

Futaba®

Brushless Electronic Speed controller for helicopter/airplane

Designed for 450-500 Class helicopter

MC-980H/A

Instruction manual



NOTE: Always read this manual before using the MC-980H/A ESC.

- Before using the MC-980H/A
- \* Improper handling of the LiPo battery is extremely dangerous. Use the battery in accordance with the instruction manual supplied with it.
  - \* Some commercial motors may not match advance timing adjustment, etc. of the MC-980H/A.
  - \* Always solder the MC-980H/A battery connection cord to a connector matched to the battery used. Do not use the ESC in a temporarily connected state.

- Mounting precautions
- ⚠WARNING

! Always use the MC-980H/A within the operating conditions range given in the specifications.

! Be sure that the battery polarity is correct.

Reverse connection will cause sparking and immediate destruction or burning inside the ESC.

! Never short circuit even places where there is no battery, motor, receiver, or connector.

Short circuits will cause sparking and immediate destruction or burning inside the ESC.

Mount the ESC so that the soldered part of the cord does not touch conductive parts.
- Connections
- Power is supplied to the Receiver. No receiver battery is required.

Connect only when using brake type reverse in airplane mode. Connect to the SW channel of the reverse switch.

Reverse line

To drive battery

Red is positive and black is negative. It is dangerous to make a mistake in polarity.

[Specification]

	MC-980H/A
Function	Auto recognition of cell
Peak current	80 A
Size	84.3 x 38.2 x 20.4 mm
Weight	96.5 g
Cell	LiPo 3~6 cells 11.1 ~ 22.2 V
BEC	5~8 V / 10 A

MC-980H/A

There is no polarity. If the direction of rotation is opposite, replace any two of the three.

Brushless motor

SBM-2 Connect to display telemetry data on the transmitter.

To S.BUS2

Throttle To CH3

Receiver

If the receiver power is insufficient when the motor starts, connect the attached capacitor to the receiver to free port.

SBM-2 LED: Flashes red and green when telemetry is communicating normally.

The attached split cable is not normally used. Used when there is an update of SBM-2.
- ! Mount the receiver and receiver antenna away from the MC-980H/A, motor cord, power cord, drive battery and other parts through which a large current flows.

If the receiver is overwhelmed by noise, control will be lost and can be extremely dangerous.

! Insert the connectors fully.

If a connector works loose due to vibration, control will be lost and is extremely dangerous.

! Mount the MC-980H/A where it will not be exposed to oil, grease, and water.

! Mount the MC-980H/A to the fuselage where there is an ample flow of cool air.

! Do not wrap the MC-980H/A body in aluminum foil.

Such wrapping will cause a loss of cooling effect and the specified performances will not be obtained.

! Install the motor securely. Also secure all the cables.

⚠CAUTION

! Do not disassemble the ESC. Do not open the case of the product.

Opening the case will damage the interior. In addition, repair will become impossible.
- Operating precautions

⚠WARNING

! Be careful that no part of your body touches parts that rotate during operation.

Unexpected rotation may cause serious injury.

Depending on the receiver, the motor may rotate the instant the power is turned on.

! Always remove the battery when not using the ESC.

If the switch is turned on erroneously, the propeller will rotate unexpectedly or a fire may start.

! Before flying, check operation of the ESC and all the control surfaces.

When not set properly and when a different model is selected, control will be lost and is extremely dangerous.

! Do not fly in rainy weather.

If water drops enter the ESC, control will be lost due to erroneous operation and is extremely dangerous. It may also cause an accident. If the ESC operates erroneously due to the entry of water, repair and inspect it.

! Always turn the power switches ON and OFF in the following order:

ON: Set the throttle stick to the stop position and turn on the power switches in transmitter → receiver order.

OFF: Set the throttle stick to the stop position and turn off the power switches in receiver → transmitter order.

If performed in reverse, the propeller may rotate unexpectedly and is extremely dangerous.

⚠CAUTION

! Do not touch the motor and ESC immediately after flight.

It will cause a burn.
- ESC/Transmitter Calibration

Perform this calibration when using for the first time or when changing transmitter. Let the ESC read the operating range of throttle.

! Before calibration, set the throttle curve of the transmitter to a straight line of -100% to 100%, and set all throttle-related mixing to INH. Make sure that the throttle amount corresponding to the maximum throttle endpoint and the minimum throttle endpoint of the transmitter is 100% and 0%, respectively.
- Turn on the transmitter and move the throttle stick to the high position.

Connect a battery to the ESC, the motor will sound "♪ 1-2-3" to indicate the ESC is powered on normally.

Connect the battery

5 seconds later, the motor will beep two short beeps to indicate the maximum throttle end point is accepted.

Move the throttle stick to the bottom position within 3 seconds after you hear those two beeps, the minimum throttle position will be accepted 1 second later.

Throttle to low

The motor will beep "Number" beeps to indicate the number of Lipo cells you have plugged in.

3cells battery

5cells battery

6cells battery

The motor will beep a long beep to indicate the calibration is complete.

Calibration is complete
- Start-up procedure

If you are in governor mode on a helicopter or use the brakes on an airplane, set the throttle cut switch on the transmitter. Be sure to connect the drive battery in the throttle cut state. Release the throttle cut at the start. After landing, stop the motor with a throttle cut and then remove the battery.

Throttle Low

Turn on throttle cut

Turn on the transmitter, move the Throttle stick to the low position, and turn on the throttle cut switch.

Connect a battery to the ESC, the motor will sound "♪ 1-2-3" to indicate the ESC is powered on normally.

Connect the battery

3cells battery

6cells battery

The motor will beep "Number" beeps to indicate the number of Lipo cells you have plugged in.

Long beep sounds to indicate that the ESC is ready.

Long beep Ready to start !
- Alarm

1.Power-on Abnormal Voltage Protection :

The ESC will measure the input voltage when it' s connected to a battery or power supply. If the input voltage is not within the regulated range, it will take the voltage as an abnormal voltage and then activate the protection, flash Red LED and beep a series of beeps.

2.Throttle Signal Loss Protection :

When the ESC detects loss of signal for over 0.25 second, it will cut off the output immediately to avoid an even greater loss which may be caused by the continuous high-speed rotation of propeller. The ESC will resume the corresponding output after normal signals are received.

3.Throttle stick is not at the bottom position :

The motor will beep "B-B-B-B-B-" when the throttle stick is not moved to the bottom position.

4.Throttle range is too narrow :

The motor will beep "B-B-B-B-B-" when the throttle range you set is too narrow (when designing this ESC, it requires that the entire throttle range you set cannot be less than 50% of the whole throttle range available on the transmitter.) The warning tone indicates the throttle range you set is void and you need to set it again.
- |             |  |  |   |   |
|-------------|--|--|---|---|
| Flight Mode |  | Heli ElfGov : ELF Governor               | Use batteries with different numbers of cells | RPM standardization starts every time       |
|             |  | Heli StoGov : Store Governor             | Recommended mode for using heli governor      | RPM standardization only for the first time |
|             |  | Fixed-wing : Air plane                   |   |   |
|             |  | Ext.Gov : Linear throttle (No Governor ) |   | Throttle curve needs to be set              |
- ⚠ Reverse the throttle channel (CH3) of the Futaba transmitter.

