DISTANCE-RC BEACON V2

MANUAL REVISION 2.2

http://distance-rc.com/store/beaconv2

INTRODUCTION

The Distance-RC beacon is a small device that can aid you in locating lost/downed RC crafts. The beacon works by sending out tones in UHF band. There are three tones being transmitted every couple of seconds, each tone is transmitted with a different output power (from 100 to 1 mW). These tones can be picked up with an ordinary PMR-446 walkie-talkie or any other receiver capable of receiving between 400 and 470 MHz.

Because of the varying signal strength of the tones you will be able to pick up more tones when you get closer to the beacon (or the stronger the signal is). Based on this principle you can narrow down the location of the beacon. Besides locating based on proximity to the beacon you can also narrow down the location of the beacon with the use of directional antennas.

With directional antennas, such as the yagi, you can determine the location of the beacon by aiming the antenna. Because of the directionality of directional antennas you will receive a stronger signal if you aim the antenna right towards the signal source and a lesser signal whey you aim away. Then you can narrow down the location of the beacon by determining in what direction the signal is the strongest. To save energy and make sure that your beacon will not interfere with your RC system the beacon is in standby modus on startup. After a specified delay time the beacon will start transmitting.

WHAT WILL YOU GET?

You will receive one finished beacon with a short JST-lead and wire antenna. Included will also be a short piece of heat shrink to package the beacon and battery.
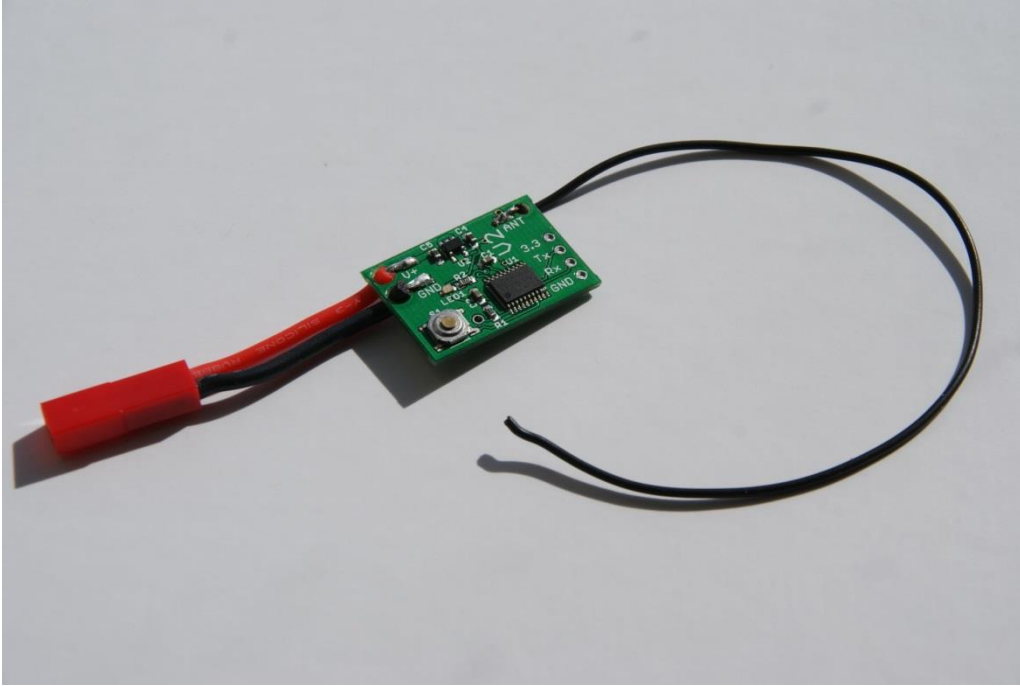
Fig. 1

GETTING STARTED

Because you can specify the frequency and delay you want on purchasing the beacon it is plug & play on arrival. You just need to hook up a 1 Cell LiPo battery (or any power source between 3.4 and 6 volt) to the JST connector.

On applying power the LED on the beacon should blink once indicating that your beacon has powered up and is now in standby mode. To make sure everything is setup as it is supposed to you can transmit a test signal by pressing the button on the beacon.

PROGRAMMING THE BEACON

Although the beacon arrives to you programmed to your specifications you might want to experiment with different settings. To do this you have two options:

1. Programming with the built-in button (this requires no external hardware);
2. Programming via the computer (this requires a 3.3V or 5V USB<->Serial adapter).

For both programming options you need to start the beacon in programming mode. To enter programming mode you have to keep the button of the beacon pressed when you apply power until the LED blinks three times.

PROGRAMMING WITH THE BUILT-IN BUTTON

To program the beacon with the built-in button we have made a flowchart that shows the available options to you. You chose the value you want by clicking the button between 0 and 9 times (e.g. if you want to enter '4' you press the button 4 times). After a second the beacon will confirm the value you entered by flashing the LED (if you pressed the button 4 times the LED will flash 4 times). If you at that time realize you made a mistake you can just enter the value again. To advance to the next item you hold down the button for more than a second until the LED starts flashing the new item number. Once you reach the end of programming a feature the led will blink 5 times to indicate you are done. Until you are done with a feature nothing is saved and thus if you remove power the values remain the old ones.

(Link to the flow chart: http://distance-rc.com/store/download/Beaconprogprocess.pdf)

PROGRAMMING VIA THE COMPUTER

Programming the beacon via the computer opens up a couple of additional options to program and enables you to update the software on your beacon. To be able to 'talk' to the beacon you will need a USB<->Serial adapter.

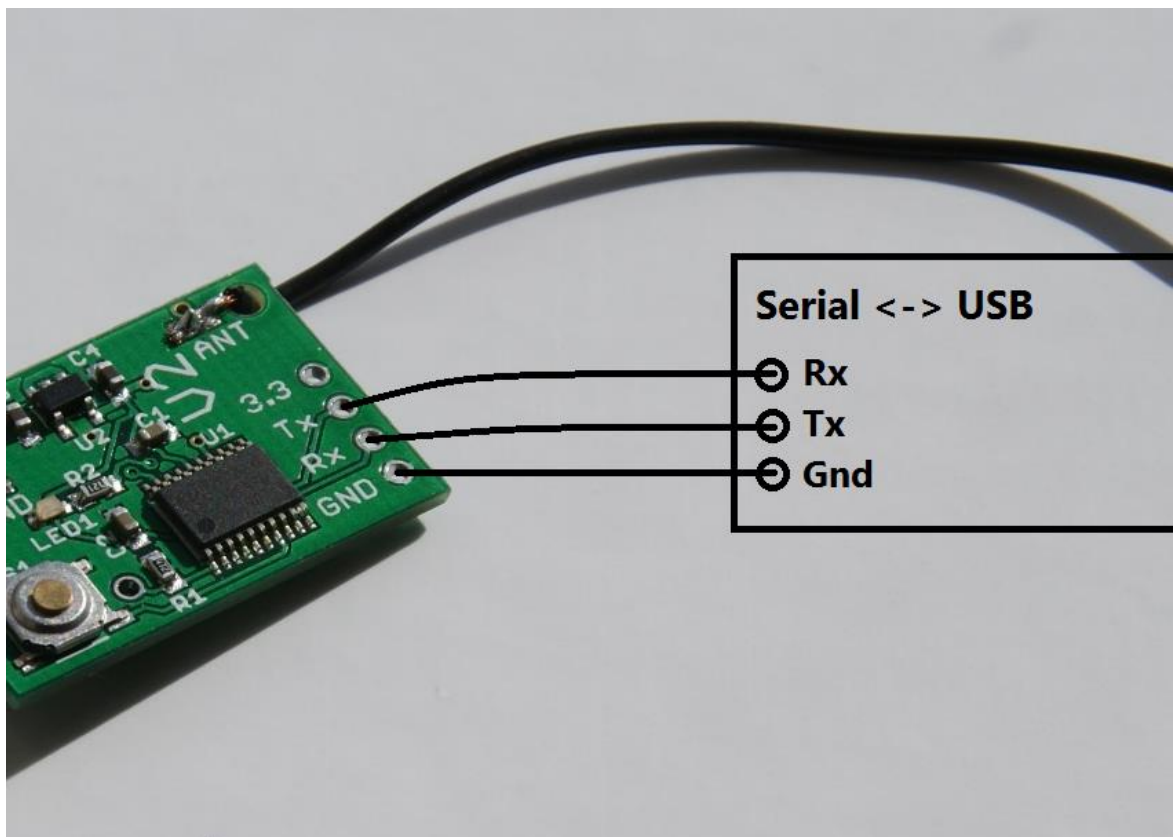(Software: http://distance-rc.com/store/download/BeaconSoftware_V2.2.zip)

Fig. 2

In figure 2 is shown how you should connect the beacon to the USB<->Serial adapter. To read and write settings you have to have started your beacon in programming mode (Button pressed while applying power).
In the user interface of the beacon software you should select the COM port of your serial adapter and click connect. The red cross in the top should turn to a green checkmark (beacon firmware V2.2 required) if the beacon is connected successfully.

The read button reads the settings currently on your beacon. From V2.2 on this happens automatically when first connected.
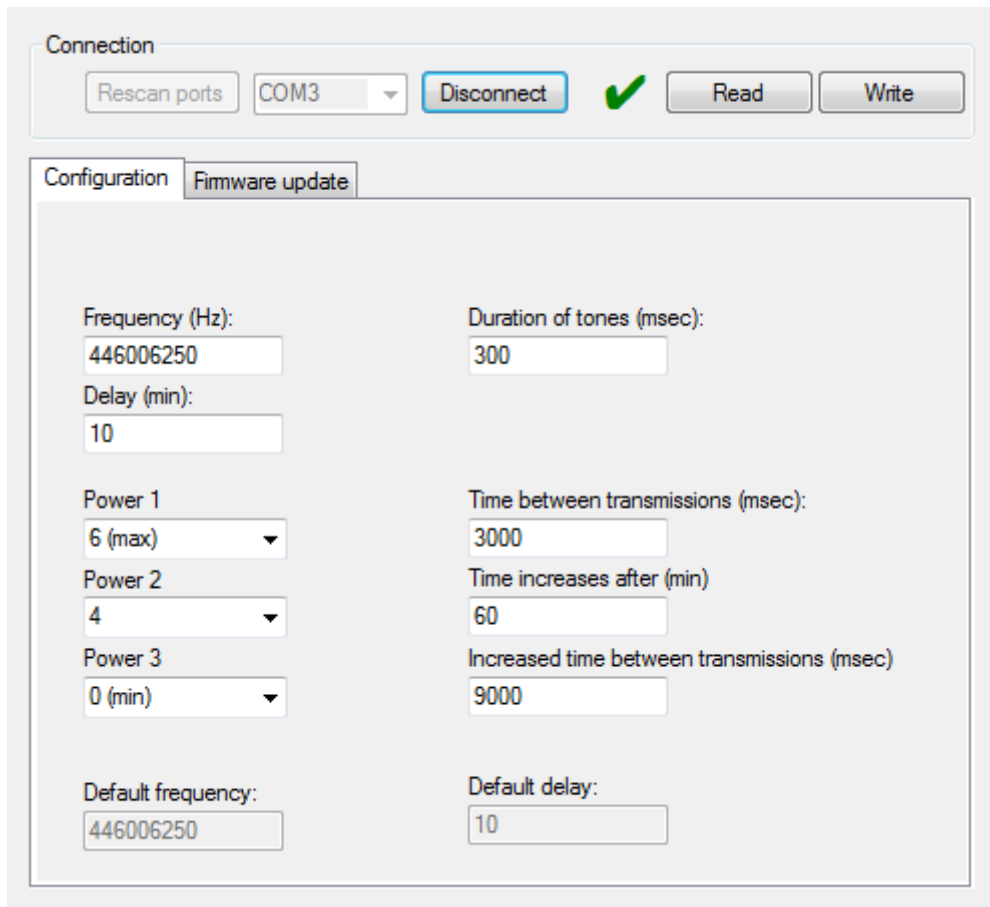

Fig 3.
In figure 3 the configuration software is shown.

CONFIGURATION PARAMETERS

On the configuration tab the transmitting properties of the beacon can be configured. The beacon will come shipped with the factory default frequency and delay chosen when ordering.
The frequency can be set from 400 to 470MHz.
Delay can be set to anything you wish to use. If you want the beacon to start transmitting immediately when turning on, enter 0 delay.

Note that increasing the tone duration will use more power, and deplete the battery quicker.

Since the firmware V2.2 version, growing time between transmissions can be used. If the beacon has been transmitting for a chosen time ('Time increases after') which is 60 minutes in this case, the time between tones will can be set to a longer interval ('Increased time between transmissions'). In this example it is set to 9 seconds. Increasing the time between transmissions after some time will greatly improve battery life, but make the beacon slightly more difficult to find.

You can set custom power levels for the tones. Level 0 is a transmitting power of about 1mW, and level 6 is about 100mW.

If there are transmitting power restrictions in your country for the frequency band the beacon operates on, you may wish to use a lower transmitting power.

If you have changed the parameters you wish to change, click the 'write' button. When you write, the settings that are in the value fields will be written to the beacon. If the data is saved successfully a message will pop up saying so.

FIRMWARE UPGRADE

To upgrade the firmware you have to get the latest firmware file from our site. Select the 'Firmware Update' tab, and then select the file using the pick file button. If you have selected the file you can click the Update button.

Do not disconnect the beacon while updating the firmware. After the flashing is done, you can use the beacon normally again. Your frequency and delay settings will not be erased when upgrading the firmware.

The firmware files can be found on:

Beacon V2.2:
http://distance-rc.com/store/download/Beacon_V2.2.bin

Beacon V2.1:
http://distance-rc.com/store/download/Beacon_V2.1.bin

Contact us

If you have any problems or questions please feel free to contact us at:

info@distance-rc.com

We will do our best to respond in a timely manner.