

ThunderBolt™ Display 3

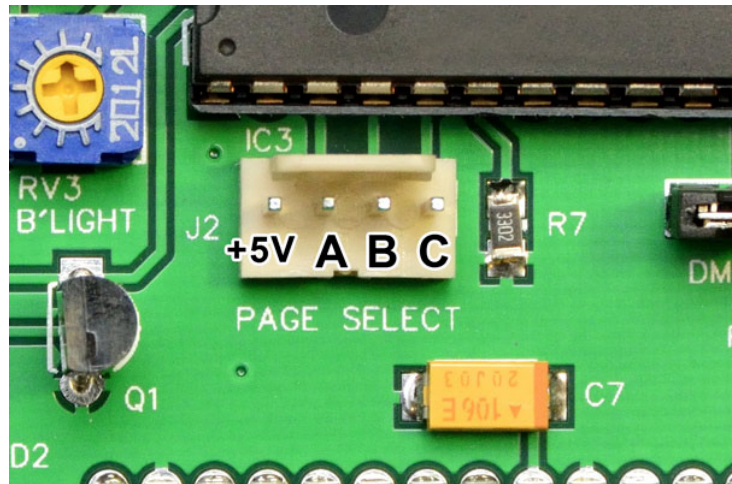
Technical Supplement

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Rotary Switch Encoding

ThunderBolt Display has eight page modes, user selectable by the HEX encoded rotary switch. If users wish to implement a different page selection scheme, the following truth table should be observed;

A	B	C	Page Called
1	0	0	1
0	1	0	2
1	1	0	3
0	0	1	4
1	0	1	Auto Cycle
0	1	1	1 > 4
1	1	1	2 > 4
0	0	0	3 > 4



Notes:

The supplied rotary switch actually has 16-position. A stopper is inserted after 8th position.

"1" = 5V. Pull down resistors are located on the underside of the PCB, so external pulldowns are not required.

LCD Backlight Brightness

RV3 sets the LCD backlight brightness

LCD Contrast Adjustment

RV2 sets the contrast of the LCD, and has been set to suit front-on viewing.

Carefully adjust if your viewing angle is not straight-on.

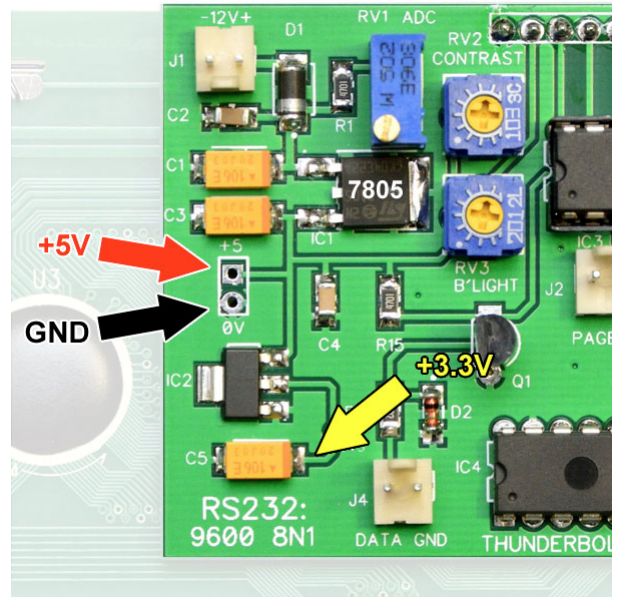
Voltage Rail Test Points

ThunderBolt Display uses 7805 +5V regulator, in a surface mount DPAK package.

+5V test point is on the pad, as indicated.

The +3.3V regulator is a TLV1117 LDO (Low Dropout Regulator) in a surface mount SOT-223 package.

The +3V3 test point is on the + side of the tantalum capacitor.



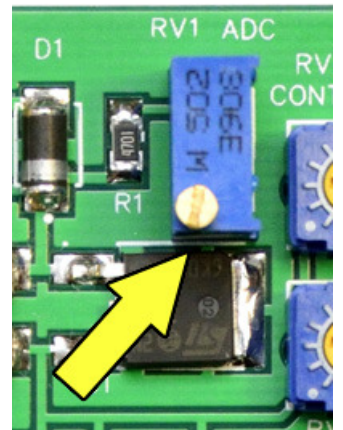
Voltmeter Calibration

RV1, a multiturn trimpot, sets the voltmeter ADC calibration.

It has been carefully adjusted so the voltmeter is within +/- 0.02V accuracy.

Check at both 10.5 volts and 15.0 volts.

Adjustment should not be required.



+5V for ThunderBolt Commander

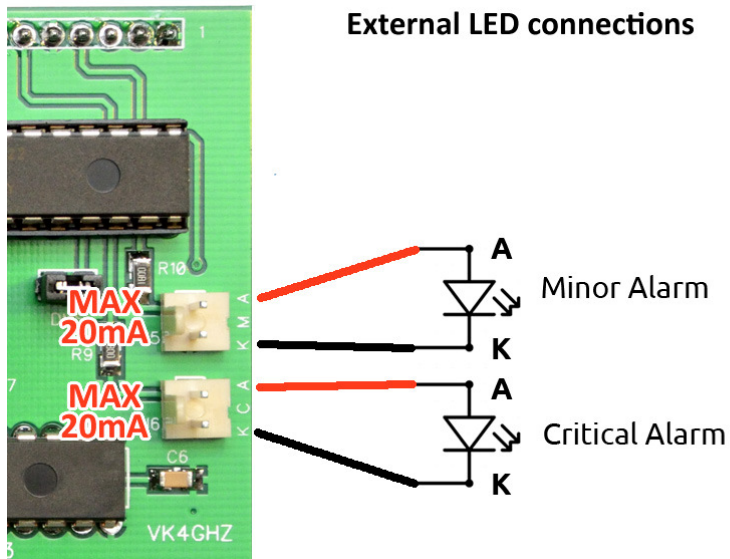
From the top side of the board, you can solder a right angle 2-pin 0.1" header connector to the +5V test points.



Alarm Outputs

ThunderBolt Display provides separate outputs for both critical and minor alarms, and the microcontroller can supply a maximum of 20mA per output, capable of directly driving LEDs.

Do not exceed 20mA, or expose the microcontroller pins to a voltage higher than +5V, or a negative voltage below 0V, otherwise DAMAGE TO THE MICROCONTROLLER WILL RESULT.



If you need to switch more than 20mA, use an external transistor (or FET) stage of a suitable rating and relay. A suggested arrangement is below.

