

## Micron MR001c Receiver Programming - v1.0

This document is available on-line at <http://micronrc.uk/mr001c-1.0-progtable> where you will be able to use the links to access information about the functions that can be programmed.

This page contains programming information for firmware versions shown in the page title, information for other versions can be found via [/mr6xx\\_versions](#).

Micron receivers implement a rich set of [features](#) with a common programming interface that allows functionality to be changed using most Micron [model rail transmitters](#) or a joystick Tx. Each row in the table below describes a 5 number sequence (levels 1 to 5) which is used to modify a feature's behaviour - e.g. change the throttle from centre-off to low-off behaviour; set an auxiliary output as servo, on/off, or auto-direction light. Each row also contains a brief explanation of the function accessed by that row and a link to more detail in the features page.

The value for each level of a programming sequence will be indicated by a repeated flash pattern on a receiver's LED. For example, the value 3 is displayed as a sequence of 3 flashes followed by a pause (this is called a 3-flash in receiver and transmitter user manuals). Where appropriate, a value of zero is displayed as a very short flash followed by a pause.

Many table rows specify how a transmitter control is used to activate the receiver function; the row specifies (usually at level 4) a R/C channel. Transmitters encode each control (throttle, toggle switch, push button, etc.) as a number in the range 0..1024 and transmits them in the radio signal as separate R/C channels. The mapping between transmitter controls and R/C channels is described in the user manual for the transmitter. Throttle is usually channel 1, Selecta (if used) is channel 2, the bind button is channel 5, and so on.

Receiver outputs use the channel value directly to provide a proportional response to transmitter control changes. Switched outputs divide the R/C channel range into 2 or 3 positions: low, mid and high where low is a channel value less than 250, high is greater than 750 and mid is 511 +/- a small delta. The transmitter user manual describes the control positions corresponding to low, mid and high and the programming table shows how these low, mid and high values are used to control the receiver output.

For specific information on how to place a receiver into programming mode, see the receiver's user manual. See the transmitter's user manual or [Receiver Programming](#) for information on how to use a transmitter for entering a program sequence.

### Programming Table

[Throttle Configuration](#) | [Servo Configuration](#) | [On/Off Configuration](#) | [General Configuration](#) | [Not used](#)

| Menu   | Level 2          | Level 3   | Level 4                               | Level 5                                | Information  |
|--|------------------|---|---------------------------------------|--|--|
| <a href="#">1 = Throttle Configuration (top)</a> | 1 = Throttle Num | 1 = Centre off (1 ch: fwd/rev) <a href="#">esc-centre-off</a>     | <b>Throttle</b><br>1-10 = R/C Channel |  | Forward and reverse with one control, off at control centre (-100% .. 0 .. +100%). Output must be a 'Throttle Servo' and the purpose of this setting is for control of the auto lights and where the throttle is positioned for emergency stop and failsafe. prog: 1,1,1,1 = Menu1, H1, centre-off, R/C chan 1'  |
| 1  | 1 = Throttle Num | 2 = Low off (2 ch: speed & direction) <a href="#">esc-low-off</a> | <b>Throttle</b><br>1-10 = R/C Channel | <b>Direction</b><br>1-10 = R/C Channel | One control for throttle (0 .. 100%) and another for direction. Each channel goes to separate outputs, the throttle must be a 'Throttle Servo', direction is a 'Normal Servo'. The purpose of this setting is for control of the auto lights and where the throttle is positioned for emergency stop and failsafe. (break){prog: 1,1,2,1,3 = Menu1, H1, low-off, R/C chan 1, R/C chan 3' |

| Menu   | Level 2          | Level 3   | Level 4  | Level 5   | Information   |
|--|------------------|---|--|---|---|
| 1  | 1 = Throttle Num | 3 = Low off to Fwd/Rev (2 ch: speed & direction)<br><a href="#">esc-low2ctr</a> | <b>Throttle</b><br>1-10 = R/C Channel  | <b>Direction</b><br>1-10 = R/C Channel  | One control for throttle (0 .. 100%) and another for direction. Both are combined into a single forward/reverse output, which must be type 'Throttle Servo'.<br>(prog: 1,1,2,1,3 = Menu1, H1, low-off, R/C chan 1, R/C chan 3')   |
| 1  | 1 = Throttle Num | 4 = Not used  |  |   |   |
| 1  | 1 = Throttle Num | 5 = Not used  |  |   |   |
| 1  | 1 = Throttle Num | 6 = Motor reverse<br><a href="#">reverse</a>                                    | 1 = Normal<br>2 = Reversed   |   | Reverse motor rotation  |
| 1  | 1 = Throttle Num | 7 = Not used  |  |   |   |
| 1  | 1 = Throttle Num | 8 = Motor soft start/stop - inertia<br><a href="#">soft-start</a>               | <b>Acceleration</b><br>1 = immediate<br>2 = 0.25s<br>3 = 0.5s<br>4 = 1s<br>5 = 2s<br>6 = 4s<br>7 = 8s  | <b>Deceleration</b><br>1 = same as accel<br>2 = 0.25s<br>3 = 0.5s<br>4 = 1s<br>5 = 2s<br>6 = 4s<br>7 = 8s | Set the rate of throttle change - acceleration and deceleration, which can be set independently or the same. The times are for full range, 0..100% throttle.<br>1,1,8,1,1 = no inertia, motor speed follows the throttle control<br>1,1,8,4,1 = accel and decel over 1s   |
| 2 = Servo Configuration<br><a href="#">(top)</a> | 1-6 = P1-P6      | 1 = Normal Servo<br><a href="#">servo</a>                                       | 1-10 = R/C Channel   | 1 = normal speed<br>2 = slow 2s<br>3 = slow 3s<br>4 = slow 4s<br>5 = slow 5s<br>6 = slow 6s               | Servo PPM signal on any 'P' pad. Default is full throw from full stick movement; can be adjusted using level3=7'. Slow motion times are for end to end rotation.  |
| 2  | 1-6 = P1-P6      | 2 = Not used  |  |   | Placeholder for offset servo  |
| 2  | 1-6 = P1-P6      | 3 = Not used  |  |   | Placeholder for toggled servo   |
| 2  | 1-6 = P1-P6      | 4 = Not used  |  |   | Placeholder for 2 chan servo mix  |
| 2  | 1-6 = P1-P6      | 5 = Not used  |  |   | Placeholder for 2 chan servo mix  |
| 2  | 1-6 = P1-P6      | 6 = Throttle Servo<br><a href="#">servo</a>                                     | 1 = Throttle Num   |   |   |
| 2  | 1-6 = P1-P6      | 7 = Adjust Servo<br><a href="#">servo-adjust</a>                                | 1 = Reverse Servo Direction<br>2 = Adjust Servo Travel   |   | Toggle servo direction or adjust travel using transmitter controls. If the pin is not currently configured as a servo, the receiver will exit programming mode at level 3.  |
| 2  | 1-6 = P1-P6      | 8 = Expand Servo Range<br><a href="#">servo-expand</a>                          | 1 = normal range (1.1ms..1.9ms)<br>2 = +25% (1.0ms..2.0ms)<br>3 = +50% (0.9ms..2.1ms)<br>4 = +75% (0.8ms..2.2ms)<br>5 = +100% (0.7ms..2.3ms)<br>6 = +125% (0.6ms..2.4ms)<br>7 = +150% (0.5ms..2.5ms)<br>8 = +200% (0.3ms..2.7ms) |   | Expand the servo throw range from the default 1.1ms .. 1.9ms (aka 100%) servo pulse width. The actual pulse width range will depend on the range of your transmitter's control. These fixed scaled values can be fine tuned using servi travel adjustment.<br><b>Beware:</b> make sure that your servo can handle the increased range before connecting it. |

| Menu   | Level 2   | Level 3   | Level 4   | Level 5  | Information   |
|--|---|---|---|--|---|
| 3 = On/Off Configuration<br><a href="#">(top)</a>  | 1-10 = P1-P10                                     | 1 = Momentary on/off<br><a href="#">momentary</a>   | 1-10 = R/C Channel                                | <b>Idle off</b><br>P=0V,<br>F=open<br>1 = ch low on<br>2 = ch mid on<br>3 = ch high on<br><b>Idle on</b><br>P=3.3V,<br>F=closed<br>4 = ch low off<br>5 = ch mid off<br>6 = ch high off | 1 R/C channel can control up to 3 outputs, momentary = non-latching.<br>eg: 3,4,1,5,1 = P4, On only when Ch5 is low<br>eg: 3,6,1,5,3 = P6, On only when Ch5 is high   |
| 3  | 1-10 = P1-P10                                     | 2 = Single Action Latching<br><a href="#">latch1</a>                                      | 1-10 = R/C Channel                                | <b>Start off</b><br>P=0V,<br>F=open<br>1 = ch low toggle<br>2 = ch high toggle<br><b>Start on</b><br>P=3.3V,<br>F=closed<br>3 = ch low toggle<br>4 = ch mid toggle                     | 1 R/C channel can control 1 or 2 outputs, each control action toggles the output on/off.<br>(eg: 3,4,2,5,1 = P4, Start off, toggle when Ch5 is low)<br>(eg: 3,6,2,5,2 = P6, Start off, toggle when Ch5 is high) |
| 3  | 1-10 = P1-P10                                     | 3 = Dual Action Latching<br><a href="#">latch2</a>  | 1-10 = R/C Channel                                | <b>Channel high</b><br>1 = >2s toggle<br>2 = <1s toggle<br><b>Channel low</b><br>3 = >2s toggle<br>4 = <1s toggle  | 1 R/C channel can control 1 to 4 outputs. Output selection is based on the time that the control is away from mid value (centre). All outputs start off (P=0V, F=open).   |
| 3  | 1-10 = P1-P10                                     | 4 = Auto Lights<br><a href="#">auto-lights</a>  | 1 = Front<br>2 = Rear<br>3 = Brake<br>4 = Reverse |  | Link output ports to the speed controller status.<br>See 7,7 for setting brake light on time.   |
| 3  | 1-10 = P1-P10                                     | 5 = Not used  |   |  | Placeholder for buffer stop automation  |
| 3  | 1-10 = P1-P10                                     | 6 = Not used  |   |  | Placeholder for stop & reverse automation   |
| 3  | 1-10 = P1-P10                                     | 7 = Not used  |   |  | Placeholder for station stop automation   |
| 4 = General Configuration<br><a href="#">(top)</a> | 1 = LED2<br><a href="#">LED2</a>                  | 1 = LED2 Disabled<br>2 = LED2 Enabled<br>3 = LED2 Enabled (not cruise)<br>4 = LED2 Always | 1-6 = P1-P6<br>7-10 = F1-F4(A-C)                  |  | Any output can drive a LED to mirror the on-board LED.<br>Option 3 is enabled but not after Tx is switched off - aka Cruise Control   |
| 4  | 2 = Not used                                      |   |   |  |   |
| 4  | 3 = Not used                                      |   |   |  |   |
| 4  | 4 = Failsafe / Cruise<br><a href="#">Failsafe</a> | Time to stop after signal loss:<br>1-4 = 1-4s<br>5 = sleep time                           |   |  | Time to kill outputs after signal loss<br>Use 'Sleep time' for 'cruise control' with transmitter switched off],   |
| 4  | 5 = Emergency stop<br><a href="#">EStop</a>       | 1 = Disabled<br>2 = ch low to stop<br>3 = ch high to stop                                 | 1-10 = R/C Channel                                | Time to stop:<br>1-6 = 1-6s  | Manual trigger stop over radio<br>(eg: 7,5,2,3,6 enabled using Ch3 low with 6s decel.)  |
| 4  | 6 = Not used                                      |   |   |  |   |
| 4  | 7 = Not used                                      |   |   |  |   |

| Menu                                  | Level 2                        | Level 3                     | Level 4   | Level 5 | Information   |
|---------------------------------------|--------------------------------|-----------------------------|---|---------|---|
| 4                                     | 8 = Selecta                    | 1 = Disabled<br>2 = Enabled | 1-10 = R/C Channel  |         | Enable or disable the loco selection feature which is compatible with all transmitters that have a Select switch. All transmitters stocked by Micron use R/C channel 2 for Selecta. |
| 4                                     | 9 = Deselect Action            | 1 = stop<br>2 = continue    |   |         | Action when deselected: 'continue' or 'stop', the default is 'continue'.<br>continue: ESC continues at the last throttle setting.<br>stop:throttle smoothly closes                  |
| 4                                     | 10 = Not used                  |                             |   |         |   |
| 4                                     | 11 = Auto-light enable/disable | 1-10 = R/C Channel          | 1 = toggle when ch low<br>2 = toggle when ch high<br>3 = momentary when ch high |         | Enable/disable the auto-direction outputs   |
| 4                                     | 12 = Reset                     |                             |   |         | Restore backed-up configuration or, if no backup, the factory configuration   |
| 4                                     | 13 = Save Configuration        |                             |   |         | Create configuration backup for reset   |
| 5 = Not used<br><a href="#">(top)</a> |                                |                             |   |         |   |