



SOLAR POWER SYSTEM

Model: SPS20

Data Sheet

Document version v1.1

Description

The SensMax solar power system SPS20 is designed to provide a reliable and sustainable power source for the SensMax TAC-B sensors and other compatible SensMax devices. It utilizes solar energy to generate electricity and ensures continuous operation of the connected equipment even in remote or off-grid locations.

The SensMax solar power system SPS20 is an all-in-one solution that integrates all the necessary components into a single package. This includes the solar panel, charge controller and battery. The compact design and integration of these components into a single system make it convenient and space-efficient.

The components are pre-wired and ready to be connected, minimizing the need for technical expertise.

Technical Specification

Model name	SPS20
Max output load	20 W
Output voltage	DC 10...14.6 V
Output connector	DC5521 angle 90° (compatible with SensMax TAC-B sensors)
Solar panel	Solar Cell 156Mono Optimum operating Current 3.33 A Short Circuit Voltage 3.66 Open Circuit Voltage 21.24 V Power 60W Size 680×510×35 mm Front Glass Thickness 3.2 mm Tolerance Watts ±3% Surface Max Load Capacity 60m/s (5kg / sq.m) Allowable Hail Load 23m/s,7.53g Cell Efficiency 21.60% Water proof IP67
Battery	Battery Type LiFePO4 Nominal capacity 20 Ah Electricity 256 Wh Nominal voltage 12.8 V Cycle Life >2000 times
Temperature range	-20°C to +65°C (charging and discharging operations)
Waterproof	IP67
Dimensions	Solar panel size 680×510×35 mm Battery size 205×100×40 mm
Weight	14 kg (whole system)

SensMax solar power system components

■ Solar panel

The high-quality solar panel capture sunlight and convert it into electrical energy.

■ Smart Charging Controller

The charging controller regulates charging process and ensures that the battery connected to the system is charged optimally. It prevents overcharging or deep discharging of the battery, thereby prolonging its lifespan.

■ Battery

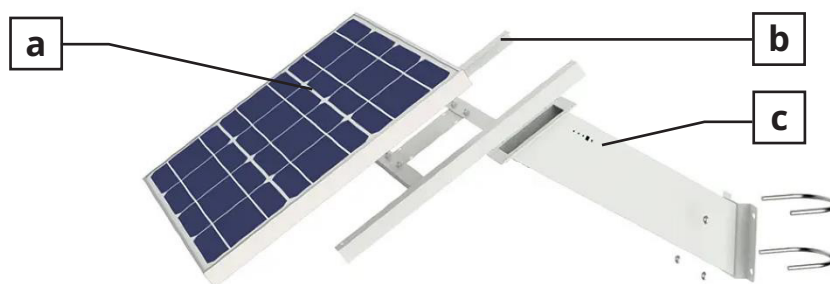
A high-quality LiFePO4 rechargeable battery stores the electricity generated by the solar panels during the day for later use, such as during nighttime or periods of low sunlight. The battery provides a stable power supply to the SensMax TAC-B sensor, ensuring uninterrupted operation. The LiFePO4 battery is placed in a metal sealed case and cannot be replaced by the user.

■ Mounting System

The solar panels are mounted on a durable and adjustable mounting system to maximize sun exposure and optimize energy generation. The mounting system ensures that the panels are securely fixed in place and properly angled to receive the maximum amount of sunlight throughout the day.

■ Wiring and Connectors

The various components of the SensMax solar power system are connected using appropriate wiring and connectors. The wiring transfers the electricity between the solar panels, charge controller, battery, and other components, ensuring efficient energy flow and system functionality.



a. Solar panel

b. Mounting system

c. Mounting bracket with built-in battery and charging controller

Operation at sub-zero temperatures

The battery case has a built-in heater that maintains the internal temperature at 0...+4°C. This allows charging to be maintained down to -20°C. However, if the ambient temperature is below -20°C, battery charging will be disabled.

Useful Information

1. Solar energy is given first priority to power the load. If there is enough solar power available, it also charges the battery. When solar energy is not sufficient to power the load, the battery takes over and supplies power simultaneously.
2. If the battery is fully discharged, it may require up to 1 hour of sunlight exposure before the system will power the load again.
3. Full battery charging time from the sun is about 6 hours.
The battery charging rate is calculated using the formula:
$$E = 60 \text{ W} * 0.7 * \text{SUNSHINE_HOURS}$$

Where E is the energy of a Wh
4. The SensMax TAC-B sensor uses about 3-4 Wh of energy, depending on the model. Therefore, with the SPS20 solar system, the TAC-B sensor can be powered for approximately 64-85 hours without sunlight.



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