

Digital S-Meter

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Kit by Troy Radio Service

Congratulations, you have purchased the very first digital CB S-Meter in the USA.

Please read carefully and understand the procedure completely so you can have the best results

Note: Other than the circuit wiring, this is an “**example only**” of how to install the digital S-Meter in a Cobra 148GTL. It will work with almost any other CB or Amateur radio but you must understand its operation prior to installing.

The first thing you should do is inventory your kit. Each S-Meter kit has the following parts:

- 1 Microcontroller Arduino pro-mini (Software loaded)
- 1 Display .91” 128X32 OLED or optional 1.28”
- 5 Resistors 1-each: 470K, 680Ohm, 100K, 3.3K, 10Ohm
- 2 Capacitors 470uF and .1uF

We do not include wire or button, as each installation is different depending on where and how you locate the board and parts. We recommend using AWG#26 and several different colors so you can keep the connections clear.

I.E in our installations we supply the I2C connections with: Blk=Gnd / Blu=SCL/Yel=SDA for the DC connections, we use Red=13.8 VDC and for sub voltages like 5vdc we have Red with Blk stripe. It just keeps things tidy.

Tech Tip: Find an old CB chassis and take wire from that.

Installation:

Find an appropriate location on the main circuit board to place the Controller. Closer to the meter and farthest from antenna SO-239 as possible is best. Figure the distance for each wire, short runs are best.

Solder all the wires and components to the controller before you mount it, in this way you don't have to fight soldering wires with only one direction to hold the board.

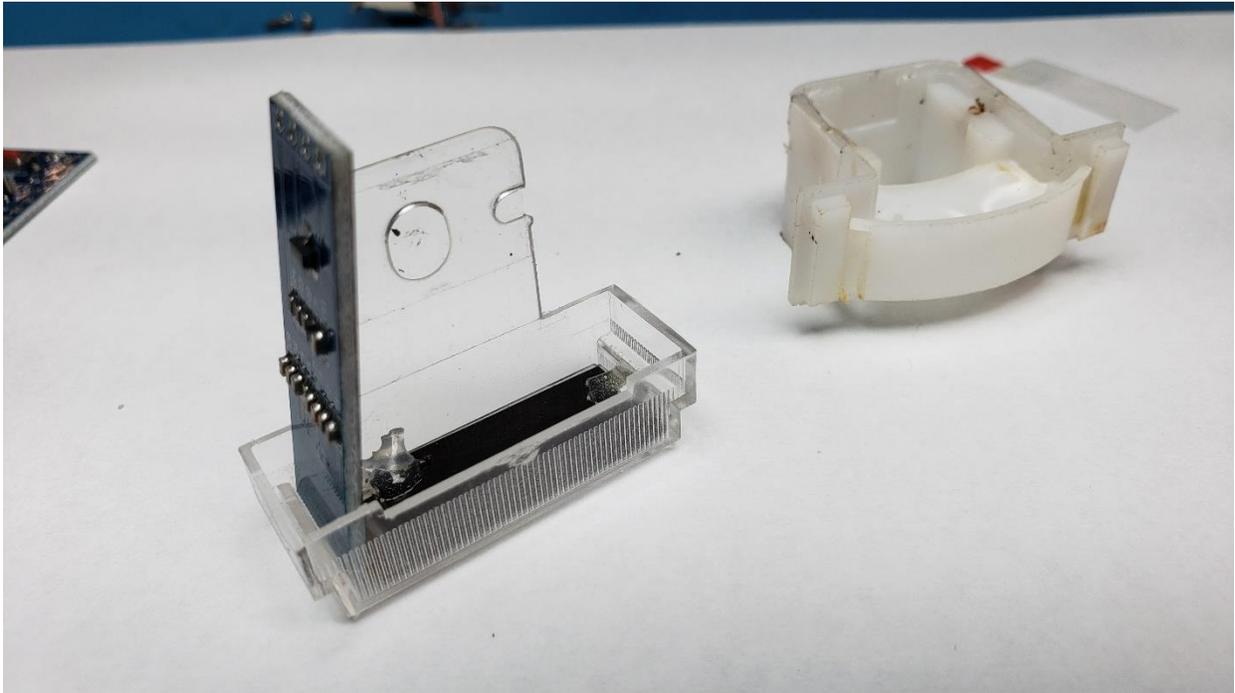
Now you are ready to make the meter: Pull out the original S-meter and disconnect the wires from it (*leave them connected to the radio side for use later*). Clean the terminals as we will be pulling them out from the other side. Gently remove the tape holding the clear plastic to the meter body and separate the clear half, be careful not to break it.

Now using a pair of needle nose pliers, remove all the mechanical guts of the meter, as well as the thin plastic face and any metal parts.

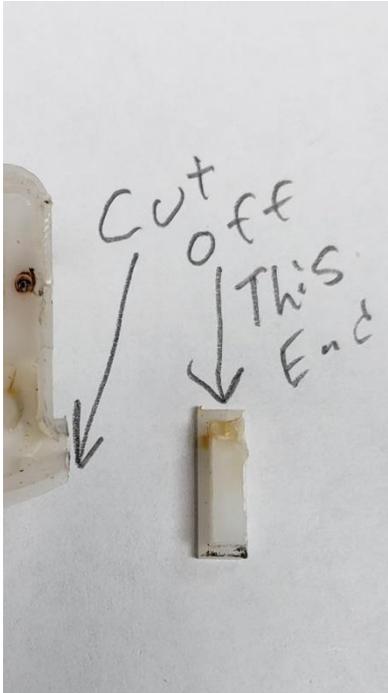
This next step is delicate and if you use force, you will break the display so be patient and slow your roll...

Separate the glass display from the Circuit board, be very careful to not use too much force, slow and steady or you may crack the screen and or tear the flex cable. Install as shown in **FG-1**. Use hot glue to affix it in place as shown.

FG-1.



Now with a cutting device such as Dremel circular blade, hold the meter body so the open area is oriented up and cut off the right side of the meter mount and save it as in **FG-2**.



FG-2

Next, assemble the meter as in FG-3 and use the cut off piece to shim the circuit board and use hot glue to affix it in place.

FG-3



Now you can attach the I2C buss wires to from the Arduino controller to the display...Gnd, Vcc, Scl and Sdk as in the circuit diagram.

Note: Feed the display Vcc from pin A2 of the Arduino controller.

Calibration:

Once you are confident you have connected everything as in the drawing and have checked ALL of your work, set your power supply to exactly 12.0 Volts DC with radio connected and remove antenna connector as we do not want any loud audio or signal to change the measurement while it calibrating. Now, turn on the radio and as soon as you see the splash screen **FG-4a**, hold down your meter button until you see the adjustment screen **FG-4b**, then release the button. Now you will see the meter calibrate its self, when it reaches the 12.0Vdc reference voltage, it will change to the voltmeter screen. At this point it should read 12.0 Volts. Now turn off the radio, connect it to a 13.8 Vdc power supply and check for proper operation on the voltage display.

To start over, do the calibration with 13.8 Vdc then start calibration method over with 12.00 Vdc exactly. This way the software knows it needs Re- calibrate.

If you have wired and calibrated correctly, you will now have a perfectly accurate Digital S-Meter!

FG-4a



FG-4b



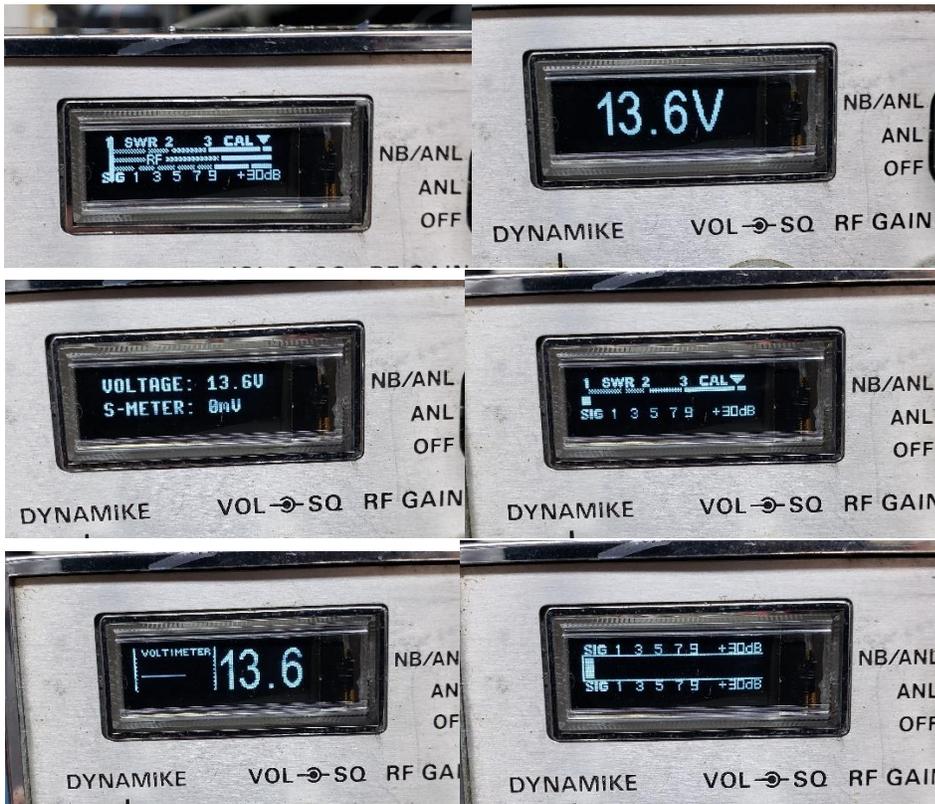
Functions:

The function of the meter button is to change modes on the display screen.

Short press (1 second) on the button, changes the screen brightness.

Note: From Dim to Bright there are 7 steps and you may not notice each change as it is a very small amount.

One quick press (1/2 second) on the button changes the display screen modes.



Check out www.ddsvfo.com for this and other info.

Thank you!