SPD194E-9S4

Multi-function Electric Meter

1. Technical parameter

			Parameter
Signal input	Connection		Three-phase four-wire/Three-phase three-wire
	Voltage	Range	400V/100V
		Overload	Last: 1.2 multiple Instantaneous:2 multiple
		Power consumption	<1VA
	Current	Range	5A/1A
		Overload	Last: 1.2 multiple Instantaneous:2 multiple
		Power consumption	<1VA
	Frequency		40~65Hz
Power supply			AC220V（default）or AC/DC80-270V
Electric energy pulse			Passive optical coupling collector output Fixed pulse width 80mS±20%
Communication			RS485 communication port,Physical layer isolation Conforming to the international standard MODBUS-RTU protocol，Communication speed1200~9600 Test type N81,E81,O81
Analog output			0/4~20mA or 0~5/10V transmitting output Programmable setting of such items and corresponding values
Relay output			Programmable banked/alarm relay output Capability 5A/250VAC 5A/30VDC Programmable battery alarm, switching input, analog input or remote mode

| Telemetry switch	Telemetry switch input measure,Passive dry node input
	Programmable correlation alarm output
Measure class	Current：0.2 Frequency：±0.1Hz
	Active energy：0.5S
	Reactive energy：1
	Analog input：0.5
Display mode	IHD LCD display
Environment	Operating temperature：-10~55℃
	Storage temperature：-20~75℃
Security	Insulation：signal, power source, shell resistance of output terminal>5MΩ
	Withstand：signal output, power source, output>AC2KV
Dimension	Dimension：96*96

2. Installation and connection

2.1 Meter dimension
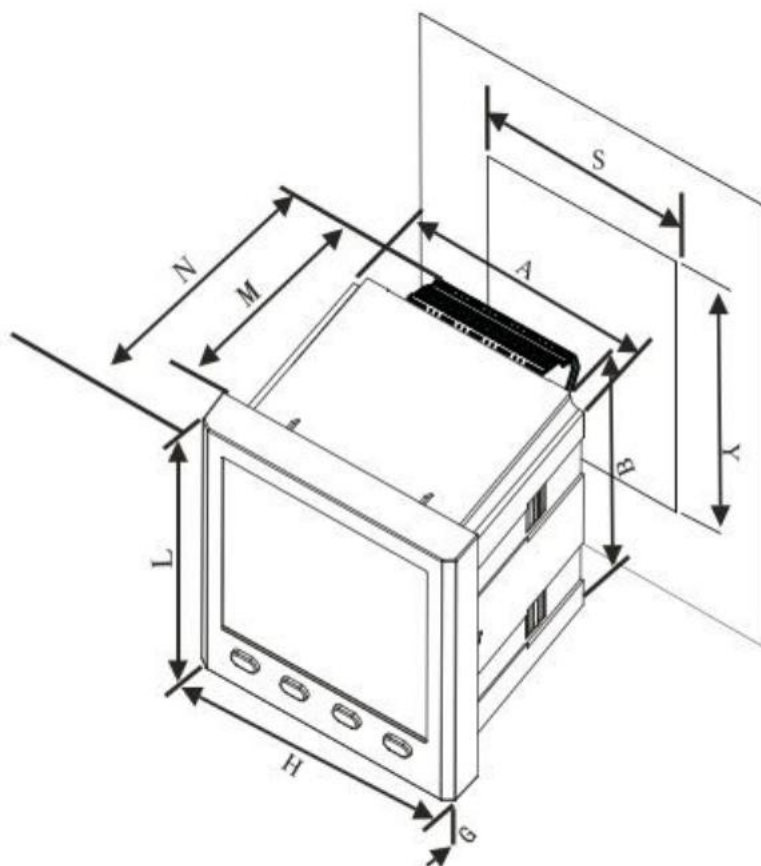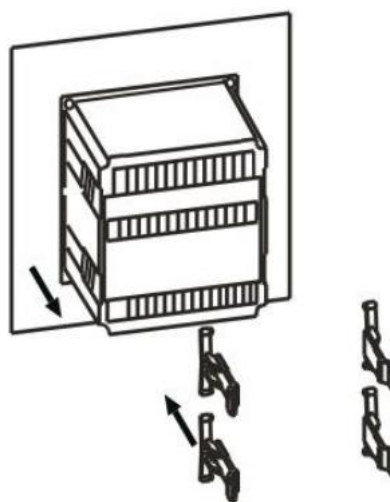

Installation dimension：A×B

Holes dimension：S×Y

Panel dimension：L×H（unit mm）

Outline dimension (L×H) Unit(mm)	Board assemble dimension (A×B) Unit(mm)	Holes dimension (S×Y) Unit(mm)	Length (N) Unit(mm)	Depth (M) Unit(mm)
96×96	91×91	92×92	93	78

2.2 Installation method
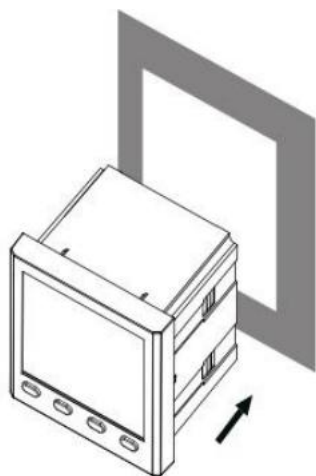
Front view   **Back view**

2.3 Description of terminal function

a.   Signal and function terminal number

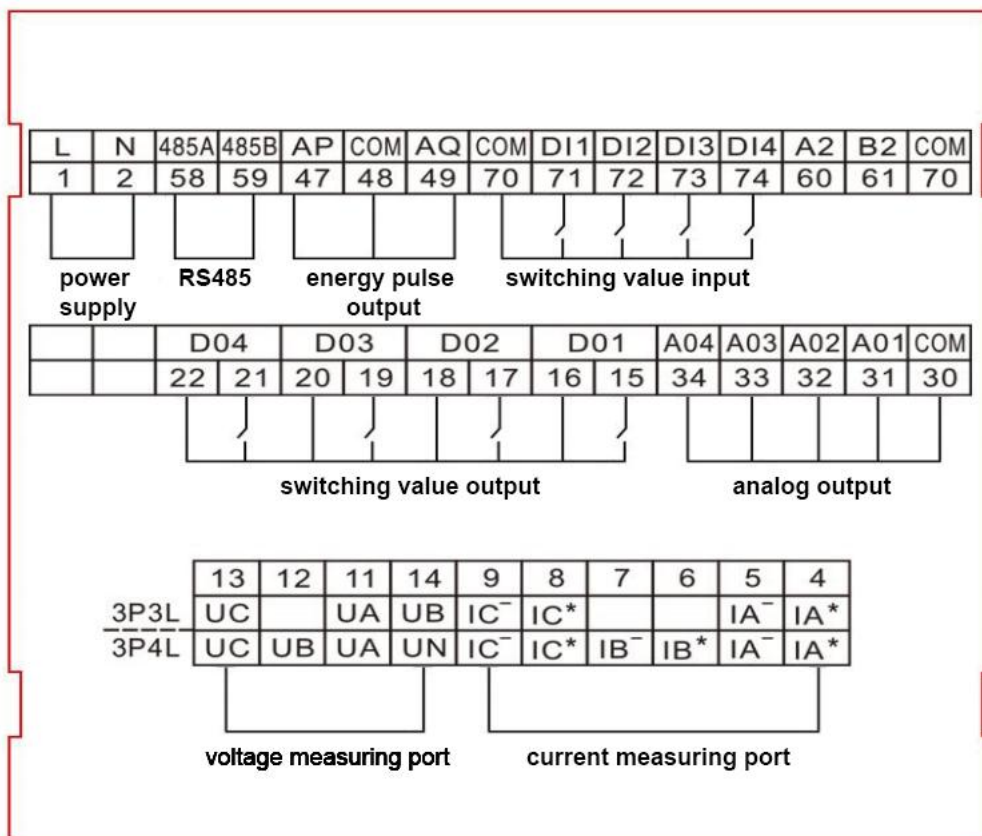This series of terminals adopts uniform numbering and is suitable for all products of this series.

The situation is shown in the following table:

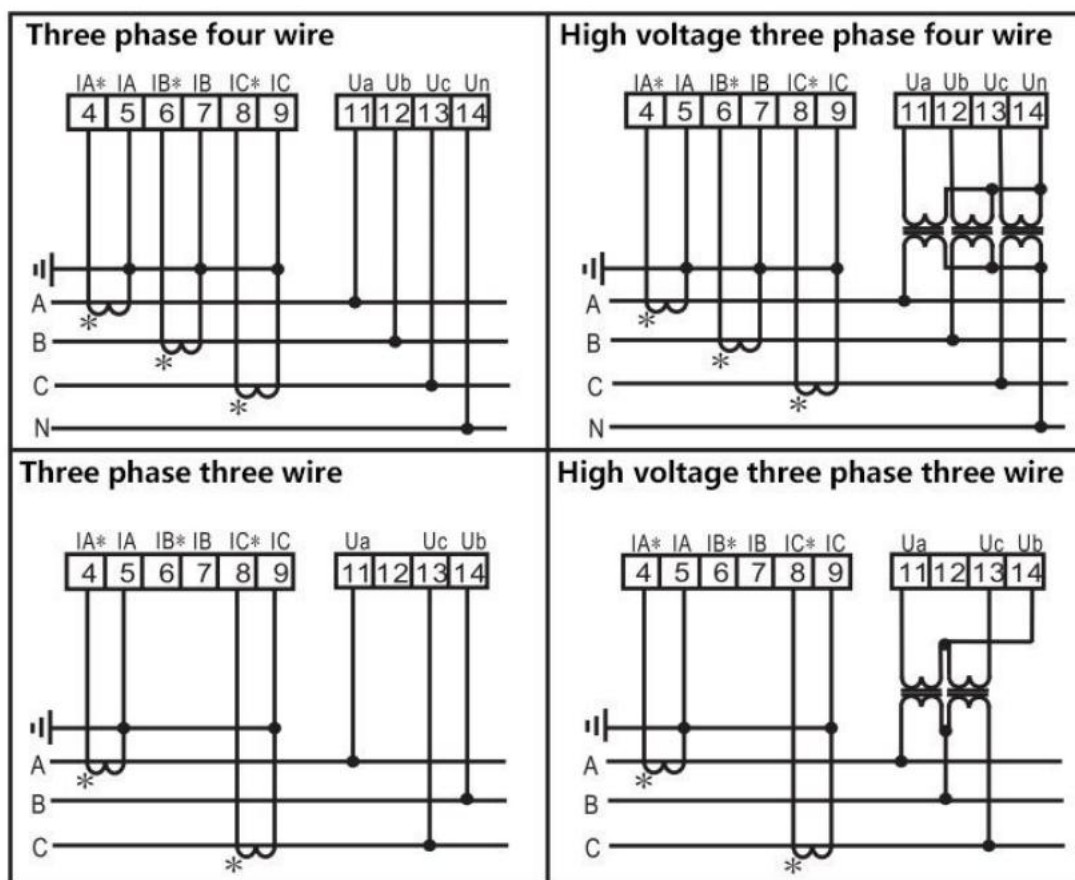|		
Power source	1,2	AC220V,AC/DC80-270V
Current signal	4~9	4,6,8 are three-phase current inlet
Voltage signal	11~14	The three-phase voltage inputs are UA,UB,UC and UN respectively
Relay output	15~22	4-way relay output
Transmitting output	30~34	4-way 4~20mA transmitting output;30public terminal
Electric energy pulse	47,48, 49	47 and 49 are positive terminal of passive output, which are connected positive terminal of power supply
RS485	58,59	They are A+ and B- respectively
Switching input	70~74	They are 4-way switching input;70 is the public terminal

b. Instructions

● 1 and 2 are the auxiliary power for instrument working, whose the limit of the power supply voltage is AC220V (default). Please ensure that the contraction power supply is suitable for this series of products, in order to prevent damage to the product.

● 4,6 and 8 are input terminals of current transformer and some marked with* is the input terminal of the current.

● The connection method of Three-phase three-wire: In a three-phase three-wire network, the B phase current does not need to be connected. And the UB is connected to terminal 14, whose specific connection could be in the reference of 2 and 4.

● For the use of the detailed connection terminals, please follow the wiring diagram on the specific product housing.

2.4 Wiring

L	N	485A	485B	AP	COM	AQ	COM	DI1	DI2	DI3	DI4	A2	B2	COM
1	2	58	59	47	48	49	70	71	72	73	74	60	61	70

power supply   RS485   energy pulse output   switching value input

		D04		D03		D02		D01		A04	A03	A02	A01	COM
		22	21	20	19	18	17	16	15	34	33	32	31	30

switching value output   analog output

	13	12	11	14	9	8	7	6	5	4
3P3L	UC		UA	UB	IC⁻	IC*			IA⁻	IA*
3P4L	UC	UB	UA	UN	IC⁻	IC*	IB⁻	IB*	IA⁻	IA*

voltage measuring port   current measuring port

a. The connection method of input signal

Three phase four wire	High voltage three phase four wire
IA* IA IB* IB IC* IC Ua Ub Uc Un 4 5 6 7 8 9 11 12 13 14	IA* IA IB* IB IC* IC Ua Ub Uc Un 4 5 6 7 8 9 11 12 13 14
A B C N	A B C N
Three phase three wire	**High voltage three phase three wire**
IA* IA IB* IB IC* IC Ua Uc Ub 4 5 6 7 8 9 11 12 13 14	IA* IA IB* IB IC* IC Ua Uc Ub 4 5 6 7 8 9 11 12 13 14
A B C	A B C

b. Wiring instructions:

● Voltage input：The input voltage should not be higher than the rated input voltage of the product (100V or 400V), otherwise the PT should be in the consideration. For easy maintenance, it is recommended to use line bank.

● Current input: The standard rated input current is 5A, and external CT should be used when the input current is greater than 5A. If there are other instruments on the CT, the connection mode should be connected in series. Before removing the current input wire of the product, it is necessary to disconnect the CT primary or secondary circuit first.

● To ensure that the input voltage and current are corresponding, the phase sequence and the direction is consistent; otherwise there will be numeric and symbolic errors.

● The meter can work in the three-phase four-wire or three-phase three-wire mode, and the user should select the corresponding connection mode according to the on-site usage. In general, three-phase three-line mode is used without center-line. Use the three-phase four-wire method in case of center-line. The three-phase three-wire can be installed with two CT (A and C phases), and the

three-phase four-wire needs to be installed with three CT (in the case of only 2CT, another phase current can be synthesized).

❖ Note: There are two types of wiring in the instrument. It is a must that the actual connection mode is consistent with the setting method, otherwise the measurement data in the meter is not accurate.

❖ Note: The technical parameters such as the specific connection mode and pulse constant are subject to the product's random wiring diagram
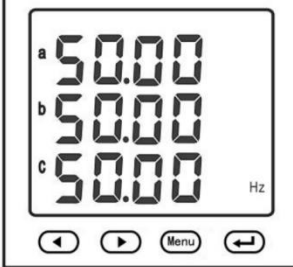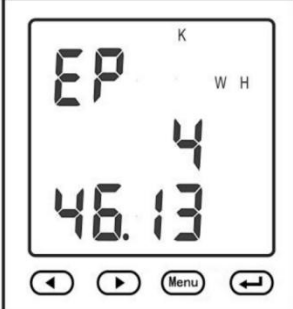
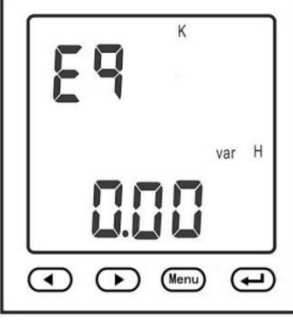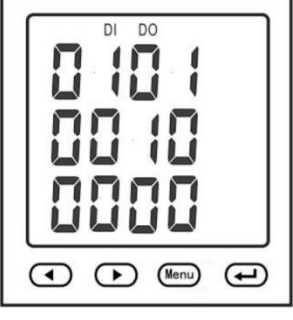## 3. The description of panel and measurement information display

3.1 Product panel and displayed information
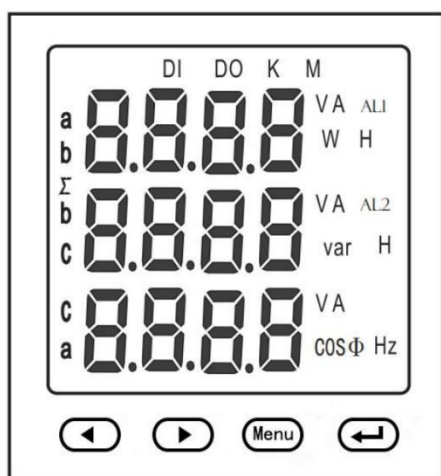
● LCD multi-function display interface information

Measurement information has 6 pages (default "disp"; when set it OFF, mean to close cycle switching. And if set to the other item, this item will be firstly displayed when device is powered.)

" ⬅ " and " ➡ " can be used to switch from page to page, and " ⬅ " is used to switch between pages information.

Board	Content	Explanation
XS1=1		There are three-phase voltage Ua,Ub and Uc respectively. Press the " ⬅ " button to display the voltage of Uab,Ubc and Uca. The content shown in the left figure is 1 test voltage, that is, the value of the input voltage multiplied by the PT variable ratio.
XS1=2		There are three-phase current IA,IB,IC respectively. In the left image, IA=5.000A, IB=5.000A,IC =5.000A. It indicate that the current is one value, that is, the input current value multiplied by the set CT variable ratio.

XS1=3	3.300 K W Σ 0.004 var 3.300 V A	It shows that there is power W, var of reactive power, VA in power, KW,Kvar in the case of K. In the left image,P=3300 W, Q= 1200var,S=4800VA. "∑"is the sum of the three phases, and the various powers of the ABC phase are switched in the order of " ➡ ".
XS1=4	a ⌐0.99 b ⌐0.99 c ⌐0.99 COSΦ	a,b,c three-phase power factor
XS1=5	a 50.00 b 50.00 c 50.00 Hz	The left diagram represents the frequency of the three phases.
XS1=6	EPS K W H 2 16.11	EPS stands for total active power.The second row and the third row are connected to read.The figure of left diagram is 216.11 KWH
XS1=7	EP K W H 4 46.13	EP stands for active power. The second row and the third row are connected to read. The figure of left diagram is 446.13KWH. Press the " ⏎ " button to switch to EP-, which represents the reverse active power.

XS1=8	E95 5 76.16 var H K	EqS stands for total reactive power. The second row and the third row are connected to read. The figure of left diagram is 576.16 Kvarh.
XS1=9	E9 0.00 var H K	Eq stands for reactive power. The second row and the third row are connected to read. The figure of left diagram is 1.0 KWH. Press the " ↵ " button to switch to Eq-, which represents the reverse reactive power.
XS1=10	DI DO 0101 0010 0000	The left diagram display the alarm output status DO and switching value input state DI.In the left figure, the third and fourth circuit relay is in the output suction state, and the first road is in the connection state.