

ClimateSmart Solar Energy System



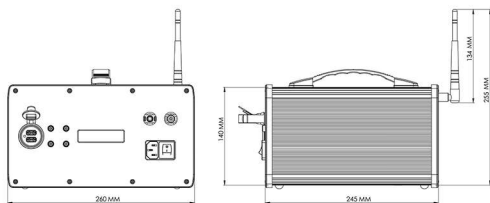
Description

ClimateSmart is a revolutionary all-in-one battery, charge controller, and IoT-enabled control system for productive use off-grid solar home systems. The design of the device is optimized for off-grid agricultural households in Africa, Asia and Latin America, operating high-efficiency electric water pumps used for irrigation, livestock and household water supply while simultaneously powering lights and DC appliances.

Features

- High capacity lithium-ion battery with 5-year lifespan
- Maximum Power Point Tracking (MPPT) charge controller significantly increases the efficiency of battery charging, particularly on cloudy days
- GSM, Wi-Fi, Bluetooth, and 433 MHz LoRa capability
- Over-the-air (OTA) programming and machine learning enable continuous system improvement and optimization tailored to each user
- 1 24V DC output to power high-efficiency electric water pumps
- 4 12V DC outputs to power lights and DC appliances
- 2 5V DC USB outputs to charge mobile phones, tablets, radios, and similar devices with rechargeable batteries
- Microprocessor-based digital dry run protection detects when water source runs dry, disables pump and sends SMS to customer

Technical Specifications



Enclosure	
Material	Aluminum
Physical Dimensions (L x W x H)	260mm x 245mm x 140mm
Weight	8.55 kg (18.85 lb)

Environmental Specifications	
Recommended Operating Temperature (Charging)	0°C - 45°C
Recommended Operating Temperature (Discharging)	-20°C - 60°C
Recommended Storage Temperature	-20°C - 45°C
Protection Rating	IP64; *IP64 dust and water resistance rating. ClimateSmart is dust tight and water splashing against the enclosure from any direction has no harmful effects.

Electrical Characteristics	
Configuration	8S6P 29.6V 15Ah
Nominal Voltage	29.6V
Charge Voltage	33.6V
Minimum Discharge End Voltage	22.4V
Nominal Capacity (20°C ± 5°C)	15Ah (0.2C)
Minimum Capacity (20°C ± 5°C)	14.5Ah (0.2C)
Maximum Continuous Charge Current	10A
Maximum Continuous Discharge Current (Total)	15.6A
24V DC C14 Female Port	10A
12V DC 5.5mm Barrel Jacks (x4)	3.5A
5V DC USB Ports (x2)	2.1A
Internal Impedance (20°C ± 5°C)	< 200mΩ (AC Impedance, 1000 Hz)

Solar Panel Specifications	
Maximum Input Power	300 Watts
Maximum Input Voltage	44 Voc

Handling Precautions

- Do not heat or throw ClimateSmart into a fire.
- Do not use or leave ClimateSmart near a heat source or fire.
- Do not leave ClimateSmart in a storage environment or inside of a car where the temperature may be above 60°C. Also do not charge/discharge in such conditions.

Certificates & Compliance with Standards

- IEC60950
- IEC61730
- ISO 9001:2015 Certified



- Warranty of 3 years from delivery date

RainMaker 2 – Solar Water Pump for Off-Grid Households



Description

Features

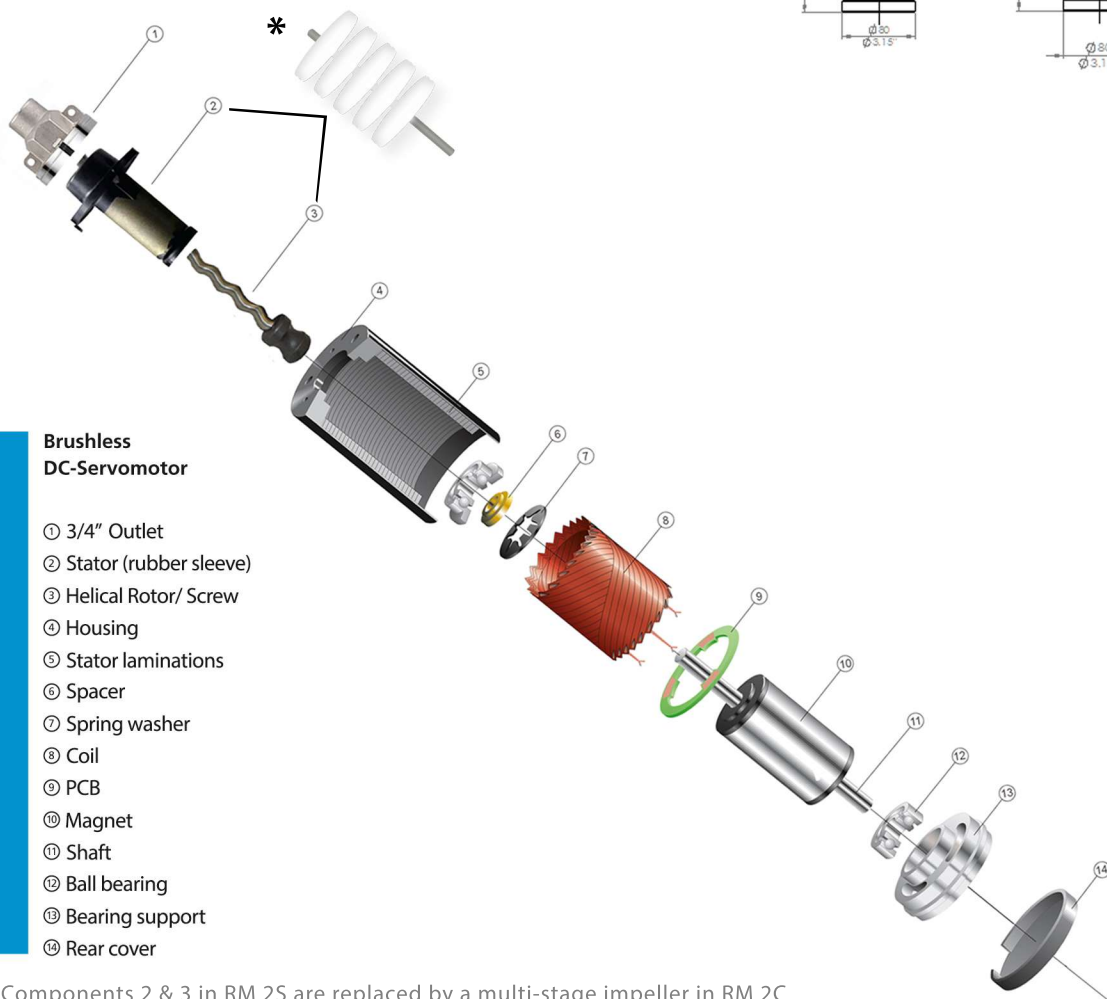
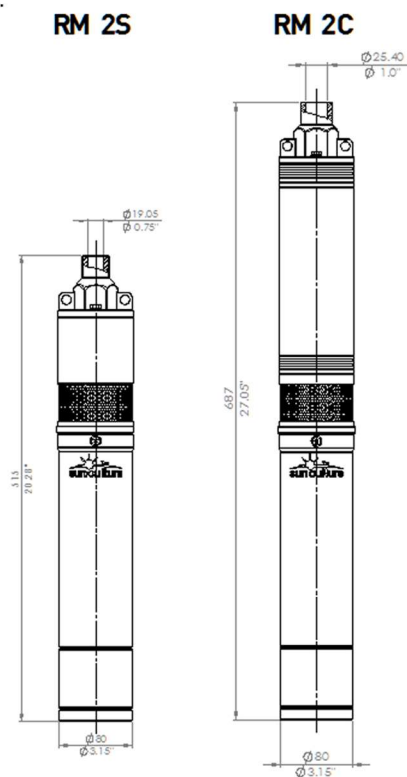
- Submersible pump with 70 meter (230 feet) maximum pumping head
- 50% peak wire-to-water efficiency
- Suitable for direct pumping to sprinkler or drip irrigation systems
- Up to 3,000 liters per hour with recommended SunCulture ClimateSmart™ Solar Energy System
- 24V Brushless DC motor with 10-year lifetime

Technical Specifications

General Information & Dimensions		
	RainMaker 2S	RainMaker 2C
Casing Material	SS 304	SS 304
Pump Classification	Positive Displacement Screw	Centrifugal Axial Flow
Pump Height	515mm (20.28")	687mm (27.05")
Pump Diameter	80mm (3.15")	80mm (3.15")
Weight	8.5 kg (18.74 lb)	6.75 kg (14.88 lb)
Outlet Size	19.05mm (0.75")	25.4mm (1")

Environmental	
Operating Temperature Range	-40°C - 60°C
Storage Temperature	-40°C - 80°C
Humidity	
	IP68 *Protected from total dust ingress and long term submersion in water beyond 1m depth

	RainMaker 2S	RainMaker 2C
Nominal Pump Power	150 Watts	150 Watts
Nominal Pump Voltage	24 Volts DC	24 Volts DC
Nominal Pump Current	6.25 Amps	6.25 Amps
Max. Pump Power	150 Watts	200 Watts
Max. Pump Voltage	34 Volts DC	34 Volts DC
Max. Pump Current	6.25 Amps	8 Amps



Brushless DC-Servomotor

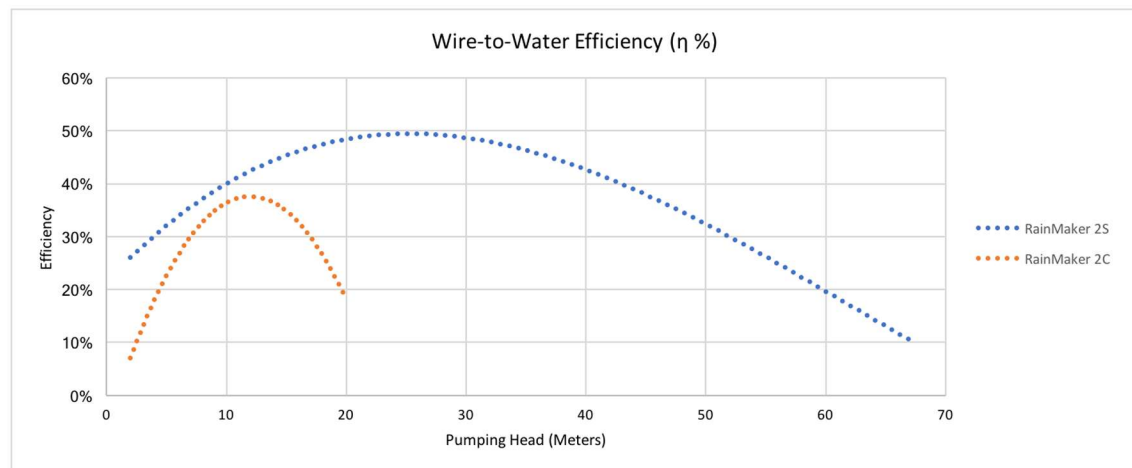
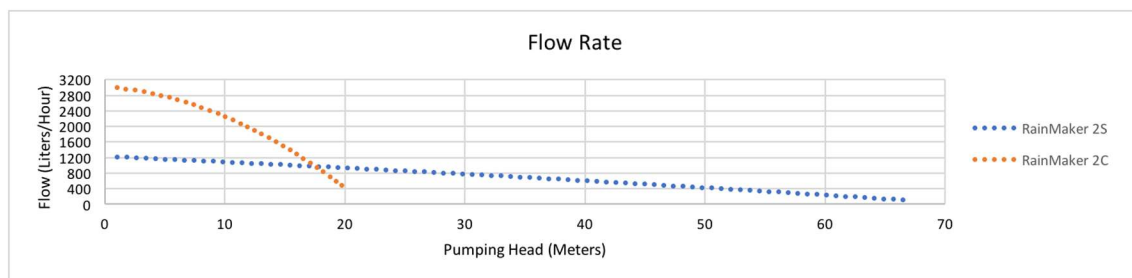
- ① 3/4" Outlet
- ② Stator (rubber sleeve)
- ③ Helical Rotor/ Screw
- ④ Housing
- ⑤ Stator laminations
- ⑥ Spacer
- ⑦ Spring washer
- ⑧ Coil
- ⑨ PCB
- ⑩ Magnet
- ⑪ Shaft
- ⑫ Ball bearing
- ⑬ Bearing support
- ⑭ Rear cover

*Components 2 & 3 in RM 2S are replaced by a multi-stage impeller in RM 2C

Technical Specifications

Mechanical		
	RainMaker 2S	RainMaker 2C
Max. Head	70 meters (230 feet)	20 meters (65.5 feet)
Max. Flow	1.2 m3/h	3.0 m3/h
Peak Wire-to-Water Efficiency	50%	38%

Pump Flow & Efficiency Curves



Certificates & Compliance with Standards

- IEC 60335-1
- IEC 60335-2-41
- ISO 9001:2015 Certified



Warranty

- Warranty of 3 years from delivery date