

# VEI Systems Installation Instructions

## D1-IAC-IAC-Mx – Differential Intake-Air Temperature (deg-C) Dual Gauge

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 dual-function instrument monitors intake-air temperature simultaneously on two independent displays within a single gauge housing. It also features a unique differential mode that shows the temperature drop or rise between the two sensors in real time, so you can instantly see the effectiveness of an intercooler for example.

### 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.

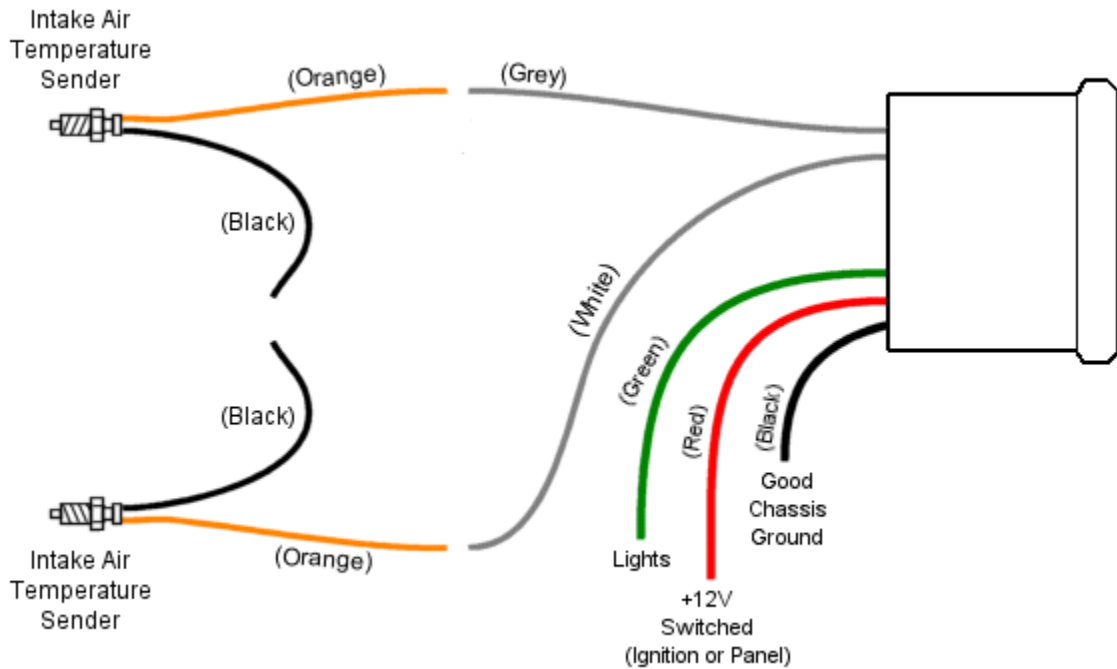
For the intake-air temperature use two SEN-IAT1E senders. Mount the senders in the intake-air stream, usually near the throttle body, or mass-air sensor, or in the inlet or outlet of an intercooler. With the differential mode on this gauge, the ideal locations are one at the intercooler inlet and one at the intercooler outlet, to determine the dynamic effectiveness of the intercooler. The sensor has 3/8"-NPT threads, so the mounting location can be drilled and tapped, or a 3/8"-NPT bung can be welded at the appropriate location.

### 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 D1 series instruments use approx. 130mA of current average, and approx. 210mA maximum, so ensure the fuse is sized appropriately. For a typical 6- or 7-gauge setup, a single 5 Amp fuse is good.

#### INSTRUMENT:

- BLACK -- connect to a solid chassis ground under the dash, 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. The black wires (grounds) of both sensors should be connected to the same point.
- 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 support the power required for the instrument, then use an external relay.
- GREEN – 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. You may on older vehicles connect this wire to the interior dash lights that come on when the park lights are switched on, however on newer vehicles the lights may be PWM dimmer (oscillating on and off rapidly to control brightness), so the gauge may flicker. Alternatively, if setting up a racing-mode display, this can be connected to a separate mode switch (12V or 0V signal).
- WHITE – this is the input for the first display channel. Connect this to the orange wire from one of the intake-air temperature senders.
- GREY – this is the input for the second display channel. Connect this to the orange wire from the other intake-air temperature sender.
- BLACK (on each sensor)– Connect these to a proper ground, preferably the same point at which the gauge is grounded.



## 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	(Temp)	Channel 1 shown on upper display and channel 2 on lower display, unless swapped (see next setting below).
Channel swap	CH1 CH2	Allows you to swap the position of the upper & lower displays if required.
Actual / differential selection	ACT DIF	Allows selection of actual temperature values or differential values. In differential mode, the differential value is the change with respect to the other (actual value). For example, if the upper display shows 45, and the lower shows a difference of -12, then the upper sender is at an actual temperature of 45 deg-C, and the lower is at $45 - 12 = 33$ deg-C. So there is a 12-degree temperature drop. Differential range is -90 to +90 and clips at these end-points.
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.

## 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.