3 Phase Power meter

Descriptions

The instrument is to measure any range of AC/DCvoltage or current set by user.It can be available for data reserve or top value reserve function. To measure or display true value of voltage/ampere/watt/power factor/frequency/ energy consumption.Up to 3 alarm output. This instrument is widely applied to power system,factory power distribution,building automation etc.With RS485 for remote control.

Highlights

1.Input:true value single/three phase measure(bandwidth :up to 2.5KHz) more than 32 parameters, such as AC DC voltage/ampere/power/power factor/frequency/electrical degree/reactive power/power frequency,etc,mini power is 1mW,apply to energy-saving equipment,motor,lab,prodution line for electrical parameters integreted measurement.

2.Features:voltage/ampere ratio set freely,input isolation among phases,single/three phase three-wire three- factors,three-phase three wire two factors, three phase four-wire selectable;

3.Output:3-line alarm output configurable,up to 8 segment output control,parameters:under-voltage/ under-ampere/over voltage/over ampere/power/power factors selectable,analog output 4-20mA;

4.RS485 interface,MODBUS RTU procotol,connect directly to various equipment,computer and PLC;

5.Widescope power supply:regular:80-265V AC/DC, 12-30V indicate when ordering;

6.case class:IP65;

7.Widely used in automatical control of power system,factory power distribution,building automation, eg.,single/three phase,voltage/current/power,three phase voltage/ampere integrated display control or up to 6 lines voltage/ampere display control;and power factor compensation control.

Specifications

Power supply	90-260V AC/DC 50/60Hz
Measured objects	True value,simple/three phases/voltage/current/Watt/ Power factor/frequency/energy consumption/reactive power
Direct input range	Voltage:0-600V Current:0-5A
P/T,C/T	P/T,C/T free set by software
Measured frequency range	0-400Hz
Accuracy	Voltage: ±0.2% ±0.1%F.S Current: ±0.2% ±0.1%F.S Watt: ±0.3% ±0.2%F.S Power factor: ±0.01 Frequency:Display0-400Hz ±1Hz
Analog	0-10V or 4-20mA selectable by software
Alarm	RELAY:NO 250V AC 3A or 30V DC 3A COS ø=1
Communication	RS232 or RS485 with MODBUS RTU protocol

Dimensions

92+0.5
A

B 92+0.5

D 115

115
C

96 F

F
96

G
12

H
100
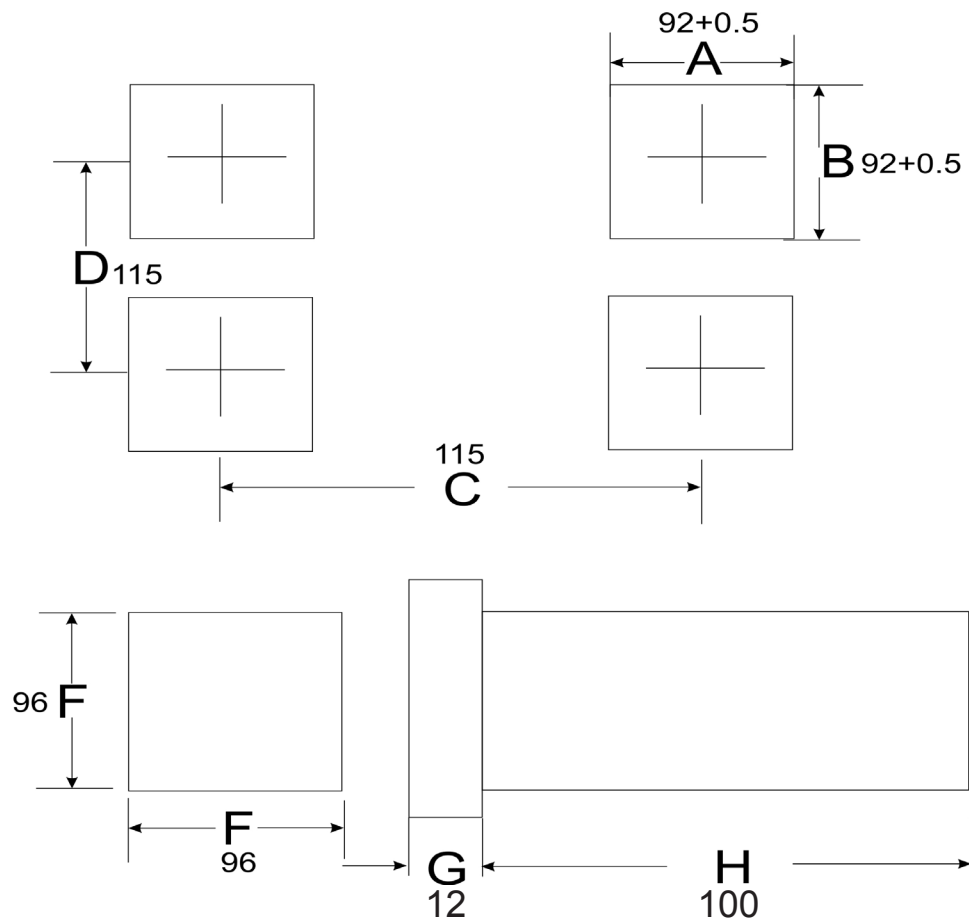
1.Simple phase connections(3 phase 4 wires simple connection,without PT,without CT)
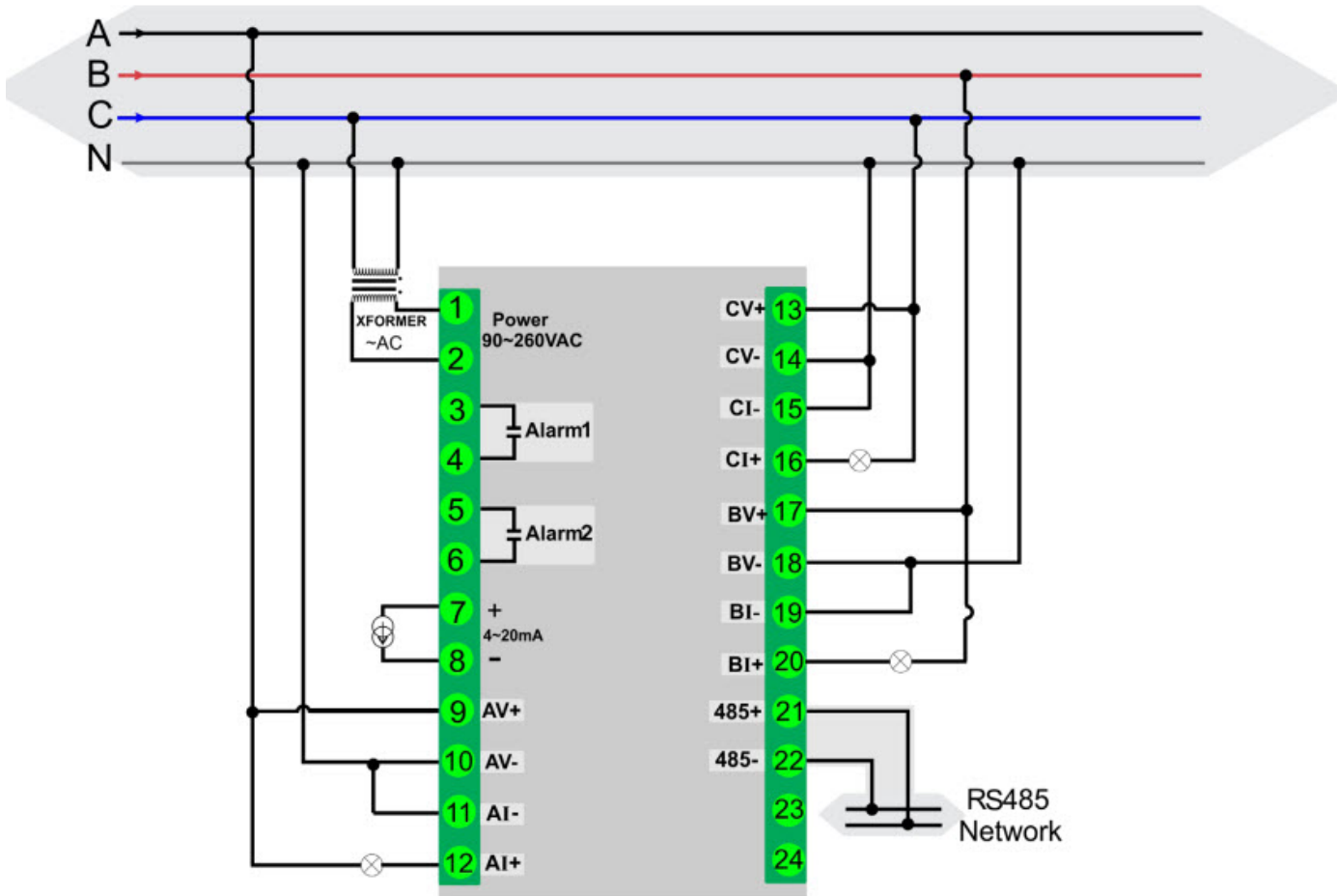
Note:

Values are 8 gigit LED display in total,each 4 in UP and DOWN.Normally displays DOWN 4 digits. Press the lamp flashes,then display the UP values.

2.3 phase 4 wires
without P/T,CT connections:
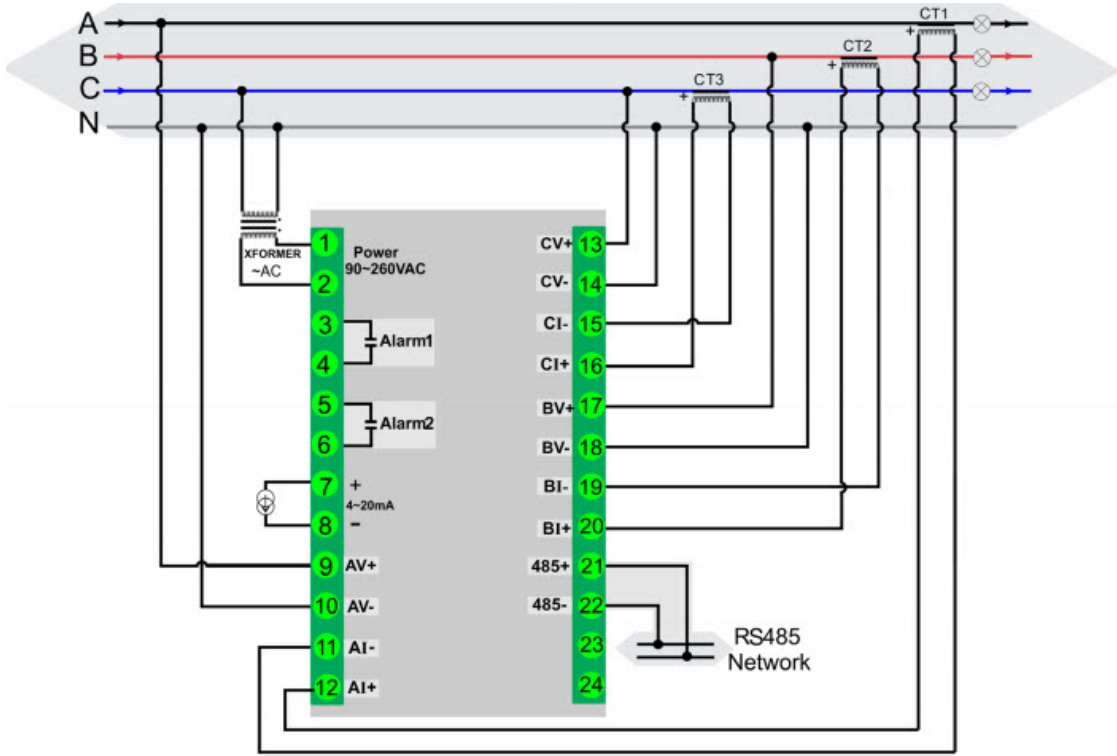
with P/T,CT connections:
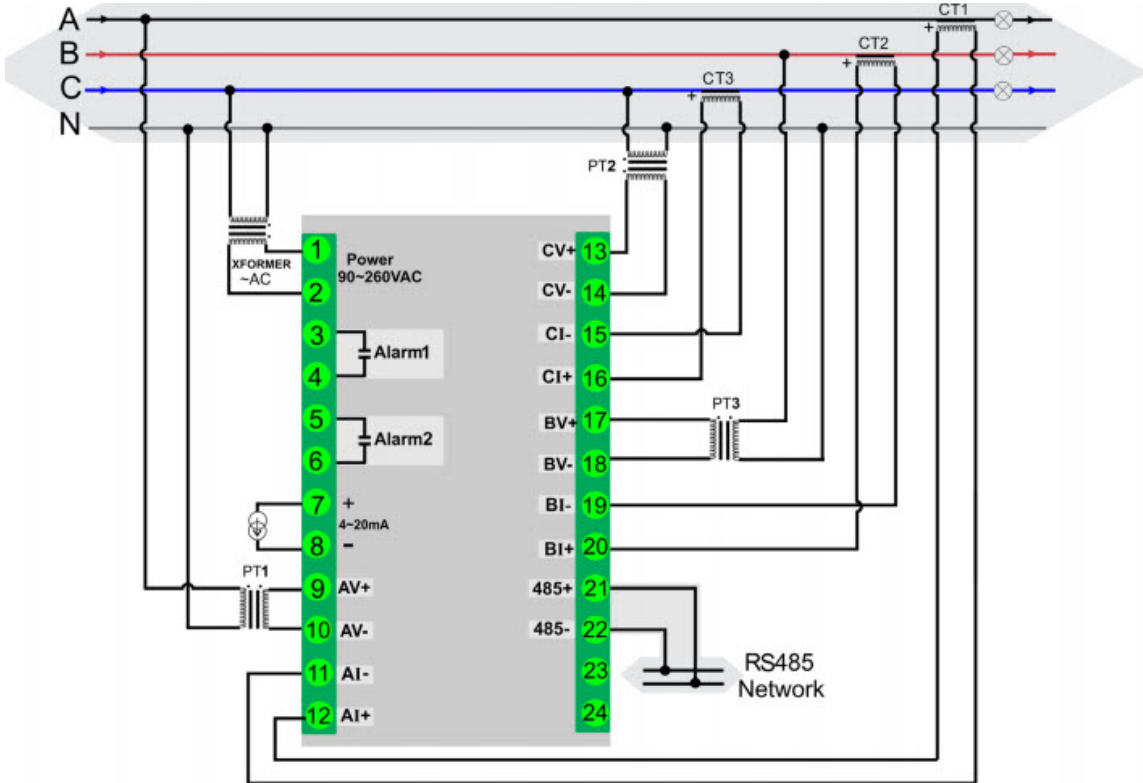
3.3 phase 3 wires(power for A/B phase,c phase for display only,without PT)
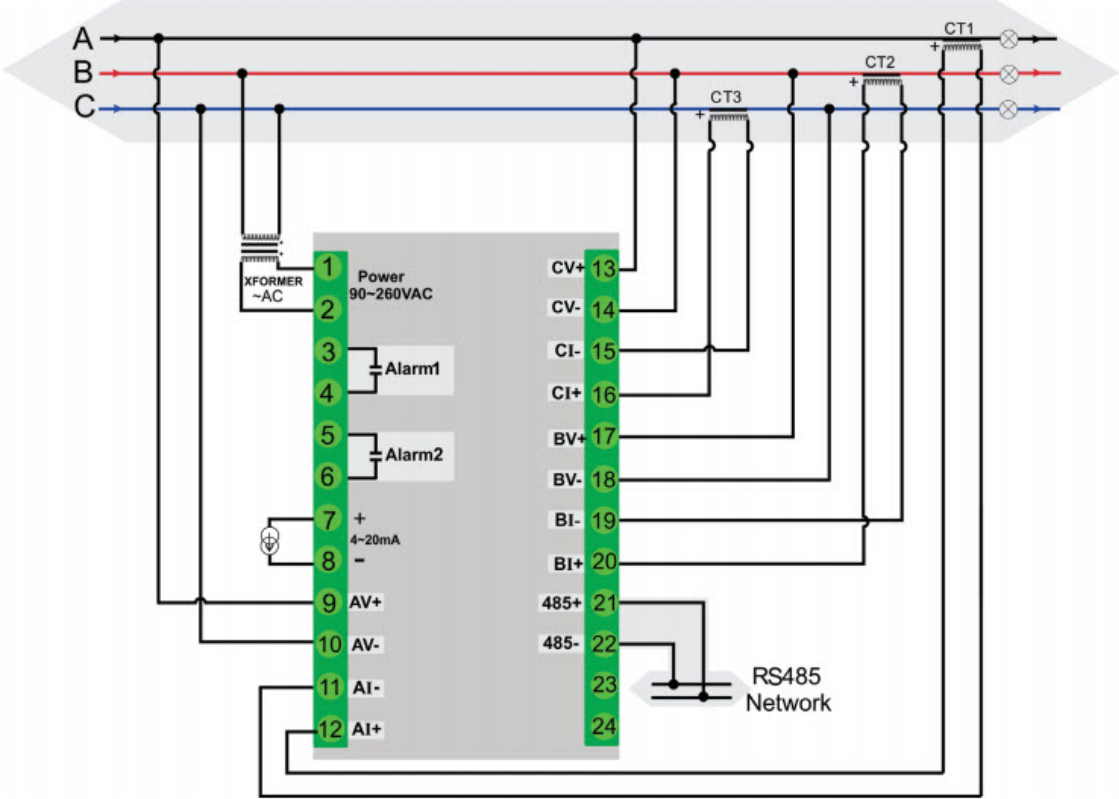
Notes:

When there is no transformer,please connect vot/amphere in series directly,eg the connection of 3 phase 4 wires without P/T,C/T connections.

4.3 phase 3 wires 3 phase(A/B phase ,C phase for display only,with PT)
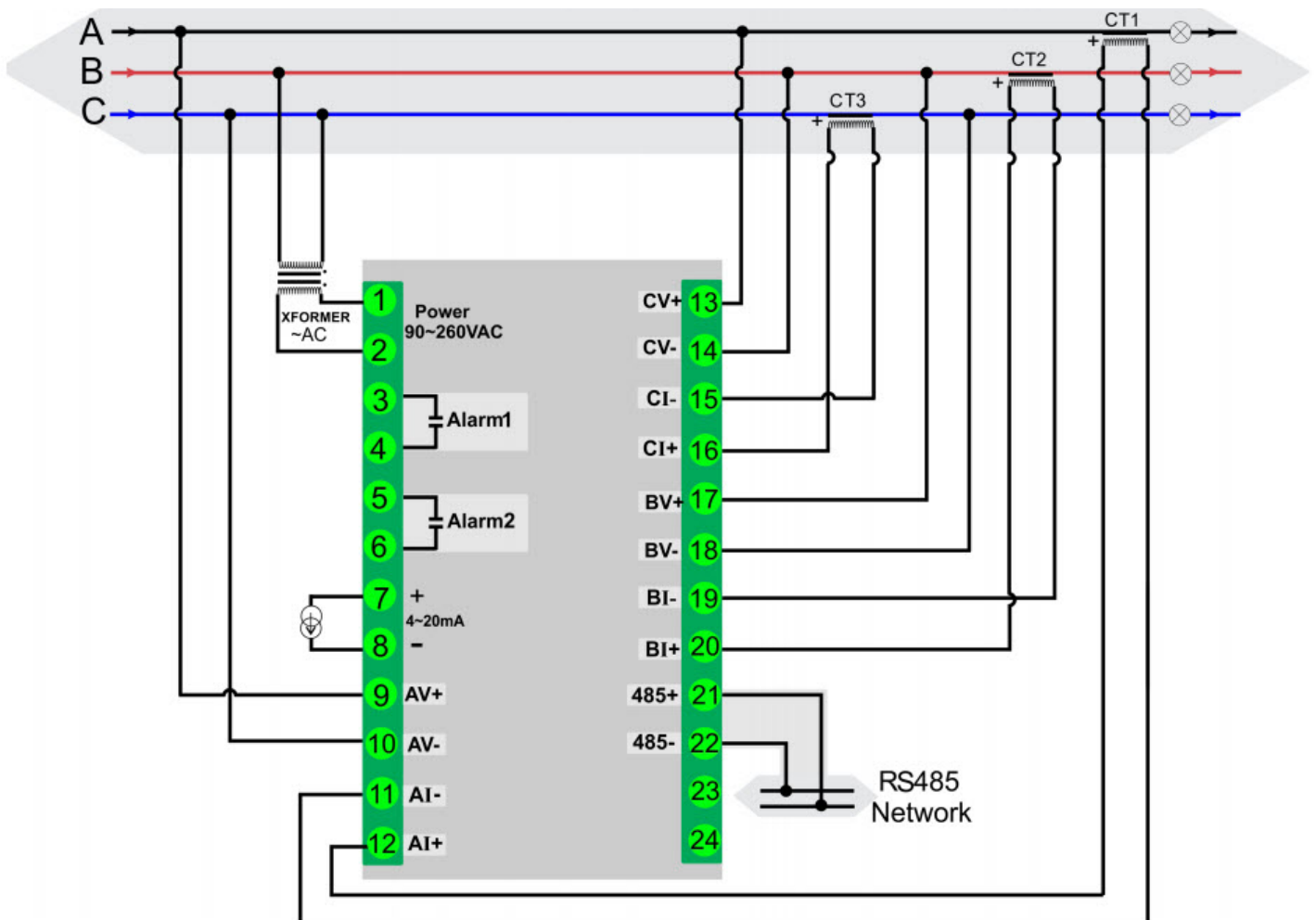
Malfunction Estimate:

1.Check the connection and wiring if correct.Specially pay attention to the power supply terminals and signal input terminals,please do nott wrong connect.As well pay attention to do not short the output terminals by strong current.

2.If tthe measurement is incorrect,please check if the connection is contrary

3.Check input mode setting,especially 3 phase connection.The parameter is

Name of parts

① A [display: 8.8.8.8.] ○ KW ○ Var

② B [display: 8.8.8.8.] ○ PF ○ Kwh
  ○ MW ○ Hz
  ○ UA ○ AI1
  ○ UB ○ AI2

③ C [display: 8.8.8.8.] ○ UC ○ AI3
  ○ ∑ ⑧

④ [SET] [<</Rst] [⌃] [⌄]

⑤ ⑥ ⑦
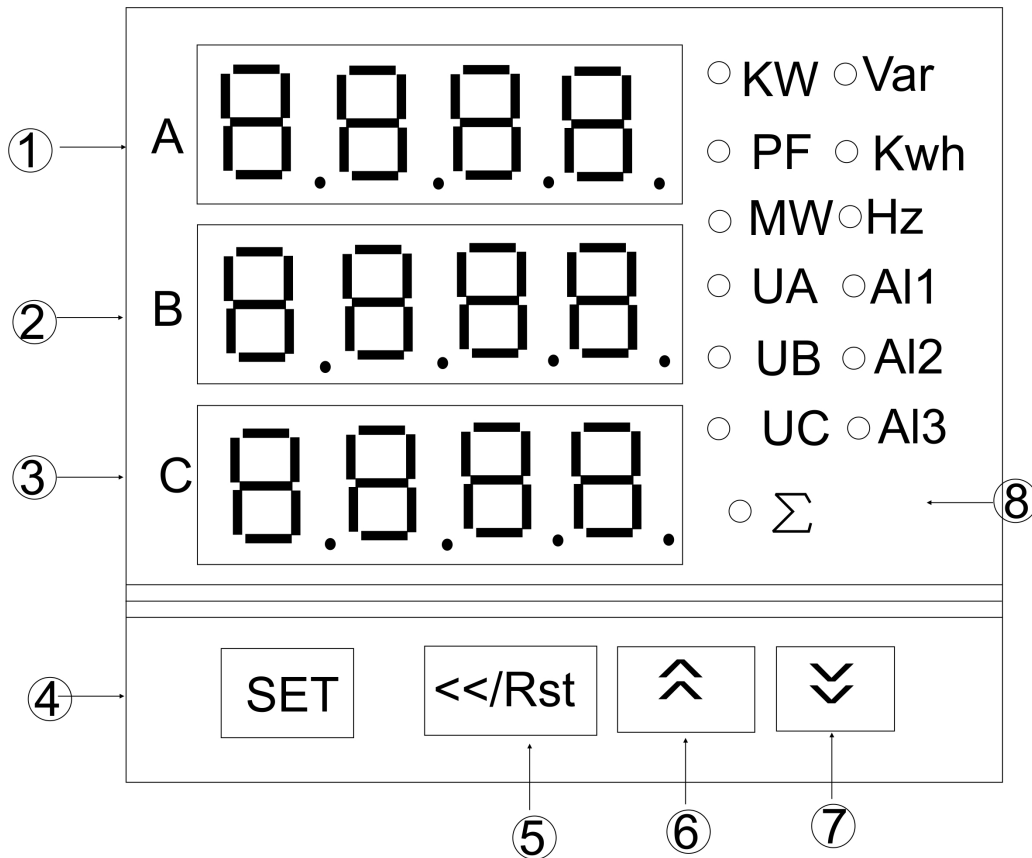
① 3 phase KW/Var/PF/Kwh/MW/Hz display window
② phase voltage measured value/parameter display window
③ 3 phase current measured value/parameter modified display window
④ Convert/Set/Confirm key
⑤ Shift/Clear key
⑥⑦ Up key/Down key
⑧ indication lamps
   Hz:frequency unit
   MW:3 phase A/B/C/∑ watt
   KW:3 phase A/B/C/∑ watt
   PF:Var:3 phase A/B/C/∑ watt power factor
   Var:3 phase A/B/C/∑ watt VAR
   Kwh3 phase A/B/C/∑ watt energy consumption
   Inactive power displays when Var&Kwh lamps on at the same time UA/UB/UCŁş Phase A/B/C/∑
running value
   ∑:Aummation of the phase
   AI1/AL2/AL3:Alarm1/@/3
   On:output Off:No alarm

Notes:
The instrument can measure both simple phase and 3 phase.Factory setting is 600V,5A AC,P/T rate
free set by software.Measure AC voltage more than 600V,please use the instrument with C/T.Mea-
sure AC current more than 5A,please use the instrument with P/T.Three phase different voltage/cur-
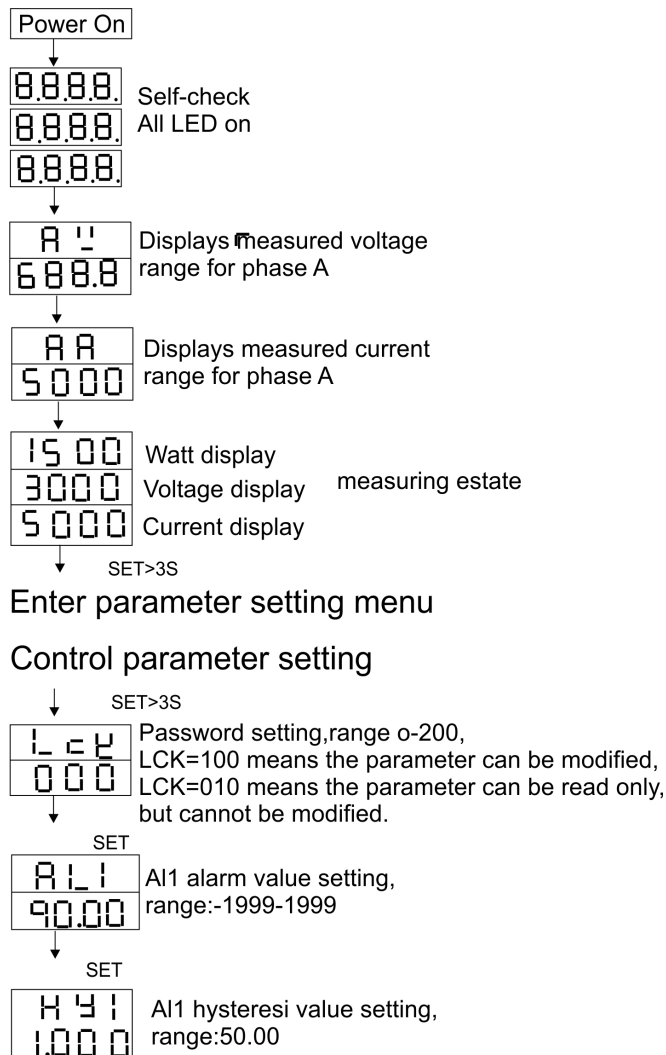rent input need.

Parameter setting

1.In the measuring estate,press and hold SET key for more than 3 seconds,enter control parameter setting menu.Press<</RST key,LED flashes,press ⋩/⋎ key to modify,and then press SET key to confirm.Press SET key to read the following parameters one by one.

2.The instrument will return to the measuring eatate without any operation for 25 seconds.

3.Convert display(Frequency input is displayed in A phase only and voltage>80V.

A.Window A is mainly used to display KW/VAR/PF/Kwh of one of phase A/B/C/UC will show the present selected phase or summation.Press SET key can convert displaying KW/VAR/PF/Kwh.

B.Window B is mainly used to display voltage of phaseA/B/C,indicated by UA/UB/Uc lamps.

C.Window B is mainly used to display current of phaseA/B/C,indicated by UA/UB/Uc lamps.

4.Kwh value clear.

PressSET key,and let the indication lamp Kwh is on,press «/CLR key to select the phase that you want to clear UA/UB/UC,then press «/CLR key for two seconds till the window A display "0"or "0.000"

5.Power fail protection.Only for phase total Kwh value.

6.Window A power on display value setting:SEt by thr parameter "DIS"

Operation process

Power On

8.8.8.8.   Self-check
8.8.8.8.   All LED on
8.8.8.8.

A ˅   Displays measured voltage
688.8   range for phase A

A A   Displays measured current
5000   range for phase A

15 00   Watt display
3000   Voltage display   measuring estate
5000   Current display

SET>3S

Enter parameter setting menu

Control parameter setting

SET>3S

L c k
000   Password setting,range o-200,
LCK=100 means the parameter can be modified,
LCK=010 means the parameter can be read only,
but cannot be modified.

SET

A1_1
90.00   AI1 alarm value setting,
range:-1999-1999

SET

H Y 1
1.00 0   AI1 hysteresi value setting,
range:50.00

SET

`A n I`
`9 L L`

Al1 alarm value mode:There are, qwH,qwL,PFH,PFL,KwH,KwL,VAH, VAL,AAH,AAL,VBH,VBL,ABH,ABL,VCH, VCL,ACH,ACL
stands for the high or low limit of Var,power factor,watt,phase A voltage,phase A current, phase B voltage ,phase B current,phase C voltage,phase C current.

SET

`A L 2`
`2 0 0.0`

Al2 alarm value setting, range:-1999-1999

SET

`H Y 2`
`1.0 0 0`

Al2 hysteresis value setting, range:50.00

SET

`A n 2`
`9 L H`

Al2 alarm mode:same as AM1

SET

`A L 3`
`6 0 0.0`

Al3 alarm value setting, range:-1999-1999

SET

`H Y 3`
`1.0 0 0`

Al3 hysteresis value setting, range:50.00

SET

`A n 3`
`L L H`

Al3 alarm mode:same as AM1

SET

`b 5 L`
`L H`

QW,PF,KW,VA,AA,VB,VA,VC,AC stands for Var,power factor,watt,phase A voltage,phase A current,phase B voltage,phase B current, phase C voltage,phase C current

SET

`t r L`
`0 0 0.0`

Analog low limit setting value 4mA

SET

`t r L`
`6 0 0.0`

Analog high limit setting value 20mA

SET

`P t A`
`1.0 0 0`

Phase B P/T rate setting.(the same value for 3 phase)

SET

`C t A`
`1.0 0 0`

Phase AC/T rate setting.(for simple phase 3 phase)

SET

`t o`
`0`

Phase B P/T rate setting.(the same value for 3 phase)

SET

`P 5 u`
`0.0 0 0`

Phase A Voltage shift value.Display value=Measured value+PSV shift value.(for simple phase)

SET

`C t b`
`1.0 0 0`

Phase B C/T rate setting.(for 3 phase only)

SET

`C t c`
`1.0 0 0`

Phase C C/T rate setting.(for 3 phase only)

SET

`A d P`
`0.0 0 0`

Decimal point setting for 3 phase current.
0:0000,1:0000,2:00.00,3:000.0

SET

`d i 5`
`0`

Window A display selection:
0:KW 1:PF 2:Var 3:Kwh

SET

`b A d`
`0`

Bit rate setting.the factory setting is 9.6k bit/s, if need other value,please mention when order

SET

`A d d`
`0 0 0`

Communication address setting
range0-255

SET

`n o d`
`3`

Single phase/3 phase terminal connection selection:
0:Single phase   1:3 phase 2 wire
2:3phase 3 wire   2:3 phase 4 wire

Return to LCK menu

The parameters showed are factory setting

Warning

Please do not turn the power supply until all of the wiring is completed.Otherwise electrical shock,fire or malfunction may result.
Do not wire when the power is on.
Do not connect the unused terminals
Do not turn on the power supply when cleaning this instrument.
Do not disassemble,repair or modify the instrument.This may cause electrical shock,fire or malfunction.
Use this instrument in the scope of its specifications.
Otherwise fire or malmalfunction may result.
The use life of the output relay is quite different according to ia capacity and conditions.If use out of its scope,fire or malfunction may result.

Caution

This instrument should be installed in a domestic environment.Otherwise electrical shock,fire or malfunction may result.The operating temperature environment should between 0(32F)to50(122F).
To avoid using this instrument in environment full of dust or caustic gas.
To avoid using this instrument in environment of strong shock or concussion.
To avoid using this instrument in environment of overflow water or explosive oil.
In case the nstrument is used in environment of nuclear control,iatrical equipment,auto,train,airplane or security equipment that need protections,please contact the manufacturer for details.
When it's for 8 digitals coloumeter,it displays in 2 windows 4 digitats each.B window displays the high 4 digits,and C the low 4 digits.Unit:WH/KWH available for user's choice

Power Meter Modbus User Instructions

1,The instrument RS485 communication BPS is fixed at 9600 bits/s,start bit=1,data bit =8,stop bit=1,starting and ending time>5ms.

2,The format of the data reading and writing is same as standard Modbus protocol.Definition as follows:

Request:(eg:send order to read AI current,01 03 00 B9 00 02 15 EE)

01	03	0185(00B9H)	0002	(15EE)
ADD	COM	PV1	Counts	CRC

Response:(eg:01 03 04 6D 96 49 F3 71 66)

01	03	04	6D96 49F3	7166
ADD	COM	Counts	PV1	CRC

Return Power:2 WORD

PV1=6D96 49F3=6D96.49F3H=INT 6D96H+POINT 49F#H=28054+18931/65536=28054.2888(49F3H=18931 6D96H=28054)

When Max bits is 1,means negative,viz.sign bit.

Ed96 bit 15=1 is negative,viz.-6D96H

3,Whensetting parameters,can read multi-parameters:when writing,can write 1 parameter only every time

4,Commands:

02H:read digital value/discrete I/O parameters

03H:read holding registers parameters

06H:write single holding register parameter value

10H:write multi holding registers parameters value

DW9 meter reading and writing parameter

Parameters address	Oaraneter type	COUNT numbers	Function	Remark
B4H(0180)	∑PF	2	3phase power factor	Read only
B7H(0183)	∑KW	2	3phase power	Read only
BAH(0186)	∑Q	2	3phase reactive power meter	Read only
BEH(0190)	∑KWH	2	3phase degree	R/W
55H(085)	∑QWH	2	3phase toyal inactive power	R/W
C2H(0194)	A-V	2	A phase voltage	Read only
C5H(0197)	A-I	2	A phase current	Read only
C8H(0200)	A-PF	2	A phase Power factor	Read only
CBH(0203)	A-KW	2	A phase power	Read only
CEH(0206)	A-VAR	2	A phase power rective power	Read only
D2H(0210)	A-KWH	2	A phase degree	Read only
D6H(0214)	B-V	2	B phase voltage	Read only
D9H(0217)	B-I	2	B phase current	Read only
DCH(0220)	B-PF	2	B phase power factor	Read only

DFH(0223)	B-KW	2	B phase power	Read only
E2H(0226)	B-VAR	2	B phase rective power	Read only
E6H(0230)	B-KWH	2	B phase degree	Read only
EAH(0234)	C-V	2	C phase voltage	Read only
EDH(0237)	C-I	2	C phase current	Read only
F0H(0240)	C-PF	2	C phase power factor	Read only
F3H(0243)	C-KW	2	C phase power	Read only
F6H(0246)	C-VAR	2	C phase rective power	Read only
FAH(0250)	C-KWH	2	C phase degree	Read only
03H(0003)	Add	1	Communication address	R/W
04H(0004)	AL1	2	AL1 alarm value	R/W
08H(0008)	HY1	2	deviation alarm setting	R/W
0BH(0011)	AM1	1	Alarm mode	R/W
0CH(0012)	AL2	2	Alarm 2 value	R/W
10H(0016)	HY2	2	AL2 deviation alarm setting	R/W
13H(0019)	AM2	1	AL2 Alarm mode	R/W
14H(0020)	AL3	2	Alarm 3 value AL3	R/W
18H(0024)	HY3	2	AL3 deviation alarm setting	R/W
1BH(0027)	AM3	1	AL3 Alarm mode	R/W
1CH(0028)	BSL	2	Current output parameter setting	R/W
20H(0032)	BRL	2	Current output low limit setting	R/W
24H(0036)	BRH	2	Current output high limit setting	R/W
28H(0040)	PTA	2	3 phase voltage PT ratio setting	R/W
2CH(0044)	CTA	2	A phase current CT ratio setting	R/W
38H(0056)	CTB	2	B phase current CT ratio setting	R/W
3CH(0060)	CTC	2	C phase current CT ratio setting	R/W
3FH(0063)	ADP	1	Decimal point of current display setting	R/W
40H(0064)	DIS	1	Parameter display setting when power on	R/W
43H(0067)	LIN	1	3 phase wire-connection type setting	R/W