VEI Systems Installation Instructions
V1-AHM4-Mx – Audio Health Monitor (Voltage and 4 Temperature zones)

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 .

DESCRIPTION

This Audio Health Monitor accurately measures temperature at 4 independent points (for amplifiers or other audio equipment), and voltage at a remote point. The temperature sensors are precision devices that are accurate to 0.5 deg C (1.0 deg F), and are all connected to a single wire out of the instrument. This wire provides power and bi-directional serial communications with all sensors. As difficult as it may be to believe, it works! The remote-sense feature on the voltmeter preempts the typical errors with voltmeters, which induces errors into the reading due to the power consumption of the instrument itself. Upper and lower alarms (user-settable) for voltage and temperature will flash and beep, and automatically switch to the sensor with the problem. There are also 2 brightness modes (normal and with lights on), each settable at one of nine levels).

MOUNTING

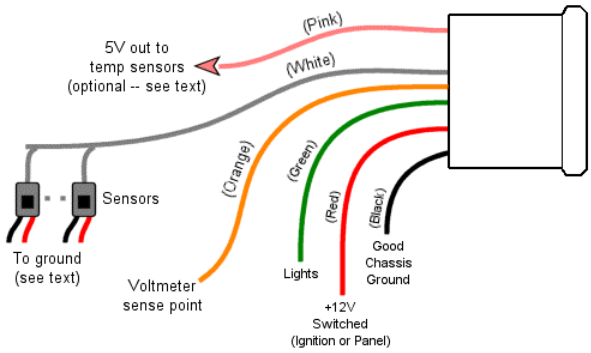
Install the unit through the front of the mounting hole in the dash pod or panel. If you are making a custom dash panel, you will need to drill a 2-1/16" hole. Slide the clamp onto the 2 studs on the back of the instrument. Secure with the 2 thumb-nuts. Use a small drop of threadlocker or nail polish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

Mount the sensors (up to 4) using double-sided thermal tape. To maximize accuracy, mount them inside the amplifier or on a vent-hole on the amplifier (not one with a fan, as this would not truly represent the temperature inside the amplifier), with the black chip towards the amplifier.

NOTE: The temperature sensors are designed to measure air-temperature only. Do not immerse or expose on any liquid, nor to any noxious or corrosive gases.

WIRING

The wires should be connected as below using crimp-on butt 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 average of 105mA of current, and a maximum of about 175mA, so ensure the fuse is sized appropriately.



- 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.
- GREEN -- connect this wire to the positive line (+12V) from the headlight switch. Alternatively, if setting up a racing-mode display, this can be connected to a separate mode switch (12V or 0V signal).
- WHITE -- connect this wire to white wire to all on the temperature senders together. This provides power and allows bi-directional serial communications to all the digital temperature sensors.
- ORANGE – connect this to the point at which voltage is to be monitored (usually the power distribution block).
- PINK (optional) – In high noise environments, data communications with the sensors may generate occassional errors. To alleviate this, connect this wire to the red wire on all the sensors. This will provide a cleaner 5V signal. NOTE: If this wire is not used, ensure that it is taped/sealed so that it does not touch anything else, as it sources power.
- BLACK on sensors – connect these to ground.
- RED on sensors – if the PINK wire is required/used (explained above), connect it to these red wires on the sensors. Otherwise, connect these to ground along with the black wire on the sensors.

OPERATION

When first powered up, the instrument will search the temperature network for all sensors (up to 4). The order in which they are identified (and therefore listed on the display) is based on the internal digital ID of each sensor, so you may want to physically move the sensors around if you want a specific ordering. The ID's of all sensors are stored in internal non-volatile memory in the instrument, so on subsequent power-up, it will not re-search the network. If you add/remove/change sensors at any time, select the "CAL" mode (see the table below), change the value to "ON", then turn off the unit and turn it back on. It will re-search the network for sensors again.

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	(Volts or Temp)	Tap & release the button quickly to change displayed function.
Set lo-voltage alarm	BL / value	Set the low-voltage alarm from 9.0 to 12.0 volts.
Set hi-voltage alarm	BH / value	Set the low-voltage alarm from 13.0 to 16.0 volts.
Set temperature units	Deg / C or F	Sets the display units for temperature (degrees C or degrees F)
Set lo-temperature alarm	TL / value	Sets the low-temperature alarm from 1 to 10 deg C (33 to 50 deg F)
Set hi-temperature alarm	TH / value	Sets the high-temperature alarm from 30 to 80 deg C (86 to 176 deg F)
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.
Calibrate	Cal / On or Off	Re-initiate search for all temperature sensors on the network.

Bargraph operation: In normal display mode, the bargraph scales are as follows:

- Voltmeter: 10.0 volts to 16.0 volts in 12 steps.
- Temperature (deg C): 0 to 120 deg C in 12 steps.
- Temperature (deg F): 0 to 180 deg F in 12 steps.

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.