Yartech Systems

Remote Radio Controller

User & Installation Manual

Version 1.1 (Draft) – 10/2014

1 Overview

The Remote Radio Controller is designed primarily for helicopter applications, but may be suitable for other aviation applications.

The controller allows the pilot to select frequencies, change volume/squelch, etc from switches or push buttons on the cyclic control stick. This means the pilot can manage the operation of the radio without removing a hand from the controls.

2 Features

- 8 inputs, allowing up to 8 switch/button combinations.
- all inputs are fully configurable.
- easily configured from a laptop.
- works with MGL V6/V10, XCOM 760 and SL30 compatible radios.
- firmware upgradeable from a laptop.

3 Configuring

3.1 Default Configuration

Although the Remote Radio Controller is fully configurable, it does have a default configuration. The controller is normally shipped with this configuration, this assures that the controller is in a usable working state. The controller can be set back to this default configuration at any time by pressing the Default button in the configuration tool.

Debounce	10 mS
Repeat Delay	500 mS
Repeat Rate	200 mS
Hold Delay	1000 mS

Table 1: Default Global Configuration

Input	Switch	Function in Channel Mode	Function in Frequency Mode
1	Top Hat Up	Increment Channel	Increment Frequency
2	Top Hat Down	Decrement Channel	Decrement Frequency
3	Top Hat Left	Flip Active/Standby	Flip Active/Standby
4	Top Hat Right	Desquelch	MHz/KHz Toggle
5	Mode Switch		
6	n/c		
7	n/c		
8	n/c		

Table 2: Default Input Configuration

3.2 Configuration Tool

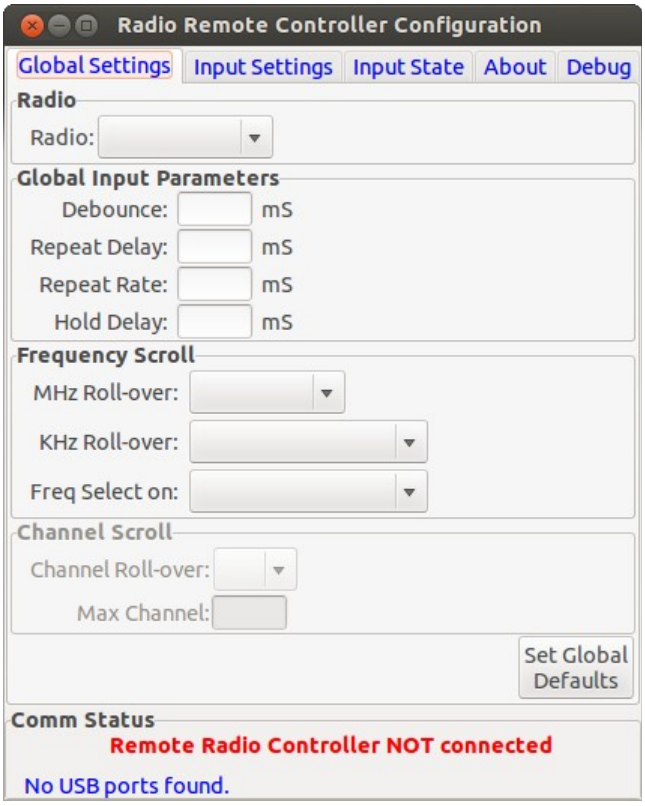
The Configuration Tool is an application that runs on a desktop or laptop computer. This tool is currently supported on the Windows and Linux platforms, and will be supported on the Mac platform in the future.

The Configuration Tool is used to select radio type, define input functions, adjust input timing parameters and upgrade the Remote Controller firmware.

3.2.1 Connecting the Configuration Tool

The configuration tool is connected to the Remote Radio Controller via a USB cord. Remove the controller endplate from the opposite end to the DB-15 connector and plug in a standard mini-USB cord. This cord is commonly used to connect cell phones, cameras, etc., and is readily available from electronics suppliers.

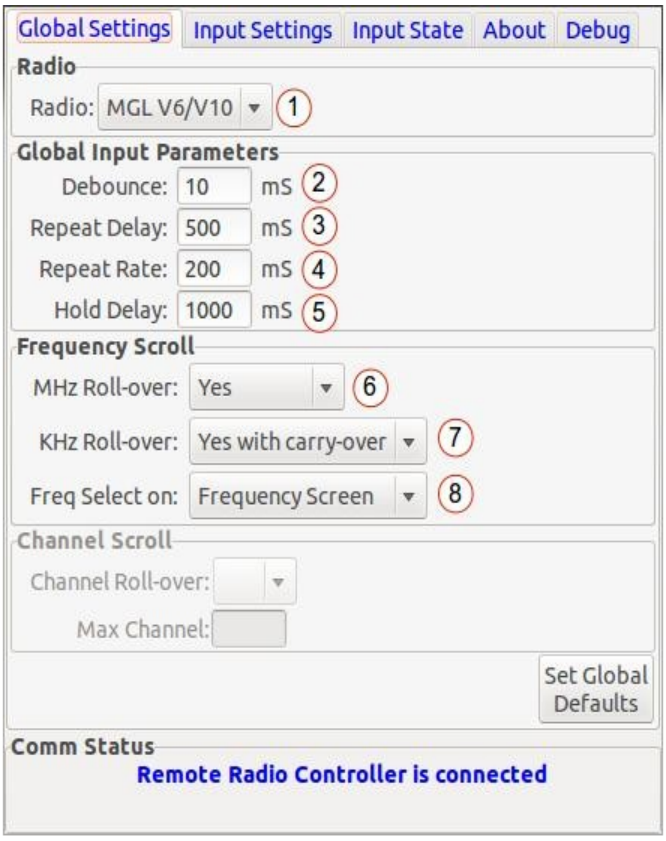
When the configuration tool is first launched, you will see the message “Remote Radio Controller NOT connected” at the bottom. The configuration tool will automatically poll all available USB connections until it finds the Remote Radio Controller.



It is not neccesary to have power connected to the Remote Radio Controller in order to configure it, the controller will power from the USB. This allows you to remove the controller and configure it at a more convenient location.

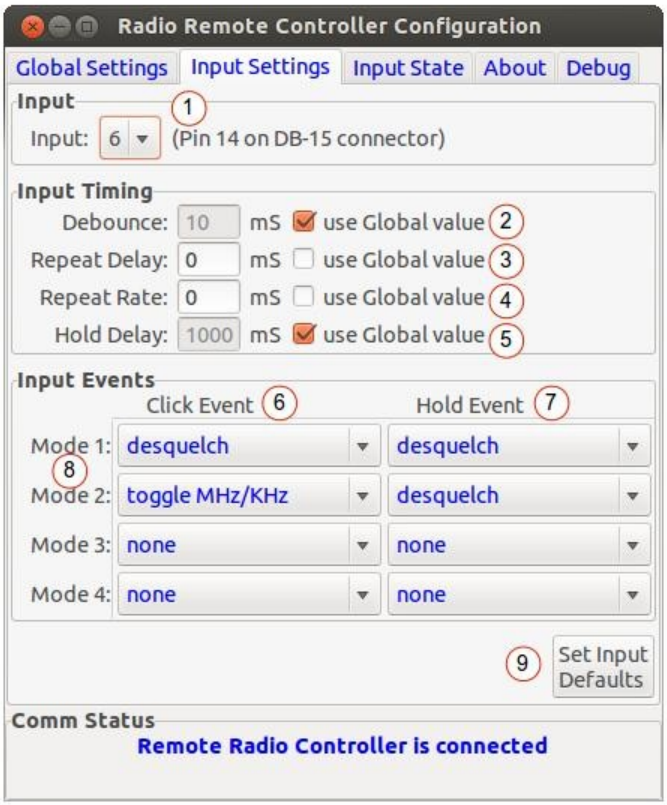
3.2.2 Using the Configuration Tool

When the Configuration Tool has found the Remote Radio Controller, the parameters for this controller will be downloaded and displayed.



3.2.2.1 Global Settings

1. **Radio** – selects radio connected to controller.
2. **Debounce** – sets the sensitivity of the input. Too small a value will cause the input to jitter (ie. may activate more than once on a single push), too large a value will make the input sluggish.
3. **Repeat Delay** – if repeat is enabled on an input, this value sets how long the switch must be activated before it begins to repeat.
4. **Repeat Rate** – when repeat mode has been activated, this value sets how fast the input will repeat.
5. **Hold Delay** – if hold is enabled on an input, this value sets how long the switch must be held before it activates a hold event.
6. **MHz Roll-over** – when MHz frequency is scrolled to one end, this setting determines whether the frequency will roll-over to the other end or just stop scrolling.
7. **KHz Roll-over** – this sets whether the KHz frequency will roll-over. This can also be set to bump the MHz frequency when the KHz frequency rolls over.
8. **Frequency Select on** – this sets the screen to be used for selecting frequency. This is a temporary fix until some MGL bugs are resolved.

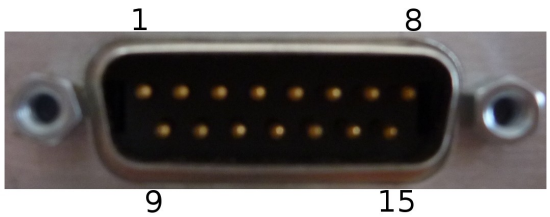


3.2.2.2 Input Settings

1. **Input –** select the input you wish to configure. The input pin for this input will be displayed to the right.
2. **Debounce** - sets the sensitivity of the input. Too small a value will cause the input to jitter (ie. may activate more than once on a single push), too large a value will make the input sluggish. If the ***use Global value*** box is checked, then the value defined in Global Settings will be used.
3. **Repeat Delay** – if repeat is enabled on an input, this value sets how long the switch must be activated before it begins to repeat. Set to zero to disable repeat mode. If the ***use Global value*** box is checked, then the value defined in Global Settings will be used.
4. **Repeat Rate** – when repeat mode has been activated, this value sets how fast the input will repeat. If the ***use Global value*** box is checked, then the value defined in Global Settings will be used.
5. **Hold Delay** – if hold is enabled on an input, this value sets how long the switch must be held before it activates a hold event. Set to zero to disable hold mode. If the ***use Global value*** box is checked, then the value defined in Global Settings will be used.
6. **Click Event** – select the function that will be triggered by a click event (ie. a short button press) on this input. The controller can be set to any one of 4 modes, a function must be selected for each of the modes you plan to use.
7.

4 Installation

4.1 Connector Pinout

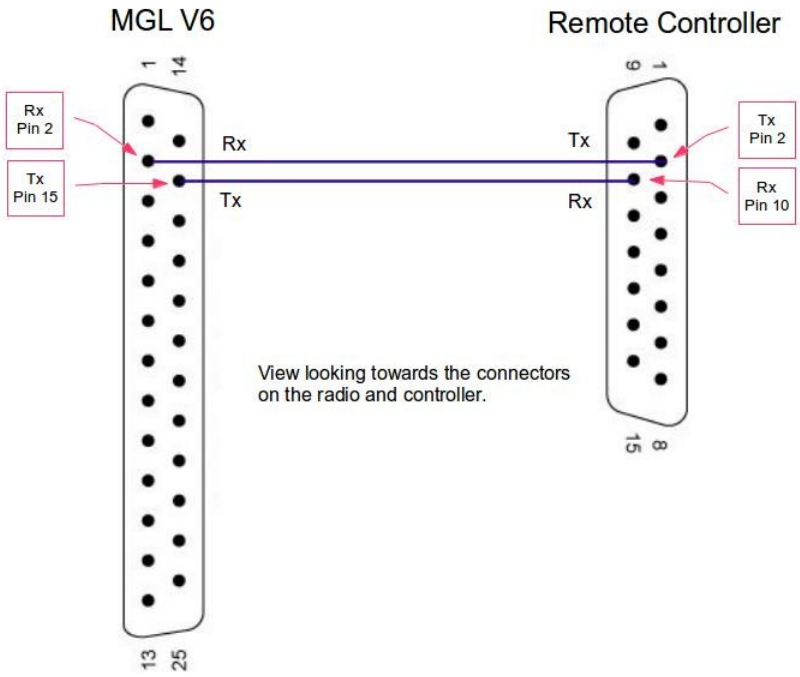


View looking to end of controller

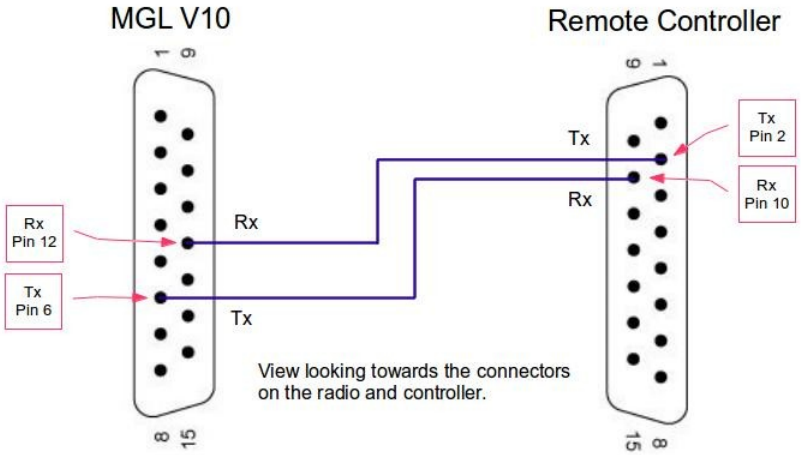
DB-15 Connector

Pin	Function
1	Power (+10 to +30 volts)
2	Serial Tx
3	not used
4	Input 1
5	Input 3
6	Input 5
7	Input 7
8	Input Common
9	Power Ground
10	Serial Rx
11	not used
12	Input 2
13	Input 4
14	Input 6
15	Input 8

4.2 Serial connection to MGL V6

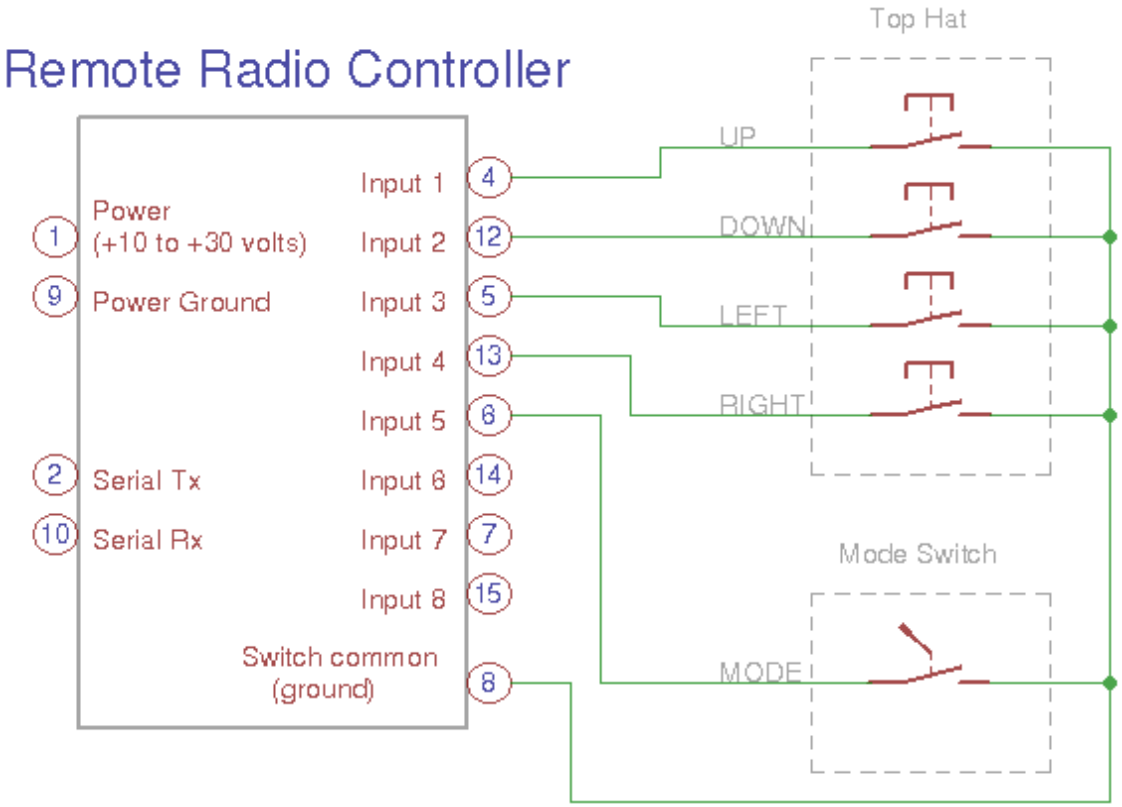


4.3 Serial connection to MGL V10



4.4 Typical Switch Wiring Diagram

Below is an example of a typical wiring diagram of the connections to the switches. This example switch arrangement is consistant with the default input configuration. You can of course use many other switch configurations to satisfy your application requirements.



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