PNI GreenHouse SC3500

6KW 48V MPPT

DESPRE ACEST MANUAL

Introducere

Acest manual descrie modul de instalare, asamblare, functionare si intretinere al invertorului PNI SC3500. Va rugam sa cititi acest manual cu atentie inainte de instalare si utilizare. Pastrati acest manual pentru referinte viitoare.

Acest manual ofera instructiuni de instalare si siguranta, precum si informatii despre sculele, echipamentele si cablurile necesare.

Urmatoarele cazuri nu intra in sfera garantiei:

(1) Depasirea perioadei de garantie.

(2) Numarul de serie a fost sters sau s-a pierdut.

(3) Capacitatea bateriei a scazut sau bateria a fost deteriorata.

(4) Invertorul s-a deteriorat in timpul transportului, prin nefolosinta indelungata sau prin alte cauze externe.

(5) Invertorul a fost deteriorat de cauze si dezastre naturale.

(6) Invertorului s-a deteriorat din cauza tensiunii de alimentare neadecvate sau a conditiilor de functionare necorespunzatoare.

INSTRUCTIUNI DE SIGURANTA

ATENTIE: Acest capitol contine informatii importante de siguranta si de functionare. Cititi aceste instructiuni si atentionari cu atentie.

1. Inainte de a pune in functiune invertorul, citit toate instructiunile si marcajele de siguranta de pe unitate sau de pe baterie.
2. **AVERTIZARE** --Pentru a reduce riscul de ranire, folositi doar baterii reincarcabile cu plumb acid. Folosirea altor tipuri de baterii poate duce la ranirea personala si la daune aduse proprietatii.
3. Nu dezasamblati unitatea. In caz de defectiune, apelati la un centru service specializat. Reasamblarea incorecta poate duce la soc electric sau la incendiu.
4. Pentru a reduce riscul de electrocutare, deconectati toate cablurile inainte de a intretine sau curata invertorul. Doar oprirea invertorului nu va reduce risucl de soc electric.
5. **AVERTIZARE** – Doar personal calificat poate instala invertorul si bateria.
6. NU incarcati niciodata o baterie inghetata.
7. Pentru functionarea optima a acestui invertor, respectati specificatiile tehnice cand alegeti cablurile necesare. Este foarte important sa folositi in mod corect invertorul.
8. Fiti foarte atenti cand folositi scule metalice in apropierea bateriei. Daca, din greseala, scapati obiecte metalice pe baterie, se pot produse scantei care la randul lor pot produce scurtciruit si incendiu.
9. Urmati cu atentie instructiunile cand deconectati terminalele AC si DC.

10. IMPAMANTAREA - Acest invertor trebuie impamantat. Asigurati-va ca respectati toate regulile si normale locale cand instalati un invertor.
11. Nu scurtcircuitati niciodata iesirea AC si intrarea DC. Nu conectati invertorul la reteaua publica de energie daca aveti scurtcircuit pe intrarea DC.
12. **Atentie!!** Doar personal calificat poate efectua operatiuni de service pe acest invertor. Daca ati urmat instructiunile din tabelul cu probleme si solutii, dar defectiunea tot persista, apelati la un centru service specializat.

INTRODUCERE

Acesta este un invertor/incarcator multi-functional, care combina functiile unui invertor, incarcator solar si incarcator de baterii pentru a oferi o sursa de energie neintreruptibila. Ecranul LCD al invertorului ofera utilizatorului informatii precum curentul de incarcare a bateriei, prioritate incarcare AC sau Solar, si tensiunea de intrare in functie de aplicatii.

Caracteristici

- **Invertor cu unda sinusoidala pura**
- Tensiune de intrare configurabile pentru electrocasnice si computere prin ecranul LCD
- Curent de incarcare baterie configurabil in functie de aplicatii prin ecranul LCD
- Prioritate incarcare solara sau AC configurabila prin ecranul LCD
- Compatibil cu tensiunea de retea sau cu puterea generatoarelor
- Controller incarcare solara MPPT 80A
- Protectie la suprasarcina/supraincalzire/scurtcircuit
- Functie de incarcare inteligenta a bateriei pentru mai bune performante ale bateriei
- Functie de pornire la rece

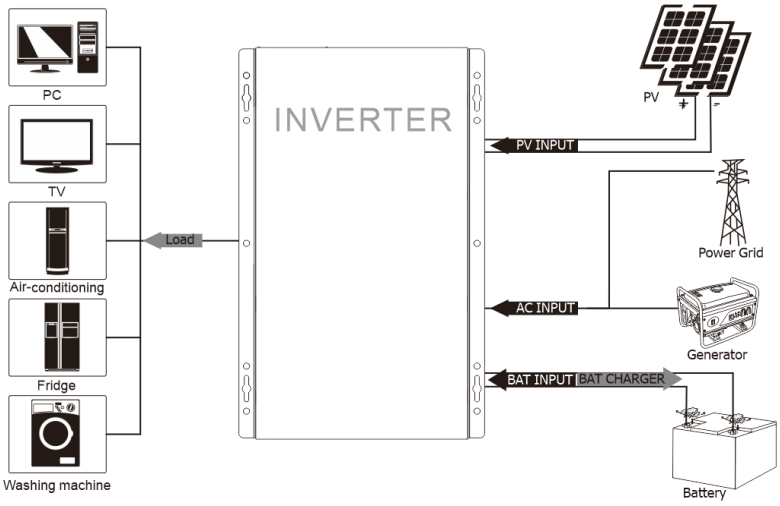
Descriere sistem de baza

Ilustratiile de mai jos arata arhitectura de baza a unui sistem cu invertor. Pentru a avea un sistem complet functional, aveti nevoie si de:

- Generator sau Retea.
- Baterie
- Module PV

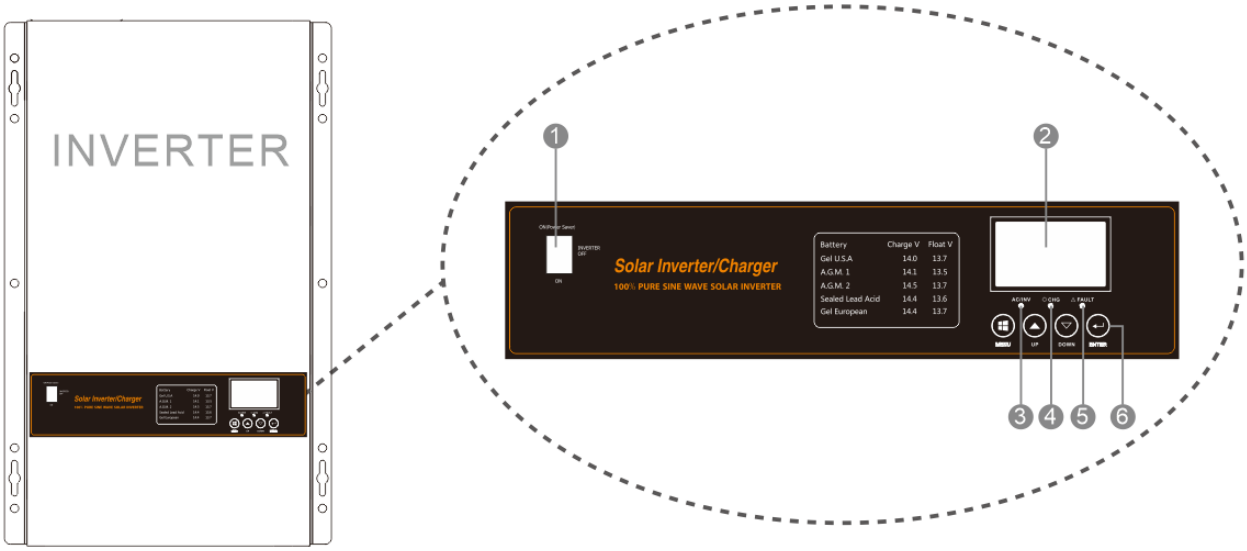
In functie de nevoile si cerintele dvs. se pot implementa diferite arhitecturi de sisteme.

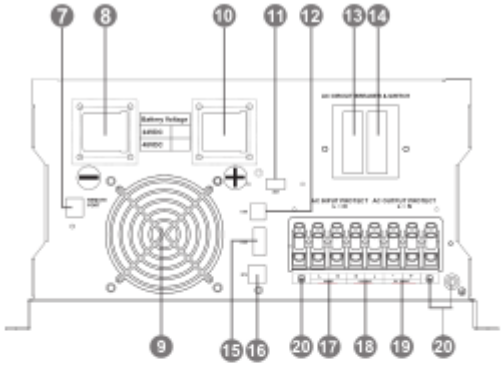
Invertorul poate alimenta diferite electrocasnice si echipamente casnice sau de birou, precum lumini, ventilatoare, frigidere si aparate de aer conditionat.



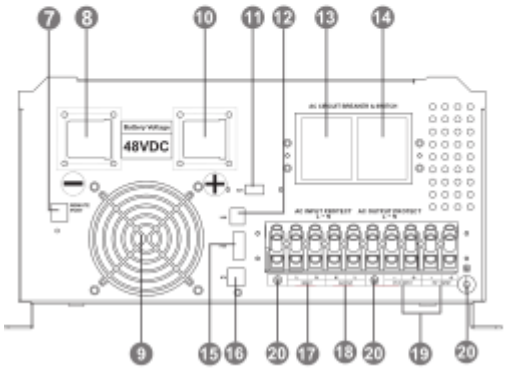
Img 1 Sistem solar hibrid

Prezentare produs





4KW-6KW single model



8KW-12KW single model

1.Intrerupator on/off si Power saver
2.Ecran LCD
3.Indicatro status
4.Indicator descarcare/incarcare
5.Indicator eroare
6.Butoane functii
7.Port control de la distanta
8.BAT -
9.FAN
10.BAT +
11.Port WI-FI
12.Port de comunicare USB
13.Intrerupator bupass/intrare AC
14.AC output breaker
15.AGS (Auto Generator Start)
16.BTS
17.Intrare AC
18.Iesire AC
19.Intrare PV
20.Impamantare

NOTA: Pentru modul de instalare si functionare in paralel, cititi instructiunile dedicate acestui subiect.

INSTALARE

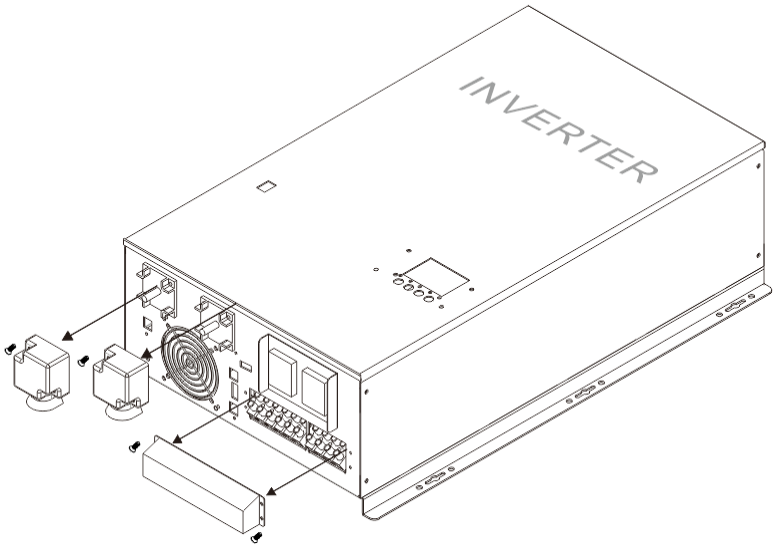
Continutul pachetului

Iniante de a instala invertorul, verificati integritatea acestuia. Verificati ca nici o componenta a invertorului sa nu fie deteriorata la transport. Continutul pachetului:

- Invertor x 1
- Manual de utilizare x 1
- Cablu USB x 1
- Software CD x 1
- Linie BTS Line x 1(optional)
- Cheie WIFI x 1(optional)
- Remote Line x 1(optional)

Pregatire

Inainte de a conecta toate cablurile, desfaceti carcasa invertorului.

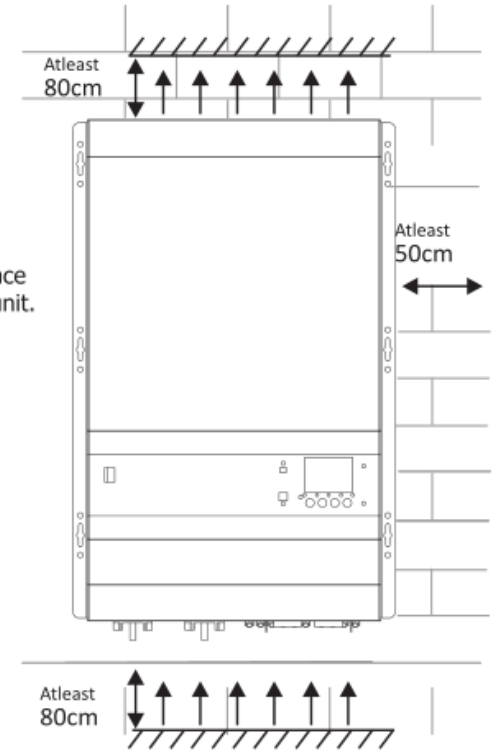


Mounting the Unit

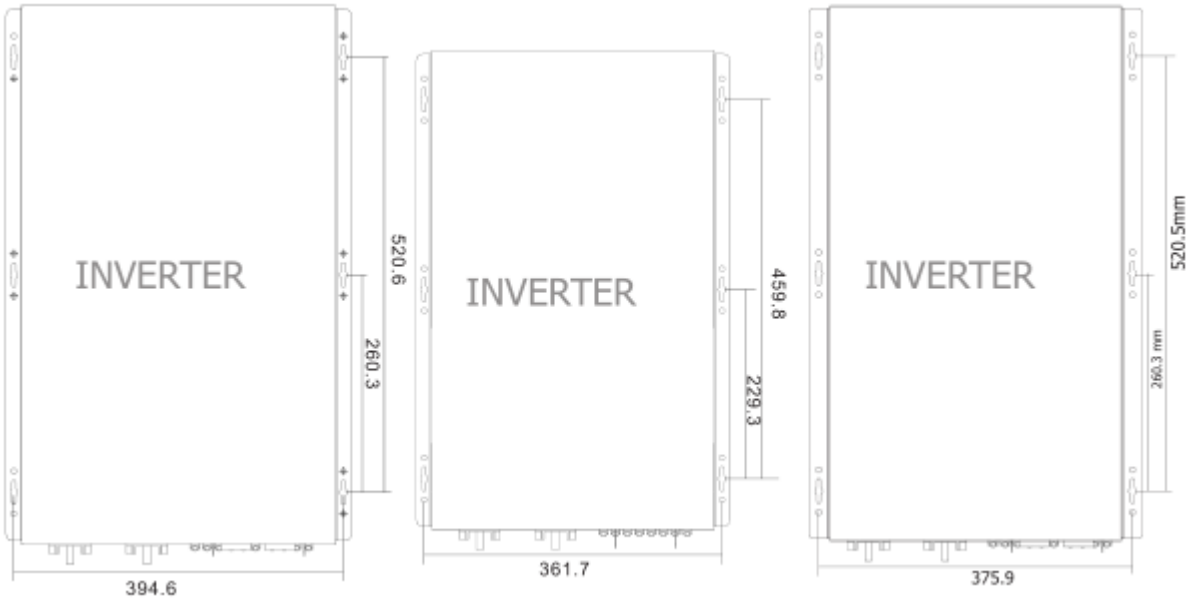
Consider the following points before selecting where to install:

- Do not mount the inverter on flammable construction materials.
- Mount on a solid surface.
- Install this inverter at eye level in order to read the LCD display clearly.
- For proper air circulation to dissipate heat, require a clearance about 50 cm to the side and 80 cm above and below the unit.
- The ambient temperature should be between 0℃ and 40℃ to ensure optimal operation.
- The recommended installation position is to be adhered to the wall vertically.
- Be sure to keep other objects and surfaces as shown in the diagram to guarantee sufficient heat dissipation and to have enough space for removing wires.

⚠ **SUITABLE FOR MOUNTING ON CONCRETE OR OTHER NON-COMBUSTIBLE SURFACE ONLY.**



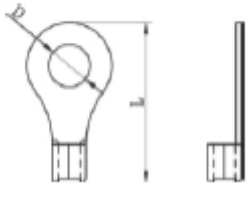
Instalarea invertorului.



Conectarea bateriei

ATENTIE: Pentru a utiliza invertorul in mod sigur si pentru a respecta toate regulamentele, este necesar sa instalati intre baterie si invertor o protectie separata in caz de supracurent DC sau un dispozitv de deconectare. In unele aplicatii ar putea sa nu fie necesara instalarea unui dispozitiv de deconectare, in orice caz, este recomandat sa instalati o protectie la cupracurent.

Ring terminal:



ATENTIONARE! Toate conexiunile trebuie efectuate de personal calificat.
ATENTIONARE! Pentru siguranta dvs si a dispozitivului, folositi doar tipurile de cablu recomandate pentru conectarea bateriei. Pentru a reduce riscul de accidentare, respectati cerintele tehnice ale cablurilor necesare.

Cabluri recomandate pentru conectarea bateriei:

Model	Amperaj	capacitate min. baterie	Dimens. cablu	Valoare cuplu
4024	200A	400AH	2*2AWG	2~ 3 Nm
5024	250A	600AH	2*1AWG	2~ 3 Nm
4048	100A	400AH	1*2AWG	2~ 3 Nm
5048	130A	600AH	1*1AWG	2~ 3 Nm
6048	150A	800AH	2*3AWG	2~ 3 Nm
8048	200A	1000AH	2*2AWG	2~ 3 Nm
10048	250A	1200AH	2*1AWG	2~ 3 Nm
12048	300A	1400AH	3*2AWG	2~ 3 Nm

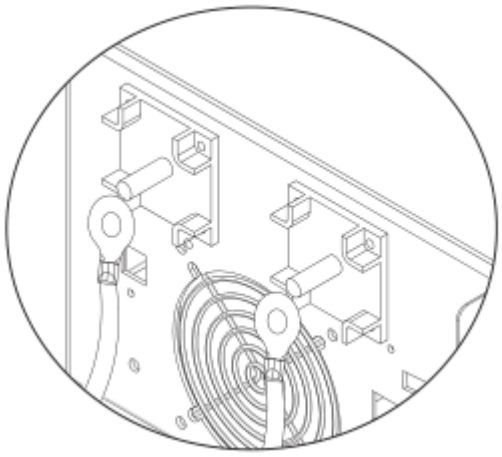
Pentru a conecta bateria, urmati pasii de mai jos:

1. Conectati terminalii sub forma de inel ai bateriei conform specificatiilor.
2. Conectati bateria potrivita in functie de tipul de invertor. Este recomandat sa conectati o baterie cu o capacitate de cel putin 400Ah pentru un invertor de 4KW-5KW DC24V, cu o capacitate de cel putin 400Ah pentru un invertor de 4KW-6KW DC48V si cu o capacitate de cel putin 600Ah pentru un invertor de 8KW-12KW.

NOTE: folositi doar baterii cu plumb acid sau baterii GEL/AGM.

3. Introduceti inelele de pe cablurile de conexiune ale bateriei in conectorii invertorului si strangeti bine

Sigurati-va ca ati respectat polaritatea.



⚠	**ATENTIONARE: Pericol de electrocutare** In timpul conectarii bateriei, fiti foarte atenti, datorita tensiunii ridicate.

⚠	**ATENTIE!!** Nu puneti nimic intre conectorul invertorului si terminalul sub forma de inel de pe cablul de legatura al bateriei. In caz contrar, acea zona s-ar putea supraincalzi. **ATENTIE!!** Nu aplicati sublstante anti-oxidante pe terminali, inainte de a fixa bine conexiunile. **ATENTIE!!** Inainte de a finaliza ocnexiunile DC sau inainte de a inchide intrerupatorul DC, asigurati-va ca DC (+) este conectat la DC (+) siDC (-) este conectat la DC (-).

Conexiuen intrare/iesire AC

ATENTIE!! Inainte de a conecta sursa de alimentare AC, instalati un intrerupator AC separat intre invertor si sursa de alimentare AC. Acesta va asigura ca invertorul este complet deconectat in timpul operatiunilor de intretinere si protejat de supracurentul de pe intrarea AC. Intrerupatorul AC recomandat este de 40A pentru 4KW-6KW, 80A pentru 8KW-12KW.

ATENTIE! Toate conexiunile trebuie efectuate de personal calificat.

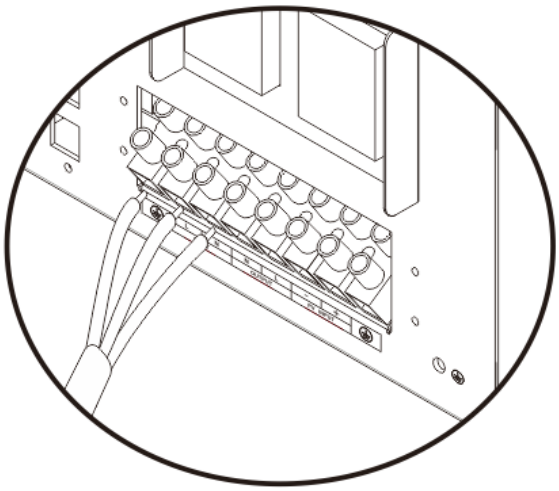
ATENTIE! Este foarte important pentru siguranta sistemului si pentru o functionare corecta sa folositi cablurile recomandate pentru conexiunile AC. Pentru a reduce riscul de accidentare, folositi dimensiunile de cabluri recomandate mai jos.

Cerinte cabluri conexiune AC

Model	Calibru	Valoarea cuplului
4KW-5KW	10AWG	1.4-1.6Nm
6KW-8KW	8AWG	1.4-1.6Nm
10KW-12KW	2*10AWG	1.6-1.8Nm

Urmati pasii de mai jos pentru a efectua conexiune de intrare/iesire AC:

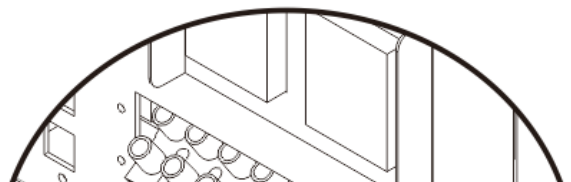
1. Inainte de a efectua conexiune de intrare/iesire AC, porniti intrerupatorul DC.
2. Indepartati izolatia de 10mm de pe cei 6 conducatori. Si scurtati conductorul faza L si null N 3 mm.
3. Introduceti firele de intrare AC conform polaritatii indicate pe blocul terminal si strangeti bine suruburile. Asigurati-va ca ati conectat mai intai conectorul PE ⏚
4. ⏚→**Impamantare (galben-verde)**
5. **L→LINE - Faza (maro sau negru)**
6. **N→Neutral - Null (albastru)**



⚠	**ATENTIE:** Asigurati-va ca sursa de alimentare AC este deconectata inainte de a efectua conexiunile.

7. Apoi, introduceti firele de iesire AC conform polaritatii indicate pe blocul terminal si strangeti bine suruburile. Asigurati-va ca ati conectat mai intai conectorul PE ⏚

   ⏚ →**Ground - Impamantare (galben - verde)**



L→LINE - Faza (maro sau negru)
N→Neutral - Null (albastru)

8. Asigurati-va ca toate conexiunile sunt bine facute si suruburile bine stranse.

ATENTIE: Important
Asigurati-va ca respectati polaritatea conexiunilor AC. Daca firele L si N sunt conectate invers, ar putea cauza scurtcircuit pe retea daca invertoarele opereaza in paralel.

ATENTIE: Unele electrocasnice cum ar fi aerul conditionat necesita cel putin 2~3 minute pentru a porni pentru ca necesita timp pentru a echilibra gazul refrigerant in circuit. Daca are loc o intrerupere brusca a curentului si o revenire la scurt timp, aceasta poate cauza defectarea dispozitivului conectat. Pentru a preveni astfel de situatii, verificati daca dispozitivul dvs. de aer conditionat este echipat cu functia pornire intarziata. Daca este conectat, in astfel de situatii, invertorul va intra in eroare de suprasarcina si va intrerupa alimentarea dispozitivului dvs. pentru a-l proteja.

Conexiune PV

ATENTIE: Inainte de a conecta modulele PV, instalati separat un intrerupator DC intre invertor si modulele PV.
AVERTIZARE! Toate conexiunile trebuie efectuate de personal calificat.
AVERTIZARE! Este foarte important pentru siguranta sistemului si pentru o functionare corecta sa folositi cablurile recomandate pentru conexiunile AC. Pentru a reduce riscul de accidentare, folositi dimensiunile de cabluri recomandate mai jos.

Model	Amperj	Dimensiune cablu	Cuplu
4024-80A **5024-80A**	80A	8 AWG	1.6-1.8Nm
4048-80A **5048-80A** **6048-80A**	80A	8 AWG	1.6-1.8Nm
8048-100A/200A **10048-100A/200A** **12048-100A/200A**	**100A/200A**	6AWG/2*6AWG	1.8-2.0Nm

Alegerea modulelor PV:

Cand alegeti modulele PV, luati in considerarea urmatorii parametri:

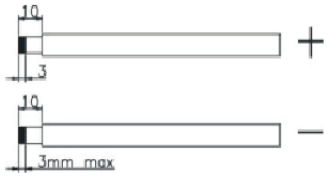
1. Tensiunea de circuit deschis (Voc) a modulelor PV nu trebuie sa depaseasca tensiunea de circuit deschis a invertorului.
2. Tensiunea de circuit deschis (Voc) a modulelor PV trebuie sa fie mai mare decat tensiunea minima a bateriei.

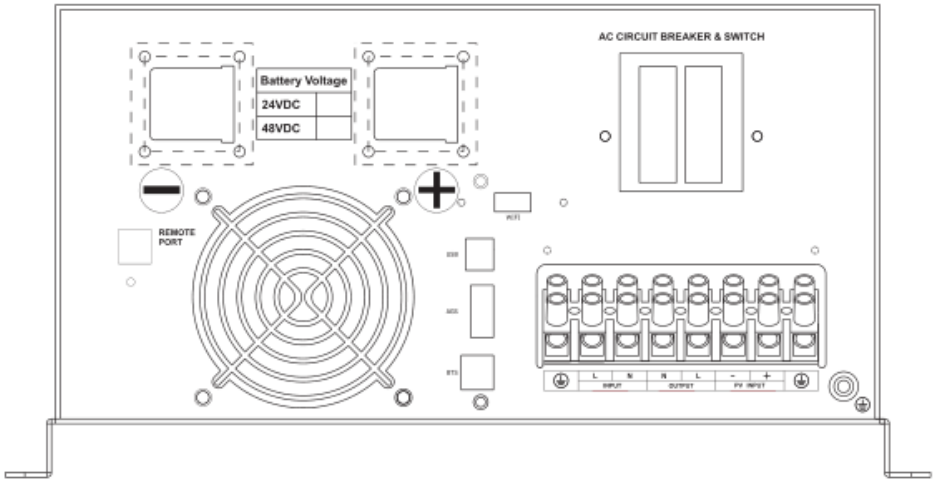
Mod incarcare solara		
MODEL INVERTOR	24V	48V

Tensiune maxima circuit deschis panouri PV	145Vdc	
Interval tensiune panouri PV MPPT	30V-130V	60V-130V
Tensiune minima baterie pentru incarcare PV	Tensiune baterie +3Vdc	

Urmati pasii de mai jos pentru a efectua conexiunile modulelor PV:

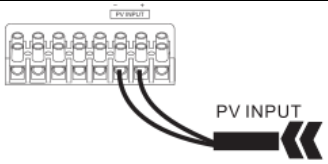
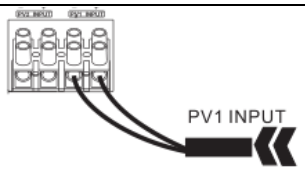
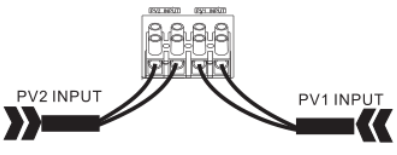
1. Indepartati izolatia de 10 mm de pe conductorii pozitiv si negativ
2. Verificati polaritatea cablurilor conectate. Apoi, conectati polul pozitiv (+) a cablului de conexiunea la polul pozitiv (+) a conectorilor de intrare PV. Conectati polul negativ (-) a cablului de conexiunea la polul megativ (-) a conectorilor de intrare PV.





3. Asigurati-va ca toate conexiunile sunt bine facute si suruburile bine stranse.

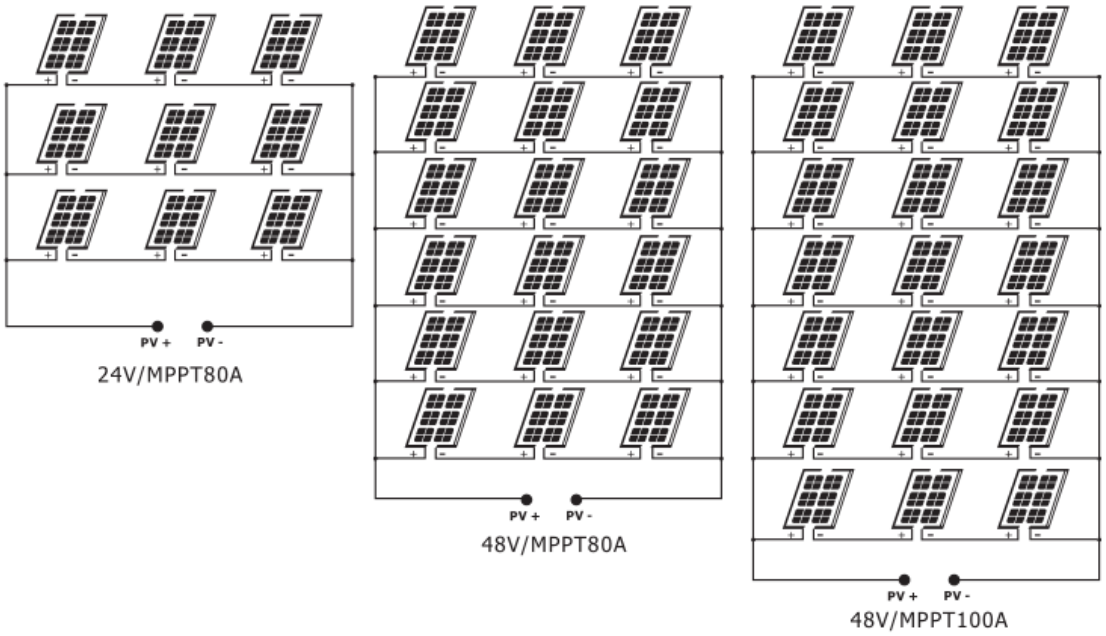
Conexiunile PV

Optiunea de conectare 1 4-6KW MPPT 80A PV Input	
Optiunea de conectare 2 8-12KW MPPT 80A/100A PV Input	
Optiunea de conectare 3 8-12KW MPPT 160A /200A PV Input	

Configurare module PV recomandata

Specificatii moduel pV（de referinta） -260W -Vmp:30.9Vdc -Imp:8.42A -Voc:37.7Vdc -Isc:8.89A -Celule:60	Invertor	Intrare solara	Numar module
	24V/80A	3S3P	9PCS
	48V/80A	3S6P	18PCS
	48V/100A	3S7P	21PCS
	48V/200A	3S7P*2	21PCS*2

Schema instalare panouri solare



Asamblare finala

Dupa ce ati conectat toate cablurile, puneti la loc capacul invertorului si fixati-l in suruburi.

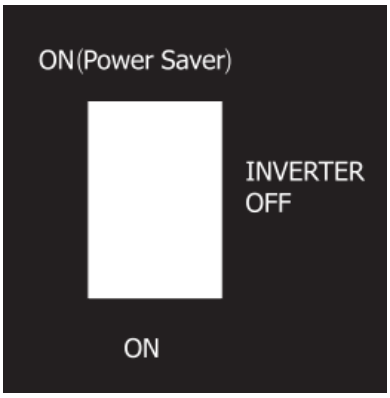
Conexiuni linii de comunicare

Folositi cablurile de comunicare incluse pentru a conecta invertorul al PC. Introduceti CD-ul intr-un computer si sintalati software-ul de monitorizare. Pentru detalii privind software-ul,

consulati manualul de utilizare de pe CD.

Instructiuni de utilizare

Pornire/Oprire/Economisire energie



Invertorul are 3 status-uri: "ON(Power Saver)""INVERTER OFF" si "ON"
Cand intrerupatorul este pe pozitia "INVERTER OFF", invertorul este oprit.
Cand intrerupatorul este pe pozitia "ON(Power Saver)" sau "ON", invertorul este pornit.
Functia Power saver (economisire energie) este destinata economisirii bateriei cand nu sutn consumatori sau cand consumatorii functioneaza rar. Ori de cate ori sarcina AC (mai mare de 25 watts) este pornita, invertorul recunoaste nevoia de energie si incepe imediat sa furnizele tensiunea maxima pe iesire. Cand nu este detectata nici o sarcina (sau mai mica de 25 watts), invertorul se intoarce la modul de cautare pentru a reduce consumul de energie al bateriei. In modul "ON(Power Saver)", invertorul va trage energie doar atunci cand este nevoie, astfel consumul in stare inactiva este redus semnificativ.

Control de la distanta

In afara de panoul de control de pa partea frontala a invertorului, un panou de control conectat la portul RJ 11 pe partea DC a invertorului printr-un cablu standard de telefon poate de asemenea controla invertorul. Daca un panou suplimentar de control este conectat la invertor prin "portul de control de la distanta" impreuna cu panoul de contro, al invertorului, cele doua panouri de control vor opera in paralel.
Oricare panou trimite comanda de la "OFF" la "Power saver off' sau"Power saver on" invertorul va porni. Cand comenzile celor doua panouri intra in conflict, Invertorul va primi comenzile dupa prioritatea de mai jos:
Power saver on/Power saver off/Power off, Doar cand ambele panouri sunt pe pozitia "Unit Off', atunci invertorul se va opri.
Lungimea maxima a cablului este de 10 metri.

WARNING!

Nu taiati niciodata cablul de telefon cand cablul este conectat la invertor si bateria este conectata la invertor, chiar daca invertorul este oprit. Daca se produce scurtcircuit pe cablu in timpul taierii, se va distruge placa de baza.

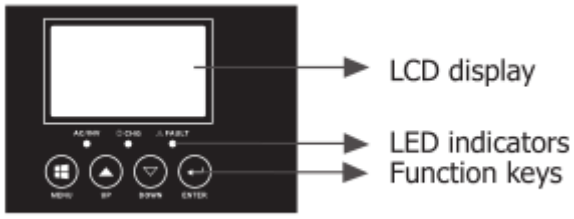
Semnal releu neenergizat

Exista un releu neenergizat (3A/250VAC) disponibil pe panoul din spate. Poate fi folosit pentru a furniza smenal catre dispozitivele externe cand tensiunea bateriei atinge nivelul de atentionare.

Status unitate	Conditie			Port releu
Power Off	Unitatea este oprita si nu este alimentat nici un consumator.			Inchis
Power On	Output is powered from Utility			Inchis
	Consumatorii se alimenteaza de la baterie	Program 01 setat ca Retea	Tensiune baterie < avertizare tensiune DC scazuta	Deschis
			Tensiune baterie > Setare valoare in Program 21 sau bateria atinge stadiul floating	Inchis
		Program 01 setat ca SBU sau prioritate Solar.	Tensiune baterie < Setare valoare in Program 20	Deschis
			Tensiune baterie >Setare valoare in Program 21 sau bateria atinge stadiul floating de incarcare	Inchis

Panoul de control

Panoul de control, afisat mai jos, se afla pa partea din fata a invertorului. Include 3 indicatori, 3 taste functionale si un ecran LCD, si afiseaza stadiul de functionare si informatii despre puterea de intrare si de iesire.



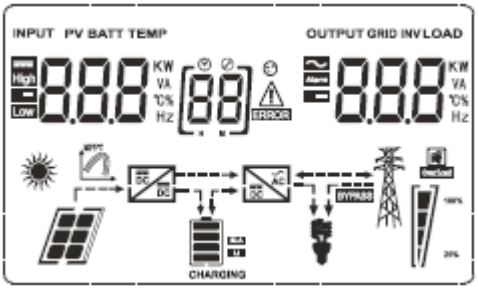
Indicatori LED

LED Indicator			Messages
AC/INV	Verde	Aprins	Iesirea se alimenteaza de la retea in mod Linie.
		Clipeste	Iesirea se alimenteaza de la sau de la PV in mod baterie
✹ **CHG**	Galben	Clipeste	Bateria se incarca sau se descarca.
⚠**FAULT**	Rosu	Aprins	Eroare invertor.
		Clipeste	Situatie de atentionare.

Taste functionale

Tasta	Descriere
MENU	Accesati sau iesiti din modul de setari sau mergeti inapoi la selectia anterioara.
UP	Crestere setare
DOWN	Descrestere setare
ENTER	Accesati modul de setari si confirmati selectia in modul de setari isau mergeti la urmatoarea selectie

Pictograme ecran LCD



Pictograma	Descriere functie
Informatii sursa intrare si informatii iesire	
	Indica informatii AC.
	Indica informatii DC.
	Indica tensiunea de intrare, frecventa de intrare, tensiune PV, tensiune baterie si curentul de incarcare. Indica tensiunea de iesire, frecventa de iesire, sarcina in VA, sarcina in Watt si curentul de descarcare.
Program de configurare si Informatii eroare	
	Indica programul de setari.
	Coduri de atentionare si coduri de eroare. Atentionare: clipeste ⚠ contine codul de atentionare. Eroare: aprins contine codul de eroare.
Informatii baterie	
CHARGING	Indica nivelul bateriei: 0-24%, 25-49%, 50-74% si 75-100% in mod baterie si starea de incarcare in mod linie.

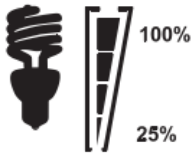
In mod AC, va indica stadiul de incarcare a bateriei.

Status	Tensiune baterie	Ecran LCD
Mod curent constant / Mod tensiune constanta	<2V/celula	4 bare vor clipi pe rand.
	2 ~ 2.083V/celula	Bara de jos va fi aprinsa si celelalte 3 bare vor clipi pe rand.
	2.083 ~ 2.167V/celula	Primele doua bare de jos vor fi aprinse si celelalte 3 bare vor clipi pe rand.
	> 2.167 V/celula	Primele trei bare de jos vor fi aprinse si bara de sus va clipi.
Bateria este complet incarcate.		Toate cele 4 bare sunt aprinse.

In mod baterie, va afisa capacitatea bateriei.

Procent incarcare	Tensiune baterie	Ecran LCD
Incarcare >50%	< 1.717V/celula	
	1.717V/celula ~ 1.8V/celula	
	1.8 ~ 1.883V/celula	

	> 1.883 V/celula	
50%> Incarcare > 20%	< 1.817V/celula	
	1.817V/celula ~ 1.9V/celula	
	1.9 ~ 1.983V/celula	
	> 1.983V/cell	
Incarcare < 20%	< 1.867V/celula	
	1.867V/celula ~ 1.95V/celula	
	1.95 ~ 2.033V/celula	
	> 2.033V/celula	

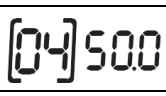
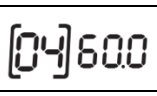
Informatii incarcare				
OVER LOAD	Indica supraincarcare.			
	Indica nivelul de incarcare: 0-24%, 25-49%, 50-74% si 75-100%.			
	0%~24%	25%~49%	50%~74%	75%~100%
				

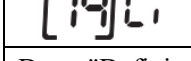
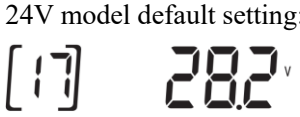
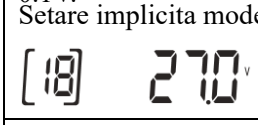
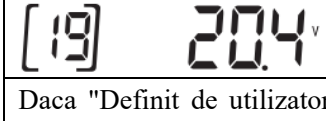
Informatii mod functionare	
	Indica conectarea la retea.
	Indica conectarea la panourile PV.
BYPASS	Consumatorii se alimenteaza de la retea.
	Incarcatorul solar este in functiune.
	Circuitul DC/AC al invertorului functioneaza.
Functionare fara sunet	
	Alarma este dezactivata.

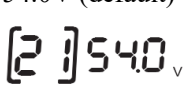
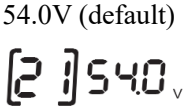
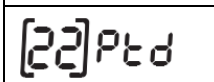
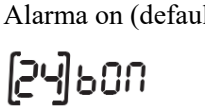
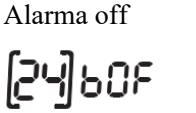
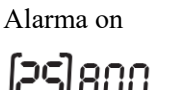
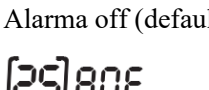
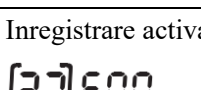
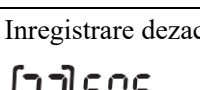
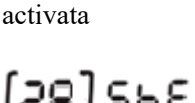
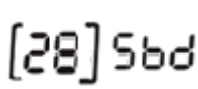
Setari LCD

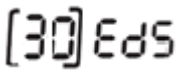
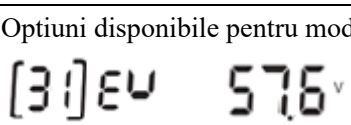
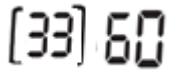
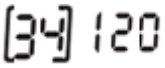
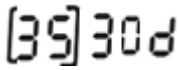
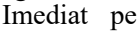
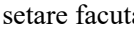
Apasand timp de 2 secunde butonul ENTER, invertorul intra in modul de setari. Apasati "UP" sau "DOWN" pentru a selecta programul de setari. Apoi, apasati "ENTER" sau "MENU" pentru a confirma selectia si pentru a iesi.

Program	Descriere	Optiune selectabila	
00	Iesire din modul de setari	Escape 	
01	Selectie prioritate sursa de iesire		Energia solara furnizeaza energie consumatorilor ca prima prioritate. Daca tensiunea bateriei este mai mare decat nivelul setat in programul 21 timp de 5 minute, invertorul va trece pe mod baterie, energia solara si bateria for furniza energie consumatorilor in acelasi timp. Cand tensiunea bateriei scade sub nivelul setat in programul 20, invertorul trece pe modul bypass, doar reteaua va furniza energie consumatorilor, iar energia solara va incarca bateria.
			Energia solara alimenteaza consumatorii in mod prioritar. Daca tensiunea bateriei este mai mare decat nivelul setat in programul 21 timp de 5 minute, dar energia solara a fot disponibila in aceste 5 minute, invertorul va trece pe mod baterie, energia solara si bateria for furniza energie consumatorilor in acelasi timp. Cand tensiunea bateriei scade sub nivelul setat in programul 20, invertorul trece pe modul bypass, utility provides power to the load only, doar reteaua va furniza energie consumatorilor, iar energia solara va incarca bateria.
		(default) 	Reteaua va furniza energie consumatorilor prioritar. Energia solara si bateri vor alimenta consumatorii doar cand reteaua nu este disponibila.
02	Interval tensiune de intrare AC	Dispozitive (default) 	Daca este selectat, intervalul de tensiune de intrare AC va fi 90-280VAC.
		UPS 	Daca este selectat, intervalul de tensiune de intrare AC va fi 170-280VAC.
		GEN 	Daca utilizatorul foloseste generator, sselectati modul generator.
03	Tensiunea de iesire		Setati tensiunea de iesire.(220VAC-240VAC)
		50Hz(default)	60Hz

04	Frecventa de iesire					
05	Prioritate sursa solara		Energia solara va incarca bateria ca prioritate.			
		(default) 	Energia solara va alimenta consumatorii ca prioritare.			
06	Suprasarcina bypass: CAnd este activat, unitatea va trece pe modul linie daca in modul baterie are loc o suprasarcina	Bypass dezactivat 	Bypass activat (default) 			
07	Repornire automata cand se inregistreaza suprasarcina	Restart dezactivat (default) 	Restart activat 			
08	Repornire automata cand se inregistreaza supratemperatura	Restart dezactivat 	Restart activat 			
10	Prioritate sursa incarcare: pentru a configura prioritate sursa de incarcare	Daca invertorul lucreaza in modul Linie, Standby sau eroare, sursa de incarcare poate fi setata astfel:				
		Sursa solara prioritara 	Energia solara va incarca bateria prioritar. Reteaua va incarca bateria doar daca nu este disponibila energia solara.			
		Solar si Retea (default) 	Energia solara si reteaua vor incarca bateria in acelasi timp.			
		Doar Solar 	Energia solara va fi unica sursa de incarcare indiferent daca reteaua este disponibila sau nu.			
		Daca invertorul lucreaza in mod baterie sau econimisire energie, doar energia solara poate incarca bateria. Energia solara va incarca bateria daca este disponobila si suficienta.				
11	Curent maxim de incarcare: pentru a configura curentul de incarcare pentru incarcarea solara sau de la retea.(curent max. de incarcare=curent de incarcare de la retea +curent de incarcare solara)	80A (default) 	4KW24V	1-160A		
			5KW24V	1-180A		
			4KW48V	1-140A		
			5KW48V	1-150A		
			6KW48V	1-160A		
			8KW48V	1-200A	1-300A	
			10KW48V	1-220A	1-320A	
			12KW48V	1-240A	1-340A	
13	Tensiune maxima retea	30A (default) 	4KW24V	1-80A		
			5KW24V	1-100A		
			4KW48V	1-60A		
			5KW48V	1-70A		

<table>
<tr><td></td><td>curent de incarcare</td><td colspan="2"></td><td>6KW48V</td><td>1-80A</td></tr>
<tr><td colspan="4"></td><td>8KW48V</td><td>1-100A</td></tr>
<tr><td colspan="4"></td><td>10KW48V</td><td>1-120A</td></tr>
<tr><td colspan="4"></td><td>12KW48V</td><td>1-140A</td></tr>
<tr><td rowspan="4">14</td><td rowspan="4">Tip baterie</td><td colspan="2">AGM (default)
  </td><td colspan="2">Flooded
  </td></tr>
<tr><td colspan="2">GEL
  </td><td colspan="2">LEAD
  </td></tr>
<tr><td colspan="2">Litiu Ion
  </td><td colspan="2">Definit de utilizator
  </td></tr>
<tr><td colspan="4">Daca "Definit de utilizator" LI este selectat, tensiunea de incarcare a bateriei si tensiunea minima de intrerupere pot fi setate in programele 17, 18 and 19.</td></tr>
<tr><td rowspan="3">17</td><td rowspan="3">Tensiuena de incarcare bulk (tensiunea C.V)</td><td colspan="4">24V model default setting: 28.2V
  </td></tr>
<tr><td colspan="4">Daca "Definit de utilizator" LI este selectat in programul 14, acest program poate fi setat. Intervalul este de la 24.0V la 29.2V pentru modelul 24Vdc . Cresterea cu fiecare click este de 0.1V</td></tr>
<tr><td colspan="4">Setare implicita model 48V: 56.4V
 
Daca "autodefinit" este selectat in programul 14, acest program poate fi setat. Intervalul este de la 48.0V la 58.4V pt 48Vdc. Cresterea cu fiecare click este de 0.1V.</td></tr>
<tr><td rowspan="3">18</td><td rowspan="3">Tesniune incarcare Floating</td><td colspan="4">Setare implicita model 24V: 27.0V
  </td></tr>
<tr><td colspan="4">Daca "Definit de utilizator" LI este selectat in programul 14, acest program poate fi setat. Intervalul este de la 24.0V la 29.2V pentru 24Vdc . Cresterea cu fiecare click este d 0.1V</td></tr>
<tr><td colspan="4">Setare implicita model 48V: 54.0V
 
Daca "autodefinit" este selectat in programul 14, acest program poate fi setat. Intervalul este de la 48.0V la 58.4V pentru 48Vdc. Cresterea cu fiecare click este de 0.1V.</td></tr>
<tr><td rowspan="3">19</td><td rowspan="3">Setare tensiune minima de intrerupere a bateriei</td><td colspan="4">Setare implicita model 24V: 20.4V
  </td></tr>
<tr><td colspan="4">Daca "Definit de utilizator" LI este selectat in programul 14, acest program poate fi setat. Intervalul este de la 20.0V la 24.0V pentru 24Vdc. Cresterea cu fiecare click este de 0.1V. Tensiunea minima de intrerupere va ramane al valoarea setata indiferent de sarcina conectata.</td></tr>
<tr><td colspan="4">Setare implicita model 48V: 40.8V
  </td></tr>
</table>

		Daca "autodefinit" este selectat in programul 14, acest program poate fi setat. Intervalul este de la 40.0V la 48.0V pentru 48Vdc. Cresterea cu fiecare click este de 0.1V. Tensiunea minima de intrerupere va ramane al valoarea setata indiferent de sarcina conectata.	
20	Tensiunea de descarcare baterie oprita cand reteaua este disponibila	Optiuni disponibile pentru modelul de 24V :	
		23.0V (default) 	Intervalul este de la 22.0V la 29.0V. Cresterea cu fiecare click este de 0.1V
		Optiuni disponibile pentru modelul de 48V:	
		54.0V (default) 	Intervalul este de la 44.0V la 58.0V. Cresterea cu fiecare click este de 0. 1V.
21	Tensiunea de incarcare baterie oprita cand reteaua este disponibila	Optiuni disponibile pentru modelul de24V:	
		27.0V (default) 	Intervalul este de la 22.0V la 29.0V. Cresterea cu fiecare click este de 0. 1V
		Optiuni disponibile pentru modelul de48V:	
		54.0V (default) 	Intervalul este de la 44.0V to 58.0V. Cresterea cu fiecare click este de 0. 1V.
22	Rotire automata pagina	(default) 	Daca este selectat, pe ecran se va roti automat pagina afisata.
			Daca este selectat, pe ecran va ramane pe ultimul mod accesat de utilizator.
23	Control lumina de fundal	Backlight on 	Backlight off (default) 
24	Control alarma	Alarma on (default) 	Alarma off 
25	Beep cand sursa prioritara este intrerupta	Alarma on 	Alarma off (default) 
27	Inregistare cod eroare	Inregistrare activata (default) 	Inregistrare dezactivata 
28	Echilibrare energie solara :cand este activat, puterea de intrare solara va fi reglata automat in functie de sarcina consumata.	Echilibrare energie solara activata 	Daca este selectata, puterea de intrare solara va fi reglata conform formulei: putere maxima solara de intrare = puterea maxima de incarcare a bateriei + puterea sarcinei conectate cand invertorul este in modul OffGrid.
		Echilibrare energie solara dezactivata 	Daca este selectata, tputerea de intrare solara va fi egala cu puterea maxima de incarcare a bateriei indiferent de cati consumatori sunt conectati. Puterea maxima de incarcare a bateriei se va baza pe curentul setat in programul 11 (Putere maxima

			solara = Puterea maxima de incarcare a bateriei)
30	Egalizare baterie	Egalizare baterie 	Egalizare baterie dezactivat(default) 
31	Tensiune egalizare baterie	Optiuni disponibile pentru modelul de 24V:28.8V 	
		Optiuni disponibile pentru modelul de48V :57.6V 	
		Intervalul este de la 24.0V la 29.2V pentru modelul 24V si de la 48.0V la 58.4V pentru 48V. Cresterea cu fiecare click este de 0.1V.	
33	Durata egalizare baterie	60min(default) 	Intervalul este de la 5 min la 900min. Cresterea cu fiecare click este de 5min.
34	Expirare timp egalizare baterie	120min(default) 	Intervalul este de la 5 min la 900min. Cresterea cu fiecare click este de 5min.
35	Interval egalizare baterie	30zile(default) 	Intervalul este de la 0 la 90 zile. Cresterea cu fiecare click este de 1 zi.
36	Activare imediata egalizare	Activat 	Dezactivat(default) 
		Daca functia de egalizare este activata in programul 30, tacest program poate fi setat. Daca a fost selectata optiunea Activat, inseamna ca ati activat egalizarea bateriei Imediat pe ecran va aparea  ". Daca "Dezactivat" este selectat, va fi anulata functia de egalizarepana la urmatoarea ora presetata de egalizare setare facuta in programul 35. Pe ecran va aparea," 	

Dupa ce tineti apasat butonul "MENU" timp de 6 secunde, invertorul se va reseta. Apasati "SUS" si "JOS" pentru a selecta programul. Apoi, apasati "ENTER" pentru a iesi.

SEt	(default) dt nrt	Resetare setari dezactivata
	dt rSt	Resetare setari activata

Coduri de eroare

Cod eroare	Descriere	Icon on
01	Ventilatorul este blocat cand invertorul este oprit	
02	Supratemperatura transformator invertor	
03	Tensiunea bateriei este prea mare	
04	Tensiunea bateriei este prea mica	
05	Scurtcircuit pe iesire	
06	Tensiunea de iesire a invertorului este prea mare	
07	Timp de suprasarcina	
08	Tensiunea magistralei invertorului este prea mare	
09	Eroare pornire soft	
11	Eroare releu principal	
21	Eroare senzor tensiune de iesire a invertorului	
22	Eroare senzor tensiune pt retea a invertorului	
23	Eroare senzor curent de iesire a invertorului	
24	Eroare senzor curent pt retea a invertorului	
25	Eroare senzor curent pentru sarcina a invertorului	

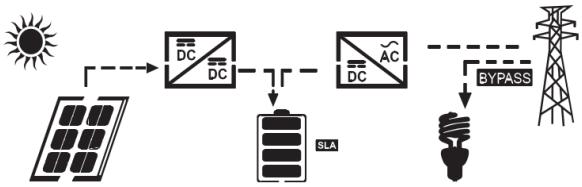
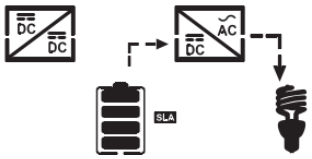
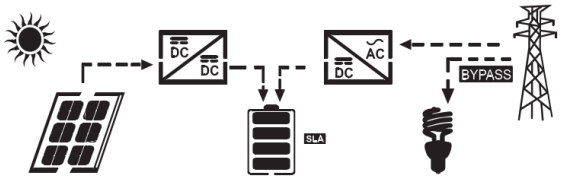
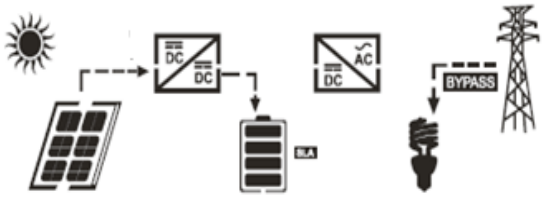
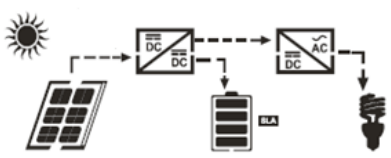
26	Eroare supracurent retea	
27	Supratemperatura radiator invertor	
31	Eroare tensiune incarcare solara a bateriei	
32	Eroare senzor curent incarcare solara	
33	Curentul de incarcare solara este necontrolabil	
41	Tensiunea de retea a invertorului este scazuta	
42	Tensiunea de retea a invertorului este mare	
43	Frecventa scazuta de retea a invertorului	
44	Frecventa crescuta de retea a invertorului	
51	Eroare protectie supracurent	
52	Tensiunea magistralei invertorului este prea mica	
53	Eroare pornire sift invertor	
55	Tensiune DC mare pe iesirea AC	
56	Conexiunea bateriei este deschisa	
57	Eroare senzor curent de control a invertorului	
58	Tensiunea de iesire a invertorului este scazura	

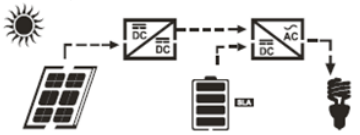
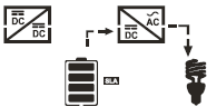
Indicatori de atentionare

Cod	Descriere	Pictograma ce clipeste
61	Ventilatorul este blocat cand invertorul este pornit	
62	Ventilatorul 2 este blocat cand invertorul este pornit	
63	Bateria este supraincarcata	
64	Baterie descarcaya	
67	Suprasarcina	
70	Output power derating	

72	Incarcarea solara se opreste datorita bateriei descarcate.	
73	Incarcarea solara se opreste datorita tensiunii PV prea mare.	
74	Incarcarea solara se opreste datorita suprasarcinii.	
75	Supratemperatura incarcare solara.	
76	Eroare comunicare incarcare PV	
77	Eroare parametru	

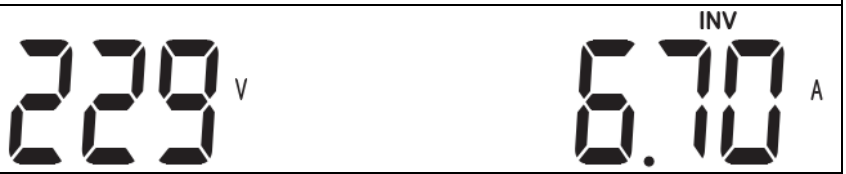
Descriere mod de functionare

Stadiu de operare	Descriere	Ecran LCD
Utility-Tie state	Energia solara incarca bateria iar reteaua ofera energie consumatorilor AC.	PV este pornit 
		PV este oprit 
Charge state	Energia PV si reteaua alimenteaza bateria.	
Bypass state	Problemele apar dotorita unor erori la circuitul intern sau din motive externe cum ar fi supratemperatura, scurtcircuit pe iesire etc.	
Off-Grid state	Invertorul va furniza energie de la baterie si de la PV.	Invertorul alimenteaza consumatorii de la PV 
		Invertorul alimenteaza consumatorii de la baterie si PV

		
		Invertorul alimenteaza consumatorii doar de la baterie 
Stop state	Invertorul se opreste daca este oprit din soft sau a intervenit o eroare.	

Setari de afisare

Informatiile afisate pe ecran pot fi schimbate apasand tastele "SUS" sau "JOS" . Informatiile afisate sunt prezentate in ordinea urmatoare: tensiune baterie, curent baterie, tensiune invertor, curent invertor, tensiune retea, curent retea, sarcina in Watt, sarcina in VA, frecventa retea, frecventa invertor, tensiune PV, putere incarcare PV, tensiune de iesire incarcare PV, curent de incarcare PV.

Informatie selectabila	Ecran LCD
Tensiune baterie/Curent de descarcare DC	
Tensiune de iesire invertor/Curent de iesire invertor	
Tensiuen retea/Curent retea	
Sarcina in Watt/VA	
Frecventa retea/ Frecventa invertor	
Putere si tensiune PV	

Tensiune de iesire incarcare PV si curent de incarcare MPPT	

SPECIFICATII TEHNICE

Tabel 1 Specificatii Mod Linie (Line Mode)

INVERTOR	4KW24V	5KW24V	4KW48V	5KW48V	6KW48V	8KW48V	10KW48V	12KW48V
Forma unda tensiune de intrare	Sinusoida (retea sau generator)							
Tensiune de intrare nominala	230Vac							
Low Loss Voltage	90Vac±7V(APL,GEN); 170Vac±7V(UPS)							
Low Loss Return Voltage	100Vac±7V(APL,GEN);180Vac±7V(UPS)							
High Loss Voltage	280Vac±7V(APL, UPS,GEN)							
High Loss Return Voltage	270Vac±7V(APL,UPS,GEN)							
Max AC Input Voltage	300Vac							
Nominal Input Frequency	50Hz / 60Hz (Auto detection)							
Low Loss Frequency	40HZ±1HZ(APL,UPS,GEN)							
Low Loss Return Frequency	42HZ±1HZ(APL,UPS,GEN)							
High Loss Frequency	65HZ±1HZ(APL,UPS,GEN)							
High Loss Return Frequency	63HZ±1HZ(APL,UPS,GEN)							
Output Short Circuit Protection	Line mode: Circuit Breaker Battery mode: Electronic Circuits							
Efficiency (Line Mode)	>95% (Rated R load, battery full charged)							
Transfer Time	10ms typical (UPS,) 20ms typical (APL)							

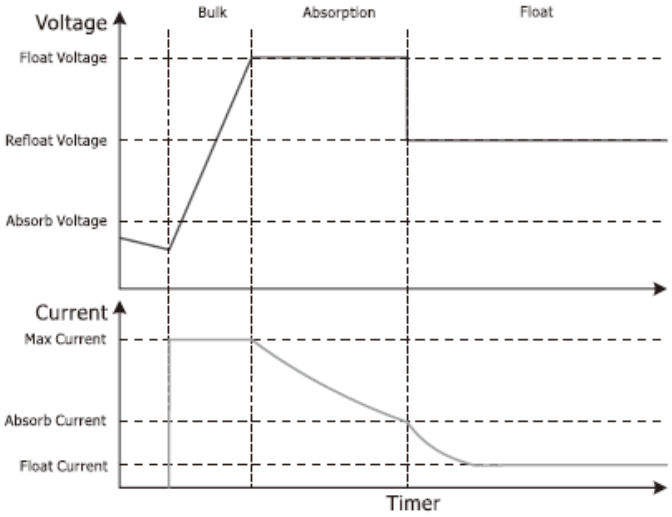
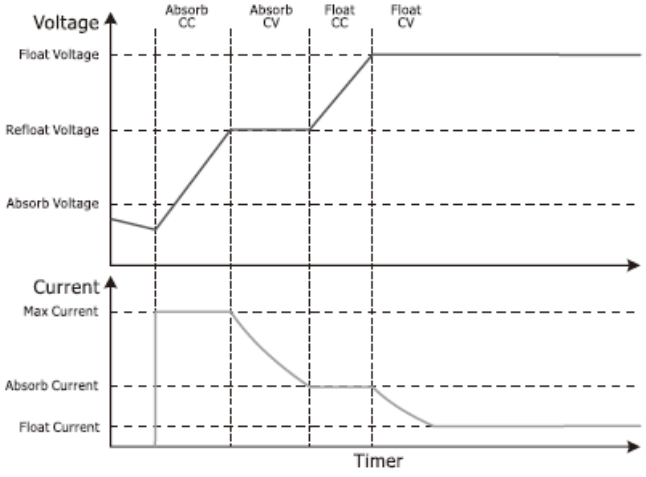
Tabel 2 Specificatii Mod Invertor

INVERTOR	4KW24V	5KW24V	4KW48V	5KW48V	6KW48V	8KW48V	10KW48V	12KW48V
Putere nominala de iesire	4KW	5KW	4KW	5KW	6KW	8KW	10KW	12KW
Forma unda tensiune de iesire	Unda sinusoidala pura							

Reglarea tesniune de iesire	230Vac±5%							
Frecventa de iesire	60Hz or 50Hz							
Eficienta de varf	＞83%		＞85%			＞88%		
Protectie suprasarcina	5min@100%-110% load; 10s@110%~150% load;5S@＞150% load							
Capacitate supratensiune	2* putere nominala pentru 400 milisecunde							
Tensiune de intrare DC nominala	24Vdc		48VDC					
Tensiune de pornire la rece	23.0Vdc		46.0VDC					
Atentionare tensiune DC scazuta @ load < 20%	22.0Vdc		44.0VDC					
@ 20% ≤ load < 50%	21.4Vdc		42.8VDC					
@ load ≥ 50%	20.2Vdc		40.4VDC					
Atentionare tensiune DC de retur								
@ load < 20%	23.0Vdc		46.0VDC					
@ 20% ≤ load < 50%	22.4Vdc		44.8VDC					
@ load ≥ 50%	21.2Vdc		42.4VDC					
Nivel tensiune scazuta								
@ load < 20%	21.0Vdc		42.0VDC					
@ 20% ≤ load < 50%	20.4Vdc		40.8VDC					
@ load ≥ 50%	19.2Vdc		38.4VDC					
Tesniune DCde recuperare mare	29Vdc		58VDC					
High DC Cut-off Voltage	30Vdc		60VDC					
No Load Power Consumption	100W	120W	100W	120W	150W	180W	190W	200W
No Load Power Consumption (Power Saver Auto**)**	6W			6.6W		8.6W		
Power Saver Auto	50W					90W		

Tabel 3 Specificatii Mod Incarcare

Mod de incarcare de la retea									
INVERTOR		**4KW24V**	**5KW24V**	**4KW48V**	**5KW48V**	**6KW48V**	**8KW48V**	**10KW48V**	**12KW48V**
Curent de incarcare @Nominal Input Voltage		1-80A	1-100A	1-60A	1-70A	1-80A	1-100A	1-120A	1-140A
Absorption Voltage	**AGM / Gel/LEAD Battery**	25Vdc		50Vdc					
	Flooded Battery	25Vdc		50Vdc					
Refloat Voltage	**AGM / Gel/LEAD Battery**	27.4Vdc		54.8Vdc					
	Flooded Battery	27.4Vdc		54.8Vdc					
Float Voltage	**AGM / Gel/LEAD Battery**	28.8Vdc		57.6Vdc					
	Flooded Battery	28.4Vdc		56.8Vdc					
Charging Algorithm		3-Step(Flooded Battery, AGM/Gel Battery), 4-Step(LI)							

Solar Charging Mode								
INVERTER MODEL	4KW24V	5KW24V	4KW48V	5KW48V	6KW48V	8KW48V	10KW48V	12KW48V
Charging Current (MPPT)	80AMP							
System DC Voltage	24Vdc		48vdc					
Operating Voltage Range	30-130Vdc		60-130Vdc					
Max. PV Array Open Circuit Voltage	145Vdc							
Standby Power Consumption	2W							
Battery Voltage Accuracy	+/-0.4V							
PV Voltage Accuracy	+/-2V							
Charging Algorithm	3-Step(Flooded Battery, AGM/Gel Battery),4-Step(LI)							
Charging algorithm for lead acid battery								
Charging algorithm for Lithium battery								

Tabel 4 Specificatii generale

INVERTOR	4KW24V	5KW24V	4KW48V	5KW48V	6KW48V	8KW48V	10KW48V	12KW48V
Certificare	CE							
Interval temperatura de lucru	0°C to 40°C							
Temperatura depozitare	-25°C~ 60°C							
Dimensiuni (D*W*H), mm	745X505X370mm					884X618X443mm		
Greutate neta, kg	56	61	56	61	64	82.5	86	92

Declaratie UE de conformitate simplificata
SC ONLINESHOP SRL declara ca **Invertor solar PNI GreenHouse SC3500** este in conformitate cu Directiva EMC 2014/30/EU si Directiva LVD 2014/35/EU. Textul integral al declaratiei UE de conformitate este disponibil la urmatoarea adresa de internet:
https://www.mypni.eu/products/6000/download/certifications

USER'S MANUAL

SOLAR INVERTER/CHARGER

MPPT 4KW- 12KW

Table Of Contents

ABOUT THIS MANUAL

Purpose

This manual describes the assembly, installation, operation and troubleshooting of this unit. Please read this manual carefully before installations and operations. Keep this manual for future reference.

Scope

This manual provides safety and installation guidelines as well as information on tools and wiring.

The following cases are not within the scope of warranty:

(1) Out of warranty.
(2) Series number was changed or lost.
(3) Battery capacity was declined or external damaged.
(4) Inverter was damaged caused of transport shift, remissness,ect external factor.
(5) Inverter was damaged caused of irresistible natural disasters.
(6) Not in accordance with the electrical power supply conditions or operate environment caused damage.

SAFETY INSTRUCTIONS

WARNING: This chapter contains important safety and operating instructions. Read and keep this manual for future reference.

1. Before using the unit, read all instructions and cautionary markings on the unit, the batteries and all appropriate sections of this manual.
2. **CAUTION** --To reduce risk of injury, charge only deep-cycle lead acid type rechargeable batteries. Other types of batteries may burst, causing personal injury and damage.
3. Do not disassemble the unit. Take it to a qualified service center when service or repair is required. Incorrect re-assembly may result in a risk of electric shock or fire.
4. To reduce risk of electric shock, disconnect all wirings before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.
5. **CAUTION** – Only qualified personnel can install this device with battery.
6. **NEVER** charge a frozen battery.
7. For optimum operation of this inverter/charger, please follow required spec to select appropriate cable size. It's very important to correctly operate this inverter/charger.
8. Be very cautious when working with metal tools on or around batteries. A potential risk exists to drop a tool to spark or short circuit batteries or other electrical parts and could cause an explosion.
9. Please strictly follow installation procedure when you want to disconnect AC or DC terminals. Please refer to INSTALLATION section of this manual for the details.
10. GROUNDING INSTRUCTIONS -This inverter/charger should be connected to a permanent grounded wiring system. Be sure to comply with local requirements and regulation to install this inverter.
11. NEVER cause AC output and DC input short circuited. Do NOT connect to the mains when DC input short circuits.
12. **Warning!!** Only qualified service persons are able to service this device. If errors still persist after following troubleshooting table, please send this inverter/charger back to local dealer or service center for maintenance.

INTRODUCTION

This is a multi-function inverter/charger, combining functions of inverter, solar charger and battery charger to offer uninterruptible power support with portable size. Its comprehensive LCD display offers user-configurable and easy-accessible button operation such as battery charging current, AC/solar charger priority, and acceptable input voltage based on different applications.

Features

- Pure sine wave inverter
- Configurable input voltage range for home appliances and personal computers via LCD setting
- Configurable battery charging current based on applications via LCD setting
- Configurable AC/Solar Charger priority via LCD setting
- Compatible to mains voltage or generator power
- MPPT solar charge controller 80A
- Overload/ Over temperature/ short circuit protection
- Smart battery charger design for optimized battery performance
- Cold start function

Basic System Architecture

The following illustration shows basic application for this inverter/charger. It also includes following devices to have a complete running system:

- Generator or Utility.
- Battery
- PV modules

Consult with your system integrator for other possible system architectures depending on your requirements.

This inverter can power all kinds of appliances in home or office environment, including motor-type appliances such as tube light, fan, refrigerator and air conditioner.

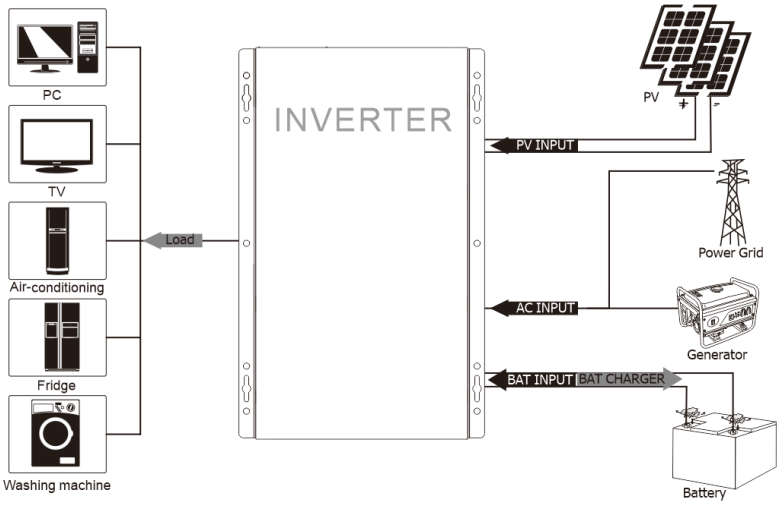
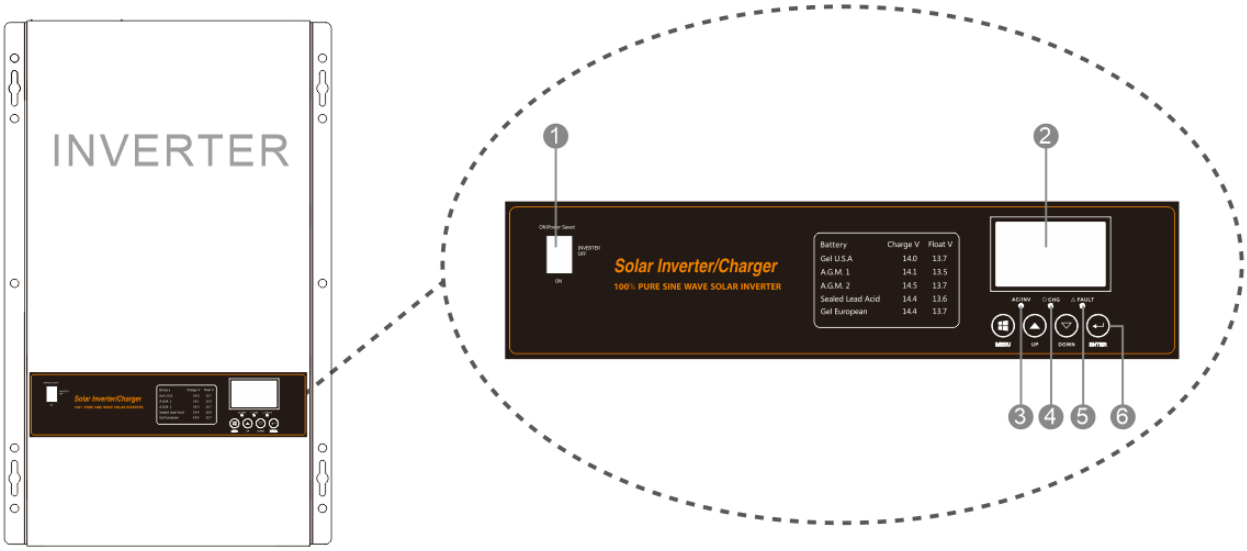
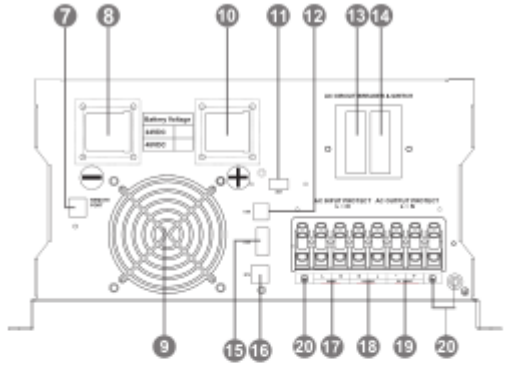


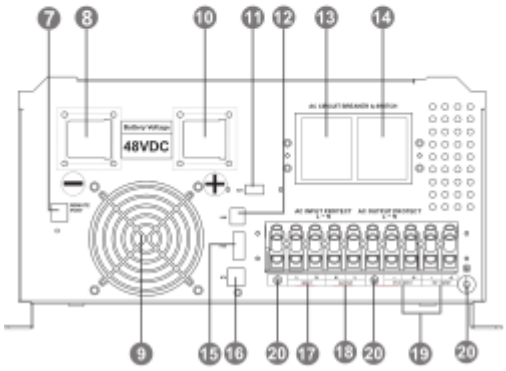
Figure 1 Hybrid Power System

Product Overview





4KW-6KW single model



8KW-12KW single model

1.Power saver on/off switch
2.LCD display
3.Status indicator
4.Discharging/Charging indicator
5.Fault indicator
6.Function buttons
7.Remote control port
8.BAT -
9.FAN
10.BAT +
11.WI-FI port
12.USB communication port
13.AC input /bypass breaker
14.AC output breaker
15.AGS(Auto Generator Start)
16.BTS
17.AC input
18.AC output
19.PV input
20.Ground

NOTE: For parallel model installation and Operation, please check separate parallel installation guide for the details.

INSTALLATION

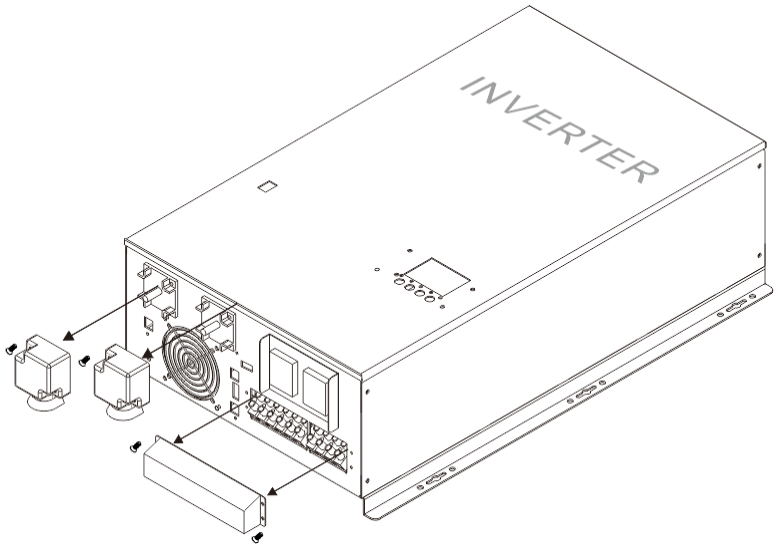
Unpacking and Inspection

Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. You should have received the following items inside of package:

- The unit x 1
- User manual x 1
- USB cable x 1
- Software CD x 1
- BTS Line x 1(Option)
- WIFI Key x 1(Option)
- Remote Line x 1(Option)

Preparation

Before connecting all wirings, please take off bottom cover by removing six screws as shown below.

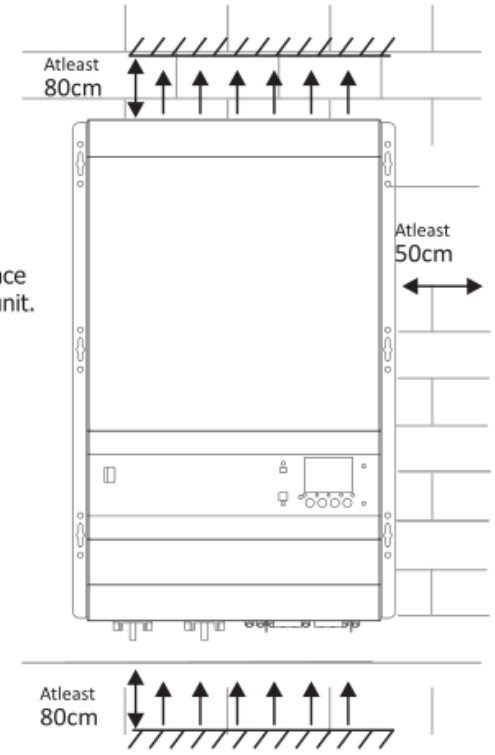


Mounting the Unit

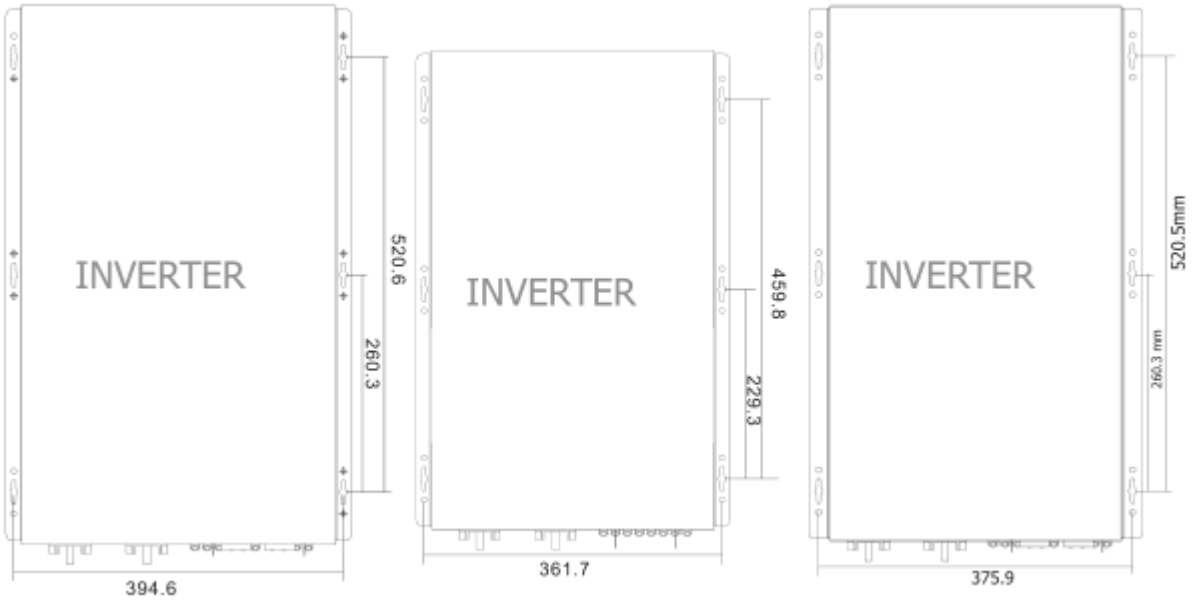
Consider the following points before selecting where to install:

- Do not mount the inverter on flammable construction materials.
- Mount on a solid surface.
- Install this inverter at eye level in order to read the LCD display clearly.
- For proper air circulation to dissipate heat, require a clearance about 50 cm to the side and 80 cm above and below the unit.
- The ambient temperature should be between 0℃ and 40℃ to ensure optimal operation.
- The recommended installation position is to be adhered to the wall vertically.
- Be sure to keep other objects and surfaces as shown in the diagram to guarantee sufficient heat dissipation and to have enough space for removing wires.

SUITABLE FOR MOUNTING ON CONCRETE OR OTHER NON-COMBUSTIBLE SURFACE ONLY.



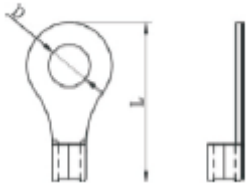
Install the unit by screwing six screws.



Battery Connection

CAUTION: To safety operation and regulation compliance, it's requested to install a separate DC over-current protector or disconnect device between battery and inverter. It may not be requested to have a disconnect device in some applications, however, it's still requested to have over-current protection installed. Please refer to typical amperage in below table as required fuse or beaker size.

Ring terminal:



WARNING! All wiring must be performed by a qualified personnel.
WARNING! It's very important for system safety and efficient operation to use appropriate cable for battery connection. To reduce risk of injury, please use the proper recommended cable and terminal size as below.

Recommended battery cable and terminal size:

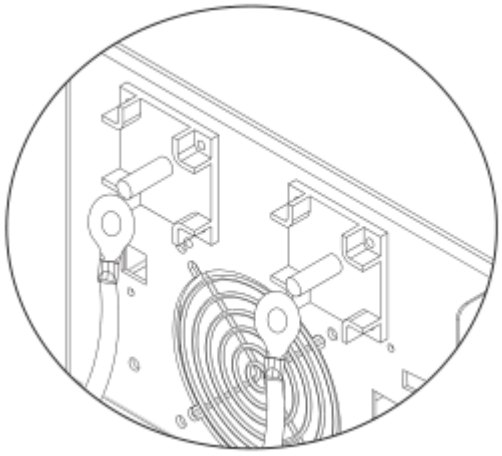
Model	Typical Amperage	Least Battery capacity	Wire Size	Torque value
4024	200A	400AH	2*2AWG	2~ 3 Nm
5024	250A	600AH	2*1AWG	2~ 3 Nm
4048	100A	400AH	1*2AWG	2~ 3 Nm
5048	130A	600AH	1*1AWG	2~ 3 Nm
6048	150A	800AH	2*3AWG	2~ 3 Nm
8048	200A	1000AH	2*2AWG	2~ 3 Nm
10048	250A	1200AH	2*1AWG	2~ 3 Nm
12048	300A	1400AH	3*2AWG	2~ 3 Nm

Please follow below steps to implement battery connection:

1. Assemble battery ring terminal based on recommended battery cable and terminal size.
2. Connect all battery packs as units requires. It's suggested to connect at least 400Ah capacity battery for 4KW-5KW DC24V model,at least 400Ah capacity batter for 4KW-6KW DC48V model and at least 600Ah capacity battery for 8KW-12KW model.

NOTE:Please only use sealed lead acid battery or sealed GEL/AGM lead-acid battery.

3. Insert the ring terminal of battery cable into battery connector of inverter and make sure the bolts are tightened with torque of 2-3 Nm. Make sure polarity at both the battery and the energy storage inverter is correctly connected and ring terminals are tightly screwed to the battery terminals.



⚠	**WARNING: Shock Hazard** Installation must be performed with care due to high battery voltage in series.

⚠	**CAUTION!!** Do not place anything between the flat part of the inverter terminal and the ring terminal. Otherwise, overheating may occur. **CAUTION!!** Do not apply anti-oxidant substance on the terminals before terminals are connected tightly. **CAUTION!!** Before making the final DC connection or closing DC breaker/disconnector, be sure DC (+) must be connected to DC (+) and DC (-) must be connected to DC (-).

AC Input/Output Connection

CAUTION!! Before connecting to AC input power source, please install a separate AC breaker between inverter and AC input power source. This will ensure the inverter can be securely disconnected during maintenance and fully protected from over current of AC input. The recommended appropriate of AC breaker is 40A for 4KW-6KW, 80A for 8KW-12KW.

CAUTION!! Please don't connect the output wring to "Grid" terminal or connect the grid wring to the "Load" terminal.

WARNING! All wiring must be performed by a qualified personnel.

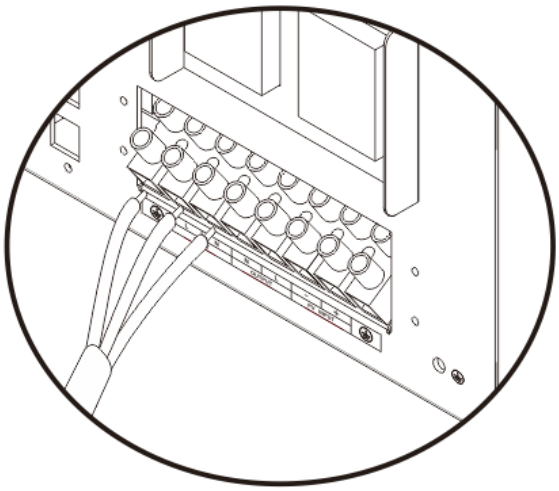
WARNING! It's very important for system safety and efficient operation to use appropriate cable for AC input connection. To reduce risk of injury, please use the proper recommended cable size as below.

Suggested cable requirement for AC wires

Model	Gauge	Torque Value
4KW-5KW	10AWG	1.4-1.6Nm
6KW-8KW	8AWG	1.4-1.6Nm
10KW-12KW	2*10AWG	1.6-1.8Nm

Please follow below steps to implement AC input/output connection:

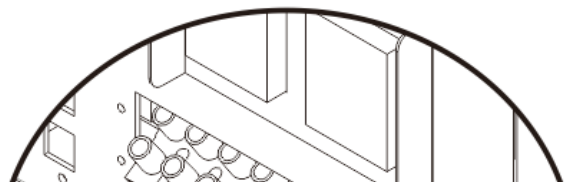
1. Before making AC input/output connection, be sure to open DC protector or disconnector first.
2. Remove insulation sleeve 10mm for six conductors. And shorten phase L and neutral conductor N 3 mm.
3. Insert AC input wires according to polarities indicated on terminal block and tighten the terminal screws. Be sure to connect PE protective conductor (⏚**)** first.
4. ⏚**→Ground (yellow-green)**
5. **L→LINE (brown or black)**
6. **N→Neutral (blue)**



⚠	**WARNING:** Be sure that AC power source is disconnected before attempting to hardwire it to the unit.

7. Then, insert AC output wires according to polarities indicated on terminal block and tighten terminal screws. Be sure to connect PE protective conductor (⏚**)** first.

   ⏚**→Ground (yellow-green)**



L→LINE (brown or black)
N→Neutral (blue)

8. Make sure the wires are securely connected.

CAUTION: Important
Be sure to connect AC wires with correct polarity. If L and N wires are connected reversely, it may cause utility short-circuited when these inverters are worked in parallel operation.

CAUTION: Appliances such as air conditioner are required at least 2~3 minutes to restart because it is required to have enough time to balance refrigerant gas inside of circuits. If a power shortage occurs and recovers in a short time, it will cause damage to your connected appliances. To prevent this kind of damage, please check manufacturer of air conditioner if it's equipped with time-delay function before installation. Otherwise, this inverter/charger will trig overload fault and cut off output to protect your appliance but sometimes it still causes internal damage to the air conditioner.

PV Connection

CAUTION: Before connecting to PV modules, please install separately a DC circuit breaker between inverter and PV modules.

WARNING! All wiring must be performed by a qualified personnel.

WARNING! It's very important for system safety and efficient operation to use appropriate cable for PV module connection. To reduce risk of injury, please use the proper recommended cable size as below.

Model	Typical Amperage	Cable Size	Torque
4024-80A **5024-80A**	80A	8 AWG	1.6-1.8Nm
4048-80A **5048-80A** **6048-80A**	80A	8 AWG	1.6-1.8Nm
8048-100A/200A **10048-100A/200A** **12048-100A/200A**	**100A/200A**	6AWG/2*6AWG	1.8-2.0Nm

PV Module Selection:

When selecting proper PV modules, please be sure to consider below parameters:

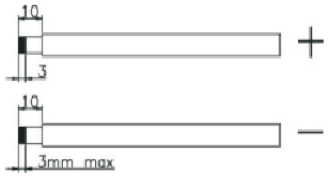
1. Open circuit Voltage (Voc) of PV modules not exceeds max. PV array open circuit voltage of inverter.
2. Open circuit Voltage (Voc) of PV modules should be higher than min. battery voltage.

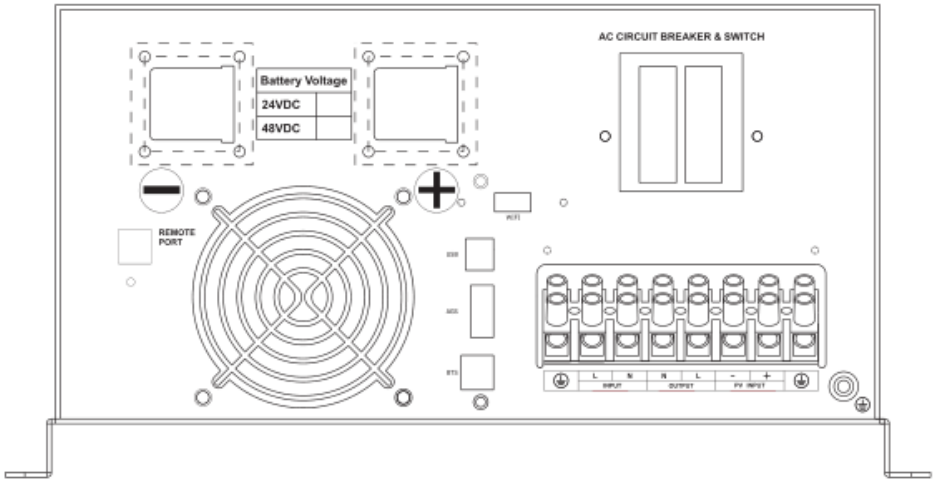
Solar Charging Mode		
INVERTER MODEL	24V	48V

Max. PV Array Open Circuit Voltage	145Vdc	
PV Array MPPT Voltage Range	30V-130V	60V-130V
Min. battery voltage for PV charge	Battery voltage +3Vdc	

Please follow below steps to implement PV module connection:

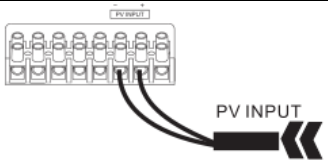
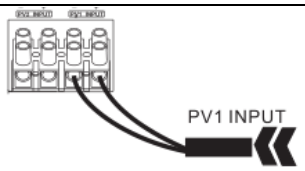
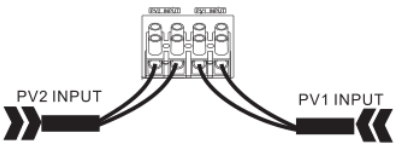
1. Remove insulation sleeve 10 mm for positive and negative conductors
2. Check correct polarity of connection cable from PV modules and PV input connectors. Then, connect positive pole (+) of connection cable to positive pole (+) of PV input connector. Connect negative pole (-) of connection cable to negative pole (-) of PV input connector.





3. Make sure the wires are securely connected.

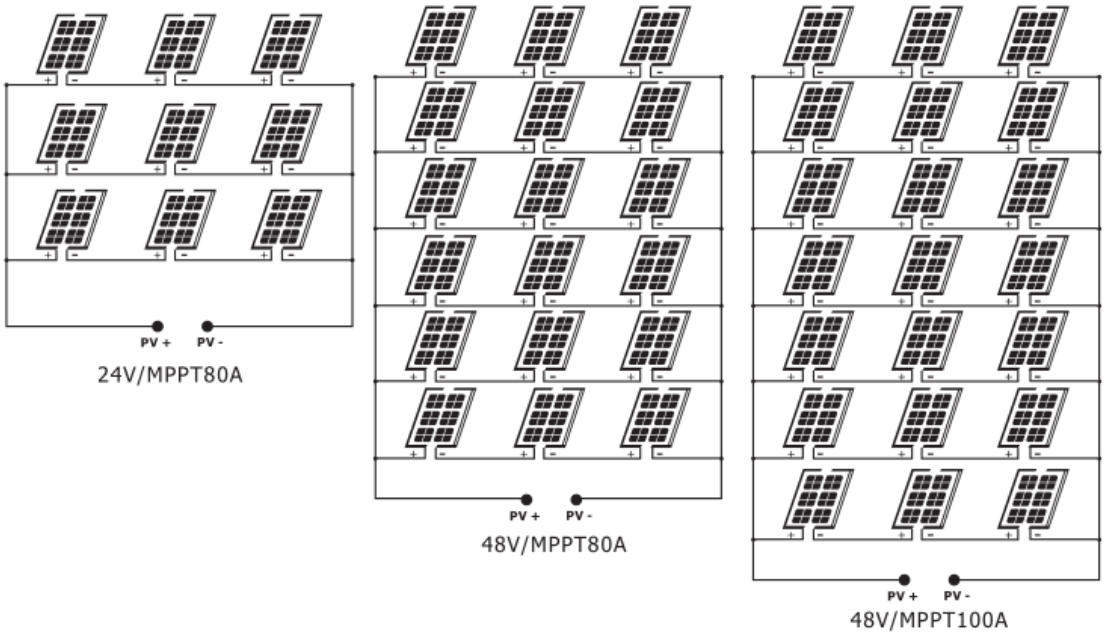
PV Wiring

Wiring option 1 4-6KW MPPT 80A PV Input	
Wiring option 2 8-12KW MPPT 80A/100A PV Input	
Wiring option 3 8-12KW MPPT 160A /200A PV Input	

Recommended PV module configuration

PV Module Spec.（reference）	Inverter Model	Solar Input	Q'ty of modules
-260W -Vmp:30.9Vdc -Imp:8.42A -Voc:37.7Vdc -Isc:8.89A -Cells:60	**24V/80A**	3S3P	9PCS
	48V/80A	3S6P	18PCS
	48V/100A	3S7P	21PCS
	48V/200A	3S7P*2	21PCS*2

Solar panel installation schematic



Final Assembly

After connecting all wirings, please put bottom cover back by screwing two screws as shown below.

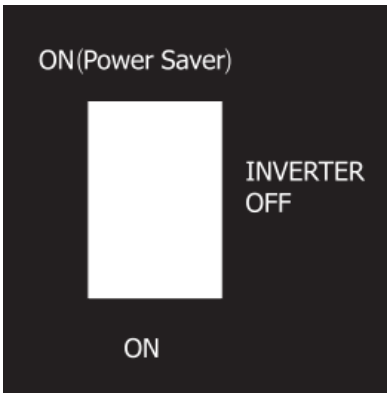
Communication Connection

Please use supplied communication cable to connect to inverter and PC. Insert bundled CD into a computer and follow on-screen instruction to install the monitoring software. For the detailed software operation, please

check user manual of software inside of CD.

OPERATION

Power ON/OFF/Power Saver



There are 3 different status for inverter: "ON(Power Saver)""INVERTER OFF" and "ON"
When power switch is in "INVERTER OFF" position, the inverter is powered off.
When power switch is turned to either of "ON(Power Saver)"or "ON", the inverter is powered on.
Power saver function is designed to conserve battery power when AC power is not or rarely required by the loads. In this mode, the inverter pulses the AC load . Whenever an AC load(greater than 25 watts) is turned on, the inverter recognizes the need for power and automatically starts inverting and output goes to full voltage. When there is no load (or less than 25 watts) detected, the inverter automatically goes back into search mode to minimize energy consumption from the battery bank. In "ON(Power Saver)" mode, the inverter will draw power mainly in sensing moments, thus the idle consumption is significantly reduced.

Remote control

Apart from the switch panel on the front of the inverter, an switch panel connected to the RJ 11 port at the DC side of the inverter thru a standard telephone cable can also control the operation of the inverter. If an extra switch panel is connected to the inverter via "remote control port" together with the panel on the inverter case, the two panels will be connected and operated in parallel.
Whichever first switches from "OFF" to "Power saver off' or "Power saver on" it will power the inverter on. If the commands from the two panels conflict, the inverter will accept command according to the following priority:
Power saver on/Power saver off/Power off, Only when both panels are turned to "Unit Off' position will the inverter be powered off.
The Max length of the cable is 10 meters.

WARNING!

Never cut the telephone cable when the cable is attached to inverter and battery is connected to the inverter. Even if the inverter is turned off. It will damage the remote PCB inside if the cable is short circuited during cutting.

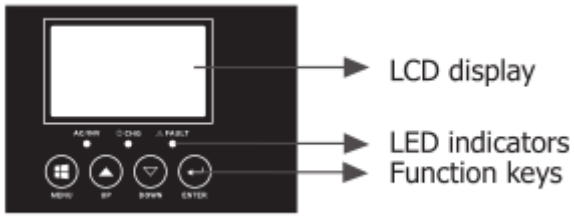
Dry Contact Signal

There is one dry contact (3A/250VAC) available on the rear panel. It could be used to deliver signal to external device when battery voltage reaches warning level.

Unit Status	Condition			Dry contact port
Power Off	Unit is off and no output is powered.			Close
Power On	Output is powered from Utility			Close
	Output is powered from Battery.	Program 01 set as Utility	Battery voltage < Low DC warning voltage	Open
			Battery voltage > Setting value in Program 21 or battery charging reaches floating stage	Close
		Program 01 is set as SBU or Solar first.	Battery voltage < Setting value in Program 20	Open
			Battery voltage>Setting value in Program 21 or battery charging reaches floating stage	Close

Operation and Display Panel

The operation and display panel, shown in below chart, is on the front panel of the inverter. It includes three indicators, four function keys and a LCD display, indicating the operating status and input/output power information.



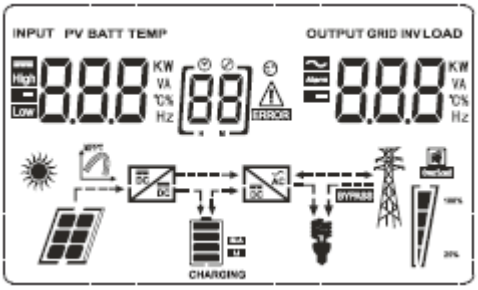
LED Indicator

LED Indicator			Messages
AC/INV	Green	Solid On	Output is powered by grid in Line mode.
		Flashing	Output is powered by battery or PV in battery mode
✹ **CHG**	Yellow	Flashing	Battery is charging or discharging.
⚠**FAULT**	Red	Solid On	Fault occurs in the inverter.
		Flashing	Warning condition occurs in the inverter.

Function Keys

Function Key	Description
MENU	Enter or exit setting mode or go to previous selection.
UP	Increase the setting data.
DOWN	Decrease the setting data.
ENTER	Enter setting mode and Confirm the selection in setting mode or go to next selection.

LCD Display Icons



Icon	Function description
Input Source Information and Output Information	
	Indicates the AC information.
	Indicates the DC information.
	Indicate input voltage, input frequency, PV voltage, battery voltage and charger current. Indicate output voltage, output frequency, load in VA, load in Watt and discharging current.
Configuration Program and Fault Information	
	Indicates the setting programs.
	Indicates the warning and fault codes. Warning: flashing with warning code. Fault: lighting with fault code.
Battery Information	
CHARGING	Indicates battery level by 0-24%, 25-49%, 50-74% and 75-100% in battery mode and charging status in line mode.

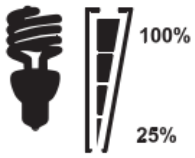
In AC mode, it will present battery charging status.

Status	Battery voltage	LCD Display
Constant Current mode / Constant Voltage mode	<2V/cell	4 bars will flash in turns.
	2 ~ 2.083V/cell	Bottom bar will be on and the other three bars will flash in turns.
	2.083 ~ 2.167V/cell	Bottom two bars will be on and the other two bars will flash in turns.
	> 2.167 V/cell	Bottom three bars will be on and the top bar will flash.
Batteries are fully charged.		4 bars will be on.

In battery mode, it will present battery capacity.

Load Percentage	Battery Voltage	LCD Display
Load >50%	< 1.717V/cell	
	1.717V/cell ~ 1.8V/cell	
	1.8 ~ 1.883V/cell	

	> 1.883 V/cell	
50%> Load > 20%	< 1.817V/cell	
	1.817V/cell ~ 1.9V/cell	
	1.9 ~ 1.983V/cell	
	> 1.983V/cell	
Load < 20%	< 1.867V/cell	
	1.867V/cell ~ 1.95V/cell	
	1.95 ~ 2.033V/cell	
	> 2.033V/cell	

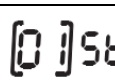
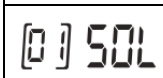
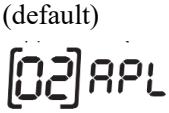
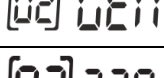
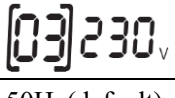
Load Information				
	Indicates overload.			
	Indicates the load level by 0-24%, 25-49%, 50-74% and 75-100%.			
	0%~24%	25%~49%	50%~74%	75%~100%
				

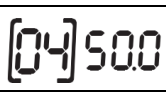
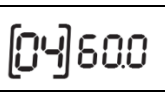
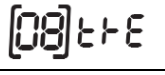
Mode Operation Information	
	Indicates unit connects to the mains.
	Indicates unit connects to the PV panel.
	Indicates load is supplied by utility power.
	Indicates the solar charger is working.
	Indicates the DC/AC inverter circuit is working.

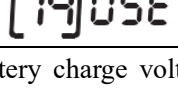
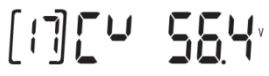
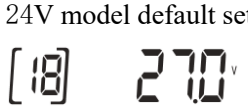
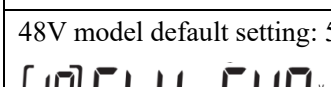
Mute Operation	
	Indicates unit alarm is disabled.

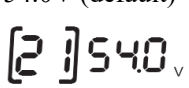
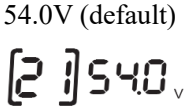
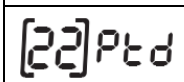
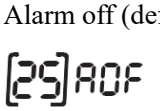
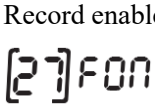
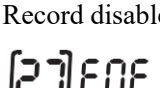
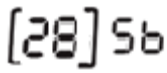
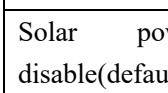
LCD Setting

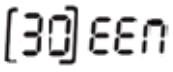
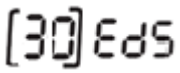
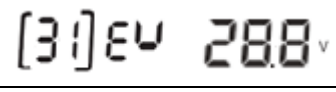
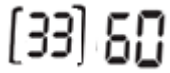
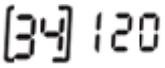
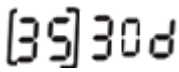
After pressing and holding "ENTER" button for 2 seconds, the unit will enter setting mode. Press "UP" or "DOWN" button to select setting programs. And then, press "ENTER" or "MENU" button to confirm the selection and exit.

Program	Description	Selectable option	
00	Exit setting mode	Escape 	
01	Output source priority selection		Solar energy provides power to the loads as first priority. If battery voltage has been higher than the setting point in program 21 for 5 minutes, the inverter will turn to battery mode, solar and battery will provide power to the load at the same time. When the battery voltage drops to the setting point in program 20, the inverter will turn to bypass mode, utility provides power to the load only, and the solar will charge the battery at the same time.
			Solar energy provides power to the loads as first priority. If battery voltage has been higher than the setting point in program 21 for 5 minutes, and the solar energy has been available for 5 minutes too, the inverter will turn to battery mode, solar and battery will provide power to the load at the same time. When the battery voltage drops to the setting point in program 20, the inverter will turn to bypass mode, utility provides power to the load only, and the solar will charge the battery at the same time.
		(default) 	Utility will provide power to the loads as first priority. Solar and battery energy will provide power to the loads only when utility power is not available.
02	AC input voltage range	Appliances (default) 	If selected, acceptable AC input voltage range will be within 90-280VAC.
		UPS 	If selected, acceptable AC input voltage range will be within 170-280VAC.
		GEN 	When the user uses the device to connect the generator, select the generator mode.
03	Output voltage		Set the output voltage amplitude.(220VAC-240VAC)
		50Hz(default)	60Hz

04	Output frequency					
05	Solar supply priority		Solar energy provides power to charge battery as first priority.			
		(default) 	Solar energy provides power to the loads as first priority.			
06	Overload bypass: When enabled, the unit will transfer to line mode if overload occurs in battery mode.	Bypass disable 	Bypass enable (default) 			
07	Auto restart when overload occurs	Restart disable (default) 	Restart enable 			
08	Auto restart when over temperature occurs	Restart disable (default) 	Restart enable 			
10	Charger source priority: To configure charger source priority	If this inverter/charger is working in Line, Standby or Fault mode, charger source can be programmed as below:				
		Solar first 	Solar energy will charge battery as first priority. Utility will charge battery only when solar energy is not available.			
		Solar and Utility (default) 	Solar energy and utility will charge battery at the same time.			
		Only Solar 	Solar energy will be the only charger source no matter utility is available or not.			
		If this inverter/charger is working in Battery mode or Power saving mode, only solar energy can charge battery. Solar energy will charge battery if it's available and sufficient.				
11	Maximum charging current: To configure total charging current for solar and utility chargers.(Max. charging current=utility charging current +solar charging current)	80A (default) 		4KW24V	1-160A	
				5KW24V	1-180A	
				4KW48V	1-140A	
				5KW48V	1-150A	
				6KW48V	1-160A	
				8KW48V	1-200A	1-300A
				10KW48V	1-220A	1-320A
				12KW48V	1-240A	1-340A
13	Maximum utility	30A (default) 		4KW24V	1-80A	
				5KW24V	1-100A	
				4KW48V	1-60A	
				5KW48V	1-70A	

<table>
<tr><td></td><td>charging current</td><td colspan="2"></td><td>6KW48V</td><td>1-80A</td></tr>
<tr><td colspan="4"></td><td>8KW48V</td><td>1-100A</td></tr>
<tr><td colspan="4"></td><td>10KW48V</td><td>1-120A</td></tr>
<tr><td colspan="4"></td><td>12KW48V</td><td>1-140A</td></tr>
<tr><td rowspan="4">14</td><td rowspan="4">Battery type</td><td colspan="2">AGM (default)
  </td><td colspan="2">Flooded
  </td></tr>
<tr><td colspan="2">GEL
  </td><td colspan="2">LEAD
  </td></tr>
<tr><td colspan="2">Lithium Ion
  </td><td colspan="2">User-Defined
  </td></tr>
<tr><td colspan="4">If "User-Defined" LI is selected, battery charge voltage and low DC cut-off voltage can be set up in program 17, 18 and 19.</td></tr>
<tr><td rowspan="3">17</td><td rowspan="3">Bulk charging voltage (C.V voltage)</td><td colspan="4">24V model default setting: 28.2V
  </td></tr>
<tr><td colspan="4">If "User-Defined" LI is selected in program 14,this program can be set up. Setting range is from 24.0V to 29.2V for 24Vdc model. Increment of each click is 0.1V</td></tr>
<tr><td colspan="4">48V model default setting: 56.4V
  </td></tr>
<tr><td colspan="4">If self-defined is selected in program 14, this program can be set up. Setting range is from 48.0V to 58.4V for 48Vdc model. Increment of each click is 0.1V.</td></tr>
<tr><td rowspan="3">18</td><td rowspan="3">Floating charging voltage</td><td colspan="4">24V model default setting: 27.0V
  </td></tr>
<tr><td colspan="4">If "User-Defined" LI is selected in program 14, this program can be set up, Setting range is from 24.0V to 29.2V for 24Vdc model. Increment of each click is 0.1V</td></tr>
<tr><td colspan="4">48V model default setting: 54.0V
  </td></tr>
<tr><td colspan="4">If self-defined is selected in program 14, this program can be set up, Setting range is from 48.0V to 58.4V for 48Vdc model. Increment of each click is 0.1V.</td></tr>
<tr><td rowspan="3">19</td><td rowspan="3">Low DC cut off battery voltage setting</td><td colspan="4">24V model default setting: 20.4V
  </td></tr>
<tr><td colspan="4">If "User-Defined" LI is selected in program 14, this program can be set up. Setting range is from 20.0V to 24.0V for 24Vdc model. Increment of each click is 0.1V. Low DC cut-off voltage will be fixed to setting value no matter what percentage of load is connected.</td></tr>
<tr><td colspan="4">48V model default setting: 40.8V
  </td></tr>
</table>

		If self-defined is selected in program 14, this program can be set up. Setting range is from 40.0V to 48.0V for 48Vdc model. Increment of each click is 0.1V. Low DC cut-off voltage will be fixed to setting value no matter what percentage of load is connected.	
20	Battery stop discharging voltage when grid is available	Available options for 24V models:	
		23.0V (default) 	Setting range is from 22.0V to 29.0V. Increment of each click is 0.1V
		Available options for 48V models:	
		54.0V (default) 	Setting range is from 44.0V to 58.0V. Increment of each click is 0. 1V.
21	Battery stop charging voltage when grid is available	Available options for 24V models:	
		27.0V (default) 	Setting range is from 22.0V to 29.0V. Increment of each click is 0. 1V
		Available options for 48V models:	
		54.0V (default) 	Setting range is from 44.0V to 58.0V. Increment of each click is 0. 1V.
22	Auto turn page	(default) 	If selected, the display screen will auto turn the display page.
			If selected, the display screen will stay at latest screen user finally switches.
23	Backlight control	Backlight on 	Backlight off (default) 
24	Alarm control	Alarm on (default) 	Alarm off 
25	Beeps while primary source is interrupted	Alarm on 	Alarm off (default) 
27	Record Fault code	Record enable (default) 	Record disable 
28	Solar power balance:When enabled,solar input power will be automatically adjusted according to connected load power.	Solar power balance enable 	If selected, the solar input power will be automatically adjusted according to the following formula: Max. Input solar power = Max.battery charging power + Connected load power when the machine in OffGrid workstate.
		Solar power balance disable(default) 	If selected, the solar input power will be the same to max. Battery charging power no matter how much loads are connected. The max.battery charging power will be based on the setting current in program 11 (Max. solar

			power = Max.battery charging power)
30	Battery equalization	Battery equalization 	Battery equalization disable(default) 
31	Battery equalization voltage	Available options for 24V models:28.8V 	
		Available options for 48V models:57.6V 	
		Setting range is from 24.0V to 29.2V for 24V model and 48.0V to 58.4V for 48V model. Increment of each click is 0.1V.	
33	Battery equalization time	60min(default) 	Setting range is from 5 min to 900min. Increment of each clink is 5min.
34	Battery equalization timeout	120min(default) 	Setting range is from 5 min to 900min. Increment of each clink is 5min.
35	Equalization interval	30days(default) 	Setting range is from 0 to 90days. Increment of each clink is 1 day.
36	Equalization activated immediately	Enable 	Disable(default) 
		If equalization function is enabled in program 30, this program can be set up. If “Enable”is selected in this program, it’s to activate battery equalization immediately and LCD main page will shows“  ”.If “Disable”is selected, it will cancel equalization function until next activated equalization time arrives based on program 35 setting. At this time,“  ” will be shown in LCD main page too.	

After pressing and holding “MENU” button for 6 seconds, the unit will enter reset model. Press “UP” and “DOWN” button to select programs. And then, press “ENTER” button to exit.

SEt	(default) 	Reset setting disable
		Reset setting enable

Fault Reference Code

Fault Code	Fault Event	Icon on
01	Fan is locked when inverter is off	
02	Inverter transformer over temperature	
03	battery voltage is too high	
04	Battery voltage is too low	
05	Output short circuited	
06	Inverter output voltage is high	
07	Overload time out	
08	Inverter bus voltage is too high	
09	Bus soft start failed	
11	Main relay failed	
21	Inverter output voltage sensor error	
22	Inverter grid voltage sensor error	
23	Inverter output current sensor error	
24	Inverter grid current sensor error	
25	Inverter load current sensor error	

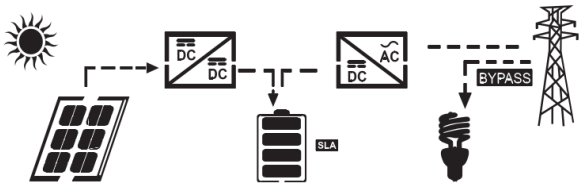
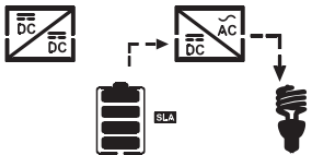
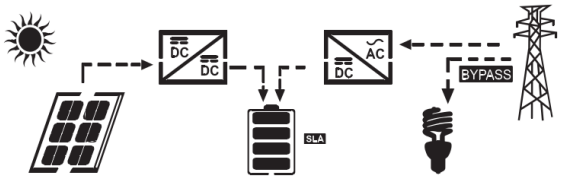
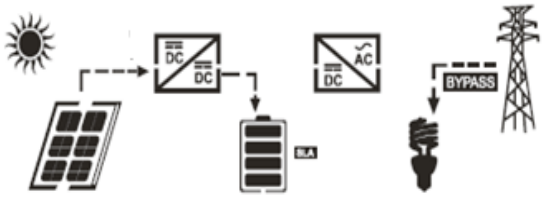
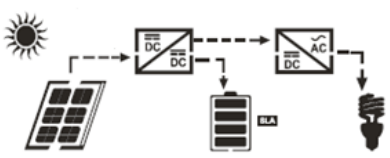
26	Inverter grid over current error	
27	Inverter radiator over temperature	
31	Solar charger battery voltage class error	
32	Solar charger current sensor error	
33	Solar charger current is uncontrollable	
41	Inverter grid voltage is low	
42	Inverter grid voltage is high	
43	Inverter grid under frequency	
44	Inverter grid over frequency	
51	Inverter over current protection error	
52	Inverter bus voltage is too low	
53	Inverter soft start failed	
55	Over DC voltage in AC output	
56	Battery connection is open	
57	Inverter control current sensor error	
58	Inverter output voltage is too low	

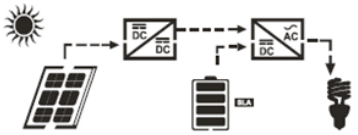
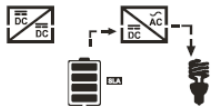
Warning Indicator

Warning Code	Warning Event	Icon flashing
61	Fan is locked when inverter is on.	
62	Fan 2 is locked when inverter is on.	
63	Battery is over-charged.	
64	Low battery	
67	Overload	
70	Output power derating	

72	Solar charger stops due to low battery.	
73	Solar charger stops due to high PV voltage.	
74	Solar charger stops due to over load.	
75	Solar charger over temperature.	
76	PV charger communication error.	
77	Parameter error.	

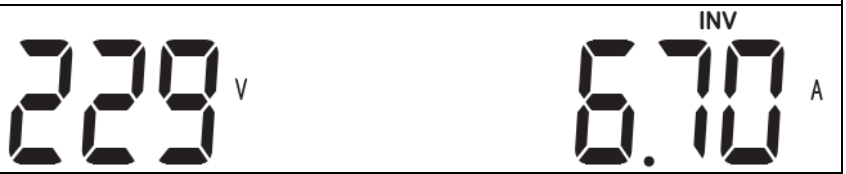
Operating State Description

Operation state	Description	LCD display
Utility-Tie state	PV energy is charger into the battery and utility provide power to the AC load.	PV is on 
		PV is off 
Charge state	PV energy and grid can charge batteries.	
Bypass state	Error are caused by inside circuit error or external reasons such as over temperature, output short circuited and so on.	
Off-Grid state	The inverter will provide output power from battery and PV power.	Inverter power loads from PV energy 
		Inverter power loads from battery and PV energy

		
		Inverter power loads from battery only 
Stop state	The inverter stop working if you turn off the inverter by the soft key or error has occurred in the condition of no grid.	

Display Setting

The LCD display information will be switched in turns by pressing "UP" or "DOWN" key. The selectable information is switched as below order: battery voltage, battery current , inverter voltage, inverter current, grid voltage, grid current, load in Watt, load in VA, grid frequency, inverter frequency, PV voltage, PV charging power, PV charging output voltage, PV charging current.

Selectable information	LCD display
Battery voltage/DC discharging current	
Inverter output voltage/Inverter output current	
Grid voltage/Grid current	
Load in Watt/VA	
Grid frequency/Inverter frequency	
PV voltage and power	

PV charger output voltage and MPPT charging current	

SPECIFICATIONS

Table 1 Line Mode Specifications

INVERTER MODEL	4KW24V	5KW24V	4KW48V	5KW48V	6KW48V	8KW48V	10KW48V	12KW48V
Input Voltage Waveform	Sinusoidal (utility or generator)							
Nominal Input Voltage	230Vac							
Low Loss Voltage	90Vac±7V(APL,GEN); 170Vac±7V(UPS)							
Low Loss Return Voltage	100Vac±7V(APL,GEN);180Vac±7V(UPS)							
High Loss Voltage	280Vac±7V(APL, UPS,GEN)							
High Loss Return Voltage	270Vac±7V(APL,UPS,GEN)							
Max AC Input Voltage	300Vac							
Nominal Input Frequency	50Hz / 60Hz (Auto detection)							
Low Loss Frequency	40HZ±1HZ(APL,UPS,GEN)							
Low Loss Return Frequency	42HZ±1HZ(APL,UPS,GEN)							
High Loss Frequency	65HZ±1HZ(APL,UPS,GEN)							
High Loss Return Frequency	63HZ±1HZ(APL,UPS,GEN)							
Output Short Circuit Protection	Line mode: Circuit Breaker Battery mode: Electronic Circuits							
Efficiency (Line Mode)	>95% (Rated R load, battery full charged)							
Transfer Time	10ms typical (UPS,) 20ms typical (APL)							

Table 2 Inverter Mode Specifications

INVERTER MODEL	4KW24V	5KW24V	4KW48V	5KW48V	6KW48V	8KW48V	10KW48V	12KW48V
Rated Output Power	4KW	5KW	4KW	5KW	6KW	8KW	10KW	12KW
Output Voltage Waveform	Pure Sine Wave							

Output Voltage Regulation	230Vac±5%							
Output Frequency	60Hz or 50Hz							
Peak Efficiency	＞83%		＞85%			＞88%		
Overload Protection	5min@100%-110% load; 10s@110%~150% load;5S@＞150% load							
Surge Capacity	2* rated power for 400 millisecond							
Nominal DC Input Voltage	24Vdc		48VDC					
Cold Start Voltage	23.0Vdc		46.0VDC					
Low DC Warning Voltage @ load < 20% @ 20% ≤ load < 50% @ load ≥ 50%	 22.0Vdc 21.4Vdc 20.2Vdc		 44.0VDC 42.8VDC 40.4VDC					
Low DC Warning Return Voltage @ load < 20% @ 20% ≤ load < 50% @ load ≥ 50%	 23.0Vdc 22.4Vdc 21.2Vdc		 46.0VDC 44.8VDC 42.4VDC					
Low DC Cut-off Voltage @ load < 20% @ 20% ≤ load < 50% @ load ≥ 50%	 21.0Vdc 20.4Vdc 19.2Vdc		 42.0VDC 40.8VDC 38.4VDC					
High DC Recovery Voltage	29Vdc		58VDC					
High DC Cut-off Voltage	30Vdc		60VDC					
No Load Power Consumption	100W	120W	100W	120W	150W	180W	190W	200W
No Load Power Consumption(Power Saver Auto**)**	6W			6.6W		8.6W		
Power Saver Auto	50W					90W		

Table 3 Charge Mode Specifications

Utility Charging Mode									
INVERTER MODEL		**4KW24V**	**5KW24V**	**4KW48V**	**5KW48V**	**6KW48V**	**8KW48V**	**10KW48V**	**12KW48V**
Charging Current @Nominal Input Voltage		1-80A	1-100A	1-60A	1-70A	1-80A	1-100A	1-120A	1-140A
Absorption Voltage	**AGM / Gel/LEAD Battery**	25Vdc		50Vdc					
	Flooded Battery	25Vdc		50Vdc					
Refloat Voltage	**AGM / Gel/LEAD Battery**	27.4Vdc		54.8Vdc					
	Flooded Battery	27.4Vdc		54.8Vdc					
Float Voltage	**AGM / Gel/LEAD Battery**	28.8Vdc		57.6Vdc					
	Flooded Battery	28.4Vdc		56.8Vdc					
Charging Algorithm		3-Step(Flooded Battery, AGM/Gel Battery), 4-Step(LI)							

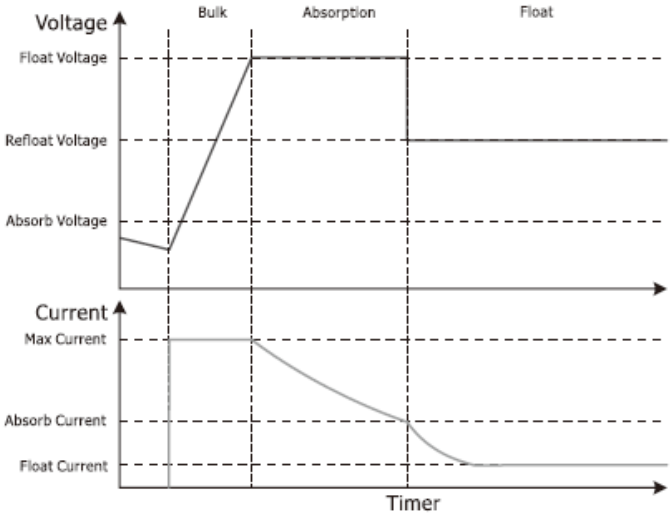
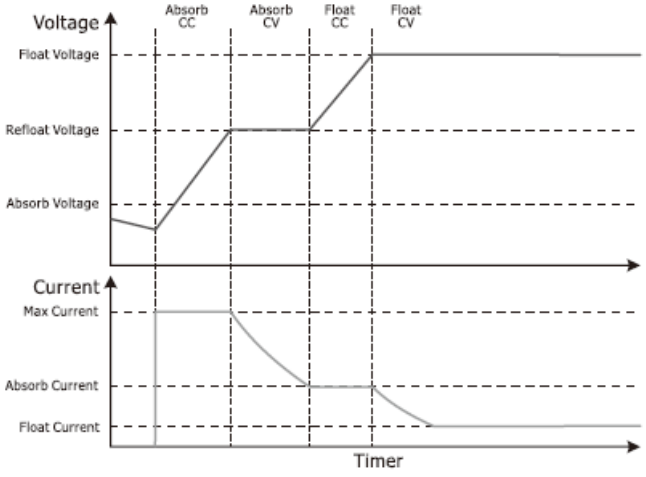
Solar Charging Mode								
INVERTER MODEL	4KW24V	5KW24V	4KW48V	5KW48V	6KW48V	8KW48V	10KW48V	12KW48V
Charging Current (MPPT)	80AMP							
System DC Voltage	24Vdc		48vdc					
Operating Voltage Range	30-130Vdc		60-130Vdc					
Max. PV Array Open Circuit Voltage	145Vdc							
Standby Power Consumption	2W							
Battery Voltage Accuracy	+/-0.4V							
PV Voltage Accuracy	+/-2V							
Charging Algorithm	3-Step(Flooded Battery, AGM/Gel Battery),4-Step(LI)							
Charging algorithm for lead acid battery								
Charging algorithm for Lithium battery								

Table 4 General Specifications

INVERTER MODEL	4KW24V	5KW24V	4KW48V	5KW48V	6KW48V	8KW48V	10KW48V	12KW48V
Safety Certification	CE							
Operating Temperature Range	0°C to 40°C							
Storage temperature	-25°C~ 60°C							
Dimension (D*W*H), mm	745X505X370mm					884X618X443mm		
Net Weight, kg	56	61	56	61	64	82.5	86	92

TROUBLE SHOOTING

Problem	LCD/LED/Buzzer	Explanation / Possible cause	What to do
Unit shuts down automatically during startup process.	LCD/LEDs and buzzer will be active for 3 seconds and then complete off.	The battery voltage is too low (<1.91V/Cell)	1. Re-charge battery. 2. Replace battery.
No response after power on.	No indication.	1. The battery voltage is far too low. (<1.4V/Cell) 2. Battery polarity is connected reversed.	1. Check if batteries and the wiring are connected well. 2. Re-charge battery. 3. Replace battery.
Mains exist but the unit works in battery mode.	Input voltage is displayed as 0 on the LCD and green LED is flashing.	Input protector is tripped	Check if AC breaker is tripped and AC wiring is connected well.
	Green LED is flashing.	Insufficient quality of AC power (Shore or Generator)	1. Check if AC wires are too thin and/or too long. 2. Check if generator (if applied) is working well or check if input voltage range setting is correct (Appliance→Wide)
When the unit is turned on, internal relay is switched on and off repeatedly.	LCD display and LEDs are flashing.	Battery is disconnected.	Check if battery wires are connected well.
Buzzer beeps continuously and red LED is on.	Fault code 07	Overload error. The inverter is overload 110% and time is up.	Reduce the connected load by switching off some equipment.
	Fault code 05	Output short circuited.	Check if wiring is connected well and remove abnormal load.
		Internal temperature of inverter component is over 90 °C.	Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
	Fault code 02		
	Fault code 03	Battery is over charged.	Return to repair center.
		The battery voltage is too high.	Check if spec and quantity of batteries are meet requirements.
	Fault code 01	Fan fault	Replace the fan.
	Fault code 06/58	Output abnormal (Inverter voltage below than 202Vac or is higher than 253Vac)	1. Reduce the connected load. 2. Return to repair center
	Fault code 08/09/53/57	Internal components failed.	Return to repair center.
	Fault code 51	Over current or surge.	Restart the unit, if the error happens again, please return to repair center.
	Fault code 52	Bus voltage is too low.	
	Fault code 55	Output voltage is unbalanced.	
	Fault code 56	Battery is not connected well or fuse is burnt.	If the battery is connected well, please return to repair center.

EU Simplified Declaration of Conformity

SC ONLINESHOP SRL declares that **Solar inverter PNI GreenHouse SC3500** complies with the Directive EMC 2014/30/EU and LVD 2014/35/EU. The full text of the EU declaration of conformity is available at the following Internet address:

https://www.mypni.eu/products/6000/download/certifications