# SUN-RAY X1

## Solar-powered, surface, and floating water pumping systems



- Highly efficient, solar submersible progressive cavity pump technology
- No fuel cost, self-contained, and complete, easy-to-install packages
- Transfers water from springs, rivers, tanks, and dams

### The SUN-RAY X1 system

The SUN-RAY X1 system is comprised of four main parts:

- solar array
- solar motor controller (SMC)
- brushless DC motor (BLDC)
- CP pump (wet end) which is direct coupled to the BLDC motor

Additional items such as floats, termination kits, water level controllers (WLCs), and float switches may also be supplied with the system.

It is critical that you install the right solar pumping system for your specific application. Our Computer Aided Solar Selection (CASS) software, available at www.solarcass.com, can help to determine the right system for you.

### Key features and specifications

The SUN-RAY X1 system has very high daily flows with discharge pressures of up to 50 meters. The highly efficient, helical rotor pump is inherently self-priming, so the pump can be positioned up to six meters above the water source.

This allows the pump to be installed above the high water mark on dam walls or river banks. The water pumping rate can also be limited to suit the water source.

The SUN-RAY X1 is suitable to pump water from springs, rivers, tanks, and dams. It is available with a floating pontoon that has been designed to safely enable the pump to float on a dam or other water source.

Three pump sizes are available:

- SRX1 CP25
  up to 50 m, up to 28 L/min*
- SRX1 CP800
  up to 35 m, up to 68 L/min*
- SRX1 CP1600
  up to 25 m, up to 130 L/min*

### Solar array

Range of output power from 285 Watts to 1710 Watts.

Available in either stationary or GPS tracking, the Mono™ patented GPS tracker can potentially increase flows by 30 percent.

Designed to withstand 140 km/hr winds and can be easily modified to withstand 210 km/hr winds.

### Solar motor controller (SMC)

Solar maximum power point tracker (MPPT) and brushless DC motor control electronics are combined in single enclosure.

MPPT adjusts the voltage on the solar array to maximize power generation and increases or reduces voltage to suit the demands of the controller (input power range from 285 Watts – 1710 Watts)

Electronic pressure control enables automatic pump shutdown once tanks and troughs are full. Thermal overload protection is also in place.

Variable motor speed control via front panel and system diagnostics via MonoVue App.

Low motor speed cut-off to reduce pump and motor wear.

Easily accessible on/off switch. Remote on/off control via float, pressure switch, or water level control via probes.

Operates in temperature range from -10°C to 50°C.



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# SUN-RAY X1 Water Pumping Systems

## Brushless DC Motor

High torque, high efficiency, brushless and sensorless DC motor, purpose-built motor for use with the SUN-RAY X1 pump. No sensor is needed to determine rotor position within the motor and without brushes to wear out, no on-going maintenance is required.

Permanent magnet rotor supported by low loss bearings.

All drive electronics are housed separately in the SMC.

## SUN-RAY X1 pump, wet end

Progressing cavity pump designed specifically for use within the SUN-RAY X1 system.

Helical rotor pump element provides maximum water output even when the water contains silt or iron oxide. Low pump speed means extended rotor and stator life in abrasive bores. Pump is self-cleaning – ideal for iron oxide rich environments.

Low interference design of rotor and stator ensures low starting torque and maximum pumping efficiency.

High operating efficiency of pump and SMC ensures maximum amount of water can be pumped over whole day, even during cloudy conditions.



SRX1 CP25

## SUN-RAY X1 performance characteristics

**Flow estimates (m3/day) based on average daylight hours**

| System size (watts ) | 285 | 570 | 855 | 1140 | 1710 |
|---|---|---|---|---|---|
| Head (m) | | | | | |
| 5 | 28 | 76 | 95 | 104 | 109 |
| 10 | 21 | 53 | 78 | 94 | 105 |
| 15 | 15 | 47 | 60 | 79 | 99 |
| 20 | 12 | 41 | 51 | 62 | 91 |
| 25 | 10 | 34 | 47 | 50 | 82 |
| 30 | 7 | 29 | 43 | - | - |
| 35 | 5 | 24 | 37 | - | - |
| 40 | 4 | 15 | - | - | - |
| 45 | - | 12 | - | - | - |
| 150 | - | 10 | - | - | - |

| SRX1 CP25 | SRX1 CP800 | SRX1 CP1600 |
|---|---|---|

**Array structure**

| System power (watts) | 285 | 570 | 855 | 1140 | 1710 |
|---|---|---|---|---|---|
| No. of 285W module | 1 | 2 | 3 | 4 | 6 |

*Based on tracking systems and for reference purposes only. Use CASS or consult with an NOV dealer representative to obtain location specific average flows.




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