THREE PHASE INVERTER
THREE PHASE SOLAR INVERTER

HDSX Series

User Manual

Content

⚠ **Warning**

This is A class inverter. It might cause slightly radio interference in daily life. And practical measure is required to take under this condition.

Preface

Thank you for the purchase of three phase inverter or three phase solar inverter (Hereinafter referred to as inverter). Please read this manual carefully before installing and using the inverter!

Copyright

We have been devoted to technological innovation and aims to meet the demands of its customers with better product and services. And product design and specification would be updated without prior notice. Please in kind prevail!

1.Installation Instructions

1-1: Open-package inspection

1. After opening the package, please check random accessories, including user manual(contains certificate conformity and warranty card), accessories for optional functions. And check whether the inverter is still kept well after transportation, if find any broken or component missing, do not turn on the machine, feedback to the carrier and distributor.

Note:
➢ **Please keep the packing box and packing material, can be used for next delivery if needed.**
➢ **This series of product is very heavy (check appendix as reference), please handle with care when carrying.**

1-2: Installation notice

1) Install in an area of well ventilated, free of water, burning gas and corrodent.
2) Not good to put on the side, better keep good air ventilation from front panel's bottom air intake, or air outlet from back panel's fan, and side face of machine.
3) Around environment temperature should remain 0 to 40 centigrade.
4) If disassembling and operate under low temperature environment, may happen water condense, only can work till thorough dry of machine inside and outside, otherwise will be shock risk.
5) If the machine is placed for a long time, it should be confirmed that the machine is completely dry and no corrosion can be installed and used.

1-3:Installation steps

1) Environmental requirements
Open the package and place the inverter in a reasonable working environment. Refer to the "Installation Precautions" for specific requirements.
2) Wire diameter selection
Use a cable with a suitable wire diameter, which can not be lower than the national safety standard. The general wire diameter is selected according to the current density of not more than 5A/mm², and the length of the connecting wire is minimized to reduce the loss.
3) Connect the battery
Determine the appropriate number of battery cells according to the rated battery voltage of the inverter. Connect the battery cable to a circuit breaker that meets the breaking capacity, and then connect it to the BATTERY terminal of the inverter. Note that the positive and negative poles cannot be reversed. Otherwise, the product may be damaged.
4) Connect the load
Turn off all loads firstly, then connect the AC load to the AC output of the inverter (AC OUTPUT), confirming that the load polarity is not reversed, and ensure the load is lower than the standard power of the inverter.
5) Connect the PV(Ignore this step if there is no built-in controller)
Connect the PV cable to the circuit breaker that meets the breaking capacity, and then connect it to the PV input terminal of the inverter. the PV array open circuit voltage and short circuit current should be lower than the maximum PV input voltage and current of the rated charge controller. Note:Be careful not to reverse the polarity.
6) Connect the mains
Connect the mains input cable to a circuit breaker that meets the breaking capacity, and then connect it to the AC input terminal of the inverter. Note that the phase and polarity are not reversed.
7) Selection of circuit breaker
a. The circuit breaker on the battery side should be a DC circuit breaker whose working voltage should be greater than the rated voltage of the battery; the circuit breaker on the PV input side should be a DC circuit breaker whose working voltage should be greater than the rated voltage of the PV array; the circuit breaker on the AC input side should be an AC circuit breaker whose working voltage should be greater than the rated voltage of the mains.
b. The rated current of the circuit breaker should be about 1.5 times of the maximum current inverter during operation .

Note:

➢ **Before connecting the load to the machine, please turn off the loads firstly.**

➢ **This product can only protect high-voltage surges with low energy. In areas with high lightning output, it is recommended to install lightning protection devices outside the PV input terminals(Ignore this content if there is no built-in controller).**

➢ **To ensure the personal safety of the user and ensure the correct use of the product, please confirm that it is properly grounded before starting the machine.**

➢ **If user want to load an inductive load such as a motor or a laser printer which operating power is too large, the inverter rated capacity should be selected according to its peak power .The load starting power is generally 2 to 3 times of its rated power.**
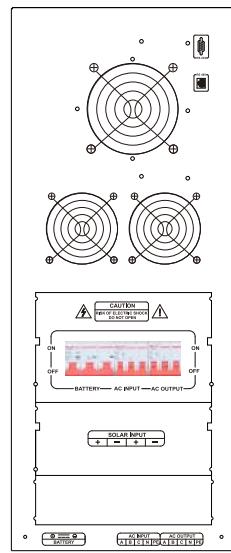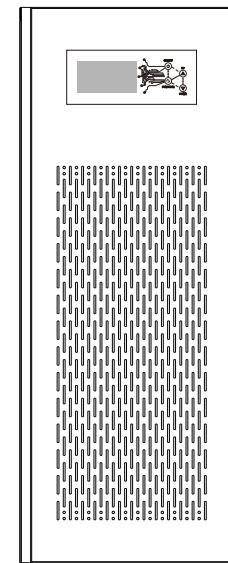
1-4: Placement

Please leave 100mm of space for each side of inverter to keep good air circulation.
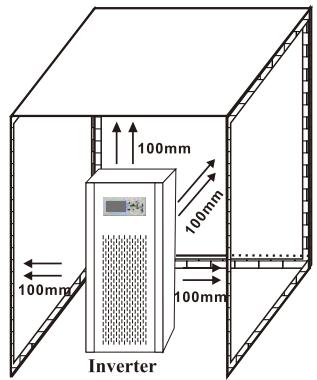
★ Avoid direct sunlight

★ Avoid dust

★ Avoid moisture and liquids

★ Avoid over heating
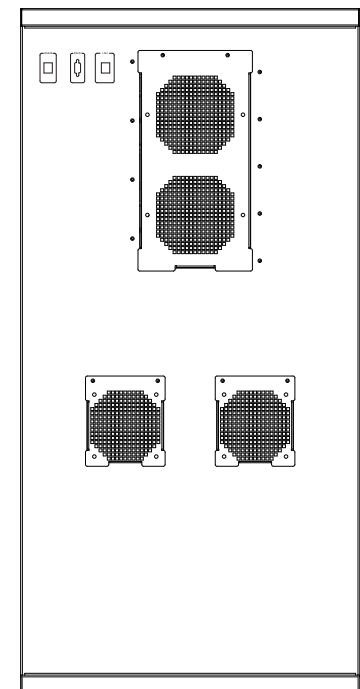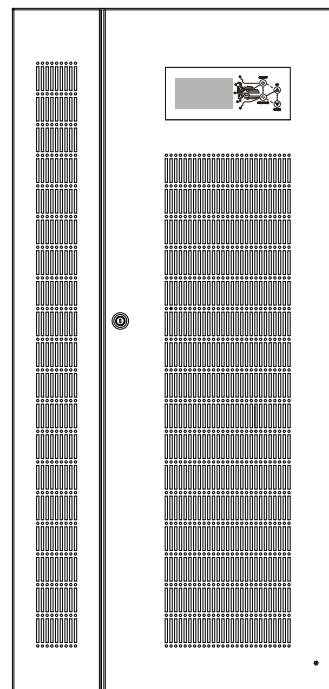
2. Outlook of Inverter

2-1: 4KVA-8KVA Series

2-2: 10KVA-30KVA Series
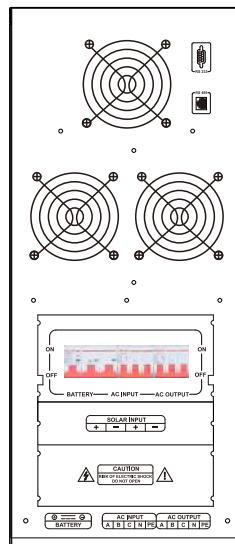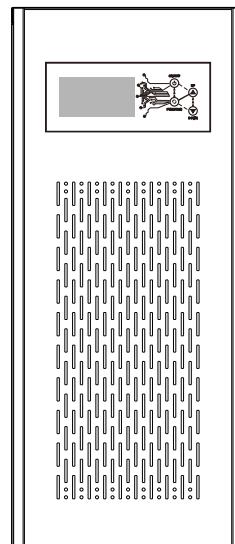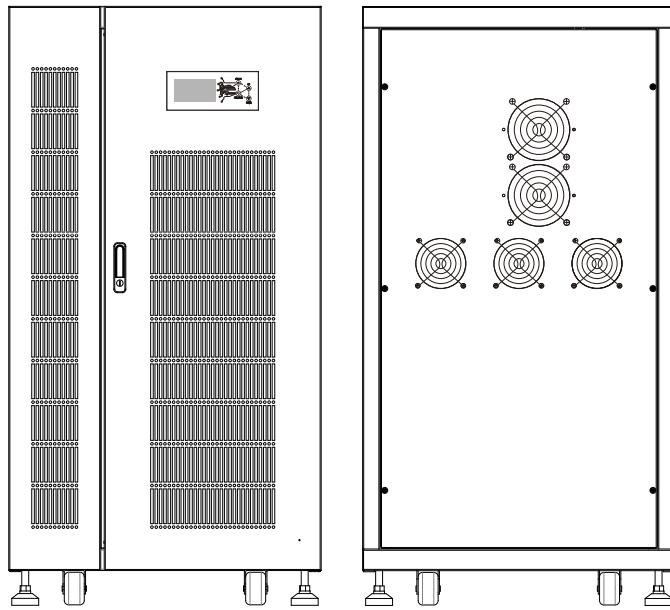
2-3: 40KVA-80KVA Series
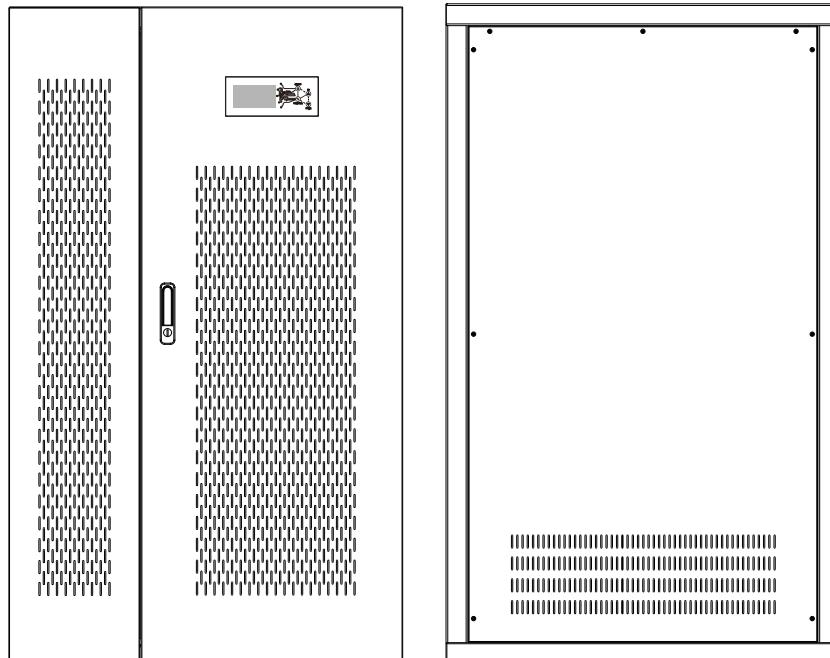
Note: Images may be slightly different from actual product. Please in kind prevail!

3. LCD display
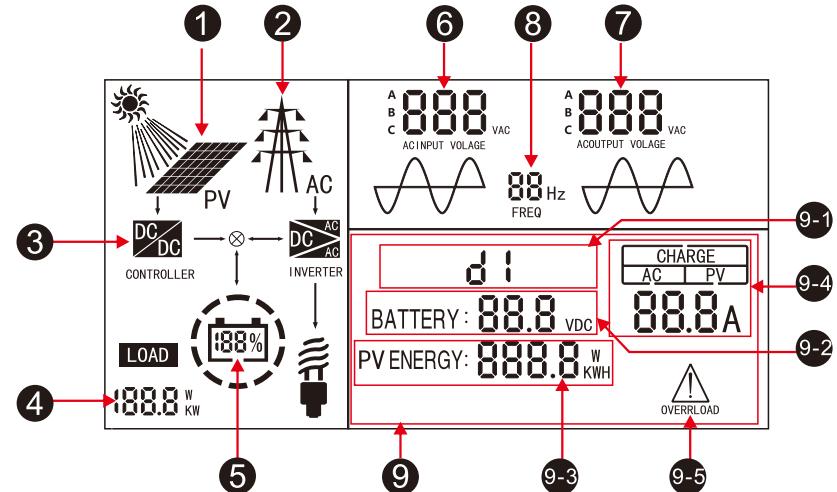
Function and setting of button on board

| |
|---|
| 1.PV: When there's solar input, sun icon is lighted; when there is no PV input, only the solar panel icon is displayed. |
| 2.AC: When mains voltage is over 100V, the high voltage wire rack iconicon is lighted. When use mains power, corresponding arrow and AC icon is lighted. |
| 3.CONTROLLER: When there's solar charging, arrow icon is lighted. |
| 4.LOAD: Total load of three-phase output |
| 5.BATTERY: To show balance battery capacity or charging process. |
| 6.AC INPUT VOLTAGE: Alternately display three-phase mains input phase voltage and line voltage (I.E. A phase voltage, B phase voltage, C phase voltage, AB line voltage, BC line voltage, AC line voltage) |
| 7.AC OUTPUT VOLTAGE: Alternately display three-phase AC output phase voltage and line voltage (I.E. A phase voltage, B phase voltage, C phase voltage,AB line voltage, BC line voltage, AC line voltage) |
| 8.FREQ: To show output frequency. |
| 9. Auxiliary information display area:
  9-1.Rotate display
    1) The working mode of the machine, d1(mains priority) / d3 (battery priority);
    2) PV input voltage (when the photovoltaic controller is built-in);
    3) Fault alarm information AXX (For specific content of the code, pls refer to the fault code table below.)
  9-2. BATT To show battery voltage.
  9-3. PV POWER To show PV energy generation.(If there is no built-in PV controller, this item is not displayed.)
  9-4. CHARGE AC/PV To show alternately AC/PV charging current.(If there is no built-in PV controller, only the AC charging current is displayed.)
  9-5. OVERLOAD: Overload alarm |

3-1. LCD screen display content introduction(Built-in solar controller)

1)Mains priority mode---Alternately display A phase voltage/B phase voltage/C phase voltage/AB line voltage/AC line voltage/BC line voltage (No PV input, AC current and PV current alternate display)

A phase voltage
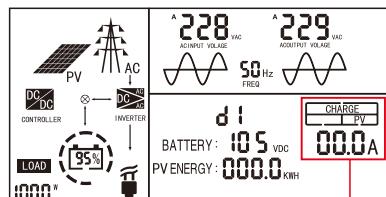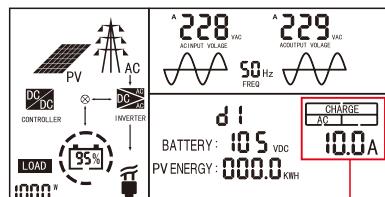
AB line voltage
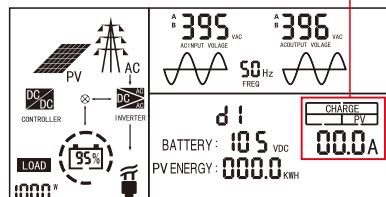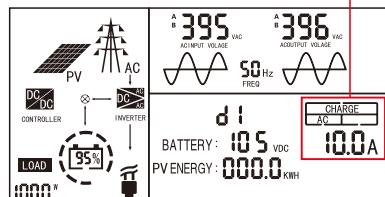
AC Charging Current

PV Charging Current

Note: The display styles of B phase voltage and C phase voltage are consistent with the A phase voltage, and the display styles of BC line voltage and AC line voltage are the same as the AB line voltage.

2) Mains priority mode---Alternately display A phase voltage/B phase voltage/C phase voltage/AB line voltage/AC line voltage/BC line voltage (Has PV input, display AC current / PV current and solar energy icon)
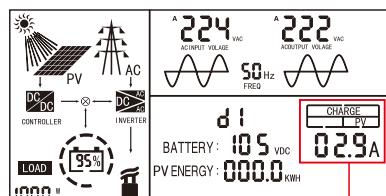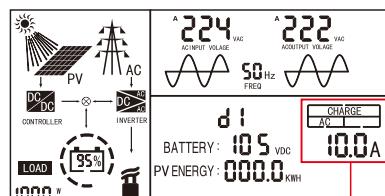
A phase voltage

AB line voltage

AC Charging Current
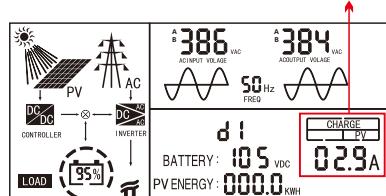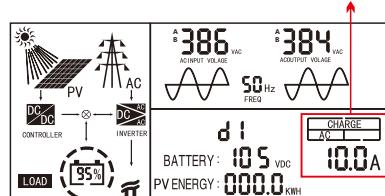
PV Charging Current

Note: The display styles of B phase voltage and C phase voltage are consistent with the A phase voltage, and the display styles of BC line voltage and AC line voltage are the same as the AB line voltage.

3) Battery priority mode ---Alternately display A phase voltage/B phase voltage/C phase voltage/AB line voltage/AC line voltage/BC line voltage (No AC input but has PV input, display AC current / PV current and solar energy icon)
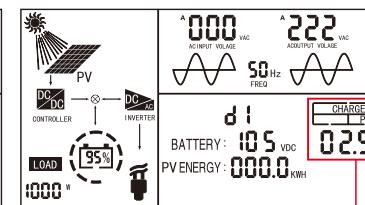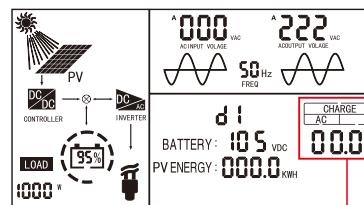
A phase voltage

AB line voltage

AC Charging Current
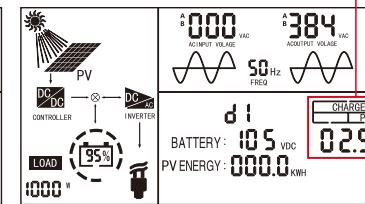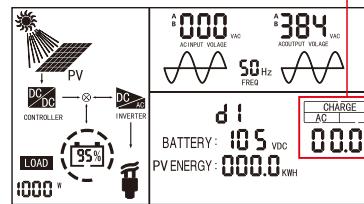
PV Charging Current

Note: The display styles of B phase voltage and C phase voltage are consistent with the A phase voltage, and the display styles of BC line voltage and AC line voltage are the same as the AB line voltage.

Remark:

1. If the inverter has a built-in controller, the display will show PV related parameters and icons, and the PV charging current and AC charging current at the bottom right of the screen will alternate display.

2. The actual display parameters are subject to the specific model, and the picture display contents are only used as examples.

3-2. LCD screen display content introduction(No built-in solar controller)

1)Mains priority mode---Alternately display A phase voltage/B phase voltage/C phase voltage/AB line voltage/AC line voltage/BC line voltage (No built-in solar controller, only display AC charging current, does not display parameters such as PV current and related iconsalternate)

A phase voltage
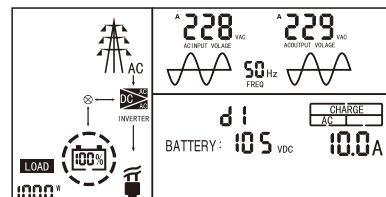
AB line voltage
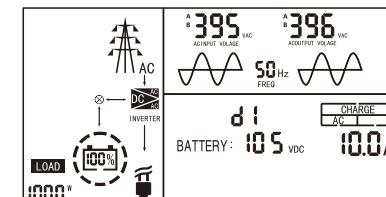
Note: The display styles of B phase voltage and C phase voltage are consistent with the A phase voltage, and the display styles of BC line voltage and AC line voltage are the same as the AB line voltage.

Remark:

1. If the inverter has no built-in controller, the display does not display PV related parameters and icons, and the other working status of the inverter does not change. As shown in the above figure, it will not be explained one by one here.

2. The actual display parameters are subject to the specific model, and the picture display contents are only used as examples.

4. Operation

Function and setting of button on board
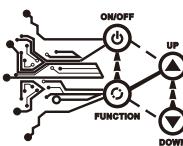
4-1: ON/OFF button

1) Powered by battery: press ON/OFF button for 1 second, inverter gives the notification tone and turn on; press ON/OFF button for 1 second, inverter makes notification tone and shut down.

2) Powered by city power: inverter starts up automatically connecting to city power; press ON/OFF button for 1 second, inverter sets indicating voice, stop AC output, and shut down after city power is disconnected.

4-2: FUNCTION button

1) Mute function: Keep pressing the FUNCTION button for 2 seconds, until the buzzer beeps once and then release the button, user could switch the machine's mute function on/off.

2) Data editing left shift function: In the password input interface or parameter setting interface, short press the FUNCTION key, and the data editing cursor will shift to the left.

4-3: UP button

In the password input interface or parameter setting interface, short press the UP key, the value of data editing increases.

4-4: DOWN button

1) Page turning function: In the fixed value query or parameter setting interface, short press the DOWN key to view each fixed value interface or parameter setting interface;

2) Enter key function: In the password input interface, after editing the password, short press the DOWN key to confirm the password to enter the parameter setting interface.

4-5: FUNCTION+ UP fixed value setting combination button

Parameter setting function: In the main interface, press the FUNCTION+UP key combination at the same time, enter the password 103, Use the FUNCIOTN button(Data editing left shift function) and UP button(data editing increase function) to complete the password entry, and then short press the DOWN key to confirm, you can enter the parameter setting interface; short press the DOWN key to switch U0-U11 settings in turn , Short press the FUNCTION key to shift the data editing cursor to the left, and short press the UP key to increase the data editing value. After waiting for 15 seconds, the machine will automatically exit and save the fixed value.

Descriptions	Remarks
U0: Communication address setting (0~247)	
U1: Working mode setting (0/1)	Setting 0 is battery priority mode (d3), setting 1 is mains priority mode (d1)
U2: Constant charge voltage setting (13.0V~16.5V)	The voltage setting value is the voltage of a single cell battery, and the system will automatically multiply the corresponding battery cell number
U3: Floating charge voltage setting (13.0V~16.5V)	The voltage setting value is the voltage of a single cell battery, and the system will automatically multiply the corresponding battery cell number
U4: Mains charging current setting(0A~60A)	The maximum charging current depends on the actual model
U5: Battery high-voltage cut off setting (8.0-18.0V)	The voltage setting value is the voltage of a single cell battery, and the system will automatically multiply the corresponding battery cell number
U6: Battery low-voltage cut off setting (8.0-18.0V)	The voltage setting value is the voltage of a single cell battery, and the system will automatically multiply the corresponding battery cell number
U7: AC supply→Battery supply voltage point setting (8.0-18.0V, available for d3 working mode)	Under working mode d3, set AC supply→Battery supply voltage point (The voltage setting value is the voltage of a single cell battery, and the system will automatically multiply the corresponding battery cell number)
U8: AC output voltage setting	220VAC/230VAC/240VAC available to set(Phase voltage)
U9: AC output frequency setting	50Hz/60Hz available to set
U10: Remote control switch function setting	1: turn on remote switch function / 0: turn off remote switch function (the remote switch function of mobile phone APP or RS485 is valid for position 1)
U11: Battery type setting (This setting is supported only on the inverter that reached a communication protocol with the lithium battery)	0: Lead-acid battery /1: Lithium battery

Remarks:
1. When setting voltage parameters, the following conditions must be met to save the setting parameter value: voltage value U5>U2≥U3>U6;
2. Other battery voltage parameter values (default)
1) The battery high voltage alarm voltage value cannot be set, and the default is 0.8V higher than the current average charging voltage value;
2) The battery low-voltage alarm voltage value cannot be set, the default is 0.5V higher than the current low-voltage shutdown voltage;
3) The inverter-to-mains voltage value is consistent with the battery low-voltage alarm voltage value.
3. Precautions for battery type setting
1) When battery type is set to "1" lithium battery,Normal communication must be maintained between the inverter and lithium battery; If the communication is abnormal, the display capacity of the inverter is 0%(the actual battery capacity is displayed after the communication is normal)., the inverter will not operate normally.
2) If no need communicate between the lithium battery and device, battery type should be set to be 0 lead-acid battery. Further, according to the lithium battery parameters, the corresponding parameters of the inverter should be set including (inverter under voltage protection value>lithium battery under voltage value;inverter equalization charge/float charge voltage value < lithium battery over voltage protection value).

4-6: FUNCTION+ DOWN fixed value query combination button

Fixed value query function: In the main interface, press the FUNCTION + DOWN key combination at the same time to enter the fixed value query interface, short press the DOWN key to view the relevant settings of U0-U11 in turn. After the query is completed, wait for 15 seconds, the machine will automatically exit.

U0：Communication address	U1: Working mode setting (0 battery priority/1 mains priority)	
U2：Constant charge voltage	U3：Floating charge voltage	U4：Mains charging current
U5: Battery high-voltage cut off	U6: Battery low-voltage cut off	U7: AC supply→Battery supply voltage point
U8: AC output voltage	U9: AC output frequency	U10: Remote control switch function
U11: Battery type(This setting is supported only on the inverter that reached a communication protocol with the lithium battery)		

Remarks:Introduction to two working modes

1) Mains priority mode(d1)
● When the mains is normal (in line with the mains input voltage range of the inverter), the mains charge battery (if with built-in solar controller, the mains and PV charge the battery simultaneously); on the other hand, the mains supplies stable power to the loads after stabilization. (the loads do not consume PV and battery energy);
● When the mains is abnormal(the mains exceeds the working range of the inverter or the mains supply is interrupted), the loads will be powered by the battery (if with built-in controller, when PV power rate is larger than the loads, PV will power the loads and the surplus energy will charge the battery; when PV power rate is less than the loads, the deficiency will be made up by battery, so both PV and battery will power the loads).

2) Battery priority mode(d3)
● When the battery is fully charged(regular parameters: 13.2VDC/single battery voltage; Equivalent to 85% capacity of the battery reached a communication protocol with the inverter),even the mains is normal, the loads will be powered by the battery(if with built in controller, when PV power rate is larger than that of the loads, PV will fully powers the loads and the surplus energy will charge the battery; when PV power rate is less than the loads, the deficiency will be made up by battery, so both PV and battery will power the loads);
● When the battery is in low voltage (regular parameters: 11VDC/single battery voltage; Equivalent to 15% capacity of the battery reached a communication protocol with the inverter)and the mains is normal,the inverter will switch to mains priority mode. The mains supplies power to the load after stabilization,and the mains charges battery simultaneously (if with built-in controller, PV and the mains charge the battery simultaneously. The loads do not consume the energy of PV and battery).

Remarks: Under Mains Priority Mode/ Battery Priority Mode, when the mains charging current is not set as 0A, the mains charge battery; when the mains charging current is set to 0A, the mains does not charge battery, but the solar controller charges the battery.

Steps of start up
1. Connect loads to the AC output of inverter.
2. Connect city power, solar panel and battery, please notice the negative and positive side during wiring.
3. Press ON/OFF button to start the inverter (start automatically under the state of city power).
4. After 30s when the output voltage is stable, start loads in turn.

Steps of Power Off
1. Disconnect loads.
2. Press ON/OFF button to disconnect AC output.
3. Disconnect city power and inverter shut down.

5. Wiring

(Remarks: Please refer to the technical parameter table for specific battery voltage and solar panel parameter, This diagram is only for wiring diagram. 12V system: single 12V battery; 24V system: 2 units 12V battery connect in series; 48V system: 4 units 12V battery connect in series; 96V system: 8 units 12V battery connect in series; 192V system: 16 units 12V battery connect in series; 384V system: 32 units 12V battery connect in series.)

5-1 : 4KVA-8KVA Series

- RS232 Communication Interface(Optional)
- RS485 Communication Interface(Optional)

Solar Panel 1

Solar Panel 2

12V Battery

12V Battery

12V Battery

12V Battery

Three-phase loads

Utility Power

A phase
B phase
C phase
Neutral Wire(N)

Earth Wire(PE)
Neutral Wire(N)
C phase
B phase
A phase

5-2 : 10KVA-30KVA Series

- RS232 Communication Interface(Optional)
- RS485 Communication Interface(Optional)

Solar Panel 1

Solar Panel 2

12V Battery

12V Battery

12V Battery

12V Battery

Three-phase loads

Utility Power

A phase
B phase
C phase
Neutral Wire(N)

Earth Wire(PE)
Neutral Wire(N)
C phase
B phase
A phase

5-3 : 40KVA-80KVA Series

- LAN Interface(Optional)
- RS232 Communication Interface(Optional)
- RS485 Communication Interface(Optional)

(This interface is on the back panel)

Solar Panel 1

Solar Panel 2

Three-phase loads

C phase
B phase
A phase
Neutral Wire(N)

12V Battery

12V Battery

12V Battery

12V Battery

Earth Wire(PE)

Utility Power

Neutral Wire(N)
C phase
B phase
A phase

5-4: 100KVA-160KVA Series

- LAN Interface(Optional)
- RS232 Communication Interface(Optional)
- RS485 Communication Interface(Optional)

Solar Panel 2

Solar Panel 1

Utility Power

Neutral Wire(N)
A phase
B phase
C phase

Three-phase loads

Neutral Wire(N)
A phase
B phase
C phase

Earth Wire(PE)

Earth Wire(PE)

12V Battery

12V Battery

12V Battery

12V Battery

RS232 Communication Interface(Optional)

RS485 Communication Interface(Optional)

Three-phase loads

A phase

B phase

C phase

Neutral Wire(N)

Solar Panel 1

12V Battery

12V Battery

12V Battery

12V Battery

Solar Panel 2

Note:
- Please avoid reverse connection while connecting batteries and PV to the inverter.
- If a generator is used as input power, the operation is as follow: start up the generator, after it runs steadily, connect and turn on inverter. When the inverter starts to work, connect user's equipment to the AC output.
- Capacity of generator≥3 times of the rated capacity of inverter.

6. Maintenance

1) The inverter just needs the minimum maintenance. And life of Pb(battery) can be preserved by frequent charge.

2) Batteries should be charged for every three months if the inverter is long-term unused.

3) Lifespan of battery normally lasts for three to five years. It should be replaced in advance if any battery is found in poor state. And the replacement shall be operated by the professional.

4) Batteries should be wholly replaced by the instruction of the supplier.

5) For every three months, batteries should be discharged (until the inverter shuts down) and recharged. Every charge (by standard inverter) should last at least for 12 hours.

6) Among high temperature area, batteries should be discharged and recharged forevery two months. Every charge (by standard inverter) should last at least for 12 hours.

Note:
- Please shut down the inverter and disconnect AC input before replacing batteries.
- Please do not wear metal jewelry such as ring or watch.
- Please use screwdriver with insulated handle and avoid to place tools or metal objects on batteries.
- Please avoid short circuit or reverse connection.

Warning:
1) Battery must not be put in the fire, which may cause explosion.
2) Shall not open or damage the battery. Electrolyte released will cause harm to eyes and skin and even intoxication.

7. Error and Solution

7-1: Regular error

Error	Reason	Solution
Wiring Terminal heating	False or loosen connection	Fasten again
Switch off on loading	Low battery or overload	Charge battery or reduce loads
Switch on failure	False connection with city power or battery	Check battery cable connection or connect again
Alarm when switch on	Battery no energy or overload	Charge battery or reduce loads

7-2: Code for alarm

Code for alarm	Reason	Solution
A00	No alarm	
A01	Battery high voltage protection	Please check whether the battery voltage is correct
A02	Battery high voltage alarm	Please check whether the battery voltage is correct
A03	Battery low voltage protection	Please switch to the mains power supply and charge the battery
A04	Battery low voltage alarm	The machine is about to disconnect its output, please switch to the mains power supply and charge the battery
A05	Mains high voltage protection 1	Please check whether the mains input voltage is too high
A06	Mains low voltage protection 1	Please check whether the mains input voltage is too low
A07	Mains high voltage protection 2	Please check whether the mains input voltage is too high
A08	Mains low voltage protection 2	Please check whether the mains input voltage is too low
A09	Mains low voltage alarm	The machine is not connected to the mains (only when the battery is inverted) or the mains input voltage is too low
A10	Mains high frequency	Please check whether the mains input frequency is too high
A11	Mains low frequency	Please check whether the mains input frequency is too low
A12	Inverter high voltage protection	Please contact supplier
A13	A-phase inverter over-current protection	Whether with impulsive load, please reduce the load
A14	B-phase inverter over-current protection	Whether with impulsive load, please reduce the load
A15	C-phase inverter over-current protection	Whether with impulsive load, please reduce the load
A16	A-phase inverter high temperature	The temperature is too high, please reduce the load
A17	B-phase inverter high temperature	The temperature is too high, please reduce the load
A18	C-phase inverter high temperature	The temperature is too high, please reduce the load
A19	A- phase inverter temperature measurement abnormal	Please replace the temperature sensor NTC
A20	B- phase inverter temperature measurement abnormal	Please replace the temperature sensor NTC
A21	C- phase inverter temperature measurement abnormal	Please replace the temperature sensor NTC
A22	A- phase load overcurrent protection	Output overload, please reduce the load
A23	B- phase load overcurrent protection	Output overload, please reduce the load
A24	C- phase load overcurrent protection	Output overload, please reduce the load
A25	A- phase load overcurrent alarm	Output overload, please reduce the load

Code	Description	Action
A26	B- phase load overcurrent alarm	Output overload, please reduce the load
A27	C- phase load overcurrent alarm	Output overload, please reduce the load
A28	Hardware overcurrent protection	Please contact supplier
A29	A-phase transformer reverse connection	Please contact supplier
A30	B-phase transformer reverse connection	Please contact supplier
A31	C-phase transformer reverse connection	Please contact supplier
A32	Button shutdown	Please contact supplier
A33	Abnormal communication	Please contact supplier
A34	Abnormal phase sequence	Please check whether the mains input is lacking phase, or adjust the input phase sequence
A35	Mains abnormal 1	Please check whether the mains is lack of phase, voltage is unstable, or jitter
A36	Mains abnormal 2	Please check whether the mains is lack of phase, voltage is unstable, or jitter
A37	Mains abnormal 3	Please check whether the mains is lack of phase, voltage is unstable, or jitter
A38	Software overcurrent protection	Please contact the supplier
A39	Neutral line abnorma	Please check whether the input and output neutral lines are consistent
A40	A-phase inverter voltage is abnormal	Please contact supplier
A41	B-phase inverter voltage is abnormal	Please contact supplier
A42	C-phase inverter voltage is abnormal	Please contact supplier
A43	Remote control shutdown	

8. Technical specification

| Model: HDSX	32248/ 96/192	48248/ 96/192	56248/ 96/192	64248/ 96/192	80248/ 96/192	10348/ 96/192	12348/ 96/192	16396/192	20396/192	24396/192
Rated Power	4KVA/ 3.2KW	6KVA/ 4.8KW	7KVA/ 5.6KW	8KVA/ 6.4KW	10KVA/ 8KW	12.5KVA/ 10KW	15KVA/ 12KW	20KVA/ 16KW	25KVA/ 20KW	30KVA/ 24KW
Battery Voltage	48/96/192VDC							96/192VDC		
Built-in solar controller charging current (Optional)	PWM: 10A-60A(48Vsystem); 50A/100A(96Vsystem); 50A (192Vsystem) MPPT: 10A-100A(48Vsystem); 50A/100A(96Vsystem)				PWM: 10A-60A(48Vsystem); 50A/100A(96Vsystem); 50A/100A(192V system) MPPT: 10A-100A(48V system); 50A/100A(96V system)					
Size(L*W*Hmm)	565*300*775				725*365*1010					
Package Size(L*W*Hmm)	625*360*895				785*425*1135					
N.W.(kg)	65	73	75	80	112	122	134	160	176	189
G.W.(kg)(Wooden Packing)	78	86	88	93	136	146	158	184	200	213
Installation Method	Tower									
Model: HDSX	323192	403192	483384	643384	803384	963384	1003384	1203384	1283384	1503384	1603384
---	---	---	---	---	---	---	---	---	---	---	---
Rated Power	40KVA/ 32KW	50KVA/ 40KW	60KVA/ 48KW	80KVA/ 64KW	100KVA/ 80KW	120KVA/ 96KW	125KVA/ 100KW	150KVA/ 120KW	160KVA/ 128KW	190KVA/ 150KW	200KVA/ 160KW
Battery Voltage	192VDC		384VDC								
Built-in solar controller charging current (Optional)	PWM: 100A-200A(192V/384 system) MPPT: 50A/100A(192V/384 system)		PWM: 100A-200A / MPPT: 50A/100A							PWM: 100A-200A / MPPT: 100A	
Size(L*W*Hmm)	720*575*1275			875*720*1380						1123*900*1605	
Package Size(L*W*Hmm)	785*640*1400			980*825*1560						1185*960*1750	
N.W.(kg)	240	260	290	308	512	542	552	612	642	705	755
G.W.(kg)(Wooden Packing)	273	293	323	341	552	582	592	652	692	755	805
Installation Method	Tower										

Input	DC Input Voltage Range	10.5-15VDC(Single battery voltage)
	AC Input Voltage Range	380Vac/400Vac(300Vac-475Vac), 190Vac/200Vac/415Vac can be customized
	AC Input Frequency Range	45Hz-55Hz(50Hz) / 55Hz-65Hz(60Hz)
	Max AC charging current	0~45A(Depending on the model)
	AC charging method	Three-stage (constant current, constant voltage, floating charge)
	Phase	3/N/PE
Output	Efficiency(Battery Mode)	≥85%
	Output Voltage(Battery Mode)	380Vac/400Vac±2%(190Vac/200Vac/415Vac can be customized)
	Output Frequency(Battery Mode)	50/60Hz±1%
	Output Wave(Battery Mode)	Pure Sine Wave
	Efficiency(AC Mode)	>99%
	Output Voltage(AC Mode)	Conforming to AC input
	Output Frequency(AC Mode)	Conforming to AC input
	Output waveform distortion (Battery Mode)	≤3%(Linear load)
	No load loss(Battery Mode)	≤2.5% rated power(4KVA-30KVA models); ≤1% rated power(40KVA-200KVA models)
	No load loss(AC Mode)	≤2% rated power(charger does not work in AC mode)
	No load loss(Energy saving Mode)	≤10W
	Phase	3/N/PE
Battery Type	VRLA Battery	Charge Voltage :13.8V; Float Voltage:13.7V(Single battery voltage)
	Customize battery	Charging and discharging parameters of different types of batteries can be customized according to user requirements (charging and discharging parameters of different types of batteries can be set through the operation panel)
Protection	Battery low voltage alarm	Factory default: 11V/Single battery voltage (before reaching the communication agreement); following BMS instruction (after reaching the communication agreement)
	Battery low voltage protection	Factory default: 10.5V/Single battery voltage (before reaching the communication agreement); following BMS instruction (after reaching the communication agreement)
	Battery over voltage alarm	Factory default: 15V/Single battery voltage (before reaching the communication agreement); following BMS instruction (after reaching the communication agreement)
	Battery over voltage protection	17V(Single battery voltage)
	Battery over voltage recovery voltage	Factory default: 14.5V/Single battery voltage (before reaching the communication agreement); following BMS instruction (after reaching the communication agreement)
	Overload power protection	Automatic protection (battery mode), circuit breaker or insurance (AC mode)
	Inverter output short circuit protection	Automatic protection (battery mode), circuit breaker or insurance (AC mode)
	Temperature protection	>90°C(Shut down output)
Alarm	A	Normal working condition, buzzer has no alarm sound
	B	Buzzer sounds 4 times per second when battery failure, voltage abnormality, overload protection
	C	When the machine is turned on for the first time, the buzzer will prompt 5 when the machine is normal
Inside Solar controller (Optional)	Charging Mode	MPPT or PWM
	Charging current	PWM: 10A/20A/30A/40A/50A/60A(48V system); 50A/100A/150A/200A(96V/192V/384V system) MPPT: 10A/20A/30A/40A/50A/60A/80A/100A(48V system); 50A/100A(96V/192V/384V system)
	PV Input Voltage Range	PWM: 60V-88V(48V system); 120V-176V(96V system); 240V-352V(192V system); 480V-704V(384V system) MPPT: 60V-120V(48V system); 120V-240V(96V system); 240V-360V(192V system); 480V-640V(384V system)
	Max PV Input Voltage(Voc) (At the lowest temperature)	PWM: 100V(48V system); 200V(96V system); 400V(192V system); 750V(384V system) MPPT: 150V(48 system); 300V(96V system); 450V(192V system); 800V(384V system)
	PV Array Maximum Power	48V System: 560W(10A)/1120W(20A)/1680W(30A)/2240W(40A)/2800W(50A)/3360W(60A) 96V System: (PWM: 5.6KW(50A)/11.2KW(100A)) / (MPPT: 5.6KW(50A)/5.6KW*2(100A)); 192V System: (PWM: 11.2KW(50A)/22.4KW(100A)/16.8KW*2(150A)/22.4KW*2(200A)) / (MPPT: 11.2KW(50A)/11.2KW*2(100A)); 384V System: (PWM: 22.4KW(50A)/44.8KW(100A)/33.6KW*2(150A)/44.8KW*2(200A)) / (MPPT: 22.4KW(50A)/22.4KW*2(100A))
	Standby loss	≤3W
	Maximum conversion efficiency	>95%

Working Mode	Mains Priority Mode/Solar(battery) Priority Mode
Transfer Time	≤4ms
Display	LCD
Thermal method	Cooling fan in intelligent control
Communication(Optional)	RS485/APP(WIFI/GPRS)

Environment	Operating temperature	-10°C~40°C
	Storage temperature	-15°C~60°C
	Noise	≤65dB
	Elevation	2000m(More than derating)
	Humidity	0%~95% (No condensation)

**Note: All specification is subject to change without prior notice.**

9. Appendix--485 Communication Port
(External communication /BMS communication can only choose one or the other)

RS485 communication port pin definition(External communication)

PIN1--------RS485-A
PIN2--------RS485-B
PIN3--------NC
PIN4--------GND
PIN5--------NC
PIN6--------NC
PIN7--------NC
PIN8--------NC

12345678
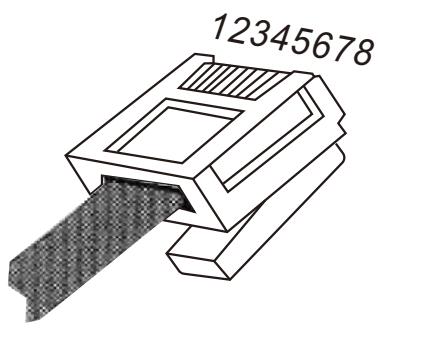
NC: refer to as not connect.

RS485 communication port pin definition(BMS communication)

PIN1--------RS485-B
PIN2--------RS485-A
PIN3--------NC
PIN4--------NC
PIN5--------NC
PIN6--------NC
PIN7--------NC
PIN8--------NC

12345678
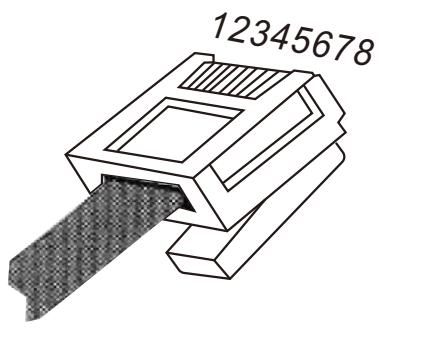
NC: refer to as not connect.

Warranty Card

Customer Name: _____   Tel.: _____

Address: _____

Brand: _____   Model: _____

Serial No.: _____   Date of Purchase: _____

Bought From: _____

Invoice Number: _____   Invoice Price: _____

Warranty Instruction

- Please keep this warranty card as proof of maintenance.
- The warranty period is 1 year from the date of purchase.
- During the warranty period, under the condition of normal use and maintenance, if damage caused by the product's own quality, the company will provide free repair and replacement parts after verification.
- The company reserves the right to maintain and interpret all contents.

Free maintain won't be given under the following circumstance:

- The damage caused by the manipulation that hasn't follow the requests of the manual.
- The product has been repaired, modified by technicians other than our company's, and any internal parts of the product have been replaced by users.
- The product number has been altered or product is inconsistent with the warranty card.
- Damage caused by careless use, penetration of water or other substances into the product.
- Damage caused by accident or natural disaster.

Certificate

Name: _____

Model: _____

Inspectors: _____

Date: _____

Products have been tested qualified by standard and permitted to deliver.