Felicitysolar®

Make life full of hope
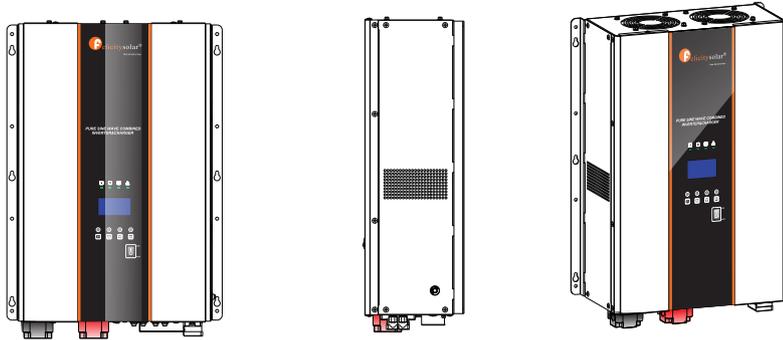
USER GUIDE
Solar inverter

Solar inverter

Felicitysolar®

Make life full of hope

**PURE SINE WAVE COMBINED INVERTER&CHARGER**

Contents

Advantages

- Bypass charging function: when the unit off, it can be activated with bypass output and can charge the battery.
- High charging current,the max charging current can be 200A for IVPS10048P2G1 and 180A for IVPS7548P2G1,170A for IVPS5048P1G1-LV,120A for IVPS3524P1G1-LV.
- Wide range of AC input voltage:the range of AC input voltage can be 90-280V for IVPS7548P2G1 and IVPS10048P2G1, 80-140V for IVPS5048 LV and IVPS3524 LV. It can be better compatible with generator working.It is rare to have wide rang input voltage for the power frequency inverter.
- Electricity and battery priority is optional: customer can choose Electricity or battery priority according to their needs.
- Battery self-defined: customer can set the overcharge voltage and float voltage, and over-discharge voltage.
- 50/60HZ: compatible.
- Intelligent: Intelligent adjustment of over-discharge voltage, intelligent fine-tuning of over-discharge voltage according to the power of the load; intelligent cooling fan, intelligent adjustment of speed according to power and charging current and core temperature inside the machine.
- Safety: Safety design is upgraded overall. Comprehensive protection, such as over-charge protection/over-discharge protection/overload protection/output short-circuit protection/ over-temperature protection, etc. Among them, transformer over-temperature protection is a leading design in the industry.
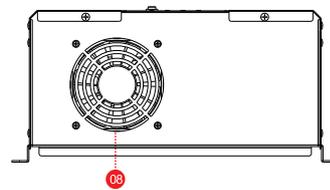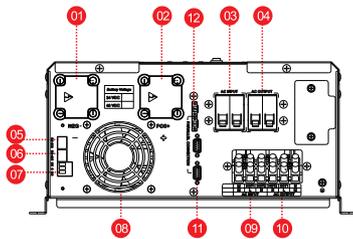
Product Overview
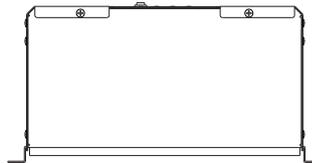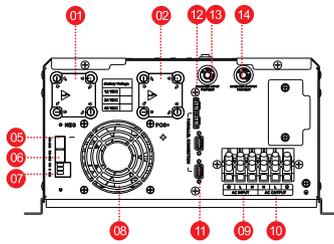
IVPS10048P2G1 TYPE

1. Battery negative terminal

2. Battery positive terminal

3. AC input breaker

4. AC Output breaker

5. RS-232

6. RS-485

7.Dry contact port

8. Fan

9.AC Input terminal

10. AC Output terminal

11. Parallel connection terminal
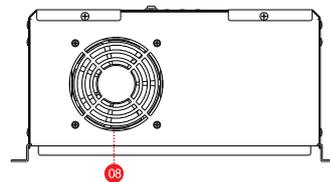
12.Current sharing terminal

13.Charge input protect

14.Inverter output protect

IVPS3524P1G1-LV TYPE

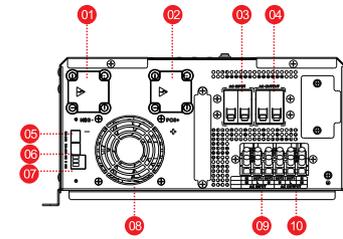**IVPS5048P1G1-LV   TYPE**

Connection diagram

Power grid

IVPS7548P2G1 TYPE

Wiring Diagram

IVPS3524P1G1-LV
AC I/O Connection
Remove cover plate

Single-Phase Wiring Mode

Input | Output
L N | N L

AC Power in

AC Power out

110/120/127Vac(L-N)

IVPS5048P1G1-LV
AC I/O Connection
Remove cover plate

Single-Phase Wiring Mode

Input | Output
L N | N L

AC Power in

AC Power out

110/120/127Vac(L-N)

IVPS7548P2G1/IVPS10048P2G1
AC I/O Connection
Remove cover plate

Split-Phase Wiring Mode

Input | Output
HOT1 HOT2 | HOT2 HOT1 N

AC Power in

AC Power out

220/240Vac(HOT1-HOT2)

Split-Phase Wiring Mode

Input | Output
HOT1 HOT2 | HOT2 HOT1 N

AC Power in

AC Power out

110/120Vac(HOT2-N)

Split-Phase Wiring Mode

Input | Output
HOT1 HOT2 | HOT2 HOT1 N

AC Power in

AC Power out

110/120Vac(HOT1-N)

Wiring System for Inverter

Split phase connection diagram for single unit. (Only valid for 7548/10048 models)

L1 L2 N PE

Load

L1 L2 PE

Utility
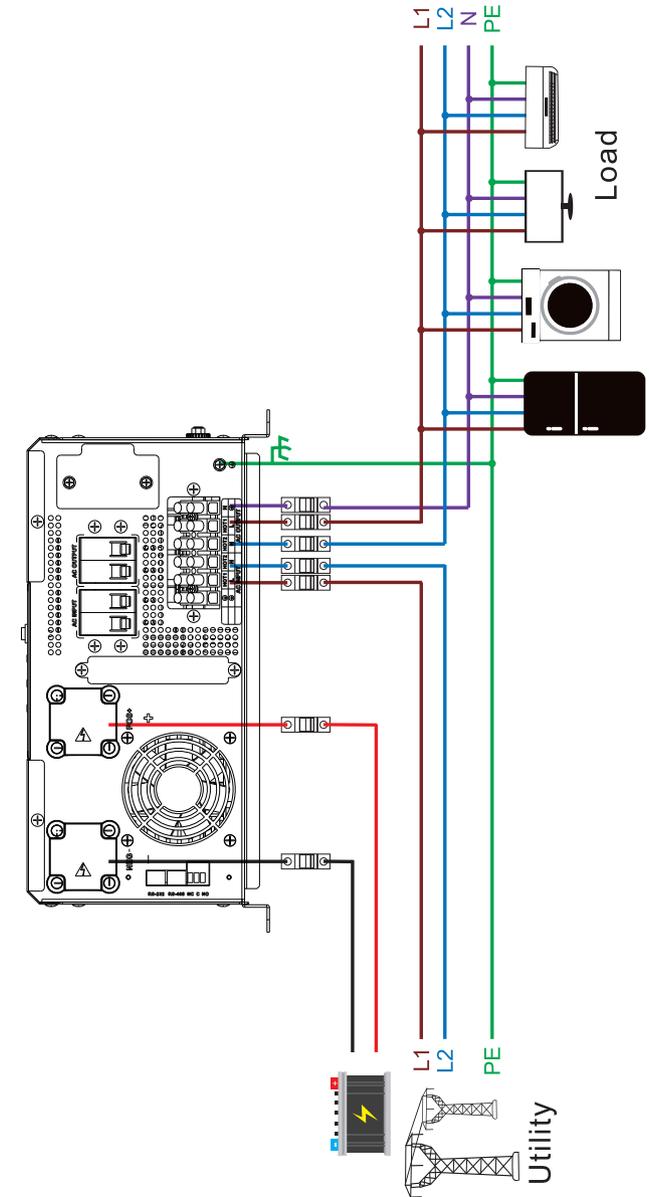
Single phase connection diagram for single unit. (Only valid for 3524/5048 models)

L
N
PE

Load

Load

PARALLEL CONNECTION

L
N
PE

Utility
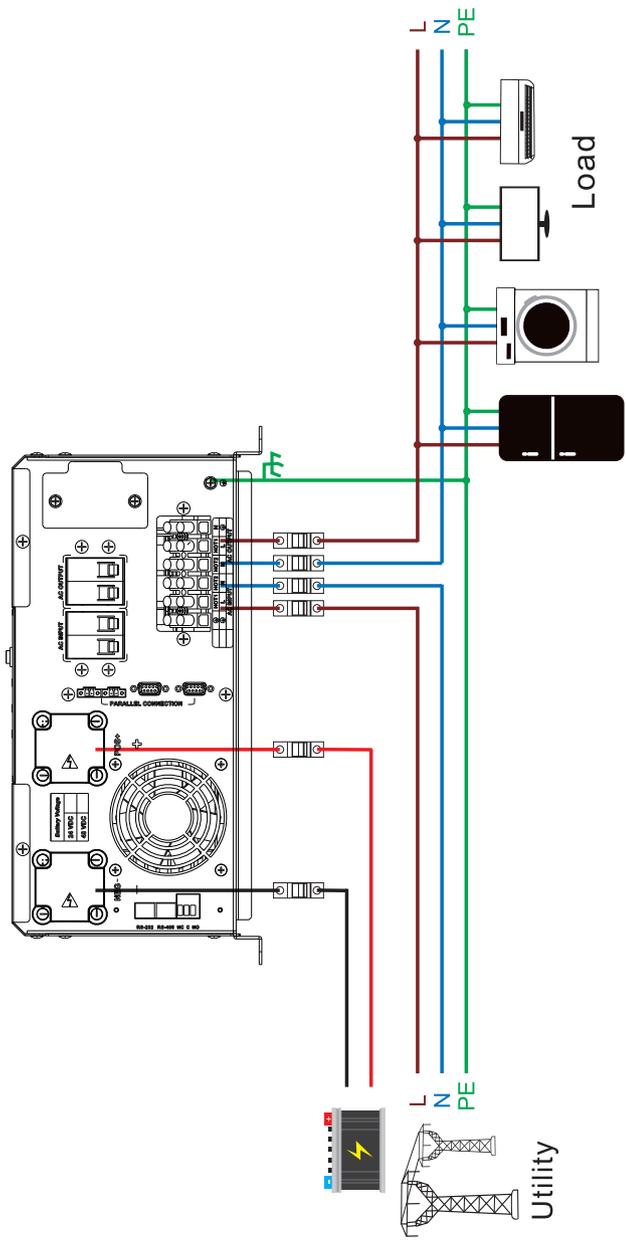
Split Phase Parallel connection diagram for two inverters in parallel. (Only valid for 3524 /5048 models)

L1
L2
N
PE

Load

PARALLEL CONNECTION

L1
L2
N
PE

Utility
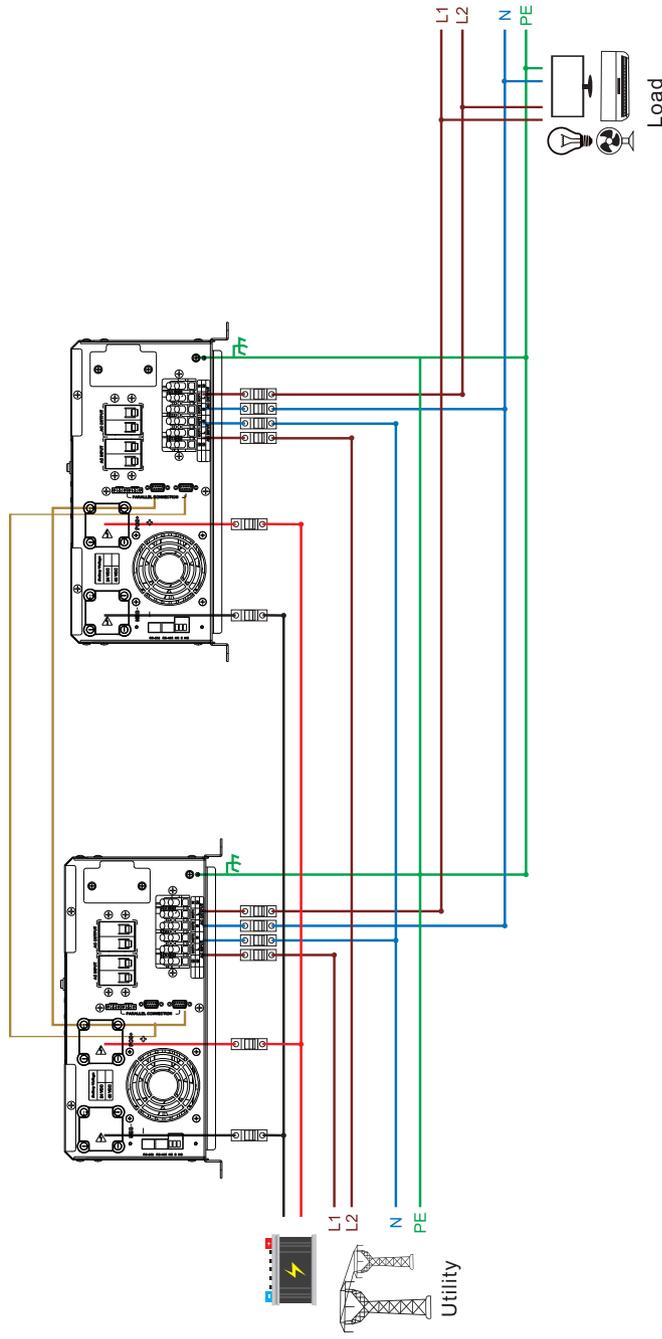
Single Phase Parallel connection diagram for three inverters in parallel (Only valid for 5048 model)
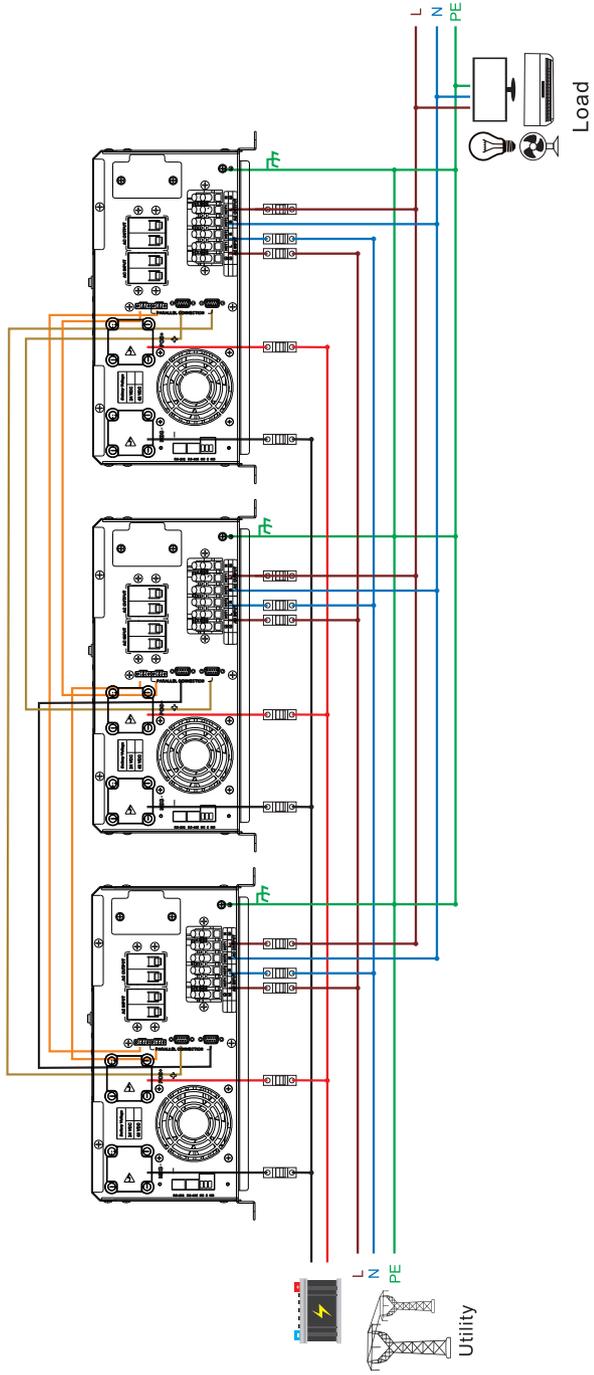
Three Phase Parallel connection diagram for three inverters in parallel. (Only valid for 5048 models)

Parallel LCD Setting
Setting items

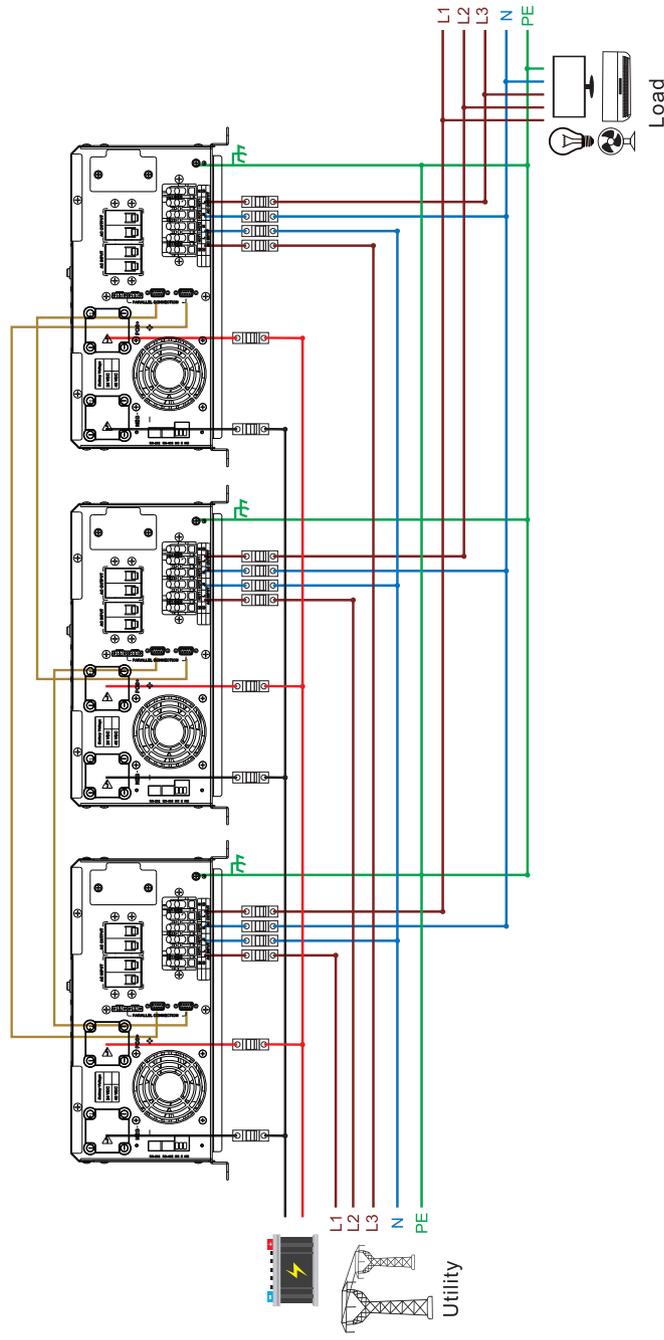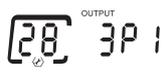| Program	Description	Selectable option	
28	**AC output mode** ***This setting is only available when the inverter is in standby mode (Switch off).**	OUTPUT 28 SIG	When the units are used in parallel with single phase, please select "PAL" in program 28.
		OUTPUT 28 PAL	It is required to have at least three inverters or maximum nine inverters to support three-phase equipment. It's required to have at least one inverter in each phase or it's up to seven inverters in one phase.
		OUTPUT 28 3P1	Please select "3P1" in program 28 for the inverters connected to L1 phase, "3P2" in program 28 for the inverters connected to L2 phase and "3P3" in program 28 for the inverters connected to L3 phase.
		OUTPUT 28 3P2	It is required to have at least two inverters or maximum eight inverters to support split-phase equipment. It's required to have at least one inverter in each phase or it's up to seven inverters in one phase.
		OUTPUT 28 3P3	
		OUTPUT 28 2P1	Please select "2P1" in program 28 for the inverters connected to L1 phase and "2P2" in program 28 for the inverters connected to L2 phase.
		OUTPUT 28 2P2	Be sure to connect share current cable to units which are on the same phase. Do NOT connect share current cable between units on different phases. Besides, power saving function will be automatically disabled.

COMMISSIONING
Parallel in single phase

Step 1: Check the following requirements before commissioning:
● Correct wire connection
● Ensure all breakers in Line wires of load side are open and each Neutral wires of each unit are connected together.
Step 2: Turn on each unit and set "PAL" in LCD setting program 28 of each unit. And then shut down all units.
NOET: It's necessary to turn off switch when setting LCD program. Otherwise, the setting can not be programmed.
Step 3: Turn on each unit.

CD display in Master unit   LCD display in Slave unit

INPUT 0 V [HS] 120 V OUTPUT

INPUT 0 V [SL] 120 V OUTPUT

NOTE: Master and slave units are randomly defined.

Step 4: Switch on all AC breakers of Line wires in AC input. It's better to have all inverters connect to utility at the same time.

LCD display in Master unit   LCD display in Slave unit

INPUT 120 V [HS] 120 V OUTPUT CHARGING

INPUT 120 V [SL] 120 V OUTPUT CHARGING

Step 5: If there is no more fault alarm, the parallel system is completely installed.
Step 6: Please switch on all breakers of Line wires in load side. This system will start to provide power to the load.

Support split-phase equipment

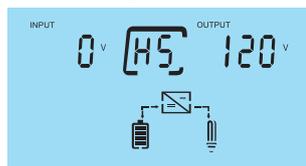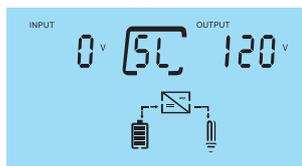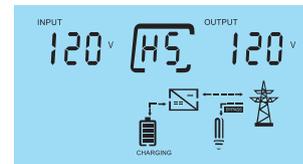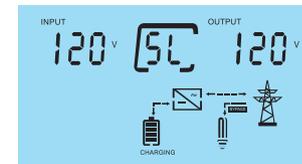Step 1: Check the following requirements before commissioning:
● Correct wire connection
● Ensure all breakers in Line wires of load side are open and each Neutral wires of each unit are connected together.
Step 2: Turn on all units and configure LCD program 28 as P1 and P2 sequentially. And then shut down all units.
NOET: It's necessary to turn off switch when setting LCD program. Otherwise, the setting can not be programmed.
Step 3: Turn on all units sequentially.

LCD display in L1-phase unit   LCD display in L2-phase unit

INPUT 0 V [P1] 120 V OUTPUT

INPUT 0 V [P2] 120 V OUTPUT
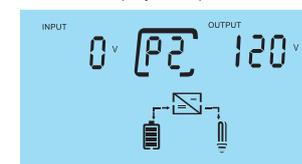
Step 4: Switch on all AC breakers of Line wires in AC input. If AC connection is detected and split phases are matched with unit setting, they will work normally.

LCD display in L1-phase unit   LCD display in L2-phase unit

INPUT 120 V [P1] 120 V OUTPUT CHARGING

INPUT 120 V [P2] 120 V OUTPUT CHARGING
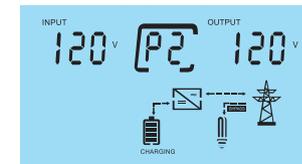
Step 5: If there is no more fault alarm, the parallel system is completely installed.
Step 6: Please switch on all breakers of Line wires in load side. This system will start to provide power to the load.

Support three-phase equipment

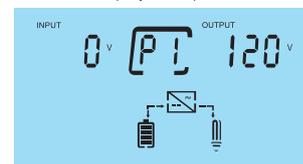Step 1: Check the following requirements before commissioning:
● Correct wire connection
● Ensure all breakers in Line wires of load side are open and each Neutral wires of each unit are connected together.
Step 2: Turn on all units and configure LCD program 28 as P1, P2 and P3 sequentially. And then shut down all units.
NOET: It's necessary to turn off switch when setting LCD program. Otherwise, the setting can not be programmed.
Step 3: Turn on all units sequentially.
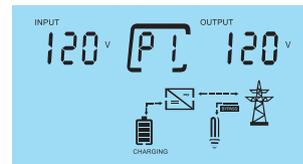
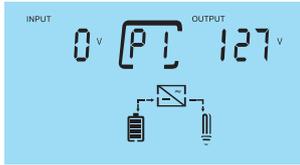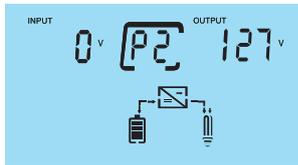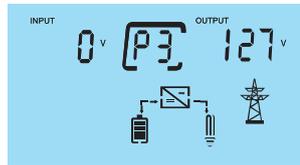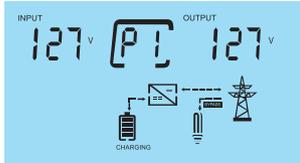LCD display in L1-phase unit   LCD display in L2-phase unit   LCD display in L3-phase unit
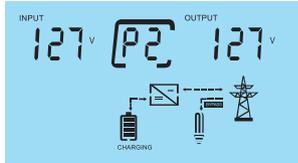
Step 4: Switch on all AC breakers of Line wires in AC input. If AC connection is detected and three phases are matched with unit setting, they will work normally.
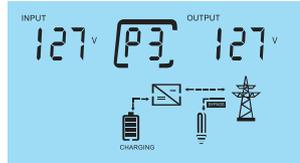
LCD display in L1-phase unit   LCD display in L2-phase unit   LCD display in L3-phase unit

Step 5: If there is no more fault alarm, the system to support 3-phase equipment is completely installed.

Step 6: Please switch on all breakers of Line wires in load side. This system will start to provide power to the load.

Note 1: To avoid overload occurring, before turning on breakers in load side, it's better to have whole system in operation first.

Note 2: Transfer time for this operation exists. Power interruption may happen to critical devices, which cannot bear transfer time.

Dry Contact Signal

There is one dry contact (3A/250VAC) available on the rear panel. It could be used to deliver signal to extemal device when battery voltage reaches waming level.
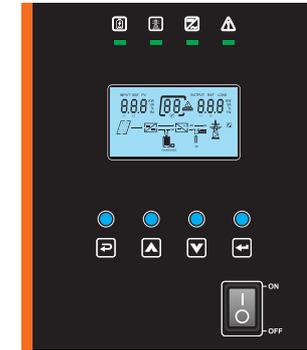
Unit Status	Condition			Dry contact port: NC C NO	
				NC&C	NO&C
Power Off	Unit is off and no output is powered.			Close	Open
Power On	Output is powered from Battery or Solar.	Program 18 set as Utility	Battery voltage <Low DC warning voltage.	Open	Close
			Battery voltage> battery charging reaches floating stage.	Close	Open
		Program 18 is set as BAT or Solar first	Battery voltage<Setting value in Program 19.	Open	Close
			Battery voltage>Setting value in Program 20 or battery charging reaches floating stage.	Close	Open

Specifications

Line Mode Specifications				
Model	IVPS3524P1G1-LV	IVPS5048P1G1-LV	IVPS7548P2G1	IVPS10048P2G1
Rated Output Power(VA)	3500VA	5000VA	7500VA	10000VA
Rated Output Power(W)	2800W	4000W	6000W	8000W
Nominal DC Input Voltage	24V	48V	48V	48V
Input Voltage Waveform	Sinusoidal(Utility or generator)			
Teriminal connection	L-N		HOT1-HOT2	
Nominal Input Voltage	120Vac		220Vac	
Low Line Disconnect	90±3Vac(UPS) 80±3Vac(APL)		170±7Vac(UPS) 90±7Vac(APL)	
Low Line Re-connect AC Input Range	95±3Vac(UPS) 85±3Vac(APL)		180±7Vac(UPS) 100±7Vac(APL)	
High Line Disconnect	140±3Vac		280±7Vac	
High Line Re-connect	135±3Vac		270±7Vac	
Max AC Input Voltage	140Vrms		280Vrms	
Nominal Input Frequency	50Hz/60Hz			
Low Line Frequency Disconnect	40±1Hz			
Low Line Frequency Re-connect	42±1Hz			
High Line Frequency Disconnect	65±1Hz			
High Line Frequency Re-connect	63±1Hz			
Output Voltage Waveform	Synchronize with input voltage			
Over-Load Protection(SMPS load)	Overcurrent protector	Air switch protection	Air switch protection	Air switch protection
Output Short Circuit Protection	Overcurrent protector	Air switch protection	Air switch protection	Air switch protection
Efficiency(Line mode)	≥95%			
Transfer Time (AC to DC)	15ms (typical value)			
Transfer Time (DC to AC)	15ms (typical value)/30ms (special value)			
Pass Through Without Battery	NO			
Overcurrent Protector (grid)	50A	63A	63A	63A
Utility Charge Mode Specifications				
Input Voltage Range	80-140Vac		90-280Vac	
Nominal Output Voltage	Depends On The Battery Type			
Max Charge Current	40A	50A	60A	80A
Charge Current Regulation	0-40A	0-50A	0-60A	0-80A
Battery Initial Voltage	Dependent on battery type or Self-defined			
Charger Short Circuit	50A	63A	63A	63A
Breaker Size	Circuit breaker			
Over Charge Protection	YES			

Charge Algorithm

Charging way	Three phases: Boost CC (constant current level) → boost CV (constant voltage level) →Float (constant pressure level)
Charge Stage Transition Definitions	(1)Boost CC Stage: If A/C input is applied, the charger will run at full current in CC mode until the charger reaches the boost voltage. (2)Boost CV Stage: the charger will keep the boost voltage in Boost CV mode until the T1 timer has run out. Then drop the voltage down to the float voltage, when the charging current is lower than 20% setting value. (3)Float Stage: In float mode, the voltage will stay at the float voltage. If the A/C is reconnected or the battery voltage drops below 24Vdc/48Vdc, the charger will reset the cycle above.

Battery Type Setting	Battery Type	Boost CC, CV	Float
		24/48	24/48
	AGM	28.8/57.6	27.2/54.4
	Flooded	29.2/58.4	27.6/55.2
	Self Defined	Adjustable, up to 31.5V/61.0V	
	Lithium	Adjustable, up to 31.5V/61.0V	

Inverter Mode Specifications

Model	IVPS3524P1G1-LV	IVPS5048P1G1-LV	IVPS7548P2G1	IVPS10048P2G1
Output Voltage Waveform	pure sine wave			
Nominal Output Voltage	110/120/127Vac±5%(L-N)		220/240Vac±5%(HOT1-HOT2)	
Split-Phase Output Voltage	/		110/120Vac±5%(HOT1-N OR HOT2-N)	
Nominal Output Frequency(Hz)	50±0.3Hz/60±0.3Hz(adjustable)			
Output Voltage Regulation	±5%rms			
Peak Efficiency	90%			
Over-Load Protection (SMPS load)	5s @ ≥150% load;10s @ 105%-150% load			
Surge rating	2 times rated overload power 5S			
Capable of Starting Electric	YES			
Output Short Circuit Protection	YES			
Nominal DC Input Voltage	24V	48V		
Min DC Starting Voltage	23V	46V		
Battery Low Voltage Alarm	23Vdc@ load < 50% 22Vdc@ load >= 50%	46Vdc@ load < 50%; 44Vdc@ load >= 50%;		
Battery Low Voltage Re-connection	23.5Vdc@ load < 50% 23Vdc@ load >= 50%	47Vdc@ load < 50%; 46Vdc@ load >= 50%;		
Dc Low Voltage Disconnection	21.5Vdc@ load < 50% 21Vdc@ load >= 50%	43Vdc@ load < 50%; 42Vdc@ load >= 50%;		
High DC Input Alarm & Fault	31.5Vdc±0.4V	63Vdc±0.4V		
High DC Input Recovery	31Vdc±0.4V	62Vdc±0.4V		

General Specifications

Operating temperature	0°C~40°C			
Storage temperature	-15°C~60°C			
Net Weight(KG)	27.7KG	31.35KG	34.7KG	55.4KG
Gross Weight(KG)	30.8KG	35.05KG	38.2KG	67.7KG
Product Dimension(MM)	440x391x195mm	494x420x195mm		584x420x195 mm
Package Dimension(MM)	552x508x290mm	607x540x290mm		670x470x355mm

Front Panel

Function Key	Description
⮐ ESC	To exit setting mode
⋀ UP	To go to previous selection
⋁ DOWN	To go to next selection
⏎ ENTER	To confirm the selection in setting mode or enter setting mode

Indicator light instruction

LCD backlight	Setting the control of LCD backlight enable, LCD backlight will always-on. Setting the control of LCD backlight disable,have no operation the LCD backlight will go out after 60s.
Fault LED light	If inverter in fault event, the red light will always-on. If inverter in warning event, the red light will flash. Inverter work normally,red light go out.
Battery LED light	Charging the battery, the battery light flash. If battery is full, battery light will always-on. The battery is not charged, the battery light will go out.
City electricity LED light	City electricity is normal, the LINE light will always-on. No city electricity, the LINE light will go out.
Inverter LED light	Battery discharging ,inverter light will always-on. Battery not discharging, inverter light will go out.
Buzzer beep	Turn on/off the inverter, the buzzer will last for 2.5s. Press any button, the buzzer will last for 0.1s. Hold on the ENTER button, the buzzer will last for 3s. If in fault event, the buzzer will keep going. If in warning event, the buzzer will beep discontinuous.

LCD Setting

After pressing and holding "ENTER" button for 3 seconds, the unit will enter setting mode. Press "UP" or "DOWN" button to select setting programs. And then, press "ENTER" button to confirm the selection or ESC button to exit.
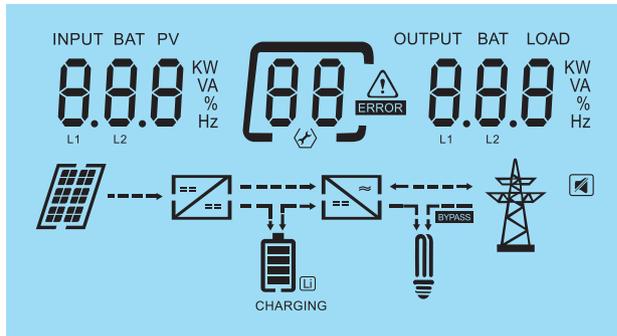
Setting items

Program	Description	Selectable option	
00	Exit setting	**00　　ESC**	
01	Output voltage setting*This setting is only available when the inverter is in standby mode (Switch off).	Output voltage 110V **OP4　[01]　110 V** output voltage 120V (default) **OP4　[01]　120 V** Output voltage 127V **OP4　[01]　127 V**	Output voltage configuration (Only for IVPS3524P1G1-LV /IVPS5048P1G1-LV)
		output voltage 220V (default) **OP4　[01]　220 V** Output voltage 240V **OP4　[01]　240 V**	Output voltage configuration (Only for IVPS7548P2G1 /IVPS10048P2G1)
02	Output frequency setting	output frequency is 50Hz **OPF　[02]　50 Hz** 60Hz(default) **OPF　[02]　60 Hz**	Output frequency configuration
03	Utility input range setting	Appliance mode(default) **AC　[03]　APL** UPS mode **AC　[03]　UPS**	APL should be selected, when the utility is not well.

05	Battery type setting	The battery type is self-define(default) **bAt　[05]　USE** The battery type is Flooded **bAt　[05]　FLd** The battery type is AGM **bAt　[05]　AGn** The battery type is Llb **bAt　[05]　LIb**	If "Self-defined" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 07, 08 and 11.
06	Max utility charging current setting	20A (default) **CHC　[06]　20 A**	3500VA: Setting range is from 0 to 40A 5000VA: Setting range is from 0 to 50A 7 500VA: Setting range is from0 to 60A 10000VA: Setting range is from 0 to 80A
07	Bulk charging voltage setting (C.V voltage)	48V model(57.6V default) **C4　[07]　57.6 V**	If self-defined is selected in program 05, this program is enable. Setting range is from 48.0V to 61.0V. Increment of each click is 0.1V.
		24V model(28.8V default) **C4　[07]　28.8 V**	If self-defined is selected in program 05, this program is enable. Setting range is from 25.0V to 31.5V . Increment of each click is 0.1V.
08	Floating charging voltage	48V model(54.4V default) **FL4　[08]　54.4 V**	If self-defined is selected in program 5, this program is enable. Setting range is from 48.0V to 61.0V. Increment of each click is 0.1V.
		24V model(27.2V default) **FL4　[08]　27.2 V**	If self-defined is selected in program 5, this program is enable. Setting range is from 25.0V to 31.5V. Increment of each click is 0.1V.
09	Charger priority.	If inverter is working in utility mode, charge priority can be set as below. However, when inverter is working in Battery mode, only PV can charge battery.	
		PV first **CHS　[09]　p4**	PV will charge battery first. Utility will charge battery only when PV is unavailable.
		PV and Utility (default) **CHS　[09]　PAU**	PV and utility will charge battery together.

09	Charger priority.	PV Only CHS [09] P40	Only PV can charge the battery.
10	Max charging current (Max charging current = utility charging current + PV charging current)	60A (default) bCC [10] 60 A	3500VA: Setting range is from 0 to 120A 5000VA: Setting range is from0 to 170A 7500VA: Setting range is from 0 to 180A 10000VA: Setting range is from 0 to 200A
11	Low DC cut-off voltage	48V model(42V default) bCv [11] 42.0 V	If self-defined is selected in program 5, this program is enable. Setting range is from 42.0V to 52.0V. Increment of each click is 0.1V.
		24V model(21V default) bCv [11] 21.0 V	If self-defined is selected in program 5, this program is enable. Setting range is from 21.0V to 26.0V. Increment of each click is 0.1V.
12	Overload bypass function	Disable (default) LbP [12] dIS LbP [12] ENA	If it is enabled, the inverter will switch to utility mode if overload happens in battery mode.
15	Buzzer Alarm	Enable (default) bEP [15] ENA bEP [15] dIS	
16	BMS communication setup	external communication(default) bnS [16] nnt	external communication Baud rate 2400 bit/s.
		BMS communication bnS [16] bnS	BMS communication, Baud rate 9600 bit/s.
17	Back light of LCD	Enable (default) bL [17] ENA bL [17] dIS	Setting the control of LCD backlight enable, LCD backlight will always-on. Setting the control of LCD backlight disable,have no operation the LCD backlight will go out after 60s.

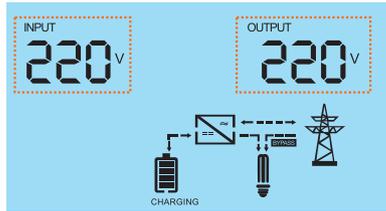| 18	Output source priority	Utility first (default) OPS [18] Uti	Utility will provide power to the loads first, battery will provide power to the loads only when utility power is not available.
18	Output source priority	PV first OPS [18] Pv	PV provides power to the loads first. If PV energy is not sufficient, battery will feed power to the loads. Utility provides power to the loads only when any one condition happens: (1) PV is unavailable; (2)Battery voltage drops to low-level warning voltage or the setting point in program 19.
		Battery first OPS [18] bAt	battery provides power to the loads first, utility provides power to the loads only when battery voltage drops to either low-level warning voltage or the setting point in program 19. And when battery voltage return to the setting point in program 20, the inverter will switch to battery mode;
19	Setting battery voltage point back to utility when selecting "BAT priority" in program 18.	48V model(default 46.0V) bUv [19] 46.0 V	Setting range is from 44.0V to 51.0V. Increment of each click is 1V.
		24V model(default 23.0V) bUv [19] 23.0 V	Setting range is from 22.0V to 25.5V. Increment of each click is 0.5V.
20	Setting battery voltage point back to battery mode when selecting "BAT priority"in program 18.	48V model(default 54.0V) bbv [20] 54.0 V	Setting range is from 48.0V to 58.0V. Increment of each click is 1V. "FUL" means the battery should be charged to float mode;
		24V model(default 27.0V) bbv [20] 27.0 V	Setting range is from 24.0V to 29.0V. Increment of each click is 0.5V. "FUL" means the battery should be charged to float mode;
37	Power Key Mode	Output off (default) Ptn [37] 0OF	When power key is off and utility is charging to battery, Output is off.
		Output on Ptn [37] 0On	When power key is off and utility is charging to battery, Output is on.

LCD Display Icons

Icon	Function description
Input Source Information	
INPUT	Indicates the AC input.
INPUT [display]	Indicate input voltage, input frequency, battery voltage, Fire L1,Fire L2.
Configuration Program and Fault Information	
[display]	Indicates the setting programs.
[display ERROR]	Indicates the warning and fault codes. Warning: flashing with warning code. Fault: lighting with fault code
Output Information	
OUTPUT BAT LOAD [display]	Indicate output voltage, output frequency, load percent, load in VA, load in Watt.
Battery Information	
[battery icon]	Indicates battery level by 0-24%, 25-49%,50-74% and 75-1 00%. The Li icon represents a lithium battery.

In battery mode, it will present battery capacity.

Load Percentage	Battery Voltage	LCD Display
Load >50%	< 11.1V/PCS	[battery icon]
	11.1~ 11.6V/PCS	[battery icon]
	11.6V ~ 12.1V/PCS	[battery icon]
	> 12.1V/PCS	[battery icon]
Load < 50%	< 11.3V/PCS	[battery icon]
	11.3 ~ 11.8V/PCS	[battery icon]
	11.8 ~ 12.3V/PCS	[battery icon]
	> 12.3V/PCS	[battery icon]
Mode Operation Information		
[utility tower icon]	Indicates the utility.	
BYPASS	Indicates load is supplied by utility directly.	
[inverter/charger icon]	Indicates the inverter / charger is working.	
Mute Operation		
[mute icon]	The alarm is disabled.	
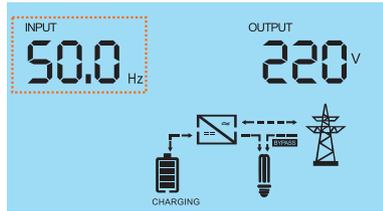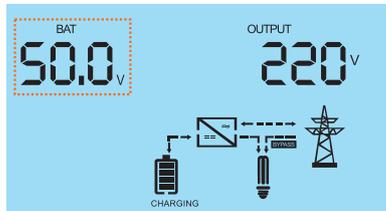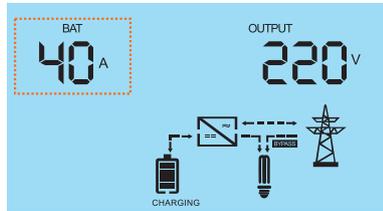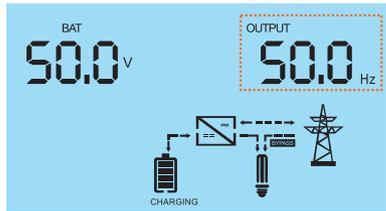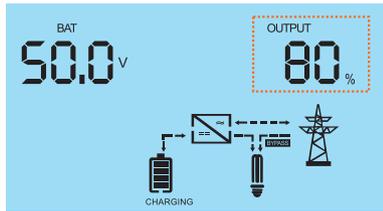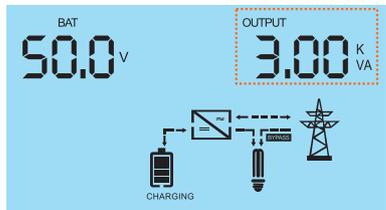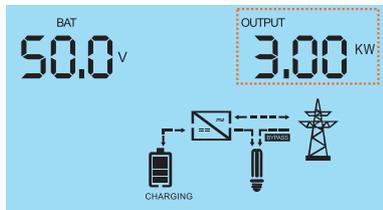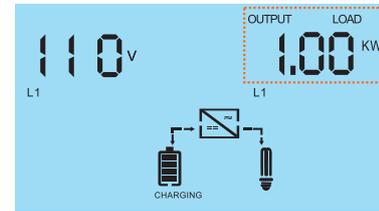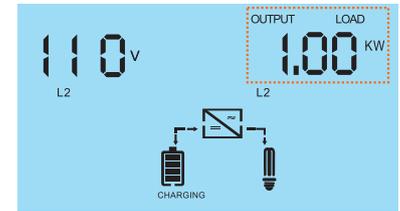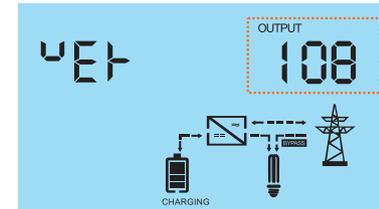
Fault Code Table

When fault event happens, inverter will cut off output, and the red LED is solid on. At the same time, fault code is shown on the LCD screen.

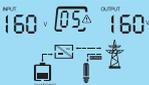| Fault Code	Fault information	Trouble Shooting	
13	Overload happens	Not allowed to overload when the inverter in battery mode, If overload, please turn off the inverter first, and then decrease the load let the load power less than the rated output power of invert, turn on the inverter again. If overload and the AC input is on, wait for 30s and it will clear away the fault automatically and work normally.	
14	Output voltage high	Restart the inverter or Contact our engineer.	
15	Output short	If AC input is on, must cut off the AC input first and then turn off the inverter, disconnect all AC output wiring and turn on it. If the screen still display fault, please connect our engineer. And if the inverter can work again, please check the output wiring and load, make sure all of them not shorted connection.	
17	Battery voltage high	Read the battery voltage from the screen, and measure the voltage of battery with multimeter . if both of the voltage are more than 60v, maybe the battery have some problem we must stop using it.	
18	Over temperature	Turn off the inverter, let it cool down, after the temperature back to normal and you can use it again.	
21	Over current happen in charging mode	Please contact our engineer.	
22	Inv soft start timeout	Please contact our engineer.	
24	Output voltage low	Turn off the inverter, disconnect all AC output wiring and then turn on it, if it still fault please contact our engineer, if it work normally, please check the output whether connect a big power load, disconnect the big one and turn on the inverter, confirm it can work normally.	
27	Battery disconnected	Please check the battery connector	
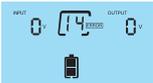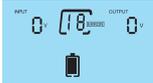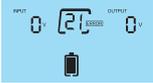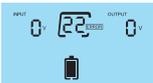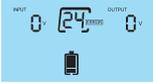
28	Current sensor is abnormal	Please contact our engineer.	
32	INV NTC is Disconnected is abnormal	Please contact our engineer.	
34	Heavy over load or output short	Please refer to Fault 13 and15 handling.	
40	CAN data loss	1. Check if communication cables are connected well and restart the inverter. 2. If the problem remains, please contact your installer.	
41	Host data loss		
42	Synchronization data loss		
43	The battery voltage of each inverter is not the same.	1. Make sure all inverters share same groups of batteries together. 2. Remove all loads and disconnect AC input and PV input.Then, check battery voltage of all inverters. If the values from all inverters are close, please check if all battery cables are the same length and same material type. Otherwise, please contact your installer to provide SOP to calibrate battery voltage of each inverter. 3. If the problem still remains, please contact your installer.	
44	AC input voltage and frequency are detected different.	1. Check the utility wiring conncetion and restart the inverter. 2. Make sure utility starts up at same time. If there are breakers installed between utility and inverters, please be sure all breakers can be turned on AC input at same time. 3. If the problem remains, please contact your installer	
45	AC output current unbalance	1. Restart the inverter. 2. Remove some excessive loads and re-check load information from LCD of inverters.If the values are different, please check if AC input and output cables are in the same length and material type. 3. If the problem remains, please contact your installer.	
46	AC output mode setting is different.	1. Switch off the inverter and check LCD setting #28. 2. For parallel system in single phase, make sure no 3P1, 3P2, 3P3, 2P1 or 2P2 is set on #28. For supporting three-phase system, make sure no "PAL", 2P1 or 2P2 is set on #28. For supporting split-phase system, make sure no "PAL" , 3P1 , 3P2 or 3P3 is set on #28. 3. If the problem remains, please contact your installer.	
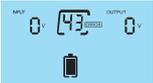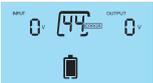
60	Current feedback into the inverter is detected.	1. Restart the inverter. 2. Check if LN cables are not connected reversely in all inverters. 3. For parallel system in single phase, make sure the sharing are connected in all inverters.For supporting three phase system or split phase system, make sure the sharing cables are connected in the inverters in the same phase, and disconnected in the inverters in different phases. 4. If the problem remains, please contact your installer.	INPUT 0ᵥ 60 OUTPUT 0ᵥ
71	The firmware version of each inverter is not the same.	1. Update all inverter firmware to the same version 2. Check the version of each inverter via LCD setting and make sure the CPU versions are same. If not, please contact your installer to provide the firmware to update. 3. After updating, if the problem still remains, please contact your installer.	INPUT 0ᵥ 71 OUTPUT 0ᵥ
72	The output current of each inverter is differen.	1. Check if sharing cables are connected well and restart the inverter. 2. If the problem remains, please contact your installer.	INPUT 0ᵥ 72 OUTPUT 0ᵥ

Warning Code Table

When warning event happens, the red LED is flashing. At the same time, the warning code is flashing on the LCD screen.

Warning Code	Warning information	Trouble Shooting	
01	Overload happens	The inverter forbid to over-load, the last working time will depend on the percent of load.	50.1 01 108
04	Battery low	The voltage of battery is too low, the battery should be charging.	22.9 04 220
05	Power derating (low utility voltage)	Read the voltage from the screen and confirm the voltage of AC input is about 90-170v. If it is ,means the voltage of AC input is low, it can work normally. If not, please contact our engineer.	160 05 160
06	TX NTC is disconnected	Please contact our engineer.	27.6 06 221
07	INV NTC is disconnected	Please contact our engineer.	27.5 07 221
14	Input Phsae Abnormal	Please contact our engineer.	27.5 14 221
/	Flash	City electricity is not match to the inverter	