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› [MUST ENERGY](#) /

› MUST ENERGY 80A 12V/24V/36V/48V MPPT Solar Charge Controller User Manual

MUST ENERGY 80A

MUST ENERGY 80A MPPT Solar Charge Controller User Manual

Model: 80A

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, maintenance, and troubleshooting of the MUST ENERGY 80A MPPT Solar Charge Controller. Please read this manual thoroughly before installation and use to ensure optimal performance and safety.

The MUST ENERGY PC1800F Series 80A MPPT Solar Charge Controller is designed to efficiently manage power from solar panels to charge various battery types, including lead-acid and lithium batteries. It features Maximum Power Point Tracking (MPPT) technology for high efficiency, multi-stage charging, and comprehensive protection mechanisms.





Figure 1: Front view of the MUST ENERGY 80A MPPT Solar Charge Controller, showing the LCD display and control buttons.

2. KEY FEATURES

- **High Tracking and Conversion Efficiency:** MPPT technology with up to 99% tracking efficiency and 98% conversion efficiency, maximizing solar panel output.
- **Versatile Battery Compatibility:** Supports 12V, 24V, 36V (manual setting), and 48V battery systems, including lithium, gel, and lead-acid types.
- **Advanced Charging:** Features a three-stage charging mode and equalization charging function for optimal battery health and longevity.
- **Comprehensive Protections:** Includes short-circuit, PV reverse polarity, battery overcurrent, load overcurrent, battery reverse polarity, and over-temperature protections.

- **User-Friendly Display:** LED and LCD display provides real-time information on photovoltaic voltage, battery voltage, battery current, and operating mode.
- **Communication Ports:** Equipped with RS485 and USB communication ports for monitoring and data exchange.
- **Temperature Compensation:** Battery Temperature Sensor (BTS) terminal allows for automatic temperature compensation, extending battery life.
- **Parallel Operation:** Multiple controllers can be used in parallel for increased system capacity.

3. SAFETY INSTRUCTIONS

Please observe the following safety precautions during installation and operation:

- Ensure all wiring is correctly polarized and securely connected to prevent damage to the controller or other components.
- Do not connect the controller directly to an AC power source.
- Always disconnect the solar panel and battery power before performing any maintenance or wiring changes.
- Install the controller in a well-ventilated area, away from flammable materials and direct sunlight.
- The controller generates heat during operation; ensure adequate airflow around the unit.
- Only qualified personnel should perform installation and maintenance.
- Wear appropriate personal protective equipment (PPE) such as gloves and eye protection during installation.

4. SETUP AND INSTALLATION

4.1 Unpacking

Carefully unpack the controller and inspect it for any shipping damage. The package should include:

- MUST ENERGY 80A MPPT Solar Charge Controller
- USB Cable
- Battery Temperature Sensor (BTS) Cable
- User Manual (English)

4.2 Mounting the Controller

The controller is designed for wall mounting. Choose a location that is:

- Indoors, protected from direct sunlight, rain, and excessive dust.
- Well-ventilated to allow for proper heat dissipation.
- Accessible for wiring and maintenance.

Use appropriate screws and anchors for your wall type to securely mount the unit.

Product Size

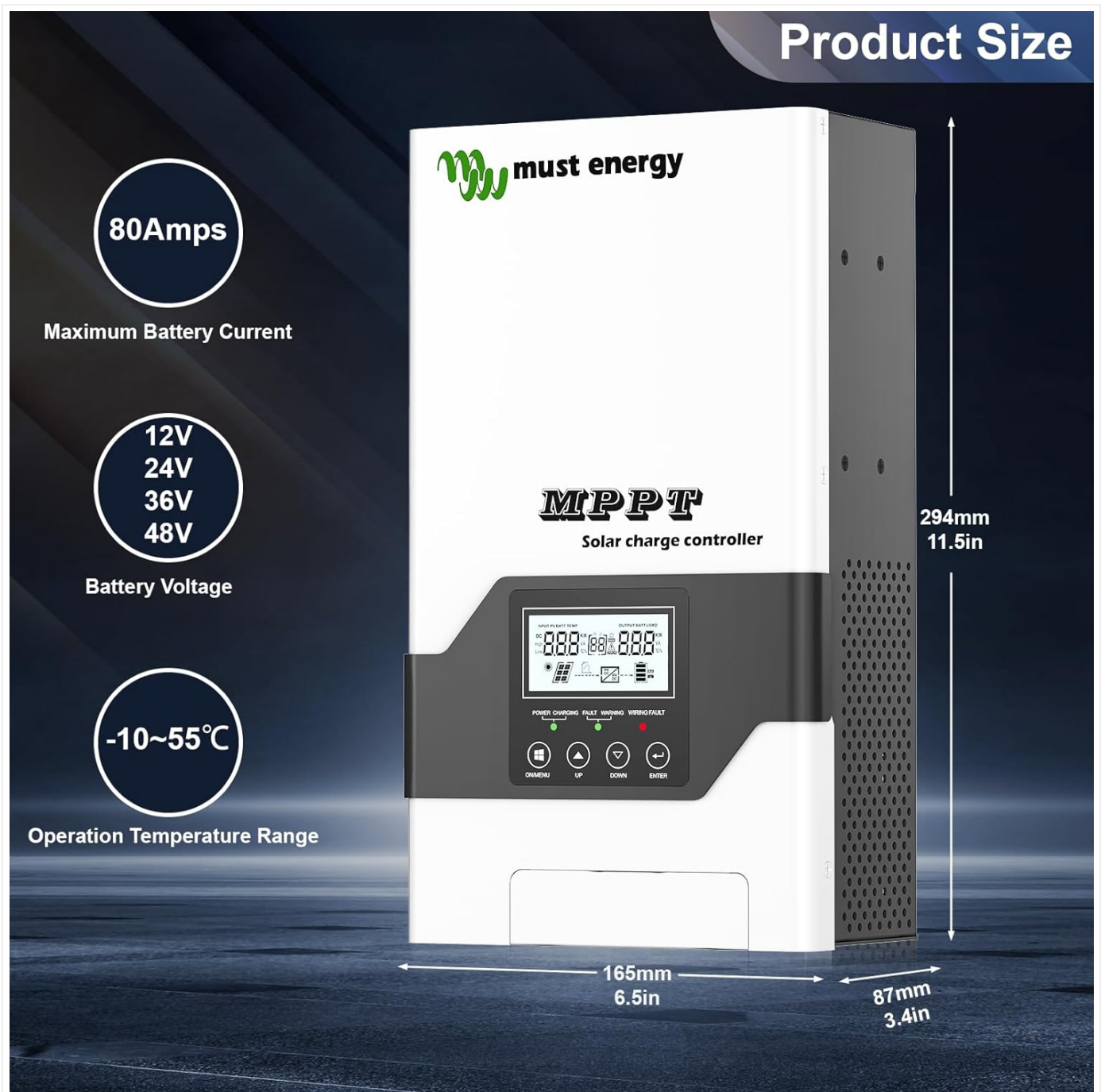


Figure 2: Product dimensions and key specifications, including 80 Amps maximum battery current, 12V/24V/36V/48V battery voltage compatibility, and -10~55°C operation temperature range.

4.3 Wiring Connections

Follow the wiring sequence carefully to avoid damage. Always connect the battery first, then the solar panels.

1. **Connect the Battery:** Connect the positive and negative terminals of the battery to the BAT+ and BAT- terminals on the controller. Ensure correct polarity.
2. **Connect the Solar Panels:** Connect the positive and negative terminals of the solar panel array to the PV+ and PV- terminals on the controller. Ensure correct polarity.
3. **Connect the Battery Temperature Sensor (BTS):** Plug the BTS cable into the dedicated BTS port on the controller. Place the sensor near the battery for accurate temperature readings.
4. **(Optional) Connect USB/RS485:** For PC monitoring or communication, connect the USB or RS485 cable to the respective ports.

Important: The controller cannot be connected directly to a load. It must be used with an inverter if you intend to power

AC loads.

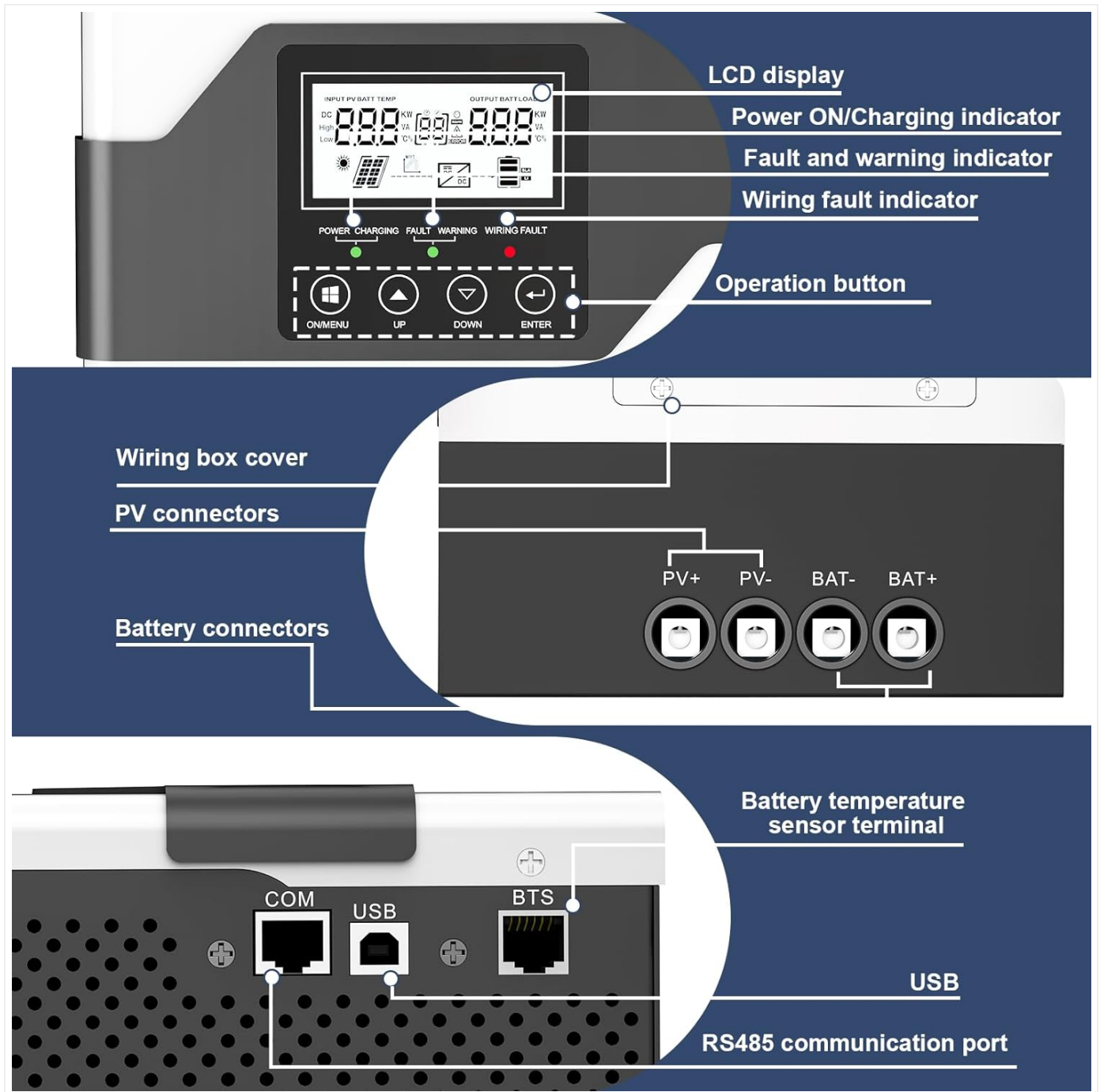


Figure 3: Detailed view of the controller's LCD display, operation buttons, wiring box cover, PV connectors, battery connectors, battery temperature sensor terminal, USB port, and RS485 communication port.

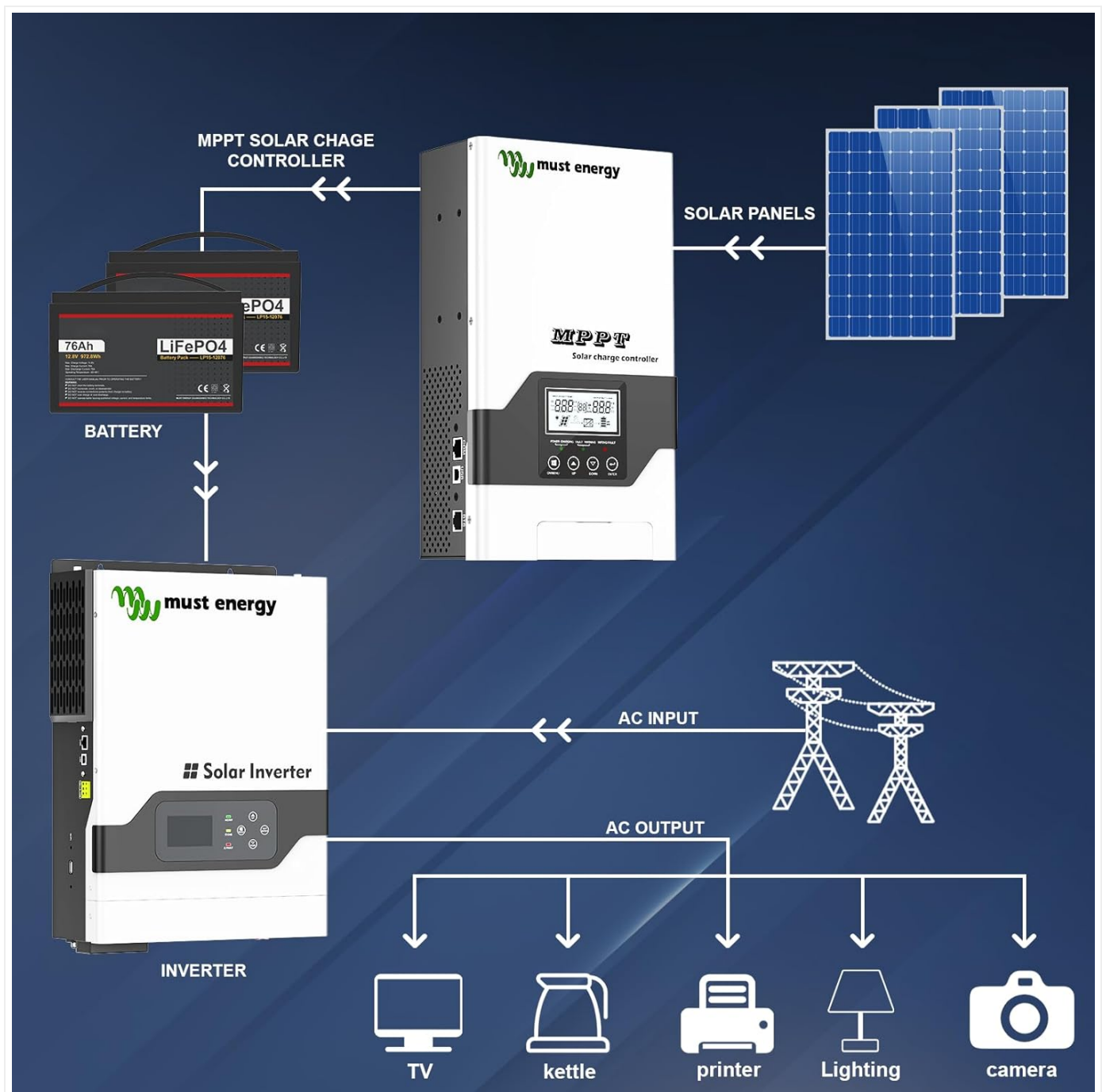


Figure 4: A typical solar power system setup showing the MPPT solar charge controller connected to solar panels, a battery, and an inverter which then powers various AC loads like a TV, kettle, printer, lighting, and camera.

5. OPERATING INSTRUCTIONS

5.1 Initial Power-Up

Once all connections are secure, the controller will automatically power on. The LCD display will show system information.

5.2 LCD Display and Buttons

The LCD display provides real-time data. Use the buttons below the display to navigate menus and adjust settings:

- **ON/MENU:** Press to cycle through display screens or enter menu settings.
- **UP:** Navigate up in menus or increase values.
- **DOWN:** Navigate down in menus or decrease values.
- **ENTER:** Confirm selection or save settings.

5.3 Battery Type and Voltage Setting

The controller automatically identifies 12V, 24V, and 48V battery systems. For 36V systems, manual setting is required. Refer to the detailed manual for specific steps to set battery parameters, including type (lithium, gel, flooded) and charging voltages.

5.4 Charging Process

The controller employs a multi-stage charging algorithm (Bulk, Absorption, Float) to optimize battery charging and extend its lifespan. The equalization charging function is available for compatible battery types.

The MPPT technology continuously tracks the maximum power point of the solar array to ensure maximum power harvest, even under varying sunlight conditions.

6. MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your solar charge controller.

- **Check Connections:** Periodically inspect all wiring connections for tightness and corrosion. Re-tighten if necessary.
- **Clean the Controller:** Keep the controller clean and free from dust and debris. Use a dry cloth for cleaning. Do not use liquids.
- **Ventilation:** Ensure that the ventilation openings are not blocked to allow for proper heat dissipation.
- **Battery Inspection:** Regularly check battery terminals for corrosion and ensure battery fluid levels (for flooded batteries) are adequate.
- **System Performance:** Monitor the system's performance via the LCD display or monitoring software to detect any anomalies early.

7. TROUBLESHOOTING

This section provides solutions to common issues. For more complex problems, contact technical support.

Problem	Possible Cause	Solution
Controller not powering on	Battery not connected or low voltage; reverse polarity.	Check battery connections and voltage. Ensure correct polarity.
No charging from solar panels	Solar panels not connected; low PV voltage; reverse polarity; fault.	Check PV connections and voltage. Ensure correct polarity. Check for fault codes on LCD.
Battery not fully charged	Insufficient solar input; incorrect battery settings; battery degradation.	Ensure adequate solar panel size and sunlight. Verify battery type and voltage settings. Test battery health.
Over-temperature warning	Poor ventilation; high ambient temperature; excessive load.	Improve ventilation around the controller. Reduce load if possible.

8. TECHNICAL SPECIFICATIONS

Feature	Specification
Model Number	80A

Feature	Specification
Nominal Battery Voltage	12V / 24V / 48VDC (Auto detection); 36V (Manual setting)
Maximum Solar Input Voltage	145V
PV Array MPPT Voltage Range	15-95V (12V battery) / 30-130V (24V battery) / 45-130V (48V battery)
Maximum Input Power	1250W (12V) / 2500W (24V) / 3750W (36V) / 5000W (48V)
Maximum Battery Current	80 Amps
Peak Conversion Efficiency	98% (MPPT Efficiency 99%)
Display Type	LCD
Communication Ports	USB, RS485
Operating Temperature Range	-10°C to 55°C
Product Dimensions (L x W x H)	29 x 16 x 8 cm
Weight	3.25 kg
Included Components	Solar Charge Controller, USB Cable, BTS Cable

PRODUCT PARAMETERS

MODEL		MC19-8015 E			
Nominal Battery System Voltage		12V / 24V / 48VDC (Auto detection); 36V (Setting)			
CONTROLLER INPUT	Battery Voltage	12V	24V	36V	48V
	Maximum Solar Input Voltage	100V	145V		
	PV Array MPPT Voltage Range	15-95V	30-130V	45~130V	45~130V
	Maximum Input Power	12 Volt-1250W 24 Volt-2500W 36 Volt-3750W 48 Volt-5000W			
BATTERY	Charging Set Points	Absorption Stage		Float Stage	
	Flooded Battery	14.2V / 28.4V / 42.6V / 56.8V		13.7V / 27.4V / 41.1V / 54.8V	
	AGM (Default)	14.4V / 28.8V / 43.2V / 57.6V		13.7V / 27.4V / 41.1V / 54.8V	
	Over-charging Voltage	15.5V / 30.0V / 45.0V / 60.0V			
	Over-charging Comeback Voltage	14.5V / 29.5V / 44.5V / 59.0V			
	Battery Defect Voltage	10.0V / 17.0V / 25.5V / 34.0V			
	Temperature Compensation Coefficient	-5mv / °C /cell (25°C vef)			
	Peak Conversion Efficiency	98% (MPPT Efficiency 99%)			
	Maximum Battery Current	80Amps			
	Max Charging Current	80amps continuous @ 40°C ambient			
DISPLAY & PROTECTION	Protections	Solar high voltage disconnect Solar high voltage reconnect Battery high voltage disconnect Battery high voltage reconnect High temperature disconnect High temperature reconnect			
MECHANICAL SPECIFICATIONS	Mounting	Wall mount			
	Machine Dimension (W*H*D)(mm)	165*285*87 (per pcs)			
	G.W (kg)	/			
	Package Dimension (W*H*D)(mm)	/			
	Gross Weight (kg)	/			
OTHER	Environmental Rating	Indoor			
	Radiating Mode	Fan cooling			
	Operation Temperature Range	-10~55°C			
	Ambient Humidity	0~90% relative humidity (non-condensing)			
	Altitude	≤3000m			

Figure 5: Detailed product parameters table, including nominal battery voltage, maximum solar input voltage, MPPT voltage range, maximum input power, charging set points for different battery types, protections, mounting, and environmental ratings.

9. WARRANTY INFORMATION

The MUST ENERGY 80A MPPT Solar Charge Controller comes with a **1 Year Warranty on Parts**. This warranty covers defects in materials and workmanship under normal use. It does not cover damage caused by improper installation, misuse, accidents, or unauthorized modifications.

Please retain your proof of purchase for warranty claims.

10. CUSTOMER SUPPORT

For technical assistance, troubleshooting, or warranty inquiries, please contact MUST ENERGY customer support. Refer to the official MUST ENERGY website for the most up-to-date contact information.

Manufacturer: MUST ENERGY

Brand: MUST ENERGY

Website: www.mustenergy.com (Example link, actual link may vary)