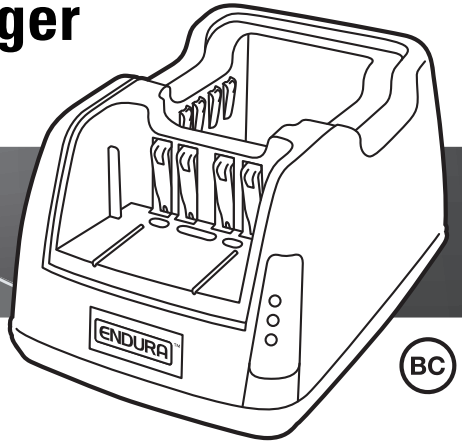
ENDURA™

Dual Unit Rapid Charger

FOR RECHARGEABLE LMR RADIO BATTERIES



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User Manual

Model: EC2M

ENDURA™ EC2M
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Introduction

Thank you for purchasing an ENDURA™ EC2M, Dual Unit Rapid Charger. This high quality product is designed for desktop use or in-vehicle use with optional accessories. The EC2M can charge two batteries at the same time and the batteries may be the same or different chemistries. The batteries may be charged while on or off the radio. Separate LEDs confirm the charge status of each battery.

With the appropriate charging pod installed, EC2M can charge these battery chemistries: lithium ion (Li-Ion), lithium polymer (LiPo), nickel-metal hydride (NiMH), or nickel cadmium (NiCd). For a complete list of charging pods available for this charger, contact your Power Products dealer, visit www.powerproducts.com, or call customer service at **800-529-1618**.

Important

1. Read all Caution statements below and this User Manual before attempting to charge a battery.
2. Check to make sure a charging pod compatible with your battery is properly installed before charging a battery or installing the charger in a vehicle.
3. Always charge new batteries completely before initial use. Recycle batteries when they can no longer be used. Do not discard unwanted batteries in the trash or incinerate. Batteries exposed to fire or excessive heat may explode.
4. For best battery performance, charge NiCd and NiMH batteries when they are fully discharged.

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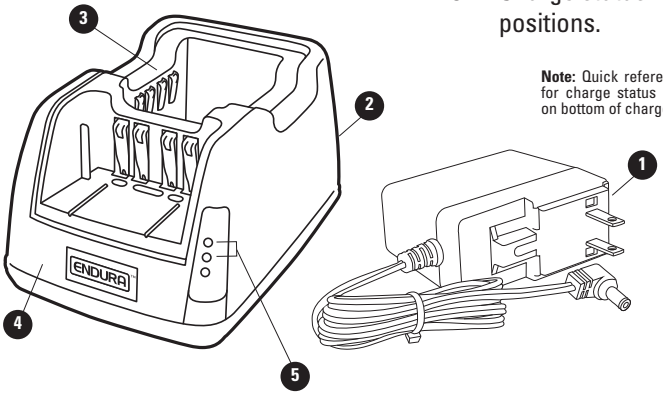
Caution

1. Based on the pod selected, EC2M can charge Li-Ion / LiPo or NiMH / NiCd batteries. If the pod is designed for Li-Ion / LiPo only, do not attempt to charge NiMH / NiCd batteries. If the pod is designed for NiMH / NiCd only, do not attempt to charge Li-Ion / LiPo batteries. Do not use EC2M to charge batteries with other chemistries or batteries that do not have overcharge protection.
2. Use charger in areas protected from the weather. Do not expose the charger to rain, any liquids, or excessive moisture.
3. Do not attempt to charge a battery without first installing the appropriate charging pod. Use only charging pods designed for the EC2M charger. Disconnect charger from power source before installing, adjusting, or removing the charging pod.
4. Make sure contacts in the charging pod and battery are clean. Do not allow wire or metal objects to touch contacts in charging pod or any internal part of the charger.
5. Do not remove the charger's housing or make any modification to the charger.
6. Use only the power supply provided with EC2M. If a replacement power supply is required, order part number TWC2M-PS. Use of other power supplies may damage the charger or batteries you may be attempting to charge.

EC2M Features

1. Power supply.
2. DC power connection – back of charger.
3. Removable charging pod.
4. EC2M – dual unit rapid charger base.
5. Charge status LEDs – for front and rear positions.

Note: Quick reference information for charge status LEDs is located on bottom of charger.



Accessories For In-Vehicle Installation

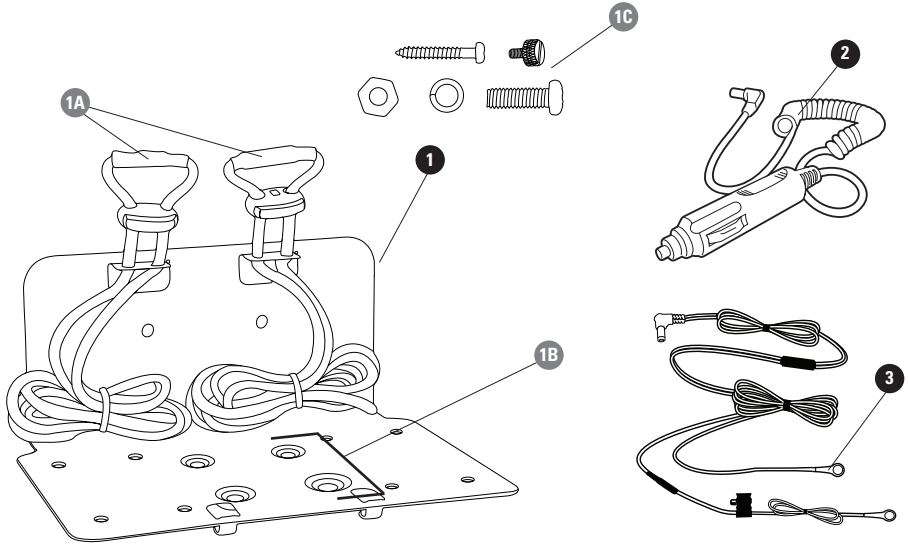
The items below are available for EC2M and allow the charger to be used in a vehicle.

1. Mounting bracket for dash or floor mounting (TWC2M-MB).

   1A. Adjustable tie-down straps for front and rear positions.
   1B. Holes for attaching to optional floor mounting bracket (LEVCA-MHD) or other bracket with 4-hole AMPS pattern.
   1C. Fasteners for dash mounting, securing charger to bracket, or securing TWC2M-MB to optional bracket with 4-hole AMPS pattern.

2. Vehicle power adapter – supplies power from a vehicle's 12V or 24V outlet (TWC6M-VPA).

3. Hardwire kit with inline fuse (TWC6M-HW).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Replacing A Charging Pod

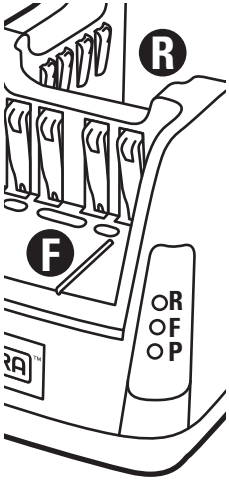
The charging pod is made from quality materials and designed to provide years of service when properly used. In most cases, the charging pod will only be replaced when you want to use the charger with a different battery.

Follow these steps to change the charging pod:

1. Obtain a charging pod made specifically for the EC2M. Confirm that the charging pod is compatible with the battery you want to charge.
2. Unplug the charger from its power source.
3. The charging pod is secured to the base with a single screw. Turn the locking screw on the bottom of the rear charging pod counter-clockwise until it no longer holds the pod. Lift the charging pod from the charging base.
4. Insert the replacement charging pod into the charging base and secure with the locking screw. Do not over tighten the screw.
5. Inspect the charging contacts to ensure they are clean and unobstructed.
6. Connect the power supply or vehicle power adapter to the EC2M. You are now ready to charge a battery compatible with the charging pod.

Charging A Battery

1. Confirm that the charging pod and battery are compatible.
2. Connect the charger to power with the power supply (included) or the vehicle power adapter (optional accessory). The status LED marked “P” illuminates GREEN to confirm the front and rear positions are receiving power.
3. Place the battery to be charged in either the front or rear position of the charging pod. The status LED marked “F” or “R” will illuminate to confirm which position is charging the battery. The battery may be charged while attached to the radio and two batteries may be charged simultaneously.
4. When a battery is placed in the charging pod and while charging, the charge status LED (F or R) will illuminate RED with no flashing to indicate normal charging.



R - Status LED for rear position. **F** - Status LED for front position.
P - Illuminates GREEN when EC2M is connected to power.

Charging A Battery (continued)

5. If the charge status LED is RED and flashes, a fault has been detected. The flash pattern represents a specific fault condition. If the status LED is ORANGE (solid or flashing), an advisement is being provided. See section **Fault Conditions & Advisements**.
6. When the battery is charged to 80% of capacity, the charge status LED will change to GREEN and begin to flash. It is recommended that the battery be charged to at least 80% capacity before use.
7. The charge status LED will illuminate GREEN with no flashing when the battery is fully charged.
8. After removing a fully charged battery, the charge status LED will illuminate ORANGE for a few seconds. Allow the charge status LED to go off before placing another battery in the charging pod.
9. EC2M is designed to charge batteries with a temperature monitoring circuit when the battery temperature is between 0°C and 45°C (32° F – 113° F); batteries outside this temperature will not be charged. The ambient temperature should be 5°C - 40°C (41° F - 104° F) while charging a battery.

Fault Conditions & Advisements

When the charge status LED flashes RED, a fault condition exists. A fault condition requires immediate attention. When the status LED is solid or flashes ORANGE, you are receiving an advisement about the battery.

The flash patterns for fault conditions are as follows:

LED Pattern	Fault Description
Flashes RED 1 Time	Indicates (A) low voltage battery failure or (B) battery has a short circuit. If (A), the battery's voltage is below the minimum level required and cannot be charged. If (B), the battery is defective and should be recycled. This warning is provided after the pre-charge stage is completed.
Flashes RED 2 Times	Indicates battery contact is "open" and current is not passing through the (+) and (-) contacts on the battery. This warning is provided after the initial diagnostic stage is complete. Check charging pod to confirm compatibility with battery.
Flashes RED 3 Times	Battery temperature is 45°C (113° F) or above. Charging has terminated, remove battery from charger. Have battery checked by a qualified technician.

Fault Conditions & Advisements (continued)

The flash patterns for advisements are as follows:

LED Pattern	Advisement
Solid ORANGE (Battery removed.)	Brief reset period for charger after battery is removed. Allow the LED to go off before inserting another battery.
Solid ORANGE (Battery inserted.)	Indicates battery is too cold when initially inserted. If the battery temperature is 0°C (32° F) or below, charging is delayed for up to two hours. Battery is monitored and charging resumes once it is above freezing. Monitoring terminates if the battery temperature remains below freezing for two hours.
Flashes ORANGE 1 Time	Battery temperature remains at 0°C (32° F) or below after two hours of monitoring. Remove battery from charger and allow it to warm.
Flashes ORANGE 2 Times	Indicates charging complete, but battery is under charged. Battery voltage is below minimum level required. This warning is provided after the rapid charging stage is complete.

Warranty And Service During Warranty

The EC2M is made from high quality materials and designed to provide years of reliable service. The following warranty applies:

Power Products Unlimited, LLC (PPU) warrants this product to be free from defects in workmanship and materials for two-years from date of purchase by the end user. This warranty applies to the original purchaser and is void if the product has been altered, misused, damaged, neglected, or if repair is required because of normal wear and tear. This is the only warranty made by PPU. In no event will PPU, its affiliates, subsidiaries, related entities, or their respective directors, officers, or employees, be liable for any damages beyond repair or replacement as described above, including without limitation, indirect, incidental, or consequential damages.

For service under warranty, return the product along with dated proof of purchase to the retailer where purchased or to Power Products. If returning directly to Power Products, follow these instructions:

Warranty And Service During Warranty (continued)

- Send item to Power Products Unlimited – Warranty Service Department, 1580 Sunflower Ave., Ste. 100, Costa Mesa, CA 92626.
  For your protection, we recommend you obtain proof of delivery for your shipment.
- Include with your product, dated proof of purchase, your name and daytime telephone number, and return address (street address only; return shipments cannot be made to a P.O. Box).
- All items sent become the property of Power Products and will not be returned.

EC2M Specifications

Dimensions (W x L x H)	101 x 137 x 81 mm / 3.9 x 5.4 x 3.2 inches
Weight (Charger Only)	290 g / .64 lbs
Compatible Chemistries	Li-Ion / LiPo / NiMH / NiCd (based on pod selected)
Ambient Operating Temperature	5° C – 40° C / 41° F – 104° F
Power Supply (TWC2M-PS)	100V – 240V AC / 47 Hz – 63 Hz / 0.58A (max)
Charger Input	12V - 24V DC / 1.6A (minimum)
Charge Rate	800 mA (10.6V – 13.5V)
Approvals	FCC[A] / BC[B] / DOE[C]

Specifications subject to change without notice.

(A) Complies with FCC Rules, Part 15, Subpart B, Class B 2016, ANSI C63.4:2014. (B) Complies with California Energy Commission CEC-400-2011-005. (C) Complies with U.S. Department of Energy 10 CFR, Part 430, PC3 and 4.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Accessories (EC2M)

Part Number	Description	Information
TWC2M-PS	Power supply. (Included with EC2M.)	UL listed. Input: 100-240V, 50-60Hz, 0.58A. Output: 15.0V, 1.6A.
TWC6M-VPA	Heavy duty vehicle power adapter.	Length: 24.0" / 6A. (cord relaxed). Replaceable fuse, 6A.
TWC6M-HW	Hardwire kit for in-vehicle installation.	Length: 13.0'. Components and cable rated to 15A.
TWC2M-MB	Mounting bracket for dash or vertical surface.	Dimensions: 5.4" x 4.1" x 2.5" (L x W x H).
LEVCA-MHD	Floor mounting bracket for TWC2M-MB.	Height: 4.3". Multi-directional with 4-hole AMPS pattern.

PowerProducts™

Endura Chargers By Power Products

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