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**RAPTOR**  
**GP**



**RAPTOR**  
**TEMPEST**

**DIGITAL 8 CHANNEL WIRELESS  
STEERING WHEEL BUTTON SYSTEMS**

**INSTALLATION AND USER GUIDE**

FOR **PRO** AND **CLUBMAN** VERSION RECEIVERS

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## RAPTOR GP INTRODUCTION

In the box you will find the following parts to the system;

- The Button Plate Transmitter Assembly
- The 12 volt Receiver Module
- Wiring loom
- Decal Set
- These Instructions



Clubman Version shown

You will have noticed that the entire button plate is made from a 3.2mm FR4 (RoHS Compliant) custom circuit board. This not only gives you an extremely tough and hard wearing button plate, it integrates the wiring right into the design. FR4 is a composite material comprised of woven fiberglass cloth with an epoxy resin binder that is flame resistant (self extinguishing). It also has impressive water resistant characteristics so it's ideal for open cockpit cars.

The push buttons have been soldered to the board and bonded on. There are no user serviceable parts on the button plate, apart from battery replacement.

The buttons have been specifically selected to provide the right level of tactile responsiveness as well as being IP65 Rated for water ingress. Again, a great choice when using this system in an open cockpit race car.

The transmitter electronics are protected by a 3M conformal coating and located under the Raptor Transmitter Cap. The cap is held in place with Neodymium magnets to ensure it can be removed easily and remains in place appropriately.

The transmission system uses similar RF technology to that of a remote door locking for a regular passenger car. It uses a dedicated frequency band of license free radio waves to communicate on and each transmitter is paired exclusively with one receiver during the manufacturing process. This ensures that no two systems are the same and eliminates any potential cross talk present in other similar systems.

The typical range of transmission is in excess of 150ft LoS, so the receiver module can happily be fitted anywhere inside the vehicle. Ideally, up under the dashboard on the occupant side of the firewall.

## RAPTOR TEMPEST INTRODUCTION

In the box you will find the following parts to the system;

- The Tempest Pad Transmitter Assembly
- The 12 volt Receiver Module
- Wiring loom
- Decal Set
- These Instructions



Clubman Version shown

Built on the core technology and circuitry of the Raptor GP, the Raptor Tempest provides all of the same functionality with an OEM look and feel. The transmitter electronics are housed in a custom designed central pad, moulded from Polyurethane Rubber to complement many existing finishes.

Although firm, the central pad is semi-flexible to allow for the pad to be clipped over the steering wheel frame and subsequently removed for battery access.

As with the GP, the push buttons have been soldered to the circuit boards and bonded in place. There are no user serviceable parts on the button plate, apart from battery replacement which is performed on the back of the pad once removed.

The buttons have been specifically selected to provide the right level of tactile responsiveness as well as being IP65 Rated for water ingress. Again, a great choice when using this system in an open cockpit race car.

The transmitter electronics are protected by a 3M conformal coating and located on the rear of the central pad.

The transmission system uses similar RF technology to that of a remote door locking for a regular passenger car. It uses a dedicated frequency band of license free radio waves to communicate on and each transmitter is paired exclusively with one receiver during the manufacturing process. This ensures that no two systems are the same and eliminates any potential cross talk present in other similar systems.

The typical range of transmission is in excess of 100ft LoS, so the receiver module can happily be fitted anywhere inside the vehicle. Ideally, up under the dashboard on the occupant side of the firewall.

## TRANSMITTER BATTERY PLACEMENT

The Raptor Transmitter contains an integrated Battery Status LED which lights up each time a button is pressed.

Unlike other systems, this can be clearly seen through the GEL Badge of the cap. If the LED is **GREEN**, the battery is good. If the LED flashes **RED**, then the battery is starting to run out needs replacing. Replacing the battery for the transmitter is designed to be easy and can be performed in just a few steps.

For the GP, just pull the transmitter cap away from the board. This will expose the battery compartment.

Access to the battery for the Tempest is provided openly at the rear of the pad.

No tools are required to change the Raptor batteries. The GP cap is held in place securely with 8 Neodymium magnets.

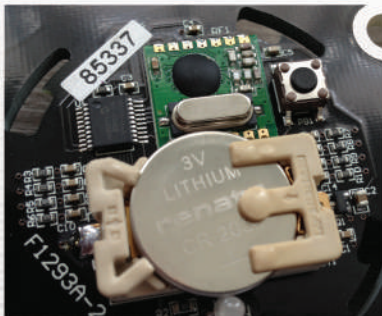
**>> BE CAREFUL NOT TO DAMAGE ANY OF THE COMPONENTS EXPOSED <<**

Replace the battery with one of the same type (**3 volt CR2032**) paying particular attention to insert the new battery with the correct way round.

Once the battery is replaced, replace the transmitter cap on the button plate by lining it up in the same orientation that it was removed.

The battery should last a good while as recent firmware changes have managed to extend the standby battery life significantly, but as with any battery left in the cold for a long time, it will eventually drain and need replacing.

We suggest that you have a spare available in your tool bag just to be on the safe side. They are not an expensive item and are available online or in your local stores.



## ROAD Vs. RACE FIRMWARE SELECTION

The Raptor Receiver Module is programmable by the fitter for enabling the various relay states. The relay states are Momentary, Latching with a Flashing option on both conditions. The DIP switches for enabling these states are clearly marked on the receiver circuit boards.

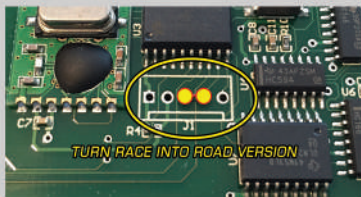
Each Raptor Receiver (PRO or CLUBMAN) has both types of Firmware installed. These are called ROAD or RACE and are selectable by setting the appropriate DIP Switch.

For **ROAD** firmware, the Relay Flash Cycle Rate has been set to 250ms (or 2 Flashes per second). This complies with the legal UK direction indicator flash speed requirements. This will also enable Indicator Cancellation logic to the operation of buttons 3, 4 and 7. (See page 6 for button layout)

For **RACE** Versions, the Relay Flash Cycle Rate has been doubled to 125ms (or 4 Flashes per second). This provides a good rate of flash for using as a 'Flash to Pass' when wired to your Race Car headlights. **Indicator cancellation will NOT apply.** Changes are made to each relay mode with the use of the DIP switches on the Raptor Receiver Board.

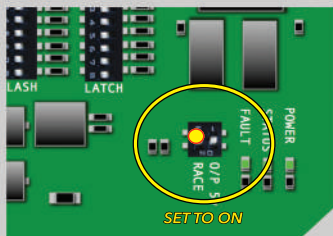
### CLUBMAN RECEIVER

For CLUBMAN Receivers, once the receiver lid is removed, identify the jumper pins from the diagram below. Bridging these pins with the provided pin JUMPER will enable ROAD Firmware. This can be reversed at any time.



### PRO RECEIVER

For PRO Receivers, once the receiver housing is removed, identify the DIP switch from the diagram below. Enabling the DIP switch will enable ROAD Firmware. This can also be reversed at any time.



## DECAL PLACEMENT (Applies to GP and TEMPEST)

We have provided a set of 56 decals to apply directly to each button face. If you are using the Raptor GP for a ROAD based setup (with ROAD Firmware), then you will need to apply the Left, Right and Hazard decals to the button locations shown in this image. This will ensure that the firmware logic works correctly.



It may be the case that the bezels have been removed from the switches during the assembly process. This is quite normal and each of the 8 bezels ( 7 Black, 1 Red (GP ONLY)) will be located in a clear sealed bag along with the PIN Jumper (if using a CLUBMAN receiver).

If the bezels ARE separate from the switches, apply your decals to the switches BEFORE clicking on the switch bezels. This can make the alignment of the decals easier when applying them. Once the outer switch bezels click into place, they can be carefully lifted with a sharp blade on their outer edges.

Once the decals have been applied, click each bezel onto the switches firmly. You will hear and feel a positive click when they are secure.

### **FOR GP ROAD USE - PLEASE ENSURE THAT THE RED BEZEL IS IN POSITION 7**

Once in place, check to make sure that each bezel is flush with the face of the Raptor.

## RAPTOR PAIRING PROCESS

Your Raptor has already been paired and thoroughly tested by Summit Technologies. However, should your transmitter need pairing with your receiver again, this can be accomplished with the use of the Pairing Buttons on both the transmitter and receiver.

### **To RE-PAIR your transmitter**

With access to both the Transmitter components and Receiver boards, perform the following steps. Ensure that the transmitter has a good battery and the receiver is powered up from the vehicle.

1. Hold the Pairing button down on the Receiver Module
2. While still holding the receiver button, press the Pairing Button on your transmitter

Once the 2 have paired, the Receiver LED will flash to confirm the pairing.

The system will not lose it's pairing should any power be lost, as it is programmed on the boards EPROM.



## HARDWIRING THE TRANSMITTER FOR 12V (GP ONLY)

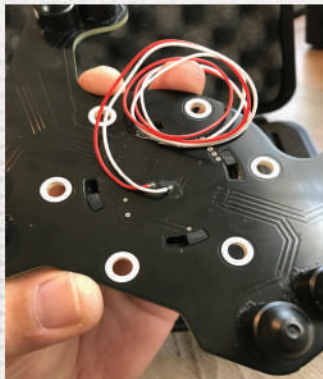
Your Raptor GP transmitter board has the option of hard wiring a dedicated 12v power supply. If you wish to use this function, please follow these instructions carefully.

On the rear of the transmitter board (Button Plate), you will find 2 empty solder terminals.

With the rear of the board facing you, the +VE connection is to the left and slightly recessed. The GND connection is to the right (As shown in this photo).

These solder points will accept a 12v Switched or permanent live connection from the vehicle.

When using this feature, **DO NOT** use the internal battery at the same time. This will damage the battery / circuit board. This is an 'Either / Or' option only. **DO NOT** use a rechargeable battery as the Raptor GP doesn't have battery charging components as part of the board.



The advantage of hard wiring the power to the transmitter board is that you will never require a battery for the system to operate correctly.

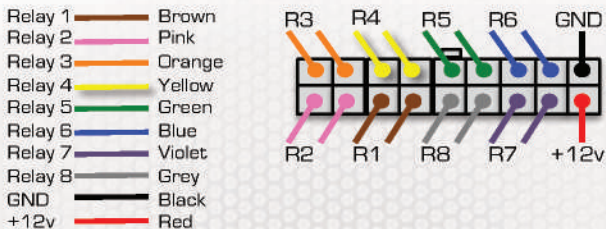
It is possible to use a removable steering wheel boss that includes a 2 pin 'Horn' connection for this purpose. This will give you a dedicated power supply to your Raptor transmitter, and retain the removable functionality of your steering wheel.

An example of a removable steering wheel boss that supports the 2 pin wiring connection.

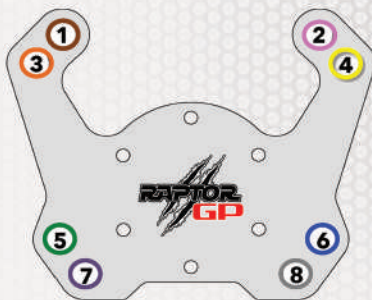


## CLUBMAN RECEIVER FITTING and WIRING

Terminal block wiring loom connections.



Note that the button positions are different for both transmitters



In the CLUBMAN Receiver, each of the coloured paired wires are unloaded connections to both sides of the Individual Internal relays, meaning that whatever voltage you send down one of the coloured wires, when the corresponding button is pressed, that same voltage comes out of the other same colour wire.

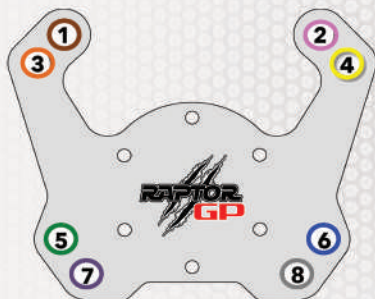
As all channels and relays are independent, it means that you have have multiple voltages on different channels (|providing that you do not exceed 10 amp load) or have some channels connect to GND. Useful for ECU map changes.

## PRO RECEIVER FITTING and WIRING



PRO Receiver terminal block wiring loom connections.

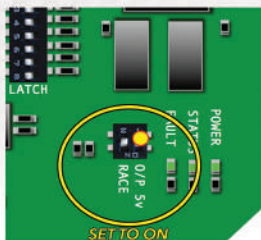
Note that the button positions are different for both transmitters



Be aware that **ALL** channels will output a voltage when operated. If you need to switch to GND then you will need to trigger a separate relay from the appropriate channel.

The RAPTOR PRO receiver has a global setting of either 12v or 5v output by selecting the DIP switch located on the receiver board. Once set to ON, the output will be 5v globally across of the all outputs. OFF will be 12v.

GLOBAL VOLTAGE OUTPUT





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