

CPM-12D

Multifunction Power Meter (DIN Rail)

Manual



CPM-12D Manual

Description

CPM-12D din rail mounting power meter with high accuracy measurement for single phase and three-phase system.

Measuring all basic parameters ; V, I, P, Q, kWh, kVarh etc..

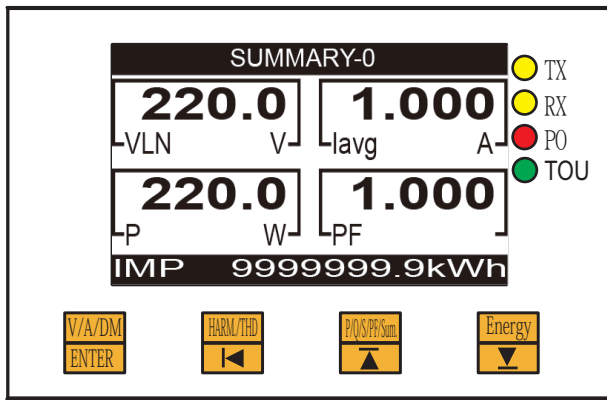
Standard with RS485 Modbus RTU communication port, front LCD display with buttons for programming.

Auto wiring change (Note) via software

CE and FCC approved

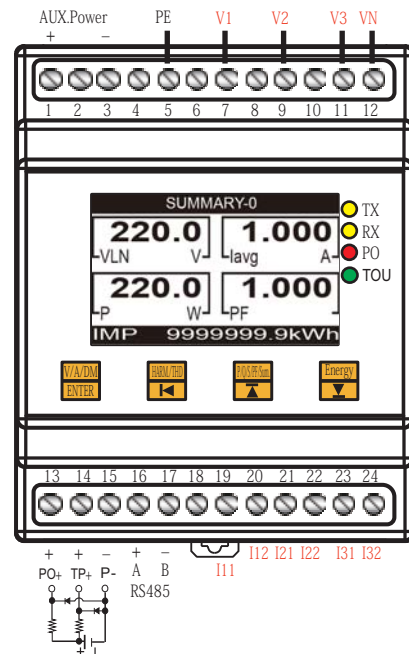
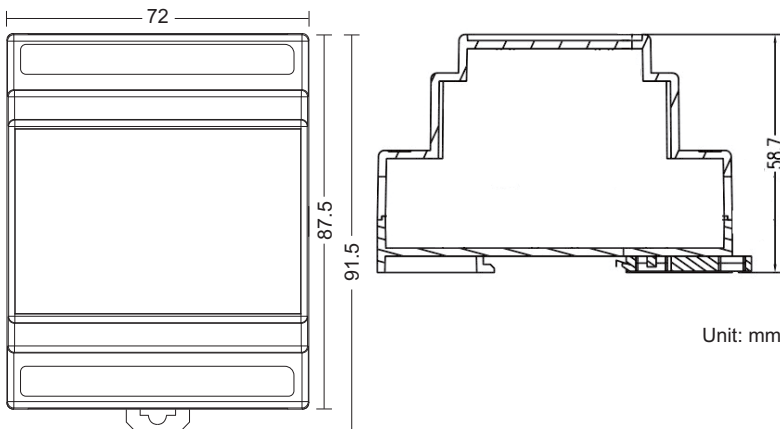
Note: Auto wiring change have certain condition limit, please refer to operation manual for further details.

Panel Description

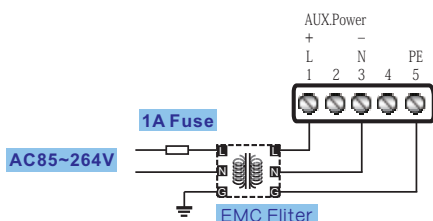


- Enter / Quickly index: Voltage / Current
- Shift / Quickly index: THD
- Up / Quickly index: Power parameters
- Down / Quickly index: Energy parameters

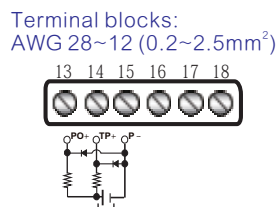
Dimensions & Installation



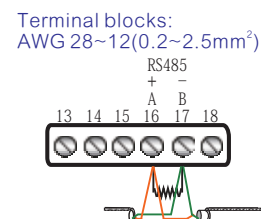
AUX Power



Pulse Output

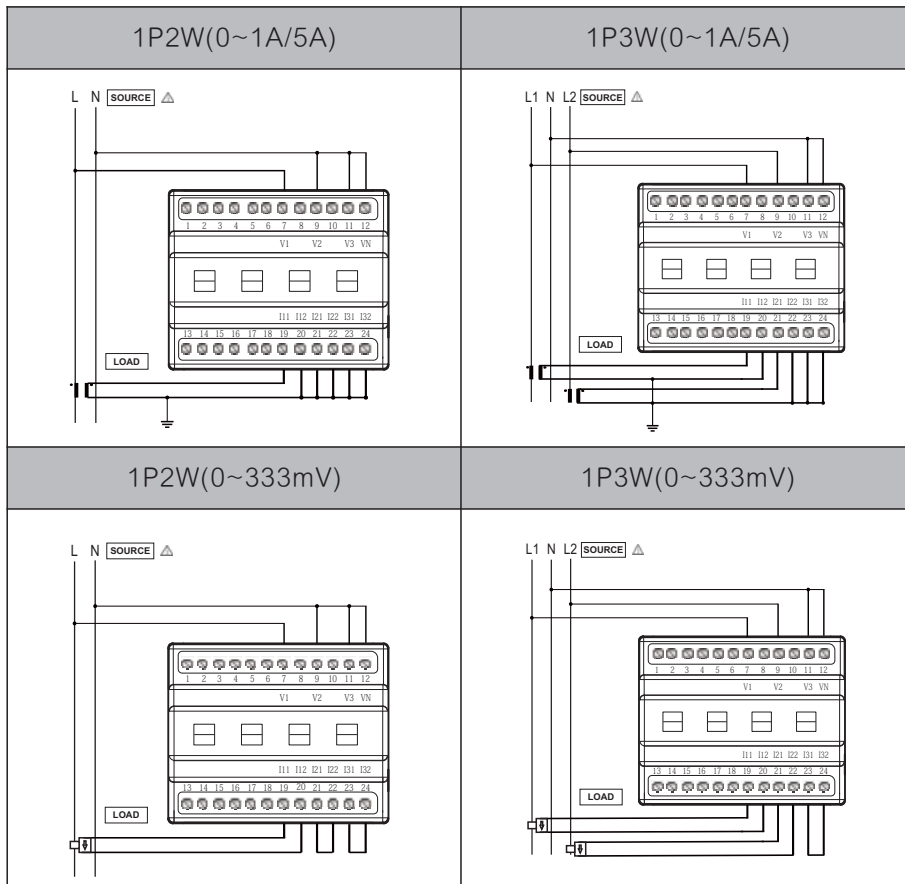


RS485 Communication port

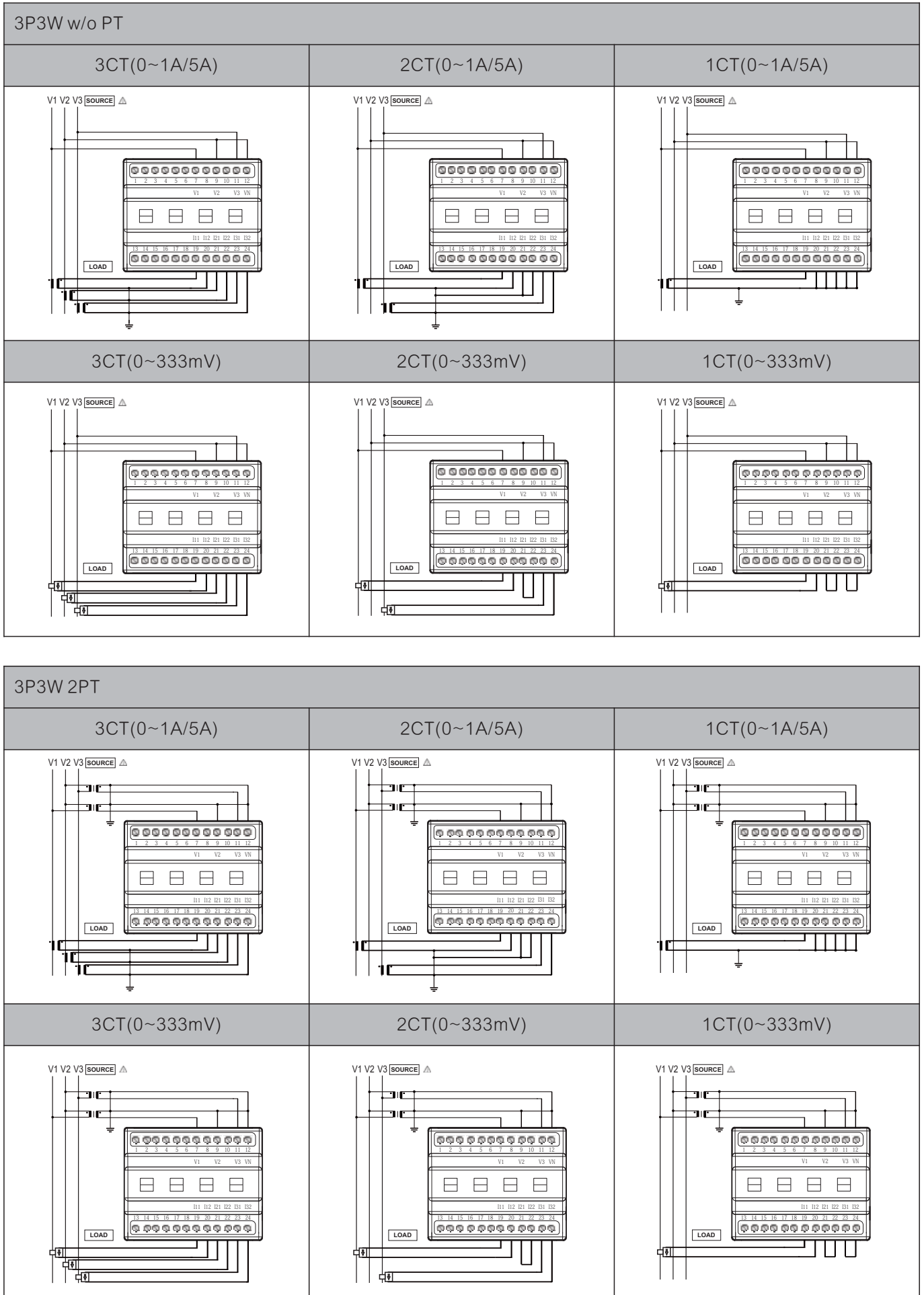


Distance Max. : 1200M
Terminator: 120~300Ω / 0.25W
(Standard: 150Ω)

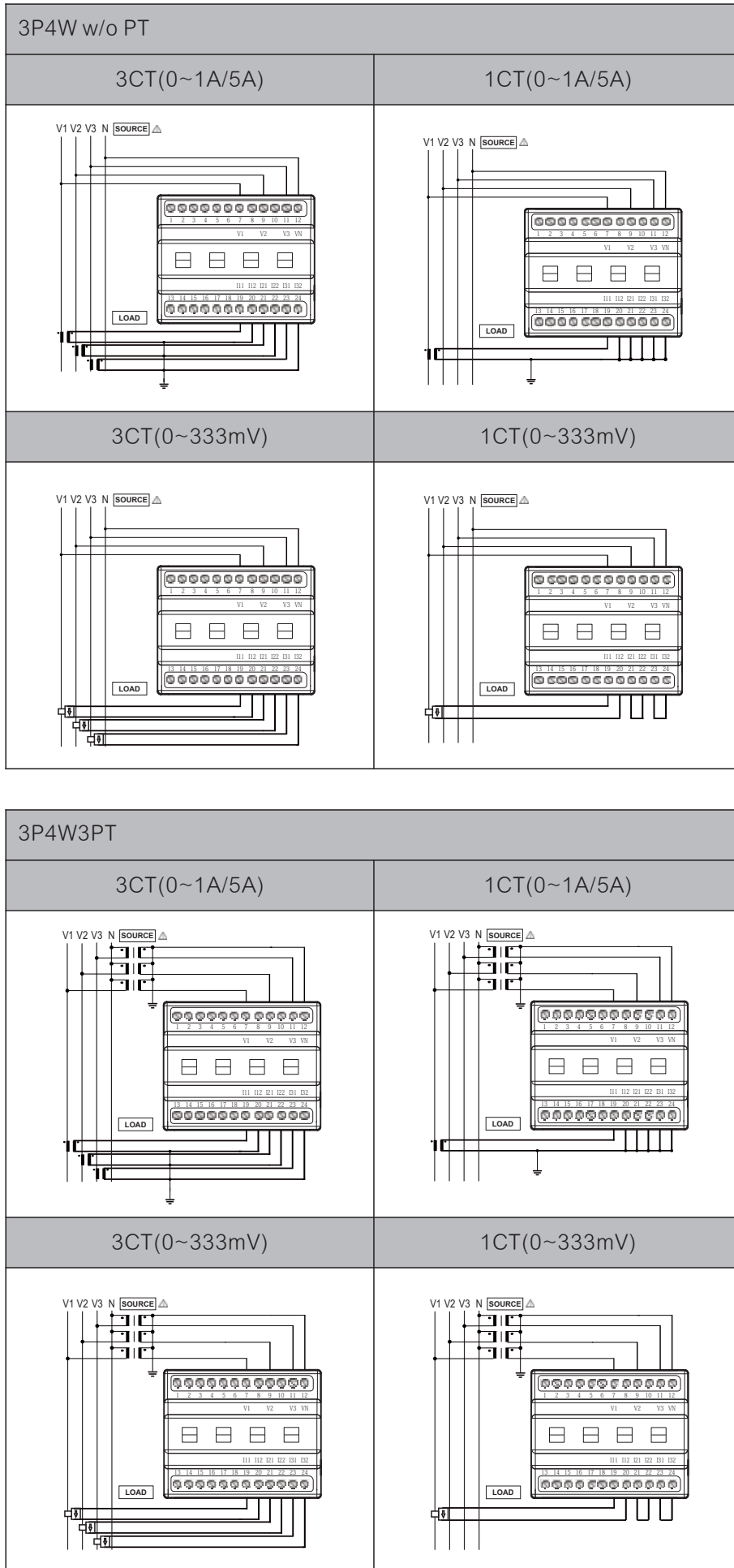
Voltage and current connection (CT secondary side distinguishes 1A/5A and 333mV)



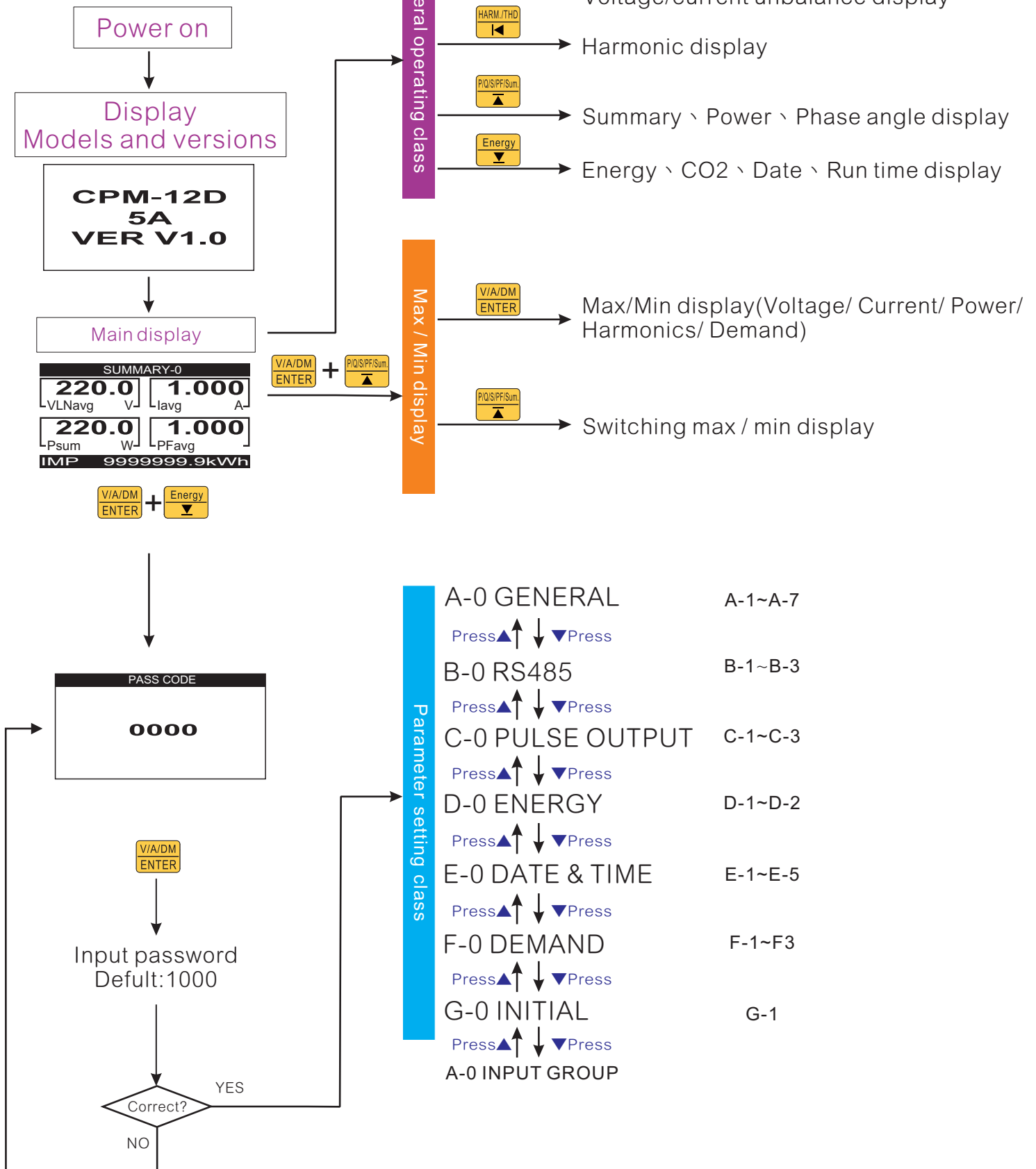
Voltage and current connection



Voltage and current connection

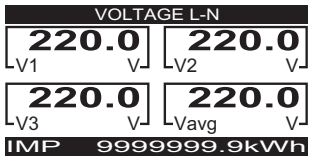


Operational flow chart:

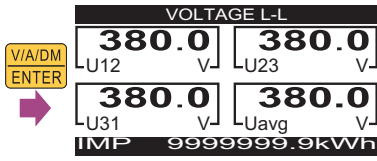


Voltage/Current/Demand display

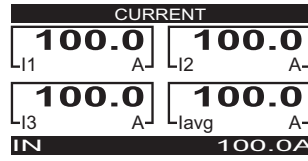
Press **V/A/DM**
ENTER



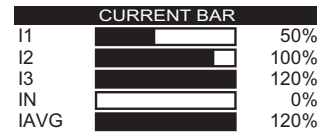
Each phase voltage



Each line voltage



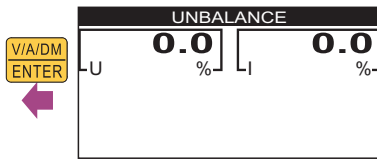
Current & Neutral current



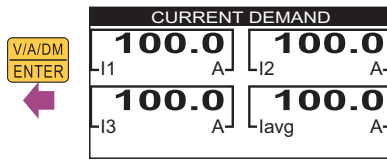
Current load bar graph

V/A/DM
ENTER

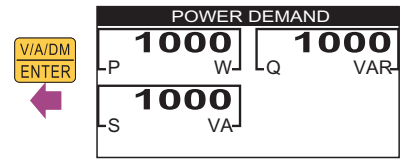
Back to each phase voltage



Voltage/
Current unbalance



Current demand

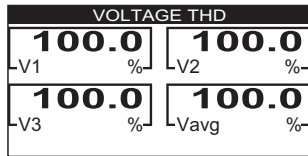


Power demand

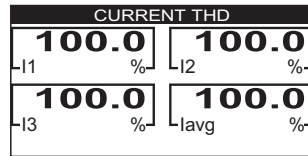
Total harmonic display

Press **HARM./THD**

System type:
1P2W/1P3W/
3P4W1CT/
3P4W3CT

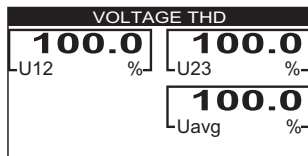


Each phase voltage harmonic & Average phase voltage harmonic

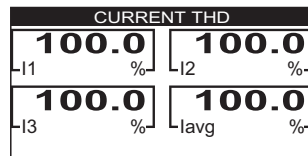


Current harmonic & Average current harmonic

System type:
3P3W1CT/
3P3W2CT/
3P3W3CT/



Each line voltage harmonic & Average line voltage harmonic



Current harmonic & Average current harmonic

Summary、Power、Phase angle display

Press 

SUMMARY-1			
220.0	1.000		
V _{LNavg}	V	I _{avg}	A
220	1.000		
P _{sum}	W	PF _{avg}	
IMP	9999999.9kWh		

SUMMARY-2			
220.0	1.000		
V _{LNavg}	V	I _{avg}	A
220	1.000		
P _{sum}	W	PF _{avg}	
IMP	9999999.9kWh		

SUMMARY-3			
100	100		
P _{sum}	W	Q _{sum}	VAR
100	1.000		
S _{sum}	VA	PF _{avg}	
IMP	9999999.9kWh		

SUMMARY-4			
100	100		
P _{sum}	W	Q _{sum}	VAR
100	60.00		
S _{sum}	VA	F _{reg}	Hz
IMP	9999999.9kWh		

Summary-1
Phase voltage/
Current/ Active
power/ PF/
IMP active energy

Summary-2
Line voltage/
Current/
Active power/ PF/
IMP active energy

Summary-3
Active power/
Reactive power/
Total apparent
power/ PF

Summary-4
Active power/
Reactive power/
Total apparent power/
Frequency



POWER FACTOR			
1.000	1.000		
PF1	PF2		
1.000	1.000		
PF3	PF _{avg}		

APPARENT POWER			
100	100		
S1	VA	S2	VA
100	300		
S3	S _{sum}		
IMP	9999999.9kVAh		

REACTIVE POWER			
100	100		
Q1	VAR	Q2	VAR
100	300		
Q3	Q _{sum}		
IMP	9999999.9kVARh		

ACTIVE POWER			
100	100		
P1	W	P2	W
100	300		
P3	P _{sum}		
IMP	9999999.9kWh		

Each phase power
factor/
Average power factor

Each phase
apparent power/
Apparent energy

Each phase reactive
power/
IMP reactive energy

Each phase active
power/
IMP active energy



L-N VOLTAGE ANGLE			
0.0	120.0		
V1-V1	V2-V1		
240.0			
V3-V1			

L-L VOLTAGE ANGLE			
0.0	120.0		
V12-V12	V23-V12		
240.0			
V31-V12			

CURRENT ANGLE			
360.0	360.0		
I1-V1	I2-V1		
360.0			
I3-V1			

 Back to Summary-0

Phase voltage angle
V1-V1
V2-V1
V3-V1

Line voltage angle
V12-V12
V23-V12
V31-V12

Current phase angle
I1-V1(V12)
I2-V1(V12)
I3-V1(V12)

Energy and Time display

Press 

ACTIVE ENERGY	
IMP	9999999.9 kWh
EXP	9999999.9 kWh
TOT	9999999.9 kWh
NET	9999999.9 kWh

REACTIVE ENERGY	
IMP	9999999.9 kVARh
EXP	9999999.9 kVARh
TOT	9999999.9 kVARh
NET	9999999.9 kVARh

APPARENT ENERGY	
TOT	9999999.9 kVAh

CO2 EMISSION	
	999.999 kg

IMP/ EXP/ Total active /
Net active energy

IMP/ EXP/ Total
reactive /
Net reactive energy

Total apparent
energy

CO₂



Back to active energy

HOUR METERS	
999999:59	hh:mm
-OPE	
999999:59	hh:mm
-RUN	

DATE & TIME	
2017/01/01	YY/MM/DD
-DATE	
23:59:59	hh:mm:ss
-TIME	

Operation time/
Running time(Time
start at current of
secondary side >1%)

Date and Time

Max/Min display

Press **V/A/DM** **ENTER** + **PI/Q/S/PF/Sum** **▲**

MAX VOLTAGE L-N			
220.0	220.0	220.0	220.0
-V1	V-	-V2	V-
220.0	V-	220.0	V-
-V3	V-	Vavg	V-

Max phase voltage

MAX VOLTAGE L-L			
380.0	380.0	380.0	380.0
-U12	V-	-U23	V-
380.0	V-	380.0	V-
-U31	V-	Uavg	V-
IMP 9999999.9kWh			

Max line voltage

MAX CURRENT			
100.0	100.0	100.0	100.0
-I1	A-	-I2	A-
100.0	A-	100.0	A-
-I3	A-	Iavg	A-

Max current

MAX POWER			
100	100	100	100
-P	W-	-Q	VAR-
100	W-	300.0	VAR-
-S	VA-	PFavg	

Max power



MIN VOLTAGE L-N			
200.0	200.0	200.0	200.0
-V1	V-	-V2	V-
200.0	V-	200.0	V-
-V3	V-	Vavg	V-

Min phase voltage



MAX FREQUENCY	
60.0	Hz
-Freq	Hz

Max frequency



MAX CURRENT DEMAND			
100.0	100.0	100.0	100.0
-I1	A-	-I2	A-
100.0	A-	100.0	A-
-I3	A-	Iavg	A-

Max current demand

MAX POWER DEMAND			
1000	1000	1000	1000
-P	W-	-Q	VAR-
1000	W-	1000	VAR-
-S	VA-		

Max power demand

MAX THD OF CURRENT			
100.0	100.0	100.0	100.0
-I1	%-	-I2	%-
100.0	%-	100.0	%-
-I3	%-	Iavg	%-

Max THD of current

MAX THD OF VOLTAGE			
100.0	100.0	100.0	100.0
-V1	%-	-V2	%-
100.0	%-	100.0	%-
-V3	%-	Vavg	%-

Max THD of voltage



Back to
Max phase
voltage



MIN POWER DEMAND			
10	10	10	10
-P	W-	-Q	VAR-
10	W-	10	VAR-
-S	VA-		

Min power demand

System information inquiry

Press  + 

SYSTEM INFO
BASIC PARAMETER
RS485 PARAMETER
WIRING INFO
CO2 EMISSION
DEVICE INFO
TOU DATA

 ENTER



(Press 2 sec)

BASIC PARAMETER
SYSTEM: 3P4W3CT
PT/PRI: 500V
PT/SEC: 500V
CT/PRI: 5A
CT/SEC: 5A
ENERGY: 0.1 kWh

Basic parameter



SYSTEM INFO
RS485 PARAMETER
WIRING INFO
CO2 EMISSION
DEVICE INFO
TOU DATA
EVENT LOG

System information

RS485 PARAMETER
ADDRESS: 001
BAUDRATE: 115200
PARITY: N.8.1

RS485 parameter

WIRING INFO
V1 11
V2 12
V3 13

Wiring information

CO2 EMISSION
RATIO: 0.638kg
WEIGHT: 999.999kg

CO₂ emission

DEVICE INFO
MODEL: CPM-12D
VERSION: V1.2
OUTPUT:RS485+PO

Device information

TOU INFO	
LAST MONTH	
THIS MONTH	

Month selection

※THIS MONTH and LAST MONTH display in the same way



(Press 2 sec)

TOU LAST MONTH	
SHARP LOAD	
PEAK LOAD	
VALLEY LOAD	
NORMAL LOAD	
SUMMARY	
2017/01/01~	
2017/01/31	

Item selection

※PEAK、VALLEY、NORMAL、SUMMARY display content is the same as SHARP



(Press 2 sec)

TOU INFO-SHARP	
IMP	99999999.9 kWh
EXP	99999999.9 kWh
ACTIVE ENERGY	

Active energy



TOU INFO-SHARP	
IMP	99999999.9 kVARh
EXP	99999999.9 kVARh
REACTIVE ENERGY	

Reactive energy



TOU INFO-SHARP	
TOT	99999999.9 kVAh
APPARENT ENERGY	

Apparent energy



TOU INFO-SHARP			
P	W	Q	VAR
1000		1000	
S	VA		
1000			
MAX POWER DEMAND			

Max power demand



TOU INFO-SHARP			
I1	A	I2	A
100.0		100.0	
I3	A	Iavg	A
100.0		100.0	
MAX CURRENT DEMAND			

Max current demand



Back to active energy

EVENT LOG	
17/07/17 12:30:59	
17/07/16 15:45:51	
17/07/14 10:36:29	
17/07/10 22:27:38	
17/07/08 02:14:42	
17/07/05 23:08:00	





Sorting by time
EVENT LOG has 16 records



EVENT LOG NO. 10	
CHANNEL:0	
OBJECT:Frequency	
STATUS:ALERT	
VALUE:0.00Hz	
DATA:2018/01/01	
TIME:00:00:00	
17/07/17 12:30:59	

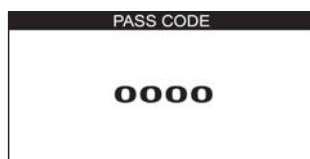
EVENT LOG NO. number
According to the location number stored in the 485 table

Key Description

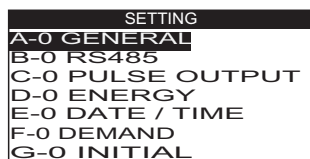
-  Move/Increase
-  Down/Decrease
-  Into setting or confirm setting and back to previous menu
-  Press 2 Sec back to previous menu or main display

Parameters setting

Press  + 

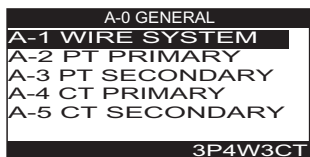


Pass word: 1000

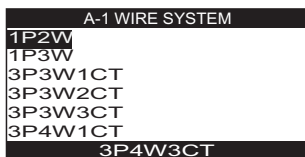
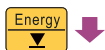


Setting item

A-0 General Setting



Setting item



A-1 Wire system setting
1P2W/1P3W/3P3W1CT/
3P3W2CT/3P3W3CT/3P4W1CT/
3P4W3CT



Move/Increase



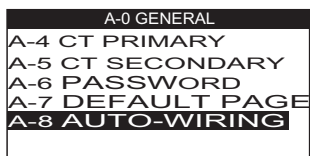
Down/Decrease



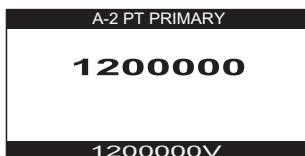
Into setting or confirm setting and back to previous menu



Press 2 Sec back to previous menu



Setting item



A-2 PT Primary side
voltage setting
100~120000V



Move/Increase



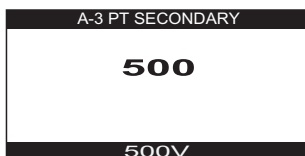
Down/Decrease



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



A-3 PT Secondary side
voltage setting
50~500V



Move/Increase



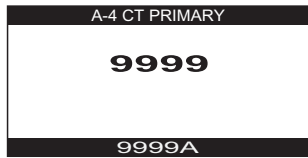
Down/Decrease



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



A-4 Current setting of CT primary side
1~9999A



Increase



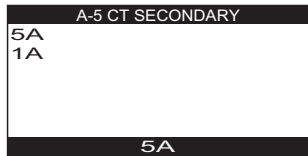
Decrease



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



A-5 Current setting of CT second side
5A/1A
※This display is not available at 333mV



Move



Down



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



A-6 Password modify
0000~9999



Increase



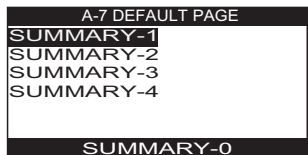
Decrease



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



A-7 Main display select
SUMMARY1~4



Move



Down



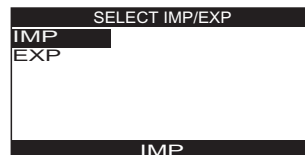
Confirm setting and back to previous menu



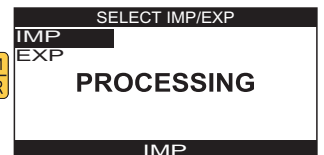
Press 2 Sec back to previous menu



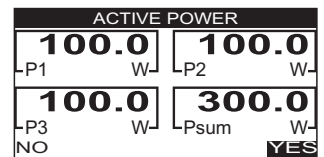
A-8 Wire change progress



Select system input is IMP/EXP



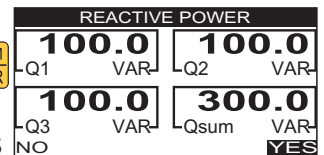
Wire change processing



Confirm active power values:
YES/NO



YES



Confirm reactive power values:
YES/NO



Wiring change failure
Press Enter to QUIT



Wiring change complete:
default / SAVE / QUIT



NO



YES

Auto wiring change condition limit:
3P4W-3CT: VN must be correct and $\theta < \pm 59^\circ$
3P4W-1CT: $\theta < \pm 59^\circ$
3P3W-2CT: V2 must be correct and $\theta < \pm 59^\circ$
3P3W-3CT: V2 must be correct and $\theta < \pm 59^\circ$
1P3W: VN must be correct and $\theta < \pm 59^\circ$
1P2W: $\theta < \pm 59^\circ$
3P3W-1CT: N/A

B-0 RS485 Setting



Setting item



B-1 Device address setting
1~247



Increase



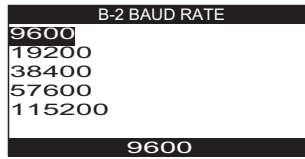
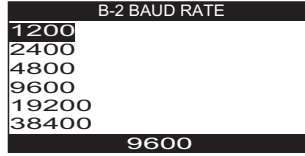
Decrease



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



B-2 Baud rate setting
1200/2400/4800/9600/19200/
38400/57600/115200 bps



Increase



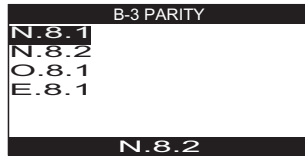
Decrease



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



B-3 Parity check setting
N.8.1/N.8.2/O.8.1/E.8.1



Move



Down

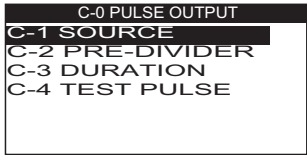


Confirm setting and back to previous menu

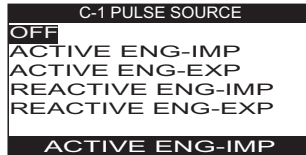


Press 2 Sec back to previous menu

C-0 Pulse Output Setting



Setting item



C-1 Parameters setting of pulse output
OFF/AE.IMP/AE.EXP/RE.IMP/RE.EXP



Move



Down



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



C-2 Divider of pulse output
1~9999次



Increase



Decrease



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



C-3 Pulse width setting:
0~5000(mS)



Increase



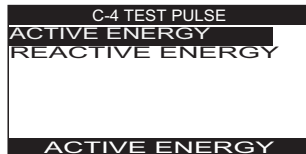
Decrease



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



C-4 Test pulse setting
Active energy/Reactive energy



Move



Down

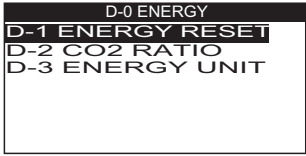


Confirm setting and back to previous menu

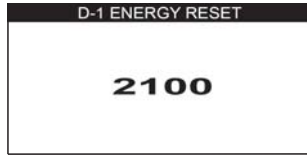


Press 2 Sec back to previous menu

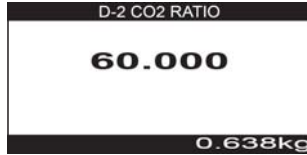
D-0 Energy Setting



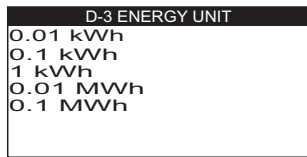
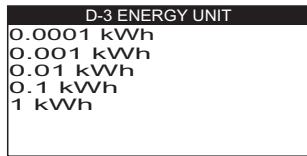
Setting item



D-1 Reset energy
2100



D-2 Total CO₂ weight of
energy
00.000~60.000kg



D-3 Energy unit setting



Increase



Decrease



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



Increase



Decrease



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



Move



Down

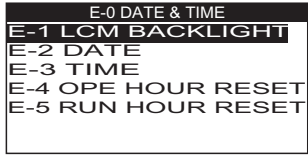


Confirm setting and back to previous menu



Press 2 Sec back to previous menu

E-0 Date & Time Setting



Setting item



E-1 LCM backlight delay time setting
0~15Min
0 is always ON



Increase



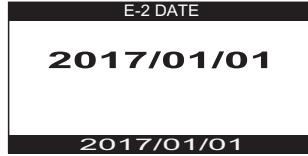
Decrease



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



E-2 Date setting



Increase



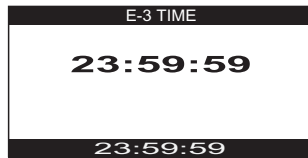
Decrease



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



E-3 Time setting



Increase



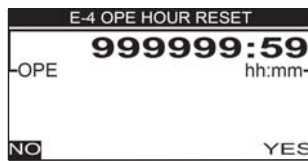
Decrease



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



E-4 Reset operation time
NO/YES



Move



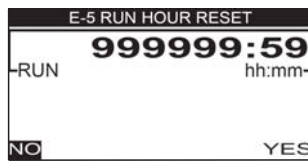
Down



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



E-5 Reset running time
NO/YES



Move



Down



Confirm setting and back to previous menu



Press 2 Sec back to previous menu

F-0 Demand Setting



Setting item



F-1 Calculation method:
SLIDE/FIX



Move



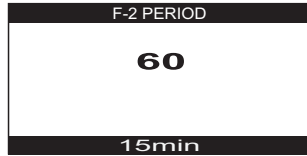
Down



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



F-2 Demand interval time
setting:
1~60Min



Increase



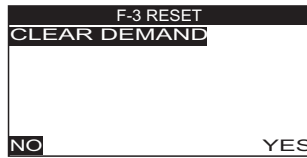
Decrease



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



F-3 Reset demand:
DEMAND



Move



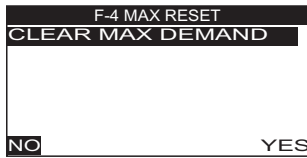
Down



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



F-4 Reset Maximum
demand:
MAX DEMAND



Move



Down



Confirm setting and back to previous menu

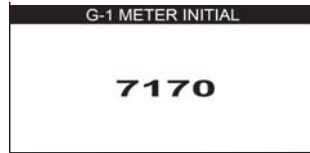


Press 2 Sec back to previous menu

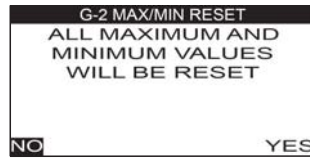
G-0 Initial



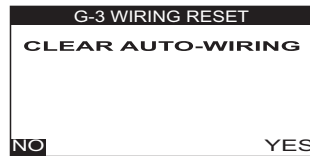
Setting item



G-1 Meter initial
After inputting 7170, it will reboot and return to default value, but the adjusted value will be retained.



G-2 Reset MAX/MIN value



G-3 Clear auto-wiring



Increase



Decrease



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



Move



Down



Confirm setting and back to previous menu



Press 2 Sec back to previous menu



Move



Down



Confirm setting and back to previous menu



Press 2 Sec back to previous menu