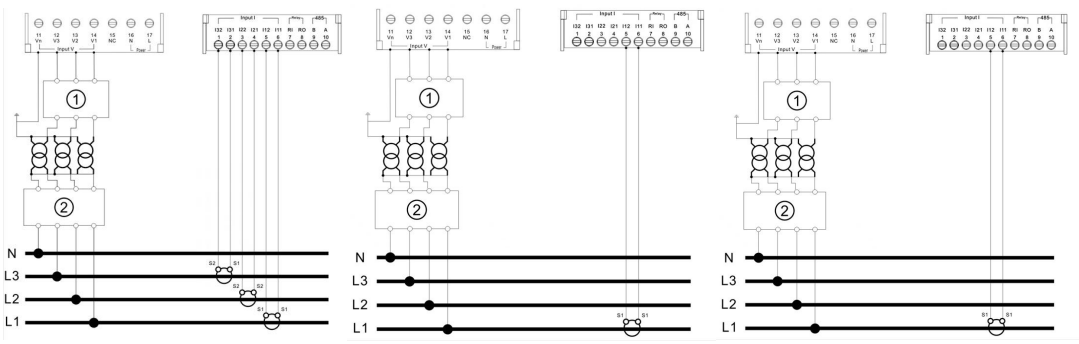
3Rcoil* or 3CT^ **2Rcoil* or 2CT^** **1Rcoil* or 1CT^**

3PH4W no VT

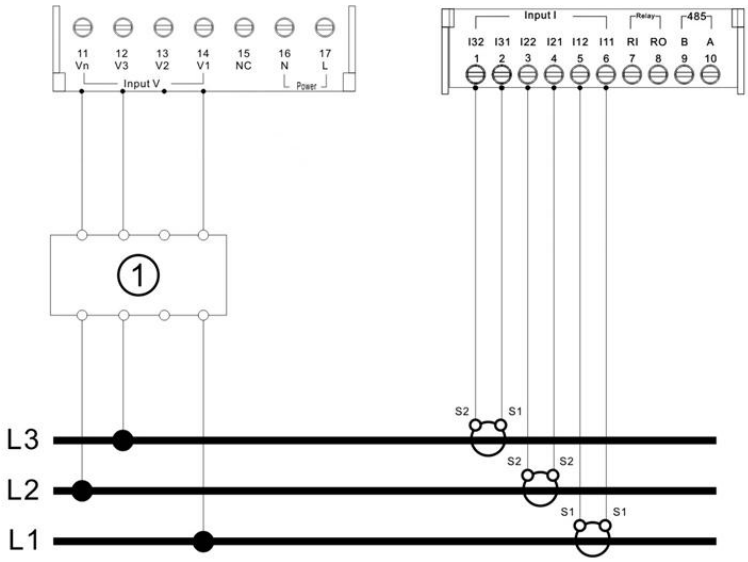


3PH4W with VT

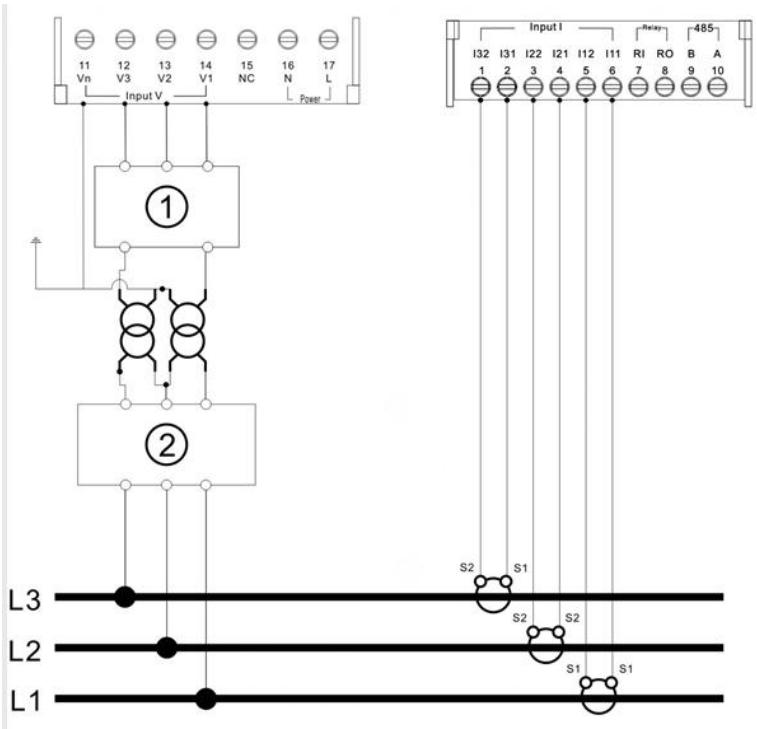
3Rcoil* or 3CT^ **2Rcoil* or 2CT^** **1Rcoil* or 1CT^**



3PH3W no VT

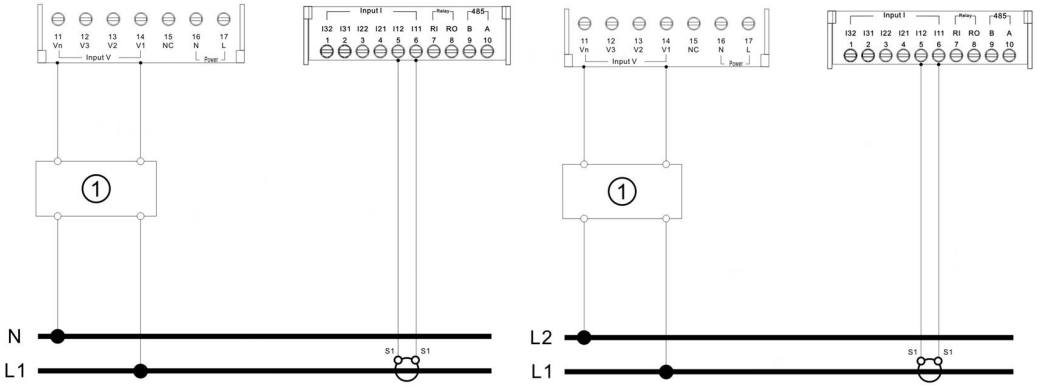


3PH3W with VT



1PH2W

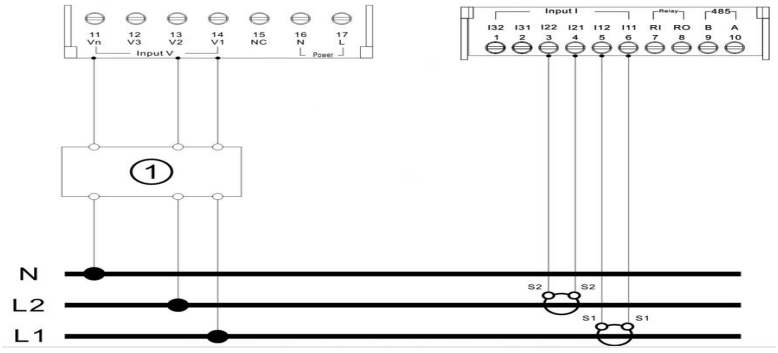
1PH2W L-N **1PH2W L-L**



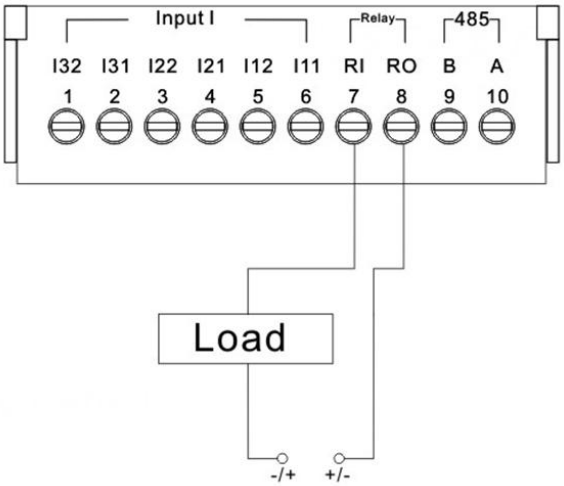
1PH3W

1PH3W

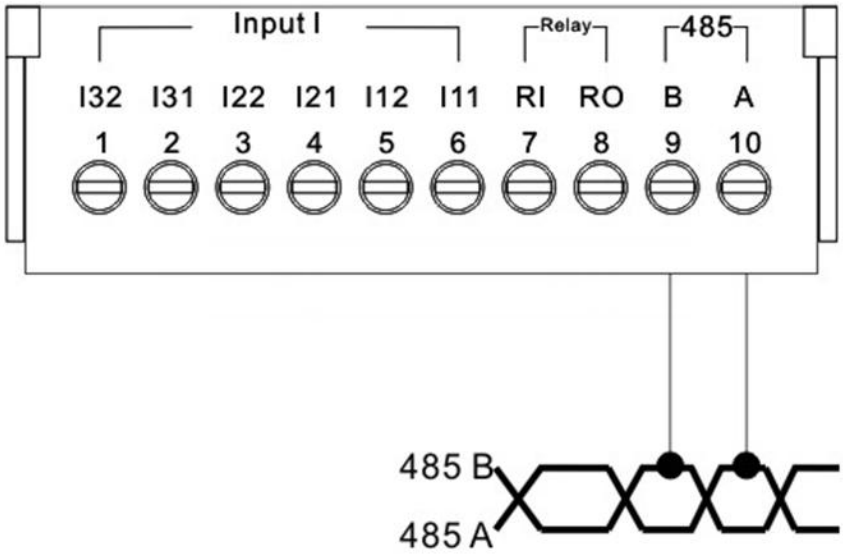
L-L-N



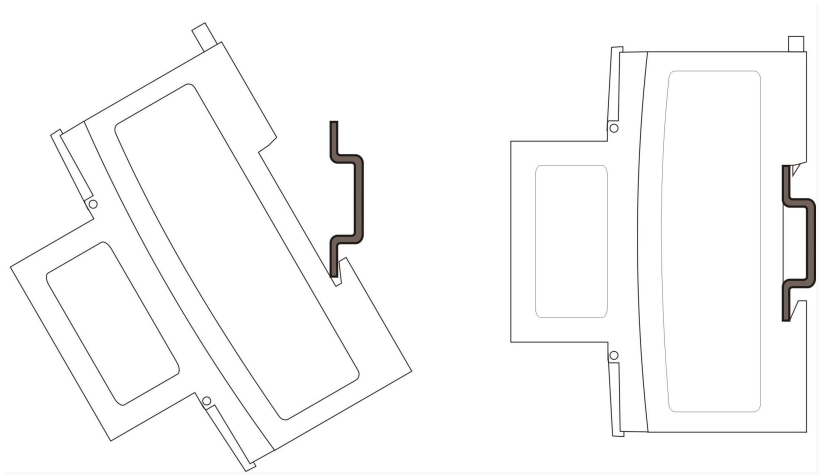
ModBus communication Wiring diagram



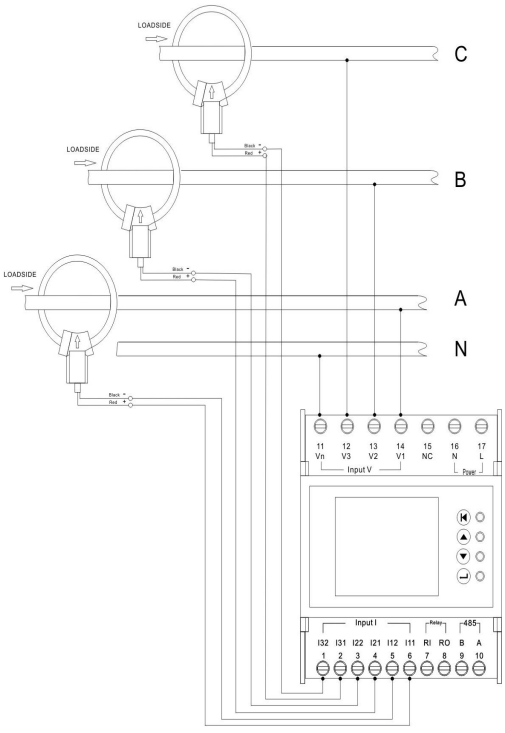
Input&output Wiring diagram



Installation



Rogowski coil connection

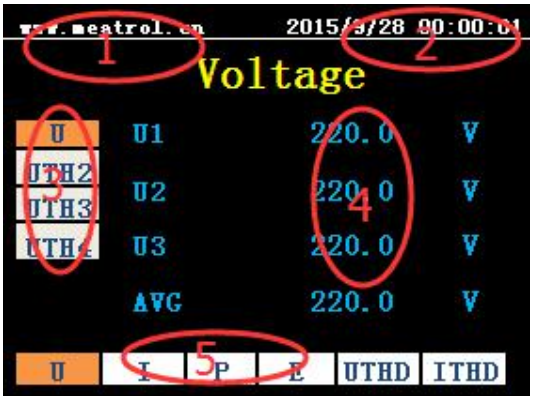


Operating Instruction

Instructions of ME631

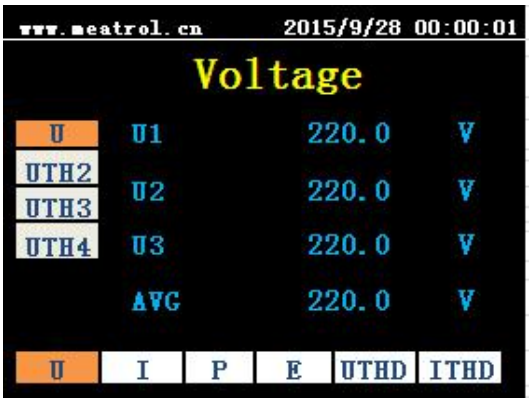
1.

Description of Interface



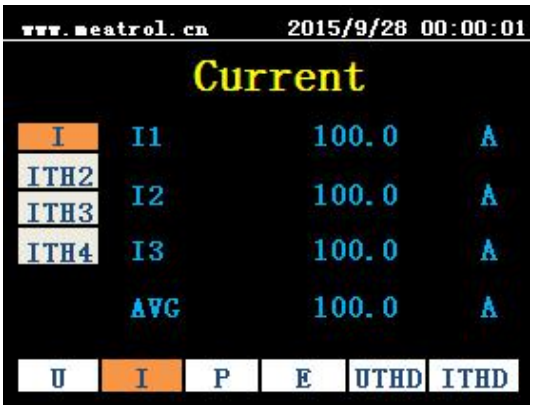
① Company website
② Meter's time
③ Secondary menus of measuring data
④ Meter of measuring data display
⑤ Main menus of measuring data: from left to right are U (voltage), I (current), Power, Energy, UTHD(harmonics voltage distorti-on), ITHD (harmonics current distortion).

2. Main menu of U (voltage)



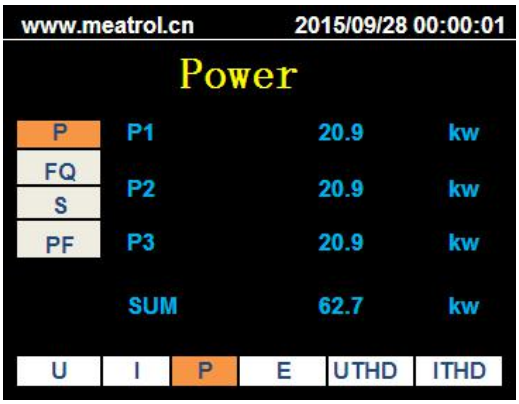
The secondary menus, from top to bottom are: U (voltage), UTH2 (2 harmonics voltage), UTH3 (3 harmonics voltage), UTH4 (4 harmonics voltage).

3. Main menu of I (current)



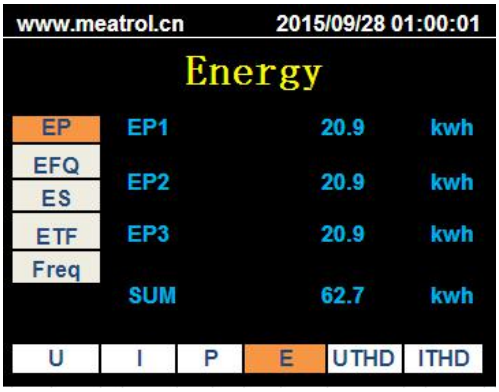
The secondary menus, from top to bottom are: I (current), ITH2 (2 harmonics current), ITH3 (3 harmonics current), ITH4 (4 harmonics current).

4. Main menu of Power



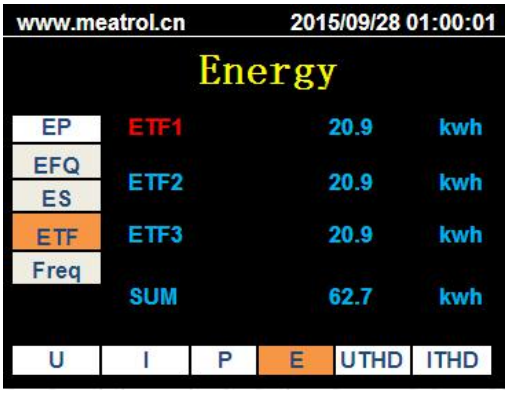
The secondary menus, from top to bottom are: P (active power), FQ (reactive power), S (apparent power), PF (power factor).

5. Main menu of Energy



The secondary menus, from top to bottom are: EP (active energy), EFQ (reactive energy), ES (apparent energy), Freq (frequency).

5.1 Tariff



Tariff selected by digital input.

Logic relation below:

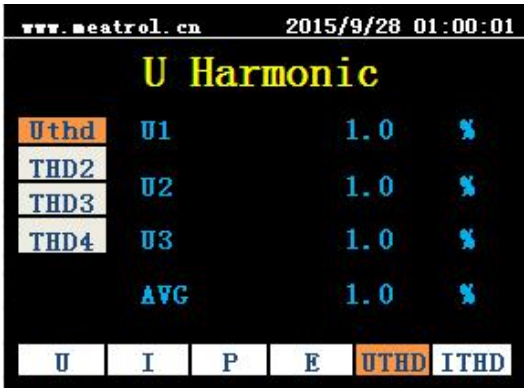
DI2=0&DI1=0 ETF1

DI2=0&DI1=1 ETF2

DI2=1&DI1=0 ETF3

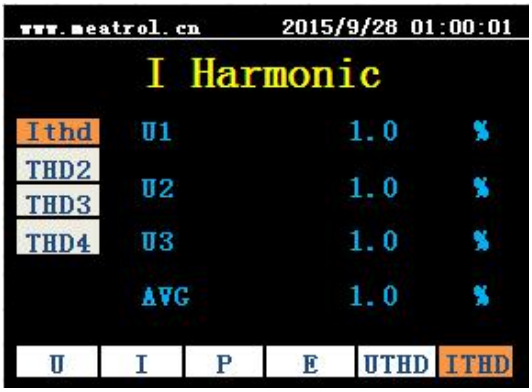
DI2=1&DI1=1 Not Available

6. Main menu of U-THD (harmonics voltage distortion)



The secondary menus, from top to bottom are: Uthd (total harmonics voltage distortion),THD2(2 harmonics voltage distorti-on),THD3(3 harmonics voltage distortion), THD4 (4 harmonics voltage distortion).

7. Main menu of I-THD (harmonics current distortion)



The secondary menus, from top to bottom are: Ithd (total harmonics current distortion),THD2(2harmonics current distorti-On), THD3 (3harmonics current distortion),THD4 (4 harmonics current distortion).

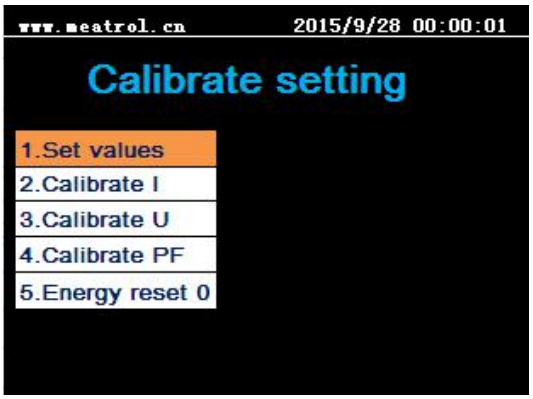
8. Instructions of key used

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.

9. Instructions of function and Setting

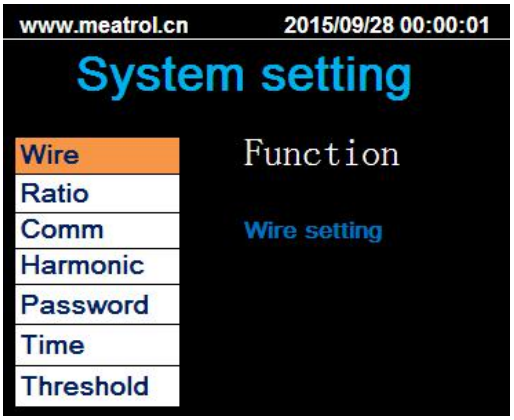
Switching main menu:
Click Up/Down to select main menu, and Click Enter to go to secondary menu. Please input
Password to entry into secondary menu, Password of Set is 1000 and Password of Cal. need to apply.

9.1 Secondary menu Select and set
Secondary menu of Set or Cal. is as the following pictures: Click Up/Down to select third menu, Click Enter to enter third menu.
Secondary menu of Cal.



The calibrate setting only use on below conditions:
A.Change Rated Value
B.Change other ratio rogowski coil connection

9.2 Third menu of set
Settings of Ct,Addr,Baud, Harmonic, Password, Time,Threshold:
Long press Left/Right to switch displacement or items, click Up/Down to change value of figures, and Click Enter to set.



9.2.1 Setting of Wire
Click Up/Down to select Wire, and Click Enter to set.
Long press Left/Right to switch displacement, click Up/Down to change value of figures, and Click Enter to set.
“Mode” select the wiring connect mod:
“3PH4W”:3 phase 4 wire system
“3PH3W”:3 phase 3 wire system
”1PH2W_LL”:1 phase 2 wire L_L system
”1PH2W_LN”1 phase 2 wire L_N system
”1PH3W_LLN”1 phase 2 wire L_L_N system
“Vcon” select Direct voltage connect or VT

conect:

“DirectCon”:Directly voltage connect

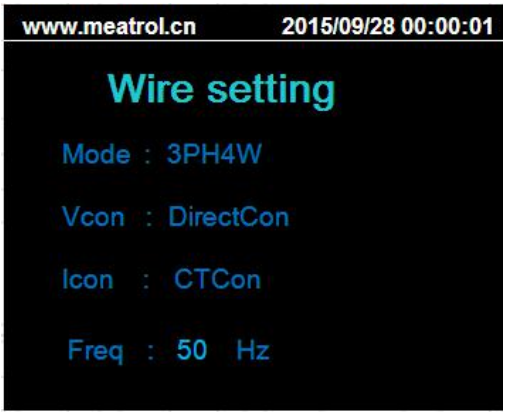
“3VT”:3 Voltage sensor connect when 3phase system

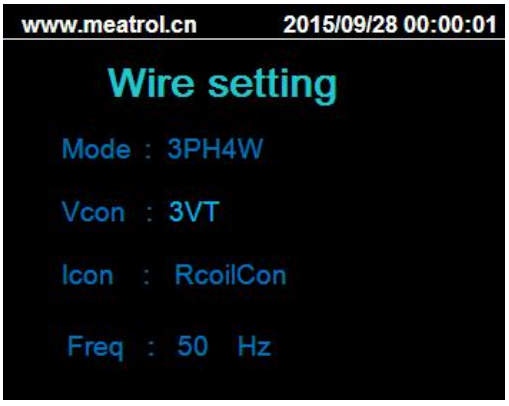
“Icon” select Rogowski coil or CTs.

“CTCon” :CT connection

“RoCon”:Rogowski coil connection

“Freq”select rated frequency.





9.2.2 Setting of Ratio

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

If select RcoilCon,setting Rcoil Sec and Rcoil Pri.

If select CtCon,setting CT sec and Pri

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

Note:

Rcoil Pri is the primary nominal current ,Rcoil Sec is the Corresponding output of Rogowski coil.

For example:

Coil ratio:85mV/kA@50Hz

Default:Rcoil Pri =1000A，Rcoil Sec=85mV

If want to change 100A rated,change to Rcoil Pri =100A，Rcoil Sec=8.5mV

If change other ratio,must setting Rcoil Pri and Rcoil Sec.

ME631 can measure big different current range,make sure the accuracy through ratio setting without calibration.

VT Sec(V):only 100,110,115,120 selected.

9.2.3 Setting of Comm

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

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;

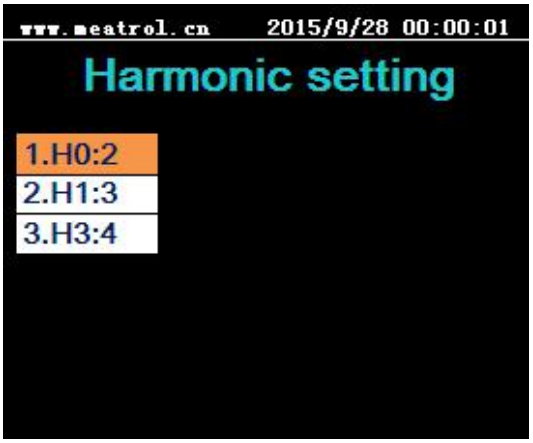
Baudrate is 1200-57600.

"Parity" select parity checking.

"EVEN" and "OLD" or "NONE"

9.2.4 Setting of Harmonic

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



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

9.2.6 Setting of Time

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

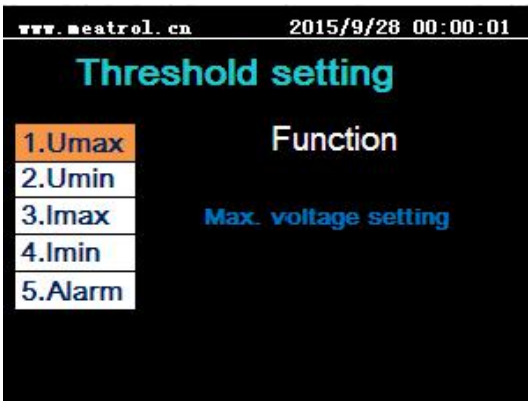
Long press Left/Right to switch displacement, Click Up/Down to change value of figures, and Click Enter to set.

9.2.7 Setting of Threshold

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

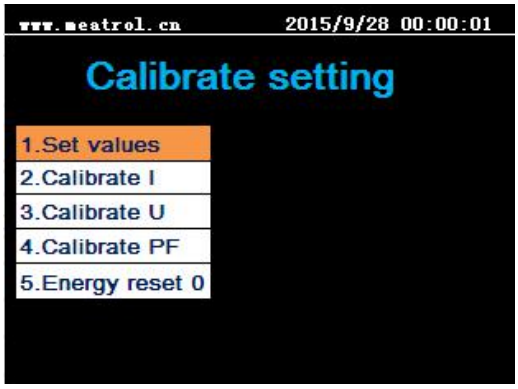
First set the threshold of Umax, Umin, Imax, Imin; and then enable the Alarm.

Next chose to enable Buzzer.



9.3 Third menu of Cal.

Calibrate current and voltage：

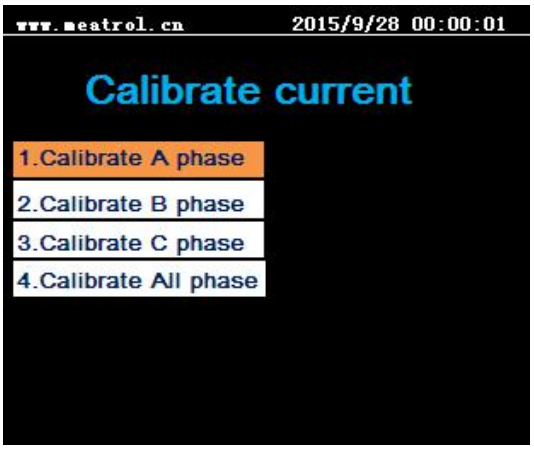


9.3.1 Click Up/Down to select" Set values"

Click Enter to input calibrating values, then click Enter again.

9.3.2 Click Up/Down to select Calibrate U or Calibrate I

Click Enter and select Calibrate A, B,C or All phase, then click Enter again, then meter is calibrating.



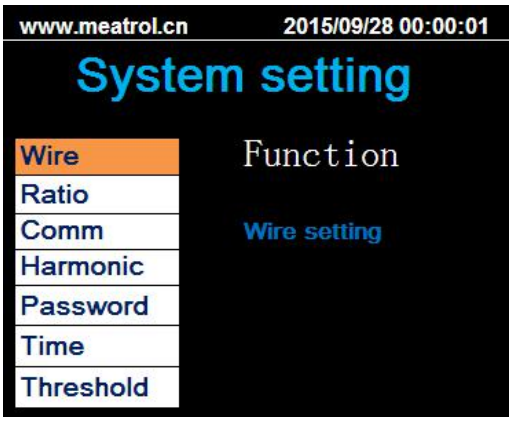
9.3.3 Energy reset

1. Select Energy reset 0 and Click Enter. No need to select Set values or input calibrating values.
2. Reset A, B, C or All phase active, reactive, apparent energy. Click Enter, then the energy reset.

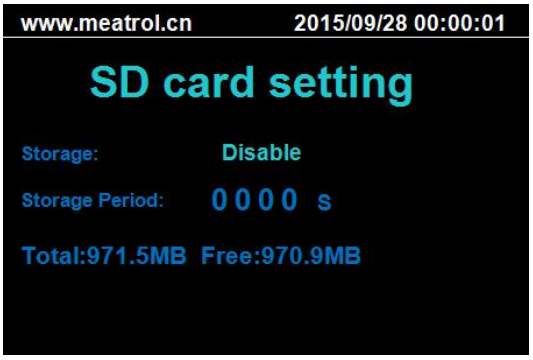
9.4 Third menu of information

10.SD card setting

Click Up/Down to select SD card and Click Enter to set.



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



Storage: select Disable and enable
Storage Period:setting storage interval time
Total: SD card capacity
Free: rest of SD card capacity

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