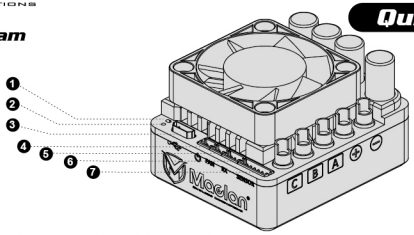
MMax 8 1/8 SCALE COMPETITION ESC

Quick Installation Guide

1. MMax 8 Physical Diagram



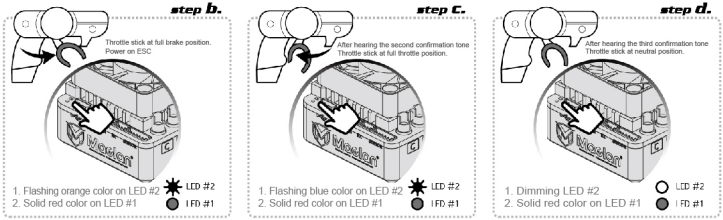
1. LED #1
2. LED #2
3. Micro USB host port
4. Power switch port
5. Fan power port
6. RX receiver port
7. Motor sensor port

2. Power on MMax 8 ESC

There are 2 ways to power on and off MMax 8 ESC: with the included slide switch plugged into the ESC power switch port, it will be controlled by the switch. If the slide switch is not installed, the ESC power is controlled by the battery connection and the ESC will power on as soon as the battery is plugged in. It will then power off when the battery is unplugged.

3. Throttle/ Radio Calibration

a. *Power on your transmitter with the ESC off.*



b. *Hold FULL BRAKE on your transmitter while powering on the ESC. You will get a confirmation tone. You will see a solid RED on LED #1 with flashing ORANGE LED #2. (The flashing ORANGE LED means the ESC is capturing the FULL BRAKE position)*

c. *When the ORANGE LED turns solid, you will get a second confirmation tone. The LED #2 will begin flashing BLUE. Apply FULL THROTTLE now. (The flashing BLUE LED #2 means the ESC is capturing the FULL THROTTLE position)*

d. *When the BLUE LED turns off with a third confirmation tone, release the throttle to neutral position. The ESC is now capturing the neutral position.*

e. *You will get a power-on tone to confirm the calibration process is complete.*

***A complete radio calibration video could be found from Maclan Racing web site and its YouTube channel. Visit the web site to view the complete process.*

4. Programming MMax 8 ESC

There are some options to program your Maclan MMax 8 ESC.

a. *You can connect the MMax 8 ESC to Maclan ProLink (sold separately) via the USB port (ProLink firmware needs to be P01 or later).*

b. *You can connect MMax 8 ESC to a MS Windows 7/10 PC via its micro USB port to change settings. You will need to download the latest Maclan Panel PC software from Maclan Racing web site.*

c. *You can also connect MMax 8 ESC to an Android phone (Android OS version 5.0 or later) via its micro USB port (proper cable required) to change settings and view data log by Maclan Smart Link app.*

5. Firmware Update

a. *Download the latest Maclan Panel software for Windows 7/10 from Maclan-Racing.com*

b. *Power on the ESC with battery, connect the MMax 8 ESC to a Windows 7/10 PC via its USB port.*

c. *Run the Maclan Panel software and follow the instruction on the screen to update firmware.*

6. LED Indicators

	LED 1	LED 2	Actions
Power on & no receiver signal	Red	Blue	LED 1 & 2 flash every sec simotaniously
Power on & ROAR blinky mode	Red	Blue & Orange	LED 1 (solid) + LED 2 (alternating blue & orange)
Power on & race open mode	Red	Blue	LED 1 (solid red) + LED 2 (solid blue)
Power on & vehicle runs forward	Red	Blue	LED 1 (solid Red) + LED 2 flashes blue rapidly to solid (full throttle)
Power on & vehicle brakes	Red	Orange	LED 1 (solid Red) + LED 2 flashes orange rapidly to solid (full brake)
Low voltage cut off	Red	Blue	LED 1 & 2 flash every sec alternatly with motor beeping
ESC temperature cut off	Red	Orange	LED 1 & 2 flash twice every sec alternatly with motor beeping
Motor temperature cut off	Red	Orange	LED 1 & 2 flash 3 times every sec alternatly with motor beeping

MMAX 8 1/8 SCALE 200A COMPETITION ESC

1. Introduction

The MMax 8 sensored Electronic Speed Controller is the ultimate in engineering design from Maclan Racing. Our commitment to quality and exhaustive track testing ensures that the MMax Pro ESC gives you the smoothest power band and reliable performance in the most demanding R/C conditions.

Please read the following instructions carefully before installing your new MMax Pro system.

2. Precautions

- For the best performance and durability, we recommend using MMax 8 ESC with Maclan Racing MR8.3 series motors.
- Please make sure to connect/solder motor wires in correct A/B/C sequence in between ESC and motor. Incorrect sequence will damage ESC permanently.
- MMax 8 ESC is a high end racing product that offers many tuning parameters. If you are not well versed in ESC setup, we have numerous factory default profiles to get you started. If you need help with detailed settings, please contact Maclan directly online for assistance.
- MMax 8 allows control of boost timing set up in the ESC. However, it must to use with correct gearing and motor KV. Any ESC damage caused from excessive boost will not be covered under warranty. This method of tuning the ESC should be done with EXTREME caution and a good knowledge of boost profiles.
- Never “free rev” and brake the motor and ESC system with no load. It can cause extreme spikes that can damage both the motor and ESC, and moreover, will void the factory warranty.
- Do not connect reversed voltage. This will damage the ESC and void the factory warranty.
- Do not leave batteries plugged into the ESC when not in use. This will prevent short circuits and over discharging of the battery.
- Always monitor both the ESC and motor temperature after running them. Temperature should never exceed 180 degrees Fahrenheit.
- MMax 8 ESC adapts a high performance switching BEC. This requires a high quality radio system. 2.4G and higher quality FM radio systems are the most suitable to work with the MMAX Pro system. AM radio systems can cause noise that results in poor performance or operation failure of the MMAX Pro system.
- Due to the natural of the 1/8 application, the cooling fan is not covered by warranty if it’s successfully power on and running.

3. Features

- High performance 32-bit CPU for high speed and accurate processing.
- New generation firmware algorithms for the strongest ever throttle and brake performance.
- On board USB host for the ease of connectivity and unlimited extensibility.
- Dual ‘power-on’ options for the ease of operation. (can be controlled by a switch or direct to battery)
- All aluminum structure with omnidirectional heatsink for maximum airflow and optimum cooling performance.
- All detachable connectors with several optional length cables.
- Adjustable throttle and brake PWM frequency for fine tuning.
- Advanced Boost/Turbo/Over-Boost system for top level racing.
- Motor/ESC temperature protection and low voltage protection.
- MS Windows 7/10 compatible and mobile app software for data logging, programing, and firmware updating.

4. Specifications

Scale: 1/8th Brushless Sensored/Sensorless ESC
Continuous Current: 200A
Peak Current: 1000A
Power input: 2S~6S Li-Po
BEC output: Switching Mode 6V to8.4V, 6A
Wire input: Black-12AWG-200mm*2
Wire output: Black-12AWG-200mm*3
Cooling Fan: 40x40x10mm high voltage turbo fan
Motor: Brushless Sensored/sensorless motor
Dimension: 58x48x34 (mm)
Net Weight: 107g (without wires and cooling fan)
Support Voltage/Motor KV Limit:

- **2S:** no limit
- **3S:** 4000KV
- **4S:** 3000KV
- **6S:** 1500KV

5. MMax 8 Programming Parameters

	Parameters	Values
General Setting	Run Mode	Practice/Race Blinky/Race Mod
	SBEC Voltage	6.0V to 8.4V
	Forward Power	50% to 100%
	Reverse Power	25% to 100%
	Sensor Mode	Full Sensored/ Smart Sense
	Motor Rotation	Normal/ Reverse
	Battery Cut Off	Disable/ 6.0V to 19.2V
	Motor Temperature Cut	Disable/ 160 degrees F (71 degress C) to 220 degrees (104 degrees C)
	ESC Temperature Cut	Disable/ 160 degrees F (71 degress C) to 220 degrees (104 degrees C)
	Motor Poles	2/4/6 Pole
	Quick Boot	On/ Off
Brake Setting	Brake Strength	0% (disable) to 100%
	Brake PWM	3.2KHz/4KHz/5KHz/6.4KHz
	Brake Curve	100% ~ 10% / Linear / -10% ~ -100%
	Drag Brake	0% to 100%
	Initial Brake	0% to 50%
Throttle Setting	Throttle PWM	5KHz/6.4KHz/8KHz/9.6KHz
	Throttle Punch	1% to 100%
	Throttle Curve	100% ~ 10% / Linear / -10% ~ -100%
	Dead Band	1%~10%
Advanced Timing Setting	Acceleration Boost Timing	0 to 10 Degrees (1 degree incremental)
	Top Speed Turbo Timing	0 to 10 Degrees (1 degree incremental)
	Turbo Delay (sec)	0/0.05/0.1/0.15/0.2/0.25/0.3/0.35/0.4/0.45/0.5/0.55/0.6/0.65/0.7/0.75/0.8/0.85/0.9

Parameter 1: Run Mode
Options are Practice/Race Blinky/Race Open.
Practice allows all settings to be adjusted on the ESC. Also, it allows reverse. Race Blinky locks out reverse and does not allow any boost and turbo to be enabled. Race Open mode locks out reverse while maintaining all advanced timing adjustability.

Parameter 2: SBEC Voltage
Options are from 6.0V to 8.4V in 0.1V Increments.
A higher voltage will make servos react faster at the expense of a shorter life span. However, do not set SBEC Voltage above the servo manufacturer’s recommended voltage.

Parameter 3: Forward Power
Options are from 50% to 100% in 1% Increments. This setting allows you to limit the forward power.

Parameter 4: Reverse Power
Options are from 25% to 100% in 1% Increments. This setting allows you to limit the reverse power.

Parameter 5: Sensor Mode
Options are Full Sensored and Smart Sense
The Full Sensored mode will operate the ESC in sensored only mode. It will provide the highest performance and smoothest power at all times. The Smart Sense mode will allow the Esc to operate with either a sensorless or sensored motor depending on the sensor cable installation. This option can be helpful in the case of sensor wire malfunction or failure.

Parameter 6: Motor Rotation
Options are normal and reverse.
This allows for the changing of motor rotation for some specific chassis that require to run a reversed motor rotation.

Parameter 7: Battery Cut Off
Options are Disable, 2S/4S/6S Li-Po
This parameter monitors the Li-Po pack voltage. If the voltage drops to the setup value, the ESC will reduce the power output to the motor to avoid battery damage.

Parameter 8: Motor Temperature Cut
Options are Disable/ 160 degrees F (71 degrees C) to 230 degrees (110 degrees C).
This parameter displays both Fahrenheit and Celsius (℉ and ℃) for easier reading. When the motor reaches the setup temperature value, the ESC will reduce the power output to the motor to 30% to avoid overheat damage.
Note: This temperature is read from the sensor unit circuit inside the motor can. There can be discrepancies between the temperature that you capture on the outside of the motor can and what the sensor board is indicating.

Parameter 9: ESC Temperature Cut
Options are Disable/ 160 degrees F (71 degress C) to 230 degrees (110 degrees C)
This parameter displays both Fahrenheit and Celsius (℉ and ℃) for easier reading. When the ESC reaches the setup temperature value, the ESC will reduce the power output to the motor to 30% to avoid overheat damage.
Note: This temperature is read from the CPU temperature sensor. It may be different from the temperature that you capture from the ESC heat sink.

Parameter 10: Brake Strength
Options are 0% (Disabled) to 100%, in 1% Increments.
A lower Brake Strength percentage will have less powerful brakes, while a higher percentage will have stronger brakes.

Parameter 11: Brake PWM
Options are 3.2KHz/4KHz/5KHz/6.4Hz
PWM stands for Pulse Width Modulation and is rated in Hertz, meaning cycles per second. A lower frequency will have a more aggressive braking feel. A higher frequency results in smoother braking, is more precise, and increases the ESC temperature.

Parameter 12: Brake Curve
Options are 100% ~ 10% / Linear / -10% ~ -100%.
A negative % Brake Curve will have a softer brake feel at the beginning of the brakes being engaged and get more aggressive as the brake is fully engaged. A linear Brake Curve will be uniform throughout the whole brake range. A positive % Brake Curve has strong brakes initially and then becomes softer.

Parameter 13: Initial Brake
Options are 0% to 50% in 1% increments.
This will set the minimum brake force when pushing the throttle trigger from neutral point to the initial brake position. A higher value will provide stronger brake strength when it engages.

Parameter 14: Drag Brake
Options are 0 (disable) to 100% in 1% Increments.
This function will provide a drag force when the throttle is released to the neutral position.

Parameter 15: Throttle PWM
Options are 4KHz/5KHz/6.4KHz/8KHz/9.6KHz
PWM stands for Pulse Width Modulation and is rated in Hertz, meaning cycles per second. A lower frequency will have a more aggressive throttle feel and have less motor RPM. A higher frequency results in smoother throttle, is more precise, produces more motor RPM, but will increase ESC temperatures.

Parameter 16: Throttle Punch
Options are 1% to 100% in 1% Increments.
A lower Throttle Punch percentage will have a slower throttle response and feel softer initially. A higher Throttle Punch percentage will have a faster throttle response.

Parameter 17: Throttle Curve
Options are 100% ~ 10% / Linear / -10% ~ -100%.
A negative % Throttle Curve will have a softer throttle feel at the beginning of the throttle being engaged and get more aggressive as it is fully engaged. A linear Throttle Curve will be uniform throughout the whole throttle range. A positive % Throttle Curve has strong throttle initially and then becomes softer.

Parameter 18: Dead Band
Options are 1% to 10% in 1% Increments
This is the amount of “play” when the throttle is engaged. A setting of lower % will make the throttle engage more instantaneously, while higher % would require more trigger movement.

Parameter 19: Acceleration Boost Timing
Options are 0 (Disable) to 10 degrees in 1 degree increments.
This sets the advanced boost timing strength for more acceleration power.

Parameter 20: Top Speed Turbo Timing
Options are 0 (Disable) to 10 degrees in 1 degree increments.
This sets the advanced boost timing strength for more top speed power.ation power.

Parameter 21: Turbo Delay
Options are
0/0.05/0.1/0.15/0.2/0.25/0.3/0.35/0.4/0.45/0.5/0.55/0.6/0.65/0.7/0.75/0.8/0.85/0.9 sec.
When this parameter is set to 0, the Turbo will be activated right after the throttle trigger is moved to the full throttle position. When it is set to a value, the turbo will be held for the selected delay period. This will provide flexibility for different track layouts.

Warning: Boost and turbo are advanced features for experienced users, and if used incorrectly can damage the ESC or motor system. Make sure to monitor temperature levels in both the speed controller and motor carefully, and adjust gearing as needed. Any system damage caused by boost/turbo/over boost will not be covered by our factory warranty.

6.Factory Profiles

The MMax 8 ESC provides 12 profiles. You can select a corresponding profile for your application. You can also reload factory default settings for each profile via the ProLink or a PC. You can also fine tune all parameters in each profile to meet your needs.

	Profile 1	Profile 2	Profile 3	Profile 4	Profile 5	Profile 6	Profile 7	Profile 8	Profile 9	Profile 10	Profile 11	Profile 12
Parameters	**Buggy High Traction**	**Buggy Low Traction**	**Truggy High Traction**	**Truggy Low Traction**	**4WD SC High Traction**	**4WD SC Low Traction**	**On Road GT8**	**On Road TC**	**6S High Speed**	**Reserve**	**Reserve**	**Reserve**
Run Mode	Race Open	Race Open	Race Open	Race Open	Race Open	Race Open	Race Open	Race Open	Race Blinky	-	-	-
SBEC Voltage	7.4V	7.4V	7.4V	7.4V	7.4V	7.4V	7.4V	7.4V	7.4V	-	-	-
Forward Power	100%	100%	100%	100%	100%	100%	100%	100%	100%	-	-	-
Reverse Power	-	-	-	-	-	-	-	-	-	-	-	-
Sensor Mode	Smart Sense	Smart Sense	Smart Sense	Smart Sense	Smart Sense	Smart Sense	Smart Sense	Smart Sense	Smart Sense	-	-	-
Motor Rotation	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	-	-	-
Battery Cut Off	4S 12.8V	4S 12.8V	4S 12.8V	4S 12.8V	2S 6.4V	2S 6.4V	4S 12.8V	4S 12.8V	6S 19.2V	-	-	-
Motor Temperature Cut	220*F/104*C	220*F/104*C	220*F/104*C	220*F/104*C	220*F/104*C	220*F/104*C	220*F/104*C	220*F/104*C	220*F/104*C	-	-	-
ESC Temperature Cut	220*F/104*C	220*F/104*C	220*F/104*C	220*F/104*C	220*F/104*C	220*F/104*C	220*F/104*C	220*F/104*C	220*F/104*C	-	-	-
Quick Boot	Off	Off	Off	Off	Off	Off	Off	Off	Off	-	-	-
Motor Poles	4 Pole	4 Pole	4 Pole	4 Pole	4 Pole	4 Pole	4 Pole	4 Pole	4 Pole	-	-	-
Brake Strength	80%	60%	90%	70%	80%	60%	90%	90%	80%	-	-	-
Brake PWM	4.5KHz	4KHz	2.5KHz	4KHz	2.5KHz	2.5KHz	4KHz	4KHz	4KHz	-	-	-
Brake Curve	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	-	-	-
Drag Brake	3%	5%	3%	5%	3%	5%	5%	5%	5%	-	-	-
Initial Brake	3%	5%	3%	5%	3%	5%	5%	5%	5%	-	-	-
Throttle PWM	5KHz	6.4KHz	5KHz	6.4KHz	5KHz	6.4KHz	5KHz	5KHz	5KHz	-	-	-
Throttle Punch	80%	65%	80%	75%	75%	50%	80%	80%	60%	-	-	-
Throttle Curve	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	-	-	-
Dead Band	5%	5%	5%	5%	5%	5%	5%	5%	5%	-	-	-
Acceleration Boost Timing	-	-	-	-	-	-	-	-	-	-	-	-
Top Speed Turbo Timing	-	-	-	-	-	-	-	5	-	-	-	-
Turbo Delay (sec)	-	-	-	-	-	-	-	0.05	-	-	-	-

7. Data Logging

The MMax 8 data logging function records major system info in the CPU memory. That includes throttle/ brake position (on mobile Maclan SmartLink app only), motor RPM, ESC and motor temperature. The ESC memory is capable of recording a total of 14 minutes of data. When viewing data through the Maclan ProLink or the Maclan Panel Windows software, it will show you the maximum and minimum of all values. When viewing data through the mobile SmartLink App, you will receive much more detailed information broken down into sessions.

8. Service & Warranty

Your Maclan MMax Pro ESC is guaranteed to be free from defects in materials and workmanship for a period of 30 days. Your original receipt showing the item and the date and place of purchase is required with your warranty service application. An ESC that is found to have been mishandled, abused or used incorrectly, including use in an application other than that for which the ESC is intended, will not be covered under the warranty. Maclan Racing has no control over the use of the ESC application with other electronic devices such as motors and batteries. Maclan Racing is not liable for any loss or damage, whether direct or indirect, incidental, or consequential, or any situation from the use, misuse or abuse of the product. Your MMax Pro ESC is not a toy. This product is not intended for use by a child under age of 14 without adult supervision. The MMax Pro ESC generates a lot of power that could result in physical injuries. By setting up, connecting or operating the product, the user accepts all related liabilities. Maclan Racing's liability shall never exceed the product's original cost.

For all technical questions, please visit www.maclan-racing.com to fill out a contact inquiry form, or e-mail your question to ***service@hobbyauthority-dist.com***

Maclan Racing offers a product trade-in program and reserves the right for all warranty applications. Please visit ***www.maclan-racinng.com*** for details.

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ENDLESS INNOVATIONS

MMAX 8
COMPETITION ESC