Timpdon Electronics

UltraRad Radio System
Controller Model *URC5*

The ***UltraRad*** Controller Model ***URC5*** for battery electric vehicles is designed to interface the ***UltraRad*** radio control system to a third party electronic speed controller.

In addition to an external ESC with a BEC, the ***URC5*** requires the following additional ***UltraRad*** radio system components, supplied separately:

- ***UltraRad* Radio Transmitter Model *UTX1***
- ***UltraRad* Radio Receiver Model *URX1***

Features

- Can be used with any third party standard radio control electronic speed controller, fitted with a BEC to provide 5V power to the controller and radio receiver.
- Connects directly to any ***UltraRad*** radio receiver.
- Can be locked to any ***UltraRad*** transmitter.
- Digital microprocessor controlled.
- Standard servo output to ESC.
- Two 5V, 20mA switched outputs under reverser control for forward and reverse lights.
- Additional 1A solid state switch output for control of horn or other auxiliary.
- Small size – 35mm x 20mm x 12mm, excluding connector pins.
- Plug connector for direct connection to ESC. Flying lead with plug for connection to radio receiver. Flying leads for lights, horn and transmitter lock switch.

Introduction

The ***URC5*** controller is designed for modellers who wish to use ***UltraRad*** radio control on battery electric vehicles which require higher power motors than can be accommodated using the standard range of ***UltraRad*** controllers with built in electronic speed control.

The ***URC5*** generates a standard radio control speed servo output which can be fed directly to an external third party electronic speed control designed for standard radio control systems to provide fully proportional speed control in both forward and reverse.

The ESC used must be fitted with a battery eliminator circuit [BEC] capable of providing 5V at 50mA, to provide power to the ***URC5*** and the ***URX1*** radio receiver.

The following manufacturers make ESCs suitable for use with the ***URC5***:

Mtronics	Viper Range	www.mtroniks.net
Roundhouse	Locoglyde	www.roundhouse-eng.com
Electronize		www.electronize.co.uk

Lighting

The ***URC5*** has two additional switched outputs for the control of directional forward and reverse vehicle lighting.

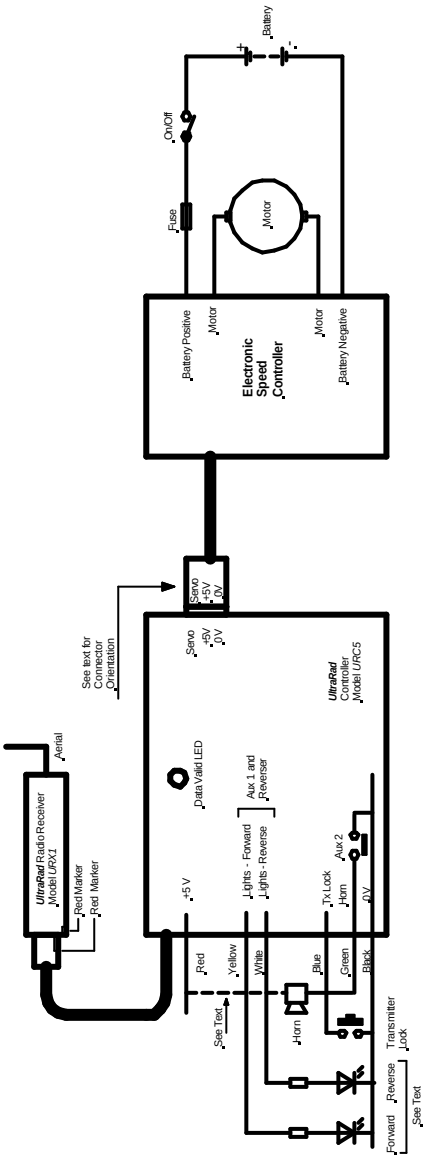
Both outputs generate a 5V output rated at 20 mA maximum each. This is adequate to power up to 4 LEDs on each lighting circuit – see below for connection details.

Lighting On/Off is controlled by the **Aux 1** transmitter switch, and the forward/reverse setting is controlled by the Reverser switch.

Horn

The ***URC5*** has an additional switched 1A output, controlled by the **Aux 2** transmitter switch for control of a horn or other auxiliary output. This switch is rated for load voltages up to 12V.

Installation and Wiring



Notes

1 Plug the flying lead into the connector on the ***URX1*** radio receiver. Make sure that the **red wire** is on the **same side** as the **red marker** on the ***URX1***. **If you apply power with this connector reversed, you may irreparably damage the *URX1*.**

2 Before plugging the ESC into the ***URC5***, check that the wiring of the ESC radio connector corresponds to the order shown in the wiring diagram and that you have oriented it correctly.

If the wiring on the RC receiver connector of the ESC you are using does not correspond to the order shown, you will need to change the pin order in the ESC connector to match.

All of the ESCs manufacturers recommended by *Timpdon Electronics* wire their connectors to the standard shown.

3 Forward and Reverse lights are connected as shown in the wiring diagram.

Use LEDs only. The outputs are not adequately rated for incandescent bulb loads.

A resistor must be connected in series with each LED and the cathode of the LED connected to the **black** wire. A resistor value of 680 ohm will give a LED current of about 5 mA, which is adequate for most applications.

If you use more than one LED on each lighting circuit, a separate resistor is required for each LED.

4 The Horn or auxiliary load, if used, is connected between the **red** and **green** wires, with the positive connection to the **red** wire.

As shown in the wiring diagram, the horn is connected to the internal 5V supply. Alternatively, if a higher supply voltage is required, it may be connected to the main battery positive supply, provided that this does not exceed 12 V.

5 Connect the single pole push button switch supplied between the **blue** and **black** wires as the transmitter lock switch. The switch should be mounted in a convenient position on the vehicle where is can be easily accessed.

Data Valid LED

The **Data Valid** indicator will flash once each time a valid radio control data packet is received from the ***UltraRad*** transmitter.

In general, data is transmitted approximately once every second, increasing to a maximum of three transmissions a second when settings values are being changed.

On first power up, this indicator will not flash, as when the ***URC5*** is shipped, it is not locked to any transmitter.

On first use, therefore, you must lock it to your transmitter, following the instructions below.

Transmitter Lock

The ***URC5*** will respond only to a single ***UltraRad*** radio transmitter, to which it has been locked. The transmitter to which it will respond can be changed by the user at any time, using the following procedure.

1. Ensure that only the ***UltraRad*** transmitter to which the ***URC5*** is to be locked is powered up in the vicinity.

2. Apply power to the ***URC5*** and ***URX1***.

3. Press and hold the **transmitter lock** push button for about 2 seconds, and then release it. As soon as the ***URC5*** locks to the transmitter, the **Data Valid** indicator will flash in synchronism with the **Transmit** indicator on the ***UltraRad*** transmitter.

4. Your radio control system is now fully operational, and will remain locked to the selected transmitter until you change it again. The lock setting will be remembered when you remove power from the ***URC5***.

Other Timpdon UltraRad Radio Control Products

Transmitters

Model ***UTX1***	**For Battery Electric Vehicles** Analogue speed channel Digital Forward/Stop/Reverse channel Two digital auxiliary channels
Model ***UTX2***	**For Live Steam and Battery Electric Vehicles** Analogue speed channel Digital Forward/Stop/Reverse channel Two digital auxiliary channels Reverser Trim Control Vehicle Servo Programming

Receivers

Model ***URX1***	Compatible with all ***UltraRad*** transmitters

Controllers

Model ***URC1***	**For battery electric vehicles** Bi-directional PWM speed controller
Model ***URC2***	**For battery electric vehicles** Bi-directional PWM speed controller 2 Auxiliary digital outputs for lights and horn
Model ***URC3***	**For Live Steam Vehicles** Regulator Servo Output Reverser Servo Output Steam Whistle Servo Output Auxiliary digital Output for lights