



## 1 Overview

Congratulations on your purchase of the first Port-O-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 v2

The new firmware v2 has many new features:

- Built-in charger
- Dial tone
- 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

**Caution:** The shell of the phone is attached to the base of the phone. Be careful when opening the phone.

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 and the power switch.

### 2.2 Inserting the SIM Card

The Port-O-Rotary phone uses industry standard SIM cards. The customer must provide their own SIM card for use. Currently in North America, T-Mobile® and AT&T Wireless® use this type of small chip to store the user's account information. SIM cards proliferate Europe and East Asia. 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.

**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 Port-O-Rotary phone uses 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-O-Rotary phone 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. Once the phone has successfully connected to the cellular network, the phone will short-ring twice. Once you hear two short rings in succession, you are ready to seal up your phone and place a call!

#### 2.3.1 Indicator Lights

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 Port-O-Rotary phone 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.

If the phone runs into problems, the LED labeled PIC will blink an error code. Error codes and their meaning are listed below.

- 1 *Problem with cellular module. Make sure it is seated against the green printed circuit board.*
- 2 *Error entering PIN code. Power cycle unit and try again.*
- 3 *Error setting cellular band. Power cycle unit and try again.*
- 4 *Error setting audio level. Power cycle unit and try again.*
- 5 *Error setting audio level. Power cycle unit and try again.*

If you continue to run into problems, please contact SparkFun Electronics Customer Service at [support@sparkfun.com](mailto:support@sparkfun.com) or 1-303-284-0979 x125.

#### 2.3.2 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 Port-O-Rotary phone 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 Port-O-Rotary phone will detect when you have quit 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 a 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 cellular phone. You should be able to disable the PIN # requirement under the Security Settings type menu. After it is removed, re-insert it into your Port-O-Rotary phone. The unit will now boot without pausing for a PIN # entry.

### 2.3.3 Cellular Band Selection

Different cellular bands are used throughout the world. The Port-O-Rotary phone will attempt to use the North American bands first. If, after 30 seconds, the Port-O-Rotary phone is not able to detect a signal, it will switch to the European bands. The Port-O-Rotary phone will attempt to get a signal on the European bands for 30 seconds. If a signal is still not found, the Port-O-Rotary phone 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 Port-O-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 (assuming you have voicemail with your cellular service). 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 handset is off the hook.

### 2.5 Placing Calls

You can pick up the handset at any time. You will hear a dial tone – as far as we know, the Port-O-Rotary is the only cellular phone that gives you a dial tone.

The Port-O-Rotary phone accepts up to 15-digit phone numbers. You dial just like you would on your cellular phone. For 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 an 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 Port-O-Rotary phone 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 Port-O-Rotary phone will try to connect the call before you have finished dialing! Be sure to have the number ready!

The Port-O-Rotary phone can handle even 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 Phone Power

### 3.1 Charging

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

LiPoly batteries 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 Port-O-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, please use the included charger (5V regulated 1A center positive). The charger plugs into any North American outlet and inserts into the back of the Port-O-Rotary phone.

Please note: Inserting the charger into the back of your phone will disconnect power to the main circuit and you will not be able to receive calls while the phone is charging. This is a nice way to power down the phone without opening the case.

### 3.2 Turning Off/On

Opening the cover of the phone can be a hassle. You can turn off the phone by inserting the charger into the jack on the rear of the phone. If the charger is plugged into the wall, the phone will charge. If the charger is not plugged into the wall, the phone will happily sit in the off state until you remove the charge plug from the phone.

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 Port-O-Rotary phone rings for the first time have given us endless amounts of entertainment. We hope you enjoy using your new phone!



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Warning: The power cord on this product contains lead, a chemical known to the State of California to cause birth defects or other reproductive harm. Wash hands after handling.