

# **ONE-PLUG POWER Plus™**

## **2700 mAh**

### **GENERAL**

One-Plug Power Plus (OPP+) is a custom add-on accessory for the Yaesu FT-817 and FT-817ND (instructions are the same for both the FT-817 and FT-817ND). The OPP+ solves the tedious and annoying battery recharging process of either (1) using the internal FT-817 charger for about 18 hours or (2) having to open the battery cover door, disconnect the battery pack from the radio, connect to the external charger, disconnect from the external charger, reconnect the battery pack to the radio, and replace the door. One-Plug Power Plus replaces your present battery pack, battery cover door, and electrical connector to the radio with an integrated power unit.

One-Plug Power Plus installation is a snap!

1. With the FT-817 power turned OFF and any external power supply disconnected, remove your present battery cover door, battery pack/holder, and disconnect it from the radio.
2. Insert the One-Plug Power Plus battery pack and connect to the radio.
3. Drill hole in battery cover door (if desired) and replace door onto radio.
4. Close the battery cover door.
5. Insert supplied dust plug.

Be sure to take a good look inside your battery compartment; it may be the last time. With One-Plug Power Plus, you may never have to open the battery cover door again!

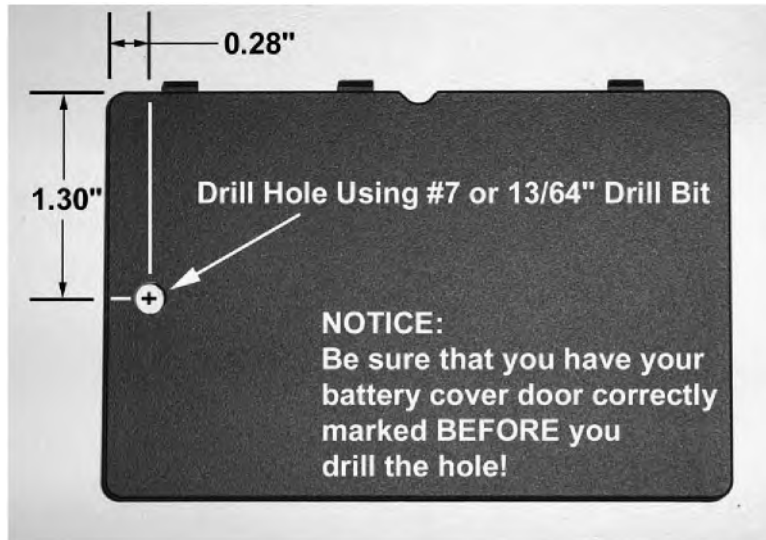
One-Plug Power Plus offers you a number of advantages over the optional Yaesu NiCd Battery Pack or the Yaesu supplied Alkaline Battery Holder (FBA-28). These include the following:

- No permanent modification at all to the FT-817 is required.
- High-capacity 2700 mAh NiMH battery pack.
- The radio & battery are protected from over-current conditions by self-resetting fuses (positive & negative battery leads).
- OPP+ includes a self-resetting thermal fuse (55 °C) tailored specifically for the FT-817.
- Option: Specially modified Yaesu FT-817 battery cover door.
- One-time plug into the low-life-cycle FT-817 Molex connector.
- Power plug mounted on battery to allow for external fast charging (*and without opening the door if using a modified door*).
- OPP+ fuses (positive and negative leads) provide protection even while using the external charger.
- External charging automatically removes radio from circuit for maximum protection of your FT-817. Internal FT-817 charger can still be used to charge the One-Plug Power Plus battery pack.

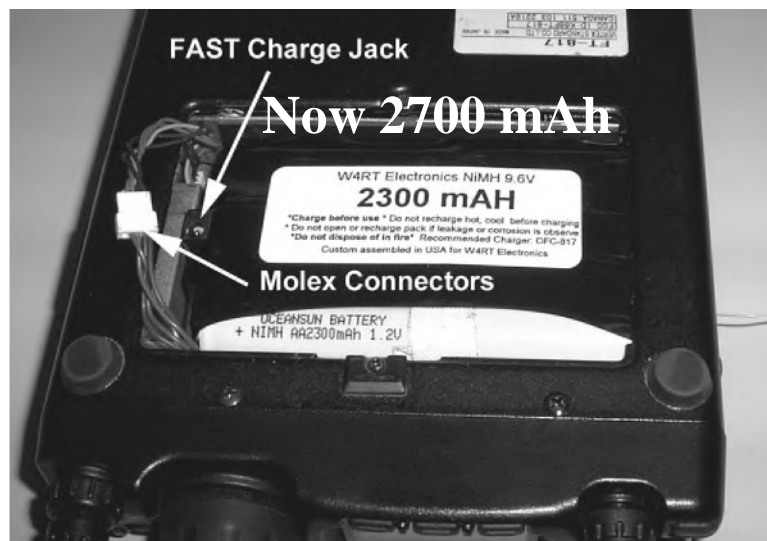
### **INSTALLATION**

#### ***READ THESE INSTRUCTIONS COMPLETELY BEFORE DOING ANYTHING ELSE***

1. Turn OFF the FT-817 power.
2. Remove any external power source connected to the FT-817.
3. Place the FT-817 with its bottom side facing up and the front panel facing you.
4. Open and remove the battery cover door. Decide if you want to use the fast charge feature by opening the battery cover door or by plugging through a hole in the door. If you want to use the door as is, then go to Step 5. Otherwise, use the OPP+ optional battery cover door OR drill the hole yourself using the following diagram. Once the door is prepared, set it aside.



5. Locate the tiny Molex connectors that connect your present battery pack/holder and the radio.
6. Carefully disconnect these connectors.
7. Remove the present battery pack/holder from the FT-817 battery compartment.
8. Take the One-Plug Power assembly and position it above the FT-817 battery compartment. The figure below shows how the OPP+ is positioned once installed. Read Steps 9 & 10 before installing the OPP+.



**NOTICE: DO NOT** use any conductive tool (e.g., screwdriver, knife,...) in the installation of your OPP. **DO NOT** insert anything into the OPP+ power jack other than the proper size and type plug. If you violate these instructions, you can damage the battery pack and the warranty will be void.

9. Carefully insert the OPP+ battery pack into the FT-817 battery compartment with the end of the battery pack having the FAST Charge jack facing to your left. The battery pack slips under the right lip of the battery compartment. Do not force.
10. Connect the tiny Molex connector from One-Plug Power to the connector from the radio. Position these cables on the shelf under the left lip of the battery compartment as illustrated in the next photograph.



11. Carefully place the battery cover door on the FT-817 battery compartment, close the door, and insert the dust plug if desired.
12. Turn the FT-817 over so that the front panel is facing you and the speaker is facing upwards.
13. Turn on the power and verify that the radio is operating.
14. Turn power off. **NOTE: The battery is generally delivered in a discharged condition.**
15. You are encouraged to properly condition your new One-Plug Power Plus battery pack before regular usage in order to achieve maximum lifetime and capacity. See subsequent section entitled "Battery Care."

### **OPERATION OF YOUR ONE-PLUG POWER**

Once you have installed One-Plug Power Plus, its operation is simple. If you have the battery charged and no external power sources attached to the FT-817, then the FT-817 will operate as usual from the battery. Unlike the Yaesu battery pack, One-Plug Power Plus provides charging alternatives for you.

#### ***READ "BATTERY CARE" BELOW BEFORE OPERATING YOUR ONE-PLUG POWER.***

1. **BEFORE ATTEMPTING TO FAST CHARGE WITH THE DOOR CLOSED, REMOVE THE DUST PLUG (if installed) FROM THE DOOR. STORE IT SO THAT YOU CAN INSERT IT INTO THE DOOR AFTER YOU HAVE COMPLETED CHARGING.**
2. **WHEN TO CHARGE THE OPP+:**  
Although you may charge the OPP+ at any time, it is recommended that you don't recharge the pack until it is at least 50% discharged. A simple method to estimate this point is to charge only when the displayed voltage is less than 9.6 VDC. Charging a near-full NiMH pack can damage the cells and reduce the capacity and lifetime. Read the Battery Care Section on the next page.
3. **SLOW METHOD --- Use the FT-817 internal charger to recharge the OPP+ battery pack:** Set Menu #11 [BATT-CHG] to select the charge time. Use a 10-hr plus an 8-hr cycles WHEN the battery pack has been fully discharged, i.e., the FT-817 has turned itself off because the voltage has dropped to about 7.2 VDC. Use Operating Function CHG (Row 11) to activate charging. W4RT Electronics recommends that the external power supply attached to the FT-817 power plug comply with the Yaesu specifications. The internal charger provides approximately 180 mA charging current when the input voltage is 13.8 VDC to the FT-817. If the supply voltage is lower, then charge time increases significantly. For example, if the input voltage is 12 VDC, the internal charger will provide about 100 mA. **NOTE (1):** You may continue to operate the FT-817 normally while the battery pack is being recharged. **NOTE (2):** The internal charger is a constant current circuit and is controlled only by the time you select. Damage to the cell may occur if you improperly overcharge.
4. **FAST METHOD --- Use an external FAST charger to recharge the OPP+ battery pack:**  
An optional charging cable allows connection to the recommended W4RT One FAST Charger OFC-

**817** and the One-Plug Power Plus jack. The plug that mates with the One-Plug Power Plus jack is a 3.8 x 1.3 mm plug (center positive). When you insert the charging plug into the OPP+ jack, the radio is automatically disconnected from the battery pack and the external charger is connected to the battery pack. Your FT-817 is now protected from any charger problems that might arise. **If you use the W4RT OFC-817, the OPP will charge in about two and one-half hours!** Fast charging time depends upon the characteristics of your charger. The Maha MH-C777/Plus or MH-C888 chargers typically take over 4 hours to charge the OPP+. The W4RT OFC-817 also has been observed to pack more charge into the OPP+ than others do. To operate the radio during charging, you will need to use an external power source connected to the FT-817 rear-deck power plug. When charging is complete, disconnect the charging plug from the OPP+ jack. (*ATTENTION: The jack and plug mate firmly. Be sure to use your thumb to hold the door against the battery compartment as you pull the jack out.*) You can now operate from the battery as usual.

Note that the OPP+ protects the FT-817 against over-current situations during charging, operation, or short-circuit by using **self-resetting fuses** in both the positive and negative battery lines. A specially selected self-resetting thermal fuse to guard against over-temperature conditions also protects the OPP+ battery pack. Compare the protection One-Plug Power provides with other battery alternatives.

**You never have to replace fuses in the OPP+, they are self-resetting!**

## BATTERY CARE

The NiMH batteries used in the One-Plug Power should provide long life and capacity IF you properly care for the batteries. You should charge the batteries properly. ***Upon installation of the One-Plug Power, be sure to fully charge the battery pack USING THE FT-817's INTERNAL CHARGER before using it to power the FT-817.*** Use the battery to power the FT-817 for normal operation, but allow it to fully discharge (FT-817 will turn itself off automatically). Repeat this cycle two additional times (full recharge and full discharge) using the internal charger of the FT-817. Be sure to allow the batteries to rest for at least 30 minutes after charging or discharging. **USE ONLY SLOW CHARGING FOR THIS INITIAL CONDITIONING.** You can now use the batteries “normally,” i.e., recharging before full discharge. You should perform a full discharge-recharge cycle at least every 10<sup>th</sup> time you do a partial recharge of the batteries. **BASIC CARE RULE: DO NOT OVERCHARGE THE BATTERIES.** When using the internal FT-817 charger, remember that it is a constant-current, timed device. Two 8-hour cycles should be acceptable for the full recharge. When using an external fast charger, it should *not* require temperature sensing. The Maha chargers mentioned above have been observed to work for this purpose. (*W4RT Electronics does not specifically recommend, sanction, or approve any charger, including those of Maha, other than the W4RT One FAST Charger, which was developed specifically for this battery pack. It is solely the responsibility of the user to select and use an appropriate charger.*) In any case, the charging current should not exceed about 2000 mA.

## STORAGE

NiMH batteries will self-discharge over time much faster than alkaline batteries. NiMH batteries can be as much as 1% per day while the shelf life of alkaline batteries can be 5-7 years. W4WB and AB4MT have experienced storage times of several months with the OPP-817 in their FT-817s; however, this time can vary significantly. Some FT-817 owners have reported storage times of just days with the OPP-817 installed in their FT-817. The most likely reason is that diode D1085 in their radio is defective, which causes the battery drain to go from microamps to many milliamps. This has been observed in various lot numbers of the FT-817, but Lot 21 seemed to have a remarkable number defective. Two realistic options are available to resolve this problem. First, replace D1085. Second option is to insert the FAST Charge Cable into the FAST Charge jack of the OPP-917+. This disconnects the battery from the radio; also, be sure that the other end of the cable is disconnected.

**WARRANTY:** One-Plug Power Plus is warranted for a period of one year from the date of purchase to be free of electrical defects in materials and workmanship; however, the battery pack is warranted for a period of 60 days. If the One-Plug Power Plus is determined to be defective, the defective item will be repaired or replaced, at the sole option of W4RT Electronics, provided that the purchaser returns said item, postage prepaid, with proof of purchase to W4RT Electronics, ATTN: Technical Support, 3077-K Leeman Ferry Rd, Huntsville, AL 35801. Include a description of the problem, daytime phone number, email address, and return mailing information. Any modification to the One-Plug Power Plus or its cables, or abusive charging or discharging of the battery pack by purchaser voids the warranty. The warranty applies only to the original purchaser and is not transferable. 10 June 2007

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