

## Micron MR603a Quick Start Guide

This guide is designed to get you started with MR603a as quickly as possible. More information can be found in the user manual - <http://micronrc.uk/mr603a>.

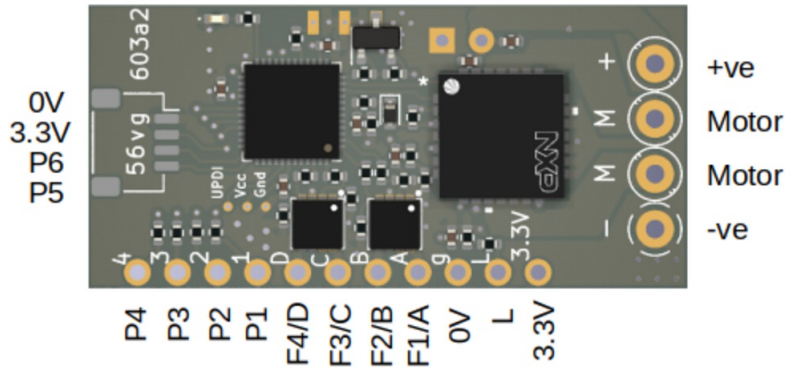
**MR603** receiver is 2.4GHz DSM2/DSMX receiver, with 3A max brushed speed controller, for use in larger scale model rail locomotives and road vehicles. It is compatible with any Spektrum DSM2 or DSMX transmitter including all of the Micron [model rail transmitters](#). The voltage range is 4.5V to 20V.

If purchased with a transmitter, MR603 will be bound to the transmitter and is ready for use; otherwise, it requires binding to your transmitter. Once bound, the transmitter should be switched on before the MR603. If the transmitter is not switched on, MR603 will automatically enter bind mode 10 seconds after switch on; it may also be configured to bind only manually using pads P5 and P6.

### Usage

- Do not bend the receiver circuit board
- Connect the positive and negative input pads to a suitable battery or power supply, via a on/off switch in the positive lead. A resettable fuse **must** be placed in the battery positive lead to protect the battery in the event of a wiring or component fault.
- Connect the 'M' pads to your vehicle motor, removing any connections to track pickups. The motor should be fitted with suppression capacitors to avoid injecting excessive electrical noise into the receiver; 100nF across the motor terminals and 100nF from each terminal to the motor case. If symptoms of motor noise interference persists, 10uH chokes in each motor lead usually solves the problem; the chokes must be rated for the maximum motor current.
- Connect any auxiliary circuits to the F and P pads; the 3.3V pads may be used for powering auxiliary circuits so long as the maximum current drawn is 200mA or less.
- Protect the receiver board before applying power for testing. It must not be allowed to touch anything metal. If MR603 was purchased with the heatshink cover supplied loose, slide this over the circuit board.
- After switching on:
  - the CPU LED will emit a rapid flash followed by a flash count corresponding to the selected configuration (default = 1), shown twice
  - the CPU LED will then slow flash while MR603 is searching for its bound transmitter; if not already bound, approx 10 seconds later the receiver will go into bind mode and the RF LED will show a rapid flash; switch your transmitter on in bind mode and the RF LED will show an irregular slow flash eventually lighting continuously.
- When bound:
  - the CPU LED will be on to show receipt of good data from the transmitter
  - the RF LED will be on and may flicker due to electrical (e.g motor) noise, signal fades caused by reflections, interference from WiFi or Bluetooth signals, or overloading from the transmitter (this will happen if the transmitter is too close)
  - the CPU LED will show a repeated double flash when deselected (transmitter Selecta switch is moved)
  - the CPU LED will show a repeated 5 flash if the low voltage cutoff has triggered
- After testing, apply the heatshrink cover if not already fitted.
- Fix the receiver in place and route the aerial so that the last 30mm can 'see' the transmitter for best range - e.g. by routing through a hole in the vehicle body. The aerial should not be cut short or made longer as this will affect operation. It is important to perform a range check after installation to ensure you have full control of your loco/vehicle at all positions around the layout. Double sided foam-cored sticky tape is ideal for mounting the receiver.

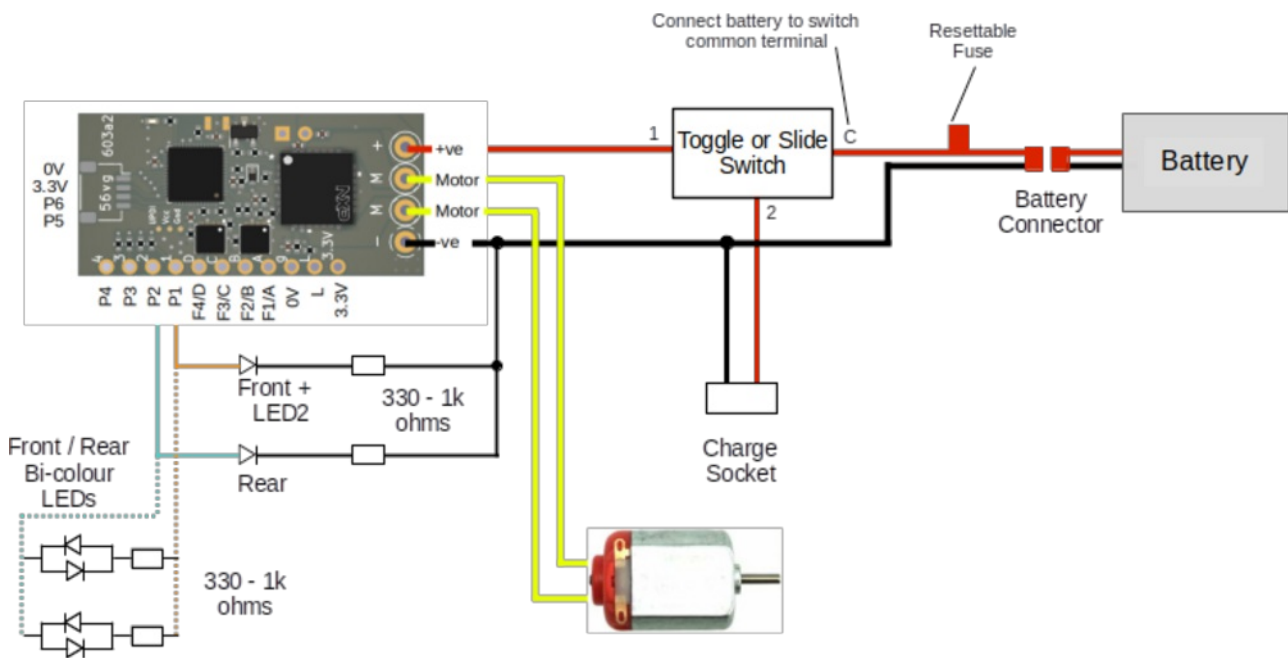
## Connections



MR603 has solder pads for:

- power input (positive & negative battery)
- motor output
- 3.3V from the on-board regulator which can supply a max of 200mA
- an additional battery negative connection (0V) - useful for wiring LEDs to P pads
- L: used to monitor battery voltage when a booster module is used, e.g. to raise a single LiPo cell to 12V.
- P1..P6: these are logic level outputs, 0V when off and 3.3V when on; they can be configured for on/off switching or to output a servo signal; P5 and P6 are at the opposite end of the board to the battery and motor pads, a 4 pin JST-SH socket may optional be fitted to carry these P outputs plus 0V and 3.3V
- F1..F4: these are FET switches capable of up to 2A; they are open circuit when off and connected to battery negative when on; a load should be wired between the F pad and battery positive, or the 3.3V pad for low current loads; labelled A..E on the receiver board and numbered 7..10 for [programming](#)

The simplest use of MR603 requires connection to a battery (via an on/off switch and resettable fuse) and to your loco/vehicle motor.



LEDs on P pads should be connected between the pad and battery negative (0V) with a series resistor appropriate to the required brightness.

Other connection diagrams (e.g. high current lights, sound card triggers) are available on the Micron MR603 web page.

**Take care** when soldering wires to P1..P4 and F1..F4 (A..E) as the pads are very close the radio sub-board. The recommended technique is to fill the pad hole with solder and then attach the wire to the top of the pad on the side opposite to the radio board - i.e. don't pass the wire through the pad hole.