Installation Guide

Installation Notes

What's in this Guide?

- This guide will instruct you on how to hook up the Electronics of your racer to the *Spider* board.
- You will need to know how to solder. You will need to know how to disassemble your racer to access the electronics
- You may want to modify your chassis to make a neater installation.

What do I need?

To install a *Spider* into your Kyosho Mini-Z, iWaver, XMod, Xmod EVO or Micro-T you will need to have some basic tools and the ability to undertake fine soldering.

- Screwdriver & tools to dismantle your chassis.
- Low wattage soldering iron. (A small tip will also make the job much easier)
- De-solder braid
- Wire Cutters & Strippers
- *Spider* External MOSFET Board

Spider Wire Colours

Control lines
- **Orange: N-Chan Fet1**
- **Yellow: P-Chan Fet1**
- **Green: N-Chan Fet2**
- **Blue: P-Chan Fet2**

Power
- **Red: Battery Positive**
- **Black: Battery Negative**

Motor
- **Terminal Block or Flying leads**

How does *Spider* Connect?

Installing *Spider* involves removing the stock FETs from the circuit board of your racer, connecting the *Spider* control wires in their place and adding wires directly to your batteries and motor.

To ensure the best performance you should try to source power from as close to the batteries as possible, using very short wiring to keep a neat installation. The control line wires (the rainbow cable) should be kept as short as possible to reduce the chance of interference.

Where do I start?

REMOVE THE BATTERIES from your racer first.

Now you are ready to dismantle your racer to gain access to the motor control FETs. This guide assumes you have the ability to do this and focuses only on the electronics install.

The motor control FETs are located in different places depending on the make and model of your racer.

You can use the photos throughout this guide to show you where the FETs are located on each type of racer.

Find & Remove the FETs!

Now that you have access to the FETs you can remove them. There are many ways of doing this. The easiest method is to use a sharp hobby knife to cut the legs on the chip, so the FET falls out of the way, before cleaning up with a soldering iron.


Example: Kyosho MR01

Here you can see both FETs removed and the Pads cleaned up with de-solder braid *(note we've removed the "Black box" to make the picture clearer, you won't need to do this if you use the cut-away FET method)*

Mounting the Spider

Before you jump in and start soldering in the wires for the *Spider* you should consider where on the chassis you are going to mount the unit, and how the wiring will run.

You should make the modification to wire lengths, and prepare any chassis mods now before picking up the soldering iron again.
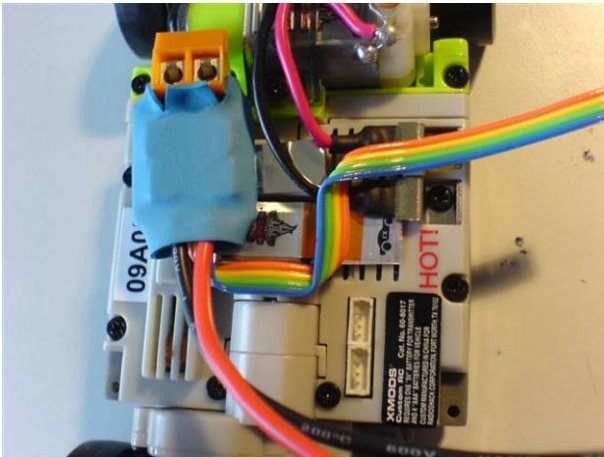
(Xmods EVO showing how we work out mounting)

Choose your mounting location so that you can keep wire lengths to a minimum, and still have a short path for motor wires as well.
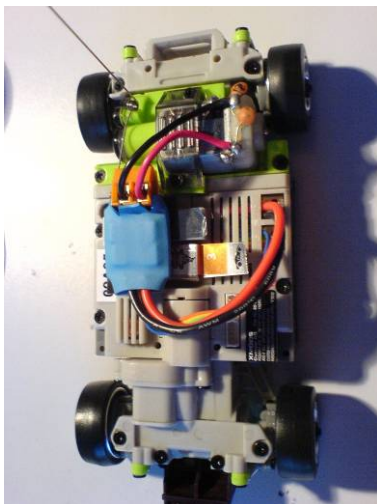
(Our final mounting position on Xmods EVO)

Wiring the Spider to your Racer

Solder on the Control lines

Spider has approximately 100mm of leads; this is enough length to let you mount the *Spider* on any racer chassis.

Once you have worked out where on the chassis the *Spider* will be mounted you should cut the wire lengths to suit and prepare the control wires for soldering.

Separate them for about 5-10mm (¼ to ½") and then strip and tin no more than 2-3mm (⅛") of the ends.

Now following the diagrams on the following pages that suit your chassis/board solder the wires to the pads vacated by the FETs

The soldering should be neat and there must be no shorts between pads.

Using more than 4-cells?
Other high performance tricks?

Spider is designed to work with up to 20v safely. However there is a design "quirk" in all Kyosho and iWaver Mini-Z, and the XMods 1st generation that means the ***Spider* should NOT be used for more than 5 NiMh cells (6v)**.

On XMods EVO it is possible to use *Spider* with LiOn or LiPo battery packs as the electronics on these drives the Spider correctly at all voltages. However you should remember that more voltage and more current mean more heat. Allow you *Spider* to cool between runs and consider installing a heatsink.

Kyosho Mini-Z Boards:
MR01 / MR02 / MA010 / Overland/Monster
The drive FETs are located on the underside of the board close to the motor terminals.
Start with the Blue wire closest to the edge of the board soldering a control line to every second pad.
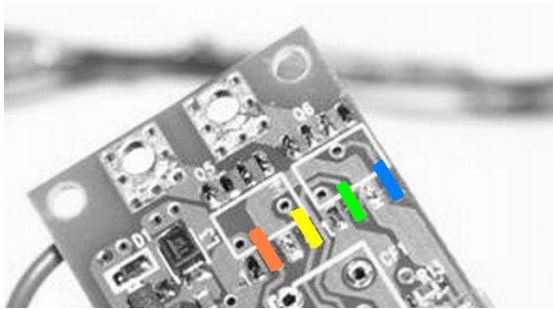
iWaver & Firelap Boards:
01 / 02 / 04 / Bigfoot

* Note: This applies to iWaver boards that are in the Mini-Z Clone type chassis not the newer iWaver specific chassis.

The drive FETs and located on the top side of the board near the motor terminals. Start with the Orange wire close to the edge of the board. The Orange wire goes to the pin TWO, the second pad in from the edge. Then solder the wires to every second pad in order.
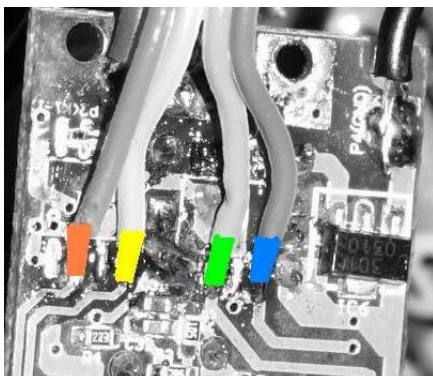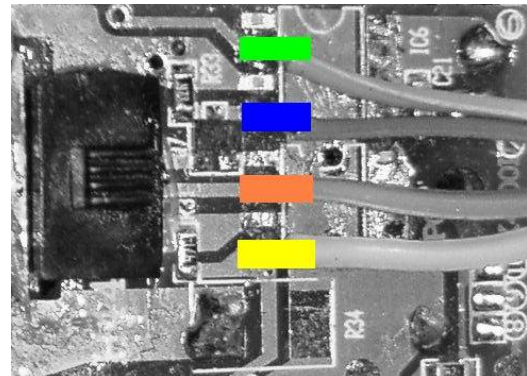

Radioshack XMODS
First Generation
The drive FETs are located on the underside of the board near the power switch.
Unlike Kyosho and iWaver boards the XMODS drive FETs are reversed. Solder as per the colours shown in the picture. The green wire followed by blue, orange and finally yellow on every second pad.


Radioshack XMODS EVO
Second Generation
The drive FETs are located on the topside of the board on the top of the chassis, next to the motor terminals.
The Xmods EVO use a different FET design to the original Xmods and Mini-Z style racers which requires the wiring to be different.
Start with the second pad from the edge of the board and solder the wires as per the picture to every second pad. (Blue, Yellow, Orange, Green)
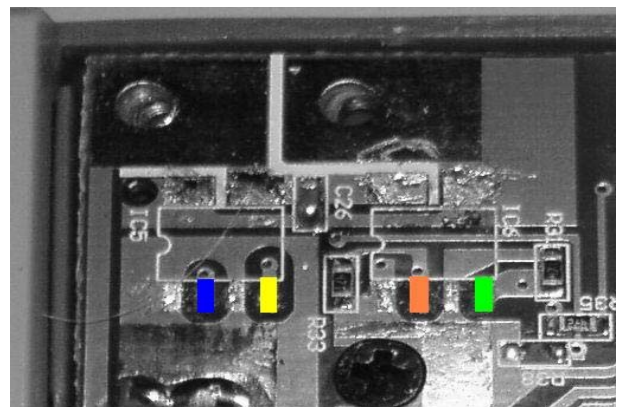
Finding Power for *Spider*

It's sometimes hard to work out the best place to get power for the **Spider**. The best solution is to connect as close as possible to the battery terminals to ensure maximum performance.

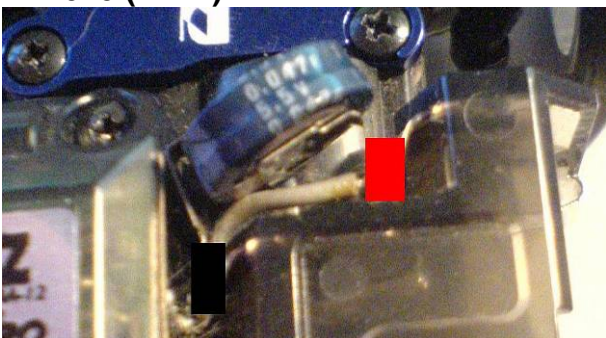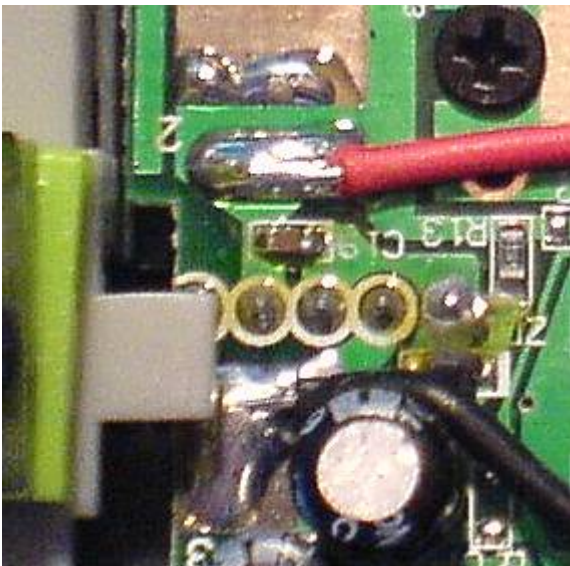Here are a few of out preferred locations.

MR-01

MR-02

MA-010 (AWD)

Xmods EVO

Solder On the Battery Wires

The silicon jacketed battery cables should be connected directly to the battery terminals to minimise "resistance" and ensure that you have suitable cable to carry the current that high-powered motors can draw.

Make sure you have wired the power correctly. If you reverse the power input you will burn out the *Spider* in less than 15 seconds.

That's it! You're ready to Race!

You should now perform a visual and physical check of your soldering and wiring. Make sure none of the leads pull free when the wires are moved.

Connect a stock motor for testing.

Power up your transmitter and install batteries into your chassis. You should be able to operate the motor.

If there is no response remove the batteries from the chassis immediately. It is likely that the power wires to the **Spider** are reversed. Recheck your wiring and try again.

(**NOTE:** *If you feel the chips on the **Spider** heat up when the power is connected then it is very likely the power wiring is reversed. This will not cause damage if you disconnect power immediately and fix the problem. As all "Spiders" are tested after being built we will not replace "Spiders" that have failed in this way.*)

You will now need to assemble the chassis and connect a motor. Depending on your version of the **Spider** the motor may connect with wires to the terminal block or solder to the board/motor.