Multi-function
digital display power meter

User Manual

Overview

multi-function digital display power meter is designed for the application of electric power monitoring, intelligent control, measurement and assessment, such as electric power system, industrial and mining enterprises, public facilities, intelligent buildings and so on. Equipped with high-precision, high-reliability and cost-effective.It can measure all power parameters intelligently in a three-phase network, such as three-phase voltage (phase/line), three-phase current, active power, reactive power, power factor, grid frequency, four-quadrant energy metering, with standard energy pulse output and RS 485 communication interface for remote transmission.

1-6 switch input, 1-4 switch input, 1-4 analog output can be optional.

1. Technical Parameters

Items		Parameters		
Accuracy class		Electrical measurement: 0.5 Active electric energy:0.5 Reactive electric energy:1 transmission output :0.5		
Signal Input	Wiring	3 phase 4 wires Y34/3 phase 3 wires V33		
	Voltage range	AC400V/100V	Over load	Lasting : 1.2 times instant time:2 times(10 seconds)
	Current range	AC5A/1A	Over load	Lasting : 1.2 times instant time:10 times(5 seconds)
	Power consumption	Voltage: <1VA (per phase) current <0.4VA (per phase)		
	Frequency	40–65 Hz		
Power supply		Working range: AC220V±10% (AC/DC85-264V need to be customized) Power consumption: <5VA		
Communication		Rs 485 communication, physical layer isolation Modbus-RTU communication protocol Communication baud rate 4800 - 9600, Verification mode: N 81, E 81, O 81		
Analog output		0 / 4-20 m A or 0-5 / 10 V transmission output Can be programmed to set transmission item and corresponding output value		
Relay output		Programmable remote/alarm relay output Capacity 5 A / 250 VAC, 5 A / 30VDC Can program alarm electric quantity, remote control mode		
Telemetry switch		telemetry switch input measurement and passive dry contact input Programmable correlated alarm output		
Display		LCD / LED display		
Display mode		Programmable, change, cycle display		
Environment		Operating temperature: - 10 - 55°C Relative humidity: ≤93% Altitude: ≤2500 m Storage temperature: - 20 - 75°C no rain, snow, salt spray and corrosive gases		
Safety		Insulation: signal, voltage, output terminal resistance to case > 50 MΩ Withstand voltage: signal input, power supply, output terminal > AC 2 KV		

## 2. Installation and Wiring

2.1 Meter's dimension
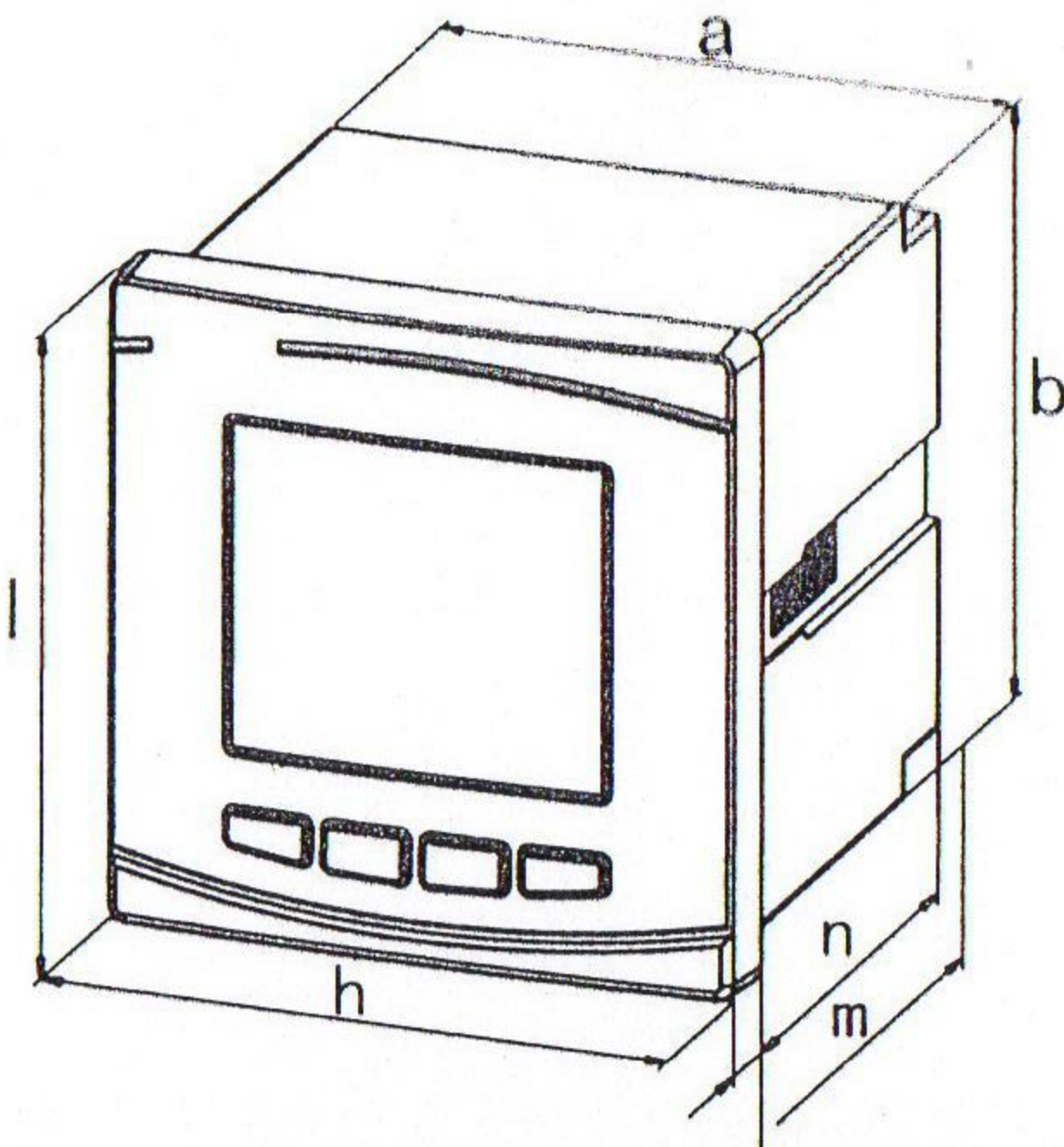
Outline code	Model of Meter	Frame Dimension (l×h) Unit(mm)	Screen Dimension (a×b) Unit(mm)	Mounting Dimension (s×y) Unit(mm)	Min Installation Distance		Total length (N) (mm)	
					Horizontal (mm)	Vertical (mm)	Old type	New type
2	2S□	120×120	110×110	111×111	120	120	114	55
9	9S□	96×96	90×90	91×91	96	96	96	55
3	3S□	83×83	75×75	76×76	83	83	89	95
A	AS□	72×72	66×66	67×67	72	72	78	95

Installation dimension：a×b
Hole size:s×y
Panel dimension:l×h （unit mm）

2. 2 Installation method

Front view   Back view
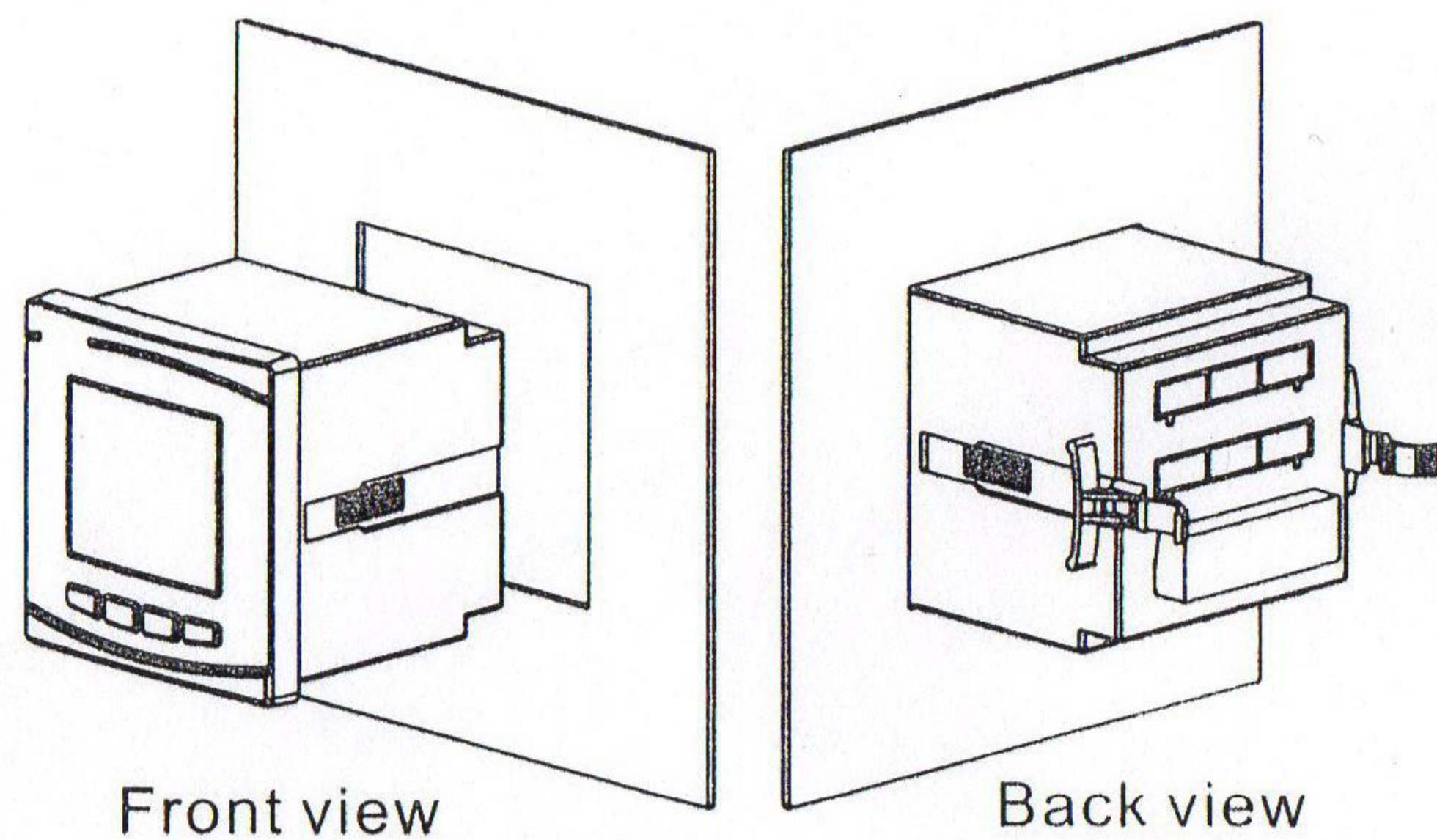
1) Open a s×y （mm） hole in the fixed distribution cabinets;
2) Take out the meter and remove the fixing bracket;
3) Meter is installed in the mounting hole in the front;
4) Insert meter's fixing bracket, and tighten the screws to keep the meter in place;

2.3 Wiring terminal function description
Signal and the function of terminal number

| Power supply	1,2	Standard:AC 220V (can be customized AC/DC 85-264V)
Current signal	4,5,6,7,8,9	With *4,6,8 is the three-phase current input terminal
Voltage signal	11,12,13,14	Respectively 3 phase voltage input UA,UB,UC,UN
Relay output	15——22	4 way relay output
Transmitting Output	30——34	4 way 4-20mA Transmitting Output,30 is common terminal
Electric power pulse	47,48,49	47,49 is passive output positive terminal
RS485	58,59	respectively are A+ ,B-
Switch input	70——76	6 way switch input, 70 way is common terminal

2.4 wiring
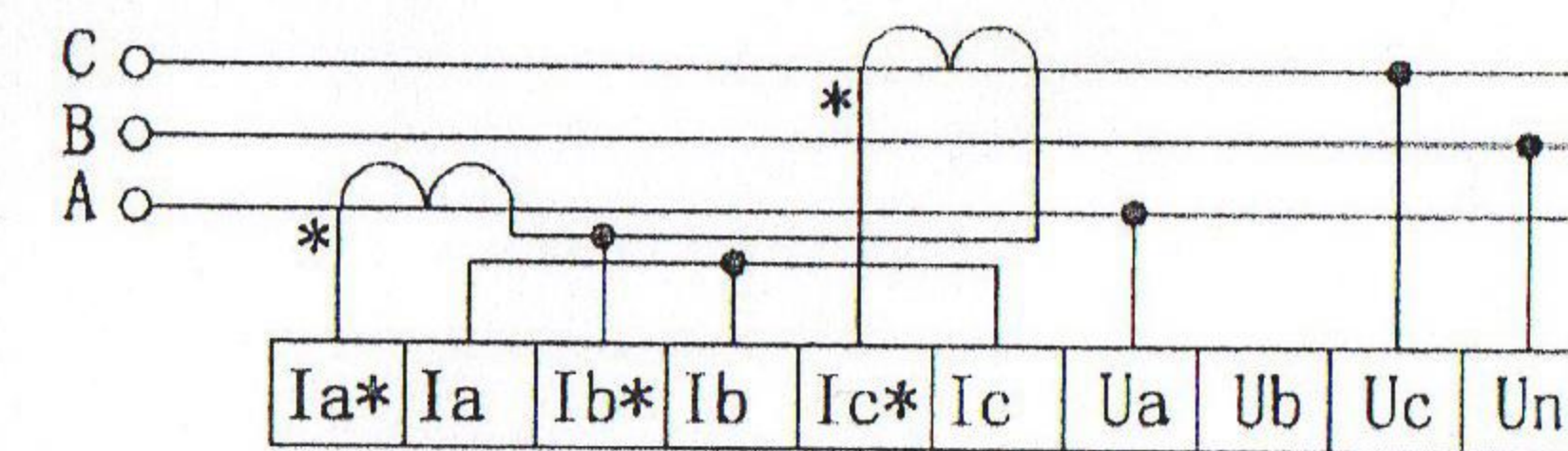
(1) Typical wiring diagram of low voltage network
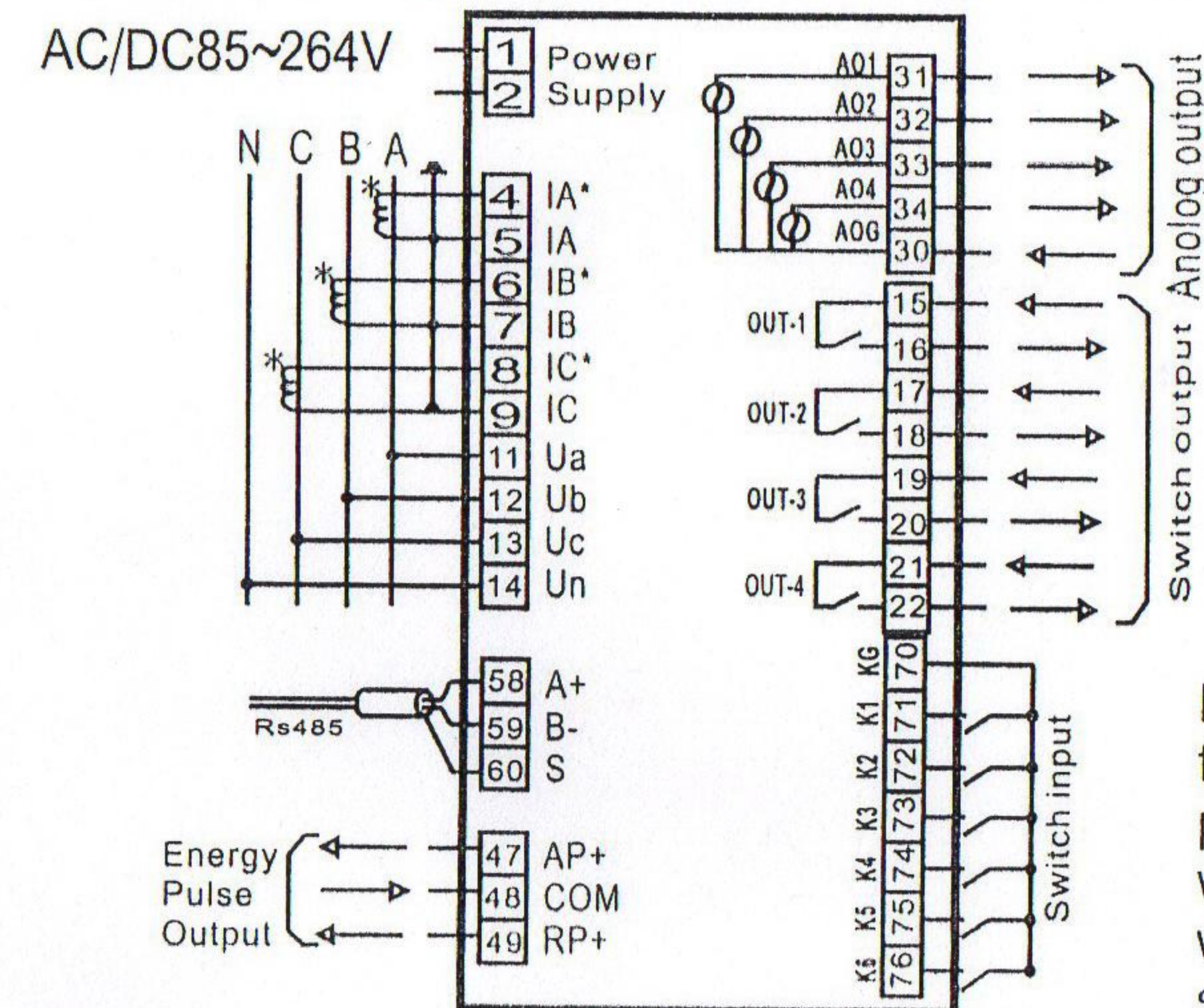
Note: According to the customization function, the wiring terminals of each product are slightly different. When wiring, please wire accordingto the wiring diagram on the specific product shell.

(2) Wiring method of signal input
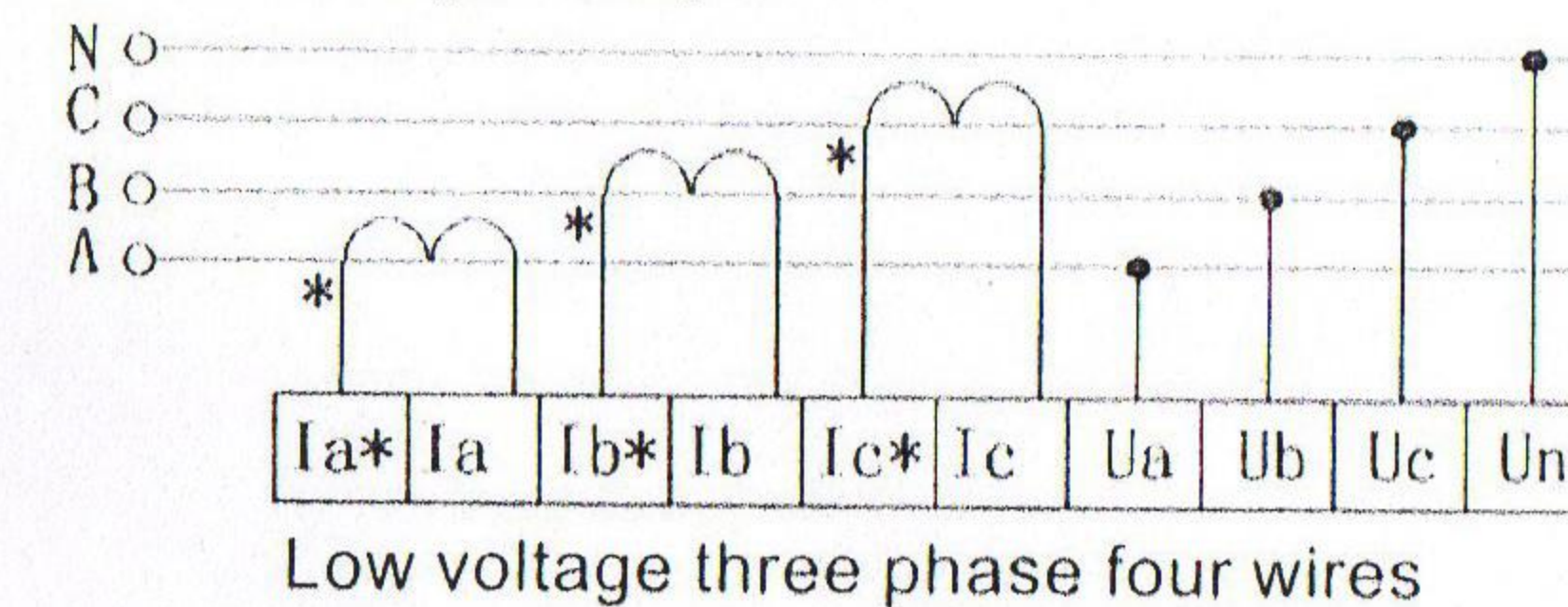
Low voltage three phase four wires

Low voltage three phase three wires

Wiring instructions

(a) Voltage input:Input voltage is not higher than product rated input voltage (100 v or 400 v). Or consider using PT . For easy maintenance, wiring row is recommended.

(b) Current input: Input current rating standard is 5A. If the current is more than 5A, CT should be used . If other meters connect with the CT, wiring should be tandem connection. Before remove current input connection, CT's first circuit and short secondary circuit must be disconnected. For easy maintenance, wiring row is recommended.

(c) Ensure that voltage, current correspond, phase sequence, and direction are consistent. Otherwise, it will lead to wrong number and wrong symbol.(power and electricity)

(d) Meter can work in three phase four wires or three phase three wires. Generally, if there is no neutral line, three phase three wires should be used.If there is neutral line,then three phase four wires should be used. 2 CT (A and C phase) can be installed in three phase three wires .3 CT should be installed in 3 phase 4 wires.(In the case of only two CT can synthesize another phase current)

Note: Two kinds of connection mode can be set.The actual connection mode and meter setup method must be consistent.

The specific connection mode, the pulse constant and other technical parameters should be according to products random wiring.

3. Programming operation

3.1 Entry and exit programming state

When the meter is in display state, press "MENU"button,then enter the password confirmation page. Use "→" button or "←" button to input password(the original input pass word is 0001). Then press "↵" button to enter programming page. Note: if the page do not change after inputting the password and press "↵"button, it indicates that the password is not right.

Under the circumstance of returning to programming interface first menu, press "MENU" button, then the meter will present "SAVE-YES". At this situation ,there are 2 operations available.

(a) Save and exit. Select the "↵" button to save, then exit.

(b) Keep programming state. Choose "MENU"button indicates exit without saving, and all the changes before are invalid.

3.2 Button usage in the programming operation

General function of four buttons

"→" button and "←" button is used for toggle key or numerical add and subtract in same page."MENU"button is used to return or enter programming interface. "↵" is for the confirmation after entering the lower menu or modify numerical validation. How to achieve increase or decrease of single digit,tens digit, hundreds digit and thousands digit under the digital display interface:

Increase or decrease of Single digit: "→" button (press "→" button can make the number 0-9 circulation on the single digit place Increase or decrease of tens digit, hundreds digit and thousands digit: you can press "←" to conduct shift operation, then press "→" to increase or decrease. For example, in the menu item INPT-PT-0001, if press "→" button ,it will change into INPT-PT-0002;If press "←" button, It can be add and subtract operation for tens digit,then press the "→" button again at this time, it will change into INPT-PT-0012; If press "←" button again,then hundred place can be operated,then press "→" button again,it will change into INPT-PT-0112; If press "←" button again,then kilobit can be operated.then press "→" button again,it will change into INPT-PT-1112.

3.3 Programming operation

3.3.1 Menu structure

In the condition of programming, display interface adopts hierarchical menu mode.Meter provide with three rows LED display;

The first layer (row) function menu, such as: INPT indicates signal input, and signal input is implemented in the sub menu of this menu;

The second layer (row) specific function setting menu, such as: I.SCL indicates the current range;
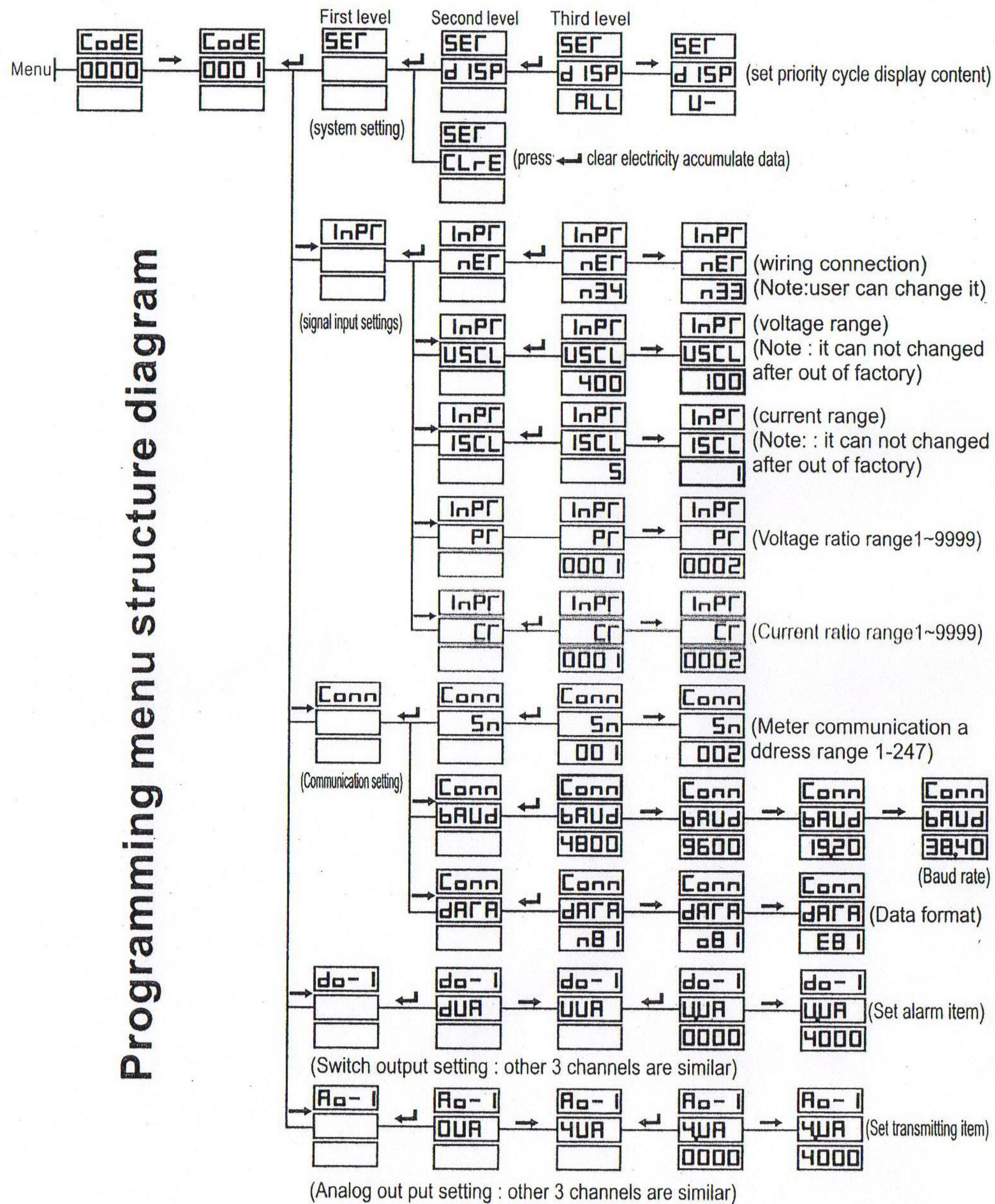
The third layer (row) specific parameter setting menu, such as: 5A represents the current range, that is, the input signal current range is 5A.

The organizational structure of the digital display interface menu as follows, users can choose appropriate set parameters according to the actual situation.

First level	Second level	Third level	descrition
system settings SET	Password CODE	0-9999	Set user password (default 0001)
	Display DISP	ALL or other data	Set the priority cyclic display project (e.g., set as U - when connenct power ,it prefer to display voltage, set as ALL to close the loop display.At this siuation ,user need to manually click left key to view)
	Clean electricity clean demand CLr	"↵" Or "Menu"	Press "↵" clear electricity accumulated data.Press MENU return without clear data
signal input INPT	Wiring method NET	N.3.4 or N 3.3	Select the connection mode of the input signal (N, 3, 4 for three phase four wires, N, 3, 3 for three-phase three-wire)
	Voltage range U.SCL	400V or 100V	Select the input voltage range (cannot be modified after out of the factory)
	current range I.SCL	5A or 1 A	Select the range of input current (cannot be modified after the factory)
	Voltage ratio PT	1-9999	Set the voltage transformation ratio = 1 time scale, 2 times scale
	Current ratio CT	1-9999	Set the current transformation ratio = 1 time scale, 2 times scale
communication setting	Address SN	1-247	Meter address range 1-247
	Communication speed BAUD	4800-9600	Baud rate 4800 9600
	Data format DATA	N,E,O data format	Data format N81 E81 O81
Relay output Settings DO-I (i is 1-4)	Select alarm terms or closed alarm (for details please check 5.4 relay output)	Set the alarm project specific threshold value	Select the alarm term, and set the appropriate threshold value.Once meet the alarm requirements, the output switch conduct.For example, set at "do-1""U.UA""3800".
Analog output Settings AO-i (i is 1-4)	Choose transmitting term or close the transmitting output (for details please check 5.3 Transmitting output)	Set the full scale of transmitting term	Choose transmitting terms and its corresponding power parameters (namely 0-20mA 4-20mA 4-12-20mA). For example ,when it is set at "Ao-1" "IAH" "5000".It indicates when A phase current 0-5A match the transmitting output signal of the first way 4-20mA

Note: The above menu items are for menu item with all function. If user find some menu items are less or do not work.It means that the products selected by the user does not support this function.
The structure diagram is as follows:

Programming menu structure diagram

First level | Second level | Third level

- **SEr** (system setting)
  - SEr / d ISP → SEr / d ISP / ALL → SEr / d ISP / U- (set priority cycle display content)
  - SEr / CLrE (press ← clear electricity accumulate data)
- **InPr** (signal input settings)
  - InPr / nEr → InPr / nEr / n34 → InPr / nEr / n33 (wiring connection) (Note:user can change it)
  - InPr / USCL / 400 → InPr / USCL / 100 (voltage range)(Note : it can not changed after out of factory)
  - InPr / ISCL / 5 → InPr / ISCL / 1 (current range)(Note: : it can not changed after out of factory)
  - InPr / Pr / 0001 → InPr / Pr / 0002 (Voltage ratio range1~9999)
  - InPr / Cr / 0001 → InPr / Cr / 0002 (Current ratio range1~9999)
- **Conn** (Communication setting)
  - Conn / Sn / 001 → Conn / Sn / 002 (Meter communication address range 1-247)
  - Conn / bAUd / 4800 → Conn / bAUd / 9600 → Conn / bAUd / 1920 → Conn / bAUd / 3840 (Baud rate)
  - Conn / dArA / nB1 → Conn / dArA / oB1 → Conn / dArA / EB1 (Data format)
- **do-1**
  - do-1 / dUA → do-1 / UUA / 0000 → do-1 / UUA / 4000 (Set alarm item)
  (Switch output setting : other 3 channels are similar)
- **Ao-1**
  - Ao-1 / OUA → Ao-1 / 4UA / 0000 → Ao-1 / 4UA / 4000 (Set transmitting item)
  (Analog out put setting : other 3 channels are similar)

Operate specification

(a)After changing the third level menu data (or options),press "←" to return to second level menu,and save the data.If press Menu button and return to the second level menu, no change will be made(it means changes are not valid).
(b) Scope of voltage and current settings is not allowed to be modified.The connection mode can be modified according to the actual connection mode.
(c) In general, the back of the meter marks the type parameter of meter and factory settings. User can also program setting according to the actual need .For details, please check

3.3.2 Typical program operation example
(1) System set: the user need to set Cycle display mode as voltages priority and clear the electric energy data.
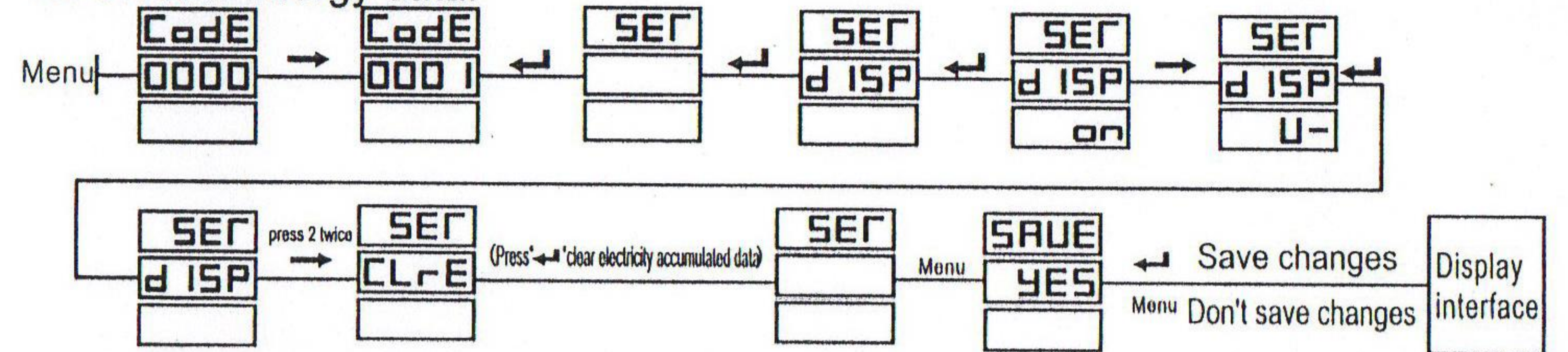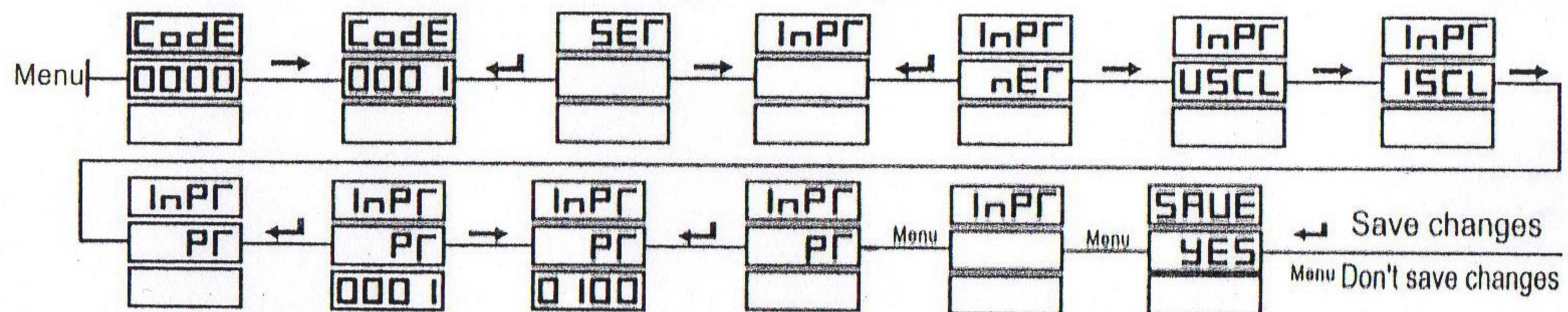

if just do power zero clearing,it can skip the operations of display mode of the measurement information.

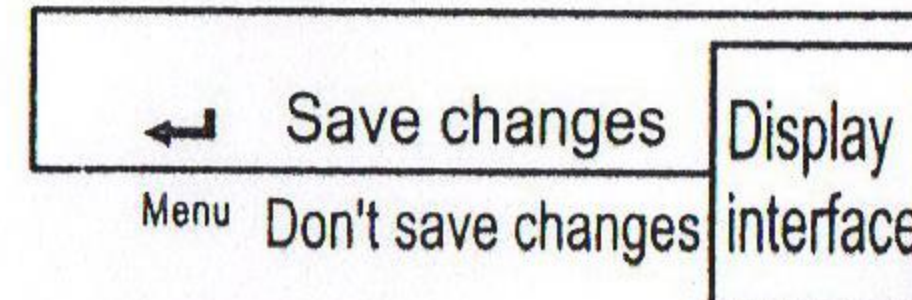(2) The setting of the input signal (Wiring method, voltage, current ratio)
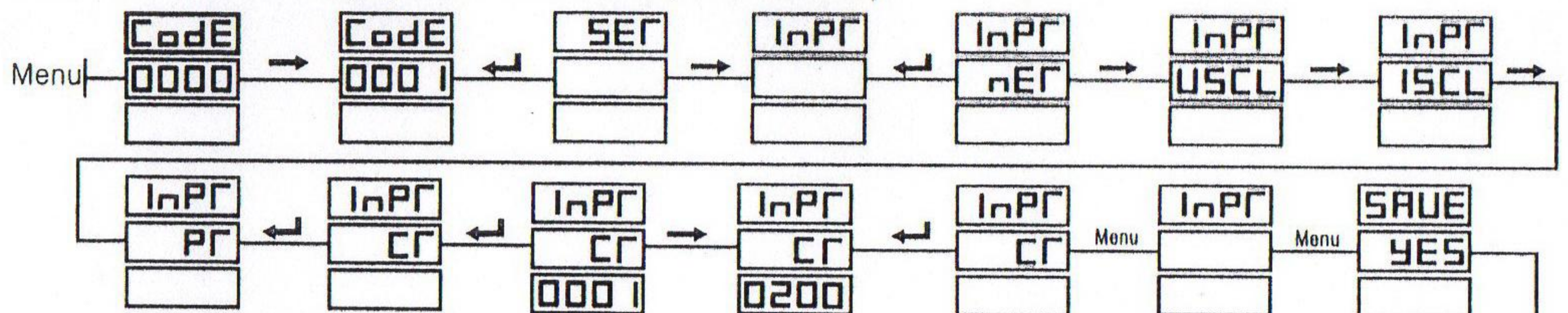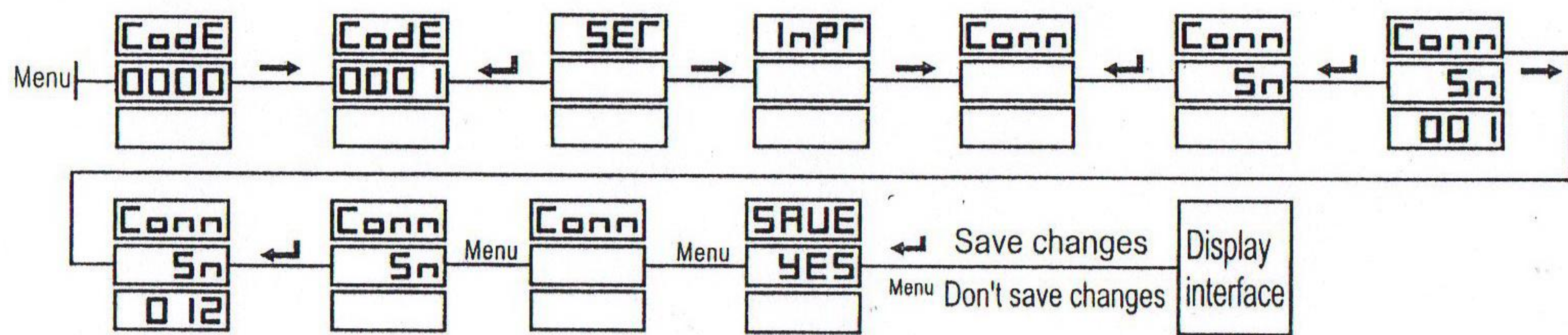Modification of wiring mode (from three phase four wires to three phase three wires):
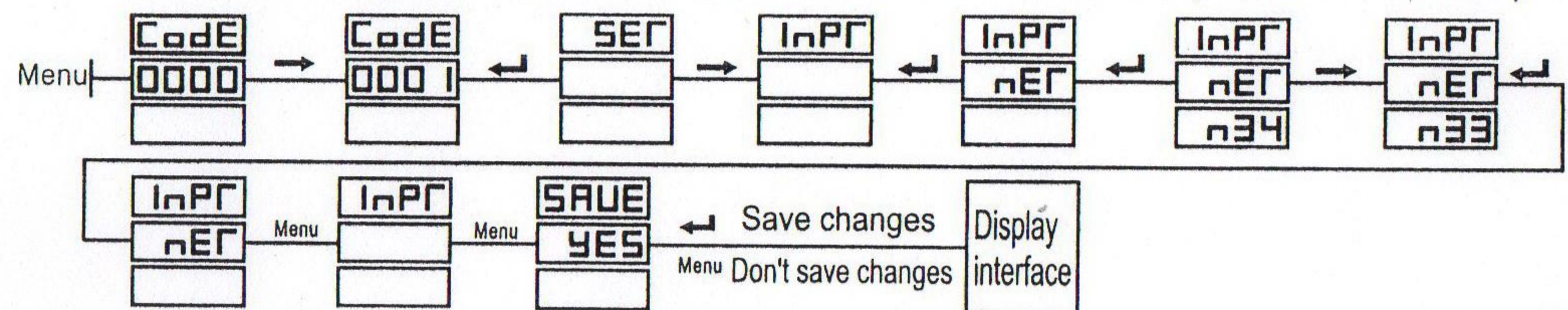
Voltage ratio setting (initial value is 1, set to 100):

Current ratio setting (initial value is 1, set to 200):

-6-

-7-

(3) Communication settings (default communication address is 1, baud rate 9600, data format N81, modified to communication address 12):

(4) The example of relay alarm output setting: set A phase voltage high alarm output, when A phase voltages more than 400 v ,the first channel switching value alarm output, namely the first channel switching value conduction . (assuming meter is at the turnoff state of alarm output before programming)
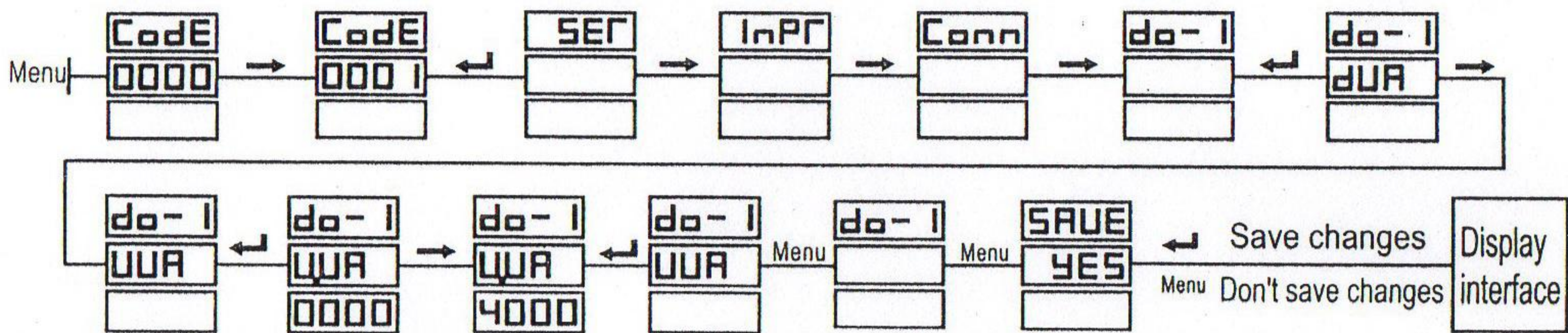

| dUA | The first alphabet "d" indicates alarm offline setting (low). |
| UUA | The first alphabet "u" indicates alarm online setting (high). |

{ When the first alphabet flashes, press " → " to switch (d-u). }

Press the" ← " button to flash except the first alphabet, indicating the specific alarm setting items (for example, UA indicates A phase voltage), press " → " button to set other alarm items, for details, please check alarm item setting table.

(5) The example of analog transmitting output setting:set A phase voltage 0-400 V and its corresponding transmitting output 4-20mA current signal (assuming meter is at the turnoff transmitting state, A phase voltage signal input range is 400 v)
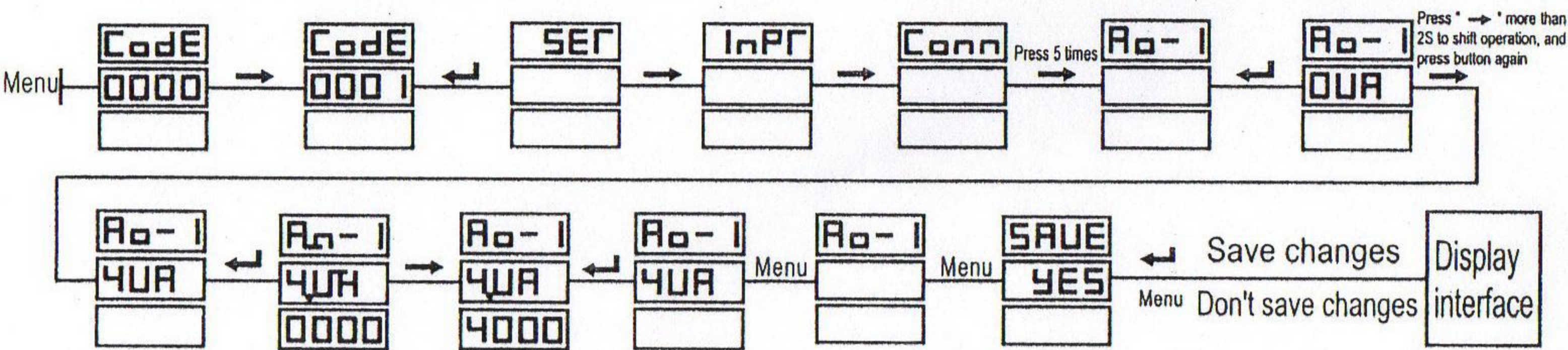

Note: transmitting item's full scale value should be set accurately , Otherwise, the transmitting will not be accurate.

4. Panel description and measurement information display

4.1 42 type series products panel and display information.

(1) E/Z series products panel

E/Z series product panels are similar, their display information and related operations could refer to the most complete functions product which is Z-2SY+. If it does not show any related information when it transfer(or related display information does not work), it means this product doe not have a part of functions of Z-2SY+ (User can check function module of 'User selection table').
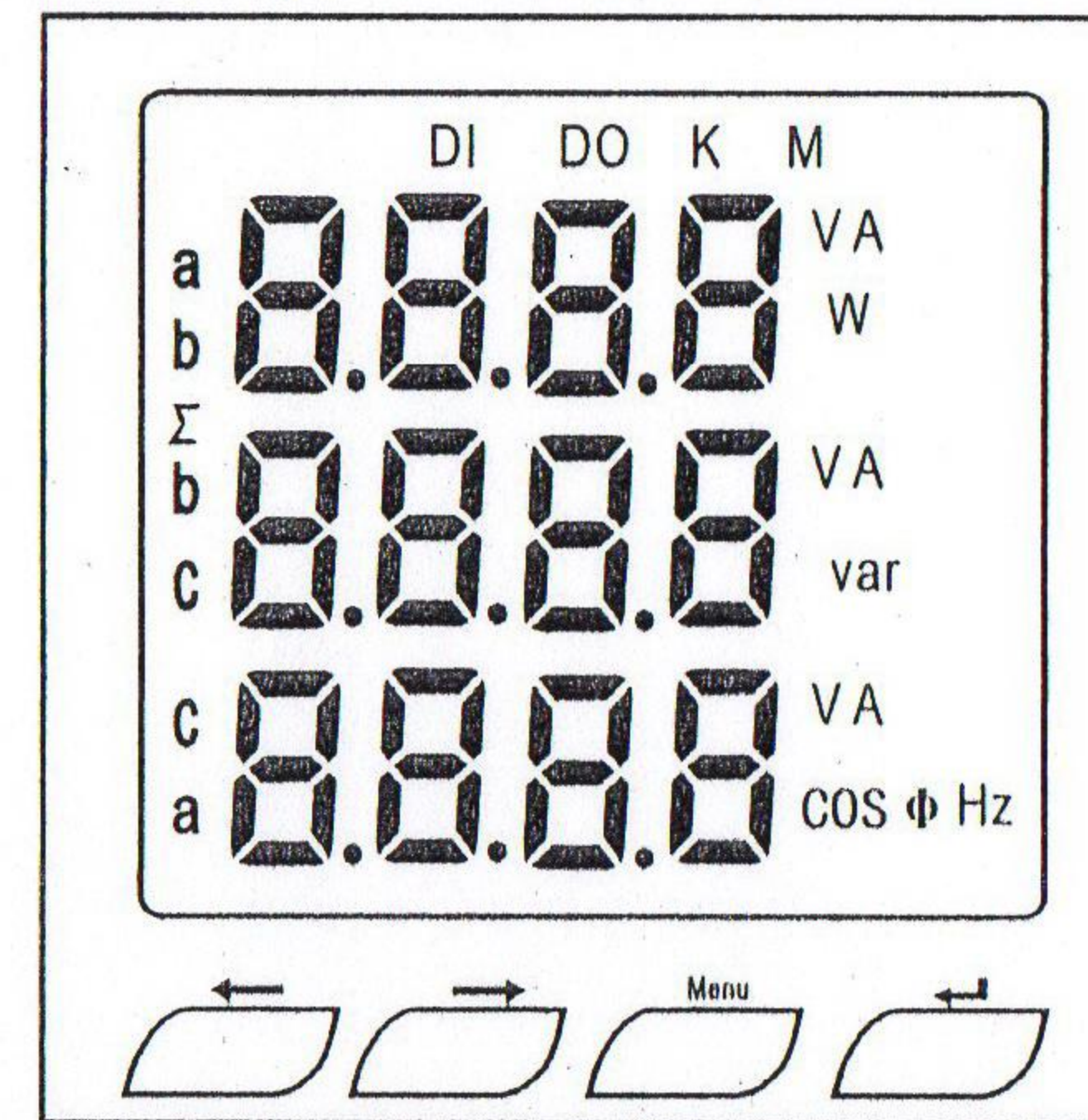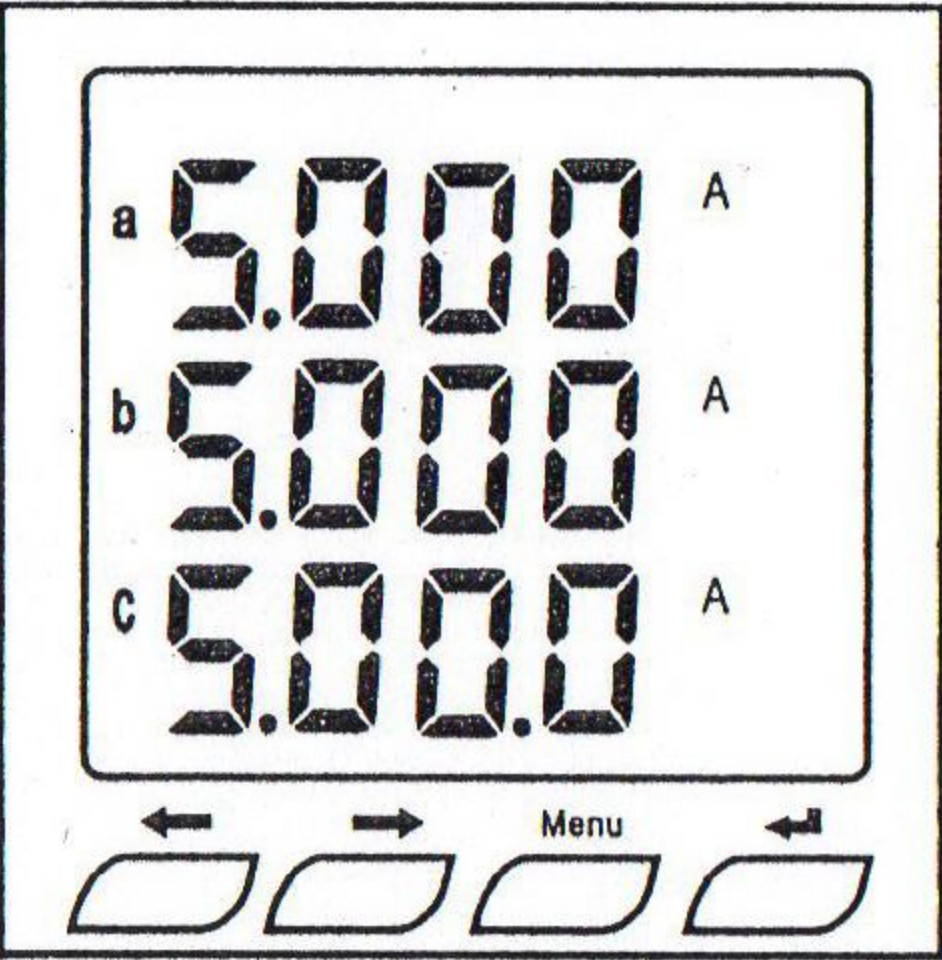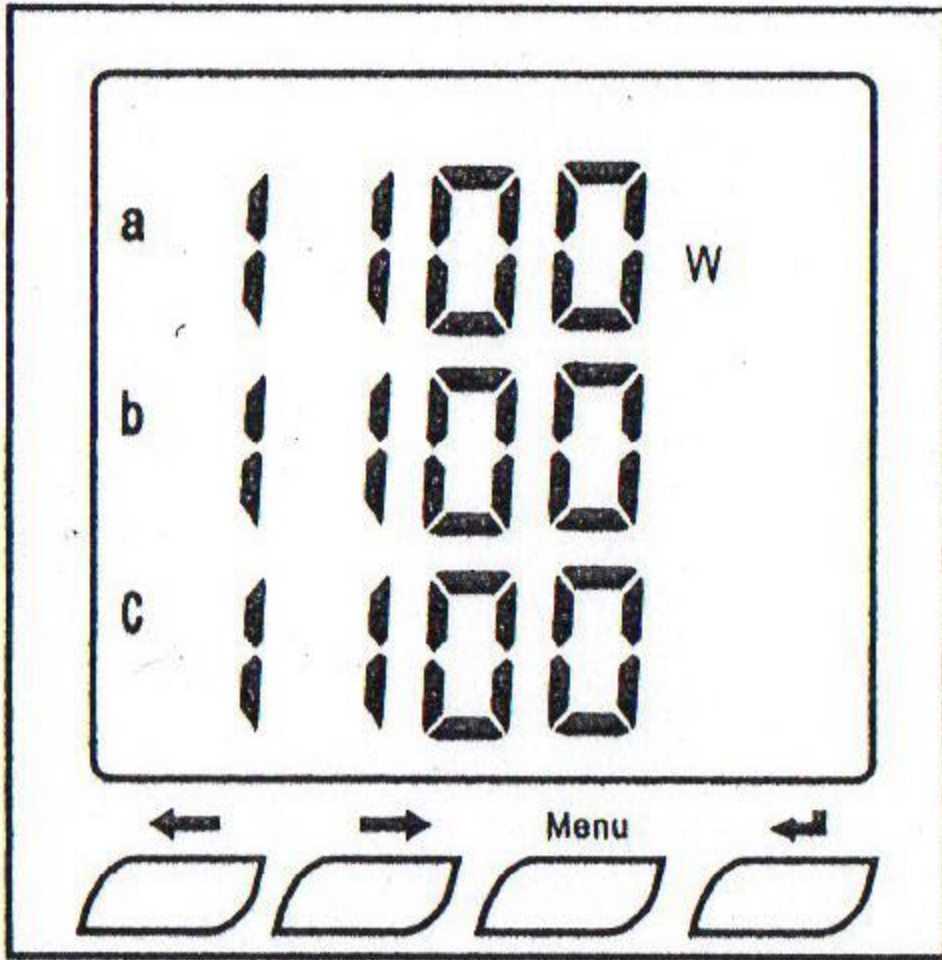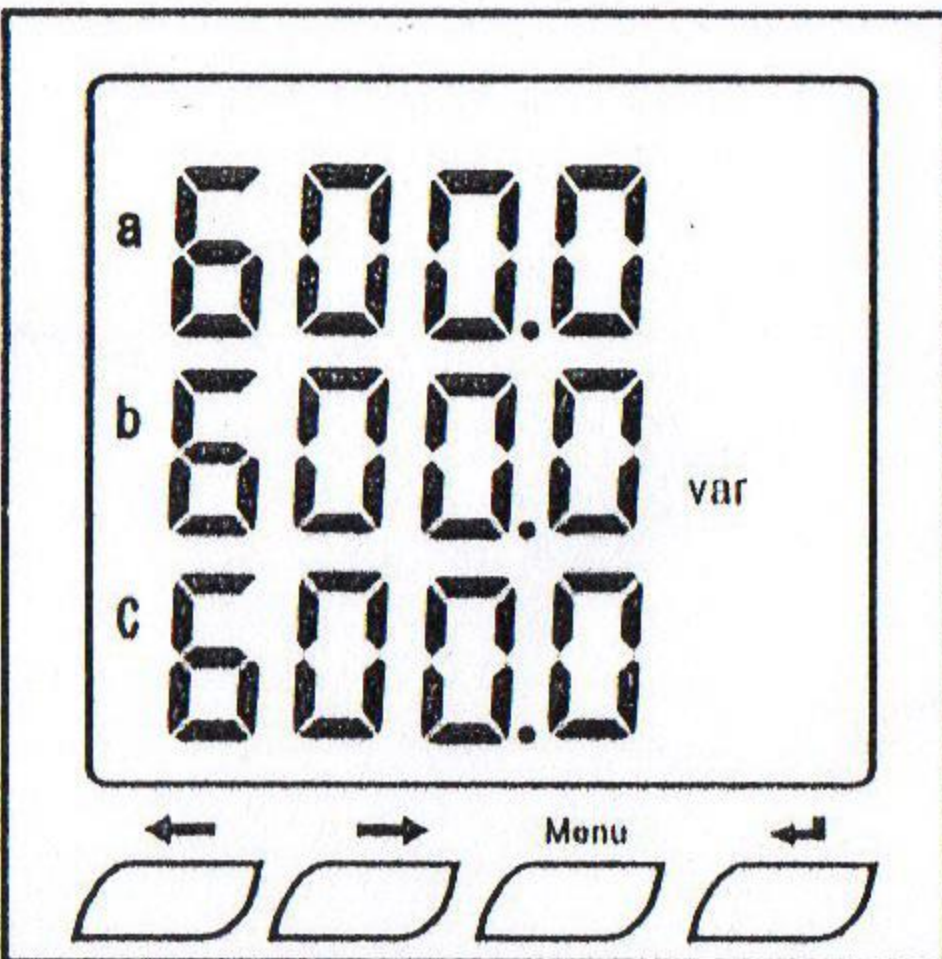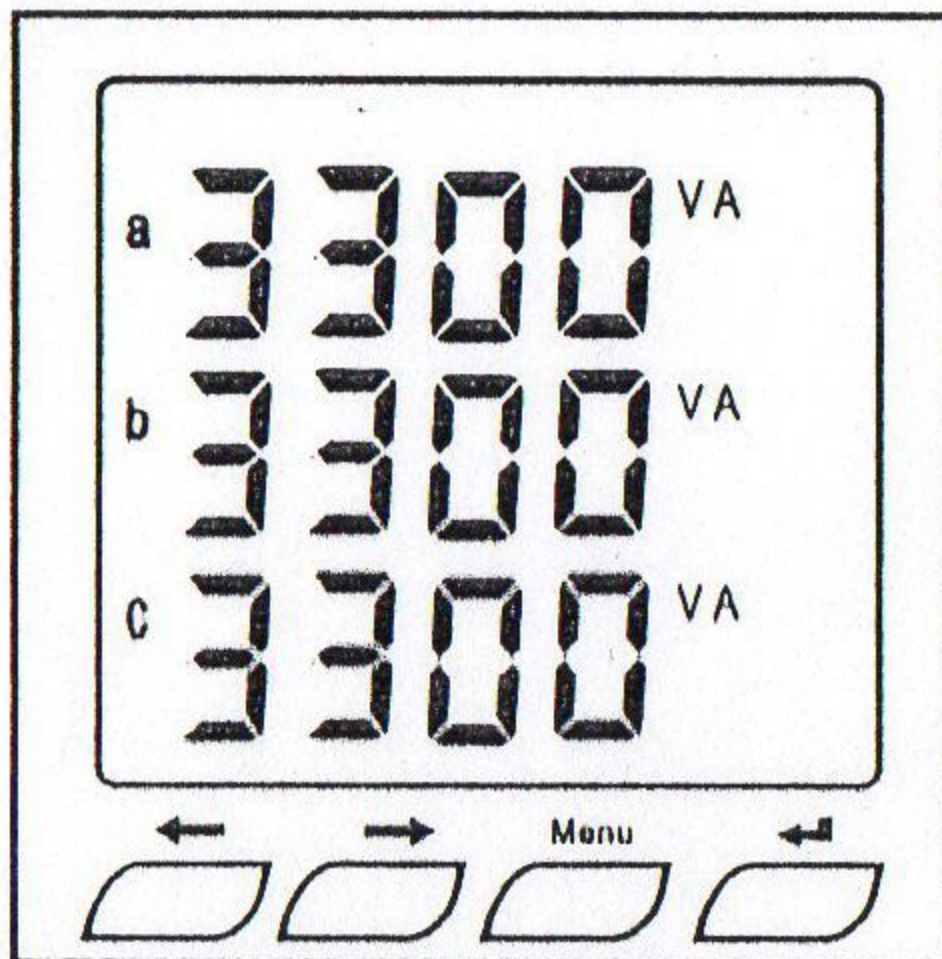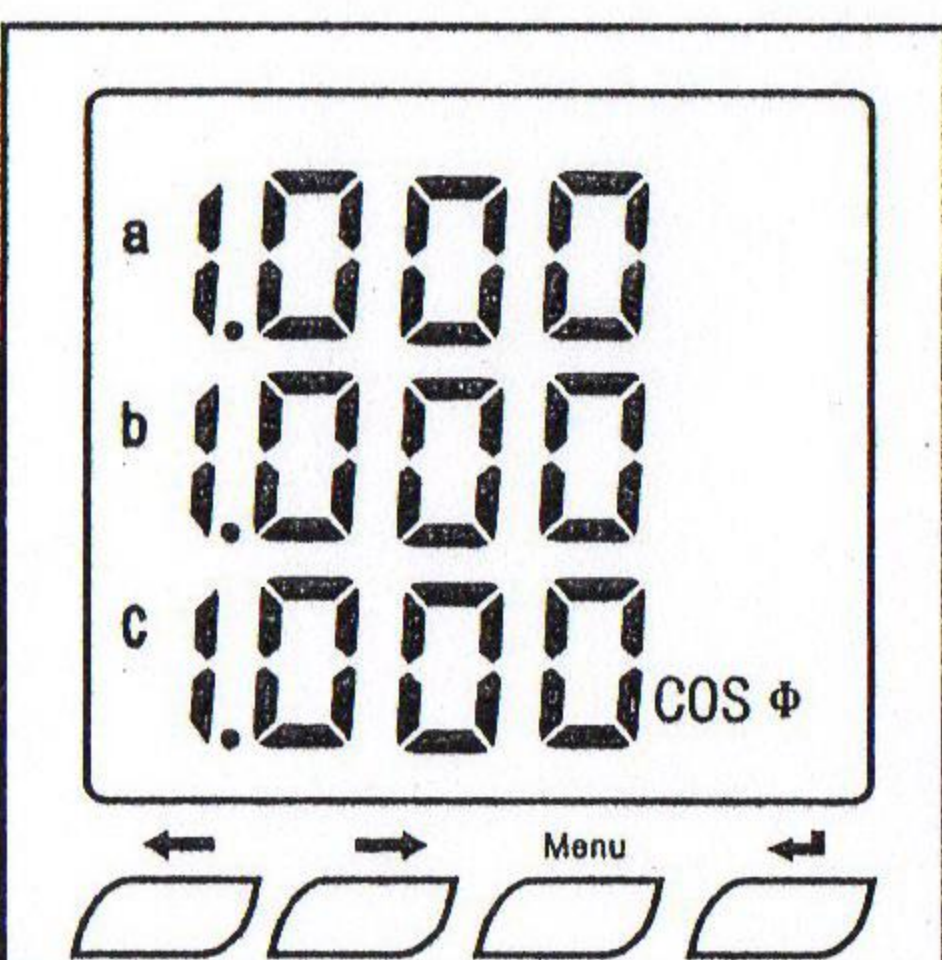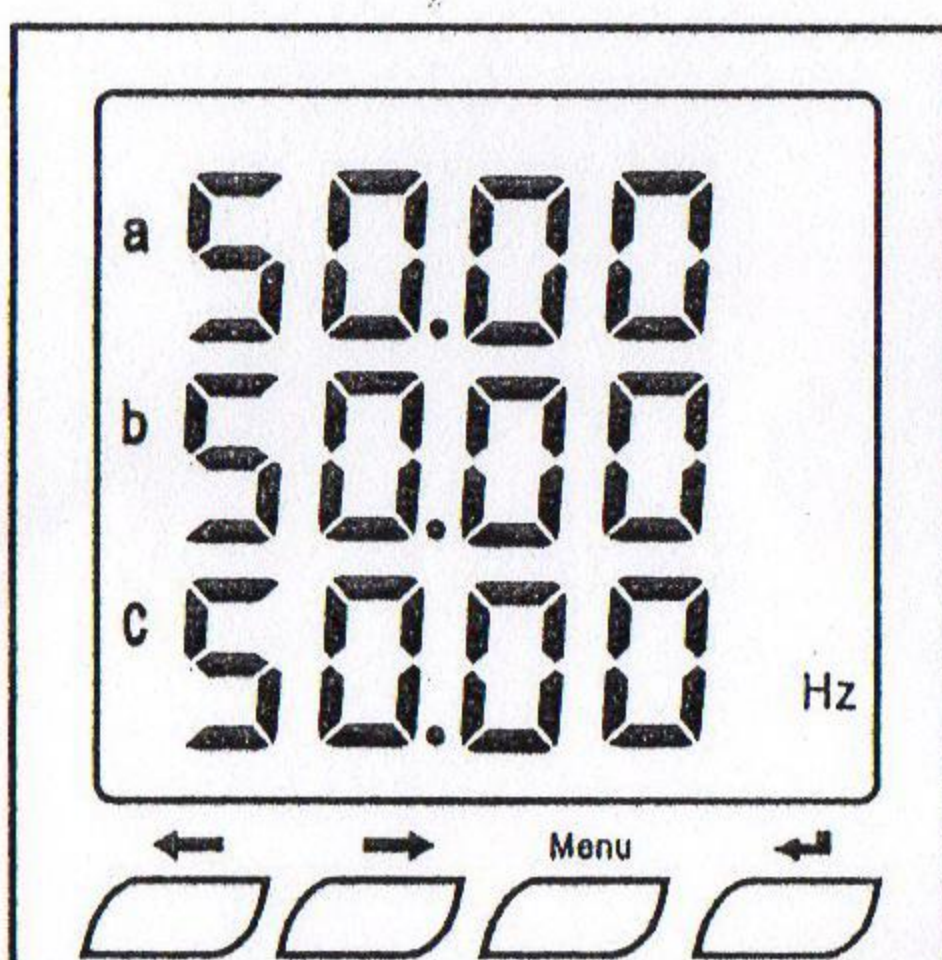

Character display	Introduction
V	Voltage
A	Current
W	Active power
var	Reactive power
VA	Apparent power
Hz	Frequency
COSΦ	Frequency factor
DI	ON-OFF input
DO	Alarm output
a b c	Phase voltage/current
ab bc ca	Line voltage
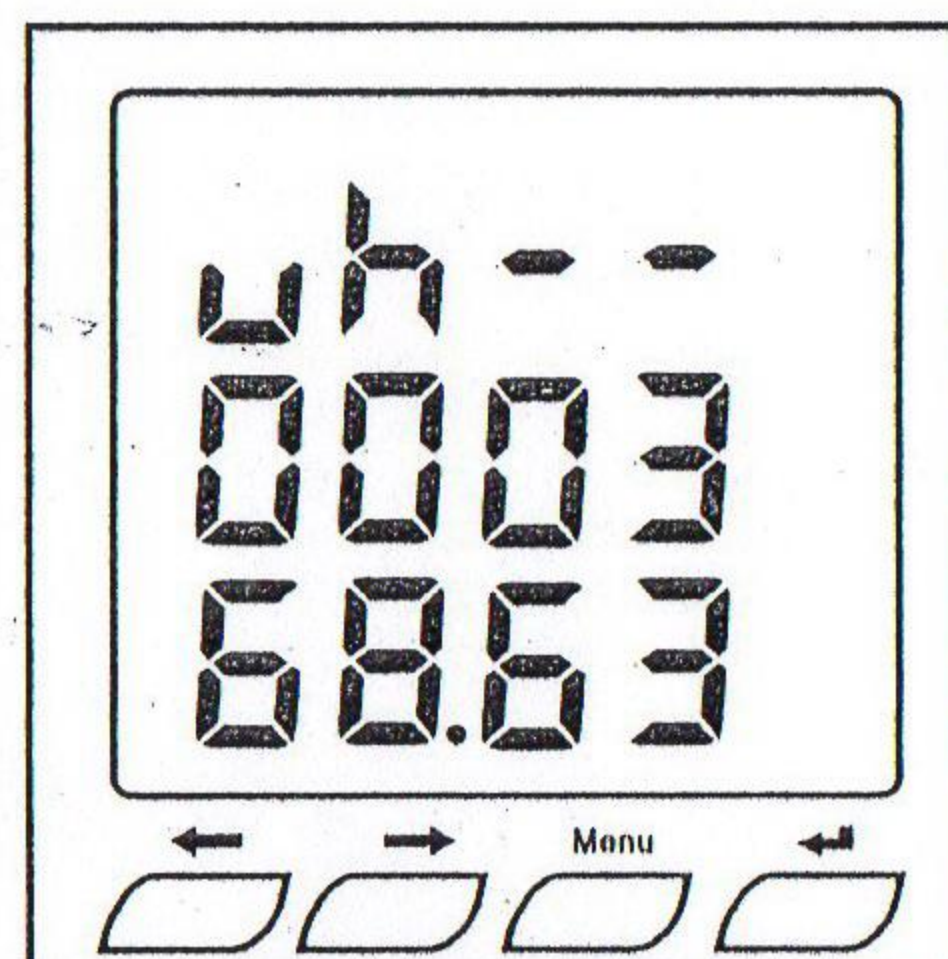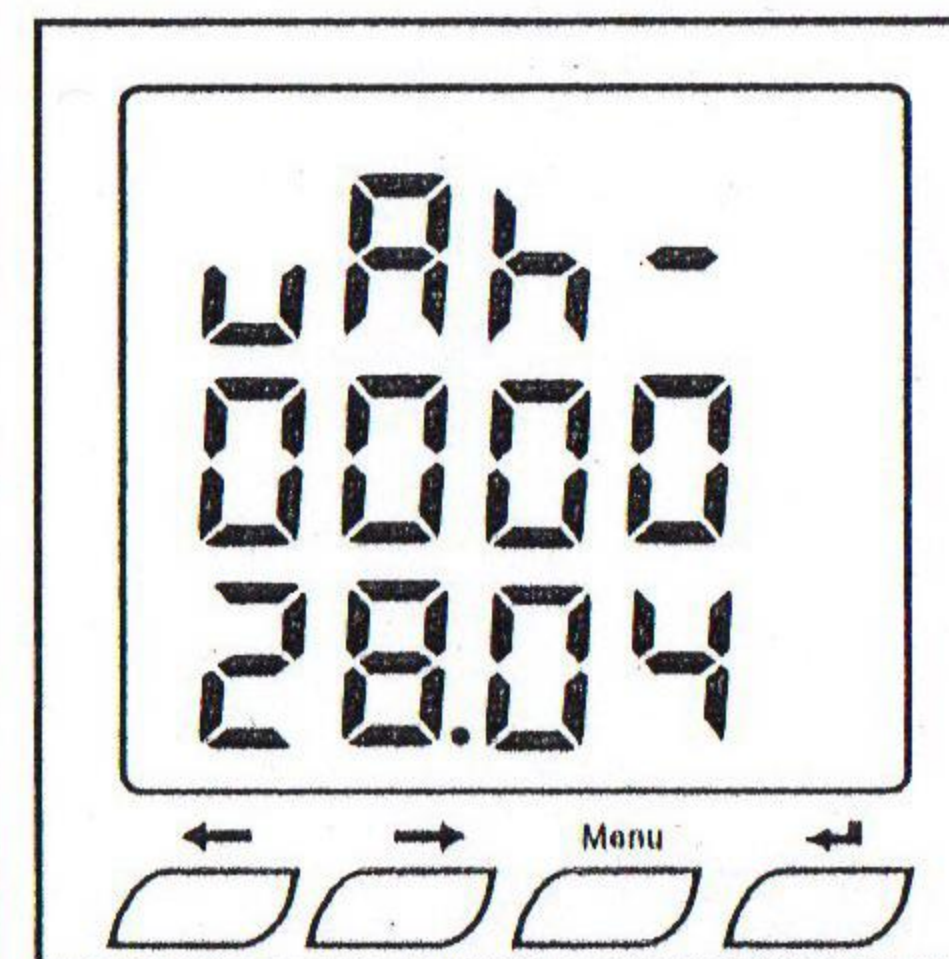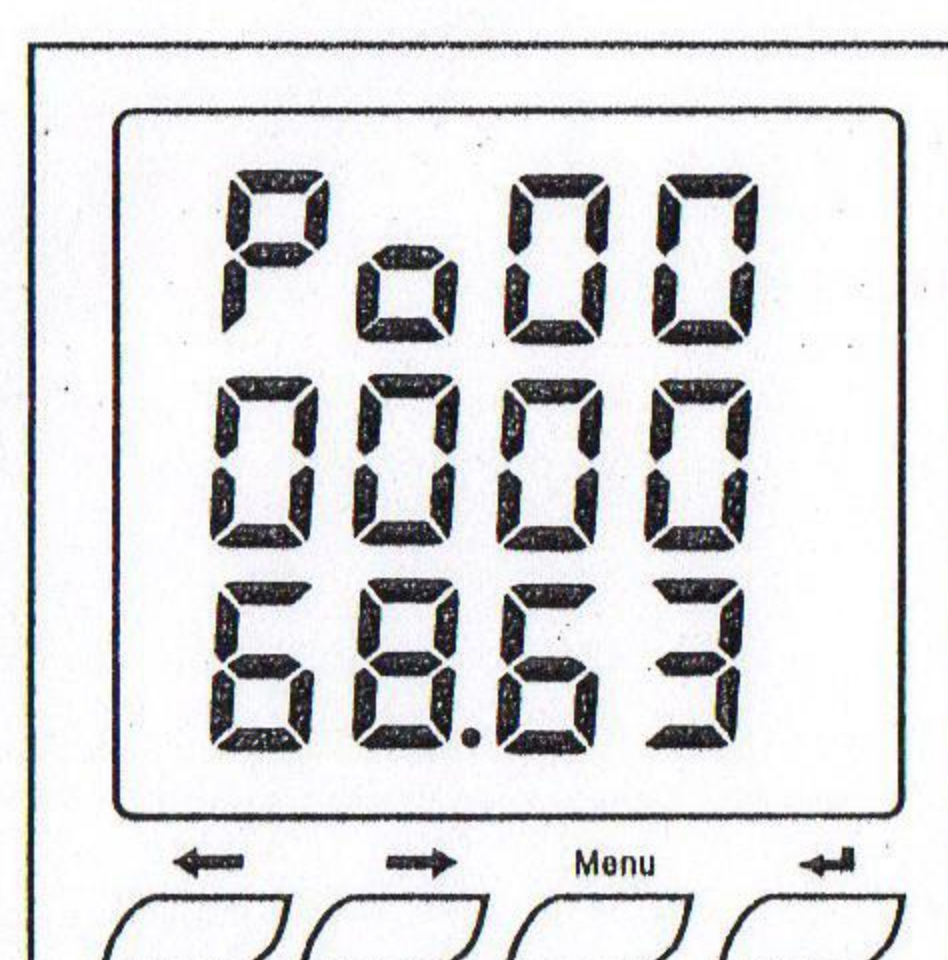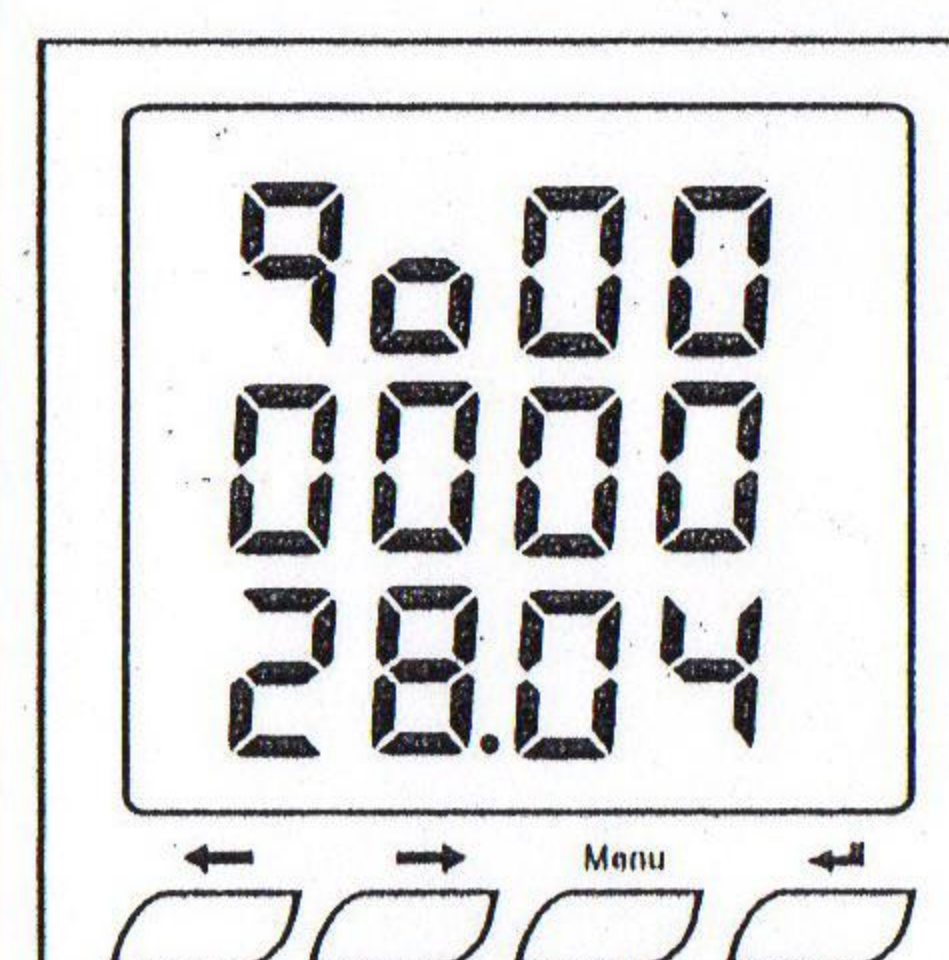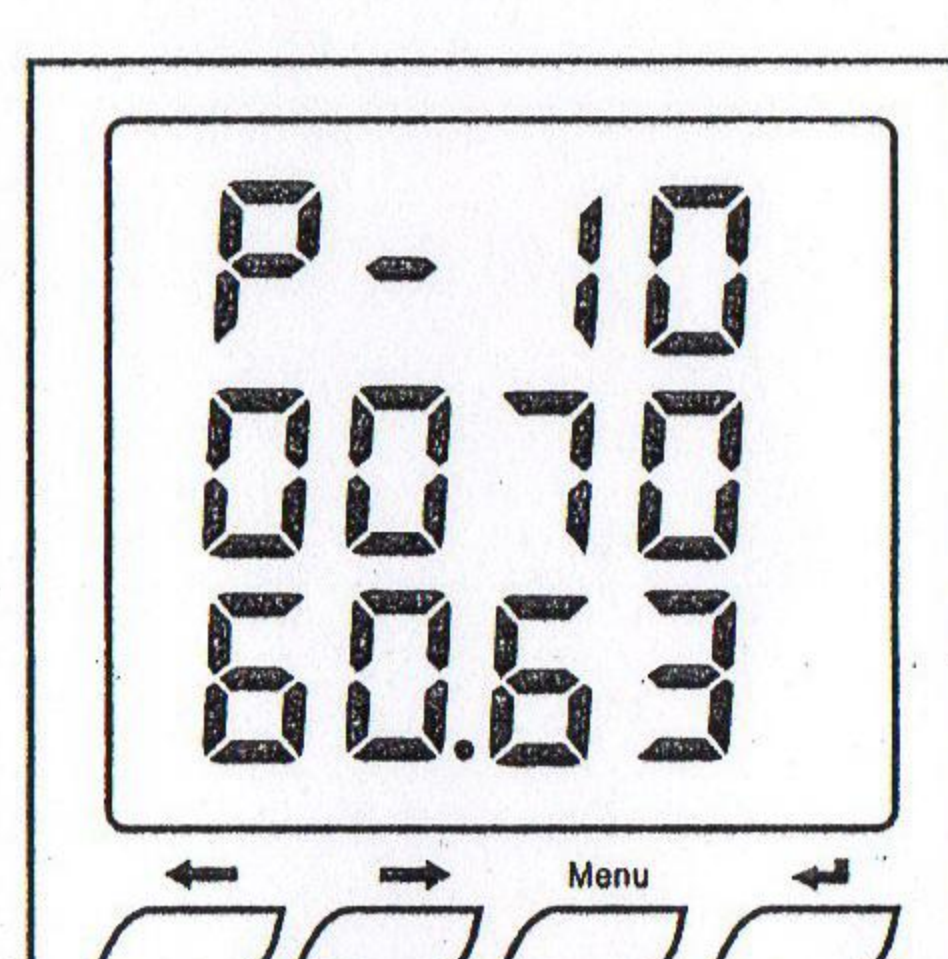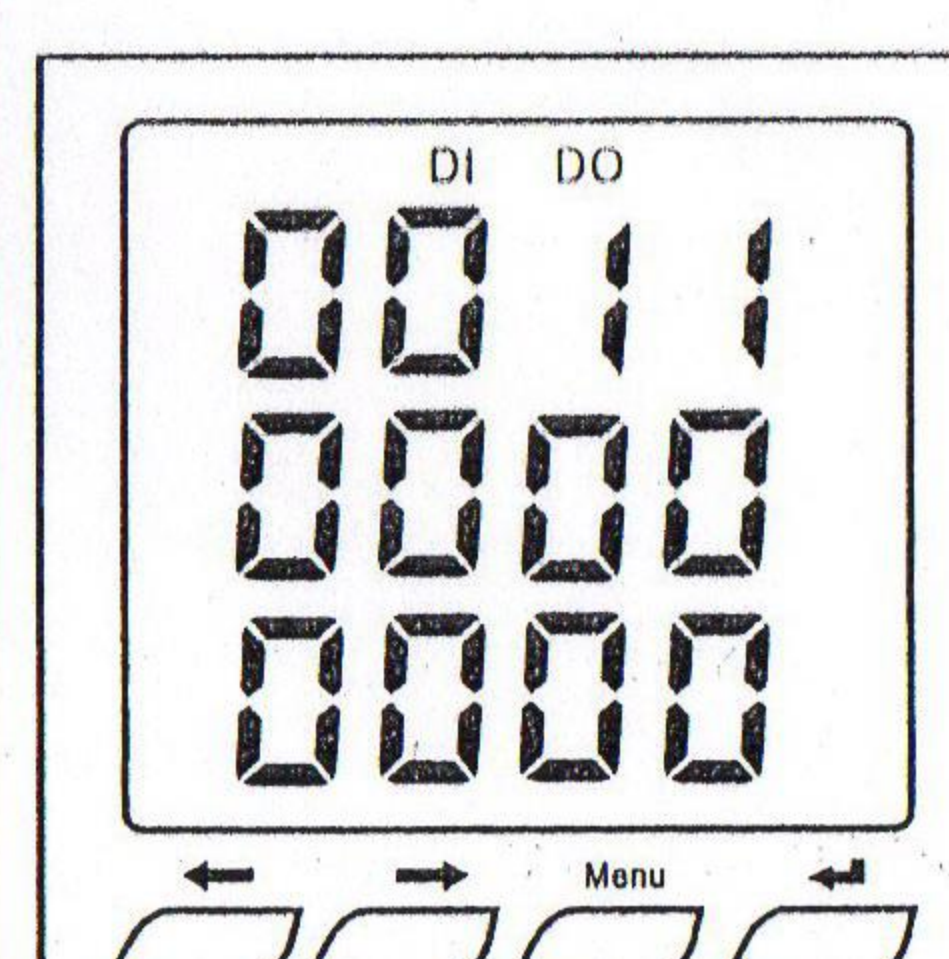
4.2 LED digital multifunction display panel information

Measurement information has 11 pages (default 'disp' set as OFF which is turn off Echo loop, set as 'other', it will preferred shows setting when power on), it can use "→", "←"to switch pages, use " ↵ "to process same page information. Each page information switch see table as shown.

Display content	Introduction	Display content	Introduction
Display interface1: Phase voltage	Respectively shows three phase phase voltage Ua,Ub,Uc, left picture display content is 1 time measurement voltage value multiply by setting PT change value.	Display inrterface2: Line voltage	Respectively shows three phase line voltage Uab,Ubc,Uca, left picture display content is 1 time measurement voltage value multiply by setting PT change value.

Display content	Introduction	Display content	Introduction
Display interface3: Current a 5.000 A b 5.000 A c 500.0 A ← → Menu ↵	Respectively shows three phase current Ia,Ib,Ic, left picture display content is 1 time measurement current value multiply by setting CT change value.	**Display interface4: Active power** a 1100 W b 1100 c 1100 ← → Menu ↵	Respectively shows three phase active power W
Display interface5: Reactive power a 600.0 b 600.0 var c 600.0 ← → Menu ↵	Respectively shows three phase reactive power var.	**Display interface6: Apparent power** a 3300 VA b 3300 VA c 3300 VA ← → Menu ↵	Respectively shows three phase apparent power VA
Display interface7: Power factor a 1.000 b 1.000 c 1.000 COS Φ ← → Menu ↵	Respectively shows three phase power factor COS.	**Display interface8: Frequency** a 50.00 b 50.00 c 50.00 Hz ← → Menu ↵	Respectively shows three phase frequency Hz.

Multi-functional meter has old type and new type:
Old type electric energy display interface reference 9-1,10-1.
New type electric energy display interface reference 9-2,10-2.

Display content	Introduction	Display content	Introduction
Display interface9-1: Active energy uh- - 0003 68.63 ← → Menu ↵	It shows active energy, left picture shows positive active energy 368.63, press 'Confirm' key to shows negative active energy.	**Display interface10-1: Reactive energy** uAh- 0000 28.04 ← → Menu ↵	It shows reactive energy, left picture shows positive reactive energy 28.04,press 'Confirm' key to shows negative reactive energy.
Display interface9-2: Active energy Po00 0000 68.63 ← → Menu ↵	It shows active energy, left picture shows total active energy 68.63,press 'Enter' key to shows (positive - negative) active energy separately.	**Display interface10-2: Reactive energy** qo00 0000 28.04 ← → Menu ↵	It shows reactive energy, left picture shows total reactive energy 28.04,press 'Enter' key to shows (positive - negative) reactive energy separately.
Meter reading content-Positive active energy P - 10 0070 60.63 ← → Menu ↵	Press the Enter key on the 9-2 interface to display the positive active energy. The left side shows the electrical energy	**Display interface11: Input Output** DI DO 0011 0000 0000 ← → Menu ↵	It shows switch ON-OFF input & output DI, left picture shows NO.3-4 channel input was in connecting

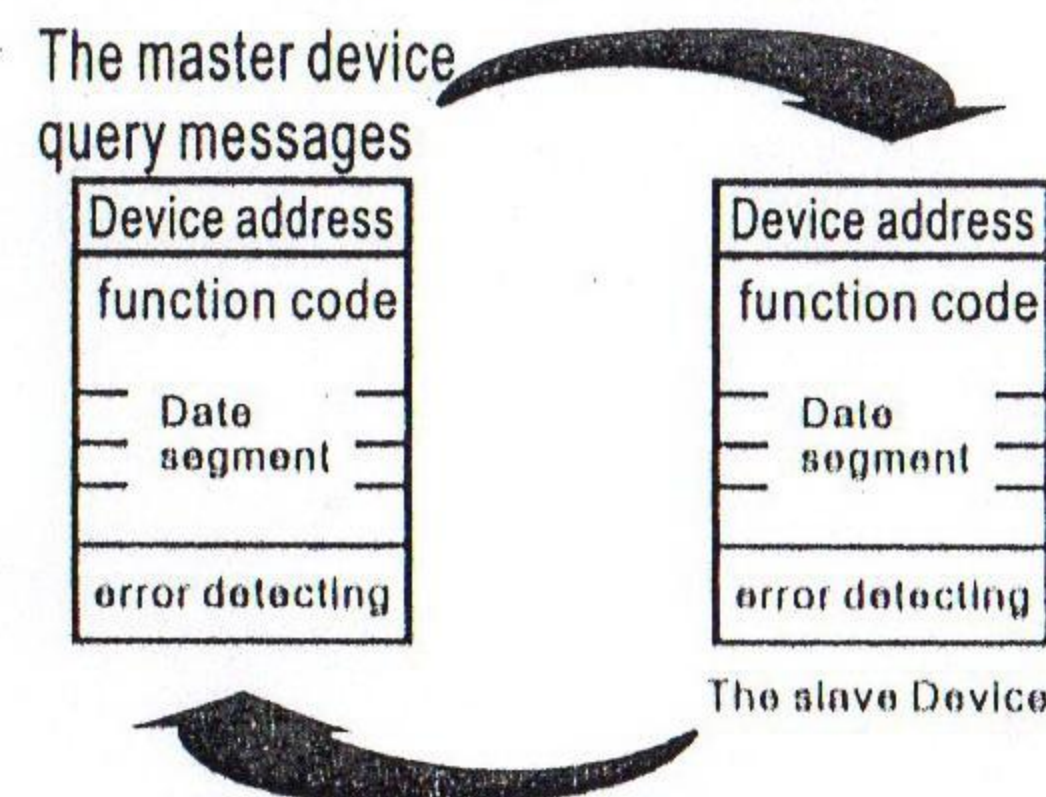# 5. Function module.

5.1 Communication

5.1.1 Physical Layer

1) RS485 communication port, asynchronous half-duplex mode.
2) Communication speed 4800~9600bps(adjustable), the factory default is 9600bps.
3) Byte transmission format: 1 start bit,8 data bits,1 check bit,2-3 stop bit(N81 E81 O81) are optional.

5.1.2 Communication protocol MODBUS-RTU

MODBUS protocol is adopting master-slaver answer communication connect type in a wire, the signal from the mainframe is addressing to a unique address of subordinate computer, the answering signal from the subordinate computer will feedback to the mainframe in the opposite direction, it means that the signal transmit in the opposite direction in a wire.

MODBUS protocol only permit the communication between mainframe(PC,PLC etc) and terminal equipments,the communication between terminal equipments is not allowed, so the terminal equipments will not occupy the communication lines when they initializing, will only response the inquiry signal when arriving the machine.

Query response cycle diagram

The master device query messages

Device address / function code / Date segment / error detecting

Device address / function code / Date segment / error detecting

The slave Device

The structure of the data frame: Message Format

Address Code	Function Code	Data Code	Check Code
1 BYTE	1 BYTE	N BYTE	2 BYTE

Address code:Consist of one byte(8bit binary code),decimal is 0~255.We only use 1~247 in our system, other address are reserved. The address of each terminal equipment must be unique, the addressed terminal equipment will response the inquiry.

Function Code:Indicate the terminal equipment which functions will be implemented, and their function and meaning.

Code	Meaning
01	Read the status of the relay output
02	Telemetry digital input status
03	Read the value of data register
05	Remote single relay output action
0F	Remote several relays output action

Data Code:Including the data that the terminal device need to carry out specific function or the data that the terminal device get when the device receive the request. The details of the data may be numerical value, reference address or setting value.

Check Code:Fault check(CRC) occupy 2 byte, including one 16 bit binary system value which is calculated by transmission equipment, then attach it to data frame. Receiving equipment will calculate CRC value when it receive the data. Compare with the CRC domain value, if they are not equal, it must be a fault occur.

Generate a CRC flow chart:
(1). Preset a 16 bit register to OFFFFH(Ary all 1), called CRC register.
(2). Xor operate the 8 bit of the first byte in the data frames, store the result to CRC register.
(3). Move the CRC register one bit to the right side, fill 0 to the highest bit, move out the lowest bit and test it.
(4). If the data moved out is 0 in last step,then repeat the 3rd step; If the data is 1, the Xor operate CRC register with a repeat fixed value.
(5). Repeat the 3rd step and 4th step until 8 replacement, then get over with the 8 bits of a value.
(6). Repeat the 2nd step and the 5th step to deal with 8 bit of next byte, until finish all the bytes.
(7). The final value of CRC register is CRC value.
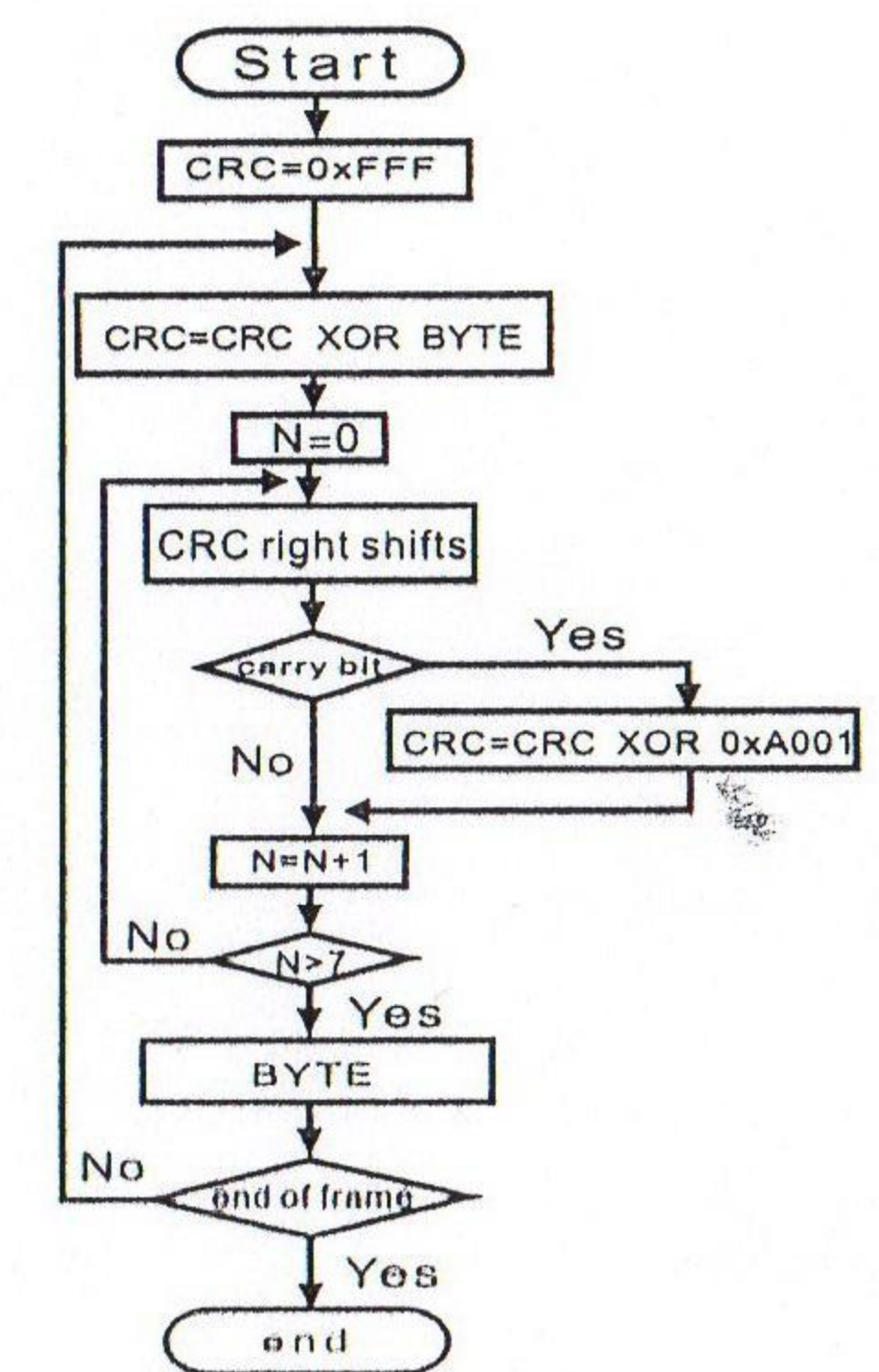
Communication messages examples:1, read data(Function Code:03/04);This can make the user get the data that collected and record by terminal device and the system parameter. The quantity of the data requested to collect by mainframe is not limited but can not beyond the range of defined address.

The following is that reading 3 data(la.lb,lc)(Each data address occupy 2bytes in data frame, the start address of la is 43(2BH),the length is 3(03H))

Check data frame(Main frame)

Address	Order	Address of start register (high bit)	Address of start register (Low bit)	Register quantity (High bit)	Register quantity (Low bit)	CRC 16 Low	CRC 16 High
0CH	03H	00H	03H	00H	03H	F4H	D6H

Response data frame(Slave), indicate la=1380H(5.000), lb=1388H(5.000), lc=1389H(5.001)

Address	Order	Length of data byte	Data 123456	CRC 16 Low	CRC 16 High
0CH	03H	06H	13H 88H 13H 88H 13H 89H	D3H	61H

Preset data(Function code:10H): This function allow the user changing the content of several storage device, degree of ammeter can be written in by this function. The data written in must be writable, not beyond the range of address, the following example is the written in current ratio is 400A/5A=80 communication mode.

Checking data frame(Main frame)

Address	Order	Start register address (High)	Start register address (Low)	Register (High)	Register (Low)	Byte written in	Data written in	CRC 16 Low	CRC 16 High
0CH	10H	00H	5AH	00H	01H	02H	00H50H	F2H	06H

Response data frame(Slave), indicate the data has been written in:

| Address	Order	Address of start register (high bit)	Address of start register (Low bit)	Register quantity (High bit)	Register quantity (Low bit)	CRC 16 Low	CRC 16 High
0CH	10H	00H	5AH	00H	01H	88HC6H	BEH

5.2 Electric energy measuring and electric pulse output

multifunction meter can provide bi-directional active energy and bi-directional reactive energy measurement. Two channels electric pulse energy output function and connected with RS485 port to realize the transmit and the display of the data. The meter display the primary data of active power and reactive power. Optocouper Relay's electric energy pulse realize active power and reactive power teletransmission. It can adopt computer terminal, DI,PLC module to collect meter's total amount of pulse to realize energy accumulation measurement. The way is adopt the accuracy test way of electric energy(National measure regulation:Standard meter pulse error comparative method)

(a).Electrical specification:In the diagram of pulse collector
   port VCC≤48V,Iz≤50mA.
(b).Pulse constant:512000imp/kWh The meaning:When the meter accumulate 1kWh, the quantity of pulse is N(51200), please noted that the 1kWh is the data of secondary data, at the PT and CT,N pulse data equal to the primary electric energy data:1kWh*voltage variable ratio PT* current variable ratio CT.
(c).For example: PLC terminal using pulse device, if it collect N pulse in T period, the meter input is 10kV/100V 400A/5A, the energy accumulated of meter is N/512000*100*80.

AP+	47	active power
COM	48	
RP+	49	reactive power

Electric energy impulse output
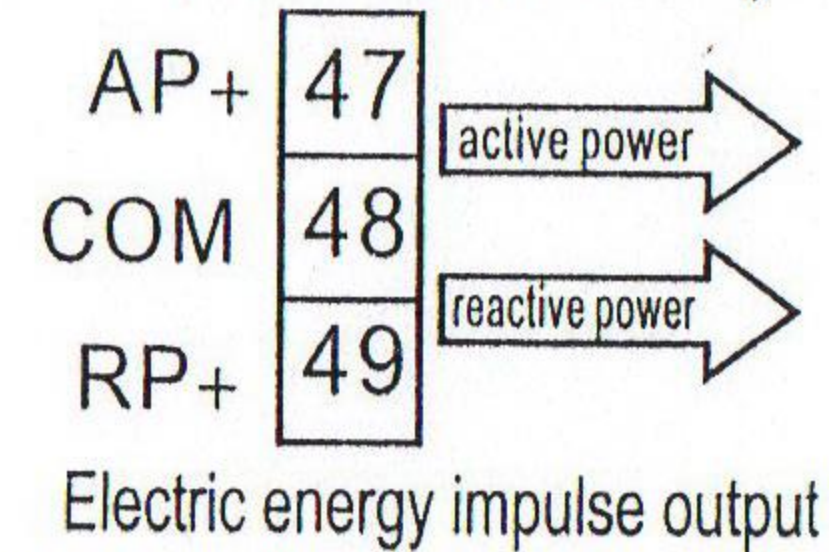
5.3 Transmitting output

meter has the function of transmitting output function. The transmit items and value range can be set neatly in each channel. Such as 4.UA 3800(UA0~380V corresponding transmitting output 4~20mA). 0.1A 5000 (IA0~5A corresponding transmitting output 0~20mA), 4.PH 5700(PA 0~5700W corresponding 4~20mA), 4.P 5700(PS-5700W~0~+5700W corresponding transmitting output 4~12~20mA), for the details, please refer the transmitting output chart.

Electric parameter: output 0/4~20mA,0/1~5V,0/2~10V
Accuracy class:0.5   Load:Rmax=400Ω
Overload:120% effective output, max current 24mA, voltage 12V

Customer can note the transmitting item and range, we will set as the customer's requirement. Customers also can revise the transmitting item and range by where it is, but the electrical parameter 0/4~20mA, 0/1~5V, 0/2~10V can not be revised.

5.4 Relay output and input

Relay capacity:5A 250VAC/5A 30VDC
Two optional work mode of relay output module

Current alarming and remote by communication. The relay working modes, alarm item and range can be set neatly in the program. Such as alarm item "U.UA",alarm range "4000" means when the UA＞400.0V relay switch connected. Alarm item "d.UA", alarm range "1000" means when UA＜100.0V, the relay connected.

For more details, please refer alarm item chart.

The relay alarm and input inspection is displayed on diodes, 1 means connected and alarm, 0 means off and not alarm. When you check the input and output state by communication protocol, read the input and output value in the storage device first. It is decimal system, the judge the value is negative or not. If it is, then transfer it to binary system. If not, it will be transfer directly. When the value of input or output is 16 bit, the first 8 bits means switching input, the last 8 bits means alarm output.

6. FAQ&Solutions

6.1 About communication

1) Meter data does not return.
Answer: First thing is make sure communication setting such as subordinate computer address, baud rate and check mode etc, are same as upper computer requirements. If the most of data meters' communication does not return in field, please check connection of communication total wire whether is accurate and reliable; RS485 converter whether is normal. If only one or few meters communication is unusual, please check related communicate wire. It can modify subordinate computer address of exchange unusual and normal meters to test, exclude or confirm upper computer software problems.

2) Returned data of meter is inaccurate.
Answer: The communication open data of meter has one time Power Grid float type data and two times Power Grid Int/long type data. Please read carefully about data storage address and specification of storage format in communication address table, and also convert to the appropriate data format. Data could according to integer type, floating point type, hexadecimal type etc to display, it can directly show data comparison with meters.

6.2 About U.I.P measurement inaccurate

Answer: First thing is make sure correct voltage and current signal already connected to the meter. It can use multimeter to measure voltage signal, and can use clamp meter to measure it if necessary. Secondary, make sure signal line connection is correct. For example, the dotted terminal(incoming line terminal) of current signal and each phase sequence connection whether is correct. For 2S4/9S4/3S4 series meters, it can observe power interface display. Active power is negative only when power transmission reverse, active power normally is is positive. If active power is negative, it might is current connected wrong, phase sequence connected wrong also will cause power abnormal. In addition, please noted that electric quantity of meter displayed is one time power grid value. If rate of voltage &current transformer which is setting in meter is different with practical rate of transformer, it also will cause meter electric quantity displayed inaccurate. Inside of voltage/current range can not modify when it leave the factory. Connection network could modify according to actual condition. But the setting of connection mode in programming menu should be same with actual connection mode. Otherwise, it also will cause wrong information displayed.

6.3 About word counter of electric energy is not correct.

Answer: The electrical energy accumulation of meter is based on power measurement. First is observe power value of meter and actual load whether is matched. multifunction electric energy meter support two ways power measurement. In case of fault wiring and total active power is negative, electric energy will accumulate to negative active energy, positive active energy will not accumulate. The most problem in field usage is current transformer incoming line and outgoing line connected reversely. 2S4/9S4/3S4 series products all can see split phase and symbol in active power. Power is negative might is wrong connection. And also, wrong connection of phase sequence also will cause word counter inaccurate in electric energy meter.

6.4 Meter isn't bright.

Answer: Make sure terminal wire connection is correct. Auxiliary working power supply is AC220V±10% (customized meter's auxiliary working power supply is AC/DC85-264V) over or under prescribed limit, meter will not work correctly even will broke. It can use multimeter to measure working voltage value. For example, working power supply in normal range, meter does not have any response, please contact our company after-sales service.

6.5 Meter doesn't response any operation.

Answer: Follow the meter instruction button and no response, please power on again. If still no response, please contact our company after-sales service.

6.6 Other abnormal condition

Answer: Please contact our technical services department immediately. User should describe details of actual condition, technician will analyze the reason based on feedback of field.

Transmission item setting chart (All of each items could set up individually.For example: transmission item A B C can only set up A phase transmission range)

Transmission item	Transmission type setting			Transmission range setting	Explaining
A B C phase voltage	0.UA	0.Ub	0.UC	4000	A、B、C phase voltage 0-400V transmitting output 0-20mA
	4.UA	4.Ub	4.UC	4000	A、B、C phase voltage 0-400V transmitting output 4-20mA
AB BC CA line voltage	0.UAb	0.UbC	0.UAC	4000	AB、BC、CA line voltage 0-400V transmitting output 0-20mA
	4.UAb	4.UbC	4.UnC	4000	AB、BC、CA line voltage 0-400V transmitting output 4-20mA
A B C phase current	0.IA	0.Ib	0.IC	5000	A、B、C phase current 0-5A transmitting output 0-20mA
	4.IA	4.Ib	4.IC	5000	A、B、C phase current 0-5A transmitting output 4-20mA
A B C phase active power	0.PA	0.Pb	0.PC	6000	A、B、C phase active power 0-6000W transmitting output 0-20mA
	4.PA	4.Pb	4.PC	6000	A、B、C phase active power 0-6000W transmitting output 4-20mA
Total active power	0.PS			6000	Total active power 0-6000W transmitting output 0-20mA
	4.PS			6000	Total active power 0-6000W transmitting output 4-20mA
A B C phase reactive power	0.9A	0.9b	0.9C	9000	A、B、C phase reactive power 0-9000W transmitting output 0-20mA
	4.9A	4.9b	4.9C	9000	A、B、C phase reactive power 0-9000W transmitting output 4-20mA
Total reactive power	0.9S			9000	Total reactive power 0-6000W transmitting output 0-20mA
	4.9S			9000	Total reactive power 0-6000W transmitting output 4-20mA
A B C phase power factor	0.PFA	0.PFb	0.PFC	1000	A、B、C phase power factor 0-1.0COS transmitting output 0-20mA
	4.PFA	4.PFb	4.PFC	1000	A、B、C phase power factor 0-1.0COS transmitting output 4-20mA
Total power factor	0.PFS			1000	Total power factor 0-1.0COS transmitting output 0-20mA
	4.PFS			1000	Total power factor 0-1.0COS transmitting output 4-20mA
A B C phase apparent power	0.SA	0.Sb	0.SC	8000	A、B、C phase apparent power 0-8000W transmitting output 0-20mA
	4.SA	4.Sb	4.SC	8000	A、B、C phase apparent power 0-8000W transmitting output 4-20mA
Total apparent power	0.SS			8000	Total apparent power 0-8000W transmitting output 0-20mA
	4.SS			8000	Total apparent power 0-8000W transmitting output 4-20mA
Frequency	0.Fr			0500	Three phase frequency 0-50Hz transmitting output 0-20mA
	4.Fr			0500	Three phase frequency 0-50Hz transmitting output 4-20mA
OFF	0.oFF			OFF turn off alarm	

Alarm item setting chart (All of each items could set up individually.For example: alarm item A B C can only set up A phase alarm range)

Alarm item	Alarm type setting			Alarm range setting	Explaining
A B C phase voltage	d.UA	d.Ub	d.UC	1000	A、B、C phase voltage under 100V alarm setting.
	U.UA	U.Ub	U.UC	4000	A、B、C phase voltage over 400V alarm setting.
AB BC CA line voltage	d.UAb	d.UbC	d.UAC	1000	AB、BC、CA line voltage under 100V alarm setting.
	U.UAb	U.UbC	U.UnC	4000	AB、BC、CA line voltage over 400V alarm setting.
A B C phase current	d.IA	d.Ib	d.IC	1000	A、B、C phase current under 1A alarm setting.
	U.IA	U.Ib	U.IC	5000	A、B、C phase current over 5A alarm setting.
A B C phase active power	d.PA	d.Pb	d.PC	3000	A、B、C phase active power under 3000W alarm setting.
	U.PA	U.Pb	U.PC	6000	A、B、C phase active power over 6000W alarm setting.
Total active power	d.PS			3000	Total active power under 3000W alarm setting.
	U.PS			6000	Total active power over 6000W alarm setting.
A B C phase reactive power	d.9A	d.9b	d.9C	6000	A、B、C phase reactive power under 6000W alarm setting.
	U.9A	U.9b	U.9C	9000	A、B、C phase reactive power over 9000W alarm setting.
Total reactive power	d.9S			6000	Total reactive power under 6000W alarm setting.
	U.9S			9000	Total reactive power over 9000W alarm setting.
A B C phase power factor	d.PFA	d.PFb	d.PFC	1000	A、B、C phase power factor under 1.0COS alarm setting.
	U.PFA	U.PFb	U.PFC	1000	A、B、C phase power factor over 1.0COS alarm setting.
Total power factor	d.PFS			1000	Total power factor under 1.0COS alarm setting.
	U.PFS			1000	Total power factor over 1.0COS alarm setting.
A B C phase apparent power	d.SA	d.Sb	d.SC	6000	A、B、C phase apparent power under 6000W alarm setting.
	U.SA	U.Sb	U.SC	8000	A、B、C phase apparent power over 8000W alarm setting.
Total apparent power	d.SS			6000	Total apparent power under 6000W alarm setting
	U.SS			8000	Total apparent power over 8000W alarm setting.
Frequency	d.Fr			0500	Three phase frequency under 0-50Hz alarm setting
	U.Fr			0500	Three phase frequency over 0-50Hz alarm setting
OFF	d.oFF			OFF turn off alarm	