

Solar Water Pumping System Hybrid AC/DC

pick it up

ready to go,
system in a box



plug it in

easy wiring, save time,
solve your problem



pump water

from any source:
pond, stream, well



Description

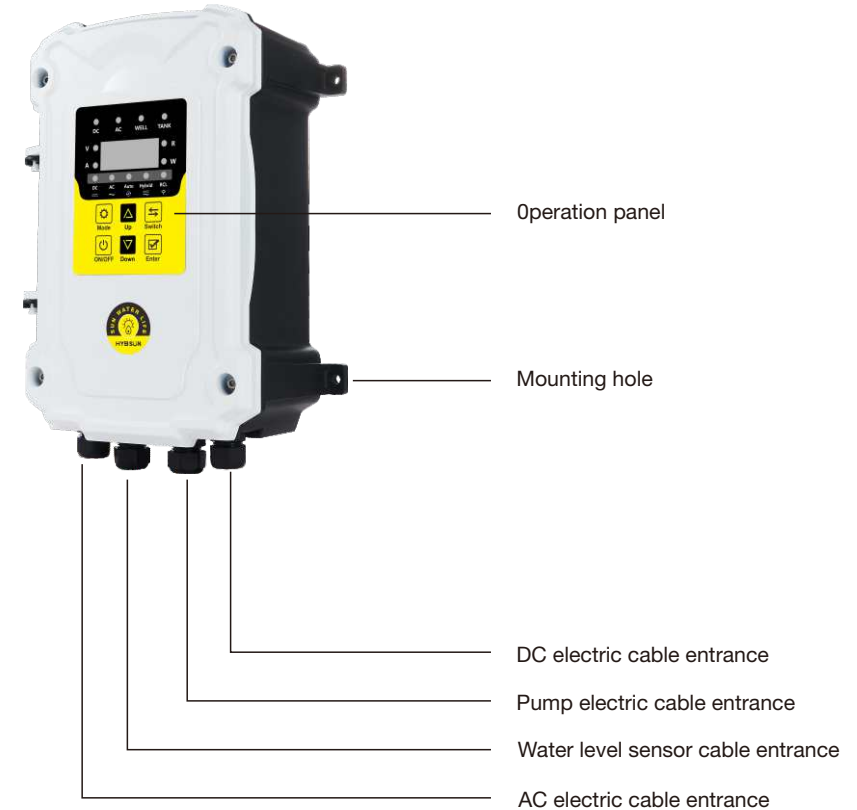
The DC/AC Hybrid solar inverter (TGP) is an off-grid solar inverter which support AC & PV input together. TGP can be connected to the grid or a generator as complementary or back-up power during solar panel power weakness. .

It is designed for continuous as well as intermittent operation. The system is suitable for various water supply systems including irrigation.

Features

- IP65 designed for outdoor solar pumping system.
- MPPT software up to 99% efficiency
- Integrate multiple protection functions to extend service life
- Support AC & PV input together, AC bypass function.
- Support 220V,3phase AC pump
- Support 220V,1phase AC pump without capacitor
- Support 220V,1phase AC pump with capacitor
- BLDC special voltage pump(110V,150V,220V,300V)
- Anti stealing function
- Intelligent self cleaning function
- Wide working voltage:AC input:single phase 80-300V,DC input:90-430V
- Long distance pump automatic stop/start without float switch-wirelessly
- GPRS remotely control pump stop/start by web/phone

Solar Controller





Technical data

Model	TGP-2-0.75	TGP-2-1.5	TGP-2-2.2
Input(DC)			
Max DC Voltage(VOC)	450	450	450
Min Working Voltage(V)	90	90	90
MPPT Working Voltage(V)	90 - 400	90 - 400	90 - 400
Max DC Current(A)	17	17	17
Input(AC)			
Input Voltage(VAC)	220/230/240V(1×Phase)- 15% + 10%		
Input Frequency(Hz)	47-63		
Output(AC)			
Rated Power(W)	750	1500	2200
Rated current(A)	4	7	10
Output Frequency(Hz)	1-400		
Performance			
Control mode	Motor control technology		
Type of motor	Asynchronous machine & Brushless DC motor		
Efficiency	99%		
Enclosure class	IP65		
Installation	Wall mounting		
Other Parameters			
Dimension(L×W×H mm)	420×310×210	420×310×210	420×310×210
Weight(kg)	6.5	6.5	6.5
Protection	IP65		
Cooling	Natural Cooling		
HMI	LCD screen		
Certifications			
Certification	CE:IEC61800-3 CS		
Working environment			
Ambient temperature	(- 25℃ ~ 60℃)		
Working altitude	3000m		
Warranty	18 months		



Technical data

The diagram shows the HMI of the solar inverter with indicator lights for DC, AC, WELL, and TANK. Below the screen are buttons for Mode, Up, Switch, ON/OFF, Down, and Enter.

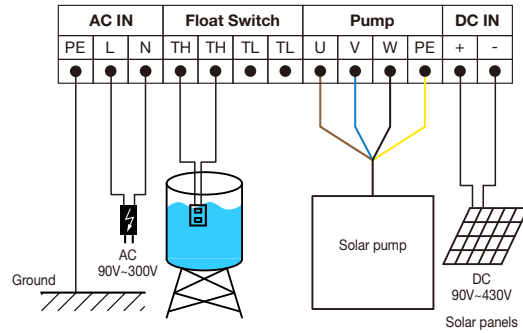
Indicator	Description
DC	DC supply powered on indicator light
AC	AC supply powered on indicator light
WELL	Well water level lower pump inlet
TANK	Water tank full

Indicator	Description
V	Display bus voltage
A	Display output current
R	Display working speed
W	Display output power

Indicator	Description
DC	DC power supply
AC	AC power supply
Auto	"DC power supply first, if DC is not enough turn to AC"
Hybrid	DC&AC hybrid power supply
RCL	GRPS working



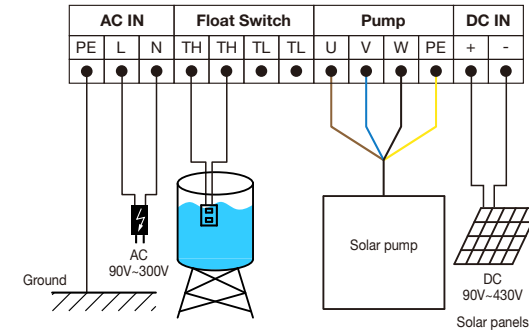
BLDC Pump wiring



P100=2: Special BLDC water-filled pump
P100=3: Special BLDC oil-filled pump

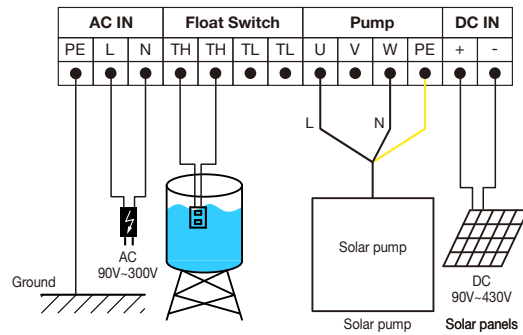


AC 110V/220V three phase pump



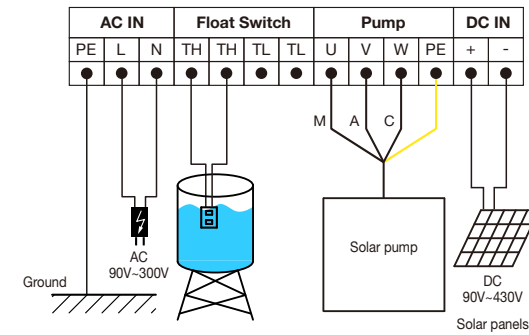
P100=1 : AC 110V/220V three phase pump

AC 110V/220 single phase pump-with capacitor

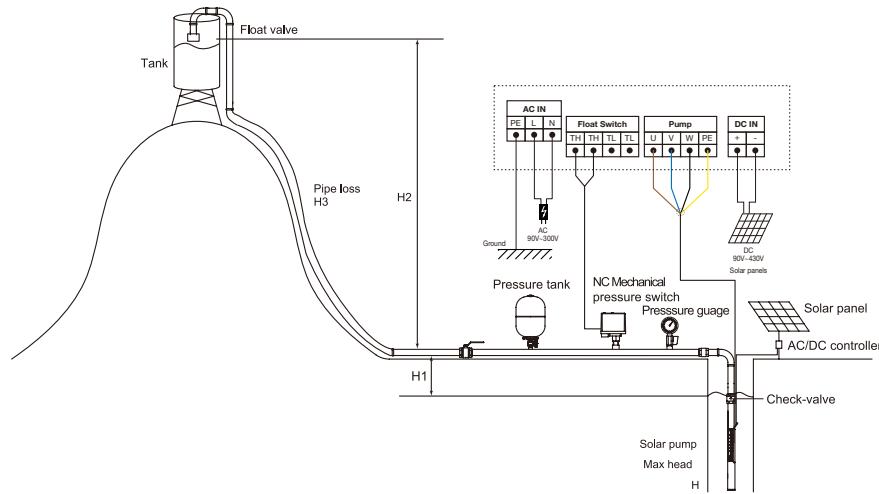


P100=4: AC 110V/220 single phase pump - with capacitor

AC 110V/220V single phase pump-without capacitor pump wiring



P100=0: AC 110V/220V single phase pump - without capacitor



1. Select single float switch mode:P500=1
2. Select float switch detection time:P501=600 (Unit:seconds,The default time:600s)
3. Opposite polarity for switch: P604=1

H: Solar pump max head

H1: Height from water level to NC Mechanical pressure switch

H2: Height from NC Mechanical pressure switch to Tank

H3: Pipe loss

Limit

$H2 < P1$: NC Mechanical pressure switch min pressure bar (Start value)

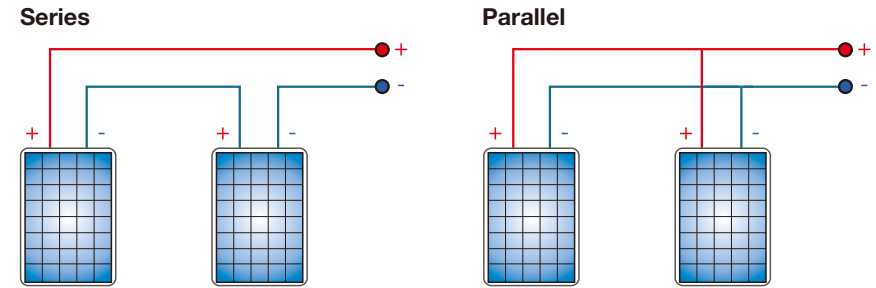
$H-H1-H3 < P2$: NC Mechanical pressure switch max pressure bar (Stop value)

Example

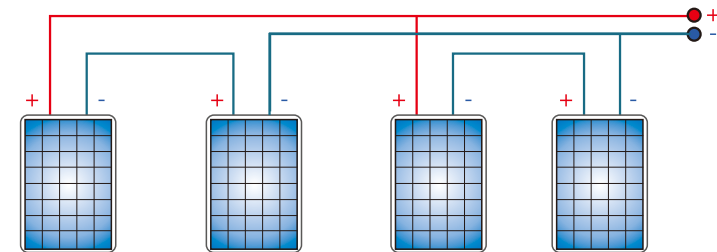
NC Mechanical pressure switch: 3.0 - 4.5 bar

$H-H1-H3 > 4.5$ bar

$H2 < 3.0$ bar



Series And Parallel



Notice: Solar panel power = Pump power $\times 1.3$


1.3 is a factor, considering the solar strength is not enough in the morning, afternoon or cloudy day. The factor between (1.2 - 1.5) according to different area or actual usage status

Solar Inverter Setting-Pump Type/Power/Speed




-P1-	Motor Type/Power/Speed setting
P100	0 : AC 110V/220V single phase pump - without capacitor 1 : AC 110V/220V three phase pump 2 : Special BLDC water-filled pump 3 : Special BLDC oil-filled pump 4 : AC 110V/220 single phase pump - with capacitor
P101	Maximum power limit: Maximum output power
P102	Maximum speed limit: Limit the maximum target speed of the pump


Long press
MODE and **ENTER** button




Press **UP** or **DOWN**
button to select between
C1,P1,P3,P4,P5,P6



Press **ENTER**
get to next step




Press **UP** or **DOWN**
button to select between
P100,P101,P102




Remarks


After the setting, press **ENTER** button to save the parameters.
Long press **MODE & ENTER** button to exit parameter setting mode.



Press **ENTER**
then set Max. RPM



Press **ENTER**
then set Max.
Output power



Press **ENTER**
then select between 0, 1, 2, 3, 4

- 0 : AC 110V/220V single phase pump - without capacitor
- 1 : AC 110V/220V three phase pump
- 2 : Special BLDC water-filled pump
- 3 : Special BLDC oil-filled pump
- 4 : AC 110V/220 single phase pump - with capacitor

AC Pump Frequency/Voltage setting



-P3-	Frequency/Voltage setting
P300	Correct frequency setting
P301	Correct voltage setting

Long press **MODE** and **ENTER** button
Press **UP** or **DOWN** button to select between **C1,P1,P3,P4,P5,P6**
Press **ENTER** get to next step
Press **UP** or **DOWN** button to select between **P300,P301,P302**











Remarks

After the setting, press **ENTER** button to save the parameters.
Long press **MODE & ENTER** button to exit parameter setting mode.



Press **ENTER**
Set Frequency

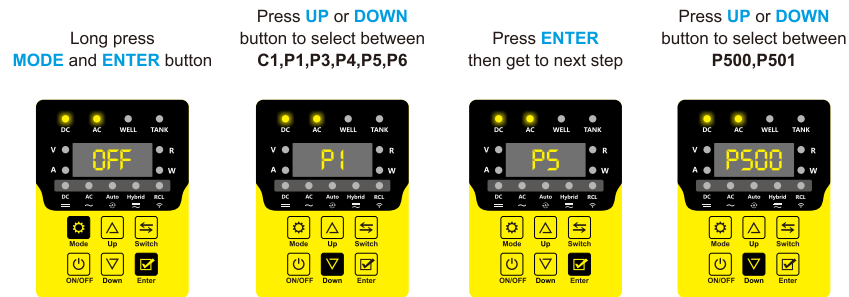


Press **ENTER**
Set Voltage

Solar Inverter Setting-Float Switch Setting



-PS-	Float setting parameters
P500	1 : Single float switch mode (TH,TH) 2 : Double float switch mode (TH,TH,TL,TL)
P501	Pump restart working delay time is (0000-9999 can set) when water tank full state relieves



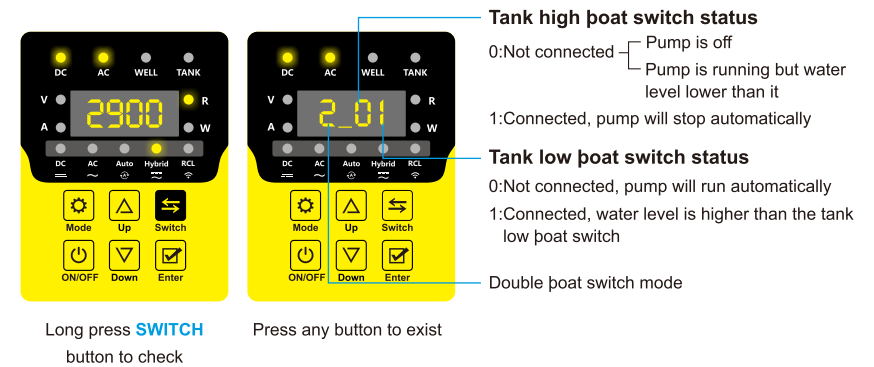
Press **ENTER** to set Float switch detection time.
Default: 30 seconds
Adjustable value: 0-9999 seconds
Only for single float switch mode

Press **ENTER** Set float switch mode
1: Single float switch mode
2: Double float switch mode

Solar Inverter Float Switch State Checking

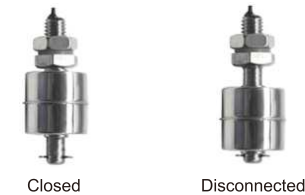


Press **MODE** under the operation interface to select the operation mode, and the operation mode indicator switches cyclically.



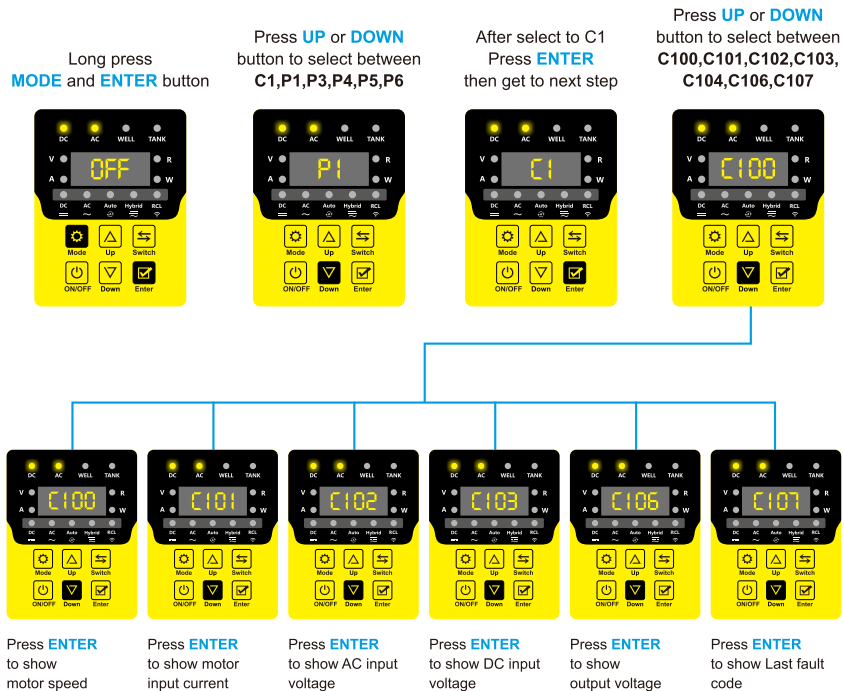
	TH	TL	Command	Status Display
Single float switch mode (P500=1)	Close	/	Stop the pump	1-1
	Open	/	Start the pump	1-0
Double float switch mode (P500=2)	Open	Open	Start the pump	2-00
	Close	Open	Fault Alarm	E-F!
	Open	Close	Keep state	2-0!
	Close	Close	Stop the pump	2-1!

Note: The float switch in this example refers to the upper conduction float switch with the following closed and open states.



Solar Inverter Electric Parameter Checking

-C1-	Electric Parameter Checking	Unit
C100	Display speed	rpm
C101	Display output current	V
C102	Display input AC voltage	V
C103	Display input DC voltage	V
C104	Display busbar voltage	W
C106	Display output voltage (motor line voltage RMS)	V
C107	Displays the last fault code that occurred NULL for no fault. Low voltage is not recorded within the fault. Press SWITCH on this screen to clear the fault record.	/

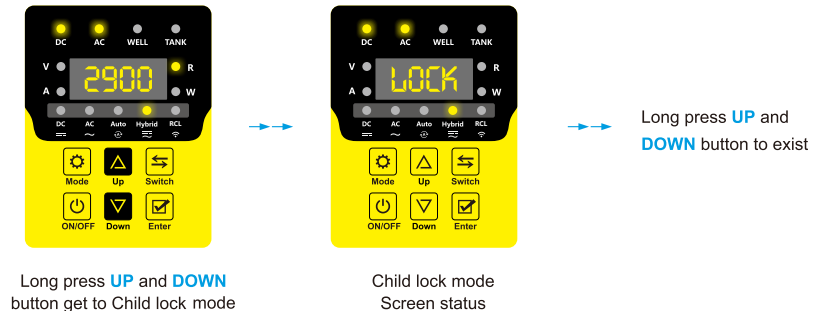


Solar Inverter Others Parameter Setting

-P6-	Other setting parameters	
P600	Forward or reverse setting(1 or 0)	
P601	Dry running detecting coefficient setting (5 is default value,Setting range:0 -15)	
P602	Child lock password setting,Setting range:0000-9999	
P603	System recovery	Enter 369
P604	Opposite polarity for poat switch/switch	0:NO switch(Closed is valid) 1:NC switch(Open is valid) 0:Default setting

Child Lock Mode

All buttons are not available under this mode, to prevent other people's wrong press.



Impeller Cleaning

Press and hold the **SWITCH** key and **ENTER** key at the same time to enter the impeller cleaning function.

The motor will carry out about 100 seconds of forward and reverse cleaning state, the digital tube display "CLEN" pashing after the end of cleaning to restore the previous interface.

Press the **ON/OFF** button to terminate the cleaning





Show	Diagnostic Content	Content Description	Processing Method	Re-Testing Time
E-R1	IPM protection	Output phase-to-phase short circuit or power IGPT damage	<ol style="list-style-type: none"> 1. Check if the output terminals of the controller are properly connected; 2. Check if the motor has faults 3. If the fault is still repeated, please contact the seller or after-sales center. 	30 Seconds
E-R2	Overcurrent protection	Excessive input or output current	<ol style="list-style-type: none"> 1. Check the input power. 2. Check if the motor and controller power match; 3. Try to extend the acceleration time in parameter setting; 4. Wait until the motor stops completely before starting; 5. If the fault is still repeated, please contact the seller or after-sales center. 	30 Seconds
E-D1	Drive failure	Drive hardware failure	Please contact the seller or after-sales center.	30 Seconds

Show	Diagnostic content	Content Description	Processing method	Re-Testing Time
E-R2	Water shortage protection	Water shortage protection in wells	<ol style="list-style-type: none"> 1. Check well water level 2. If the fault is still repeated, please contact the seller or after-sales center. 	30 seconds, 30 minutes after 3 consecutive times
E-F1	Float switch	Reverse float connection when using dual float setting, or hardware failure	<ol style="list-style-type: none"> 1. Exchange floats or swap X1 and X2 2. Check the float 3. If the fault is still repeated, please contact the seller or after-sales center. 	30 Seconds



Show	Diagnostic content	Content Description	Processing method	Re-Testing Time
E-E2	Storage failure	EPROM memory corruption	Please contact the seller or after-sales center.	30 Seconds
E-U1	Low voltage protection	Bus voltage below 50V	<ol style="list-style-type: none"> 1. Check the input power. 2. If the fault is still repeated, please contact the seller or after-sales center. 	30 Seconds
E-U2	Overvoltage protection	Bus voltage higher than 460V	<ol style="list-style-type: none"> 1. Check the input power. 2. If the fault is still repeated, please contact the seller or after-sales center. 	30 Seconds
E-CH	Over temperature protection	The temperature inside the control box exceeds the set protection temperature	<ol style="list-style-type: none"> 1. Check the installation environment of the controller; 2. Check the radiator duct; 3. If the fault is still repeated, please contact the seller or after-sales center. 	30 Seconds
E-L1	Stall protection	Controller motor parameters are not correct	<ol style="list-style-type: none"> 1. Check whether the controller parameter Settings (P1, P2) are correct; 2. If the fault is still repeated, please contact the seller or after-sales center. 	30 Seconds
E-L2	Out-of-step protection	Insufficient starting voltage, too much fluctuation of AC power supply	<ol style="list-style-type: none"> 1. Check the input power. 2. If the fault is still repeated, please contact the seller or after-sales center. 	30 Seconds
E-D1	Current Offset	Controller current detection hardware failure	Please contact the seller or after-sales center.	30 Seconds
E-P1	Out-of-phase protection	The motor is connected to one phase less or not connected to the motor or motor temperature protector protection	<ol style="list-style-type: none"> 1. Check the input power 2. Check the controller input terminal 3. Check motor/water pump 4. If the fault is still repeated, please contact the seller or after-sales center. 	3 Minutes