
DS5210 Series Digital Electrical Meter

User Manual

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ZHEJIANG FENGDENG ELCTRIC CO.,LTD

Overview:

DS5210 series economic type single-phase digital electric measuring instrument is a new generation of intelligent instrument, mainly used for measuring voltage, current, frequency, active power, reactive power, power factor and so on. It is widely used in electric power monitoring, industrial automation, switch cabinet and various intelligent distribution system.

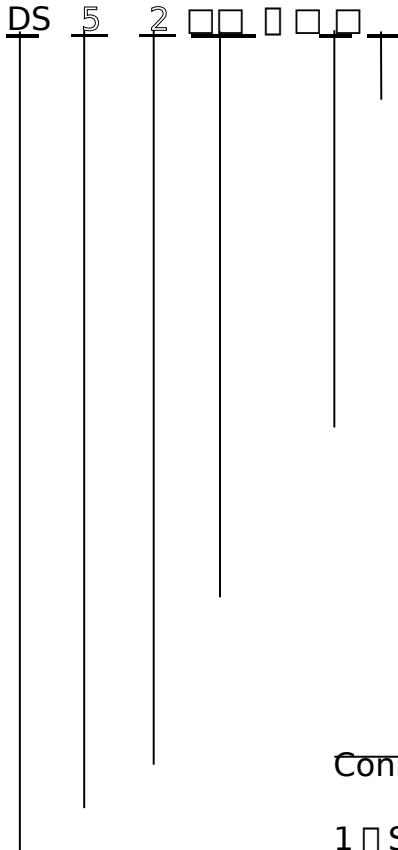
Features

- High precision, can measured normal waveform
- Digital display, can set the ratio of voltage and current
- Easy for installation and connection
- Input impedance $> 2M\Omega$
- Input / output protection function, meter will be Long life and reliability
- Password protection, can avoid the careless in the operation

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1.2 Model definition



Meter Type

I □ Ammeter

U □ Voltmeter

P □ Active power meter

Q □ Reactive power meter

PF □ Power factor meter

F □ Frequency meter

Combination parameter □ UIP □ UIF.□.

Connection

1 □ Single-phase

2 □ Three-phase three wire

3 □ Three-phase four wire

Meter Dimension

10 □ 96mm×96mm 20 □ 96mm×48mm

30 □ 72mm×72mm 40 □ 48mm×48mm

50 □ 80mm×80mm 60 □ 120mm×120mm

LED Display

Meter Code

Company Code

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1 □ Structure And Working Principle

Modularization design □ can choose Auxiliary function □ MCU sampling of input signals continuously □ data processing for sampling results. Parameters will display according to the keyboard programmed voltage and current ratio

2 □ Main technical performance and parameters

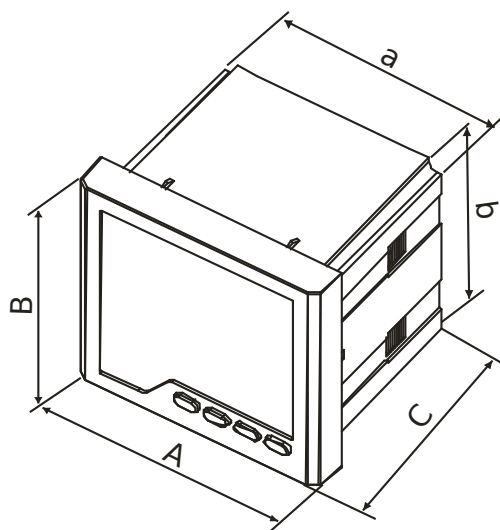
Technical parameter		Index	
Input characteristics	Measurement network		□□
	Nominal input	AC Voltage	AC 100V □ 220V □ 380V □ 500V
		AC Current	AC 1A □ 5A
	Linear range	Voltage	10 □□ 120 □ Nominal input value
		Current	1 □□ 120 □ Nominal input value
		Frequency	45Hz □ 65Hz
		Power Factor	0.1(Delay) □ 1.0 □ 0.1(Leading)
Allowable Overload		Continue □ 1.2 times □ Instantaneity □ Voltage 2times/5s, Current 10times/5s Display "HHHH" when exceed the rated value	
Output characteristic	Accuracy grade	Voltage, current, active power, power factor 0.5 grade □ frequency 0.1 grade □ Reactive power 1 grade	
	Data update	3 times/second	
	Display mode	4 bit digital tube LED display, automatic decimal point shift	

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Other characteristics	Auxiliary power supply		AC220V □ 50Hz
	power consumption		<5VA
	electromagnetic compatibility	Electrostatic discharge immunity	4 Grade □ GB/T17626.2 □
		Electrical Fast Transient Burst Immunity	2 Grade □ GB/T17626.4 □
		Surge immunity	4 Grade □ GB/T17626.5 □
	Security features	Insulation strength	Input and auxiliary power supply AC2.5kV □ 1min
		insulation resistance	>100MΩ
		Heat resistance and flame retardant	Terminal □ 960°C □ Case □ 650°C □ actuation duration □ 30s
	environment	Temperature	Operation □ -25 □ 55°C □ Storage □ -25 □ 50°C
		Humidity	≤93%RH □ Non-Dewfall □ Non corrosive gas
		Altitude	≤2500m
Installation method		Embedded	

3 □ Appearance and Installation dimensions

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Outline code	Surface size (width A× height B) Unit:mm	Base size (Width a× height b) Unit:mm	Panel open size (Width× height) Unit:mm
10	96×96	90×90	91×91
20	96×48	90×44	92×45
30	72×72	66×66	68×68
40	48×48	44×44	45×45
50	80×80	66×66	68×68

5.1 Installation

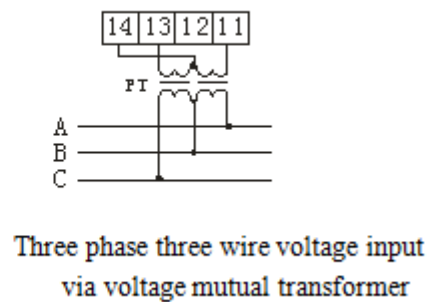
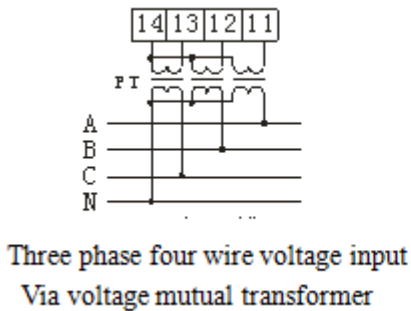
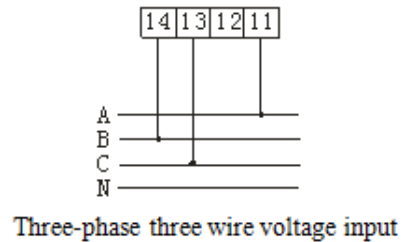
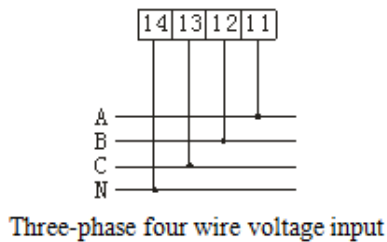
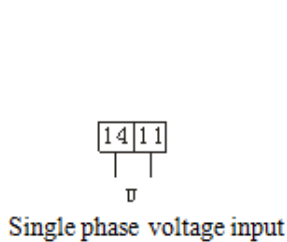
Embedded installation mode, open the hole in the panel according to the Panel open size in the instrument, Put the meter to the panel and embedded into the installation hole, and clamp the clamping piece into the instrument corresponding to the clamping groove.

5.2 Connection mode

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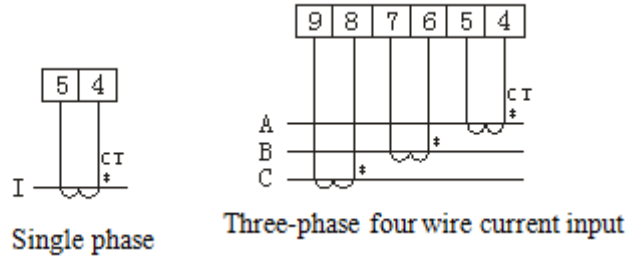
Before power the meter □ should make sure the connection is correct. If the wiring diagram on the specification and the wiring diagram on the instrument case are not consistent. □ Please refer to the wiring diagram on the instrument case.

1.Voltage meter signal input



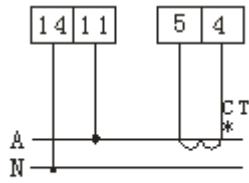
5.2.2 Current meter signal input

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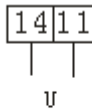
5.2.3 Power meter, combined meter signal input

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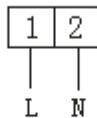
Single phase

5.2.4 Frequency meter signal input



Single phase AC voltage

5.2.2 Auxiliary power supply



Auxiliary power

5.3 Connection description

5.3.1 Instruments need to be applied to the auxiliary power supply, Please make sure that the supplied power is suitable for meter to prevent damage to the meter.

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5.3.2 Input voltage is not higher than the rated input voltage of the products, or should be considered to use voltage transformer, voltage transformer should be one end of the grounding, in order to maintain convenience, Voltage input terminal is recommended to use with fuse

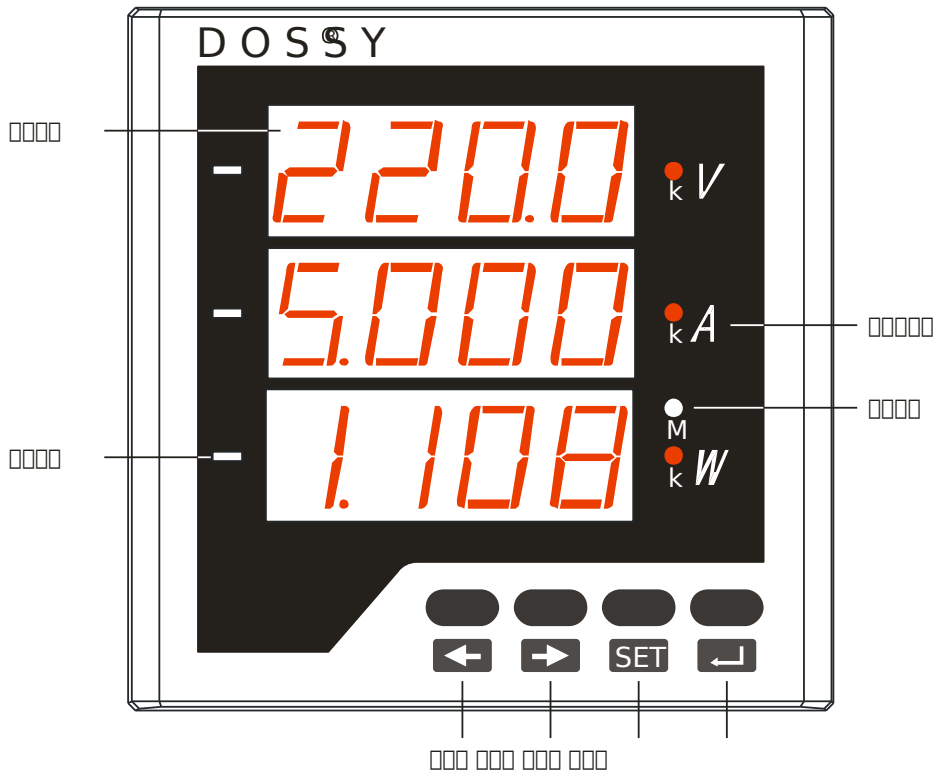
5.3.3

Input current should not be higher than the rated current of the products, or should consider to use the current transformer, current transformer should one end of the grounding, in order to maintain convenient.

5.4 Panel and operation instructions

DS5210 series panel is shown as below □

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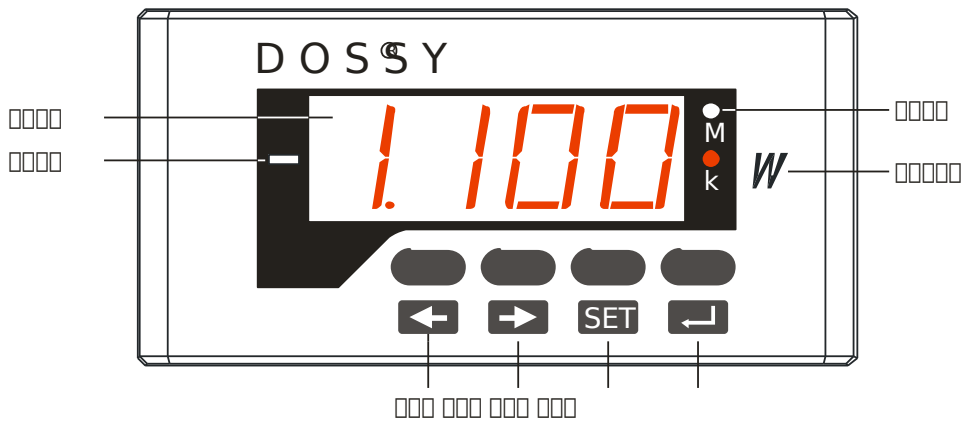


□□□□ Display □□□ Negative indication

□□□ Unit □□□ Unit rate

□□□□□□ Left shift keys □ Right shift keys

Programming keys Return keys



□□□□ Display □□□ Negative indication


□□□ Unit □□□ Unit rate


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□□□□□□ Left shift keys □ Right shift keys


Programming keys Return keys

5.4.2 Key Instruction

Left shift keys  □ For menu switch; the keys is used to shift the cursor,When modifying the parameter value.

Right shift keys  □ For menu switch; the keys is used to shift the cursor,When modifying the parameter value.Long press to achieve a rapid increase in the value of the parameters.If both use left and right shift keys in the same time,can decrease the value,long time press will rapid decrease.

Programming keys  □ Used to enter the programming , and modify the parameter values to save the parameter values and return to the superior menu.

Return keys  □ Used to cancel the values,when it is in programming mode .Can push the keys until measured value display

5.4.3 Programming parameter description

Parameter type	Parameter code	Parameter name	Setting range	description
System	<i>Pt</i>	Voltage ratio	1 □ 9999	Set the input circuit voltage ratio. When the voltage is through the mutual transformer □ Pt □ Primary circuit rated voltage/Two circuit rated voltage □ If voltage input directly,Pt=1
	<i>Ct</i>	Current ratio	1 □ 9999	Set the input current ratio When the voltage is through the current transformer □ Ct □ Primary circuit

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				rated current/Two circuit rated current; If current input directly,Ct=1
	<i>nEt</i>	Input network	0 □ 2	Setting the input network: 0:Three-phase four wire, 1:Three-phase three wire, 2:Single-phase

5.4.4 Operation instructions

1. Enter **SET** meter will display to input the password □ use **←→** to move and change the number to “816” ,then push **SET** to the programming system. **For DS5230 just confirm factory default “0000”.**

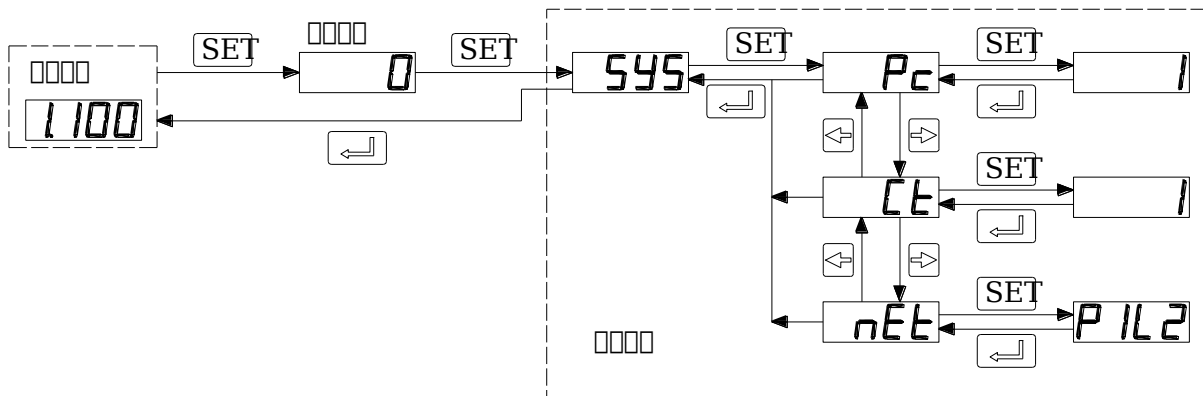
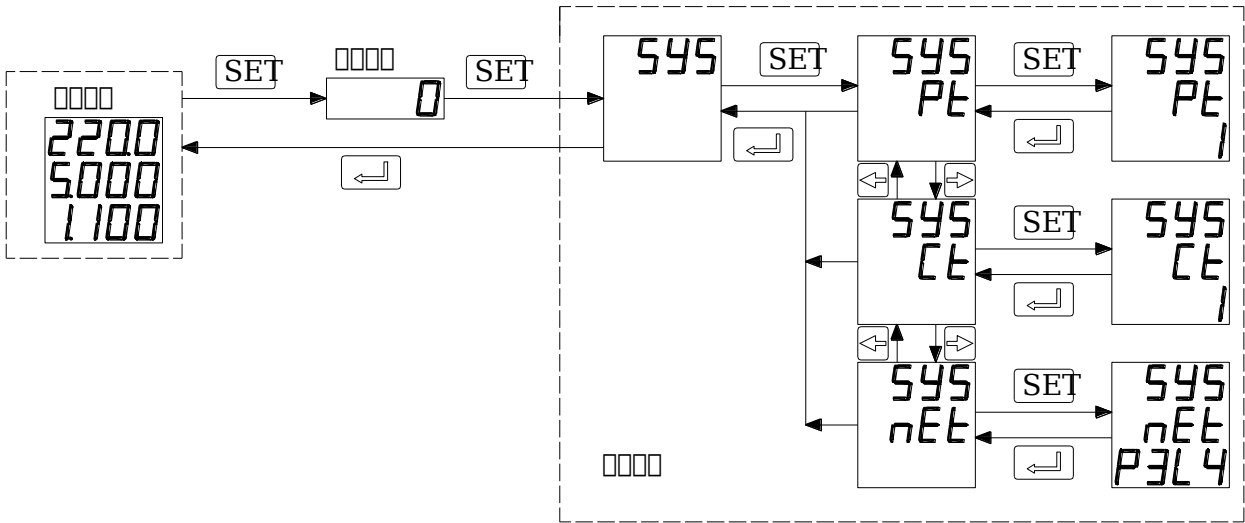
2. Then the meter will display *Pt* so you can change the Voltage ratio,if need change other item need push **SET** Then the meter will display to *Ct* and *nEt* ,after setting USE **SET** to save the operation.

3. If push **↵** will return to the last menu.If no operation within 60 second the meter will return to the display state.

Programming model diagram

Three Phase display meter

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Single phase meter

5.4.4 Abnormal display instructions

HHHH: The measured value is out of range .The voltage or current input exceeds 1.2 times of rated value of the instrument

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----hyphens □ Input disconnection indication □

----Upper cross bar □ The measured value is beyond the display range of the meter

Attention

5.5.1 Please confirm the meter power supply, whether the input signal is in the range , the terminal connection is correct and solid. Before using the power supply

Meter need to preheat 15min to accurately measure

5.5.3 Instruments should not be hit, collision and violent vibration, the use of the environment should meet the technical requirements

6 □



Maintenance

Instrument should be verification at least one time each year, if the meter deviation exceeds the range, usually it cause by damp, dust or corrosive gases, we can dry and clear to recovery the accuracy. If it not works need send back to the factory to repair.

The meter have guarantee for 12 months, user should follow the instructions .if found quality problems, the manufacturers will give free repair or replacement.

7.1 Packing

Packaging should be environmental protection materials, packaging requirements should be consistent with the provisions of 15464-1995 GB/T □

7.2 Transportation and storage

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The transport and storage of shall conform to the provisions of 9329-1999 JB/T. Storage temperature of the environment is -25 degrees Celsius to 50 degrees Celsius, the relative humidity of not more than 85%, and the harmful substances contained in the air is not enough to cause the corrosion of the instrument.