MODELLFUN MFC ESC INSTRUCTION MANUAL

Bidirectional Governor ESC

Properties:

1. Lost signal protection
2. Super soft start
3. Linear acceleration, increments by 1960 steps
4. max. speed: 200000 R/min 2 pole
5. Operating voltage 5.5V – 22V
6. BEC (Battery Eliminator Circuit) integrated (3A)
7. Intuitive and simple programming through PG card.
8. Govenor mode
9. Low voltage protection: cut off or reduction selectable
10. Variable calibration for multiple receiver types
11. Minimum speed selectable
12. Fly or drive mode selectable (C-Series only)
13. Variable center on drive mode
14. Drive mode braking and reversing selectable
15. Nominal currents: 15A, 30A, 50A, 100A (MF and MFC series)

Usage:

1. Initialising: After connecting the power supply, the ESC will perform a start up routine. If no receiver signal could be detected, it will switch into the "FindMe" Mode and emit beep signals only. If a signal is detected, it must be at 0% in order to unlock the drive control. If the 0% signal is detected for more than 3 seconds, the ESC will release the drive control and the motor will turn on receiver inputs. In case the voltage of the power supply is too high, the ESC will emit three beep signals only and will not release the drive control. The beep signals can only be heard if the ESC is connected to a brushless motor.

2. Safety Features:

   Low voltage protection (standard 5.5V): Electronic fuse on reaching a critical battery voltage. Either motor power reduction or motor shutdown could be selected by the PG card. This feature protects other equipment, such as the receiver and servos from failing on low battery power. In case of this shutdown, the device should be stopped (or landed) as soon as possible and the battery replaced or recharged. Do not leave the battery connected to the ESC after usage. The ESC discharges the battery and on certain battery types it may lead to permanent damage (LIPO).

   Signal loss protection: If the receiver signal is lost, the power will be reduced to 20% in flying mode (drive mode will shutdown after 3 seconds). If the signal is received again, the ESC will immediately react on the signal.

   Temperature Protection: If the ESC temperature reaches 110°C, the power will be reduced to 50% until the ESC cooled down to a temperature of less than 110°C.

   Block Protection: If the motor is blocked, the ESC will not force the motor until it will overheat. The ESC will shut down after several seconds.

The ESC is to be connected to the motor (please use only sensor less brushless motors for RC applications) by the three same colored power wires. If the motor turns into the wrong direction, simply exchange two wires with each other. Power supply is to be connected to the black (minus) and the red (plus) power wire. Please make sure the polarity is correct, there is no protection circuit. Receiver is to be connected through the Futaba Servo Plug. The ESC provides a BEC circuit, which provides power to the receiver and other components on the receivers distribution rail. If you do have a separate receiver power supply (secondary battery), make sure to interrupt the red wire in the servo plug line.

Adjustable Values (Programming by PG Card):

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1. Low voltage protection:(OFFVOLT) adjustable value between 0.00V and 99.9V, to be adjusted according to battery specification.
2. Brake response (BRAKETYPE): three settings: no brake, soft braking and hard braking
3. Timing (ADVANCET): three settings: Low, Mid, High. Depending on the KV value of your motor. Should be adjusted if your motor is getting hotter than normal.
4. Spin up (START): Quickstart, Softstart and Supersoft. Quickstart for small motors with small intertia to run on (high gear ratio, small roting mass). Supersoft for Helicopters to prevent rotor blades from snapping in.
5. Low voltage reaction/Over temperature reaction (OFFTYPE): Two options, power reduction or cut off, Reduction will be at 50% of maximum load, but still be adjustable between 0-50%. by the RX signal. In case of temperature cut off, this function will be disabled again if the ESC cooled down.
6. Synthesizing Frequency (FREQ): two settings: 8kHz (standard), 13kHz. Smaller Motors may reach higher efficiency on the higher setting.
7. Throttle signal scaling (SCALE): Adjustable from -39% to +39%, Is to be used to reach the full throttle travel. Possible scenarios are that full power is reached too early (in this case adjust a value higher than 0%) or that full power is not reached at all (in this case adjust a value lower than 0%). Modern transmitters should be adjustable in the sub trim menu of the transmitter.
8. Govener Mode (SPEEDFIX): setting on/off: Only for helicopter usage. Revolutions will be kept constant if load changes. In normal mode the ESC will be regulated by a power curve, e.g. if the load rises, the revolutions may fall. Similar to cruise control function in real cars.
9. Start RPM (STPERCENT): adjustable value of 0% to 49%. Defines minimum RPM on start up. Useful to prevent high currents on low RPMs.
10. Operating Mode (MODEL): Plane/Car: provides reversing function (only M series).
11. Car Mode Neutral Position (NEUTRAL): Set up the neutral position signal value.
12. Drive Mode: one way, reversible, reversible with stop at neutral.

Usage of PG Card:

The ESC can only be programmed by the program card. To do so, connect the ESC to the program card and connect the power supply to the ESC. Now you will see the software version and after that you will see the main programming menu. With the four buttons you can program the ESC. The first button from the left side changes numeric values (Voltage/Percentage). The second button from the left is used for changing parameters or choosing functions. The third button from the left is used to change between parameter entry and function selection, as well as for confirming the save sequence. The fourth button from the left is used to write the parameters to the ESC. After programming the ESC you must disconnect the power supply to reset the ESC for using it in drive mode.

Programming:

Connect the ESC to the PG card and connect the ESC to the power supply. After some seconds you will find the parameter screen with the numbered functions. By pushing the third button from the left you can change the cursor position and the selected function:

1. OFFVOLT=00.0V-99.9V, Low voltage level set up. With the second button from the left you can change the digits (0-9), with the first button from the left you can change the position. After entering the correct value you can return to the function selection by pushing the third button from the left. By pushing the second button from the left you enter the next function, while the screen scrolls downwards:

2. BRAKETYPE, Now you can change the parameter value by pressing the third button from the left. You can change the presets by pushing the second button from the left.: DIS (brake disabled), SOFT (soft brake), HARD (hard brake). After that you can return by pushing the third button from the left to the function selection. All further parameters can be adjusted as before described. Once you reached the last parameter, the screen will start again with parameter 1.

Further functions are:

3. ADVANCET (Timing), Options: LOW (), MID (middle) HIGH ()

4. START (start motor), Options: FAST (quick start), SOFT (soft start), VERYSOFT (super soft start, f. helicopters)

5. OFFTYPE Low voltage/over temperature reaction, Options: REDUCE (reduce power to 50%). CLOSE (shut down motor)

6. FREQ Synthesizing frequency, Options: 13KHZ, 8KHZ.

7. SCALE Throttle signal scaling, adjustable from -39% to +39%

8. SPEEDFIX Governor Mode, Options ON/OFF

9. STPERCENT (minimum speed), adjustable from 0% to 49%.

10. MODEL (operating mode): Options CAR (reversible, only C series will react). PLANE (Airplane, Helicopter)

11. NEUTRAL (Stop point selection for reversing): Options: 70/30, 60/40,50/50,40/60,30/70. 50/50

12. CARDIR : ONE (just forward), TWO (forward/backward, immediate response), TWO2 (forward/backward with stop function)

3. Calibration of RX Signal:

To release the drive mode, a 0% throttle signal is necessary for 3 seconds. A short beep confirms the release of the ESC drive controller. If you want to calibrate the signal, first set up a 100% signal before power on. Once the ESC confirmed that by a short beep, adjust the throttle to the 0% position. Once it is confirmed by another beep, the ESC releases the drive control. In the CAR mode, after powering on, you must also set up one time a 0% signal. Make sure you selected the proper scaling (70/30, 60/40), if the signal will not meet this mark, the ESC will not release (30 or 40%) the drive control.

Have fun,

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MODELLFUN MF/MFC SERIES BRUSHLESS SPEED CONTROLLER

INSTRUCTION MANUAL

15A - 100A RMS CURRENT REVERSIBLE