

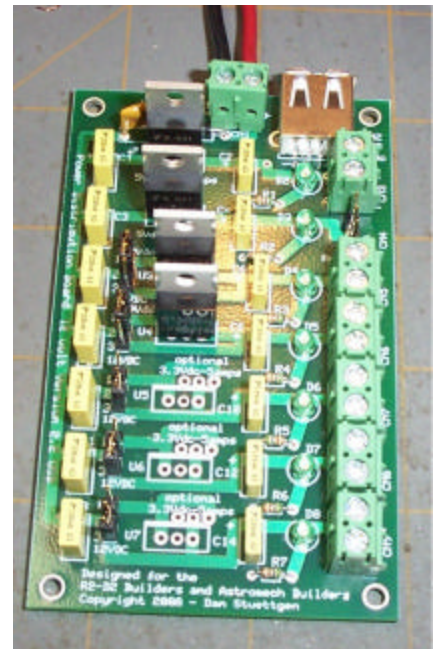
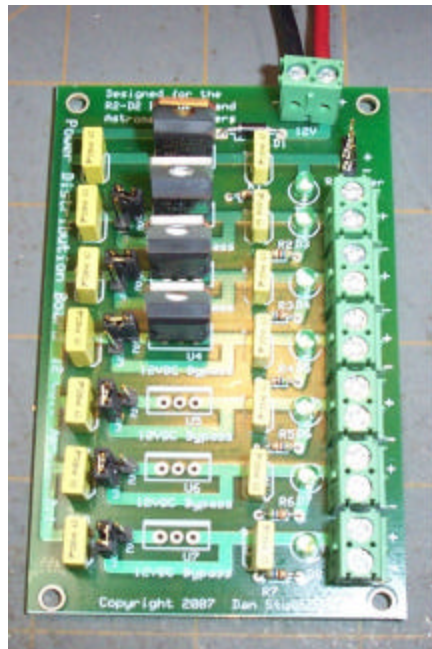
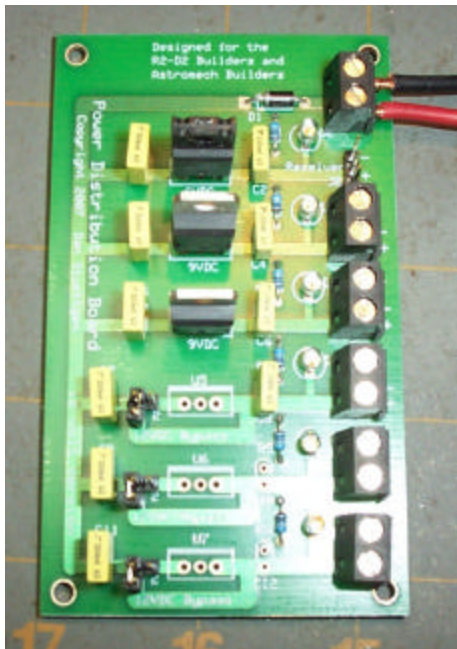
12V Power Distribution Board Instructions

This set of instructions is for all three versions of the 12Vdc Power Distribution Board designed for the R2 Builders and Astromech Builders by **Dan Stuetgen**.

The following instructions should be considered guidelines for this boards use. .

The most important requirement is that this board only operates with a 12 Volt Battery. 12v 7ah, 10ah and 12ah Gel Cell, or sealed lead acid batteries are ideal. When connecting the battery to the board be sure that you connect it to the correct terminals. The board does have reverse battery protection so if the power LED's do not light up, then the battery wires are reversed so just switch them and it will start working. Version 3 also includes a re-settable fuse on the board. When a short is detected, the fuse will open and when the short is removed, the fuse will reset by itself.

Photos below are of the various versions of the Power Distribution Board.

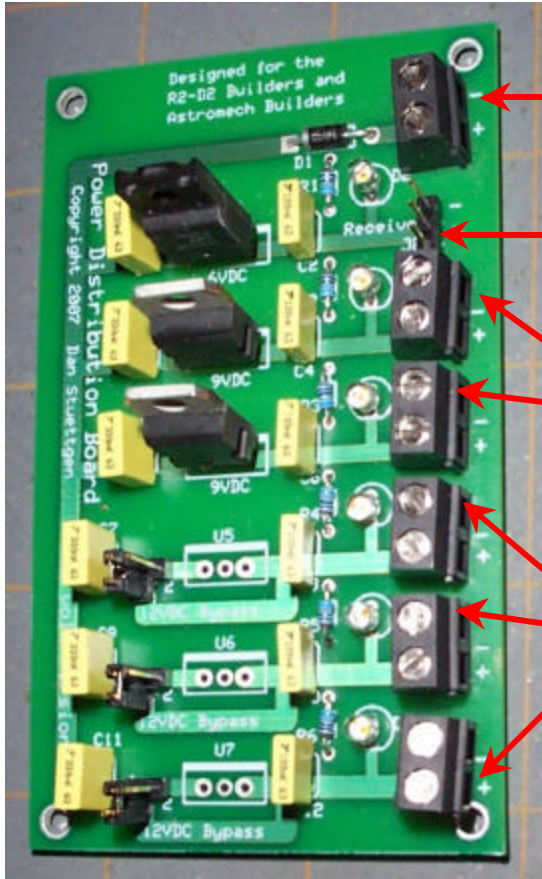


Version 1: Power at right top and includes:
(1) 6 volt regulator for R/C receiver,
(2) 9 volt regulators
(3) optional regulator locations with 12 volt pass-throughs. Jumper selected

Version 2.1: Power at top right and includes:
(2) 5 volt regulators (1) for R/C receiver
(2) 9 volt regulators
(3) optional regulator locations with 12 volt pass-throughs. Jumper Selected

Version 2.2 USB:
Power at top right and includes:
(2) 5 volt regulators (1) for R/C Receiver & (1) shared by CN2 & CN3
(2) 9 volt regulators
(3) optional regulator locations with 12 volt pass-throughs. Jumper Selected

Version 1 board



12VDC Battery Connector

R/C Receiver Connector

9VDC Connectors for PSI's, Sound System Amps, Logic indicators, or any other 9VDC device.

12VDC connectors for Relay boards and small low amperage motors.



No1

No2

No3

No4

No5

No6

No7

Starting with the top Connector:

No 1: is the 12-volt power input

No 2: is for powering your RC receiver and the first Voltage regulator is a 6-volt regulator. Most receivers will operate between 4.8 and 6 volts.

No3: is a 9-volt output powered by regulator #2

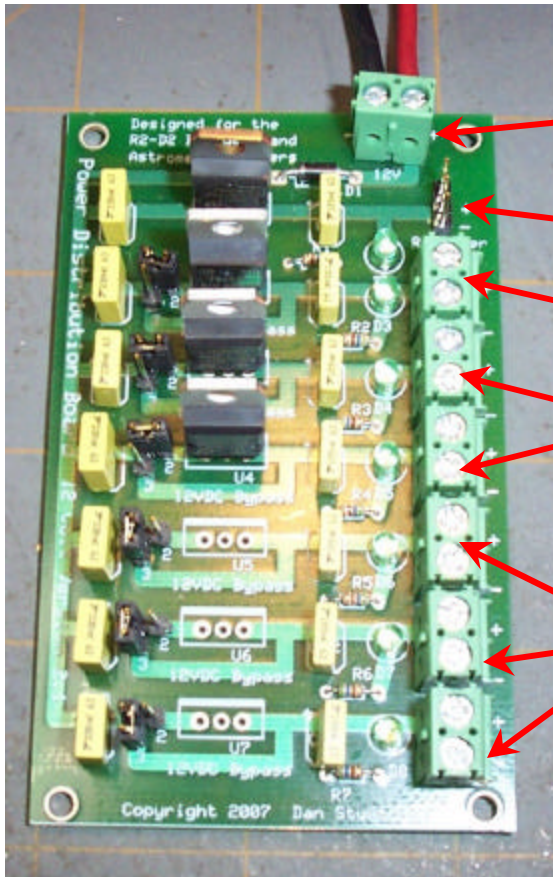
No4: is a 9-volt output powered by regulator #3

No5: is a 12-volt pass-through with optional regulator location – Jumper selected

No6: is a 12-volt pass-through with optional regulator location – Jumper selected

No7: is a 12-volt pass-through with optional regulator location – Jumper selected

Version 2.1 Board



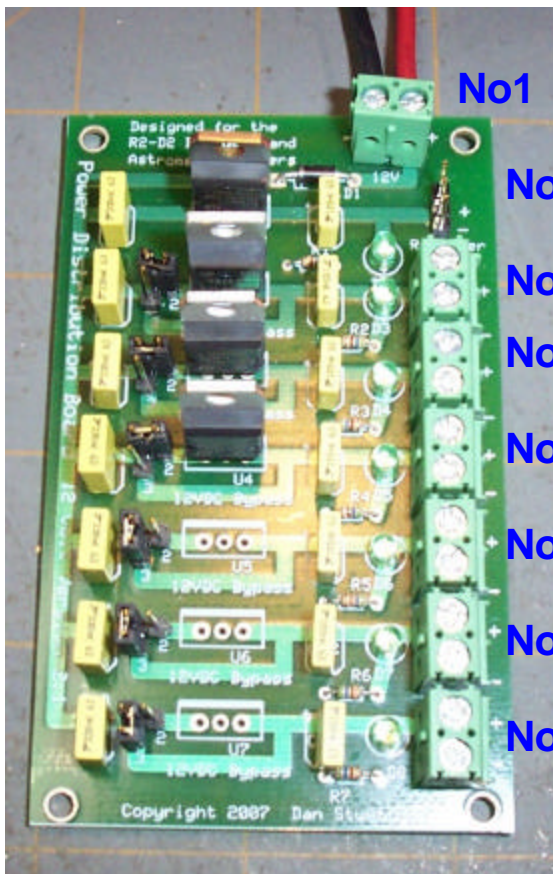
12VDC Battery Connector

R/C Receiver Connector

5VDC Connector for 5 volt Devices

9VDC Connectors for PSI's, Sound System Amps, Logic indicators, or any other 9VDC device.

12VDC connectors for Relay boards and small low amperage motors.



No1

No2

No3

No4

No5

No6

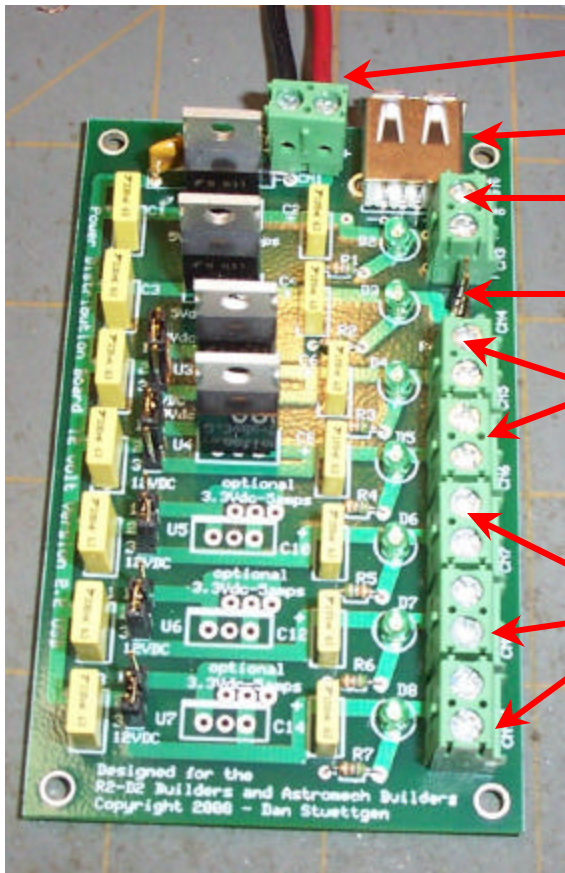
No7

No8

Starting with the top Connector:
No 1: is the 12-volt power input
No 2: is for powering your RC receiver and the first Voltage regulator is a 5-volt regulator. Most receivers will operate between 4.8 and 6 volts.
No3: is a 5-volt output powered by regulator #2
No4: is a 9-volt output powered by regulator #3
No5: is a 9-volt output powered by regulator #4
No6: is a 12-volt pass-through with optional regulator location
No7: is a 12-volt pass-through with optional regulator location
No8: is a 12-volt pass-through with optional regulator location

Connectors #3 - #8 are Jumper selectable for 12-volt pass-troughs

Version 2.2 USB Board



12VDC Battery Connector

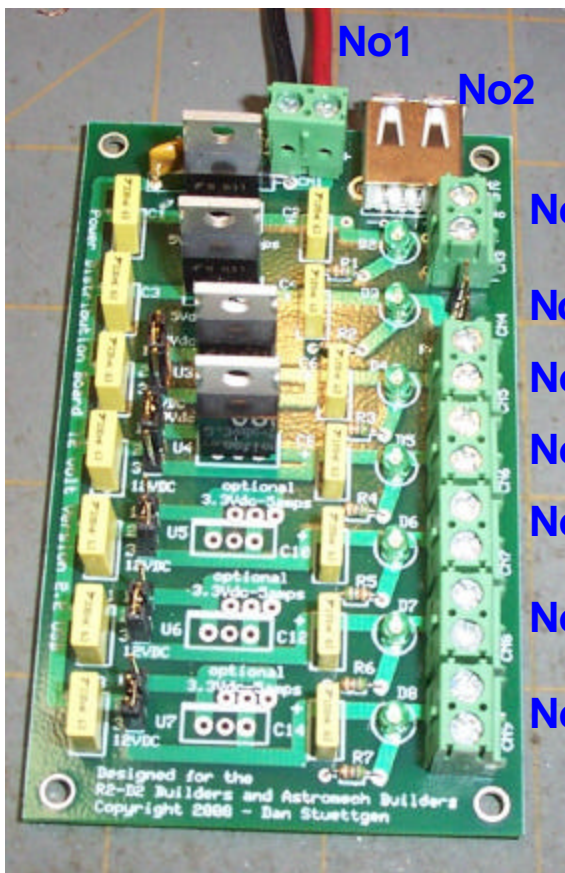
USB Type A Connector 5 volt output

5VDC Connector for 5 volt Devices

R/C Receiver Connector

9VDC Connectors for PSI's, Sound System Amps, Logic indicators, or any other 9VDC device.

12VDC connectors for Relay boards and small low amperage motors.



No1

No2

No3

No4

No5

No6

No7

No8

No9

Starting with the top Connector:

No 1: is the 12-volt power input

No 2: is a 5-volt output powered regulator #1 and shared with No 3.

No3: is a 5-volt output powered by regulator #1 and shared with No 2.

No4: is a 5-volt output powered by regulator #2 for R/C Receiver only.

No5: is a 9-volt output powered by regulator #3

No6: is a 9-volt output powered by regulator #4

No7: is a 12-volt pass-through with optional regulator location

No8: is a 12-volt pass-through with optional regulator location

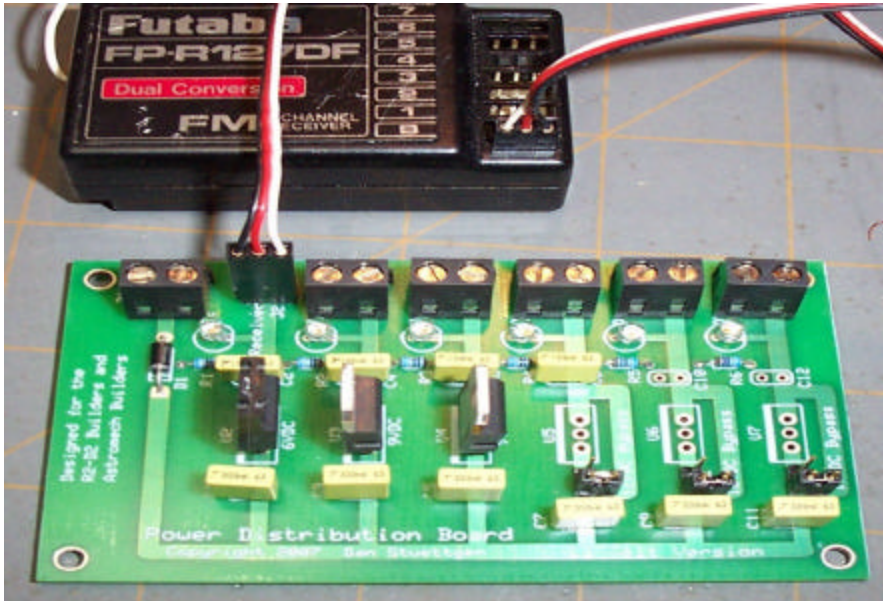
No9: is a 12-volt pass-through with optional regulator location

Connectors #5 - #9 are Jumper

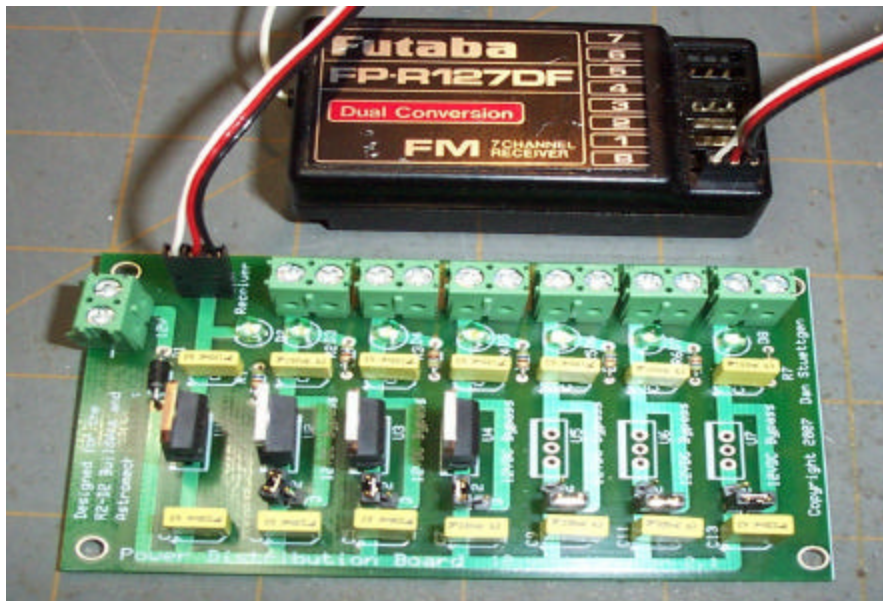
selectable for 12-volt pass-throughs

Connectors #7 - #9 have optional 3.3 volt regulator locations above the standard regulator location.

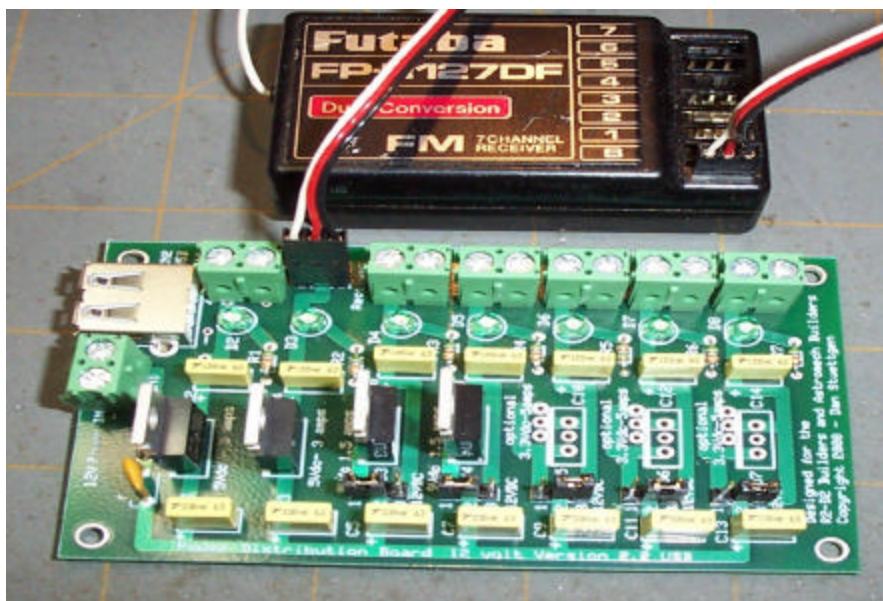
Connectors #7 - #9 have optional 3.3 volt regulator locations above the standard regulator location.



Version 1 Board:
 R/C Receiver power connections:
Gnd = Black on Left
Pwr = Red in Middle
 White wire not used on right

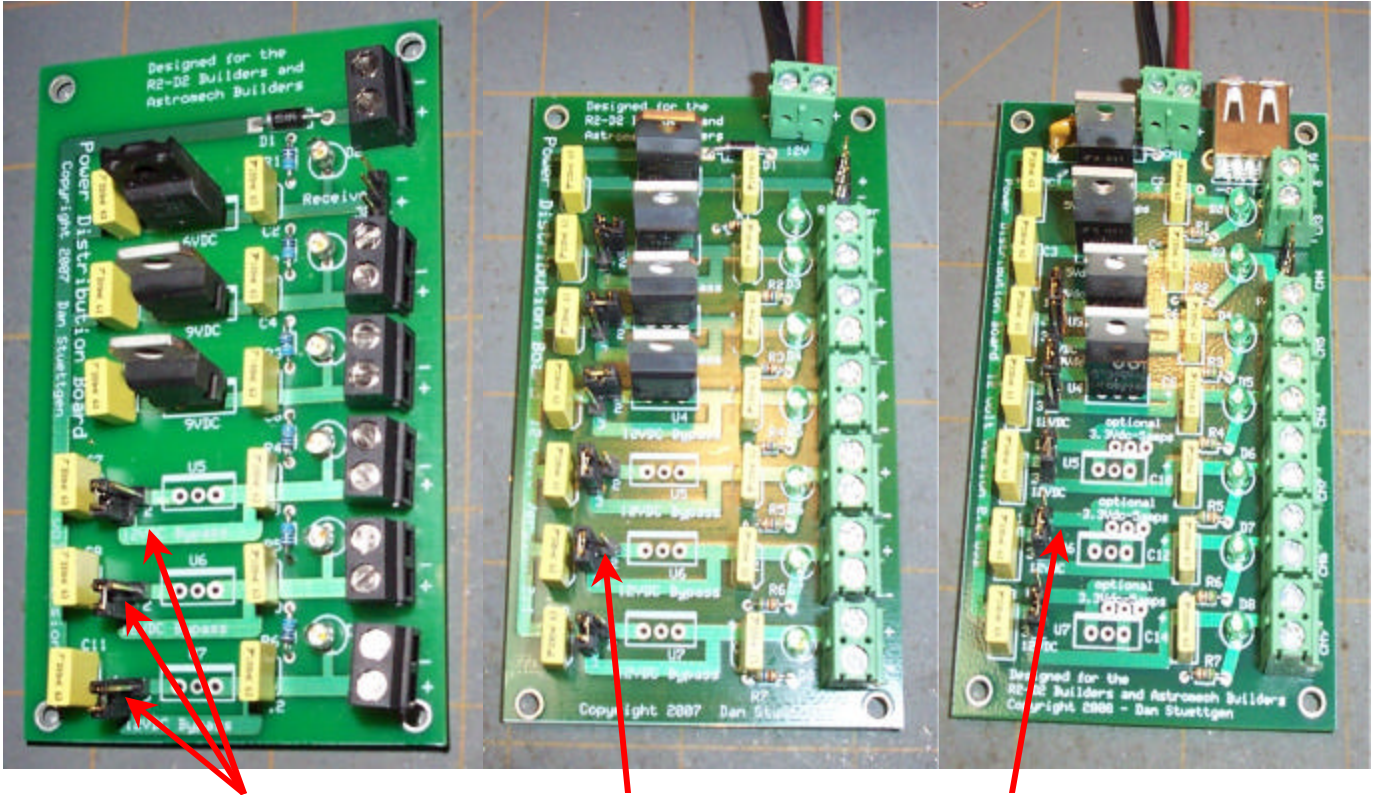


Version 2.1 Board:
 R/C Receiver power connections:
 White wire not used on left
Pwr = Red in Middle
Gnd = Black on Right



Version 2.2 USB Board:
 R/C Receiver power connections:
 White wire not used on left
Pwr = Red in Middle
Gnd = Black on Right

12 Volt Pass Through's



Jumpers locations are on the left side of the board.

Change jumpers from vertical to horizontal position after adding voltage regulators to power them.

Change jumpers from vertical to horizontal position after adding voltage regulators to power them.

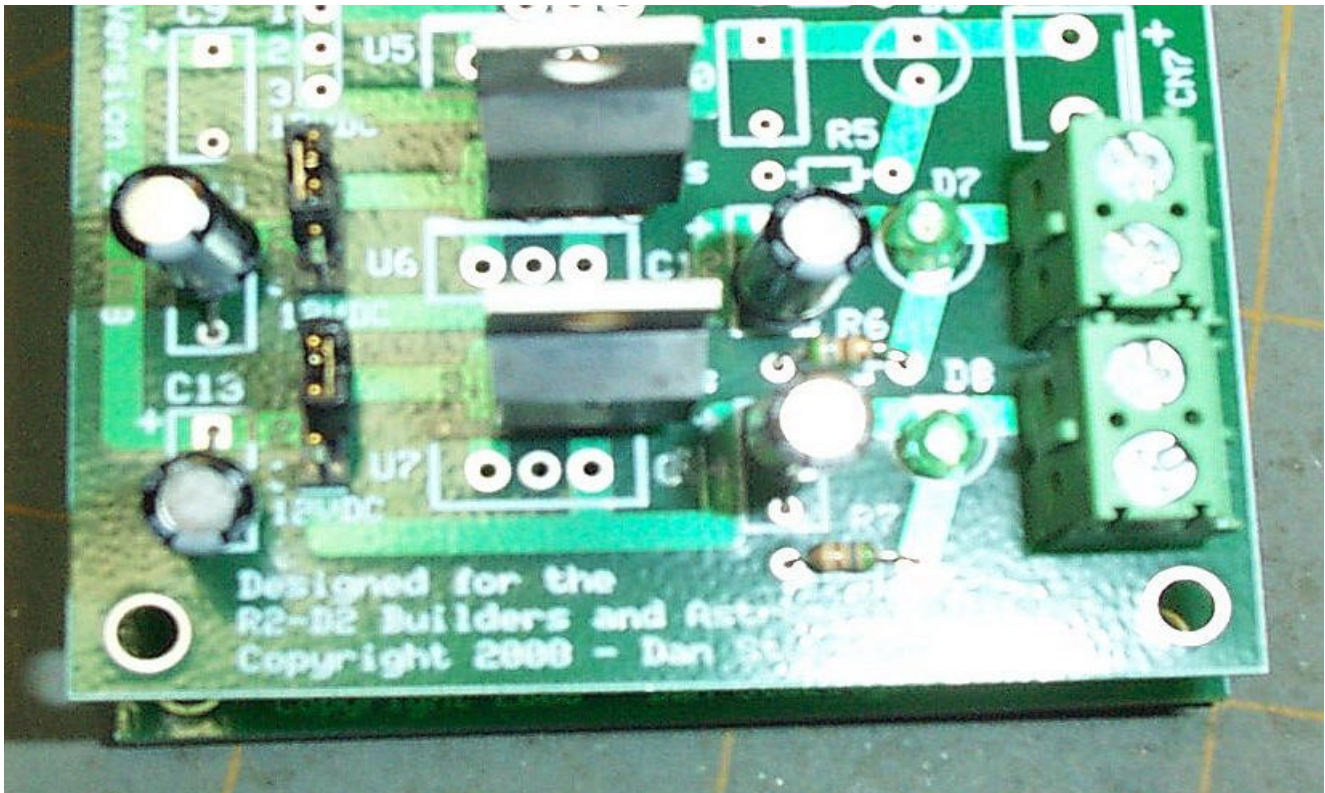
Change jumpers from Lower to Upper position after adding voltage regulators to power them.

The last three connectors are used for devices that required 12 volts. The Max Amps for these is that of the Battery, so if you are using a 7ah battery your max amps to power devices to these connectors would be 7amps, thusly if using a 12ah battery it would be 12 amps.

Should you have a need for another 9-volt connection or the need for a 5 volt connection. You can simply insert a positive Linear regulator of the voltage you need (not over 9 volts) in to any of the three bottom locations. They must be the TO-220 style case.

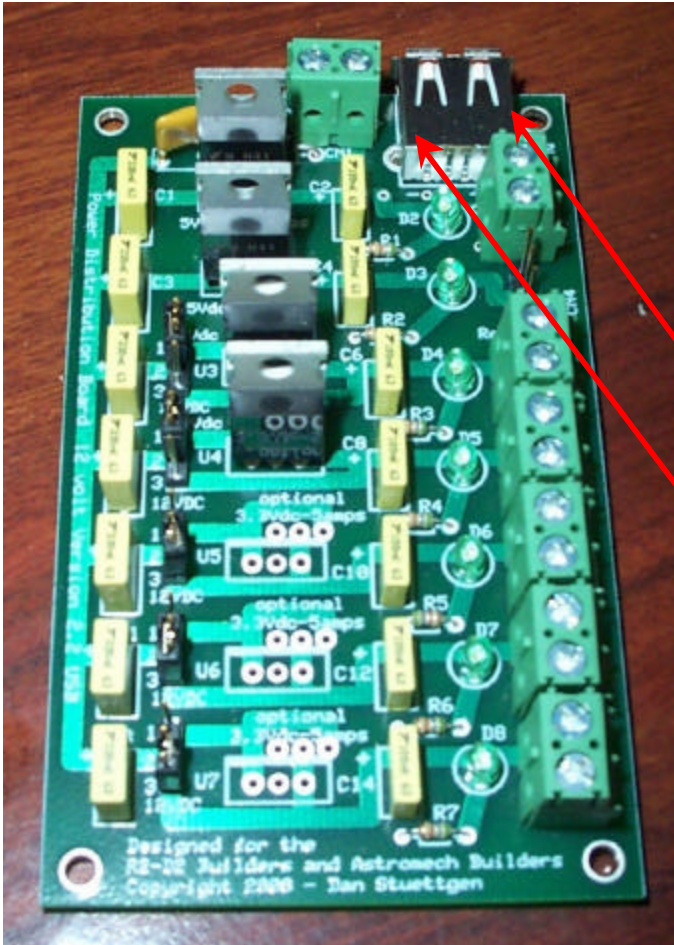
After regulator has been soldered in place, then change the jumper to the left of the regulator. This will route power through the regulator instead of bypassing it. These bottom three locations allow the users to choose the voltages that they need by adding the desired regulators and changing the jumper. Should you find later that you need the 12 volts and not the regulator you installed, Just change the jumper back to the original position and you will bypass the regulator and have 12 volts going to the connector again.

Optional 3.3 Volt Regulator on Version 2.2 USB board only



Version 2.2 USB board has locations for optional 3.3-volt regulators above and to the right of the standard Regulator locations U5, U6 and U7. 3.3-Volt regulators have a different pin out arraignment than a standard regulator so they can only be used in these optional locations. If a 3.3-volt regulator is to be used, you must remove the two yellow capacitors on either side of the regulator location and replace them with 10uf 35 volt Electrolytic Caps. Be sure to install the Caps in the correct orientation. The board is marked for the positive leg of the Cap, which will be the longer of the two legs. After the Caps and regulator is installed, move the jumper from the lower position to the upper position to power the regulator. Use Regulator part number **827-AME1084DCBTZ** from Mouser electronics in the 3.3-volt locations.

USB connector on Version 2.2 USB board



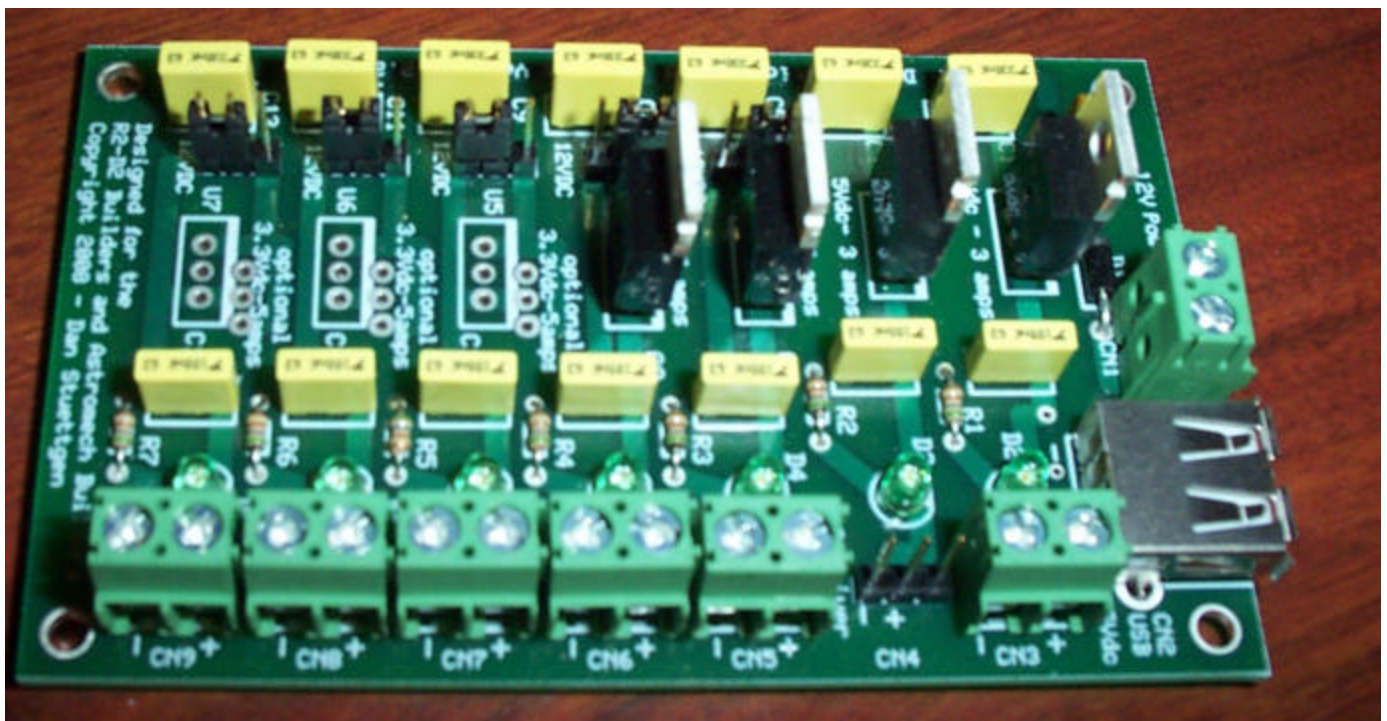
The USB connector on the 2.2 USB version of the power board is a Type A connector. It is designed to power 5 volt devices only at no more than 1 amp.

Power is on the right side of the connector looking at the top.

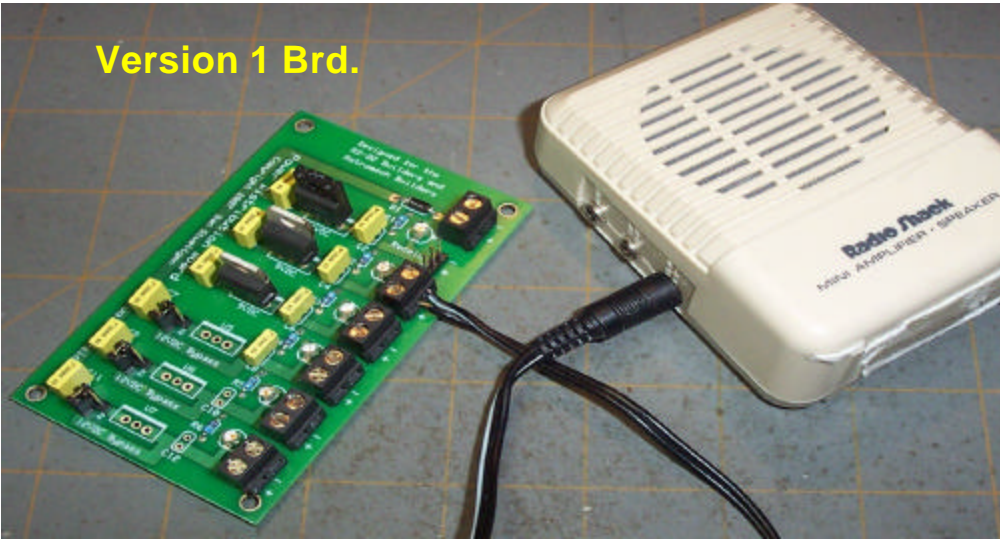
Ground is on the Left side of the connector looking at the top.

Two middle pins are not connected

The USB connector and CN3 are powered from the same regulator, so keep this in mind when using both connectors to power devices. Regulator have a max amp output of 3 amps.



Version 1 Brd.



Here is a Radio Shack Amplified speaker connected to one of the 9volt connectors.

When using a device that has a plug type connector, make sure that you wire it correctly to the connector, as some have the middle hole negative and some positive.

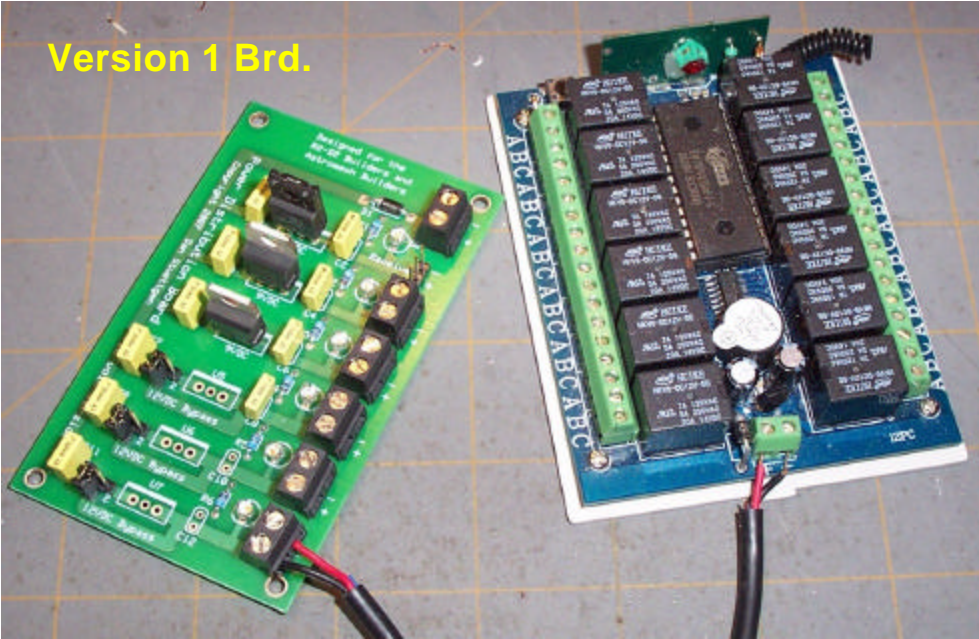
Version 2.1 Brd.



Version 2.2 USB Brd.



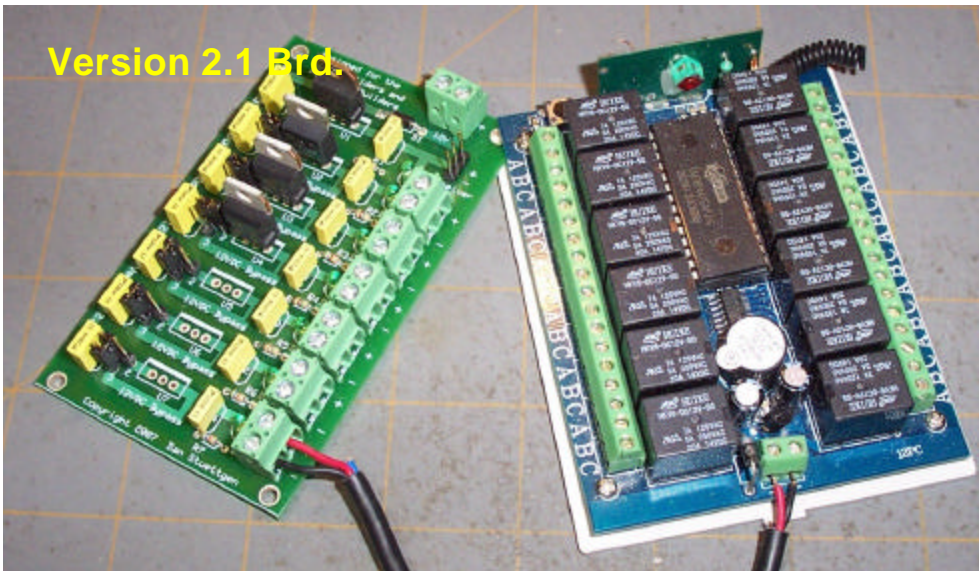
Version 1 Brd.



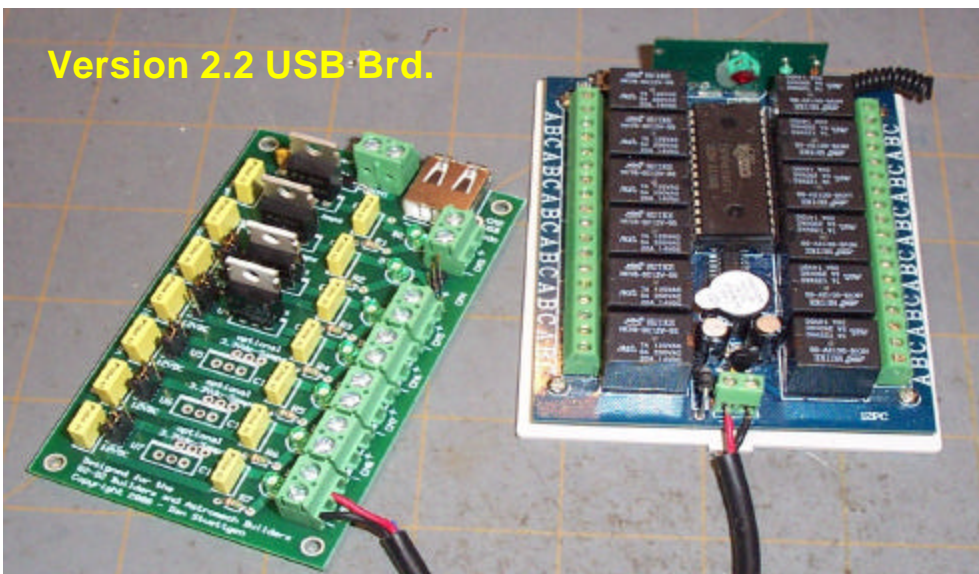
Here is a 12Volt 12Channel RF relay board connected to one of the 12 Volt Pass through connectors.

Wiring of the relay board should be done according to that manufacturer's directions.

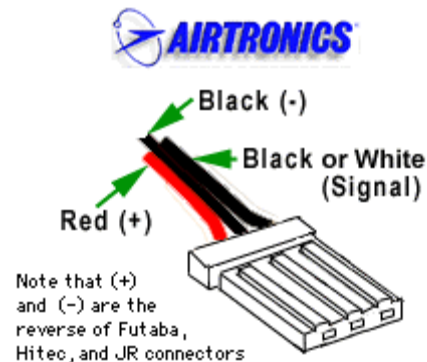
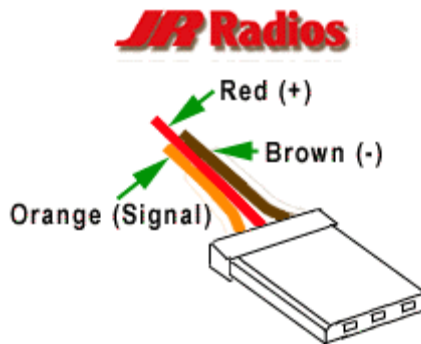
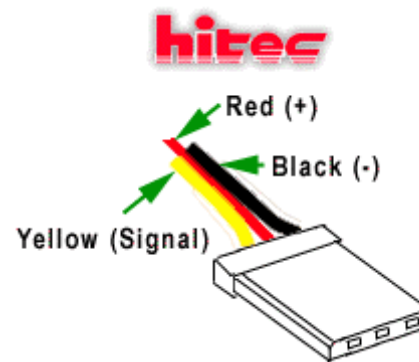
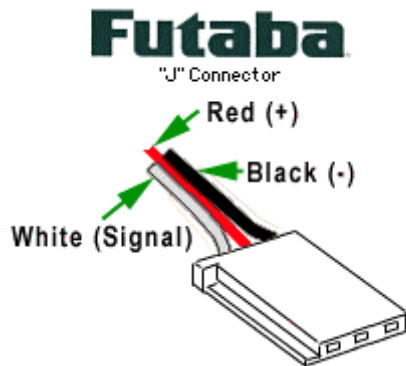
Version 2.1 Brd.



Version 2.2 USB Brd.



These are the cable and connector types for your various manufacturers for power and receiver cables. Be sure to check wire colors and locations when connecting to the R/C receiver power connector.



Troubleshooting:

These board are protected by a Diode to prevent damaging the board should the power wires be reversed. If the LED's do not light when power is applied, then the wires should be reversed.

If one or more LEDs does not light up when power is applied, check to see if the Jumper is in the correct positions.

If the Jumper is in the correct position and the LED still does not light, then use a VOM meter to check to see if there is a voltage at the output connector.

If you have the correct voltage at the connector and the LED still is not light, then the LED is bad and should be replaced.

If there is no voltage at the connector then the Regulator is bad and should be replaced.

Version 2.2 USB board has a re-settable fuse on the board. When a short occurs it trips and when the short is removed, it re-sets itself automatically.