
Introduction

In the **UltraRad** radio control system, all transmitters operate on the same frequency, 434.20 MHz.

Differentiation between different transmitters is achieved by a unique serial number embedded within each transmitter during manufacture which is included in each transmission made by the transmitter.

Each **UltraRad** receiver and controller will respond only to transmitted messages bearing a particular serial number. The transmitter serial number to which any individual controller will respond is user selectable, and is changed by a transmitter lock procedure as follows:

- 1 The controller is placed into transmitter lock mode either by an external switch input to the controller, or by a lock command incorporated within the data transmitted from the transmitter.
- 2 On the next transmission received by the controller from any transmitter, the controller decodes the transmitted serial number from within the transmission data and saves the value to non-volatile memory within the controller.
- 3 As soon as the controller locks to a transmitter the **Data Valid** indicator on the controller will start to flash in synchronism with the **Tx** indicator on the transmitter.
- 4 Subsequently, when normal operation is restored, on each subsequent transmitted data packet received the transmitted serial number is again decoded and compared with the stored lock value. If the two values are identical, the controller will respond to the transmission. Otherwise, it will be rejected and no action taken.

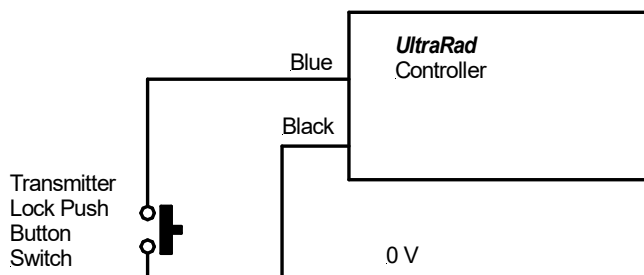
The **UltraRad** system permits a total of 65536 separate transmitter serial numbers.

Transmitter Lock Methods

As described above, there are two separate methods of initiating a transmitter lock procedure, local and remote:

Local Lock

This method may be used with any **UltraRad** controller and transmitter, and requires an external push button switch, fitted to the vehicle incorporating the controller, connected between the **blue** wire and the 0V supply to the controller [**black** wire], as shown below:



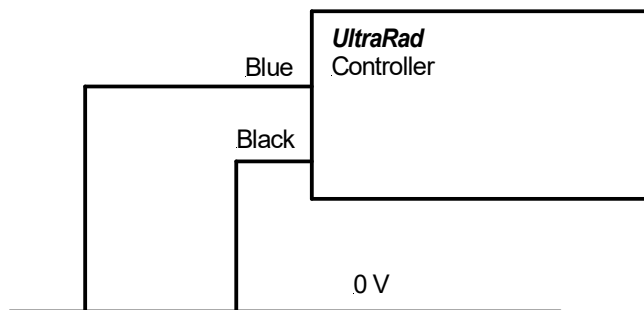
Whenever the **Transmitter Lock** push button is pressed, the **UltraRad** controller will lock to the next transmission received from any nearby **UltraRad** transmitter, so you must ensure that only the transmitter to which you wish to lock is energised in the vicinity during the lock procedure.

If you intend only to use your **UltraRad** system with a single transmitter, you can dispense with the push button switch and simply temporarily connect the **blue** wire to the 0V supply [**black** wire] on the single occasion you will need to perform the lock procedure. Thereafter, the **blue** wire should be left disconnected and taped up to prevent accidental contact.

Remote Lock

This method may be used with any **UltraRad** controller, but requires an **UltraRad** transmitter Model **UTX2**. It is not available when using the **UTX1** transmitter.

To permit remote lock, the **blue** wire on the **UltraRad** controller must be permanently connected to 0V [**black** wire], as shown below:



Transmitter
Lock push
button switch

First ensure that the **UltraRad** controller is switched off, and the **UTX2** transmitter is switched on.

Then to perform a lock, turn on the **UltraRad** controller and, within 20 seconds, press and hold the recessed **Transmitter Lock** push button switch on the side of the **UTX2** transmitter, using a pencil point or similar object, and hold pressed until the **Data Valid** indicator on the controller starts flashing.

To minimise the risk of someone else pressing the **Transmitter Lock** push button on a different transmitter and taking over control of your vehicle, the remote lock function will only work for a period of twenty seconds on each occasion that an **UltraRad** controller is powered up. Thereafter, it is disabled. It is also disabled permanently if the **blue** controller wire is disconnected from 0V and taped up.

Before performing a remote lock function yourself, make sure that nobody else has an **UltraRad** system energised in the vicinity.