



## Camera Adapter Board (CAB) V2.00 Installation Notes

May 10, 2006

CAB hookup requires 0.1" friction-latch style female plugs, e.g. Molex' 22-01-3xx7 series. Crimp contact inserts for these connectors are sold separately, as Molex part number 08-55-0102. Amp and other manufacturers offer similar products, including insulation-displacement types that are much quicker to install but require different tooling.

J1 and J2 each have two pins. J3 has seven pins, but the mating connector could also be a 9-pin type if the installer prefers to integrate J1 and J3 into a single plug.

Camera module video output connects to CAB J1 pin 2 (Video In) and pin 1 (Ground). Pin 1 is marked: \*

Video output from CAB is present at J2 pin 2 (Video Out) and pin 1 (Ground). This output is designed to drive long, lossy coaxial cables with precompensation adjustments for the losses.

Raw power supply should be about +24VDC but **must not exceed 30V under any circumstances**. Connect to J3 pin 2 (V+) and pin 1 (Ground). CAB's over-voltage protection device (D1) may fail (short) if the raw supply goes over 30V. Power supply current required by CAB alone is about 35mA. Add your camera module's power supply current rating to this value to get total required supply current.

Connect a 7812 or equivalent 3-pin regulator IC to pins 3, 4, and 5 of J3. See schematic drawing for hookup detail. Keep lead length to a minimum, preferably no more than three inches. The regulator device may oscillate if the leads are too long, resulting in severe video interference problems. This regulator controls the camera power supply output voltage, but has no effect elsewhere in CAB. Regulator ICs with other voltage ratings may be selected by the installer if necessary.

Regulated +12VDC camera power output is available at J3 pin 6 (V+) and pin 7 (Ground). Connect this power source to your video camera module's power input circuit. Up to 200mA may be taken from pin 6 if the attached regulator has an adequate heat sink.

### Note: An oscilloscope with video triggering capabilities is required for CAB calibration:

The controls marked "LEN" (Length), "HF" (High-Freq Adj.), and "LF" (Low-Freq Adj.) should be initially set full CCW (counterclockwise). The "GAIN" (Amplitude) control should initially be set at midrange. With the longest intended camera cable in place, adjust GAIN for 286mV (40IRE) of video sync at the receiving end of the cable. Be certain to measure sync amplitude *between the blanking level and the flattest portion of the sync tip*. Do not measure overshoot or undershoot (if any), and do not measure from the black level reference (usually 7.5IRE above blanking level). In general, the back porch area is the most reliable blanking level reference, but you must ignore the color burst for this measurement.

Advance LEN to full CW (clockwise) if possible without observing overshoot on the sync pulse. Then adjust HF and LF for the best possible sync pulse shape consistent with correct amplitude of the color burst (i.e. 286mVpp or 40IRE). Compromise if necessary. Relatively sharp, square corners without overshoot characterize the "best" shape. If a video multiburst or video frequency sweep signal generator is available, use it in preference to the camera module as a signal source for CAB calibration. In some cases, alteration of CAB component values will yield improved cable compensation. Consult Decade Engineering to explore this option.

Subsequent recalibration for shorter cables may be carried out by simply resetting LEN and AMP. The HF and LF frequency compensation controls should not require any further attention *unless the cable type is changed*.