

# VEI Systems Installation Instructions

## V1-E85-Mx – Ethanol-to-Gasoline Content Ratio Monitor

Please read these instructions completely before beginning installation to ensure that you have the tools and skills necessary for installation and operation of this instrument. If you are not sure that you can perform the installation safely, then consult a qualified installer. Further instructions available at [www.VEISystems.com/technical.html](http://www.VEISystems.com/technical.html).

### FEATURES

This gauge shows the composition of ethanol to gasoline flowing through the fuel rails in a vehicle, as a ratio or percentage from 0 to 100. The value shown indicates the percentage of ethanol in the gasoline, so a display of 85 indicates that the mixture is 85% ethanol and 15% gasoline. The gauge also has an analog output indicating the ratio, which may be fed to an ECU for tuning adjustment, or a datalogger for monitoring.

### MOUNTING

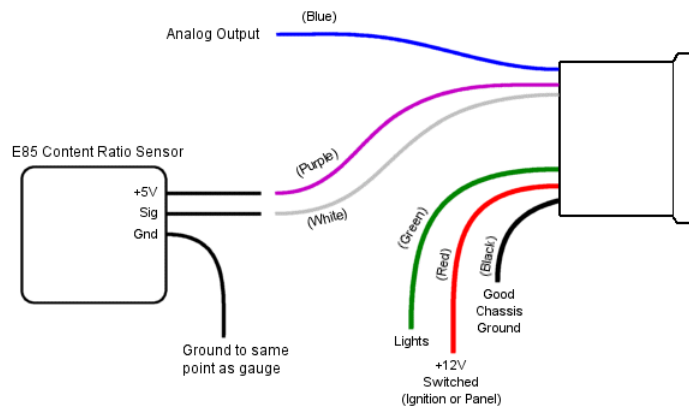
Install the unit through the front of the mounting hole in the dash pod or panel. If you are making a custom dash panel, you will need to drill a 2-1/16" hole. Slide the clamp onto the 2 studs on the back of the instrument. Secure with the 2 thumb-nuts. Use a small drop of threadlocker or nail polish on the thumb-nuts to prevent them from loosening under vibration.

Mount the sensor securely with the screws provided, or otherwise, keeping it away from any major heat sources such as exhaust manifolds. Connect the sensor to the return side of the fuel system after the fuel pressure regulator (between the output of the fuel-pressure regulator and the fuel tank's return input) with standard push-on EFI fittings, or appropriate adapters as required for your vehicle.

NOTE: This gauge is only specified for use with our E85 sensor. Use with other sensors is not supported, and may damage the gauge or sensor.

### WIRING

The wires should be connected as below using crimp-on butt-splice connectors, or soldered and sealed with heat-shrink tubing. Before connecting any wires, you should either disconnect the battery power, or carefully connect the wires in the order shown. If not, you may damage the instrument. Use an existing fuse in the fuse panel, or an external fuse to supply power to the instrument. The V1 series instruments use an 105mA of current avg. and 175mA max, so ensure the fuse is sized appropriately. For a typical 6- or 7-gauge setup, a single 5 Amp fuse is good.



- BLACK -- connect to a solid chassis ground under the dashboard, or directly to the battery. You may need to expose the metal connection point under the dash by scraping or lightly sanding it. A ring terminal and a screw should work well in most cases.
- RED -- connect this to a source of **switched** +12V power. This will usually be found at or near the ignition switch, and will usually have a relay wired through the ignition switch. An alternate source of this is a switched power line from a nearby light or accessory (radio, etc). If you are unsure that the wire can supply the power required for the instrument, then use an external relay. To minimize any measurement errors, use a heavy-gauge wire such as a 14 gauge or better.
- GREEN (optional) -- connect this wire to the positive line (+12V) from the headlight switch. When this line receives a positive voltage, the gauge will use the "park-lights" brightness setting. Alternatively, if setting up a racing-mode display, this can be connected to a separate mode switch (12V or 0V signal). If unused, connect this to ground.
- PURPLE -- this wire supplies +5V to the ethanol content sensor. Connect this to +5V or VCC wire on the sensor. Note that the pigtail connector on the gauge may not be color-coded, so follow the wire to the +5V or VCC label on the sensor. Do not allow this wire to come in contact with ground or other signals as it sources power, and can short out the regulator in the gauge. This wire does not have enough power to drive other loads.
- WHITE -- this is the signal input to the gauge. Connect this to the SIG or OUT wire on the ethanol content sensor. Note that the pigtail connector on the gauge may not be color-coded, so follow the wire to the SIG or OUT label on the sensor.

- BLUE (optional) – this is the analog output from the gauge. Connect this to an input on the ECU or other monitoring device, with a relatively high input impedance (1 Megohm or higher is ideal). If unused, tape or seal this wire properly as it sources power and can short if grounded or connected to other wires.
- BLACK (GND on Sensor) – connect this (wire marked as GND on sensor) to the same ground point as the gauge. As the sensor will not be installed inside the vehicle's cabin, you can extend this as necessary.

## OPERATION

Press and hold the button for a few seconds to change the mode. Press and release quickly (tap the button) to change the setting in any mode. Modes are as follows:

MODE	DISPLAY	SETTINGS
Normal	(E-to-G ratio)	Shows 0-100 normally, or LO or HI on out-of-range conditions. See ANALOG OUTPUT section below.
Brightness Regular	Br . 9	Last digit shows regular brightness level from 1 to 9.
Brightness park-lights on	BP . 1	Last digit shows brightness level with lights on from 1 to 9.

## ANALOG OUTPUT

The analog output provides a proportional absolute output from 0.5V to 4.5V for ethanol-to-gasoline ratios of 0 through 100 respectively. If the signal input from the sensor is too low (out of normal range), not present or not readable, the analog output goes to 0V, and the display shows "LO". If the signal input from the sensor is too high (out of normal range), the analog output goes to full (~4.75V), and the display shows "HI".

## WARRANTY & LIABILITY

Neither VEI Systems, nor its dealers or agents shall be liable in any way, for any damage, loss, injury or other claims, resulting from the installation or use of this product. By purchasing or installing this product, you assume all liability of any kind connected with the use and/or application of this product. If you are unsure that you can safely install and use this product, consult a qualified installer or mechanic. The warranty on this product covers only the product itself for a period of 1 year from the date of purchase, and it will be at our discretion to repair or replace the affected parts. No user serviceable parts inside. Warranty void if product enclosure opened.