130*180mm

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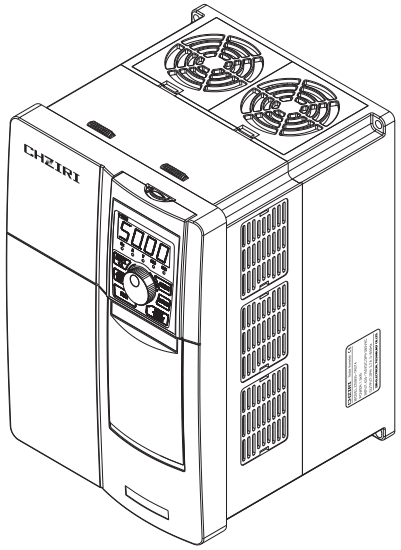
CHZIRI®

ZSI800 Solar Inverter Series

User Manual



ZIRI ELECTRICAL TECHNOLOGY CO.,LTD

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Table of Contents

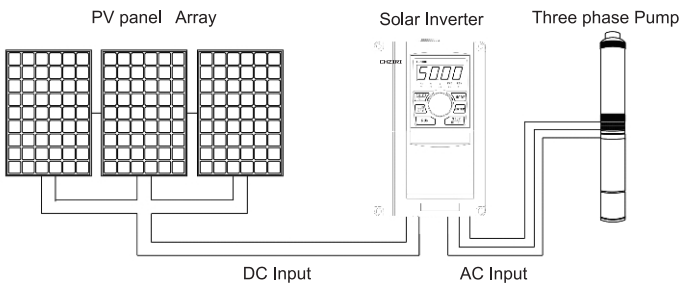
ZSI800 Series Solar Inverter User Manual

1. Product Description

Thank you for choosing solar inverter. This product is designed by our company for using in the field of solar photovoltaic inverter for many years of exploration and research.

For the working principle of solar photovoltaic panels and power supply features, this product has the following characteristics:

- MPPT is the abbreviation of Maximum Power Point Tracking (maximum power point tracking).The MPPT controller detects the voltage generated by a solar panel in real time and tracks the highest voltage and current (VI), allowing the system to charge the battery with maximum efficiency. Solar inverters play an important role in the PV system, coordinating the work of solar panels, batteries and loads. They are an indispensable component of the PV system.
- Software unique MPPT algorithm through the controller can detect real-time solar panel voltage regulation output frequency, fast dynamic response,and the motor is always working at the maximum power point, so that the solar photovoltaic panels to achieve the maximum economic efficiency.
- Software increases the keyboard encoder resolution setting function, a variety of resolutions can be selected. It's convenient for the user to operate and use .
- The main power of frequency inverter can either use for solar PV DC power . can be single phase , three phase ac power , simple wiring , It truly multi-power working mode. expanding the practical application of the inverter; wide voltage design, The inverter In the higher and lower voltage can still work stably, Product has strong adaptability.



2. Demonstration of the Model

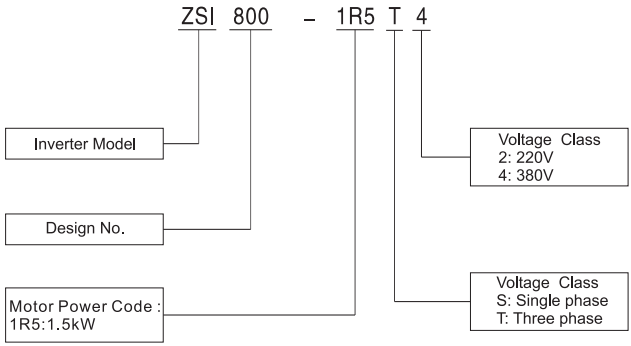


Fig.2-1 Inverter Model Demonstration

3. Specifiation Label

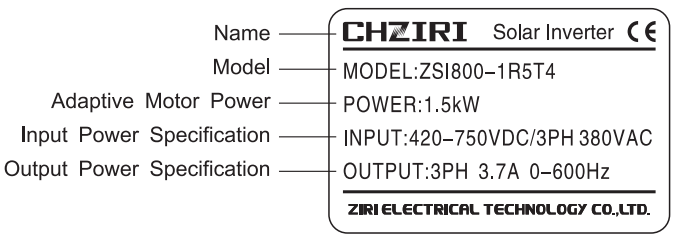


Fig.2-2 Inverter Label

4. Inverter Model and Specification

Sheet 2-1 Inverter Model and Specification

Inverter Model	Input Voltage (V)	Rated Output Power (kW)	Rated Output Current (A)	Adaptation mot r o power (kW)
ZSI800-0R4T2/S2	260-380VDC (Single Phase 220V±15%)	0.4	2.4	0.4
ZSI800-0R7T2/S2		0.75	4.5	0.75
ZSI800-1R5T2/S2		1.5	7.0	1.5
ZSI800-2R2T2/S2		2.2	10	2.2
ZSI800-3R7T2	260-380VDC (Three phase 220V±15%)	3.7	16	3.7
ZSI800-5R5T2		5.5	20	5.5
ZSI800-7R5T2		7.5	30	7.5
ZSI800-0R7T4	420-750VDC (Three phase 400V±15%	0.75	2.5	0.75
ZSI800-1R5T4		1.5	3.7	1.5
ZSI800-2R2T4		2.2	5.0	2.2
ZSI800-3R7T4		3.7	9.0	3.7
ZSI800-5R5T4		5.5	13	5.5
ZSI800-7R5T4		7.5	17	7.5
ZSI800-011T4		11	25	11
ZSI800-015T4		15	32	15
ZSI800-018T4		18.5	37	18.5
ZSI800-022T4		22	45	22
ZSI800-030T4		30	60	30
ZSI800-037T4		37	75	37
ZSI800-045T4		45	90	45
ZSI800-055T4		55	110	55
ZSI800-075T4		75	160	75
ZSI800-090T4		90	176	90
ZSI800-110T4		110	210	110
ZSI800-132T4		132	253	132
ZSI800-160T4		160	300	160

5. Terminal Wiring Instructions

5.1 Description on Control Circuit Terminals

5.1.1 Main circuit terminals are shown in Figure 3-1 to Figure 3-4.

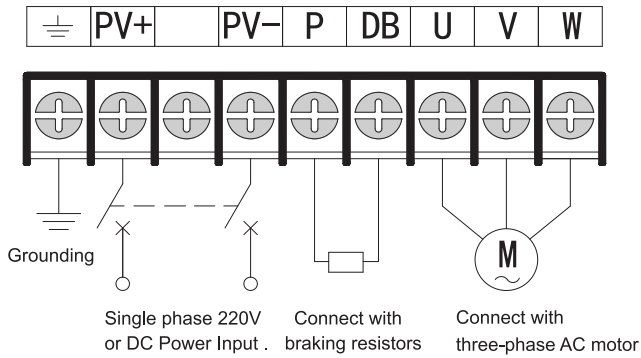


Fig.3-1 Main Circuit Terminal 1

Applicable models: ZSI800-0R4S2~2R2S2

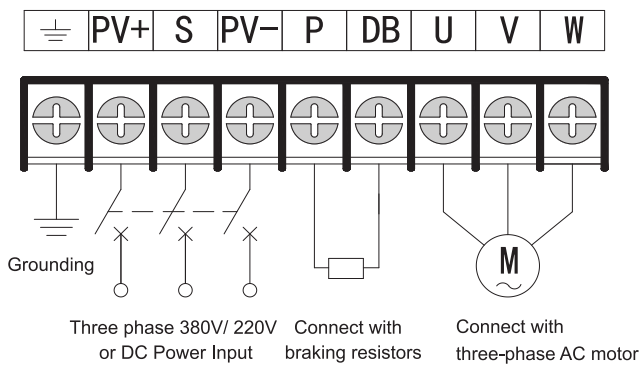


Fig.3-2 Main Circuit Terminal 2

Applicable models: ZSI800-0R4T2~3R7T2 ZSI800-0R7T4~5R5T4

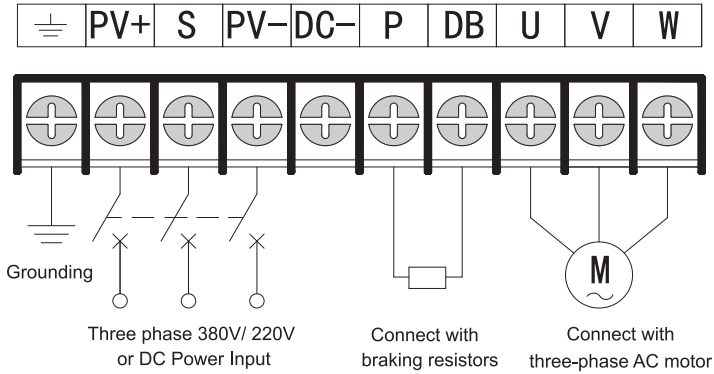


Fig.3-3 Main Circuit Terminal 3

Applicable models: ZSI800-5R5T2 ZSI800-7R5T4~011T4

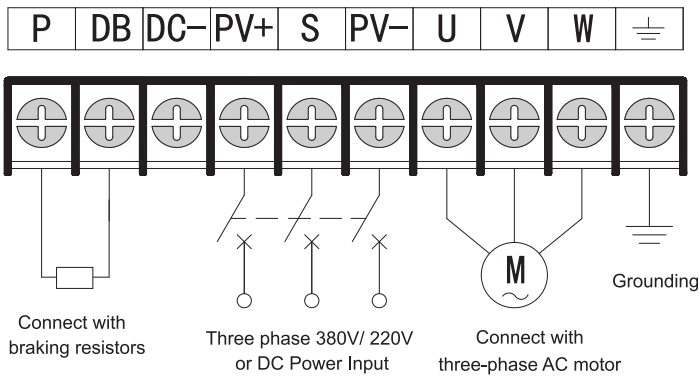


Fig. 3-4 Main Circuit Terminal 4

Applicable models: ZSI800-7R5T2 ZSI800-015T4~018T4

5.1.2 Function Description on Control Circuit Terminals

Sheet 3-1 Function Description on Control Circuit Terminals

Terminal Symbols	Function	Description
PV+	Power input terminal	Connect with three-phase 380V or 220V AC power supply,DC input connect with PV + and PV-.
S		
PV-		
PV+	Power input terminal	Connect with single phase 220V with AC power supply,DC input connect with PV + and PV-.
PV-		
U	Inverter Output Terminal	Connect with three-phase AC motor
V		
W		
P	Connect with External brake resistor terminal	Connect with both ends of external braking resistor
DB		
P	Connect with external braking unit or DC input terminal	P connected to the positive brake unit, DC- connected to the negative. P connect with PV +, DC- connect with PV-.
DC-		
P	Connect with External DC reactor terminal	Connect with both ends of DC reactor (remove the short circuit connect)
DC+		
⏚ G	Grounding	Connect to ground wire

5.2 Description on Control Circuit Terminals

5.2.1 Control circuit terminal are shown in the Fig.3-24and Fig.3-25.

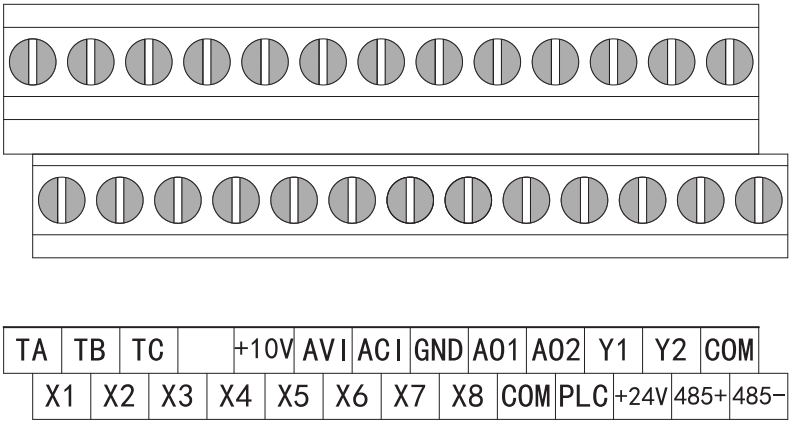


Fig.3-24 Control Circuit Terminals 1

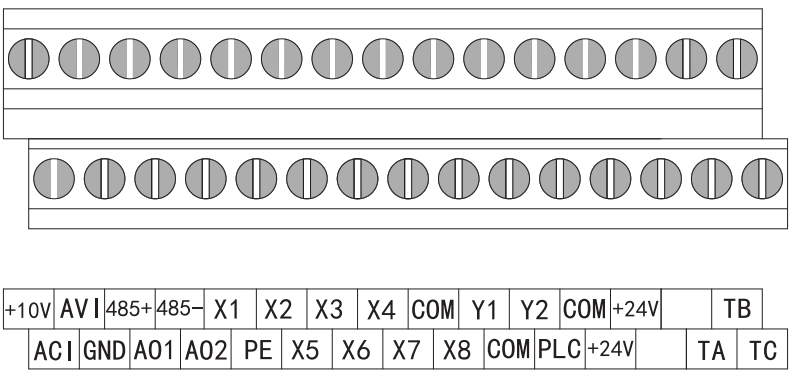


Fig. 3-25 Control Circuit Terminals 1

5.2.2 Description on Control Circuit Terminals

Sheet 3-2 Function Description on Control Circuit Terminals

Type	Terminal Symbols	Function Description	Electrical Specifications
Publicport	COM	Digital signal public terminal	
Multi-function Input Terminal	X1	Valid only when there is a short circuit between Xn(n=1，2，3，4，5,6,7,8) -COM. The functions can be set by the parameter F5.00 ~F5.07 separately .	INPUT,0~24V power level signal .5mA.
	X2		
	X3		
	X4		
	X5		
	X6		
	X7		
	X8		
Multi-function Input port Public Terminal	PLC	Digital signal common port selection terminal	
Multi-function output terminal	Y1	Multi-function open-collector output, defined as a variety of functions of the switch output terminals, their functions are set by the parameters F6.00 ~ F6.01, reference to COM.	OUTPUT, Maximum load Current I≤50mA
	Y2		
Others	PE	Ground terminal	
Public port	GND	Analog signal common terminal	

Type	Terminal Symbols	Function Description	Electrical Specifications
Analog Input terminal	+10V	External analog given power, and GND, AVI terminal connected with potentiometer, can set the frequency.	INPUT, 10V DC voltage
	AVI	Analog voltage signal input, reference to GND.	INPUT, 0~10V DC voltage
	ACI	Analog current signal input, reference to GND.	INPUT, 0~20mA DC current.
Analog Output terminal	AO1	Programmable analog output, reference ground is GND.	OUTPUT, 0~10V DC Voltage Or 0~20mA DC current
	AO2		OUTPUT, 0~20mADC current .
Power Supply Interface	+24V	24VDC power output (Control power)	24VDC–100mA
Programmable output terminal	TA	Relay contact output, normal: TA-TB closed, TA-TC disconnect. During operation: TA-TB is disconnected and TA-TC is closed. The function is set by F6.02.	Contact rated value: NO：240VAC–3A NC：240VAC–1A
	TB		
	TC		
Communication Terminal	485+	Communication Signal Positive	
	485-	Communication Signal Negative	

6. Functional Parameters

- The marked "√ " Indicate the setting value of parameter can be modified no matter when the inverter stop or running.
- The marked "X" indicates the setting value of parameter can be modified only when the inverter is shut down , and can not be modified when the inverter is running .
- The marked " _" indicates the parameter can be displayed only and can not be modified .

6.1 Parameter Sheet

Code	Name	Setting Range	Min.Unit	Factory Setting	Running Modification
F0.01	Running command channel	0：Keyboad command channel 1：Terminal command channel 2：Communication command channel	1	0	×
F0.02	Keypad and Terminal UP/DOWN Setting	0：Valid , Save the parameters when the inverter is powered off 1：Valid .the value can not be saved when the inverter is powered off 2：UP/DOWN setting is invalid 3：Valid during running ,clear when the inverter stop .	1	0	√
F0.03	Frequency command selection	0： Keyboard or encoder setting 1：Analog AVI setting 2：Analog ACI setting 11：Mppt Function Selection	1	0	√
F0.04	Maximum output frequency	10.00~600.00Hz	0.01Hz	50.00Hz	×

6.1 Parameter Sheet（To be continued ）

Code	Name	Setting Range	Min.Unit	Factory Setting	Running Modification
F0.05	Upper limit frequency	F0.06~F0.04（Mx.frequency ）	0.01Hz	50.00Hz	√
F0.06	Lower limit frequency	0.00~F0.05 （Running frequency upper limit）	0.01Hz	0.00Hz	√
F0.07	Keypad setting frequency	0.00~F0.04（Max.Frequency ）	0.01Hz	50.00Hz	√
F0.08	Acceleration time 1	0.1~3600.0s	0.1s	Depend on the model	√
F0.09	Deceleration time 1	0.1~3600.0s	0.1s	Depend on the model	√
F0.10	Running direction selection	0：Forward(the default running direction) 1：Reverse 2：Forbid reverse	1	0	×
F0.11	Carrier frequency	1.0~15.0kHz	0.1kHz	Depend on the model	√
F0.13	Restore parameters	0：No action 1：Restore the default value 2：Clear fault records	1	0	×
F0.14	AVR function Selection	0：Disable 1：Enable all the time 2:Disabled during deceleration	1	0	√

Code	Name	Setting Range	Min.Unit	Factory Setting	Running Modification
F1.00	Start Mode	0：Start directly 1：DC braking and start 2：Speed tracking starting	1	0	×
F1.01	Direct starting frequency	0.00~50.00Hz	0.01Hz	1.50Hz	√

Code	Name	Setting Range	Min.Unit	Factory Setting	Running Modification
F1.02	Starting frequency maintain time	0.0~50.0s	0.1s	0.0s	√
F1.03	DC braking current before start	0.0~150.0%	0.1%	0.0%	√
F1.04	DC braking time before start	0.0~50.0s	0.1s	0.0s	√
F1.05	Stop mode	0：Ramp to stop 1：Coast/Free stop	1	0	√
F1.06	Starting frequency of DC braking at stopping	0.00~F0.04（Max.Frequency）	0.01Hz	0.00Hz	√
F1.07	Braking wait time at stopping	0.0~50.0s	0.1s	0.0s	√
F1.08	DC braking current at stopping	0.0~150.0%	0.1%	0.0%	√
F1.09	DC braking time at stopping	0.0~50.0s	0.1s	0.0s	√
F1.10	Dead time of FWD/REV	0.0~3600.0s	0.1s	0.0s	√
F1.11	Terminal running protection selection when power on	0：Command invalid when powered on 1：Command valid when powered on	0.1s	0.0s	√
F1.12	Input/Output terminal polarity selection	0x000~0x7FF	1	0x000	√
F2.01	Motor rated power	0.4~700.0kW	0.1kW	Depend on the model	×
F2.02	Motor rated frequency	0.01~600.00Hz	0.01Hz	50.00Hz	×
F2.03	Motor rated rotate speed	0~36000rpm	1rpm	Depend on the model	×
F2.04	Motor rated voltage	0~460V	1V	Depend on the model	×
F2.05	Motor rated current	0.1~2000.0A	0.1A	Depend on the model	×

Code	Name	Setting Range	Min.Unit	Factory Setting	Running Modification
F5.00	X1 terminal function selection	0：No function 1：Forward running 2：Reverse running 3：3-Wire running control 4：Jog forward control 5：Jog reverse control 6：Coast to stop 7：Reset fault; 8：External fault input 9：Frequency UP command（UP） 10：Frequency DOWN command（DOWN） 11：Clear frequency UP/DOWN 12：Multi-step speed terminal 1 13：Multi-step speed terminal 2 14：Multi-step speed terminal 3 15：Multi-step speed terminal 4 16：Acceleration and deceleration time selection 17：PID control pause 18：Traverse frequency pause(stop at the current frequency) 19：Traverse frequency reset(return to the centre frequency). 20：Acceleration and deceleration prohibition 21：Torque control prohibition 22：Frequency increase / decrease setting temporarily cleared. 23：DC braking when stopping 24：External pulse input 25：Full of water 26：Shortage of water 27:Reserved 28: A Coast to stop.	1	1	×
F5.01	X2 terminal function selection		1	2	×
F5.02	X3 terminal function selection		1	7	×
F5.03	X4 terminal function selection		1	0	×
F5.04	X5 terminal function selection		1	0	×
F5.05	X6 terminal function selection		1	0	×
F5.06	X7 terminal function selection		1	0	×
F5.07	X8 terminal function selection		1	0	×
F5.08	ON/OFF filter times	1~100	1	5	√
F5.09	Terminal control running mode	0：2-wire control mode 1 1：2-wire control mode 2 2：3-wire control mode 1 3：3-wire control mode 2	1	0	×

Code	Name	Setting Range	Min.Unit	Factory Setting	Running Modification
F6.00	Y1 output selection	0：No output 1：Forward running 2：Reverse running 3：Fault output 4：Frequency level detection FDT output 5：frequency reached 6：Zero speed running 7：Upper limit frequency reached 8：Lower frequency limit reached 9:Running 10: Reserved	1	1	√
F6.01	Y1 output selection			2	√
F6.02	Relay output selection			3	√
F6.03	AFM output selection	0：Running frequency 1：Setting frequency 2：Running RPM 3：Output current 4：Output voltage 5：Output power 6：Output torque 7：Analog AVI input 8：Analog ACI input 9～14：Reserved	1	0	√
F6.04	AFM output lower limit	0.0～100.0%	0.1%	0.0%	√
F6.05	The AFM lower limit corresponding to the output	0.00～10.00V	0.01V	0.00V	√
F6.06	AFM output upper limit	0.0～100.0%	0.1%	100.0%	√
F6.07	The AFM upper limit corresponding to the output	0.00～10.00V	0.01V	10.00V	√
F8.11	Fault auto reset times	0～9999	0.1s	0	√
F8.12	Fault reset interval time	0.1～100.0s	0.1s	1.0s	√

Code	Name	Setting Range	Min.Unit	Factory Setting	Running Modification
FA.00	MPPT mode	0：No function， 1:CVT working， 2：MPPT fixed step 3：MPPT variable step.	1	0	√
FA.01	MPPT Step Length	0.1-10.00Hz	0.1HZ	0.3	√
FA.02	MPPT Adjust the hysteresis width	0.01-10.00KW	0.01kw	0.01	√
FA.03	MPPT Period	0.01-90.00S	0.01S	0.02	√
FA.04	Frequency fluctuation rate	0.01-10.00Hz	0.01HZ	0.05	√
FA.05	The maximum voltage	0-1000V	1	Depend on the model	√
FA.06	The maximum voltage	0-1000V	1	Depend on the model	√
FA.07	The recovery voltage	0-1000V	1	Depend on the model	√
FA.08	The target voltage	0-1000V	1	Depend on the model	√
FA.09	Water shortage protection selection	0:OFF 1：ON	1	0	√
FA.11	Water shortage protection frequency	0.00~F0.04 (Max.Frequency)	0.1HZ	15.00	√
FA.12	Water shortage protection current	0~200%	1%	50%	√
FA.13	Water shortage detection time t	0~36000s	1s	10	√
FA.14	Water shortage protection automatic restart delay time	0~36000m	1m	120	√
FA.15 ~ FA.20	Reserved				–

7. Use Note:

1. This operation manual is based on the principle of easy and simple .Only some common parameters are input for solar photovoltaic applications. For more functional information, please refer to the manual of the general-purpose inverter.

2. please confirm whether the inverter specifications and power supply voltage levels are consistent before wiring , otherwise it will cause damage to the inverter or can not work properly.

3.The motor capacity should be equal to or smaller than the inverter capacity, and the motor voltage should be consistent with the inverter output voltage. Otherwise, the inverter may not work normally or even damage the inverter or motor.

4.Please do not connect the input power with the inverter output terminal U,V,W .

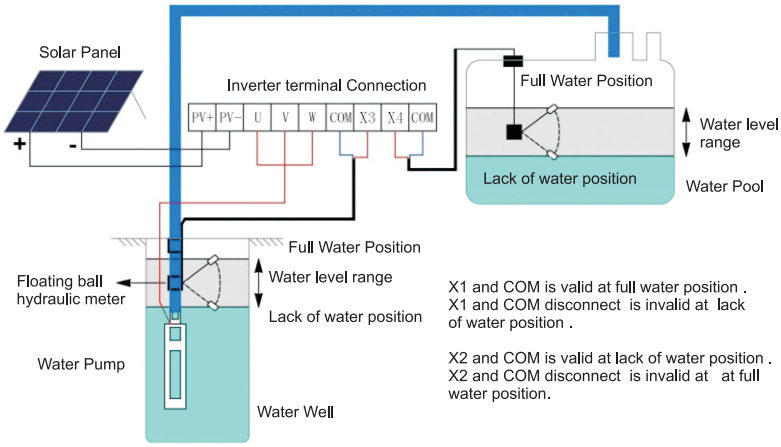
5. When the carrier frequency is less than 3KHz, the maximum distance between the inverter and the motor should be within 50m; when the carrier frequency is greater than 4KHz, the distance should be reduced appropriately. This wiring connection is best laid in a metal tube. it's necessary to add an output reactor or filter .

6. For more details .Please refer to the user manual of general inverter .

8. Application Case

Solar water supply control system provided the DC power for the inverter supplied by the solar panels . The solar inverter run with the pump and drag the water into the bucket from the water well .

Water wells and buckets have a water level detector, when the water inside the well below the lower limit.the inverter will stop , when the water inside the bucket is higher than the upper limit of the water level .The inverter must shut down.



Wiring Diagram for Water supply control

Parameter Setting

Code	Name	Setting Range	Min.Unit
F0.03	Frequency command selection	0～11	11
F1.05	Stop mode	0：Ramp to stop 1：Coast/Free stop	1
F1.12	Input/Output terminal polarity selection	0x000～0x7FF	0x00C
F5.02	X3 terminal function selection	0～28	25
F5.03	X4 terminal function selection	0～28	26
F8.11	Fault auto reset times	0～9999	10
FA.00	MPPT mode	0～3	2

Appendix User's Warranty Bill

User's Details

Distributor		Buying date	
Inverter Model		Serial number	
Equipment name		Motor Power	
Installation date		Use date	

Repair Details

Fault:
Solution :
Repair Date: Maintenance personnel signature:

Reason of Fault:
Solution:
Repair Date: Maintenance personnel signature:

TIP

- The user should keep this warranty bill.