

# STEALTH RC

## J.E.D.I. SUPPLEMENTAL GUIDE

### VERSION 1.0 DRAFT



2/5/2015

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## 1. STEALTH RC AND JEDI INTEGRATION

Starting with the Stealth RC 1.0.8 firmware, we now have experimental JEDI support.

There are three ways to integrate the systems. :

### **Stealth RC Primary, JEDI Tethered / JAWALite**

In this configuration we connect the JEDI device to the Stealth Controller and send *JAWALite* commands via the Stealth RC Auxiliary Serial Connection. This is probably a good option if all you have are the JEDI Logic Displays (or Teeces logics with JEDI command compatible firmware.) The logics can be used standalone and separate from the JEDI Controller. Most people only need the lights to blink, with the occasional effect to sync with a sound or action on the Stealth side.

### **JEDI Primary, Stealth RC emulating JEDI RC Receiver**

Use the JEDI Controller as the primary (scripting, sound etc) with Stealth RC emulating a JEDI RC Receiver. Servos, Speed Controllers etc are all connect to the JEDI system.

### **Stealth RC Primary, JEDI Tethered / JAWAScript**

This method is untested, but in theory you could connect the JEDI Device to the Stealth Auxiliary Serial via the JEDI Serial Command Line interface (CLI), and send JAWAScript commands or call JAWA scripts, e.g. to control add-on servos, secondary sound. Very much like how we use the Arduino based Stealth Servo/IO Expander Boards, but using a TTL serial connection instead of i2c to trigger events.

## 1.1. SUPPORTED JEDI DEVICES/FIRMWARE

The following devices are supported if the correct firmware is used:

- JEDI Controller, firmware 4.0 X28 or higher. As far as I'm aware all JEDI Controllers can be upgraded to run the latest firmware.
- JEDI Logic Display Controller, firmware 4.0 tested but should work on earlier releases (may need to change baud rates to match. Originally JEDIs defaulted to 2400, but on newer releases they run at 9600 BAUD.)
- JEDI YODA Controller - not tested but should work as it's firmware is based on the 4.0 release.

## 1.2. STEALTH RC TO JEDI JAWALITE / DISPLAY CONTROLLER INTEGRATION

We can control the JEDI Logic Displays (or even a JEDI Controller) by sending *JAWALite* commands via the Stealth Auxiliary Serial Connection (*AUX*). Setting up is relatively simple. Requiring only 1 extra wire.

This should also work with Teeces logics if you're running a JEDI "compatible" firmware that support the JawaLite command set.

Please see the JEDI JawaLite Reference Guide for a full list of supported commands. But some useful one's are:

OT1 - standard blink pattern

OT2 - Flashing Alarm pattern

OT4 - Short circuit pattern

OT5 - Scream pattern

OT6 - Leia message pattern, plays for 33 seconds

OTZ - Scroll text set either set by the M command or default

OMsometext - Set text message on all panels

OWn - Set wait/delay to *n* before returning to default state (usually blinking)

You can also target specific parts of the display by replacing the '0' with 1,2 or 3 for TFLD,BFLD,RLD.

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### 1.2.1. PHYSICAL CONNECTIONS

If your logic display is already wired for power then the only extra connection you need is to connect the RX and TX lines from both boards, but you may need to rework how power is connected to the JEDI Display Controller. It could even be powered from the Stealth RC board directly.

#### JEDI Display Controller

R + -	Board
o o o	Outside Edge
PDCRX	

#### Stealth RC

TX RX G	Board
o o o	Outside Edge
AUX	

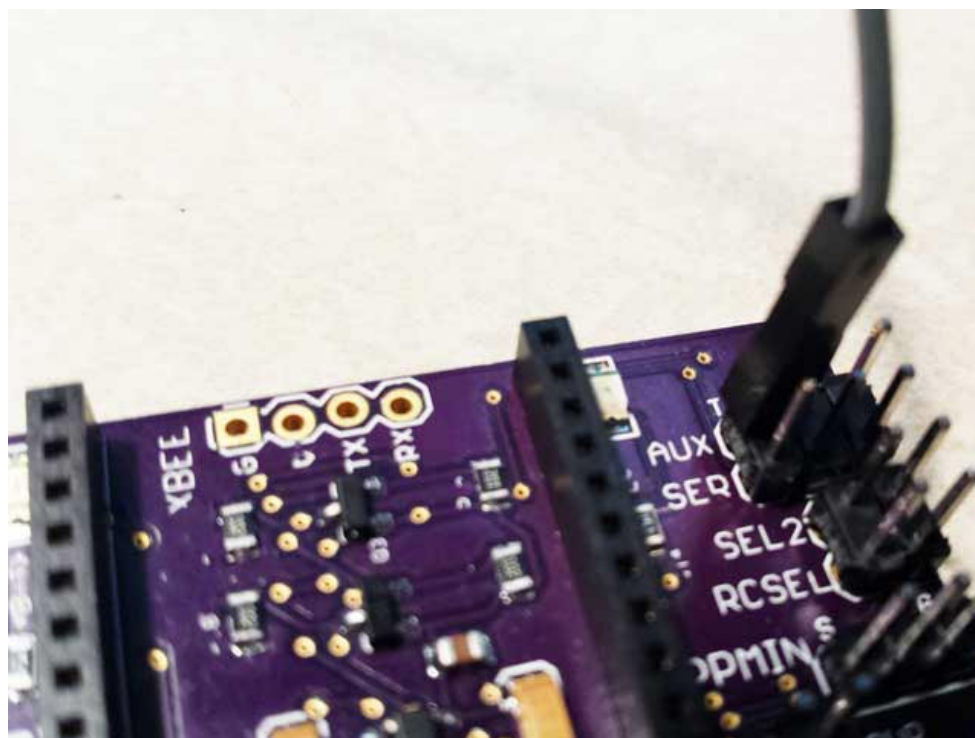
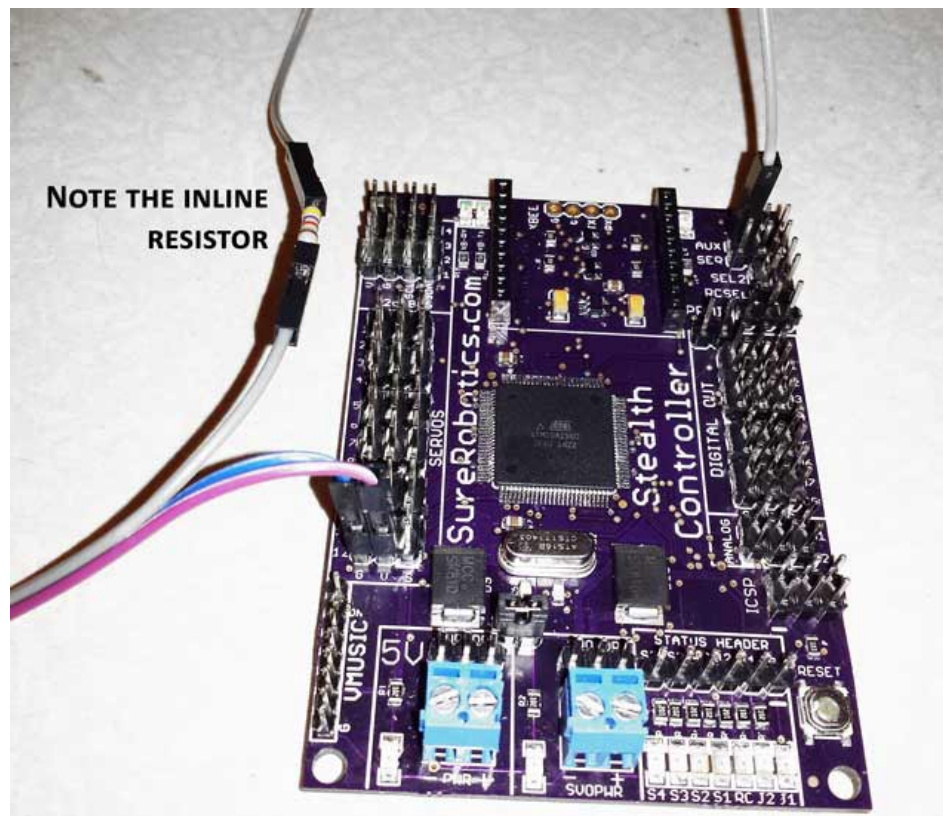
#### Connections

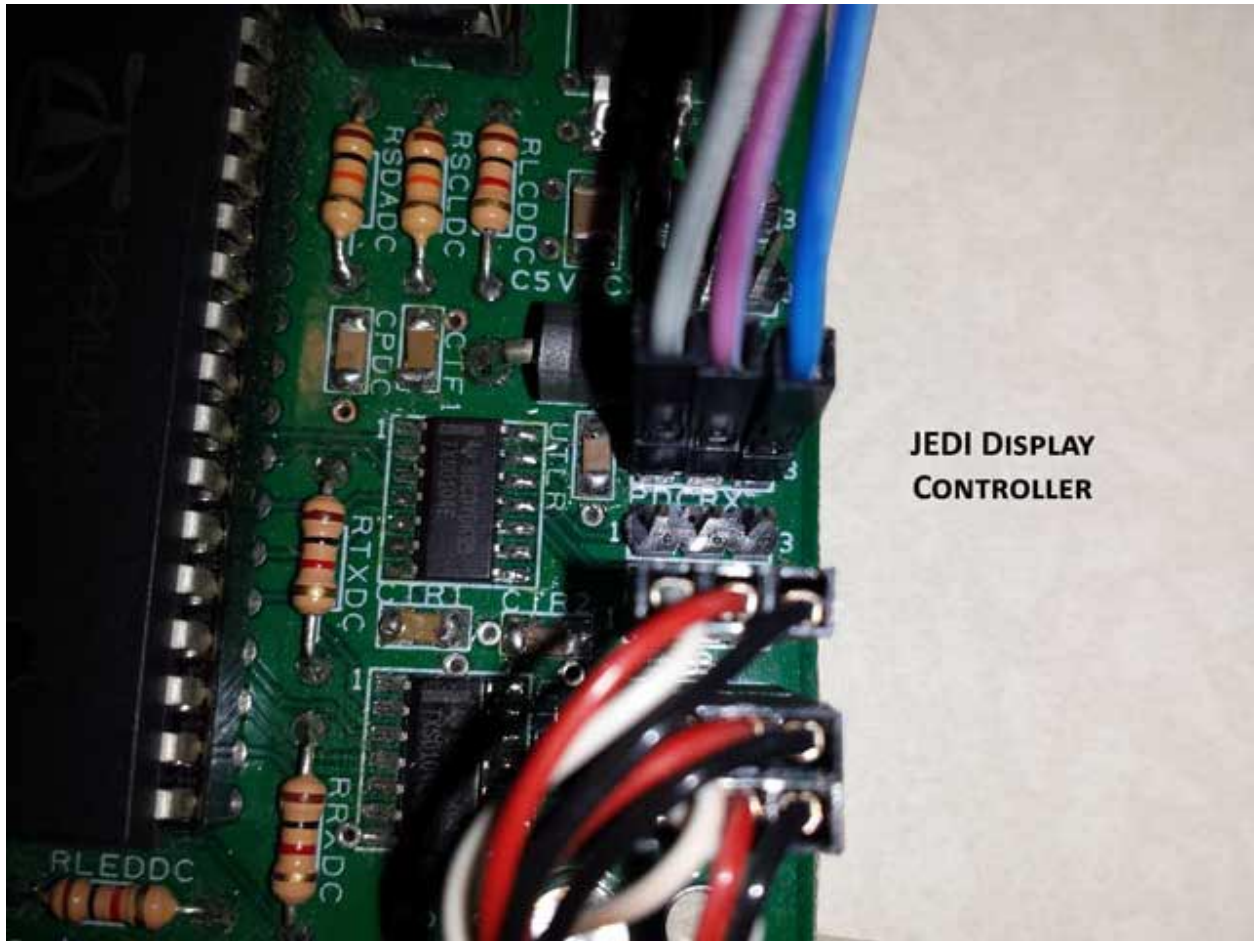
JEDI PDCRX (R) -> 3.3K Resistor (inline) -> Stealth AUX Tx

JEDI PDCRX (+) -> 5V (could use spare Stealth servo pins)

JEDI PDCRX (-) -> GND (any spare GND pin, e.g. one of the unused Servo headers)

The inline resistor on the RX/TX wire is very important because the JEDI board runs at 3.3V internally, whereas the Stealth system runs at 5V. This reduces the voltage on the data line. The Parallax/Propeller microcontrollers used in the JEDI system are +5V "tolerant", but it's best to be safe than sorry.





**JEDI DISPLAY  
CONTROLLER**

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### 1.2.2. STEALTH RC CODE SETUP

See the main Stealth Reference Guide for full details on how the auxiliary serial connection can be used to send commands/string to other devices, but in summary here's an example of additional lines to be added to the Stealth RC config .txt.

```
auxbaud=9600
auxeol=13
auxdelim=:
auxinit=OT0:OW15
a=OMASTROMECH.NET :OW10:OZ
a=OT4
b=1,1,5,1
b=6,1,3,2
```

#### Explanation:

- Set the Stealth RC auxiliary serial baud rate to 9600 (default for JEDI Display 4.0), may need to use 2400 for older boards.
- Set End of Line (EOL) character to Carriage Return/Decimal 13 (CR). This character is sent at the end of each auxiliary command block or when we hit a delimiter character in our string.
- Set auxiliary output string delimiter ":". This is so we can send multiple commands in one go.
- On startup JEDI perform a test pattern on all displays (OT0) for 15 seconds.
- Create two auxiliary serial strings and assign to two buttons.
- Button 1, Play sound bank 5, and run start LED "short circuit" (OT4). This runs by defaults for 10 seconds
- Button 6, Play sound bank 3, and set (OM) and scrolling (OZ) message on all displays for 10 seconds.

#### Notes:

- You can define up to 10 Auxiliary Strings
- Maximum length of a string is 40 characters

### 1.3. JEDI RC RECEIVER EMULATION

In this mode the Stealth Controller emulates a JEDI RC Converter, passing channels 1 thru 4 (joysticks) and channels 5 & 6, emulated using buttons, thru to the JEDI system via the JEDI Controller RC port (PRC.)

On the Stealth RC Controller make sure to use a switch or jumper to close the **SEL2** pin header.

On startup the Stealth RC Controller will enter a simplified mode and show " *JEDI Pass Thru v4.X. Aux Baud 9600*" on the console. Status LED S3 will be light as well if you have version 2.2+ of the board.

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#### 1.3.1. CONNECTING THE STEALTH CONTROLLER TO THE JEDI CONTROLLER

##### JEDI Controller

PRC	1	2	3		Board
	o	o	o		Outside Edge

##### Stealth Controller

AUX	TX	RX	G		Board
	o	o	o		Outside Edge

PRC Pin 3 -> Stealth AUX G

PRC Pin 2 -> **DO NOT CONNECT!**

PRC Pin 1 -> Stealth AUX TX

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### 1.3.2. NOTES/CAVEATS

- Unlike with the regular Stealth RC, you must hold the "stroke" button while entering strokes.
- The disable Joystick Button does not work. Use the joysticks on/off power switches instead.
- Unlike with a regular Stealth RC setup, both Remotes need to be on for JEDI to recognize a valid signal/controller. They don't have to be on during power up and can be turned off anytime. But once one is off the inputs from other are disabled too.
- JEDI Button Assignment by default are map as follows:  
JEDI Channel 5 (up/down buttons on back) is emulate by Joystick 2's two front buttons  
JEDI Channel 6 (up/down buttons on back) is emulate by Joystick 1's two front buttons  
Use the "jb" parameter in *config.txt* to reassigned buttons. This can be stored to EEPROM.  
jb=[StealthButton#],[StealthButton#],[StealthButton#],[StealthButton#]  
Default is jb=6,1,7,2
- You will probably need to reverse the direction of channel/servo 3 in Stealth RC's config.txt. Otherwise up is down on remote 2 and JEDI strokes will be all mixed up.  
e.g. s=3,0,180,90,0,5,100,1
- You will probably need to simplify your JEDI Strokes.
- *startup.jws*:  
If you're not getting a full range of motion on some of the servos please check "SET LOWLIMIT", "SET HIGHLIMIT" and "SET SERVO n SCALE y", and "SET SERVO n RANGE" JAWAScript commands. In some sample scripts I've seen these have been included to limit the range on the "dome" servo channel resulting in problems in a Stealth environment. Try comment them out first.
- Once setup and a minimal working configuration is store to the Stealth RC EEPROM, then you no longer need to have a VMUSIC2 module connect to the Stealth RC system. Setup can also be done via the Stealth Command Line Interface (CLI.)
- As with the regular Stealth RC setup, joystick are a lot more sensitive and you will need to tune your speed controller and/or JEDI parameters to make them less sensitive. On Dimension Engineering Sabertooth Speed Controllers I highly recommend using the latest DesCribE firmware that allows very fine tuning of motor power curves.
- Alternate RC input to Stealth RC via PPM Converter is not supported.