Flashing Sport Devices

I have added the ability to flash Sport devices (Tx modules, receivers and Sport sensors) to the following:
SKY board running ersky9x.
9XR-PRO running ersky9x
Taranis running ersky9x
Taranis running openTx r2940 (modified)

In all cases, this is available by running if "Maintenance Mode". This is entered by switching on with both horizontal trims held AWAY from the centre.

When Maintenance mode is running, the word MAINTENANCE is displayed on the top line, with a menu of options. The menu is slightly different on the various hardware to reflect the different possibilities.

Taranis:
Update Bootloader
Update Int. XJT
Update Ext. Sport

SKY board:
Update Bootloader
Update CoProcessor
Update Sport

9XR-PRO
Update Bootloader
Update Sport

WARNING:
Receivers and sensors usually have a voltage supply limit of 10 volts. If your transmitter is using a battery that may exceed this value, take care to provide a supply voltage to the target device that is less than this.

To flash Sport devices, generally the pins in the module bay are used. Unfortunately, these are in the wrong order for a direct connection to the SPort bus.

The pins in the module bay are numbered from 1 to 5, starting with pin 1 at the top.
On the Taranis and the 9XR-PRO, the lower 3 pins are used:
Pin 3 - Switched power.
Pin 4 – Ground
Pin 5 - SPort data

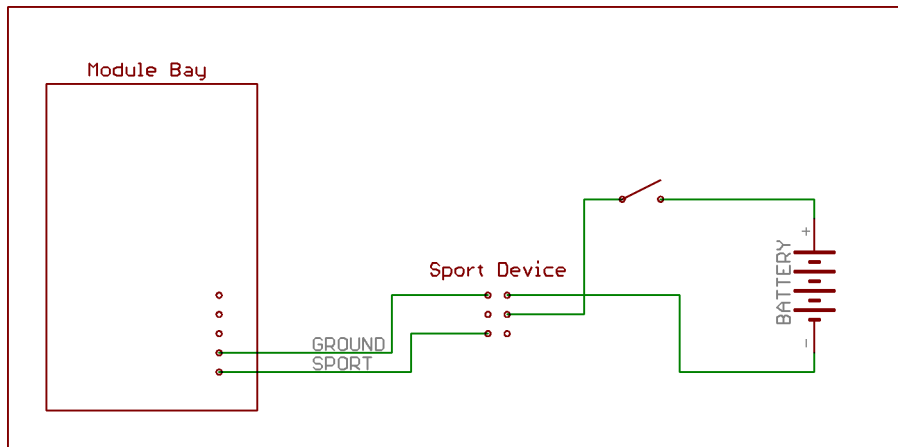The Sport bus requires the three connections in the order:
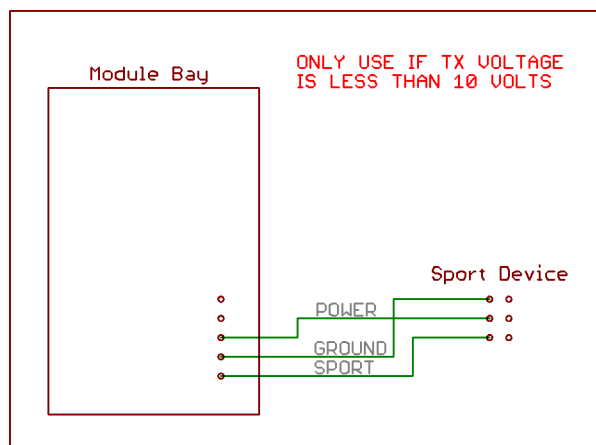Ground
Power
SPort data

On the Taranis, using the stock 6-cell NiMh battery, you may connect the module bay pins to the device you wish to flash at the start of the operation as the Taranis has the ability to switch the module bay power on and off. For the other transmitters, you will need to wait before connecting the target device until the transmitter is looking for the device.

The design of the Sport interface allows a non-powered device to be connected. This means an easy way of operation is to connect Ground and Sport data to the device, and power the device from a separate power supply of less than 10 volts. A standard 4 or 5-cell NiMh receiver battery is ideal.
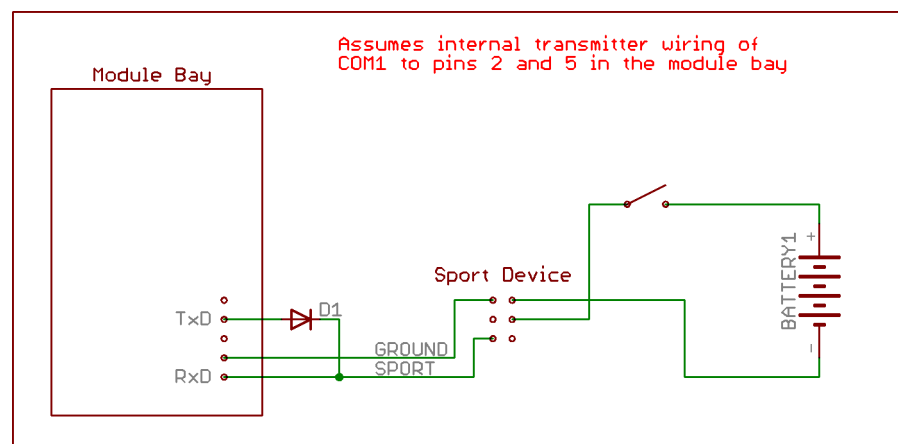
Connection using separate battery:

Connection using internal supply (max. 10 volts)

Connection using serial interface (SKY board)

On the SKY board, you need to use COM1 (I may be able to add COM2 as an option later). I have my COM1 wired to pins 2 and 5 in the module bay for use with a modified DJT module. You then need to add a diode to the signal on pin 2, as done by FrSky, to make a SPort compatible signal. I tested using a SPC board (http://www.frsky-rc.com/product/pro.php?pro_id=132), which has the diode (1N4001) on it.

To flash the device, select the option in the maintenance menu, and press MENU. You will be presented with a list of files from the \firmware directory on the SD card (*.frk). Select the required file, then press MENU LONG.

You will then be presented with a summary of the chosen operation, e.g.:

Flash Ext.SP from
X8R_130725.frk

If this is correct, press MENU LONG again.

The display will now show:

Flashing
Finding Device

If using the switched power from the Taranis, the device will be found and flashing will start. Otherwise, switch the power to the device on, flashing will then start.
The flashing procedure is quite slow, only about 1000 bytes per second. The time taken to flash a device will depend on the size of the file, but typically is between half a minute and one and a half minutes. The progress bar will fill in to show how far the operation has advanced.

Mike Blandford. 13-Aug-2014.