WATER FILLED MOTOR

AC/DC HYBRID SOLAR PUMP

Instruction Book

Product Introduction

These hybrid AC/DC solar submersible pumps are with permanent magnet frequency conversion water-filled motor. The structure of double shields motor poses no pollution risk to drinking water. The built-in intelligent controller with MPPT function make it more efficient and reliable.

Application

-Watering cattle and livestock

-Agriculture irrigation

-Home use drinking water etc

-Gardens and farms

-Surface water pumping

-pumping water from ponds and lakes

Working environment

These solar pumps are used for clean, no explosive liquids, not containing solid particles or longer fibers than grains of sand. Using the pump for liquids with greater sand content than permitted will greatly shorten the service lifetime of pump.

PH: 5-9

Liquid temperature: 0°-30°℃(0°F-92°F)

Pump maximum operating temperature: 55°(131°F)

Maximum sand content: 50ppm and 0.1% by weight

Characteristic

-Permanent magnet brushless dc motor, energy conservation and high efficiency.

-Double shielded water-cooled motor, safe and poses no pollution risk to drinking water

- Intelligent frequency conversion algorithm, maximizing efficiency and saving energy

-Built-in intelligent controller, with MPPT and DSP Technology, easy for installation.

-Hybrid AC and DC power, ensuring the uninterrupted operation of the pump under different power supply environments

-Wide range of voltage and power supply.

-High-accuracy rotor with graphite bearing and thrust bearing, prolong the working life

-Two years warranty

Power supply

-Solar panels

-Electrical Mains supply

-Storage batteries

-Generator

Supply voltage

-AC voltage range: 90-240VAC, 50-60Hz

-DC voltage range: 60-380VMP

-Open circuit voltage: 60-440VOC

-Output power range: 0.37-3.0Kw for DC

-Output power range: 0.37-3.0Kw for AC

Pump

-Made of 100% stainless steel AISI304

-Single shaft and impeller design removing any imbalance

-Minimal pump vibration and noise

-Long service lifetime of the motor

Motor

-Made of 100% stainless steel AISI304

-Double outer and inner shielding structure

-Internal coil made from high-temperature tolerant copper wire

-Efficiently protecting the motor under high-temperature environment

-Extended motor's service lifetime

-Water-filling lubricated rotor with top and bottom graphite-made bearing and thrust bearing made with high precision

-Co-axial rotation efficiently reduces motor's vibration and noise, extends its service lifetime.

-Built-in integrated Variable Frequency Converter with intelligent-speed control algorithm with a maximum speed 4300 RPM.

Built-in Intelligent controller

-The intelligent controller with high flexibility can be powered with either DC or

-AC voltage.

-MPPT&DSP technology

-Intelligent parameter detection

-Soft start running

-Long working life

Features and Benefits

Dry-running protection

The pump's built-in controller has the intelligent detection function of water level to prevent dry running without water. When water level drops below water inlet, the pump's controller will automatically cut off power supply. It can protect the pump from overheating damage caused by dry running.

If the pump idles for 30 seconds, the controller enters the long delay protection state and restarts after 10 minutes.

To disable the long delay protection function: cut off power supply manually, wait 2 minutes then manually re-start the pump.

Over-voltage & under-voltage protection

Under unstable power supply conditions, the intelligent controller cuts-off the power due to its interference-protection components

it is recommended to install a lightning arrester if operating under thunder storms environment.

Over-load & over-current protection

When voltage surges, overload protection contactor in the controller opens, cutting-off power. Then the controller tries to self-start several times every 30 seconds until the voltage is stabilized.

High temp protection

To avoid extreme motor heating, the control system inside the pump will cut-off power when motor temp reaches 120°C(248°F). The controller then restarts when the temp drops to below 120℃ (248°F).

MPPT function

The Maximum Power Point Tracking algorithm ensures maximum extraction and utilization of generated power from PV generators.

Soft start

The motor is equipped with an intelligent variable frequency converter and soft starter program. As the motor continues to run, the operating power gradually increases until the motor reaches its maximum speed.Therefore, the service life of the motor, MCB, contactor and protective switchgear is extended.

High efficiency

The pump is with permanent magnet DC brushless motor, as opposed to asynchronous motor, offering more efficient and stable output power. Internal motor winding enables a more stable magnetic field.

Intelligent frequency conversion controls the motor's speed according to the power input and load.

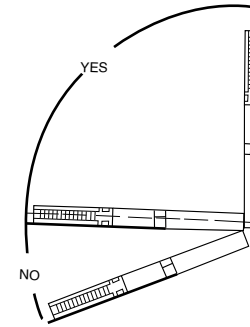
Motor parameters are as follows:

- Speedrange:500-4300 RPM
- power range:370-3000w
- maximum current:13A
- AC/DC hybrid power input

Pump Installation

	Make sure the power supply is disconnected during installation.

lnstallation diagram



Pump can be installed both vertically and horizontally, but the outlet should never be below the horizontal line. Minimum head of 10% than max pump head must be granted.

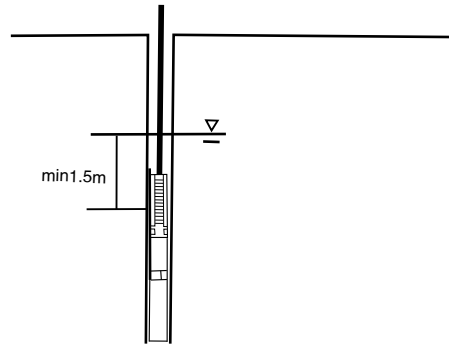
Parameters:

-Well diameter must be equal to or greater than 4"

-Submersion Depth must be less than 150m under the water

Installing the pump inside the well

To reduce noise transmission, it is advised to use plastic pipes. The pump must always be secured in the well through a special rope attached to loop on the pump head. It is recommended not to drop the pump in the well by using the electric cable, its integrity must be preserved in all steps. In this regard it is recommended to use a cable support or install over the riser pipe. During operation, the pump suction must always remain at least 1.5 meters below the dynamic water level.



	Do not drop the pump in the well by using the electric cable Preserve the electric cable integrity during all the steps. Secure the pump using a stainless steel rope to be tightened to the well head

Fault information

Downtime	Fault description
10 seconds	Input overvoltage
	Input undervoltage
20 seconds	Motor stall
30 seconds	Software overcurrent—input overcurrent
	Software overcurrent—motor overcurrent
	Hardware overcurrent
	PFC output voltage overvoltage
	Abnormal current zero
60 seconds	Low motor speed
300 seconds	MCU high temperature
10 minutes	Water shortage
20 minutes	Motor phase lack