1. Overview

The Ecarke 200W Portable Power Inverter is a device that converts DC (Direct Current) power from a compatible Milwaukee 18V lithium-ion battery into AC (Alternating Current) household power. It provides a portable power source for small electronic devices and appliances, and includes an integrated LED light. The inverter itself does not include a battery.

Primary Function: To enable the use of standard 110-120V AC devices from a Milwaukee M18 18V battery pack.

2. Features and Specifications

2.1 Physical Ports and Outputs

- **1 x AC Outlet:** Standard 3-prong (NEMA 5-15) outlet. Outputs 110-120V AC at 60Hz.

- **2 x USB-A Ports:** Each provides DC 5V at up to 2.1A for charging phones, tablets, and other USB devices.
- **1 x USB Type-C Port:** For charging compatible devices.
- **1 x Adjustable LED Light:** A 200-lumen light with a lamp head that can be adjusted up to 75°.

2.2 Power Specifications

Specification	Detail
Input Voltage	18V DC (from Milwaukee M18 battery)
Output Waveform	Modified Sine Wave
Continuous Output Power	200 Watts
Peak Output Power	250 Watts
Output Voltage	110-120V AC
Output Frequency	60 Hz

2.3 Protection Features

- **Low Voltage Protection:** Automatically shuts off when the battery voltage drops below approximately 15V to prevent over-discharge and potential battery damage.
- **Overload Protection:** Protects against drawing more than the rated power.
- **Over-Current Protection:** Safeguards against excessive current draw.
- **Overheat Protection:** Helps prevent damage from internal overheating.

2.4 Physical Dimensions

Approximately 4.9" L x 4.6" W x 3.1" H (Item Dimensions).

3. Compatible Batteries

This inverter is designed to be compatible with Milwaukee 18V lithium-ion M18 battery packs. Examples of compatible battery model numbers include:

- 48-11-1815
- 48-11-1820
- 48-11-1822

Note: The Milwaukee battery is **not included** with the inverter. You must provide your own compatible, charged battery.

4. Use Guide

4.1 Initial Setup and Operation

1. **Insert Battery:** Slide a compatible, charged Milwaukee M18 battery onto the battery slot on the inverter until it clicks securely into place.
2. **Power On:** The inverter should power on automatically when a battery is connected. The LED light or other indicators may illuminate.
3. **Connect Devices:**
    - Plug AC devices (not exceeding 200W continuous) directly into the AC outlet.
    - Connect USB devices to the USB-A or USB-C ports using appropriate cables.
4. **Use the LED Light:** The built-in light should turn on. Adjust the angle of the lamp head as needed (up to 75°).

4.2 Using the AC Outlet

- Only connect devices with a power rating of 200 watts or less for continuous operation.
- Devices with motors or compressors (like small fans, mini-fridges) may have a higher startup surge; ensure the peak power (250W) is not exceeded.
- This inverter is suitable for small electronics, phone chargers, laptops (check wattage), LED lights, and similar low-power appliances.

Important: Do not attempt to power high-wattage appliances like hair dryers, microwaves, space heaters, or standard power tools. This can overload and damage the inverter.

4.3 Battery Runtime

The operating time depends on the capacity (Ah rating) of your Milwaukee battery and the power draw (in watts) of the connected device.

Estimated Runtime Formula (Approximate):
(Battery Voltage (18V) x Battery Capacity (Ah)) / Device Wattage = Runtime (Hours)
Example: A 5.0Ah battery powering a 50W device: (18V * 5.0Ah) / 50W ≈ 1.8 hours.

The low-voltage protection will shut off the inverter when the battery is nearly depleted to protect it.

4.4 Low Voltage Protection Shutdown

If the inverter stops working while a battery is attached, it may have triggered the low-voltage protection.

1. Disconnect all devices from the inverter.
2. Remove the battery from the inverter.
3. Charge the battery using a Milwaukee charger.
4. Reattach the charged battery to the inverter to resume use.

5. Safety and Maintenance

- Use the inverter in a well-ventilated area. Do not block any vents on the unit.
- Keep the inverter dry. It is designed for indoor/outdoor use but should be protected from direct rain or immersion.
- Do not disassemble the inverter.
- Disconnect devices and remove the battery when not in use for extended periods.
- Store in a cool, dry place.
- If the inverter becomes unusually hot, emits smoke, or produces a burning smell, disconnect the battery immediately and discontinue use.

6. Troubleshooting

Problem	Possible Cause	Solution
Inverter does not power on.	Battery not attached, dead, or not fully seated.	Ensure a compatible, charged battery is correctly clicked into place.
Inverter shuts off during use.	1. Overload (device wattage too high). 2. Battery voltage too low (protection triggered). 3. Overheating.	1. Disconnect high-wattage device. 2. Charge the battery. 3. Allow unit to cool in a ventilated area.
AC device does not work.	Device wattage exceeds inverter capacity.	Use a lower-wattage device. Check device power requirements.
USB device not charging.	Faulty cable or incompatible device.	Try a different USB cable. Ensure device is charging-capable via USB.
LED light does not work.	Battery issue or internal fault.	Check battery charge and connection. If problem persists, the unit may be defective.

7. What’s in the Box

- Ecarke 200W Portable Power Inverter (1 unit).
- User manual (this guide).

Not Included: Milwaukee M18 battery, AC power cords, USB cables, or battery charger.