ASHAPOWER NEON60

ASHAPOWER NEON60 Solar MPPT Charge Controller SMU User Manual

Model: NEON60 (AP0007)
Brand: ASHAPOWER

1. Introduction

The ASHAPOWER NEON60 (HV) Vers. 7.7 MPPT charge controller is a versatile device designed for solar power systems. It supports a wide range of battery bank voltages from 12V to 48V, automatically detecting and configuring itself to the connected battery system. Its high Open Circuit Voltage (Voc) range simplifies PV panel grouping, while the Maximum Power Point Tracking (MPPT) technology ensures optimal power production from your solar array. The unit also features a sleek design suitable for visible indoor installations.

Key Features:

- Compatible with 12V/24V/36V/48V battery banks.
- Automatic detection and self-setting for battery bank voltage.
- 4-stage smart charging (Bulk-Absorption-Float-Equalization) for extended battery life.
- Programmable initial limited ampere battery charging facility.
- Ultra-fast and efficient power point tracking (98.9%).
- dsPIC33EP family microcontroller-based design.
- PV panel reverse polarity protection.
- Automatic disconnection of PV panels at night.
- Over-voltage and overload protection from PV panels.
- 16 user-programmable function settings with inbuilt keys.
- Grid power control to the connected inverter (SMU - Solar Management Unit).
- Forced grid to solar shifting facility.
- Multifunction status display.

2. Safety Information

Please read and understand all safety instructions before installing or operating the ASHAPOWER NEON60 MPPT Charge Controller. Failure to follow these instructions may result in electric shock, fire, severe injury, or property damage.

- **Electrical Hazard:** This device operates with high voltages and currents. Only qualified personnel should perform installation and maintenance.
- **Disconnect Power:** Always disconnect all power sources (solar panels and battery bank) before performing any wiring or maintenance on the charge controller.
- **Proper Grounding:** Ensure the charge controller is properly grounded according to local electrical codes.
- **Correct Wiring:** Use appropriate wire gauges and connectors for all connections to prevent overheating and ensure safe operation.
- **Ventilation:** Install the device in a well-ventilated area to prevent overheating. Do not block ventilation openings.
- **Battery Safety:** Batteries can produce explosive gases. Install in a well-ventilated area and avoid sparks or flames near batteries. Wear appropriate personal protective equipment (PPE) when working with batteries.
- **Environmental Conditions:** Do not expose the device to rain, moisture, or extreme temperatures.

3. Package Contents

Verify that all items are present in the package:

- ASHAPOWER NEON60 Solar MPPT Charge Controller SMU
- User Manual (this document)
- Clamp

4. Product Overview

The ASHAPOWER NEON60 is designed for efficient solar power management. It features a robust casing and a clear display for monitoring system status. The device automatically adapts to various battery bank configurations.

Figure 4.1: ASHAPOWER NEON60 HV Solar MPPT SMU with its maximum charging capacity for different battery banks. This image displays the model, maximum charging capacity for 12V, 24V, 36V, and 48V battery banks, including Max PV Voc Range and Max Panels in Watts.

Figure 4.2: Front and side view of the ASHAPOWER NEON60 HV Solar MPPT SMU, showing the display and connection terminals.

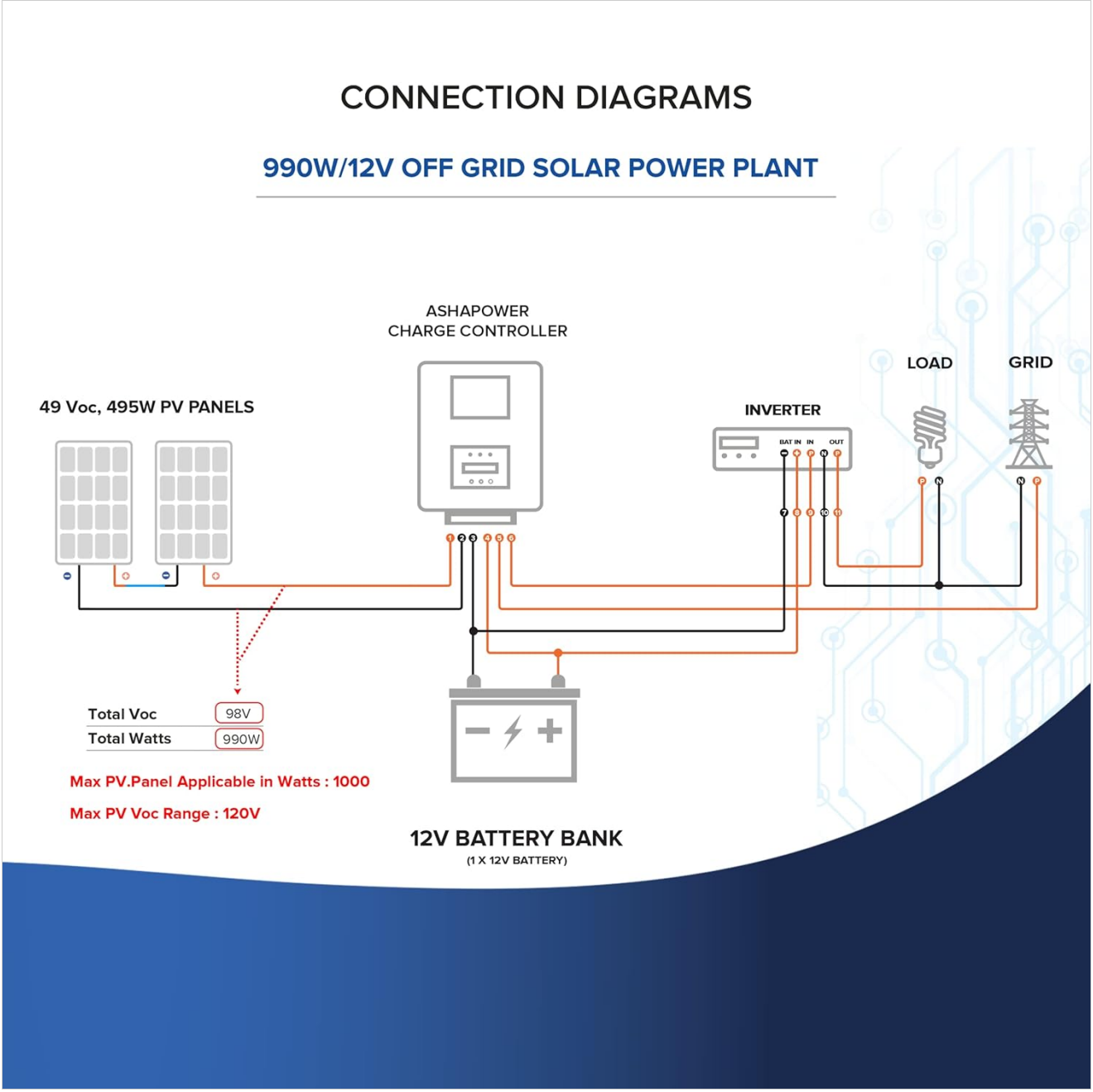

Figure 4.3: Visual representation of key features including input/output current and watts display, 4-stage charging, high tracking efficiency, intelligent initial current limiting, auto disconnection of PV panel at night, easy and flexible installation, easy factory settings restoration, and auto/forced grid to solar shifting.

5. Setup and Installation

Proper installation is crucial for the safe and efficient operation of your ASHAPOWER NEON60 MPPT Charge Controller. Refer to the following diagrams for typical off-grid solar power plant connections.

5.1. 12V System Connection Diagram

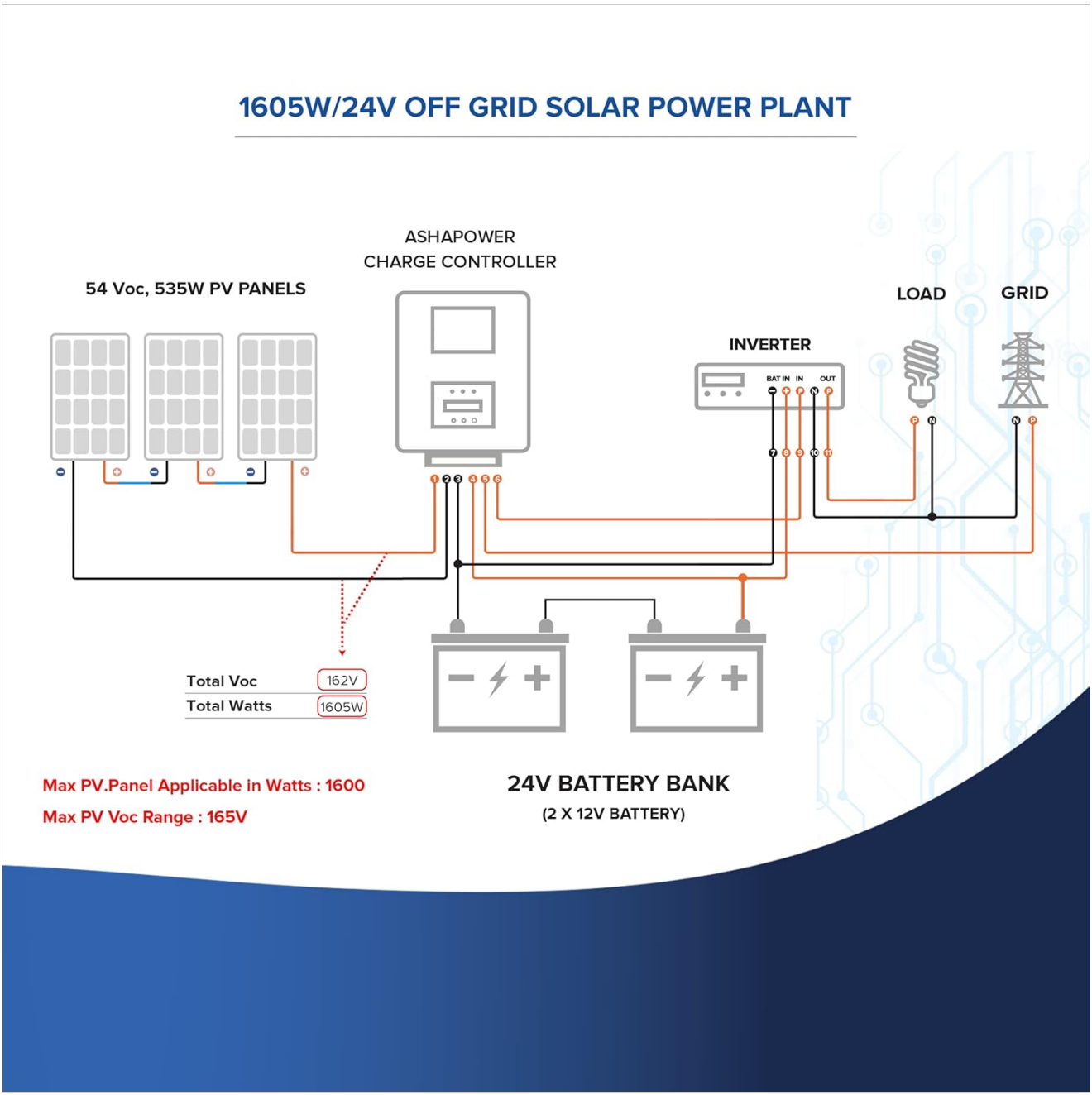

Figure 5.1: Connection diagram for a 990W/12V off-grid solar power plant. This diagram illustrates connecting 49 Voc, 495W PV panels to the ASHAPOWER charge controller, a 12V battery bank (1 x 12V battery), and an inverter connected to a load and the grid. Max PV.Panel Applicable in Watts: 1000, Max PV Voc Range: 120V.

5.2. 24V System Connection Diagram

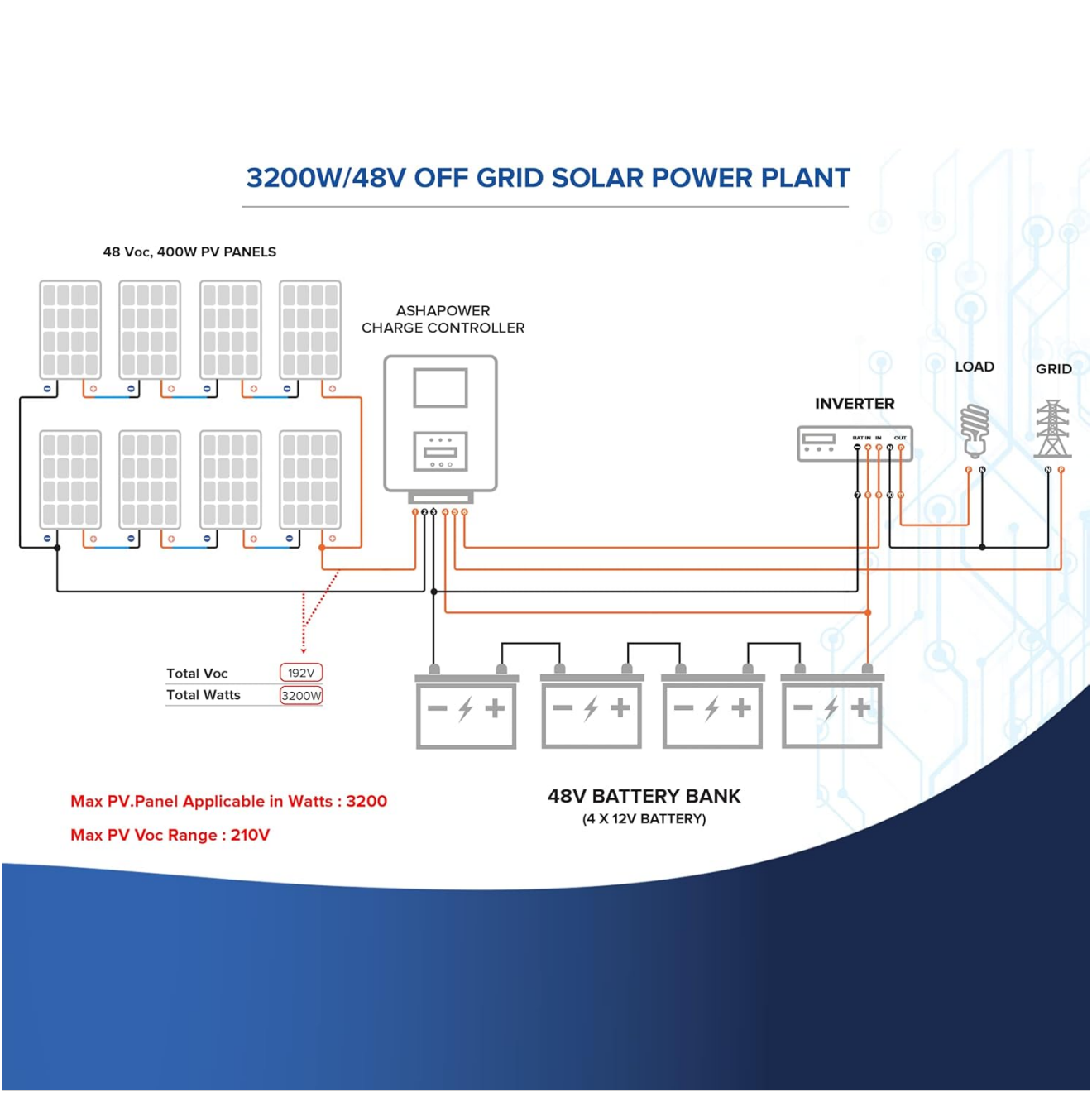

Figure 5.2: Connection diagram for a 1605W/24V off-grid solar power plant. This diagram illustrates connecting 54 Voc, 535W PV panels to the ASHAPOWER charge controller, a 24V battery bank (2 x 12V batteries), and an inverter connected to a load and the grid. Max PV.Panel Applicable in Watts: 1600, Max PV Voc Range: 165V.

5.3. 48V System Connection Diagram

Figure 5.3: Connection diagram for a 3200W/48V off-grid solar power plant. This diagram illustrates connecting 48 Voc, 400W PV panels to the ASHAPOWER charge controller, a 48V battery bank (4 x 12V batteries), and an inverter connected to a load and the grid. Max PV.Panel Applicable in Watts: 3200, Max PV Voc Range: 210V.

General Installation Steps:

1. Mount the charge controller in a cool, dry, and well-ventilated location.
2. Connect the battery bank to the charge controller first. Ensure correct polarity. The device will automatically detect the battery voltage.
3. Connect the solar panels to the charge controller. Ensure correct polarity and that the total Voc and wattage are within the controller's limits.
4. Connect the inverter to the charge controller's grid power control terminals (if using SMU functionality).
5. Verify all connections are secure before applying power.

6. Operating Instructions

The ASHAPOWER NEON60 features a multifunction status display and user-programmable settings. The device operates in MPPT AUTO BYPASS mode by default.

Figure 6.1: Operation Guidelines of Display Buttons. This image details the purpose, action (button press), display, and function for various operations like turning off/on solar shifting, and changing grid mode to solar forcefully.

6.1. Display Button Functions:

- **To turn off (disable) automatic solar to grid/grid to solar shifting function:** Press & Hold DOWN BUTTON (2 seconds). Display: INV MODE OFF, AUTO BYPASS OFF. Function: MPPT reconnects grid power to the connected inverter.
- **To turn on (enable) automatic solar to grid/grid to solar shifting function:** Press & Hold UP BUTTON (2 seconds). Display: INV MODE ON, AUTO BYPASS ON. Function: MPPT disconnects grid power to inverter if the battery terminal voltage is above GRID-SOL set voltage.
- **To change grid mode to solar forcefully (Forced Shifting):** Press & Hold ENTER BUTTON (3 seconds). Display: —. Function: MPPT disconnects grid power to inverter if the battery terminal voltage is above SOL-GRID set voltage.

Note: To change default function settings, download and refer to user manuals of concerned models & versions from the ASHAPOWER website.

6.2. Charging Stages:

The controller employs a 4-stage smart charging process to optimize battery health and longevity:

1. **Bulk Charge:** Delivers maximum current to rapidly charge the battery.
2. **Absorption Charge:** Maintains a constant voltage to fully charge the battery without overcharging.
3. **Float Charge:** Reduces voltage to a lower level to maintain the battery at full charge, compensating for self-discharge.
4. **Equalization Charge:** Periodically applies a higher voltage to balance cell voltages and prevent sulfation (for flooded batteries).

7. Maintenance

Regular maintenance ensures the longevity and optimal performance of your ASHAPOWER NEON60 MPPT Charge Controller.

- **Cleaning:** Keep the device clean and free from dust. Use a dry cloth to wipe the exterior. Do not use liquid cleaners.
- **Connections:** Periodically check all electrical connections to ensure they are tight and free from corrosion. Loose connections can cause overheating and poor performance.
- **Ventilation:** Ensure that the ventilation openings are not obstructed to allow for proper airflow and heat dissipation.
- **Environmental Check:** Confirm that the installation environment remains within the recommended temperature and humidity ranges.

8. Troubleshooting

If you encounter issues with your ASHAPOWER NEON60, consider the following basic troubleshooting steps:

- **No Power/Display Off:** Check all power connections from the battery and solar panels. Ensure the battery voltage is within the operating range.
- **Low Charging Current:** Verify solar panel connections and ensure panels are clean and not shaded. Check for proper battery bank voltage detection.
- **Over-voltage/Overload Protection:** If the device enters protection mode, disconnect the source of the over-voltage or overload. Allow the unit to cool down if it's an overload issue.
- **Incorrect Battery Voltage Detection:** Ensure the battery bank is correctly wired and the voltage is stable. The device should auto-detect.
- **System Not Shifting to Solar:** Review the operating instructions for the automatic and forced grid to solar shifting functions. Check the set voltage thresholds.

For persistent issues or complex problems, please contact ASHAPOWER customer support.

9. Specifications

Feature	Detail
Brand	ASHAPOWER
Item Model Number	AP0007
Product Dimensions (LxWxH)	31.2 x 19.1 x 14.1 cm
Item Weight	5 kg 410 g

Feature	Detail
Compatible Battery Banks	12V/24V/36V/48V (Auto-detection)
Max. Voc Range	210V
Max. Watts	3200W
Charging Current	60A
Display Type	LCD
Colour	Blue
Included Components	User manual, Clamp

10. Warranty and Support

10.1. Warranty Information

The ASHAPOWER NEON60 Solar MPPT Charge Controller comes with a **2-year warranty** from the date of purchase. Please retain your purchase receipt for warranty claims. The warranty covers manufacturing defects under normal use conditions.

10.2. Customer Support

For technical assistance, troubleshooting, or warranty inquiries, please contact ASHAPOWER customer support:

- **Email:** contact@ashapower.in
- **Phone:** +91-7594 82 1007
- **Website:** Visit the official ASHAPOWER website for more information and resources:https://ashapower.in/

ASHAPOWER is committed to providing dedicated support for its products.