SUNAPEX FX-20APM

SUNAPEX Solar Charge Controller 12V 20A User Manual

Model: FX-20APM

1. Product Overview

The SUNAPEX 12V 20A PWM Solar Charge Controller is designed to efficiently manage power flow from your solar panels to your battery, ensuring safe and optimal charging. It features built-in protections and versatile charging options for various battery types.

Key Features

- **12V System Compatibility:** Specifically designed for 12V batteries and solar panels without integrated controllers. Not suitable for 24V or 36V battery packs.
- **Plug & Play Design:** Features female and male connectors for quick and easy connection to solar panels. Upgraded SAE connectors ensure a secure fit.
- **Zero Battery Drain:** Equipped with diodes to prevent reverse current flow, ensuring no battery discharge when sunlight is absent.
- **Comprehensive Safety Measures:** Includes safeguards against overcharge, overvoltage, reverse current, reverse polarity, short circuit, and over-temperature.
- **Real-Time Monitoring:** LCD screen and LED indicators provide real-time status of solar panel and battery. Press the switch once to display current for 5 seconds.
- **Multiple Device Charging:** Integrated Type-C (PD20W Max) and USB (QC18W Max) output ports allow direct charging of electronic devices from the solar panel or battery.
- **Battery Mode Memory:** Remembers the selected battery mode, eliminating the need for reselection after power cycles.

The SUNAPEX 12V 20A Solar Charge Controller, showing its main body, input/output cables, and digital display.

2. Safety Information

Adhering to safety guidelines is crucial for the proper and safe operation of your solar charge controller. Please read and understand all instructions before use.

Important Safety Precautions

- Ensure the solar charge controller is only used with 12V batteries. Do not connect to 24V or 36V battery packs.
- Always connect the solar panel to the controller first, then connect the battery. Ensure positive and negative poles match correctly.
- The controller is designed to prevent reverse current flow, protecting your battery from discharge during

periods of no sunlight.

- The device incorporates multiple safety features including overcharge, overvoltage, reverse current, reverse polarity, short circuit, and over-temperature protection.
- Avoid exposing the controller to extreme temperatures outside its operating range (-35°C to +80°C).

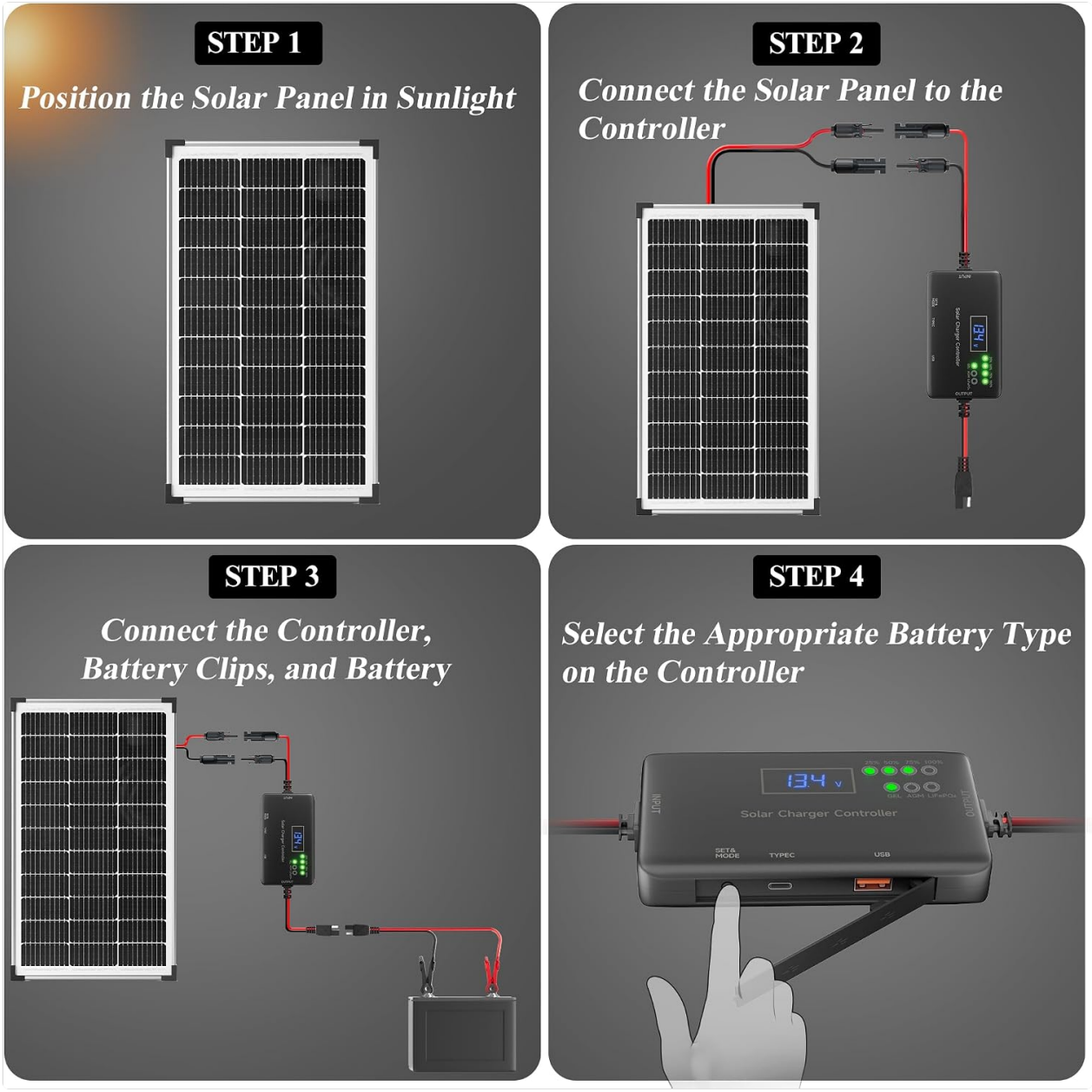
The controller features a 6-point safety system, including overcharge, over-temperature, over-voltage, reverse current, reverse polarity, and short circuit protection.

The controller is designed to operate within a wide internal protection temperature range, from -35°C (-31°F) to +80°C (+176°F).

3. Setup and Installation

Follow these steps to set up your SUNAPEX Solar Charge Controller:

1. **Position the Solar Panel:** Place your solar panel in direct sunlight to maximize energy capture.
2. **Connect Solar Panel to Controller:** Use the provided female and male connectors to connect your solar panel's output to the controller's INPUT port. Ensure a secure fit.
3. **Connect Controller to Battery:** Connect the controller's OUTPUT port to your 12V battery using appropriate battery clips or connectors. Double-check that positive and negative terminals are correctly matched.
4. **Select Battery Type:** Once all connections are made, select the appropriate battery type on the controller (Gel, AGM, or $LiFePO_4$). Refer to the Operating Instructions for details.



Visual guide for the four steps of setting up the solar charging system: positioning the panel, connecting to the controller, connecting to the battery, and selecting battery type.

This controller is exclusively designed for 12V battery and solar panel systems, ensuring compatibility and optimal performance within this voltage range.

4. Operating Instructions

Battery Type Selection

The controller is compatible with 12V Lead-Acid, Gel, and Lithium Iron Phosphate ($LiFePO_4$) batteries. To select the correct battery type:

1. Press and hold the **SET & MODE** button for approximately 3 seconds. The indicator light for the currently selected battery type (e.g., GEL) will start flashing.
2. While the light is flashing, short press the **SET & MODE** button to cycle through the available battery types (GEL, AGM, $LiFePO_4$).
3. Once the desired battery type's indicator light is flashing, release the button. The light will remain on, indicating that the selection is complete and saved.

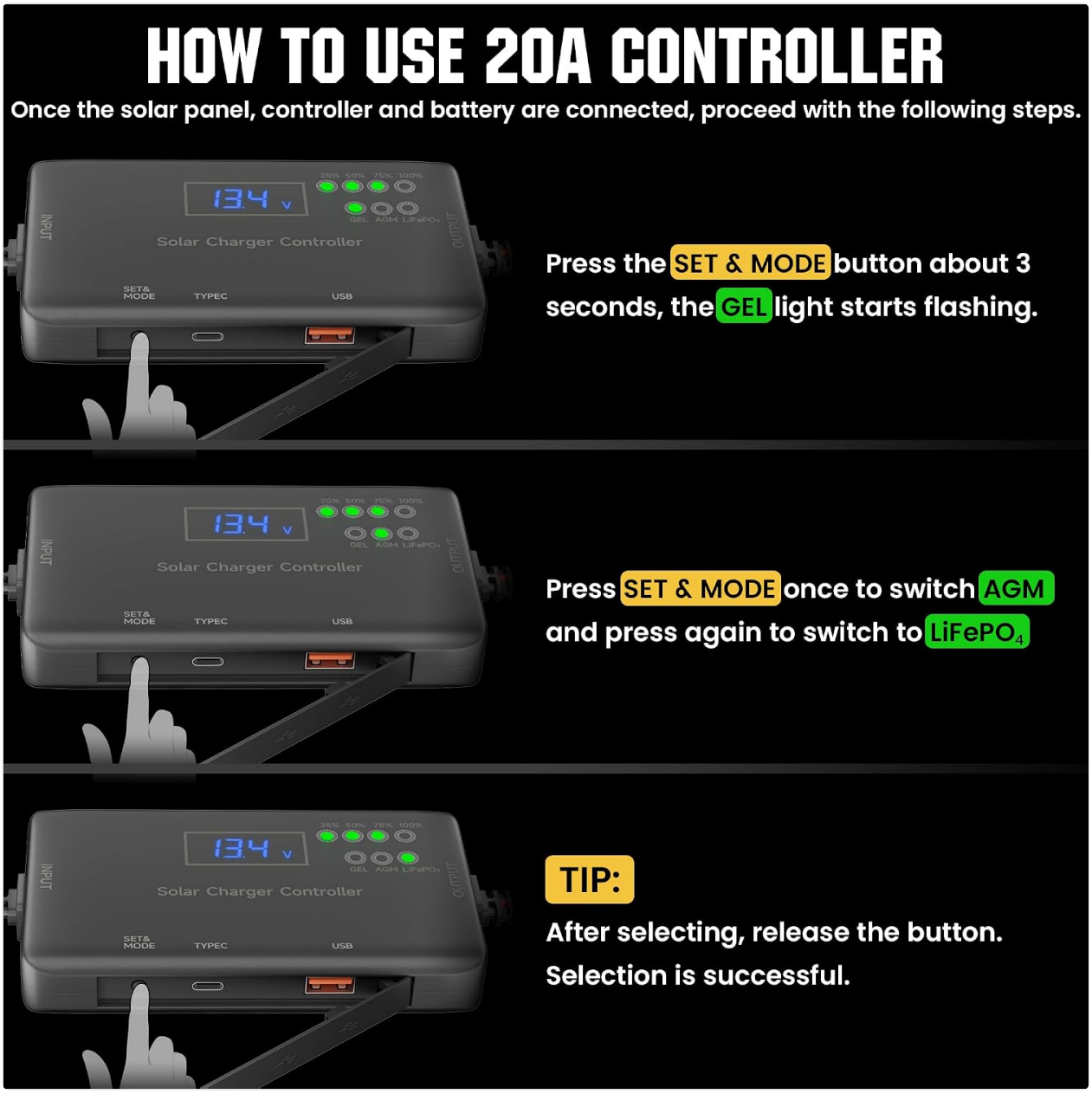
Real-Time Monitoring

The LCD screen displays the battery voltage by default. To view the charging current, press the **SET & MODE**

button once. The current will be displayed for 5 seconds, after which the display will revert to showing the battery voltage.

Multiple Device Charging

The controller is equipped with a Type-C port (PD20W Max) and a USB port (QC18W Max). These ports can be used to charge electronic devices directly, drawing power from either the connected solar panel or the battery.



Detailed steps on how to select the appropriate battery type (GEL, AGM, $LiFePO_4$) using the SET & MODE button on the controller.

The multifunctional controller features both USB (QC18W Max) and Type-C (PD20W Max) ports for charging various electronic devices.

5. Specifications

Feature	Detail
Model	FX-20APM
Rated Current/Voltage	20A / 12V
Solar Voltage (Open Circuit)	15-30V
Battery Compatibility	12V Lead-Acid, 12V Gel, 12V Lithium Iron Phosphate ($LiFePO_4$)
USB Output	QC18W (Max)
Type-C Output	PD20W (Max)
Dimensions (L x W x H)	4.1 x 2.0 x 0.8 inches (104 x 51 x 20 mm)

Item Weight	5.6 ounces
Display Type	LCD with LED indicators
Material	Plastic
Color	Black

6. Maintenance

To ensure the longevity and optimal performance of your SUNAPEX Solar Charge Controller, consider the following maintenance tips:

- **Regular Cleaning:** Periodically wipe down the controller with a dry, soft cloth to remove dust and debris. Ensure the display and indicator lights are clear.
- **Connection Checks:** Regularly inspect all connections (solar panel input, battery output, USB/Type-C ports) to ensure they are secure and free from corrosion. Loose connections can lead to inefficient charging or damage.
- **Environmental Protection:** While the controller has internal temperature protection, avoid prolonged exposure to extreme weather conditions or direct water immersion. Install in a well-ventilated area if possible.
- **Battery Health:** Monitor your battery's health and ensure it is compatible with the controller's 12V requirement. A healthy battery contributes to the overall efficiency of the solar charging system.

7. Troubleshooting

If you encounter issues with your SUNAPEX Solar Charge Controller, refer to the following common troubleshooting steps:

- **No Display/Power:**
  - Check all cable connections. Ensure they are firmly seated and correctly polarized (positive to positive, negative to negative).
  - Verify that the solar panel is receiving sufficient sunlight.
  - Confirm the battery has enough charge to power the controller's display.
- **Battery Not Charging:**
  - Ensure the solar panel is connected to the INPUT and the battery to the OUTPUT.
  - Check the solar panel's output voltage to ensure it is within the controller's operating range (15-30V open circuit).
  - Verify that the correct battery type (Gel, AGM, $LiFePO_4$) is selected on the controller.
  - Inspect cables for any damage or breaks.
- **Overcharge/Overvoltage Protection Activated:**
  - The controller is designed to prevent overcharging. If the battery is full, charging will stop.
  - Ensure the battery voltage is appropriate for a 12V system.
- **USB/Type-C Ports Not Working:**
  - Ensure the controller is receiving power from either the solar panel or the battery.

- Check the charging cable for the device you are trying to power.

If the issue persists after following these steps, please contact customer support.

8. Warranty and Support

SUNAPEX offers a one-year warranty for this product, covering manufacturing defects and malfunctions under normal use. We are committed to providing reliable products and excellent customer service.

Technical Support

We provide lifetime technical support for the SUNAPEX Solar Charge Controller. If you have any questions regarding product installation, operation, or troubleshooting, our dedicated support team is available 24/7 to assist you.
Please feel free to contact us at any time for assistance.