

# Portable Rotary Phone

## Users Manual

9/14/2005

### 1 Overview

Congratulations on your purchase of the first Portable Rotary Phone ever built! We are sure you will enjoy the dependability, the laughs, and the looks you'll receive from co-workers and friends. This short user's manual will walk you through the basics of using your new cellular phone.

### 1.1 Improvements in v1.1

The new firmware v1.1 has many new features:

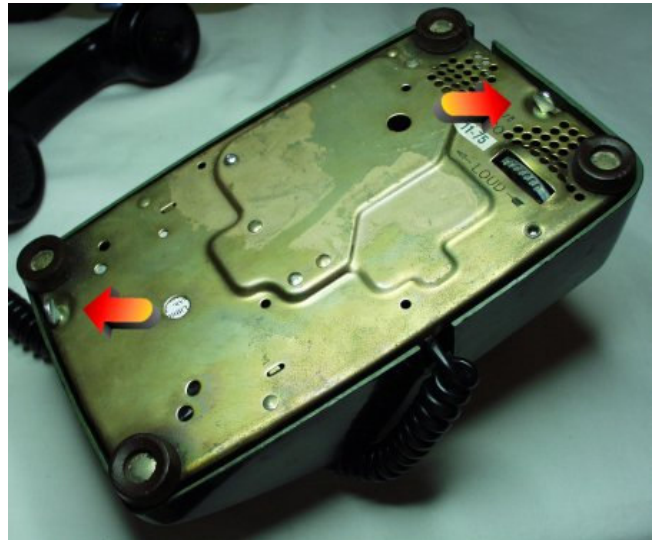
- Truly international design (switches automatically between cellular bands)
- Variable length International Dialing and '+' character
- SIM Card detection
- Allows entry of SIM PIN # through the rotary interface (only if necessary)
- Extended error responses

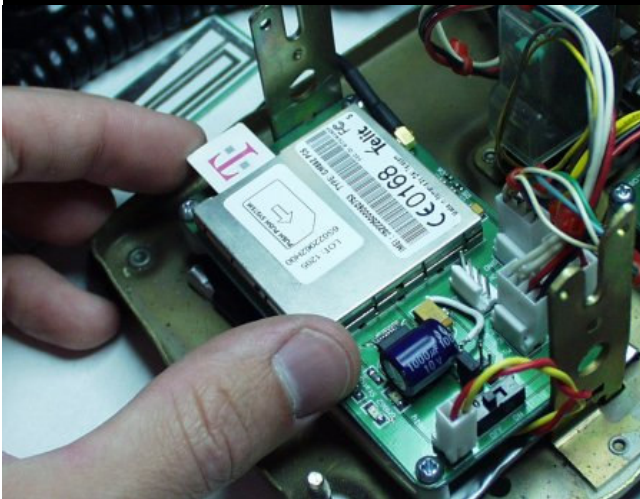
## 2 Basic Operation

### 2.1 Opening the Hood

Each phone ships with easy to remove screws on the bottom of the phone:

Removing these two screws will allow access to the SIM card insertion and removal, the internal battery for charging, and the power switch.





## 2.2 Inserting the SIM Card

The Portable Rotary Phone uses industry standard SIM cards. The customer must provide their own SIM card for use. Currently T-Mobile and Cingular (including AT&T) use this type of small chip to store the user's account information. Once you've installed your SIM card and powered up the phone, anyone who calls your number will be calling your new rotary phone!

The installation of the SIM card is straight forward. First remove the cover of the phone and verify that the power switch is in the 'Off' position. Locate the SIM slot on the side of the cellular module. Sliding the card in, you will hear a slight 'click' as the SIM is locked into place. Don't worry, removal is as simple as pushing in the card again and the module will release your SIM card.

Installing a T-Mobile SIM card

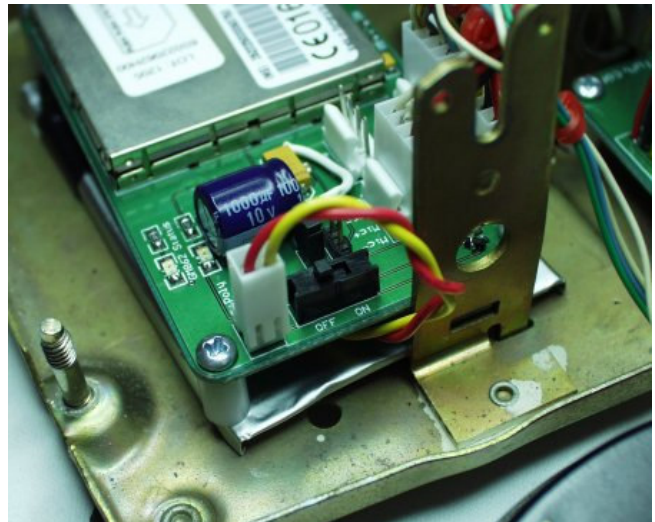
**Remember:** Your account minutes will be used as normal for all calls placed or received through the Portable Rotary Phone.

## 2.3 Power Switch

What good would a cellular phone be if you couldn't turn it on? The Portable Rotary Phone has a simple slide On/Off switch.

After the SIM card is installed, slide the switch to the **On** position. During the boot process, the Port-

able Rotary Phone (PRP) will give different indicators.



The phone will short-ring once indicating the phone is booting. This is normal and *does not* indicate an incoming call.

There are two small lights (LEDs) that will indicate the current status of the cellular connection. Initially, after the unit is powered, the **GM862 Status LED** will blink on and off once per second. After approximately 60 seconds, the GM862 Status LED will flash quickly and then go dark every three seconds. This indicates that the phone is registered on the network and ready to place and receive calls. The PRP will then short-ring *twice* to indicate that booting is complete. You can now carefully replace all internal parts, close the cover, and tighten the two thumb screws on the base of the phone.

### 2.3.1 PIN Number Entry

If during the boot process, you hear *three* short-rings, this indicates that a PIN # is required for the SIM card you inserted. The PRP will wait for you to enter a PIN #. It will allow you to enter up to 10-digits. If you have a 4-digit code, just enter 4-digits by dialing them on the rotary. For example, if your PIN # is '1234', you would dial '1' then '2' then '3', '4', and then wait.

The PRP will detect when you have quite dialing. If the PIN # was correct, booting will continue. You should hear *two* short rings indicating the boot process completed successfully.

**Caution:** You have ten chances to get the PIN # correct before the SIM card shuts down completely. If this happens, the SIM card will be permanently locked. If you have a purchased a SIM card with PIN # required, we recommend you remove this requirement by inserting the SIM card into a normal phone. You should be able to disable the PIN # requirement under the *Security Settings* type menu. After it is removed, re-insert it into the PRP. The unit will now boot without pausing for a PIN # entry.

## 2.3.2 Cellular Band Selection

Different cellular bands are used throughout the world. The PRP will attempt to use the North American bands first. If, after 30 seconds, the PRP is not able to detect a signal, it will switch to the European bands. The PRP will attempt to get a signal on the European bands for 30 seconds. If a signal is still not found, the PRP will flash the **PIC Status** LED with 3 short pulses and 3 seconds of off time.

If this happens, and you *are* in Europe or America, check the antenna connection and move to an area with better reception.

## 2.4 Receiving Calls

Give it a try! Once the unit has been powered and closed up, call your cellular number from another phone. The Portable Rotary Phone will ring the vintage bell ringer quite loudly. Picking up the handset at any time will connect the call as normal. If the handset is not picked up after 4-5 rings, the caller will be directed automatically to your voicemail. The ring volume can be adjusted by the dial on the bottom of the phone.

**Note:** If you need to 'mute' the ringer, simply take the handset off the hook. No minutes will be used as the phone will be expecting you to dial a number and the ringer will not actuate while the hand-

set is off the hook.

## 2.5 Placing Calls

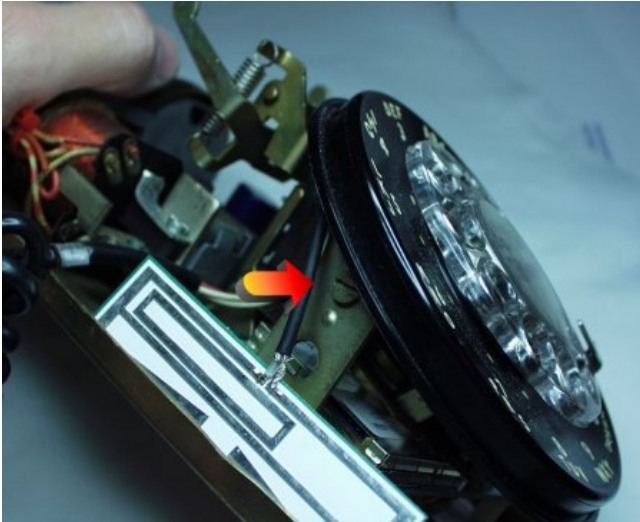
You can pickup the handset at any time. You *will not* hear a dial tone. The PRP accepts up to 15-digit phone numbers. You dial just like you would on your cellular phone. or instance, if you needed to call us here at Spark Fun : (303)-284-0979, you would pick up the handset and dial **3 0 3 2 8 4 0 9 7 9**. No preceding 1, no dialing 9 for at outside line (hah!). If you mess up at any time (it can be a little tricky at first) simply press down on the handset for a second and release; any previously dialed number will be lost and you can start again.

Any length phone number can now be entered! Whether it's '911' or '001-776-33267-3409', you'll get through! The phone allows you to dial up to 15 digits. The PRP looks for a minimum pause of **4 seconds** before sending the current dialed number. That means, if you are in the middle of dialing a number and wait more than 4 seconds between numbers, the PRP will try to connect the call before you have finished dialing! Be sure to have the number ready!

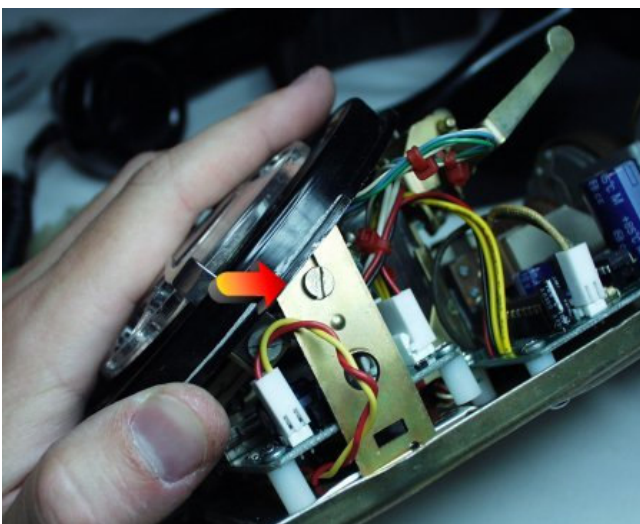
The PRP can handle even the oddest international numbers as well! If you need to dial +07995632 (we don't know where it goes), how does one dial a '+'? By dialing a double '9' at the beginning of the number, a '+' will be sent. This means you would dial **9 9 0 7 9 9 5 6 3 2** and the phone will dial +07995632. If you ever have a phone number that truly starts with '99', please let us know!

## 3 Hardware Description

### 3.1 Removing the Rotary Dial



The pictures for this manual were taken with the dial removed for simplicity. With a little practice, you should be able to insert the SIM card, operate the power switch, and disconnect/reconnect the battery without having to remove the dial. If need be, the dial can be easily removed with a flat-head screw driver. There are two screws located on each side of the dial that must be loosened (not removed).



With these two screws loosened, the dial will remain in place. The two uprights have small indexing holes that keep the dial oriented at the correct angle. Applying slight, outward pressure to the uprights and lifting gently on the dial face will release the rotary dial. Again, a little practice goes a long way.

**Don't worry!** Because these phones are so heavily built, it is unlikely you can do any harm to the phone itself. However, please be cautious when handling the internal electronics.

### 3.2 Charging the Battery

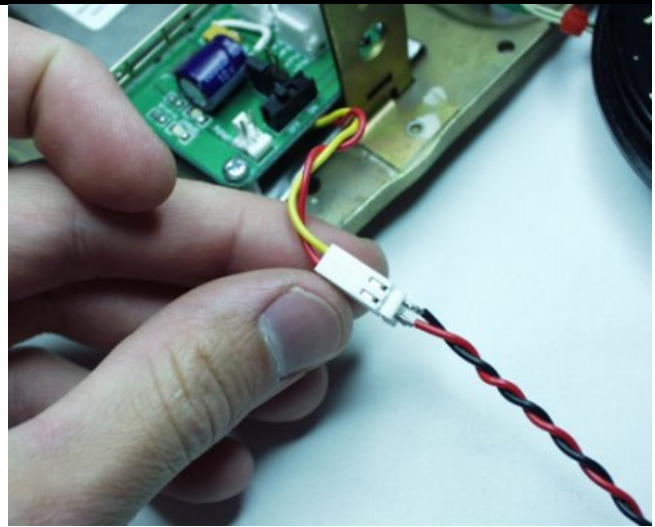
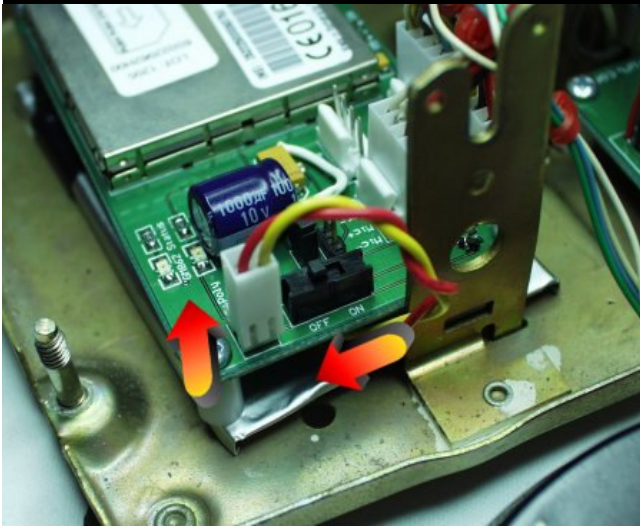
The Portable Rotary Phone uses an advanced battery chemistry called Lithium Polymer Ion. These new batteries pack quite a bit of energy into a very small space. The 2000mAh LiPoly battery will run the Portable Rotary phone for **4-5 days** on a full charge in stand-by and **10 hours** of talk time. If your phone is not ringing when there is an incoming call or if you have tried unsuccessfully multiple times to place an outgoing call, you may need to charge the battery.

Lithium Polymers are quite finicky when it comes to charging:

- *Never ever* use a charger other than the one provided to you by Spark Fun Electronics
- Never use this battery for use in anything but the Portable Rotary Phone
- Do not dispose of Lithium Batteries in normal trash

These cells are quite hardy and can be recharged and used reliably for over three years. To charge the Lithium Polymer in your phone, first follow the directions for removing the cover.

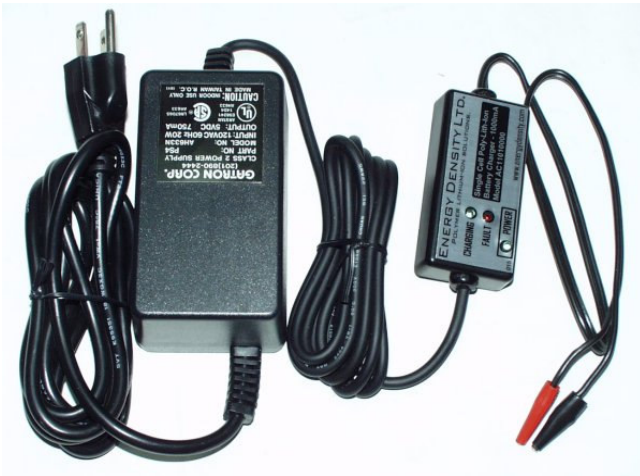
Power down the phone by sliding the On/Off switch to the 'Off' position. Wait 5-10 seconds while the unit powers down. Carefully lift up on the battery connector housing. All the connectors in the Portable Rotary Phone are polarized friction fit connectors. This means they can only be inserted in one orientation (the correct way) and they will stay connected (friction fit).



The Lithium Polymer battery charger plugs into any 110V three-prong outlet. The other end has a mating connector that attaches to the battery. The charging process is actually quite simple once you have achieved access to the battery connector.

connect the charger from the wall and do not use the phone. Please call us (from a different phone) at 303-284-0979.

- If at any time the battery begins to expand in size during charging, disconnect the charger from the wall and do not use the phone. Please call us (from a different phone) at 303-284-0979.



That's it! Please feel free to email [support@sparkfun.com](mailto:support@sparkfun.com) if you have any questions about how to use your phone.

The looks from family, friends, and even bartenders as the Portable Rotary Phone rings for the first time have given us endless amounts of entertainment. We know you will enjoy using your new phone!

First attach the battery pack to the charger and then plug the charger into the wall. Be sure that the red wires always connect together.

The charger has a *Power* light, a *Charge* light, and a *Fault* light. Plugging the charger into the wall, the Power and Charge lights should come on. The Charge light will go out when charging is complete. Reconnect the battery to the phone, repeat the power up steps and reseal the phone.

**Caution:**

- If at any time, the Fault light comes on, dis-