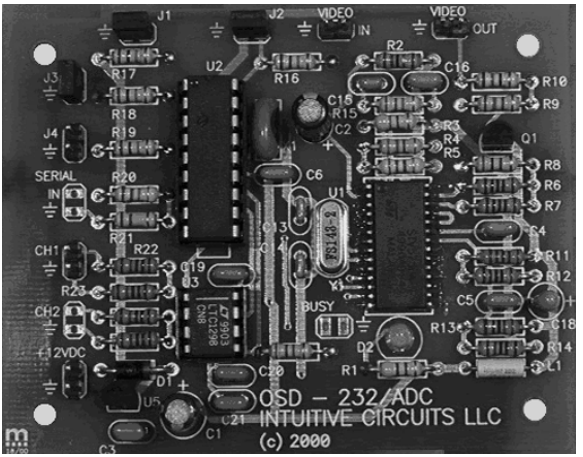
OSD-SSM

On-screen display signal strength meter

Version 1.02



Description

OSD-SSM is an on-screen display overlay board with analog to digital circuitry which continuously converts incoming ATV receiver AGC circuit voltage to a 0% to 100% signal strength bar graph. OSD-SSM installed at an ATV repeater site is a valuable resource because users get instant and accurate feedback of what their incoming signal strength is. While watching OSD-SSM's self-generated bar graph screen users of cross-band ATV repeaters can rotate their transmit antenna for maximum signal strength. Users of in-band ATV repeaters can also benefit because of OSD-SSM's ability to hold the incoming reading. By keying their ATV transmitter, sending a command to have OSD-SSM hold the reading, dropping their transmitter, and switching to the OSD-SSM video source, users can see their signal strength. Another option is to have other hams monitoring the repeater give signal strength readings over the FM calling frequency. OSD-SSM can also be used to help identify interference as well a physical obstructions between the user and repeater.

Specifications

Dimensions:	3 1/4" x 2 1/2" x 1/2"
Weight:	1.0 oz.
Input voltage:	8.0 to 14.0 volts DC (70 ma max.)
Operating temperature:	-10 C to +70 C
Video levels:	1 volt peak to peak nominal composite video
Video impedance:	input 75 ohm, output 75 ohm resistively terminated
CH1 input:	0 to 10.0 volts DC (2.44 mv resolution)
CH2 input:	unused

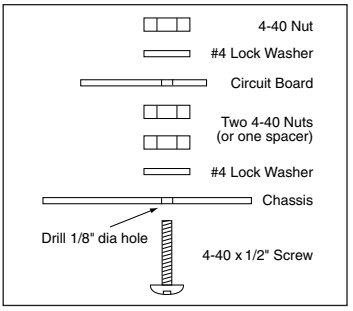
Installation

The following is the list of OSD-SSM circuit board pads (places to solder wires to). Please follow common electronic safety precautions when soldering.

Pad	Attach To
+12 VDC	+8 to +14 volt supply
GND	Ground from power supply
VIDEO IN and GND	Incoming NTSC video source (optional)
VIDEO OUT and GND	Outgoing NTSC video source with overlaid text
SERIAL IN	UNUSED
SERIAL GND	UNUSED
CH1 and GND	Incoming voltage from ATV receiver AGC circuit (10 VDC max)
CH2	UNUSED

Board Mounting Details

Mount the OSD-SSM board into a shielded enclosure to protect it from RF. For each of the four mounting holes be sure to use two 4-40 nuts or one 1/4" spacer between the OSD-SSM board and chassis to prevent the bottom of the OSD-SSM board from shorting to the chassis.



PC Electronics ATVR ATV Receiver Hookup

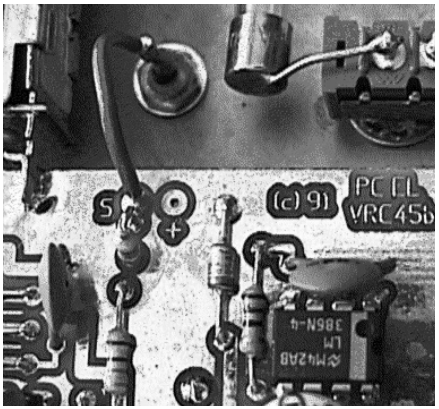


Fig 1.0 - VRC45b installation (inside view)

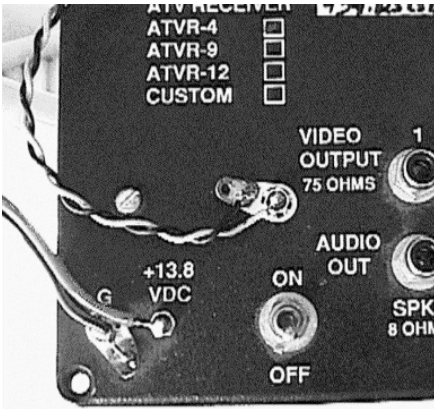


Fig 2.0 - VRC45b installation (outside view)

1) Drill an 11/64" hole into the ATVR enclosure near the VRC45b board.
2) Install a 1000 pf feed-through capacitor with ground lug.
3) On the inside of the enclosure solder a wire from the feed-through capacitor to the VRC45b "S" pad (see figure 1).
4) On the outside of the enclosure solder wires from the feed-through capacitor and ground lug (see figure 2) to the OSD-SSM CH1 pads. Keep the wires as short as possible.

Calibrating

OSD-SSM is a very accurate digitalvolt meter which scales a specified voltage range to a 0% to 100% bar graph. The voltage range (e.g. 6.5 to 3 volts) and direction (i.e. increase in voltage indicates decrease in signal strength or increase in voltage indicates increase in signal strength) must be calibrated for a specific ATV receiver. The calibrating process is simple and only needs to be done once. The information is stored in non-volatile memory so even with loss of power the information is retained.

IT IS VERY IMPORTANT TO NEVER PUT OVER 10 VDC INTO CH1! IF UNSURE, ATTACH A VOLTAGE METER TO THE ATV RECEIVER AGC S-METER OUTPUT FIRST.

To calibrate OSD-SSM to a new ATV receiver perform the following steps:

- Power off OSD-SSM and remove jumpers J1 and J2.
- Attach the ATV receiver AGC S-Meter output to OSD-SSM CH1 input.
- Apply power to OSD-SSM.
- On screen you will see: P0 > J1: with a real-time updating voltage reading.
- With NO incoming ATV signal insert the J1 jumper. You will see the P0 (no picture) voltage lock.
- On screen you will see: P5 > J2: with a real-time updating voltage reading.
- With a strong incoming ATV signal insert the J2 jumper. You will see the P5 (snow free picture) voltage lock.
- The message “Done” will appear.
- After a 5 second delay OSD-SSM will begin normal operations.

Operation

Once calibrated OSD-SSM will continuously display on-screen ATV receiver signal strength and voltage. OSD-SSM scales the bar graph percentage based of the P0 and P5 voltage calibrations. During normal operation jumper J3 and J4 affect how OSD-SSM behaves (see below).

Jumper	Action
J1	**P0 (no signal) calibration** Leave closed (inserted) during normal operation.
J2	**P5 (snow free picture) calibration** Leave closed (inserted) during normal operation.
J3	**Text overlay method** closed (inserted) - self generated blue screen open (removed) - overlaid text with incoming video source note: OSD-SSM cannot overlay text on a snowy incoming video source.
J4	**HOLD** While the jumper is closed (inserted) the last signal strength reading will be displayed.

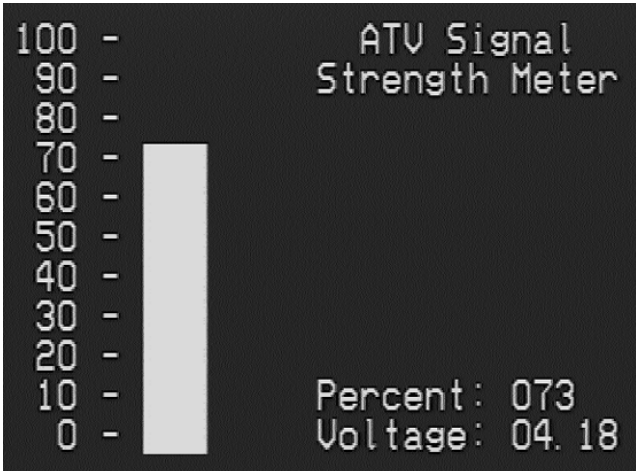


Fig 3.0 - Screen shot of OSD-SSM

Trouble Shooting Tips

Problem	Solution
Green LED off (won't power up)	• Check power supply output (8 to 14 VDC). • Check polarity of supply to OSD-SSM board.
Screen is unreadable in overlay mode	• Check that the OSD-SSM "VIDEO IN" has a valid video signal.
No signal strength information on-screen	• Verify ATV receiver signal strength output is connected to OSD-SSM channel 1 pads.

Warranty & Service

If the product fails to perform as described in our product description or specification, within 90 days from the date of shipment to the buyer, we will repair or replace the product and/or accessories originally supplied. Failure due to improper installation, misuse, abuse or accident is not covered by this warranty. Incidental and consequential damages are not covered by this warranty. The buyer must obtain a Return Material Authorization by calling (248) 524-1918, and shipping the defective product to Intuitive Circuits, 2275 Brinston, Troy, MI 48083, freight prepaid. After the warranty expires, we will promptly supply an estimate for the repair cost.

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