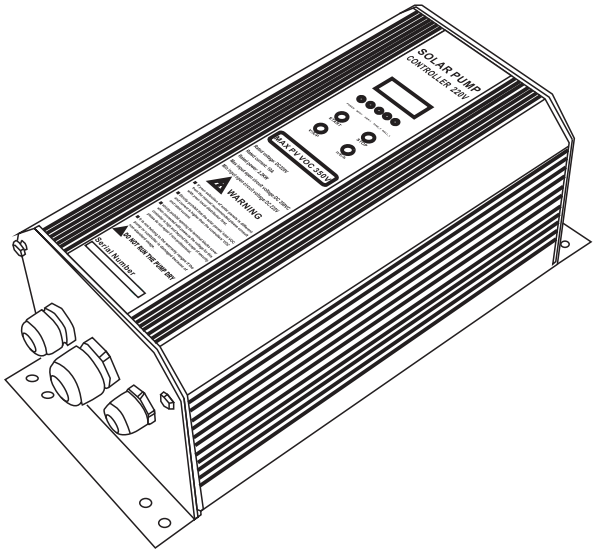
Pump Controller Manual

BSSC4-29-1000-110V
BSSC4-53-10000110V
BSSC4-88-1000-110V
BSSC4-60-1500-150V
BSSC4-77-1500-150V
BSSC4-130-1500-150V
BSSC4-47-2200-220V



Attention:

1.Please carefully check the manual before installation.

2.The only usage of the product is to control the matched DC solar pumps.

CONTENTS

1.Safety

1.1 Before Power On

●Make sure the terminal wire connections are correct,“P+”、“P-”are for panel connection,“1”、“2”、“3”for pump connection,wrong connection will lead to controller damage.

●The voltage of panel system is not allowed to exceed the open-circuit voltage of controller , avoid to use same power supply with strong interference equipment , otherwise it will damage the controller.

●Match correct pump power with controller.

●Ensure the insulation of MOSFET and aluminum board during the installation.

1.2 In running

●When the system is running,it is not allowed to disconnect the connection between pump and controller,other wise it may damage the pump motor and controller.

●When the system is running,do not tough or exam the The parts of the circuit board or signal.

●Do not tough the radiator or any heat parts,in case of burns.

●Unprofessinal operators are not allowed to operate or exam the controller.

2.Technical Specification

Table 1 Specification

Specification \ Model		150V	220V	300V
Rated Voltage		150VDC	220VDC	300VDC
Rated Current		10A	10A	10A
Max working Current		12A	12A	12A
Min working Current		1.3A	1.3A	1.3A
Open circuit voltage input		>170VDC	>272VDC	>340VDC
Open circuit voltage Max		250VDC	350VDC	450VDC
Open circuit voltage Min		90VDC	150VDC	220VDC
Max Power		1.5KW	2.2KW	3KW
Current	Overload	15±0.5A	15±0.5A	15±0.5A
	Over current	32±0.5A	32±0.5A	32±0.5A

3.Protect Function Manual

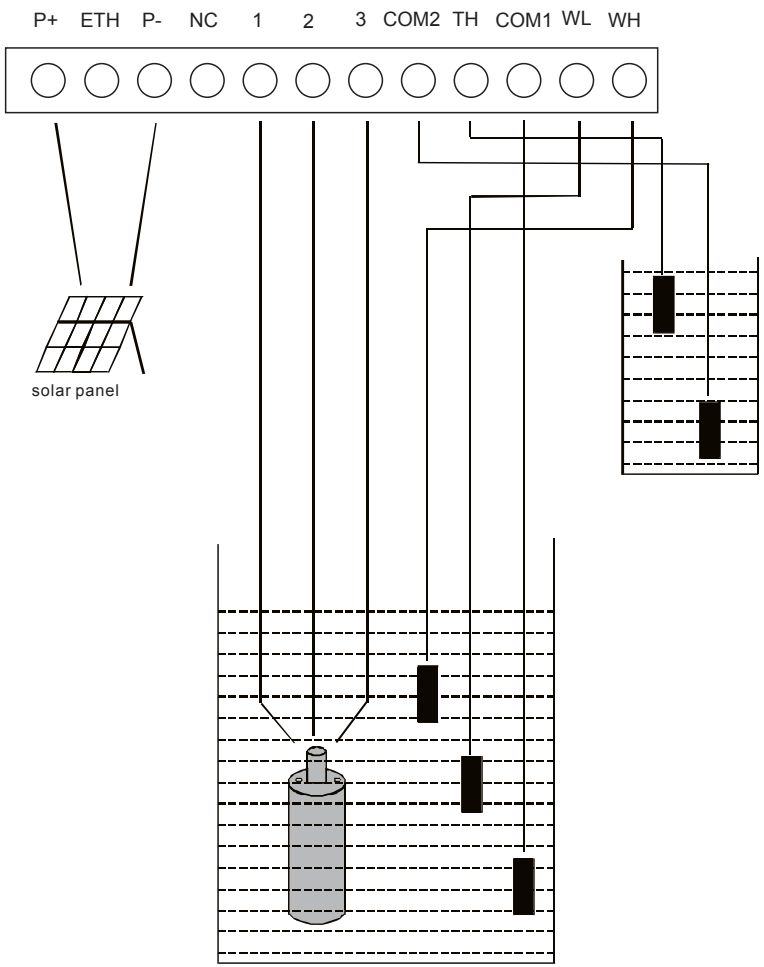
Table 2 Protect Function Instruction

Protection	Manual
Protection of opposite connection	Solar Panel “PV+”“PV-”polarity are opposite connected, controller can continue working after adjust.
Load over current and short circuit protection	If the load current is more than15A and longer than 10s,the controller will be in protection mode; If more than 32±0.5A,the controller will stop working immediately. Try to re-start the controller 15mins later.
Weak Power Protection (Details See Table 4)	50V: The working current smaller than 1.3A;Solar Panel input voltage smaller than 60VDC or bigger than 250VDC；Come into Protection mode. Try to re-start the controller 6mins later.
	220V: The working current smaller than 1.3A;Solar Panel input voltage smaller than 110VDC or bigger than 350VDC；Come into Protection mode. Try to re-start the controller 6mins later.
	300V: The working current smaller than 1.3A;Solar Panel input voltage smaller than 220VDC or bigger than 450VDC；Come into Protection mode. Try to re-start the controller 6mins later.

4. Installation Guide

4.1 Wire connection

Typical wire connection as below pictures:



4.2 Terminal Instruction：

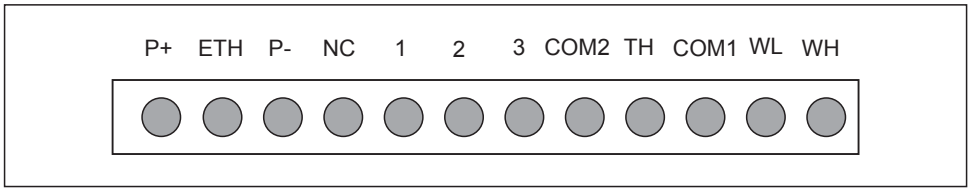


Table 3 Terminal instruction

Terminal	Instruction
P+	Anode of solar panel
ETH	Earth
P-	Cathode of solar panel
NC	Blank
1	Connect with Pump motor Wire 1
2	Connect with Pump motor Wire 2
3	Connect with Pump motor Wire 3
COM2	Low level of Tank(Water level sensor)
TH	High level of Tank(Water level sensor)
COM1	Public wire of Well(Water level sensor)
WL	Low level of Well(Water level sensor)
WH	High level of Well(Water level sensor)

4.3 Instruction of water level sensors

Tank water level sensor: The tank water level senor is used to detect the water level of tank.Once the tank is full,the sensor will stop the system.When installation,connect“COM2”at the bottom of tank,connect“TH”at the top of tank.Once the water level is full,the system will stop in 8s;once the tank is empty,the system will re-start to work in 5mins.

Well water level sensor: The well water level sensor is used to detect the water level of well.Once the well is empty, the sensor will stop the system .When installaiton,connect “COM1”at the bottom of well,connect“WH” higher than “COM1”.Once the well is empty,the system will stop in 10s; once the water level is higher than “WH”level,the system will re-start to work in 30mins.

4.4 Light Instruction

Table 4 150V/220V/300V Light Instruction

Lighting	Light Situation	Light Situation Instruction			Recover Time
		150V	220V	300V	
POWER	Stay On	System Normal			
MPPT	Flashing	MPPT mode on			
ERR_I	Stay On	T≥15S, I≥15A;			T≥15min
	Flashing	I≥32A.			
	Stay On	A:Vsolar≤50V B：I≤1.3A.	A:Vsolar≤110V B：I≤1.3A.	A:Vsolar≤220V B：I≤1.3A.	T≥6min
	Flashing	Vsolar≥250V	Vsolar≥350V	Vsolar≥450V	
Tank_F	Stay On	The tank is full			
	Flashing	Wait for pumping up			T≥5min
WELL_L	Stay On	No water in the well			
	Flashing	Wait for pumping up			T≥30min
AN	-	Meaningless for Now			

5.Operating Board Instruction

5.1 Operating Board

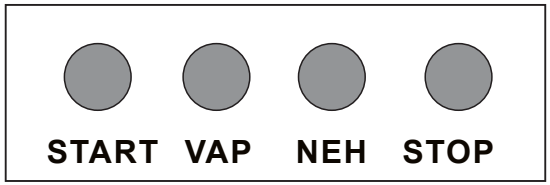


Chart 2 Operating Board

5.2 Button Instruction

Table 5 Button Functionh

Button	Instruction
“Start”	The pump will start running immediately, no 1min delay when power connecting any more
“V/A/P“	Display the system parameters sequently, voltage/current/power
“n/E/h“	Display the system parameters sequently, speed/ fault code/system operate time
“Stop“	Stop the pump immediately, and the pump must be reboot manually

5.3 Digital Display Manual

Table 5 Digital Display Shows

Digital Display Shows	Instruction
Decimal points are lit successively and circularly	1.When electrified, the system enter into the default energy saving mode 2.After 1 minute of no button operation, the system enter into the energy saving model
“N” is displayed on screen	Press “ STAR” button and will enter into the startup mode
“U XXX” is displayed on screen	The first time to press “V/A/P” button, and will display the system voltage
“C XX.X” is displayed on screen	The second time to press “V/A/P” button, and will display the over-load current
“P XXX” is displayed on screen	The third time to press “V/A/P” button, and will display the motor power
“XXXX” is displayed on screen	The first time to press “n/E/h” button and a number displayed on screen. Calculate the motor speed according to this number. Speed=number/pole pairs (note: pole pairs= number of poles/2)
“E-XXX” is displayed on scree	System abnormal(more details refer to Error Code)
“X” is displayed on screen	Display the motor run time
“N XXX” is displayed on screen	Press “STOP” button to enter into the stop mode

6. Angle of installation of the solar panel

Use the following graphics to help determine your optimal mounting angle. If you are located in the Northern hemisphere, face your panels south, and tilt back to an angle equal to your latitude. The opposite is required if located in the Southern Hemisphere.This is a standard year-round default position. For seasonal positioning, please see the chart below.

Latitude	Year Round Tilt	Year Round Tilt	Winter Tilt
50	60	55	65
45	55	50	60
40	45	40	50
35	40	35	45
20	20	15	25

7.Test Running

7.1 Key check project before test running

- Set all the terminal screws tight before running.
- Check all the connection of the terminal.
- Make sure no short circuit phenomenon.

7.2 Test running method

According to “Installation Guide”,make COM1 and WH short circuit;The system situation and the light as follow table:

NO.	Light	System Situation
1	All the lights flash once	Power on
2	“POWER”light is on	System starts to self-check
3	“POWER + MPPT”light on	Pump starts to run

Remark：1、If water level sensors are not used,make COM1 and WH short circuit to run the system.

8.Maintanance Method

8.1 Regular maintanance project

- Every panel’s output voltage is in normal range.
- The tightness of terminal screws.
- Check if there are any dust/iron scrap/mordant liquidin controller.
- Check if there are any noise or shaking of the pump when the system is on.

8.2 Attentions during the maintanance

- Disconnect the input power of controller before maintanance;
- The demounted metal spare parts are not allowed to put into controller,it will lead to open-circuit of controller;
- Keep the controller clean after maintanance,avoid any dust or liquid invade into the controller.

9. ERROR CODE AND MEANING

E001: Current Protection

E002：Voltage Protection

E003：Current+Voltage Protection

E004: Tank Protection

E005: Current+Tank Protection

E006: Voltage+Tank Protection

E007: Current+Voltage+Tank Protection

E008: Low level Protection

E009: Low level+Current Protection

E010: Low level+Voltage Protection

E011: Low level+Current+Voltage Protection

E012: Tank+Low level Protection

E013: Tank+Low level+Current Protection

E014: Tank+Low level+Voltage Protection

E015: Tank+Low level+Current+Voltage Protection

E016: Data error

E032: Verify and Error

E064: Communications Blackout