

MCS-240 ESC

Introduction

The MCS-240 ESC is well suited for the high amperage, high voltage requirements of large scale RC electric airplanes and EDF jets. The design maximizes robust performance by focusing on motor control and not data acquisition.



US made IR3207 Power MOSFETs tied in parallel provide a theoretical capacity of 720 amps at 75 volts. Conventional derating allows for a 400 amp capacity however thermal realities dictate that MCS offer this product for applications limited to 240A peak/180A continuous when mounted in the air stream. The design supports 16S (67 volt) operation however MCS recommends a limit of 15S (63 volts).

FighterCat Legacy

The MCS-240 is based on the design of the original 400 Amp FighterCat ESC developed for the RC boat racing community. Before FighterCat abandoned their ESC product line MCS sponsored a number of units in electric 50cc and 100cc 3D planes and large EDF's. Field testing was performed by numerous RC associates seeking an alternative to Castle HV "ICE" products over a 2 season period. During that time there have been no failures, consistent cool running and reports of a general increase in power over Castle products which more than compensates for any weight differences.

MCS-240 refinements

The FighterCat design was evaluated by MCS' and resulted in three changes:

1. The PWM switching power device was changed from the original IR2103 270ma (max) linear component to a more effective 2A switching device. This provides more "crisp" transitions in PWM switching resulting in improved thermal dynamics.
2. Supply power input capacitance was increased.
3. All power devices are fully encapsulated within thermally conductive putty joined to the heat sink.

It measures 6"x 2.2" x 0.9", weighs 12.5 oz. complete with installed 6mm bullets and 8 awg. leads long enough for most installations.

MCS-240 Setup Software

The MCS-240 comes configured for the typical high performance EDF:

- *Auto cell count
- * Slow 3.1v Cut Off
- *Brake off
- * 5 deg Timing
- * 8kHz PWM
- * Linear Throttle
- * Automatic Throttle Set Points
- * Medium Acceleration

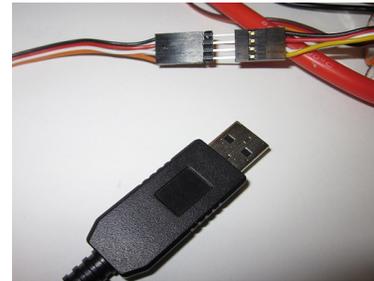
This unit incorporates over temperature protection.

To change the parameters listed above install the provided setup software located on the USB memory stick provided with the ESC into a Windows XP or Win7 computer. It can be installed from the USB port or first copied onto your hard drive.

Name	Date modified	Type	Size
 dotNetFx40_Client_x86_x64.exe	3/18/2010 3:42 PM	Application	41,993 KB
 Prolific_DriverInstaller_v130.exe	7/15/2010 11:41 AM	Application	3,099 KB
 setup.exe	3/11/2013 4:19 PM	Application	418 KB
 Setup1.msi	3/11/2013 4:19 PM	Windows Installer ...	1,222 KB

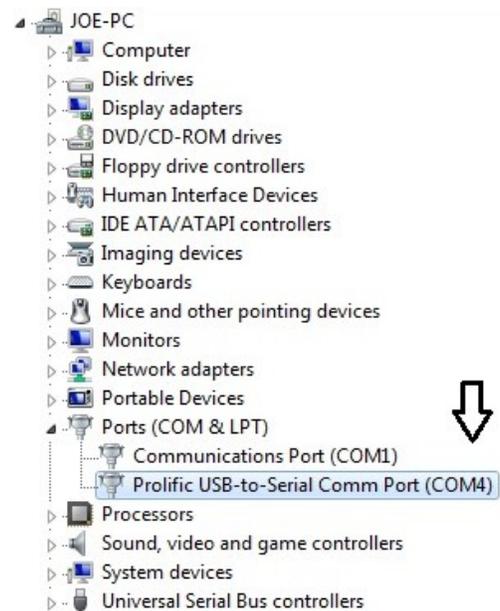
First locate and double click on "**Prolific_DriverInstaller_v130.exe**" to install the USB communication driver. Follow the screen instructions. Next double click on "**Setup.exe**". If you are running an older XP computer it will initiate the ".Net 4" upgrade process which you must "OK" to continue. Follow the screen instructions to complete the installation.

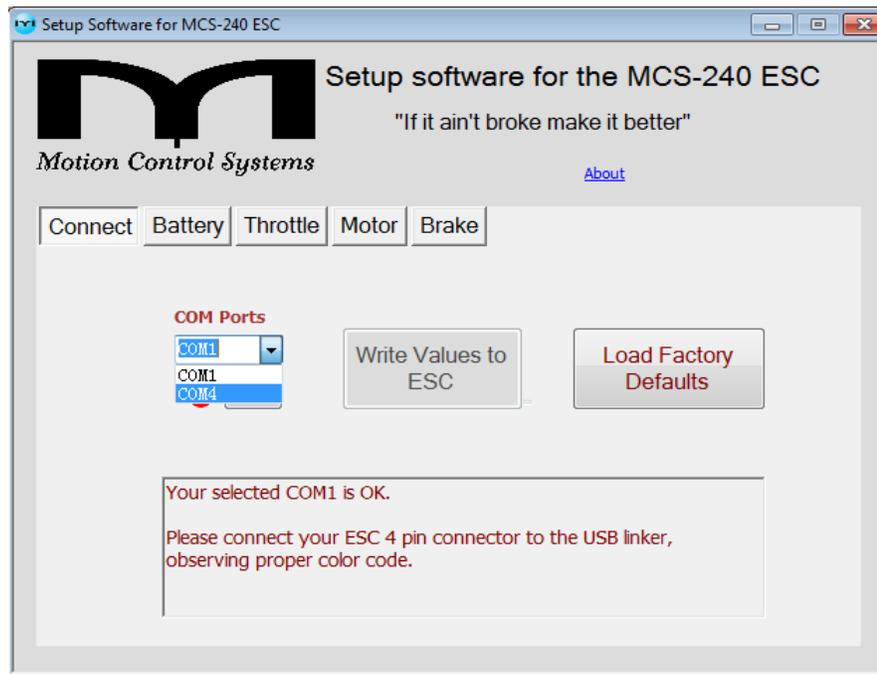
Plug the USP adapter into the 4 pin connector attached to the ESC. Observe color polarity black wire to black wire. Then plug the USB plug into the computer USB port on the computer. If the port is active you will hear a tone shortly after it is plugged in. Otherwise you may have to select another port. The ECS will get all necessary power from the port.



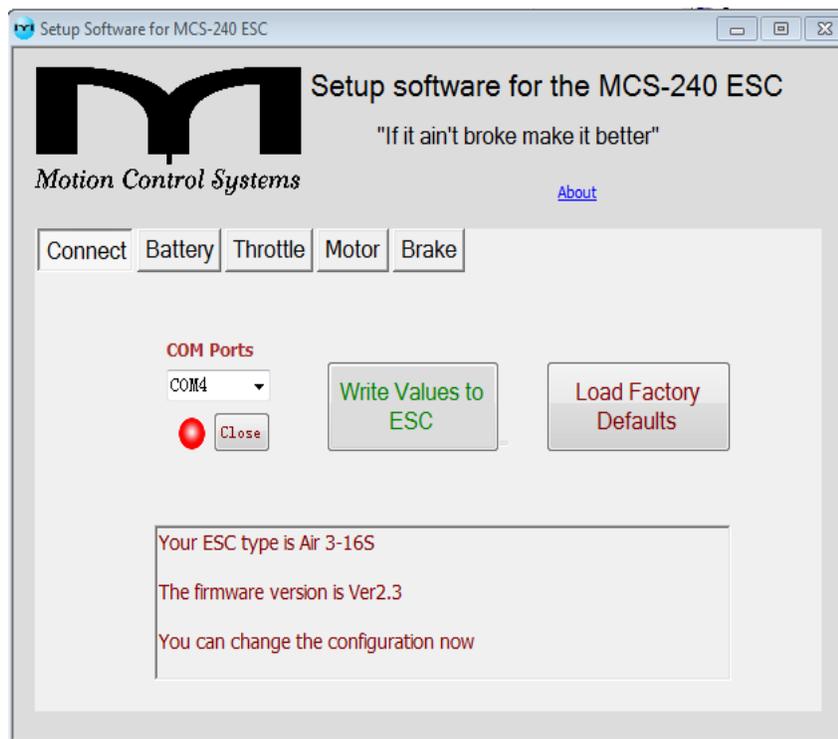
Go to the computers "Device Manager" screen and determine which Comport the Prolific driver is associated with. In the example at the right it is using COM4. In your case it may be a different Com number. The Device Manager is found by going to the "Control Panel" and clicking the "System Icon". If you have difficulty finding it type Device Manager into the computer search window.

Once you have determined which Comport number you will be selecting locate the MCS-Setup icon on the desktop and double click it to start the program.



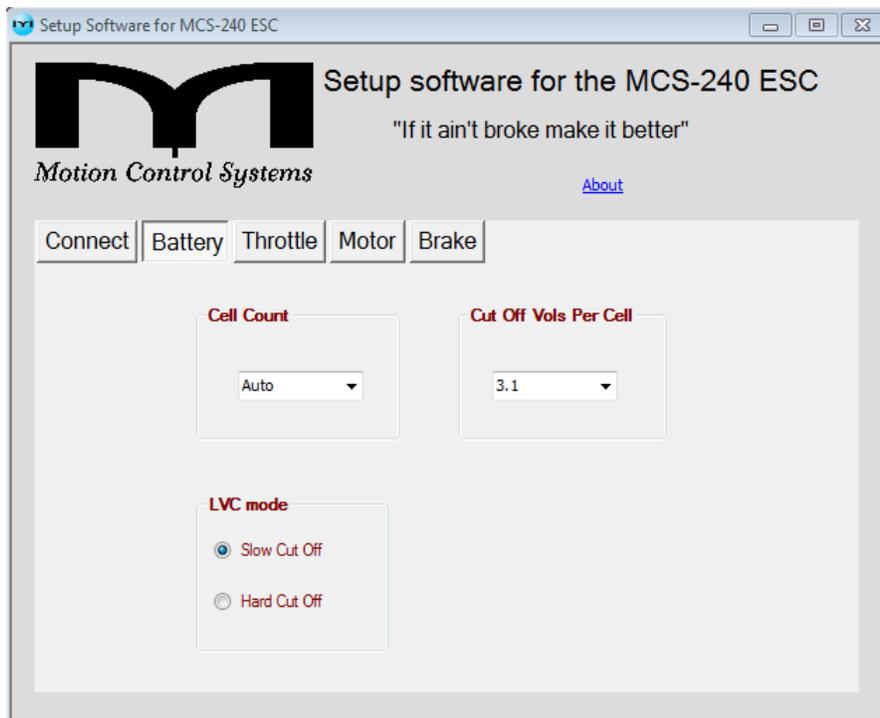


When the Setup program starts you will be presented with the above screen. Click on the arrow just to the right of the COM1 label to pull down the selection menu. Click on the Comport number you found the USB drive associated with in the Device manager.



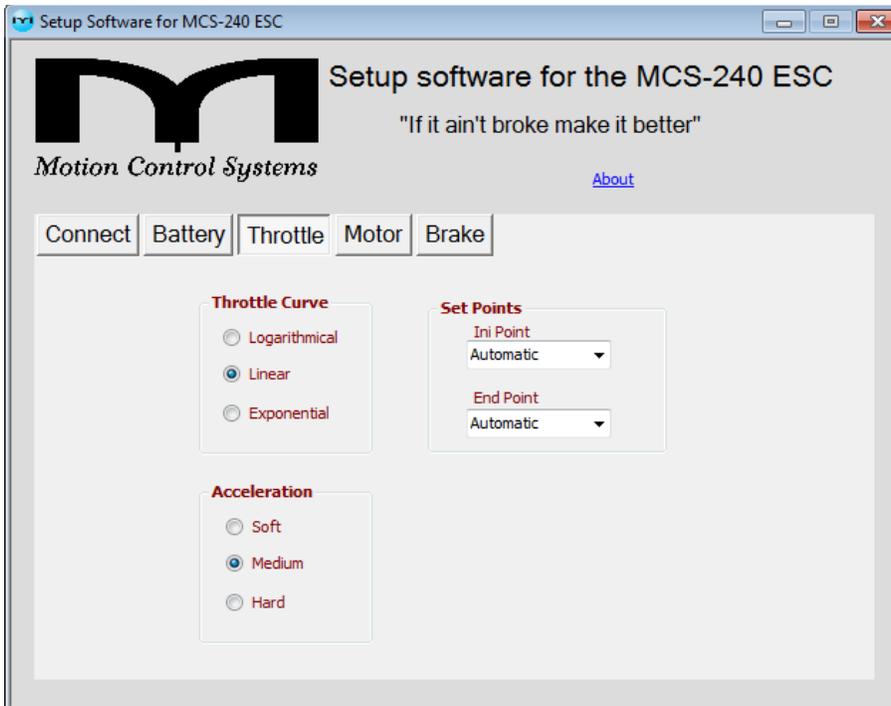
Once the communication has been established the display should show the "Type" and "Firmware" version numbers with the message at the bottom that "You can change the configuration now". It may take as long as 10 seconds for the screen to update however if it does not then you must shut the setup program down and unplug the ESC for 10 seconds. Then plug in the ESC first, wait a few seconds then start the program again. Select the Comport and wait for the bottom display to change to the appropriate message. **When you have completed making all your changes you will come back to the Connect Screen and click "Write Values to ESC" before shutting the program down.**

Click the "Battery" tab on the top line to make changes to the power configuration.



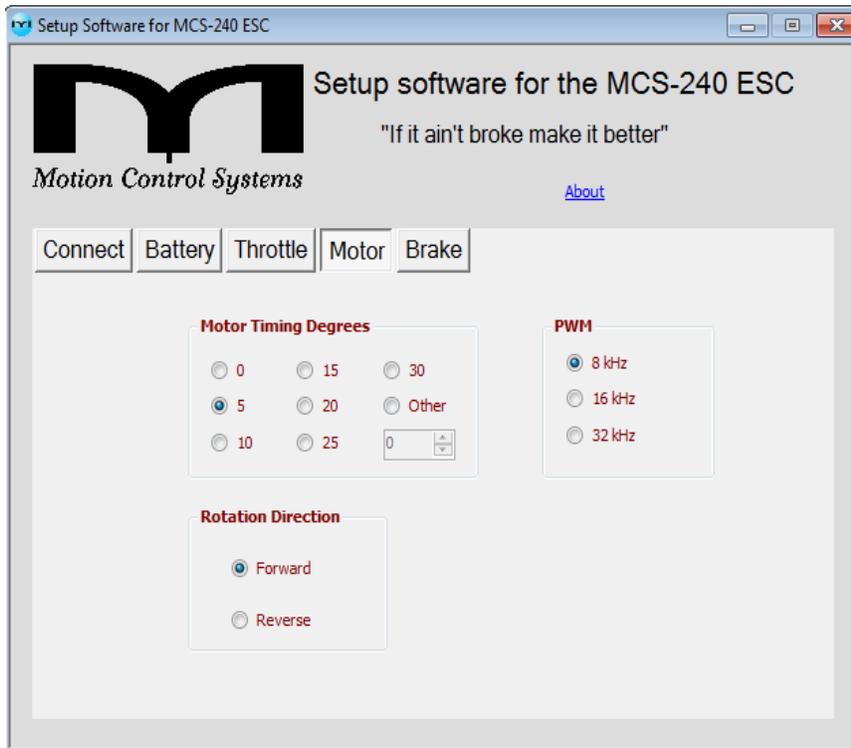
The settings on the screen above are those you would use to provide maximum protection to the plane at the possible risk of the batteries

Click the "Throttle" tab on the top line to make changes to the throttle configuration.



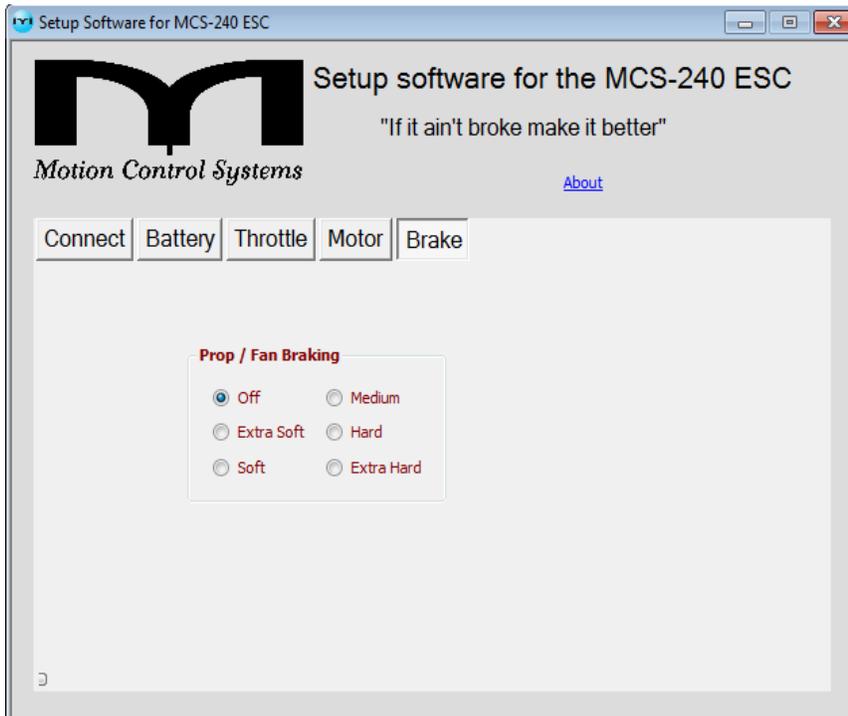
Set the acceleration to "Soft" to extend the spool up time and "Hard" to increase the throttle response for 3D flying

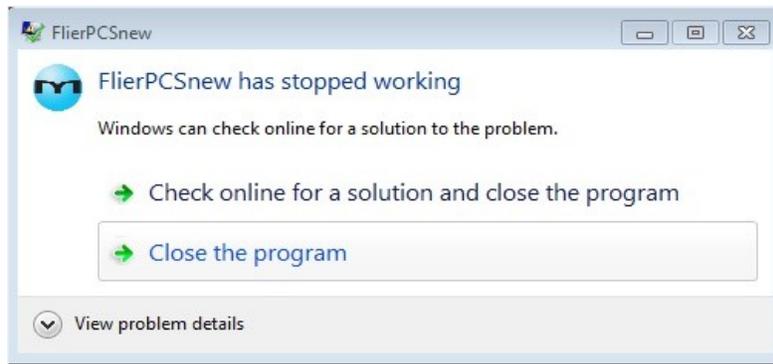
Click the "Motor" tab on the top line to make changes to motor timing, rotation or PWM.



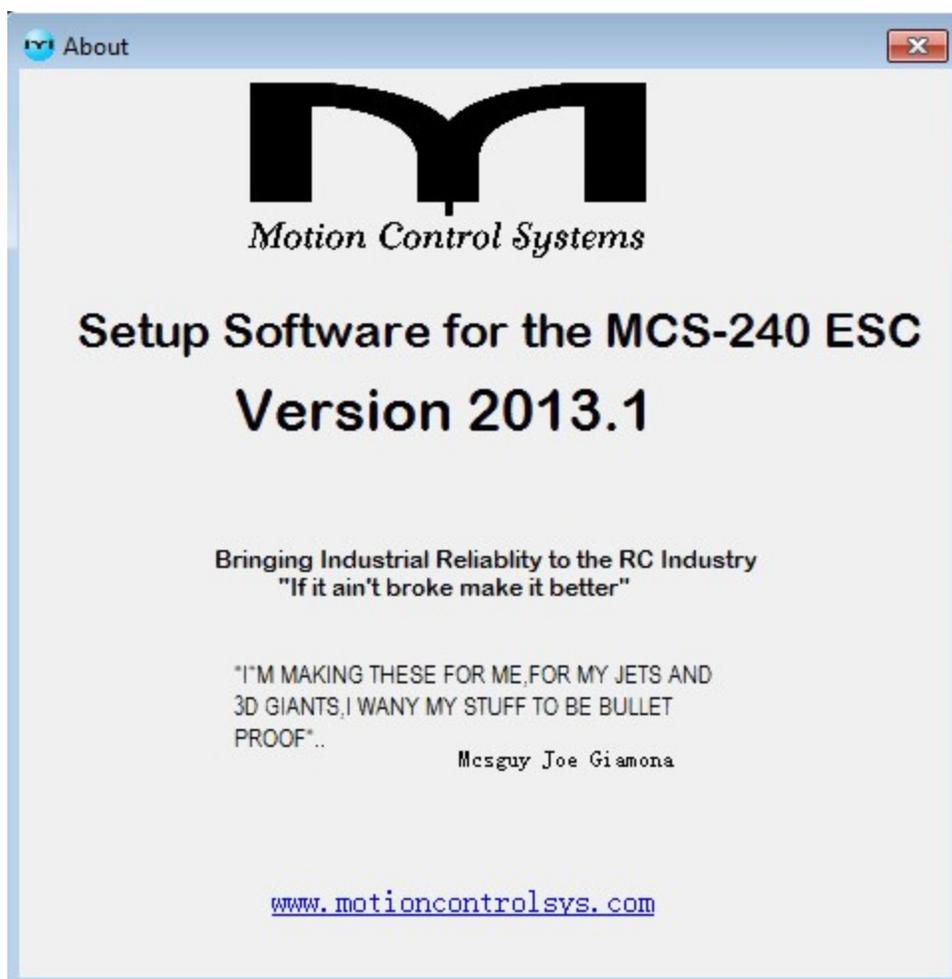
Set the motor timing value to match the motor manufacturers specification. 5 degrees is usually good for an Inrunner and 25 degrees typically works for an Outrunner. You can increase the power by increasing the timing but you increase the motor temperature and you can cause the motor to lose synchronicity (squeel) during acceleration. Leave the PWM at 8 kHz unless you running a very high RPM motor

Click the "Brake" tab on the top line to enable or make changes to the brake





On some computers, when you shut down the setup program you will get the error message shown above. It is of no consequence, click the "Close the program" button.



Enjoy!