

## LBNL Bias Board Documentation

The LBNL bias board supplies all necessary DC bias voltages to operate a 4 corner LBNL CCD (it can be used to run 2 CCDs in 2 corner mode).

The Board has been tested in an SDSU GenII controller under the LBNL custom Voodoo software, but should perform well in any ARC/SDSU controller system.

The board requires an additional operating voltage of -30V (-28.5V to -40V) at <100ma. This voltage can be supplied on the backplane (pin B6) or on the terminal block (J11). If voltage is supplied through the backplane J12 needs to be connected from pin 2 to pin 3, if the voltage is supplied to the terminal block pins 1 and 2 should be connected. The voltage is enabled on-board by the presence of the -16V operating voltage.

The on board DACs can be addressed like a video board: J4 sets the board address, where an installed jumper is a 0. We use address #4 (two right hand jumpers installed).

DACs 0 through 7 supply 0 to -25V for Vdd and Vr for the CCD. They are connected as follows:

DAC Address	J10 D-sub 25 pin	Voltage range
0	1	0 to -25V
1	2	0 to -25V
2	3	0 to -25V
3	4	0 to -25V
4	5	0 to -25V
5	6	0 to -25V
6	7	0 to -25V
7	8	0 to -25V
8	9	0 to +5V
9	10	0 to +5V
10	11	0 to +5V
11	12	0 to +5V
12	13	0 to +80V or 0 to +200V
13	-	Ramp rate 0 to 130V/sec

The Board also supplies +/-15V on J10 pins 25/24. All other pins are grounded. (see schematics page 6)

The on board GND plane is separated between analog and digital. Installing J2 connects both planes. This may be advisable in many cases to reduce noise. Otherwise they are connected by 1.5 Ohm and opposing diodes to limit voltage differences to 0.5V between digital and analog ground.