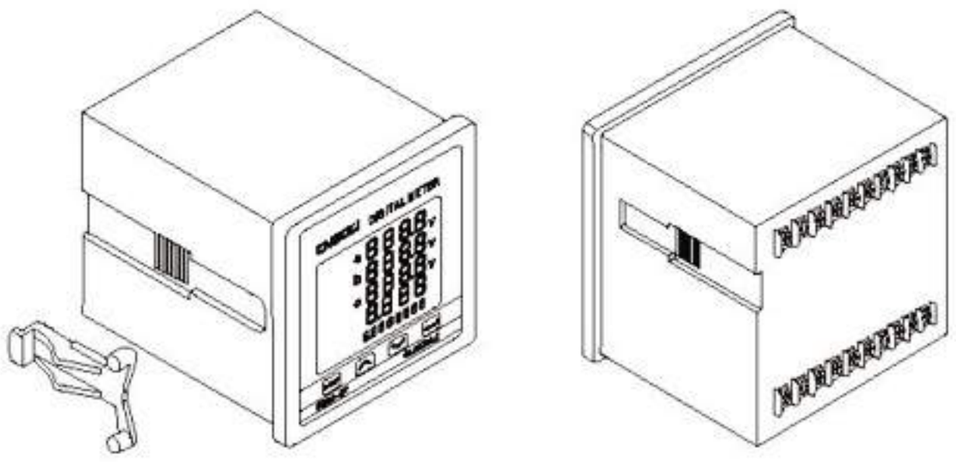
CNSCKJ S&C ELECTRIC

DM□-EY□
LCD Multifunctional Network Analyser
Operational Instruction Manul



Please read through the manual before installment and operation
Please keep the manual for future use

Chapter 1 General Introduction

DM□-EY□ multifunctional network analyser (analyser for short below) is specifically designed and made for the electrical monitoring requirement of power distribution system. On condition of high-precision measurement all of the common electrical parameters including of three-phase voltage, three-phase current, active power, reactive power, frequency, power factor and four-quadrant energy, it is added more functions such as harmonic analysis, indication of demand value, record of max. and min. value; Long-life LCD display the instrument measuring parameters and operation information of network system; Rs485communication interface, applying MODBUS_RTU communication protocol; with four programmable keys on the instrument panel, convenient switch, programmable setting of instrument parameters with great flexibility.

Many kinds of extended function modules for choosing: four-channel analog quantity (0-20mA/4-20mA)output can realize the transmitting output function of electrical quantity; four-channel switching value input and four-channel switching value output to realize the local or long-range switch signal monitoring and control output function (function of "remote signalling "and "remote control").The instrument can directly replace conventional power transmitter, measuring indicating instrument, electric energy measuring instrument and the related auxiliary unit. With modular structural design, users can choose the most economical functional configuration according to the actual requirement, which is highly cost-effective.

It is widely used in occasions of energy management systems, supply and distribution network automation, district power control and complete sets of switchgear. It has the advantages of convenient installment and maintenance, sample wiring, small quantity, programmable input parameters and capable of the network with different PLC, industry control computer communications software.

Chapter 2 Product specifications

Table 1

Shape	4-channel transmitting outputs	4-channel switching value outputs	Rs485 communication interface	2-channel energy pulse outputs	4-channel switching value inputs	Harmonic analysis	Indication of demand value
42 Square	NO	NO	YES	YES	YES	YES	YES
96 Square	NO	NO	YES	YES	YES	YES	YES
42 Square	NO	YES	YES	YES	YES	YES	YES
96 Square	NO	YES	YES	YES	YES	YES	YES
42 Square	YES	NO	YES	YES	YES	YES	YES
96 Square	YES	NO	YES	YES	YES	YES	YES

Chapter 3 Technical parameters

Table 2

Technical parameters			Index
Input	Network		3-phase 3-wire, 3-phase 4-wire
	Voltage	Rated value	AC 100V or 400V
		Over load	Lasting: 1.2 times instantaneous: 2 times/30s
		Consumption	<0.5VA(each phase)
		Impendence	>500kΩ
	Current	Rated value	AC 1A、5A
		Over load	Lasting: 1.2 times instantaneous: 20 times/1s
		Impendence	<20mΩ(each phase)
	Frequency		45~65Hz
Output	Measure & Display	Display mode	LCD display (blue backlighting,128x64 lattice)
		Harmonic analysis	Total harmonic distortion of each phase current and voltage; Total odd harmonic distortion, total even harmonic distortion; 2rd~31st. single harmonic content
		Indication of demand value	Max. positive & negative total active demand value Max. positive & negative total reactive demand value Current positive & negative total active demand value Current positive & negative total reactive demand value
		Memory of Max.&Min. Value	Max.&Min. Value of voltage and current each phase
	Electric energy pulse	Output mode	Two-channel open-collector optical coupling pulse output
		Pulse constant	Active 10000imp/kwh Reactive 10000imp/kvarh
	Communication	Output mode	RS485
		Protocol	MODBUS_RTU
		Baud rate	1200、2400、4800、9600、19200
	Analog quantity	Channel quantity	4-channel
		Output mode	DC 0~20mA, 4~20mA programmable
		Load ability	≤400Ω
	Switching value output	Channel quantity	4-channel
		Output mode	Normally open relay contact output
		Contact capability	240VAC/1A 30VDC/1A
	Switching value input		Four channel dry contact input (can add to 8 channels), resolution: 2ms, delay time: 60ms
Accuracy	Voltage, current		± (0.5%FS+1 digit)
	Active power, reactive power, apparent power		± (0.5%FS+1 digit)
	Frequency		±0.1Hz
	Power factor		±0.01PF
	Active electric energy		±0.5%(only for reference, not for meterage)
	Reactive electric energy		±2.0%(only for reference, not for meterage)
Power supply	Scope		AC/DC 85~264V
	Consumption		<5VA
Safety	Withstand voltage	Input and power supply	>2kV 50Hz/1min
		Input and output	>1kV 50Hz/1min
		Output and power supply	>2kV 50Hz/1min
	Insulating resistance		Any two of input, output, power supply, casing>20MΩ
Environment	Temperature		Operation: -10~50℃ Storage: -25~70℃
	Humidity		≤85%RH, free of wet and gas corruption
	Elevation		≤3000m

Chapter 4 Installment and connection

4.1 Shape and cutout hole dimension

Table 3

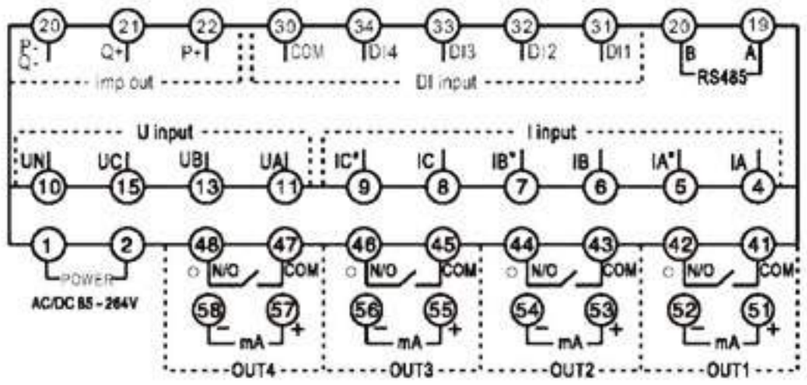
Instrument shape	Panel dimension		Case dimension			Cutout hole dimension	
	W	H	W	H	D	W	H
42 Square	120	120	110	110	80	112	112
96x96 Square	96	96	91	91	100	92	92

4.2 Method of installation

According to the instrument dimension, choose the corresponding hole cutout dimension from the table above, make a hole in the installation screen, insert the instruments into the hole, place the two clamping pieces into the clamping holder and push and tighten them by hand.

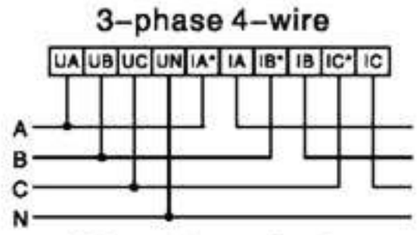
4.3 Terminal arrangement and function declaration of instrument

(Note: If it is not the same with the wiring schema of the instrument case, please accord to the one of instrument case).

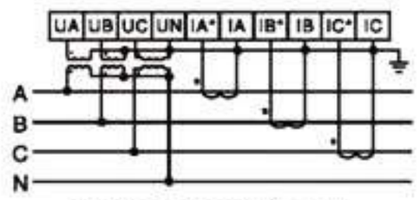


96X96
120X120

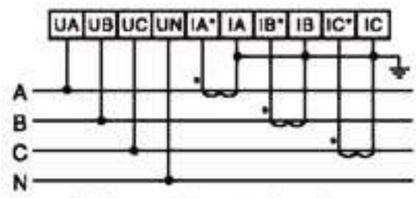
Note: imp out is the pulse output port of active electric energy and reactive electric energy; DI input is the input port of four–channel switching value; OUT1～OUT4 are the common ports of four–channel switching value output or four –channel transmitting output , which are optional and effective after the installment of function module.



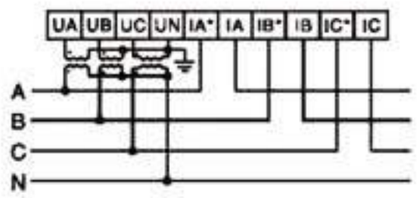
Voltage input directly, current input directly



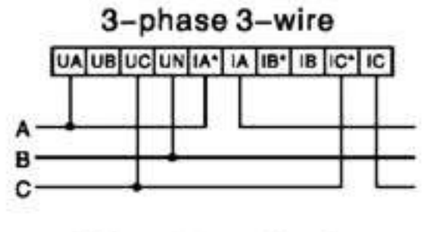
Voltage input via PT, current input via CT



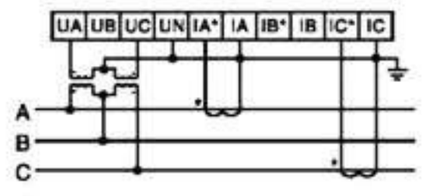
Voltage input directly, current input via CT



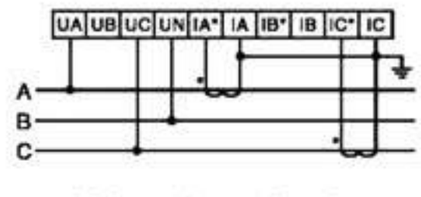
Voltage input via PT, current input directly



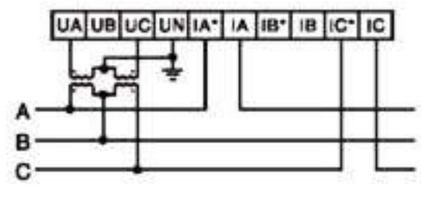
Voltage input directly, current input directly



Voltage input via PT, current input via CT



Voltage input directly, current input via CT



Voltage input via PT, current input directly

4.3.1 Auxiliary power supply (POWER) :

The voltage range of operational power supply is AC/DC 85 ~ 264V. It is suggested to install a fuse of 1A beside of the live wire when using the AC power supply to prevent damaging the instrument. In the areas with poor power quality, the surge suppressor and quick pulse group suppressor should be installed in the power supply circuit.

4.3.2 Electrical quantity signal input(I input and U input):

I input is A, B and C three–phase AC current signal input port, I* is for current input, U input is A, B and C three–phase AC voltage signal input port.

When connection, please ensure the phase sequence and polarity of input signal respond with the terminals to avoid indicating value error.

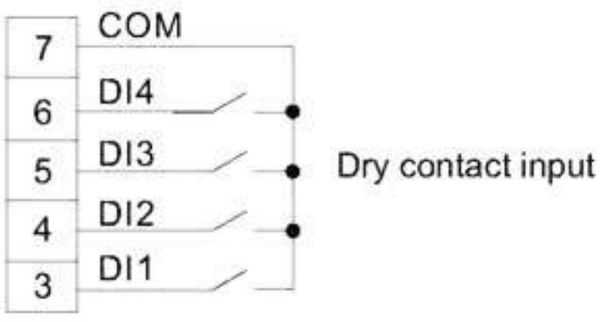
When the voltage is higher than the rated input voltage of the product, you should consider of using PT and installing fuse of 1A at the voltage input port; while the current is higher than rated input current of the product, you should consider of using the exterior CT.

4.3.3 Energy signal output:

P+ is the active energy pulse output + port, Q+ is the reactive energy pulse output + port, P–Q– are the active/reactive electrical pulse output – port. Output mode: open–collector optical coupling output; open–collector voltage VCC≤48V; current Iz≤50mA. The energy pulse output corresponds with the secondary data. When measuring the primary energy, it needs to multiply the PT multiplying power and CT multiplying power to get the primary data.

4.3.4 Switching value input (DI input):

DI1 ~ DI4 are 1~4 channel dry contact input port, inside of the instrument there is power supply of DC12V, COM is the "–" port of DC 12V.



4.3.5 Switching output or analog transmitting output (OUT1 ~ OUT4) :

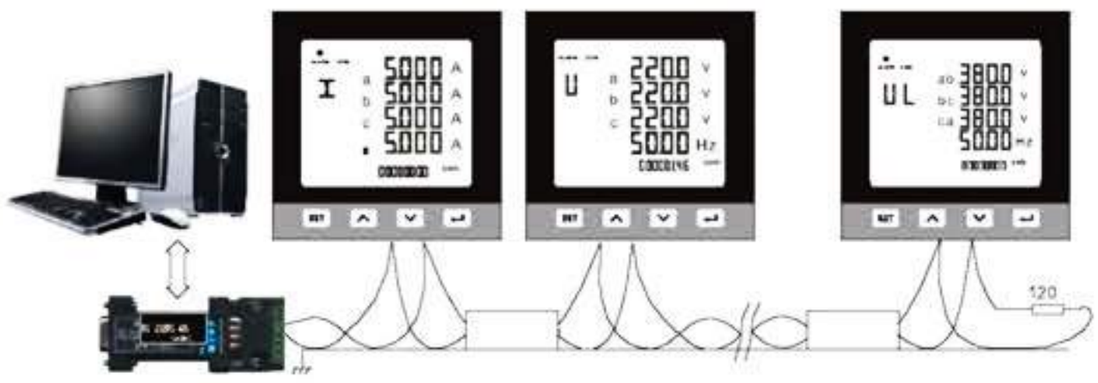
Can support four channel switching value output or four–channel analog transmitting output (It needs to add the corresponding modules), but only support one of the two.

When installing the four switching value output modules, OUT1 ~ OUT4 respectively correspond the alarm or switching value output 1 ~ 4. When it is applied in switching value output, the output status is controlled by the PC. When it is applied in the alarm output, the output status is controlled by the instrument.

When installing the four analog quantity transmitting output modules, OUT1 ~ OUT4 respectively correspond the transmitting output 1 ~ 4.

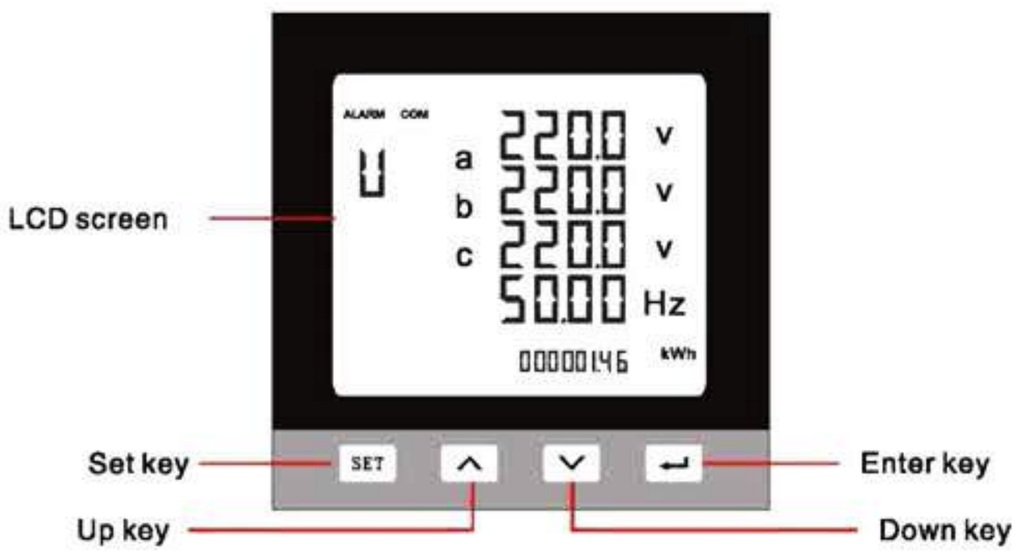
4.3.6 RS485 communication connection

The instrument supplies a RS485 communication interface and adopts MODBUS_RTU communication protocol (see the appendix). Up to thirty–two instruments can be connected in one communication line at one time. Each instruments should have the only communication address in the circuitry. Communication connection should use the shielded twisted paired with copper mesh, whose diameter should be not less than 0.5mm. Communication line should be far away from the high–voltage cables or other high field environment and the maximum transmission distance is 1200 m. The typical network connections are shown in the following figure and users can choose other suitable connect mode under specific conditions.



Chapter 5. Programming and usage

5.1 Panel description



5.2 Key function

Set Key: Under the measuring display mode, enter the programming mode by pressing this key 2s, the instrument shows that "input password", enter the correct password (original password is 0), Under the programmable mode, it is for entering the selected menu items of the modified parameter values and return to the previous menu; automatically return to the display mode if there is no operation for 10 min.

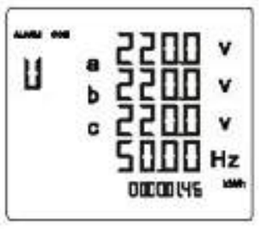
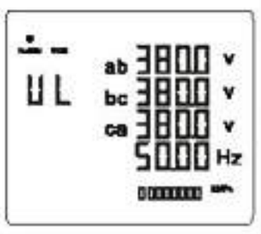
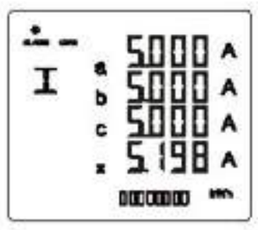
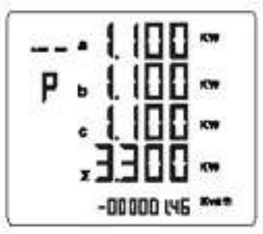
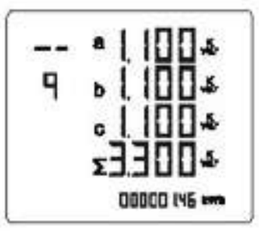
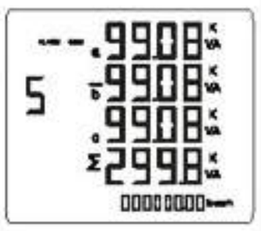
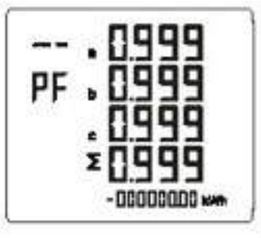
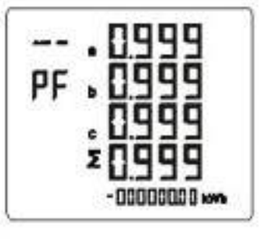
Up Key: Under the display mode, it is to enter the next display interface; under the programmable mode, it is used for progressive increase of parameter value or enter the next menu;

Down Key: Under the display mode, it is to enter the previous display interface; under the programmable mode, it is used for decrease of parameter value or enter the previous menu;

Enter Key: press this key to enter programming mode. Enter the programming mode or return to the previous menu; the menu items The instrumen willing display SAVE–YES when it return to the measuring display mode from the programming mode then press the Enter key to save and qiut.

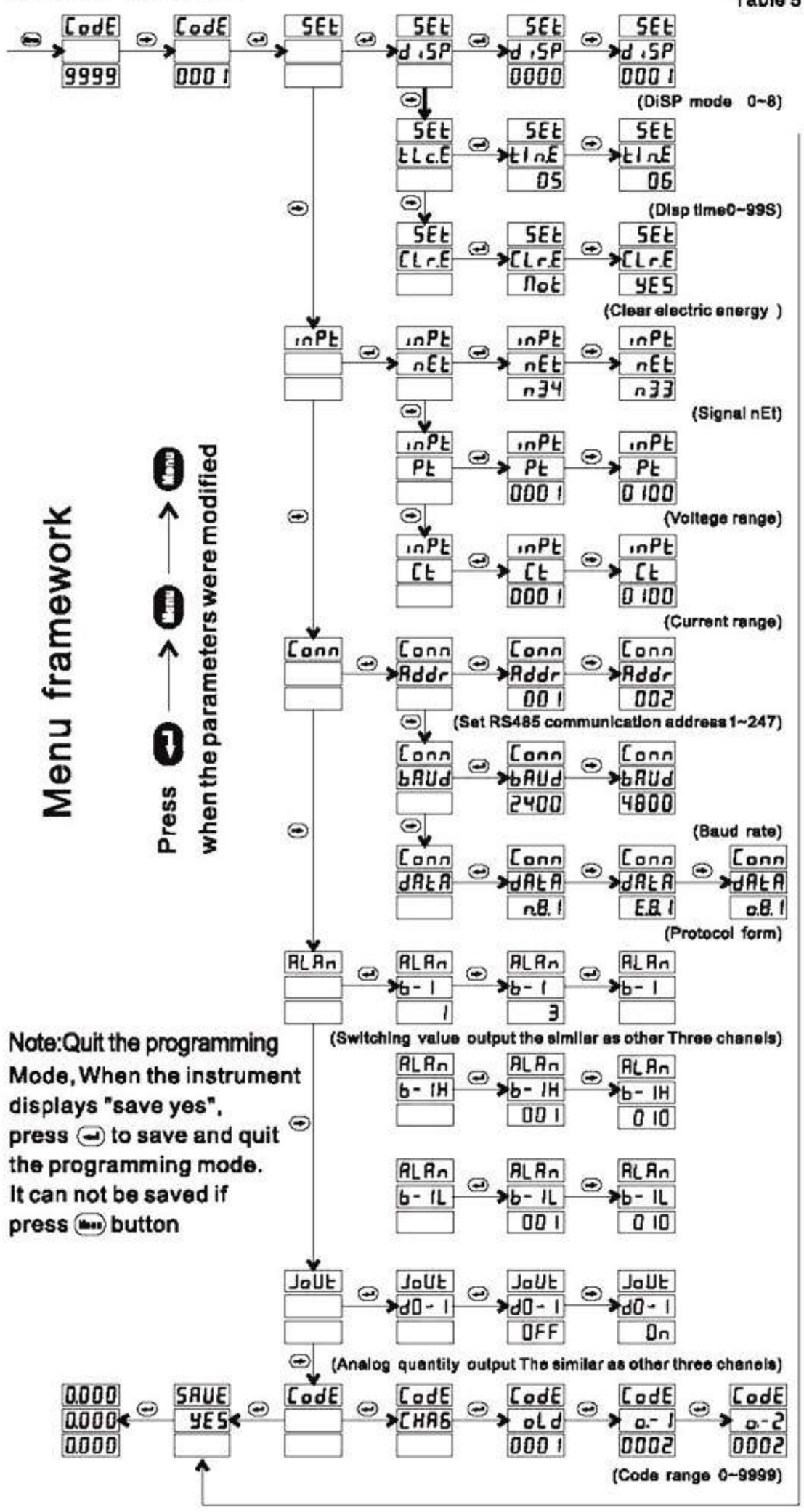
5.3 Description of display mode

Table 4

Display interface	Demonstration	Description
Phase Voltage (The 1st team: interface 1) Display Item = 1		Display phase voltage(P–N)、frequency and Positive active energy The left picture shows: UA–phase voltage Is 220.0V; UB–phase voltage Is 220.0V; UC–phase voltage Is 220.0V; It doesn't display this interface when 3–phase 3–wire Frequency is 50.00Hz; Positive active energy is 1.46 kWh
Line Voltage (The 1st team: interface 2) Display Item = 2		Display line voltage(P–P)、frequency and Positive reactive energy The left picture shows: UAB–line voltage Is 380.0V; UBC–line voltage Is 380.0V; UCA–line voltage is 380.0V; Frequency is 50.00Hz; Positive reactive energy is 0.00kvarh
Current (The 1st team: Interface 3) Display Item = 3		Display current IA、IB、IC、total current and Positive reactive energy The left picture shows: A–phase current is 5.000A; B–phase current Is 5.000A; C–phase current Is 5.000A; Total current Is 5.198A; Positive reactive energy is 0.00kwh
Active Power (The 1st team: Interface 4) Display Item = 4		Display each phase active power Pa、PB、PC、Display total active power and Negative reactive energy The left picture shows: A–phase active power is 1.100kW; B–phase active power is1.100kW; C–phase active power is1.100kW; It doesn't display this interface when 3–phase 3–wire Total active power Is 3.300kW; Negative reactive energy is 1.46kvarh
Reactive Power (The 1st team: Interface 5) Display Item = 5		Display each phase reactive power QA、QB、QC、total reactive power and Positive active energy The left picture shows: A–phase reactive power is 1.100kvar; B–phase reactive power is 1.100kvar; C–phase reactive power is1.100kvar; Otal reactive power is 3.300kvar; Positive active energy is 1.46 kWh
Apparent Power (The 1st team: interface 6) Display Item = 6		Display each phase apparent power SA、SB、SC、total apparent power and Positive reactive energy The left picture shows: A–phase apparent power is 99.08kVA; B–phase apparent power is 99.08kVA; C–phase apparent power Is 99.08kVA; It doesn't display this interface when 3–phase 3–wire Positive reactive energy is 0.00kvarh
Power Factor (The 1st team: interface 7) Display Item = 7		Dsplay each phase power factor PFA、PFB、PFC、total power factor and Positive reactive energy The left picture shows: A–phase power factor Is 0.999; B–phase power factor is0.999; C–phase power factor is0.999; It doesn't display this interface when 3–phase 3–wire Total power factor is0.999; Positive reactive energy Is 0.00Kwh
Switching (The 1st team: interface 8) Display Item = 8		Display the switching value status The left picture shows: The second and the third channel of switching value input are in open state, The first and the fourth channels of s witching value Input are In closed state; The third and the fourth channels of switching value output are in closed state The first and the second channels of switching value output are in open state It may be different from the left picture according to different models, "0"means unused channels

5.4 Menu framework

Table 5



Note:Quit the programming Mode, When the instrument displays "save yes", press ↵ to save and quit the programming mode. It can not be saved if press Menu button

4.5Menu significations

Under the programmable mode, four menu setting items including of setting (SEt), Input(InPt),Communication(Conn),switching value output (do1–4), annlog quantity A(o1–4),modify password(CodE)and LCD display hierarchical menu framework management are provided in this instrument. Row1 displays the first–tier menu; row 2 displays the second–tier menus; row3 displays the parameter value.

Menu significations

First-tier menu	Second-tier menu	Parameter value	Description
CodE		0~9999	Prompt the input programm Able Password is codE, And can only enter the programmable mode with correct Password.(Factory CodE:0001)
SEt	d ,SP	0~6	Select display mode "diSP"
	tLc.E	1~15	Adjust the bright of LCD, 15: brightest
	CLr.E	End	Pressing "Enter key" to clear the electric energy data of the instrument

First-tier menu	Second-tier menu	Parameter value	Description
inPt	nEt	n.3.4 n.3.3	Select input network "nEt " ,n.3.3 three-phase three-wire n.3.4 three-phase four-wire
	Pt	1~9999	Set multiplying power of voltage transformer(Primary value/second value of voltage transformer)
	Ct	1~9999	Set multiplying power of current transformer (Primary value/second value of current transformer)
Conn	Addr	1~247	Set RS485 communication address "Sn"
	bAUd	9600 4800	Select communication baud rate "bAud" :4800 or 9600
	dAtA	n.8.1 0.8.1 E.8.1	Protocol form: n.8.1:n-no check, 8-eight data bits, 1-one stop bit 0.8.1:o-odd check, 8-eight data bits, 1-one stop bit e.8.1:o-even check, 8-eight data bits, 1-one stop bit
ALAn	0~255	0~9999	Select the first-channel alarm output object and set the higher and lower limit of alarm output range
JoUt	0~255	0~9999	Select the first-channel transmitting output object and set the higher and lower limit of transmitting output range
CodE	oLd	0~9999	Current code
	o-1	0~9999	Input new code first time
	o-2	0~9999	Input new code second time

5.6 Programming description of output functions

When setting the Output Type as the alarm or transmitting output, first please confirm if the there is corresponding modules, then choose a alarm or transmitting object, set object of channel 1~channel 4 as corresponding parameter value, and set the higher and lower limit of the alarm or transmitting range. Please ensure that the higher limit setting value should be bigger than the lower one, or it may cause output error.

The setting value of alarm(or transmitting) higher(or lower)limit value should be the electrical quantity value which the line secondary side input to the instrument, that is:

Setting value = alarm(or transmitting) higher(or lower)limit value ÷ CT/PT ratio ..... (Formula 1)(Note:The alarm(or transmitting) higher(or lower) limit value in Formula 1 is the line primary side electrical quantity value, not including the frequency or power factor).

For example, one piece DM96-EY+ instrument, specification is 10kV/100V 500/5A, if you want to set the 4-channel switching value outputs correspond respectively to the A-phase voltage, B-phase voltage, C-phase voltage and frequency which monitor and alarm when overrange. It requests to open the alarm contact in the range 8kV ~ 12kV and 48 ~ 52Hz, or the alarm contact will be closed at once.

The setting method is as following:

1) Set menu "Output Type" as Alarm

2) Set the Object of Channel 1 ~ 4 respectively as Voltage-UA, Voltage-UB, Voltage-UC, Frequency

3) Set the Lower Limit of Channel 1 ~ 4 respectively as 80.0、80.0、80.0、48.00

4) Set the Higher Limit of Channel 1 ~ 4 respectively as 120.0、120.0、120.0、52.00

5) Set the Delay Time as 0, Difference as 1

After setting, the instrument will output as the following method: the relay contact of "OUT1 port" is closed when the A-phase voltage is lower than 8kV or higher than12kV; conversely it is open; the relay contact of "OUT2 port" is closed when the B-phase voltage is lower than 8kV or higher than 12kV; conversely it is open; the relay contact of "OUT3 port" is closed when the C-phase voltage is lower than 8kV or higher than 12kV; conversely it is open; the relay contact of "OUT4 port" is closed when the frequency is lower than 48Hz or higher than 52Hz; conversely it is open;

5.7 Cautions

5.7.1 The measuring range of instruments has been set as the same parameters provided by users at the factory. Users should check if the input network, voltage/current measuring range and transformer multiplying power are consistent with the actual input again before use.

5.7.2 Please confirm if the instrument power supply, input signal and each terminal wiring are correct and reliable before applying the power.

5.7.3 The instrument should not be rapped, knocked and vibrate excessively and its using environment should meet the technical requirements.

Appendix:DM96-EY multifunctional network power instrument communication protocol

DM96-EY series instrument are provided with Rs485 communication interface and apply MODBUS_RTU communication protocol.

1. Type and format of communication data:

The information transmission is a synchronous mode with byte as unit. The transmitting communication information between the main station and the secondary station is11-bit word format, including one start bit(0), eight data bits and two stop bits.(1)

The format of message frame:

Start	Address code	Function code	Data sector	CRC verification code	End
Halt time more than 3.5 bytes	1 byte	1 byte	N byte	2 byte	Halt time more than 3.5 bytes

2 .Communication message transmitting process

When communication instructions transmit from master device to slave device, the slave device with corresponding address code receives communication orders and reads the massage according to functional code and relational requirements. After successful CRC verification without error, the corresponding operation will be conducted and the result (data), including address code, function code, data after execution and CRC verification code, is returned to the master device. In case of CRC verification failure, no message would be returned.

2.1 Address code:

Address code is the first byte (8 bits) of each communication message frame, from1 to 247. Every slave device must have the only address code and only the slave device conforming to the address code can respond and return the message. When the slave device returns the message, all of the return data start with each address code. The address code sent by master device shows the receiving address of slave device, while the address code returned by slave device shows the returning slave address. The responding address code shows where the message comes from.

2.2 Function code

Function code is the second byte of each communication message frame. The master device sends and tells that what operation the slave device should carry out by means of function code. Then the slave device responds. The functional code returned by slave device is the same as the one sent by master device, which shows that slave device has responded the master device and carry out the relational operation. The instrument supports two function codes as following:

Code	Meaning
0x03	Read data register value
0x04	Read set parameters Storage
0x05	Read the relay output state and telemetry switch input state
0x0F	Remote multi-relay operation

2.3 Data sector

Data sector are different following the different function code. These data could be numerical value, reference address and son on. For different slave device, the address and data information are different (There should be communication information table). The master device utilizes the communication order (Function code 03H and 10H) to read and amend the data register of the slave device. The data length read out or written in should not exceed the effective range of the data register address once.

3. Brief Introduction of function code

3.1 function code 03H: Read register

For example, if the master device wants to read out the two register data with reading address of 01H and start address of 0CH

Message sent from master device:		Massage sent
Address code		01H
Function code		03H
Address of start register	High byte	00H
	Low byte	28H
Register quantity	High byte	00H
	Low byte	02H
CRC verification code	Low byte	44H
	High byte	03H

If the data of slave device 28H, 29H is 4489H, 8000H, the slave device returns:

Message returned from slave device		Message returned
Address code		01H
Function code		03H
Byte number		04H
Data of register 28H	High byte	44H
	Low byte	89H
Data of register 29H	High byte	80H
	Low byte	00H
CRC verification code	Low byte	5EH
	High byte	E9H

3.2 Function code 10H: Write multiple register

For example, if the master device wants to keep the data of 0001H, 0002H and 0064H to three register with slave device address of 01H and start register address of 04H.

Message sent from master device		Message sent
Address code		01H
Function code		10H
Address of start register	High byte	00H
	Low byte	04H
Register quantity	High byte	00H
	Low byte	03H
Byte number		06H
Pending written data of register 04H	High byte	00H
	Low byte	01H
Pending written data of register 05H	High byte	00H
	Low byte	02H
Pending written data of register 06H	High byte	00H
	Low byte	64H
CRC verification code	Low byte	3AH
	High byte	BEH

Message returned from slave device:

Message returned from slave device:		Message returned
Address code		01H
Function code		10H
Address of start register	High byte	00H
	Low byte	04H
Register quantity	High byte	00H
	Low byte	03H
CRC verification code	Low byte	C1H
	High byte	C9H

4. 16-bit CRC verification code

Master or slave device can use verification code to judge if the receiving information is correct. Because of electronic noise or other influence, the information sometimes occur errors in the process of transmission. Error verification code (CRC) can verification if the information in the process of transmission of communication data from master or slave device.

The 16-bit CRC verification code, placed at the end of the message frame being delivered, is calculated by the device which sends the message. The message-receiving device will recalculate CRC of the received message to compare with the received CRC. CRC inconsistency indicates errors. Only 8 data bits are involved in CRC calculation, with the exclusion of start bit and end bit. Algorithm of CRC code:

1) Presetting a 16-bit register to hex FFFF (namely 1 for all bits in binary system). The register is called CRC register;
2) XORing the first 8-bit binary data (the first byte of the communication message frame) with the low 8-bit of 16-bit CRC register, then storing the result in CRC register;
3) Right-shifting the register data by one bit (towards lower bit) and filling the highest bit with 0, then verifying the shift-out bit;
4) If the shift-out bit is 0, repeat step 3 (right-shifting one more bit); If the shift-out bit is1, XOR the CRC register data with polynomial A001 (1010 0000 0000 0001);
5) Repeating step 3 and step 4 until all of the 8-bit data have been processed after 8 right-shift operations;
6) Repeating step 2 to step 5 to process the next byte of the communication message frame;
7) When calculation procedures of the first 5 bytes in the communication message frame are completed, the 16-bit CRC verification code will be generated in the 16-bit CRC register.

5. Processing of error

When the instrument detects error except the CRC code error, the message must be sent back to the master device. The top digit of functional code 1 is the functional code sent back from slave device and master device, which is adding 128 on the basis of the functional code sent from the master device. The error message frame format returned by the slave device is as following:

Address code	Function code (The top bit is 1)	Error code	Low byte of CRC verification code	High byte of CRC verification code
1 byte	1 byte	1 byte	1 byte	1 byte

Error code as following:

01H	02H	03H	04H
Illegal function code	Illegal register address	Illegal register quantity	Illegal data value
The instruments do not support the function code received	The register address received is beyond the register address range of instrument.	The register quantity received is beyond the register quantity of instrument.	The data value received is beyond the data range of the corresponding address.

Meter data address table: (Primary side data, floating point)

Address		Data Content	Data Length Word	Data Format	Explanation
DEC	HEX				
50	0x32、0x33		Frequency	float	Data type float four-byte floating data
51					
52	0x34、0x35	Ua	A-phase voltage	float	
53					
54	0x36、0x37	Ub	B-phase voltage	float	
55					
56	0x38、0x39	Uc	C-phase voltage	float	
57					
58	0x3a、0x3b	Ia	A-phase current	float	
59					
60	0x3c、0x3d	Ib	B-phase current	float	
61					
62	0x3e、0x3f	Ic	C-phase curren	float	
63					
64	0x40、0x41	In	Neutral current	float	
65					
66	0x42、0x43	COSΦa	A-phase power factor	float	
67					
68	0x44、0x45	COSΦb	B-phase power factor	float	
69					
70	0x46、0x47	COSΦc	C-phase power factor	float	
71					
72	0x48、0x49	COSΦt	Total power factor	float	
73					
74	0x4a、0x4b	Pa	A-phase active power	float	
75					
76	0x4c、0x4d	Pb	B-phase active power	float	
77					
78	0x4e、0x4f	Pc	C-phase active power	float	
79					
80	0x50、0x51	Pt	Total active power	float	
81					
82	0x52、0x53	Qa	A-phase apparent power	float	
83					
84	0x54、0x55	Qb	B-phase apparent power	float	
85					
86	0x56、0x57	Qc	C-phase apparent power	float	
87					
88	0x58、0x59	Qt	Total reactive power	float	
89					
90	0x5a、0x5b	Sa	A-phase apparent power	float	
91					
92	0x5c、0x5d	Sb	B-phase apparent power	float	
93					
94	0x5e、0x5f	Sc	C-phase apparent power	float	
95					

Meter data address table: (Secondary side data)

Address		Data Content	Data Length Word	Data Format	Explanation
DEC	HEX				
0	0x00	CODE	Programming password	int	1-9999
1	0x01		Frequency	Int	50HZ F=Read/10 unit:Hz
2	0x02	Ua	A-phase voltage	int	LED Value=V*PT/10 LCD Value=V*PT/100 unit:A
3	0x03	Ub	B-phase voltage	Int	
4	0x04	Uc	C-phase voltage	int	
5	0x05	Ia	A-phase current	Int	LED Value=V*PT/1000 LCD Value=V*PT/10000 unit:V
6	0x06	Ib	B-phase current	int	
7	0x07	Ic	C-phase curren	Int	
8	0x08	In	Neutral current	int	
9	0x09	COSΦa	A-phase power factor	Int	Value=COSΦ/1000
10	0x0a	COSΦb	B-phase power factor	int	
11	0x0b	COSΦc	C-phase power factor	Int	
12	0x0c	COSΦt	Total power factor	int	
13	0x0d	Pa	A-phase active power	Int	Value=P*CT*PT/1000 wunit:KW
14	0x0e	Pb	B-phase active power	int	
15	0x0f	Pc	C-phase active power	Int	
16	0x10	Pt	Total active power	int	
17	0x11	Qa	A-phase apparent power	Int	Value=Q*CT*PT/1000 unit:Kvar
18	0x12	Qb	B-phase apparent power	int	
19	0x13	Qc	C-phase apparent power	Int	
20	0x14	Qt	Total reactive power	int	
21	0x15	Sa	A-phase apparent power	Int	Value=S*CT*PT/1000 unit:KVA
22	0x16	Sb	B-phase apparent power	int	
23	0x17	Sc	C-phase apparent power	Int	
24	0x18	St	Total apparent power	int	
25	0x19、0x1a	PEpt	Positive active electric energy	long	Value=Ept*CT*PT/3200 unit:Ept: Kwh Eqt: KVarh
26					
27	0x1b、0x1c	NEpt	Reverse active electric energy	long	
28					
29	0x1d、0x1e	PEqt	Inductive reactive electric energy	long	
30					
31	0x1f、0x20	NEqt	Capacitive reactive electric energy	long	
32					
33	0x21	CT	Current transformer ratio	Int	1-9999 (Computing the primary current)
34	0x22	PT	Voltage transformer ratio	Int	1-9999 (Calculated primary voltage)
35	0x23	Ie	Rated Current	Int	5.000A
36	0x24	Ue	Rated voltage	int	400.0V

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