

Solar Powered DC Circulation Pump

Model TD5

Installation & Operating Instructions

General Information

This pump has been designed to provide versatility and performance not available in any other high temperature DC operated pump. It can be powered from any fixed (6V - 24V) source or directly from a PV Solar Panel. The power level can be manually selected or the pump can automatically optimize power draw from a PV panel for maximum flow rate using advanced MPPT (maximum power point tracking) technology.

When powered from fixed sources it is suitable for a host of applications in cars, boats, and RV's that require high temperature and pressure capability. In Solar Water Heating systems this pump can be connected directly to a PV panel eliminating the need for any controllers and sensors.

Areas of Use:

- Solar Water Heating Systems
- Hot Water Circulation
- Radiant Floor Heating
- Heat Transfer Applications
- Cooling Systems
- Food Grade Liquid Transfer
- General High Temperature/Pressure Pumping

Main Features

- Selectable Power Level or full MPPT power optimization
- Brushless and Sealless, nothing to wear out
- Advanced Magnetic Drive Technology
- Durable Permanent Magnet Rotor with Ryton Impeller
- Full Stainless Steel Pump Housing
- Ceramic Shaft
- Designed for Continuous Operation, Rated for 30,000 hours
- All Food Grade Materials
- Quiet

Built-In Protective Functions

- Drive Circuitry will sense dry operation and shut down to prevent damage
- Will slow operation or stop completely when an overtemperature condition is detected. This can arise due to excessive fluid temperature or excessive ambient temperatures. The pump will automatically recover when temperatures return to a safe level.
- Protected against overload conditions, such as can arise if the impeller is stuck due to debris.
- Will detect overvoltage condition and shut down when voltage exceeds 28V. Will recover automatically when voltage falls below threshold.

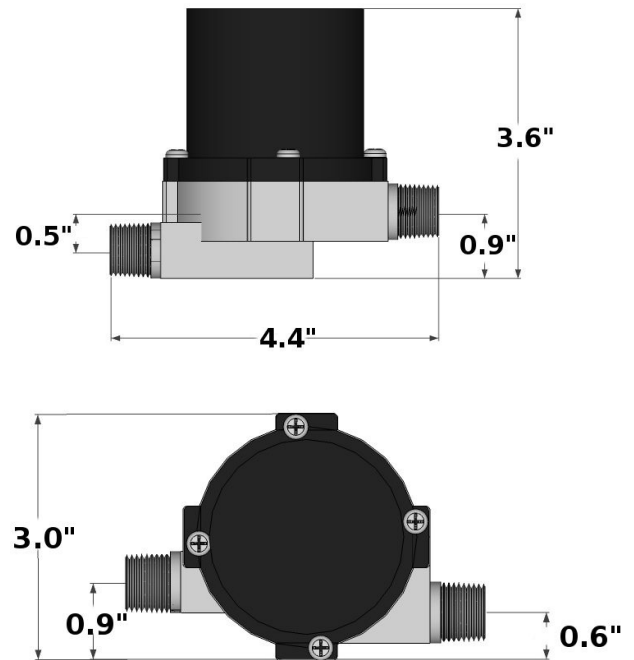
Materials

- All Wetted Parts are Food Grade
- Stainless Steel Pump Housing
- Ryton Impeller
- Viton "O" Ring
- Ceramic Ferrite Magnet

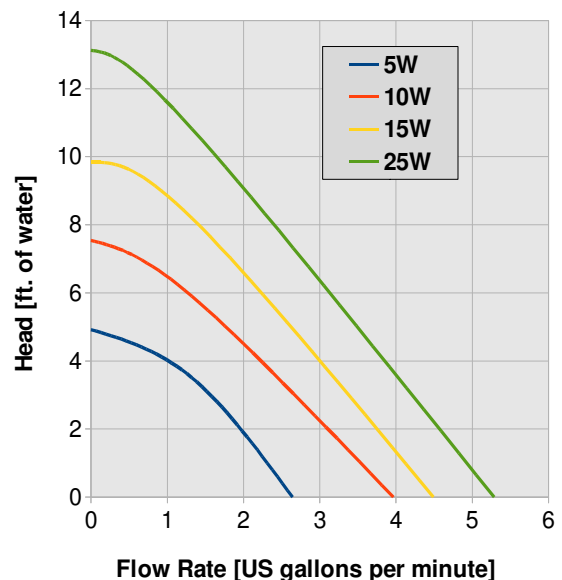
General Specifications

Voltage Range	6V-24V
Nominal Operating Voltage	17V
Maximum Fluid Temperature	230°F
Maximum Fluid Pressure	145 psi
Operating Noise	≤ 45dB
Minimum Start-Up Power	≤ 2 Watts
Maximum Head	14 ft.
Maximum Flow Rate	5 gpm

Dimensions

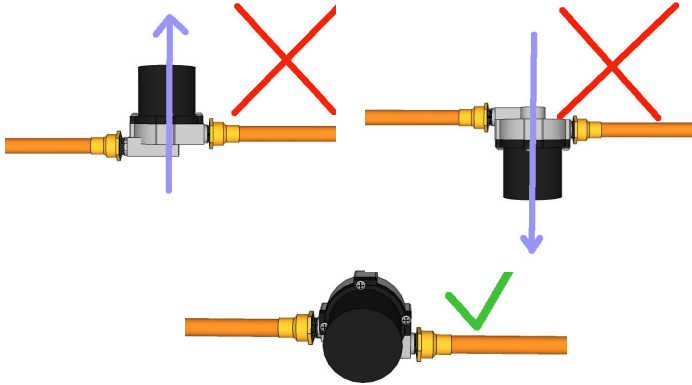


Performance Characteristics



Installation

- The pump shaft should be horizontal. A shaft that is vertical will cause premature pump failure.



- Observe POLARITY! The red wire must be connected to the positive side of the power supply, and the black wire to the negative. Reversing polarity will **IMMEDIATELY DESTROY** the electronics in the pump
- Keep the outside of the pump body dry, and install such that moisture does not enter the electronics enclosure. Moisture in the electronics will quickly destroy the pump.
- Do not allow water inside the pump to freeze. The expansion of the ice will crack the pump housing
- There is a powerful magnet inside the pump. If your water contains small particles of iron or other magnetic materials they will eventually collect on the magnet and prevent the pump from operating at full efficiency.
- The pump will not work if it has air in it. Also it cannot prime itself. For initial operation thoroughly purge the system of all air.

Power Settings

This pump supports 4 different power settings as well as full MPPT mode.

It can be operated from a battery (12V or 24V) or any other DC source at all power settings. Please make sure your source has enough power to supply the setting you choose. Do Not use MPPT when connecting to a fixed DC supply.

For direct connection to a PV panel (without battery or charge controller) you can use MPPT mode or fixed power mode. In MPPT mode the pump will seek to optimize its power, constantly adapting to the characteristics of the PV panel and the amount of sunlight. In fixed power mode it will draw the amount of power from the panel corresponding to the setting. In this mode your panel must have enough power to support the setting. It is possible to use a large PV panel (over 25W) as long as the open circuit voltage is below 26V. If your PV panel has a higher open circuit voltage the pump may shut itself down.

Selector Setting	Power	Current with 12VDC Supply	Current with 24VDC Supply	Min. PV Panel Rating
1-1	5W	420 mA	210 mA	5W
2-2	10W	840 mA	420 mA	10W
3-3	15W	1.3 A	630 mA	15W
4-4	25W	2.1 A	1.1 A	25W
5-5	MPPT	N/A	N/A	5W

Startup Hints

- Make sure the system is purged of all air. Sometimes small bubbles will remain in the pump and cause noisy operation. Turning the pump off and on several times will usually purge the bubbles out of the pump.
- If you are running the pump from a PV panel it will take some time before the pump starts in the morning. PV panels will not produce enough power to run the pump until they receive full sun.

Troubleshooting

Symptom	Cause	Solution
Noisy operation	Air bubbles in the pump, Running Dry	Purge the air from the pump
Pump runs intermittently	dry running protection active	purge air from pump
	overtemperature protection active	wait until pump cools down
Pump won't run	Incorrect polarity	complete replacement
	moisture in electronics	
	input power insufficient	provide specified power supply
	dirt in the pump	clean inside of pump housing

Imported by HELIATOS SOLAR
Hybrid Solar Water Heating Systems

www.heliatos.com

661 7SOLAR7

info@heliatos.com