



# UHF 433/434MHz USER GUIDE

## Introduction

*Congratulations on your purchase! The new Marshall Scout UHF transmitter combines superior range (about twice the range of the normal Scout) and excellent reliability. This transmitter incorporates many industry firsts to give your bird the best protection available -- long range coupled with reliability and excellent efficiency in a rugged aluminum case:*

- **Frequency Stable**
- **Short and Safe™ 6.5"** Antenna
- **Optional Magnetic Tap On /Tap Off™**
- **Apollo 13 Mode™** battery saving technology.
- Low Battery Sensor
- Long Battery Life, up to 10 days continuous use.
- **Power Line Static Protection™**
- Rugged, Hard-Coat Anodizing
- Machined Aircraft Aluminum Housing
- High Impact Crystal
- Highest **Reliability** possible
- Re-Configurable



## Transmitter Specifications:

*Temperature Range: -40 F to +150 F (with new battery)*

*Weight: 9 grams (leg), 9.5 grams (tail)*

*Standard Operation: 40ms pulse, 58 pulses per minute.*

*Apollo 13 Operation: 20ms pulse, 2200 pulses per minute.*

*Range: 80 miles, line of sight.*

*Battery Life: 10 days, continuous.*

## Battery

The Scout uses the readily available CR2032 Lithium 3 volt Battery. proven by falconers for years. We recommend the Renata CR2032.



Battery is installed negative side down into the transmitter. You should be able to read the text "CR2032" & "+" on the top side of the battery after installation. Always install the battery at an angle towards the tab spring inside the transmitter. Never install battery straight down, as this can damage the battery springs. As soon as the battery is installed transmitter will begin running. Install Lid securely "finger tight". No need for tools or tape. Note: To easily remove the battery, gently tap the transmitter upside down.

**Important:** When installing the lid be sure to tighten it securely (as tight as possible using your fingers). A pair of pliers can also be used if you need a little more torque. An insufficiently tightened lid can come loose.

**Important:** When changing the battery of a Scout equipped with the magnetic switch, please remove the battery for a period of 1-2 minutes before installing a new battery. The Scout "remembers" its state from the last time the battery was removed, and leaving the battery out for this period will clear the memory. For non-magnet equipped Scouts, there is not need to wait to install the new battery.

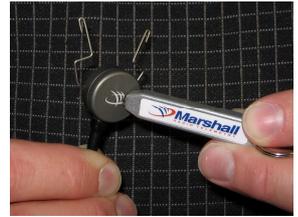
## Battery Life

The Scout will transmit for about 10 days continuous with a new battery installed. The Scout will warn you when there are approximately 5 days remaining on the battery with a "double beep" every 10 pulses. The transmitter keeps track of cumulative transmission time to estimate remaining battery life. As a backup system it also measures battery voltage in real time, which will warn you should you accidentally put in an old battery.

### Tap On /Tap Off™ Switch (optional)

If so equipped, the Scout uses the unique Marshall Tap On/Tap Off™ magnetic switch to turn the transmitter on and off. You can leave it on bird while not in use, removing only to change battery. To turn Scout off, touch magnet to battery lid until you hear 5 rapid beeps on receiver as confirmation (the delay is to prevent accidental turn-off.) Repeat process to turn back on, confirmed by 3 rapid beeps. If you lose magnet, transmitter can be turned on and off by unscrewing the lid. Always double check for transmitter signal by tuning in on receiver before flight, and when turning it off.

**Note:** Due to the ultra-low drain of the Scout circuit, there is no need to worry about leaving a battery in the transmitter after turning off with the magnet – a new battery will be fine after two years in transmitter.



*Turning Off: Hold magnet to base of transmitter until you hear 5 beeps.*

**Apollo 13 Mode™:** If the transmitter has been going for 24 hours, the transmitter figures your bird is probably lost and does what NASA would do in the same situation, conserving battery life with shorter and less frequent pulses. If your bird was lost with a new battery, Apollo 13 Mode would come on after 24 hours giving you a total of 10 days to look for your lost bird. If you lost the bird just before the double beep came on, it would last another 3 days.

### Maintenance

The Scout is completely waterproof and can be washed with hot water. Make sure insides of case and lid are dry before installing battery. **Inspect antenna** and replace as soon as you see cracks or any exposed metal wire. For tail mounts, always inspect the condition of the tail spring. Replace if any cracks or weaknesses appear on spring. For leg mounts, inspect the Bewitt slot for any signs of wear or thinning.

### Replacing the Antenna

The short antenna on Scout is field replaceable. Use only Marshall replacement antennas with *Power Line Static Protection™*, length 6.5. Your Marshall replacement antenna will come with instructions on replacing the antenna.

### Scout Range

The Scout UHF is designed to give best range while on your bird. It has been tested to over 70 miles line-of-sight. Like any transmitter, *range varies greatly with terrain*. Tests have shown its range in hunting situations of western US deserts to be anywhere from 3 to 40 miles, depending on height of transmitter, height of receiver, type of terrain and obstructions, and radio noise or interference.

### Using the Receiver

Signal from Scout is *strongest* if **receiver antenna is lined up in same orientation as Scout antenna**. Since a falcon on a perch keeps tail almost vertical, you will get best signal if holding receiver antenna with its elements vertical. However, there are cases when transmitter's antenna could be nearly horizontal and holding your receiver antenna horizontally will give the better result.



*Bird on perch*



*Bird on ground*

Hint: If **both** horizontal and vertical signals can be heard, use **horizontal** for better pinpoint accuracy.

### Customized Transmitter

If your needs change in the future, the frequency (channel) of the Scout can be changed electronically without opening it up. A 216 MHz transmitter can be set anywhere from 216.000 to 219.995. A 173 MHz transmitter can be set to 173.000 to 173.995. Also, the pulse width and pulse rate can be adjusted to give either better battery life or more, longer, easier-to-track pulses. The low battery trigger point can also be set earlier or later if you prefer. The default operational settings are: 58 pulses per minute (ppm), 40 millisecond (ms) pulse width and approximately 7 days before low battery mode begins. Send transmitter to Marshall Radio to custom re-configure it for \$35 plus shipping. One business day turn-around guaranteed.

### Warranty

Marshall Radio Telemetry warrants that the RT+ will be free from defects of workmanship and materials for One (1) Year from the date of purchase by end-user. Return defective transmitter directly to Marshall Radio Telemetry and we will repair or replace it and return it free of charge. However, we will not be responsible for damage from misuse or normal wear and tear incurred during use. Warranty is void if a non-Marshall Radio Telemetry antenna has been used. *Under no circumstances will Marshall Radio be responsible for damages or loss beyond the value of the transmitter itself, including but not limited to the loss of a bird or lost time.*

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