micron radio control

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Micron MR6xx Receiver Programming - v1.0

Micron MR6xx receivers implement a common programming interface which 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 ESC from centre-off to low-off throttle; set an auxiliary output as servo, on/off, or auto-direction light.

A transmitter encodes 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.

Motor and servo outputs use the channel value directly to provide a proportional response to transmitter control changes. Switched outputs usually 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 then 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 switch the output.

Programming Table

Menu	Level 2	Level 3	Level 4	Level 5	Information
1 = ESC Configuration	1 = H1	1 = Centre off (1 ch: fwd/rev) esc-centre-off	**Throttle** 1-10 = R/C Channel		Forward and reverse with one control, off at control centre (-100% .. 0 .. +100%) prog: 1,1,1,1 = Menu1, H1, centre-off, R/C chan 1
1	1 = H1	2 = Low off (2 ch: speed & direction) esc-low-off	Throttle R/C Channel 1-10 = R/C Channel	**Direction** 1-10 = R/C Channel	One control for throttle (0 .. 100%) Second control for direction (prog: 1,1,2,1,3 = Menu1, H1, low-off, R/C chan 1, R/C chan 3
1	1 = H1	3 = Not used			
1	1 = H1	4 = Motor start power min-power	0-10 = Tens (x10) (0-flash = 0)	0-9 = Units (x1) (0-flash = 0)	Minimum power level, the motor will jump to this power when the throttle is opened. (0% for full power range) (eg: 1,1,4,2,5 = Menu1, H1, min power, 25%)
1	1 = H1	5 = Motor max power max-power	0-10 = Tens (x10) (0-flash = 0)	0-9 = Units (x1) (0-flash = 0)	Maximum power level (100% for full power range) (eg: 1,1,4,8,0 = Menu1, H1, max power, 80%)
1	1 = H1	6 = Motor reverse reverse	1 = Normal 2 = Reversed		Reverse motor rotation
1	1 = H1	7 = ESC PWM pwm	1 = 16kHz 2 = 8kHz 3 = 4kHz 4 = 2kHz 5 = 1kHz 6 = 500Hz 7 = 250Hz 8 = 120Hz 9 = 60Hz 10 = 30Hz 11 = 15Hz		Set the speed controller PWM frequency, the default setting is 16kHz
1	1 = H1	8 = Motor soft start/stop - inertia soft-start	**Acceleration** 1 = immediate 2 = 0.25s 3 = 0.5s 4 = 1s 5 = 2s 6 = 4s 7 = 8s	**Deceleration** 1 = same as accel 2 = 0.25s 3 = 0.5s 4 = 1s 5 = 2s 6 = 4s 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. 1,1,8,1,1 = no inertia, motor speed follows the throttle control 1,1,8,4,1 = accel and decel over 1s

Menu	Level 2	Level 3	Level 4	Level 5	Information
2 = Servo Configuration	1-6 = P1-P6	1 = Normal Servo servo	1-10 = R/C Channel	1 = normal speed 2-6 = slow motion	Servo PPM signal on any 'P' pad. Default is full throw from full stick movement; servo travel and reversing can be adjusted using level3 = 7. Slow motion times are roughly equal to the number of seconds for end to end rotation (for an 'average' servo).
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 = Not used			Placeholder for external ESC
2	1-6 = P1-P6	7 = Adjust Servo servo-adjust	1 = Toggle Servo Direction 2 = Adjust Servo Travel		Toggle servo direction or adjust travel using transmitter controls.
3 = GPIO Configuration	1-6 = P1-P6 7-10 = F1-F4 (A-D)	1 = Momentary on/off momentary	1-10 = R/C Channel	Idle off P=0V, F=open 1 = ch low on 2 = ch mid on 3 = ch high on Idle on P=3.3V, F=closed 4 = ch low off 5 = ch mid off 6 = ch high off	1 R/C channel can control up to 3 outputs, momentary = non-latching. eg: 3,4,1,5,1 = P4, On only when Ch5 is low eg: 3,6,1,5,3 = P6, On only when Ch5 is high
3	1-6 = P1-P6 7-10 = F1-F4 (A-D)	2 = Single Action Latching latch1	1-10 = R/C Channel	Start off P=0V, F=open 1 = ch low toggle 2 = ch high toggle Start on P=3.3V, F=closed 3 = ch low toggle 4 = ch mid toggle	1 R/C channel can control 1 or 2 outputs, each control action toggles the output on/off. (eg: 3,4,2,5,1 = P4, Start off, toggle when Ch5 is low) (eg: 3,6,2,5,2 = P6, Start off, toggle when Ch5 is high)
3	1-6 = P1-P6 7-10 = F1-F4 (A-D)	3 = Dual Action Latching latch2	1-10 = R/C Channel	Channel high 1 = >2s toggle 2 = <1s toggle Channel low 3 = >2s toggle 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	1-6 = P1-P6 7-10 = F1-F4 (A-D)	4 = Auto Lights auto-lights	1 = Front 2 = Rear 3 = Brake 4 = Reverse		Link output ports to the speed controller status. See 7,7 for setting brake light on time.
3	1-6 = P1-P6 7-10 = F1-F4 (A-D)	5 = Not used			Placeholder for buffer stop automation
3	1-6 = P1-P6 7-10 = F1-F4 (A-D)	6 = Not used			Placeholder for stop & reverse automation
3	1-6 = P1-P6 7-10 = F1-F4 (A-D)	7 = Not used			Placeholder for station stop automation
4 = General Configuration	1 = LED2 LED2	1 = LED2 Disabled			Any output can drive a LED to mirror the on-board LED. Option 3 is enabled but not after Tx is switched off - aka Cruise Control
		2 = LED2 Enabled 3 = LED2 Enabled (not cruise) 4 = LED2 Always	1-6 = P1-P6 7-10 = F1-F4(A-C)		
4	2 = LVC LVC	1 = LVC Disabled 2 = LVC Auto			Enable or disabled low voltage cut-off. 2-flash = LVC enabled with auto threshold, 3-flash = LVC enabled with manually set threshold. Levels 4 & 5 only apply to manual threshold.
		3 = LVC Manual	Manual threshold (volts): 2-20 = 2-20V	Manual threshold (tenths): 0-9 = 0.1-0.9V	

Menu	Level 2	Level 3	Level 4	Level 5	Information
4	3 = Sleep Sleep	Time before sleep: 1-6 = 1-6 hours 7 = never	LVC sleep: 1 = No 2 = Yes (5 minutes)		Inactivity timeout (1-6 hours) LVC sleep is triggered by Low Voltage Cut (if enabled)
4	4 = Failsafe / Cruise Failsafe	Time to stop after signal loss: 1-4 = 1-4s 5 = sleep time			Time to kill outputs after signal loss. Use 'Sleep time' for 'cruise control' with transmitter switched off
4	5 = Emergency stop EStop	1 = Disabled			Manual trigger stop over radio (eg: 7,5,2,3,6 enabled using Ch3 low with 6s delay - i.e. Ch3 must be low for at least 6s to trigger.)
		2 = ch low to stop 3 = ch high to stop	1-10 = R/C Channel	Trigger delay: 1-6 = 1-6s	
4	6 = ESC Arming Arming	1 = Disabled			Arm the ESC only when the throttle is in the off position. Enabled by default. THINK CAREFULLY before you disable this feature.
		2 = Enabled	1 = H1		
4	7 = Brake On Time	1-6 = 1-6s			The time that the brake light stays on after stopping. The default is 1s.
4	8 = Selecta Selecta	1 = Disabled			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.
		2 = Enabled	1-10 = R/C Channel		
4	9 = Deselect Action	1 = stop 2 = continue			Action when deselected: 'continue' or 'stop': continue - ESC continues at the last throttle setting. stop - throttle smoothly closes the default is 'continue'.
4	10 = Auto-light control AutoLightCtrl	1 = Disabled			Enable/disable the auto-direction outputs using an R/C channel. When this control is enabled, the initial state of auto-lights is disabled (i.e. off). Any other function mapping of the R/C channel remains - e.g. output on/off switching.
		2 = Enabled	1-10 = R/C Channel	1 = toggle when ch low 2 = toggle when ch high 3 = momentary when ch high	
4	11 = Reset				Restore backed-up configuration or, if no backup, the factory configuration
4	12 = Save Configuration				Create configuration backup for reset
4	13 = Select Configuration	1-4 = stored configuration			Select one of the stored configurations, See the receiver documentation for details of each configuration
4	14 = Show Firmware Version				Show the firmware version by flashing the LED (and LED2 if enabled). Firmware versions are 2 numbers: major and minor (e.g. 1.2). The major number is shown first, a pause and then the minor number; a zero is shown as a very brief flash, much shorter than the normal flash. The pattern is repeated until the receiver is switched off.
5 = Radio Configuration	1 = Binding Bind	1 = DSM2/DSMX Protocol	1 = auto 2 = manual		Choose auto or manual bind. The pins/pads for manual bind are specified in the receiver manual.

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