

Manufacturer of Solar PV Modules & other Solar Products and Comprehensive EPC Solution Provider



Himalayan Solar

Power Solution for a **Shining Future**

Solar Water Pumps



We also
manufacture :

Solar
PV
Panels

Solar
Pump
Controller

Solar
Power
Plants

Lithium
Ion
Battery

Solar
Power
Packs

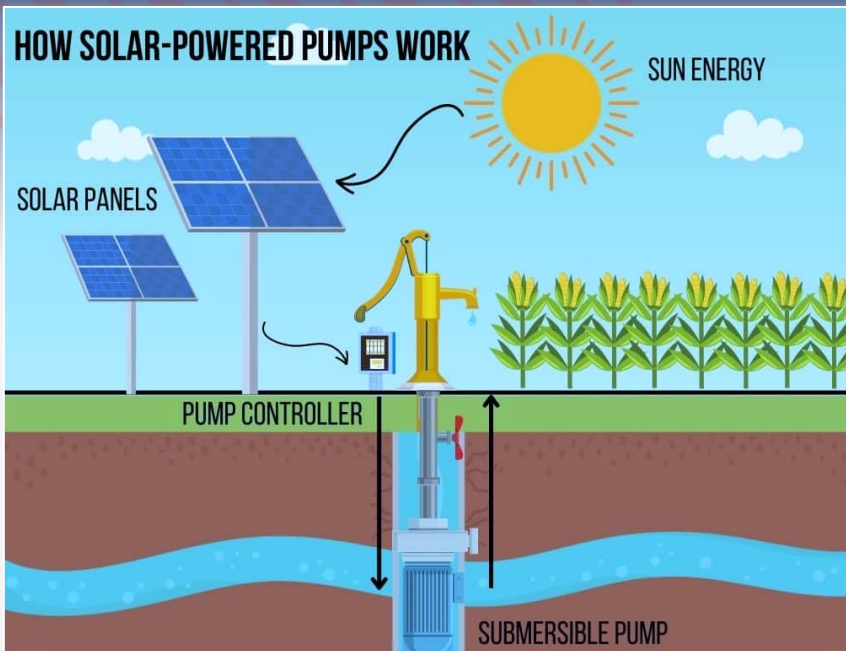
Solar
Charger
Controller

Solar
Home
System

Solar
Street
Lights

INTRODUCTION

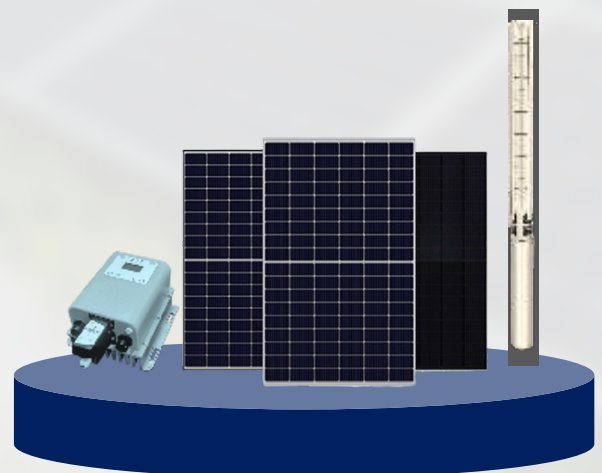
(Solar Water Pump Submersible)



Structure of Solar Pumping System

The solar array, an aggregation of many solar modules connected in series and/ or parallel. This array absorbs radiation from sunlight and converts it into electrical energy thus help in providing dynamical water as a whole system. The pump controller controls and adjusts the system operation, according to the variation of intensity of sunlight to realize the maximum power point tracking (MPPT). The pump is able to draw water from the deep wells or rivers and lakes to pour into the storage tank or reservoir, or directly connect to the irrigation system, fountain system, etc. According to the actual system demand and installation conditions, different types of pump such as centrifugal pump, axial flow pump, mixed-flow pump or deep-well pump may be used.

Now a days Solar pumping system is becoming more and more popular, it is being applied to daily use (underground water), agriculture irrigation, forestry irrigation, desert control, pasture animal husbandry, water supply for islands, wastewater treatment engineering, and so on. In recent years, with the promotion of the utilization of non conventional energy resources, solar pumping systems are being used more and more in municipal engineering, city center squares, parks, tourist sites, resorts and hotels, the landscapes and fountain systems in the residential areas. This system is composed of a solar array, a pump and a pump controller. Based on the design philosophy that it is better to store water than electricity, there is no energy storing device such as battery in the system.

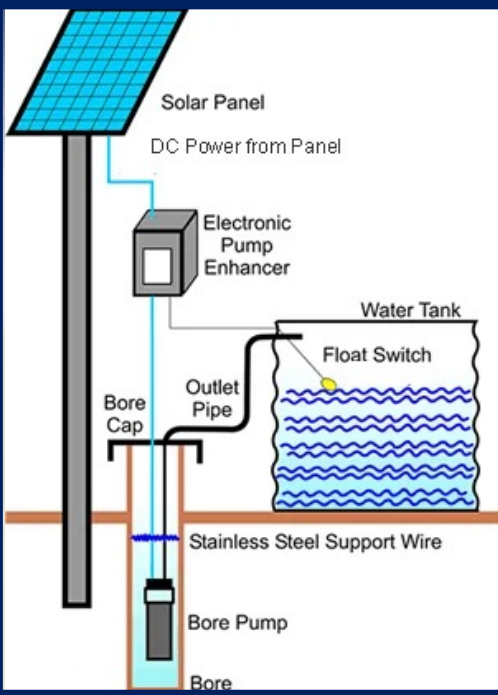


Applications

- Ground water lowering
- Irrigation Systems
- Industrial Application
- Drip irrigation & Sprinkler
- Tank / Cistern filling
- Wildlife refuge
- Rural water supply for ranches, cabin & cottages
- Fountains



Features



- High flow system for faster tank filling and significant water output.
- Proven motor and pump technology for long-term reliability
- Pumpset can start at low radiations.
- Clean and pollution free energy, Eco-Friendly.
- Ideal for remote areas, where electricity is not available or availability is capital intensive.
- Suitable for day time irrigation, Continuous supply for 6-8 hours in a day.
- MPPT – Max Power Point Tracking for maximizing efficiency of input power
- Soft start feature prevents water hammer and increase system life & easy to operate.
- Simple installation and maintenance free.
- MNRE approved

All-in-one Package

The Solar Pump controller is used as a solution for specific pumping requirements of the solar pumping system. Using Himalayan solar components, our technical expertise in groundwater pumping, and Innovative thinking based on global market inputs, we have developed a rugged, high-output system which tackles the challenges of remote and harsh environments. No other system delivers the features, benefits, and reliability of solar controller in just one package!

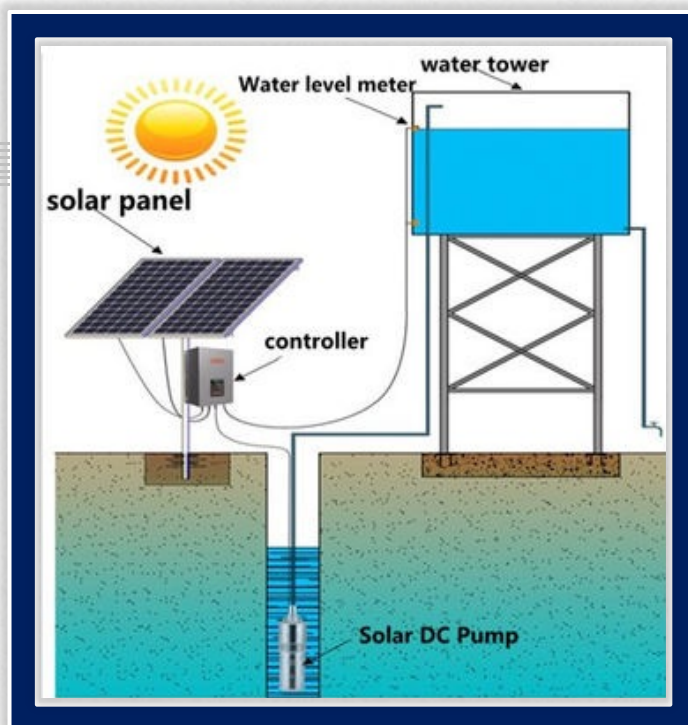
THE SOLAR WATER PUMPING SYSTEM INCLUDES

- Himalayan Solar High Efficient Submersible motor
- Himalayan Solar Submersible pump
- Solar Panel and Its mounting structure
- Solar controller
- Cable
- Pipes
- Variety of flow rates available in: 32 to 4000 LPM.
- Motor and controller ratings available in: 900 to 54000 Watt

Solar DC(Surface) Pump

INTRODUCTION

Himalayan solar powered pump is a powered by solar energy. A solar powered irrigation pump consists one or more solar panels (also known as solar modules or solar plates.) a pump (mostly a centrifugal pump), electronic controls or a controller device to operate the pump, the required hardware and in some cases other items like inverter, batteries etc. On a simpler note, solar powered pumps are like traditional electric pump with the only exception that it uses solar energy instead of fossil fuel or electricity. A solar powered pump can be cost-effective, environment-friendly and low-maintenance solution for meeting water requirements for irrigation, community water supply, livestock and other purposes.



A solar powered pump works like any other available and commonly used water pumps. The main difference is solar powered pumps run on solar energy and does not require any fuel (diesel, kerosene, gas, etc.) or external source of electricity (from an electricity company) to deliver water.

Himalayan Solar Surface Pump set consists of following parts

Solar Structure



The solar structure is a set of solar modules which are to be connected in series and possibly strings of modules connected in parallel to get the required power to operate the pump.

Controller



The controller is an electric device that matches the power output from the solar Structure to the pump motor and regulates the Operation of the pump according to the input energy from solar array.

Solar Surface Pump



The solar surface pump comprises of the motor which drive the movement (Prime mover) of pump impeller which moves the water under pressure.



SOLAR PUMP CONTROLLER



Himalayan Solar Pump Controller (Solar Pump Inverter, IP65/67)

A transformer-less Inverter system, with 110/160/230/320/415Vac, 3-phase output voltage and V/F control to manage pump starting condition (soft start). The equipment is micro controller based and operated with software for digital control of inverter parameters, fault finding- diagnostics and digital I/O signaling.



Protection Automatics shuts in case of

Dry run

Earth fault

High or low
voltage surge

Short or open
circuit in motor

Over
heating

Solar Water Pump Controller Technical Specification

MPPT Controller

With the Inbuilt MPPT (Maximum Power Point Tracking) function, it regulates the output frequency according to irradiation in real time to achieve the maximum power. Adopting the proposed dynamic VI maximum power point tracking (MPPT) control method, fast response and stable operation, better than the conventional methods, which may lead to the problems including poor tracking performance,

Salient features of Himalayan Solar Pump Controller

- 01 When solar power is not available controller can be automatically or manually switched to an alternating single phase or three phase input ac supply.
- 02 High Resolution LCD display shows speed(%), input DC voltage, Output AC/PWM voltage and current system status.
- 03 Uses MPPT technology to maximize water delivery at various solar energy level.
- 04 MPPT maximize power points tracking for maximizing the efficiency of input power.
- 05 GSM option also available to controls and monitor remote locations pumps.
- 06 Remote telemetry capability through RS485 continuous data points(optional)
- 07 High flow systems for faster tank fill and significant water outputs.
- 08 Simple installation and easy maintenance.
- 09 The control unit convert that(DC) power into alternating current for AC power as supply is further given to the submersible pump through cable.
- 10 Operate through Himalayan mobile APP.



| RATING | 3 HP | 5 HP | 7.5 HP | 10 HP |
|------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Pump Controller Rating | 2.2 kW | 3.7 kW | 5.5 kW | 7.5 kW |
| MPPT Range | 250-450 VDC | 350-790 VDC | 350-790 VDC | 350-790 VDC |
| Controller I/P Voc | 310-450 VDC | 540-790 VDC | 540-790 VDC | 540-790 VDC |
| Controller I/P Vmp | 310-450 VDC | 450-790 VDC | 300-790 VDC | 450-790 VDC |
| Controller I/P Current DC | 10 Amp | 10 Amp | 18.5 Amp | 18.5 Amp |
| Controller O/P Current | 9 Amp | 9 Amp | 17 Amp | 17 Amp |
| Controller I/P Power (kW) | 2.2 kW | 3.7 kW | 5.5 kW | 7.5 kW |
| Enclosure IP Protection | IP 65 | IP 65 | IP 65 | IP 65 |
| MPPT Tracking | yes | yes | yes | yes |
| Operating Temp | C(-10) to C(+55) | C(-10) to C(+55) | C(-10) to C(+55) | C(-10) to C(+55) |
| Inside the control box | up to 60 | up to 60 | up to 60 | up to 60 |
| Relative Humidity | Less than 95%, | Less than 95%, | Less than 95%, | Less than 95%, |
| Controller overload capacity | 120% rated current for 60s | 120% rated current for 60s | 120% rated current for 60s | 120% rated current for 60s |

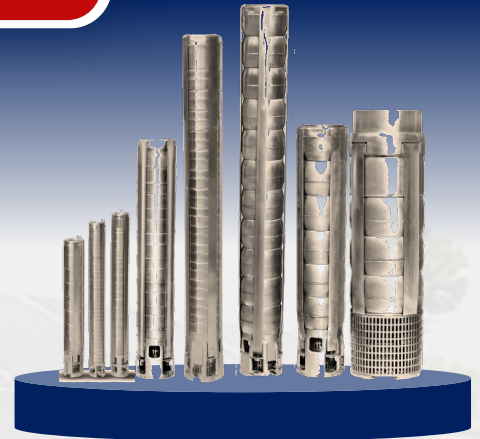
Himalayan Solar Stainless Steel Submersible Pumps

Himalayan Solar Sheet Metal Stainless Steel Submersible pump are specially designed, with the use of latest manufacturing techniques. Years of experience, superior design and better manufacturing techniques have resulted into development of this range of pumps, which are efficient and reliable in operation. Strict quality assurance standards during the total process assure trouble free and reliability in operation requiring minimum maintenance.

- > 30% higher efficient.
- > Suitable to 4", 6" & 8" Submersible Motor.
- > All bearings are water- lubricated and have a square shape, enabling sand particles, if any, to leave the pump together with the pumped liquid.
- > Bearing bush is made of anti friction rubber-NBR to withstand wear resistance.
- > Non return Valve made in stainless steel (AISI 304 Grade). The valve casing is designed for optimum hydraulic properties to minimize the pressure loss across the valve and, thus, contributes to the high efficiency of the pump.
- > Pump motor coupling is according to NEMA standard. Radial flow and mixed flow impellers & bowl made from stainless steel (AISI 304 Grade).
- > Stop Ring which is designed as thrust bearings limits axial movements of pump shaft.
- > Suction Case , stage casing and discharge chambers are made by stainless steel (AISI 304

Application in:

- > Water supply from bore well
- > AC and Solar energy compatible
- > Municipal & irrigation purpose
- > Water supply in commercial establishments
- > Small farms, gardening & nurseries



Himalayan SOLAR AC/DC SUBMERSIBLE MOTOR

DC Motor Benefits

- 30% higher efficient compare to AC submersible motor
- 30% higher discharge compare to AC submersible motor
- Require lower torque and low power to operate.
Start Early in the morning
- 100% stainless steel 304

Features

01 IP68 grade protection

02 Stainless steel casing, shaft & other components

03 Equipped with mechanical seal and sand guard for maximum sand protection

PMSM DC MOTOR

Comparison of Solar DC Motor Over Induction Motor

INDUCTION MOTOR

| | | |
|---------------|--------------------------------------|------------------|
| 0-3600 RPM | Speed Range | 0-2900RPM |
| Less | Solar Array | More |
| Less | Size for same power ration | More |
| More | Power Density for same size | Less |
| Less | Requirement of Current for same load | High |
| Higher (>85%) | Efficiency | Lower (<85%) |
| Compulsory | Drive (AC/DC-DC-AC) | Optional |
| Higher | Power Injection | Limited by Speed |
| 0-120Hz | Frequency of motor | 0-50/60Hz |
| 150% | overloading | 120% |
| Higher | system Efficiency (Drive-Motor-Pump) | Lower |

Indicative Technical Specifications of Shallow Well (Surface) Solar Pumping Systems with D.C. Motor /PMSM/SRM

| Description | Model-3 | Model-4 | Model-5 | Model-6 | Model-7 | Model-8 | Model-9 | Model-10 |
|---------------------------------|---|---|---|---|---|---|---|---|
| PV array (Wp) | 2700 | 2700 | 4800 | 4800 | 4800 | 6750 | 6750 | 6750 |
| Motor Pump-set capacity (HP) | 3 | 3 | 5 | 5 | 5 | 7.5 | 7.5 | 7.5 |
| Shut Off Dynamic Head (meters) | 12 | 25 | 12 | 25 | 45 | 12 | 25 | 45 |
| Water output * (Liters per day) | 297000 (format to all head of 10 meters) | 148500 (format to all head of 20 meters) | 528000 (format to all head of 10 meters) | 264000 (format to all head of 20 meters) | 182400 (format to all head of 30 meters) | 742500 (format to all head of 10 meters) | 371250 (format to all head of 20 meters) | 256500 (format to all head of 30 meters) |

Water output figures are on a clear sunny day with three times tracking of SPV panel, under the –Average Daily Solar Radiation condition of 7.15 kWh/ sq.m. on the surface of PV array (i.e. coplanar with the SPV modules).

Notes:

1. Suction head, if applicable, minimum of 7 meters static suction lift corrected for atmospheric pressure and water temperature.
2. For higher or lower head / PV capacity, or in between various models; water output could be decided as per the clause 4 (i.e. Performance Requirements) specified earlier.
3. If submersible pumps are used in lieu of surface pumps, the water output must match that of the surface pumps as specified in this table.

Indicative Technical Specifications of Shallow Well (Surface) Solar Pumping Systems with D.C. Motor /PMSM/SRM

| Description | Model-3 | Model-4 | Model-5 | Model-6 | Model-7 | Model-8 | Model-9 | Model-10 | Model-11 |
|---------------------------------|---|---|---|---|---|--|---|---|---|
| PV array (Wp) | 3000 | 3000 | 3000 | 4800 | 4800 | 6750 | 6750 | 6750 | 6750 |
| Motor Pump-set capacity (HP) | 3 | 3 | 5 | 5 | 5 | 7.5 | 7.5 | 7.5 | 7.5 |
| Shut Off Dynamic Head (meters) | 45 | 70 | 100 | 70 | 100 | 150 | 70 | 100 | 150 |
| Water output * (Liters per day) | 297000 (format to all head of 30 meters) | 148500 (format to all head of 50 meters) | 528000 (format to all head of 70 meters) | 264000 (format to all head of 50 meters) | 182400 (format to all head of 70 meters) | 742500 (format to all head of 100 meters) | 371250 (format to all head of 50 meters) | 256500 (format to all head of 70 meters) | 70875 (format to all head of 100 meters) |

Water output figures are on a clear sunny day with three times tracking of SPV panel, under the –Average Daily Solar Radiation condition of 7.15 kWh/ sq.m. on the surface of PV array (i.e. coplanar with the SPV modules).

Notes:

1. For higher or lower head / PV capacity, or in between various models; water output could be decided as per the clause 4 (i.e. Performance Requirements) specified earlier.
2. If surface pumps are used in lieu of submersible pumps, the water output must match that of the submersible pumps as specified in this table.

Indicative Technical Specifications of Shallow Well (Surface) Solar Pumping Systems with A.C. Induction Motor Pump Set

| Description | Model-3 | Model-4 | Model-5 | Model-6 | Model-7 | Model-8 | Model-9 | Model-10 |
|---------------------------------|---|---|---|---|---|---|---|---|
| PV array (Wp) | 2700 | 2700 | 4800 | 4800 | 4800 | 6750 | 6750 | 6750 |
| Motor Pump-set capacity (HP) | 3 | 3 | 5 | 5 | 5 | 7.5 | 7.5 | 7.5 |
| Shut Off Dynamic Head (meters) | 12 | 25 | 12 | 25 | 45 | 12 | 25 | 45 |
| Waterout Put * (Liters per day) | 267000 (format to all head of 10 meters) | 132300 (format to all head of 20 meters) | 475200 (format to all head of 10 meters) | 235200 (format to all head of 20 meters) | 168000 (format to all head of 30 meters) | 668250 (format to all head of 10 meters) | 330750 (format to all head of 20 meters) | 236250 (format to all head of 30 meters) |

***Water output figures are on a clear sunny day with three times tracking of SPV panel, under the —Average Daily Solar Radiation condition of 7.15 kWh/ sq.m. on the surface of PV array (i.e. coplanar with the SPV modules).**

Notes:

1. Suction head, if applicable, minimum 7 meters static suction lift corrected for atmospheric pressure and water temperature.
2. For higher or lower head / PV capacity, or in between various models; water output could be decided as per the clause 4. (i.e. Performance Requirements) specified earlier.
3. If submersible pumps are used in lieu of surface pumps, the water output must match that of the surface pumps as specified in this table.

Indicative Technical Specifications of Solar Deep well (submersible) Pumping Systems with A.C. Induction Motor Pump Set

| Description | Model-3 | Model-4 | Model-5 | Model-6 | Model-7 | Model-8 | Model-9 | Model-10 | Model-11 |
|---------------------------------|---|--|--|---|--|---|---|--|---|
| PV array (Wp) | 3000 | 3000 | 3000 | 4800 | 4800 | 6750 | 6750 | 6750 | 6750 |
| Motor Pump-set capacity (HP) | 3 | 3 | 3 | 5 | 5 | 5 | 7.5 | 7.5 | 7.5 |
| Shut Off Dynamic Head (meters) | 45 | 70 | 100 | 70 | 100 | 150 | 70 | 100 | 150 |
| Water output * (Liters per day) | 105000 (format to all head of 30 meters) | 63000 (format to all head of 50 meters) | 42000 (format to all head of 70 meters) | 100800 (format to all head of 50 meters) | 67200 (format to all head of 70 meters) | 43200 (format to all head of 100 meters) | 141750 (format to all head of 50 meters) | 94500 (format to all head of 70 meters) | 60750 (format to all head of 100 meters) |

***Water output figures are on a clear sunny day with three times tracking of SPV panel, under the —Average Daily Solar Radiation condition of 7.15 kWh/ sq.m. on the surface of PV array (i.e. coplanar with the SPV modules).**

Notes:

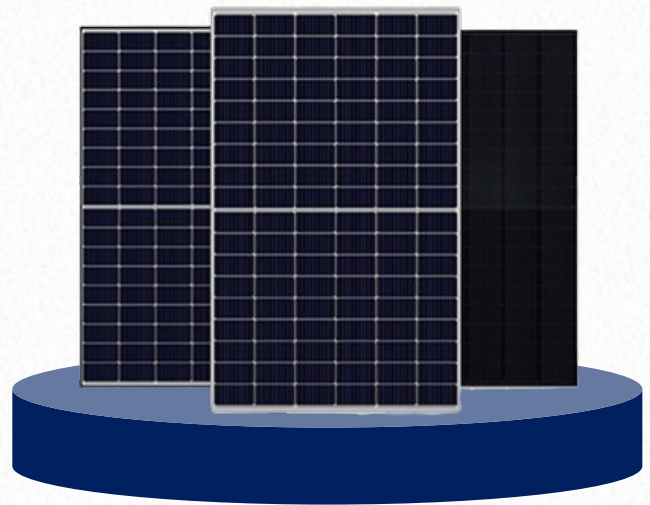
1. For higher or lower head / PV capacity, or in between various models; water output could be decided as per the clause 4 (i.e. Performance Requirements) specified earlier.
2. If surface pumps are used in lieu of submersible pumps, the water output must match that of the submersible pumps as specified in this table.



Manufacturer of Solar PV Modules & other Solar Products and Comprehensive EPC Solution Provider

Our Commitments

- ◉ Quality Products & Solutions
- ◉ Timely Delivery
- ◉ Cost Effectiveness
- ◉ Total Customer Satisfaction



Himalayan Solar

Power Solution for a **Shining Future**

Manufacturing Units:

- Plot No. 237,
HSI IDC Industrial Estate,
Alipur, Barwala, Panchkula
134118, Haryana, India
- Plot No. 3 & 4, Khasra No. 249,
Khewat No. 980 & 977, Near
Aryakulam International School,
Assandh – Kohand Road, Munak,
Karnal, Haryana - 132040

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