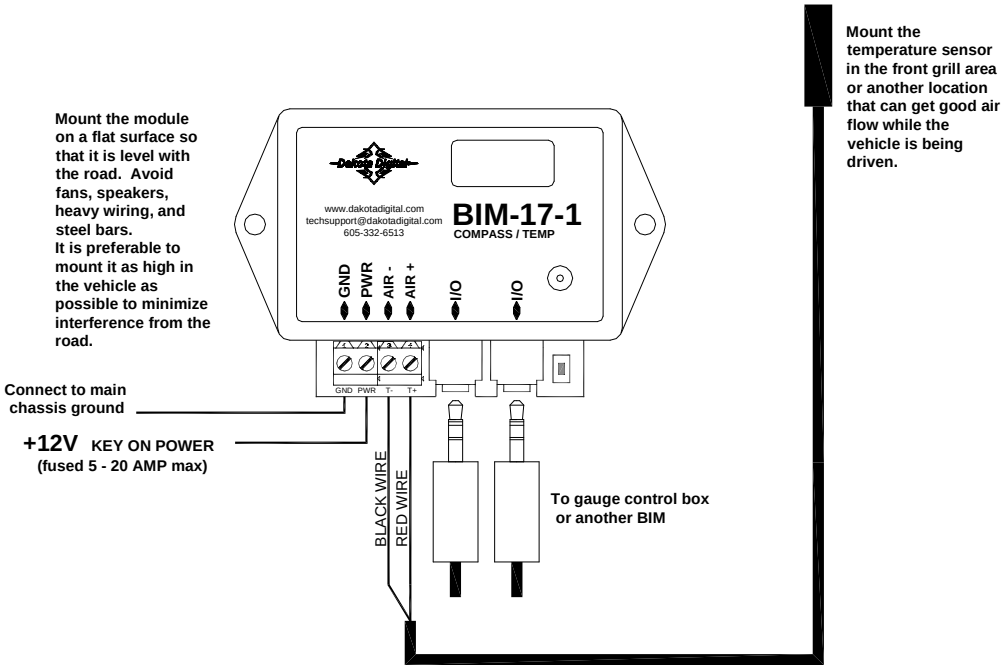
BIM-17-1
Bus Interface Module for compass and outside temperature



This Bus Interface Module has an internal compass sensor and an input for the included digital air temperature sensor, SEN-15-1. There are two interface ports on the module. Either one can be connected to the gauge system or to another module, allowing several units to be daisy chained together. Do not connect the I/O port to anything other than a Dakota Digital gauge or BIM. Do not mount the module in the engine compartment; it should be mounted in interior of the vehicle. If there are several modules being used, it may be easiest to attach this one as the last module in the series. Six foot and twelve foot cables are included to allow flexibility in the mounting location of the compass module and routing of the cable.
Each unit connected to the bus needs a unique ID number assigned to it. It can be assigned an ID from 1 – 16 or turned off. The factory default ID number is 8. ***The compass must be calibrated in the vehicle before it can begin reading properly.*** The display will flash between '5Et' and '-CL' until it has been calibrated in your vehicle.

Specs for each input are:

Sensor	Range	resolution	warning
Internal compass	N-NE-E-SE-S-SW-W-NW	1°internally	when outside interference is present
SEN-15	-40 – 255 ℉	1℉	-24 – 40

Temperature unit will follow the unit set for the main water temp gauge.

Air temperature sensor mounting:

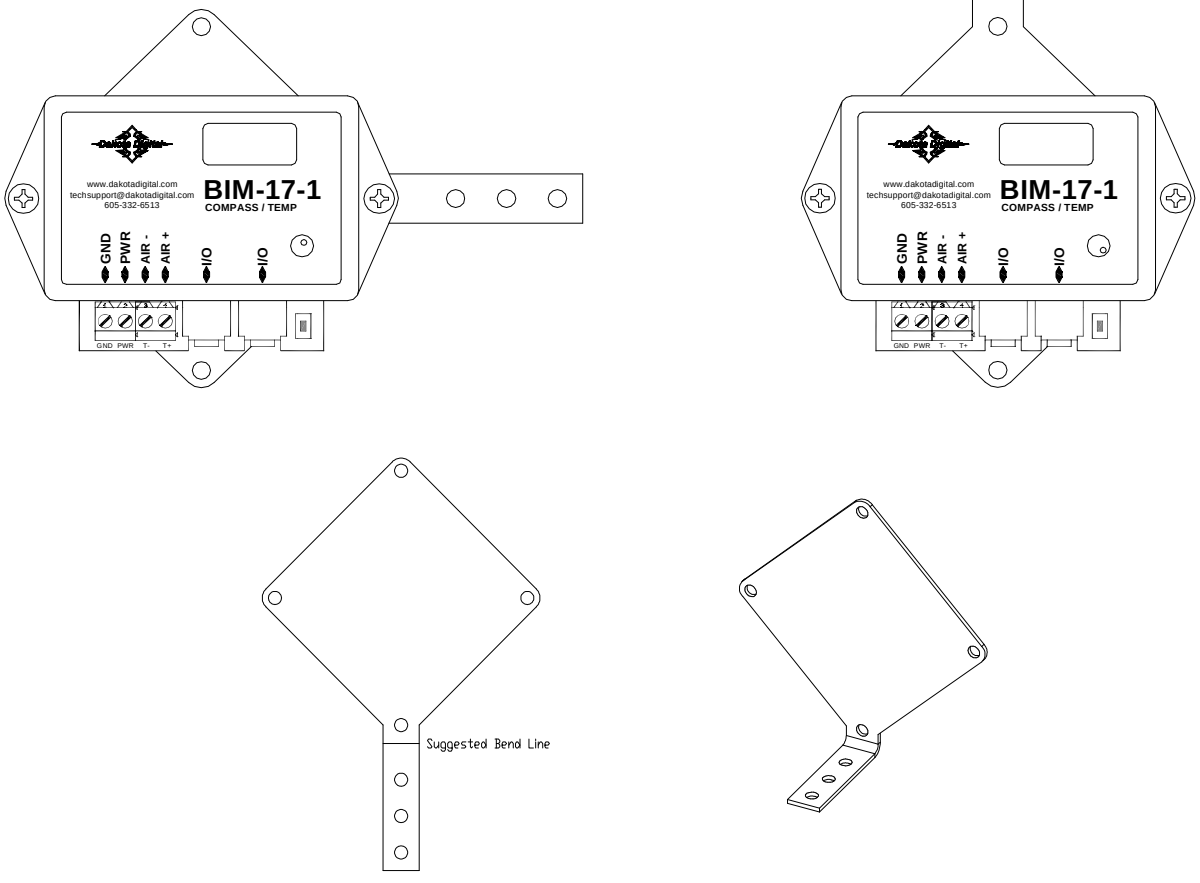
Make sure the temperature sensor probe can get adequate air flow. For outside temperature measurement, the front grill area or above the front bumper may be a good location. It should be in a location that can get good air flow across it while the vehicle is moving. When you are sitting still for a long period of time after driving the temperature reading may begin to rise due to the engine heat radiating forward.

Compass module mounting:

Do not mount the module in the engine compartment; it should be mounted in interior of the vehicle. Avoid any strong magnets such as fan motors and speakers, high current wiring such as alternator or fan wires, or steel bars. Sheet steel is much better than steel bars or brackets since the bars and brackets can bend the magnetic fields causing compass errors. Some roads have steel bars in them for reinforcement which can cause interference. Mounting the module higher in the vehicle helps eliminate this. Magnetic interference drops off very rapidly with distance, so even small movements away from the interference can help significantly.

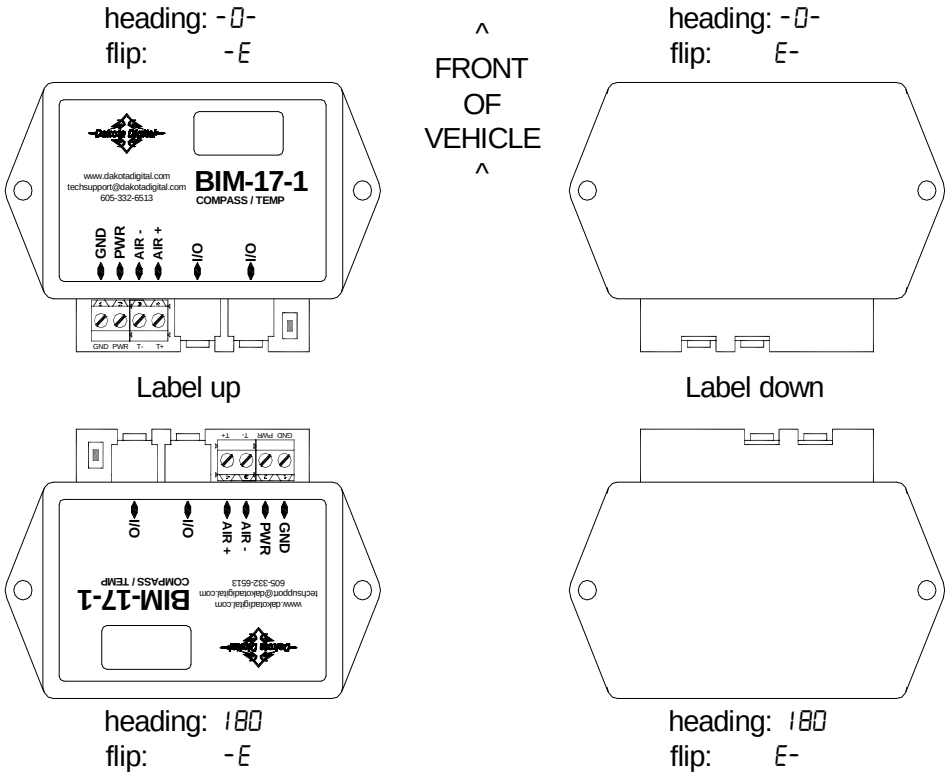
The BIM unit should be mounted flat and level with the road. The module can be mounted directly to a flat surface in the vehicle or the supplied mounting bracket can be used. The bracket can be attached to the module so that it extends out the left, right, front, or back. The flat mount extending out can be bent to simplify mounting the module to a vertical or angled location. ***The bend should be done between the mounting holes to provide a stronger support. It is recommended that the bracket be clamped into a vise and a hammer used to make the bend between the mounting holes as shown in the diagram below.***

The bubble level in the lower left corner of the module can be used to assist in leveling the module when mounting it. If at least half of the bubble is inside the dark circle then the module is level enough. The module can be oriented with the label and display facing up or down and can have the wiring terminals facing towards the front of the vehicle or the back of the vehicle. The setup section on the following page shows how to set up the module for different mounting positions so that it shows the correct headings.



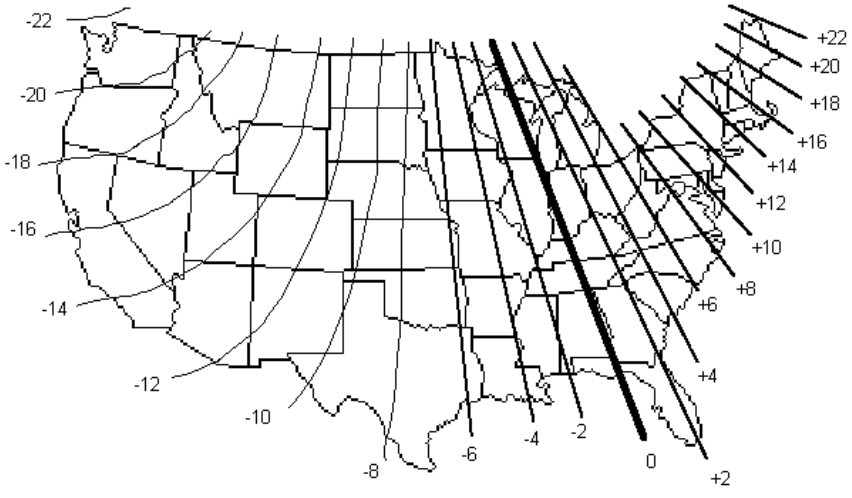
To set or change the ID numbers and set orientation:

- Hold the switch beside the BIM terminal strip while turning the key on. The BIM display will show the current revision code while this is held.
- Release the switch. The display will show "-C-".
- Press the switch. The BIM display will show "C- 1".
- Release the switch. The display will show the current ID for channel 1.
- Press and release the switch to change the setting from 1-16 or OFF.
- Press and hold the switch to save the setting. The BIM display will show "-O-" or "180".
- Release the switch. This is the heading adjustment to allow the sensor to face forward or backward.
- Press and release the switch to change the setting.
- Press and hold the switch to save the setting. The BIM display will show " -E" or "E- ".
- Release the switch. This is the flip adjustment to allow the sensor to be mounted right side up or upside down.
- Press and release the switch to change the setting.
- Press and hold the switch to save the setting. The BIM will restart with the new settings.



The calibration and warning points are set up through the gauge display system. The calibration should be done in an open area such as an empty parking lot to avoid any external interference.
Only VFD3/3X controls with a plastic case support adding BIM's.
For VFD3, VFD3X, and VHX systems follow these steps:

- Make sure the BIM units are all connected to the gauge control box with the 3.5mm data cables.
- Hold the SW1 switch from the gauge system control box while turning the key on and starting the engine. The message display should show SETUP.
- Release SW1.
- Momentarily press SW1 until BIM is shown on the message display.
- Press and hold SW1. The message display should show SCAN followed by the number of BIM channels detected. Release SW1.
- If 0 is shown, check all connections and then press and hold SW1 with SCAN shown to retry reading the modules.
- Otherwise, if any other number is shown, press and release SW1 until SETUP is shown.
- Press and hold SW1 until the speed display shows " – " or the message changes.
- Release SW1. On the VFD3 systems the message display will show the label assigned to the first channel found and the speed display will show "C" followed by the channel ID number. On the VHX systems the message display will show "CH" followed by the channel ID number on one line and the label currently assigned on the second line.
- Momentarily press SW1 until the desired channel ID number is shown.
- Press and hold SW1. The message display will show "LABEL".
- Release SW1. The message display will show the label assigned to this channel.
- The compass label cannot be changed.
- Press and hold SW1. The message display will show "WARN".
- Release SW1. The message display will show "L" followed by the current low warning point or will flash the temperature warning point.
- Momentarily press SW1 to change the low warning point to the desired value.
- Press and hold SW1 until the speed display shows " – ".
- Release SW1. The message display will show "N" followed by the current true north offset correction.
- Momentarily press SW1 to change the true north offset correction to the desired value.
- Press and hold SW1. The message display will show "CAL"
- Release SW1. The message display will show either "SKIP" or "BEGIN".
- Momentarily press SW1 to change the selection.
- To end here and skip the compass calibration, press and hold SW1 with "SKIP" displayed.
- To continue on with the calibration, press and hold SW1 with "BEGIN" displayed.
- Release SW1. The message display will show "CIRCLE" and the BIM-17 display will show "C L". Begin slowly driving in a circle in an open area. Drive in at least two slow, complete circles.
- Momentarily press SW1 to finish and save the compass calibration.
- The message display will now show "DONE".
- This can be repeated for additional channels, or the key can be turned off to exit setup.



Troubleshooting quick tips:
While the BIM is operating, the dot in the upper left corner of the display will indicate the status. On steady indicates it is powered up but not receiving any bus activity. Flashing indicates it is communicating on the bus.
The display will flash between '5EE' and '-CL' until it has been calibrated in your vehicle. It cannot begin reading correctly until after this is completed.
To see the sensor and channel status on the BIM display, press and hold the switch. The display will cycle through three screens. The first will show the sensor input status. 'E' indicates there is a bus ID conflict. '-' indicates the sender is connected properly. 'H' indicates the sender is not connected or the signal is too high. 'L' indicates the sender is shorted to ground or is too low. The second screen will show the ID assigned to it. The third screen will show the compass heading in degrees.
Interference notes:
The dot in the lower, center of the display will be on when the unit is detecting a large interference.
Traffic light sensors mounted into the road can cause a temporary error in the compass heading. The reading will correct itself once you have driven off the road sensor.
Bridges can cause temporary interference due to the steel supports.
Steel reinforced concrete can cause interference if the module is mounted too low in the vehicle.
If the compass is always showing interference, even in open areas, then repeat the compass calibration. If this does not resolve the problem then move the BIM-17 to a different location and then repeat the compass calibration.

Troubleshooting guide.

Problem	Possible cause	Solution
Sensor does not show on gauge readout. BIM will not light up at all.	PWR terminal does not have power.	Connect to a location that has power.
	GND terminal does not have a good ground.	Connect to a different ground location.
	Module is damaged.	Return for service. (see instructions)
Sensor does not show on gauge readout. BIM has a steady dot lit	Interface cable is not connected.	Connect the supplied 3.5mm data cable between the module and the gauge control box.
	Interface cable is loose.	Make sure both ends of the cable are seated in securely.
	Another BIM is set with the same channel IDs.	Test module works when connected to control box alone. Change ID's on one of the modules so each module uses unique IDs.
Compass shows interference at all times.	Compass is not calibrated correctly.	Follow Compass calibration instructions on third page.
Compass reads incorrectly.	Compass is not calibrated correctly.	Follow Compass calibration instructions on third page.
	True North offset is incorrect.	Change the North offset to correct the compass heading.
N-S and E-W are reversed.	Heading orientation is set incorrectly.	Change the orientation heading following the directions on the 3rd page.
E-W is reversed. N-S OK	Flip orientation is set incorrectly.	Change the orientation flip following the directions on the 3rd page.
N-S is reversed. E-W OK	Both heading and flip are set incorrectly.	Change the orientation following the directions on the 3rd page.
Gauge lights up, but does not read correctly.	Loose connection on sensor wires.	Inspect and reconnect wires.
	Connector not seated on sensor.	Reattach the sensor plug, making sure the locking tab clicks in place.
	Channel sensor label setup is incorrect.	Change label by entering BIM setup through gauge system.
	Voltage or wiring problem in the vehicle wiring harness.	Check wiring harness for loose or damaged wires.
Gauge lights up, but displays "---". ('L' on BIM)	SND terminal is shorted to ground.	Check wire for damaged insulation. Replace if necessary.
	Sender is damaged.	Replace sender.
Gauge lights up, but displays "EEE". ('H' on BIM)	Sender is not connected to gauge.	Connect SND terminal on gauge to sender terminal.
	Wire between gauge and sender is broken.	Test and replace wire.
	Sender is damaged.	Replace sender.
	Module is damaged.	Return module for service. (see instructions)
BIM display shows "88-8"	Data cable is damaged.	Inspect and replace 3.5mm data cable.
	Another module on the bus is damaged or connected improperly.	Inspect other modules on the data bus.

SERVICE AND REPAIR

DAKOTA DIGITAL offers complete service and repair of its product line. In addition, technical consultation is available to help you work through any questions or problems you may be having installing one of our products. Please read through the Troubleshooting Guide. There, you will find the solution to most problems.

Should you ever need to send the unit back for repairs, please call our technical support line, (605) 332-6513, to request a Return Merchandise Authorization number. Package the product in a good quality box along with plenty of packing material. Ship the product by UPS or insured Parcel Post. Be sure to include the RMA number on the package, and include a complete description of the problem with RMA number, your full name and address (street address preferred), and a telephone number where you can be reached during the day. Any returns for warranty work must include a copy of the dated sales receipt from your place of purchase. Send no money. We will bill you after repair.

Dakota Digital Limited Lifetime Warranty

DAKOTA DIGITAL warrants to the ORIGINAL PURCHASER of this product that should it, under normal use and condition, be proven defective in material or workmanship for the lifetime of the original vehicle it was installed in, such defect(s) will be repaired or replaced at Dakota Digital's option.

This warranty does not cover nor extend to damage to the vehicle's systems, and does not cover removal or reinstallation of the product. This Warranty does not apply to any product or part thereof which in the opinion of the Company has been damaged through alteration, improper installation, mishandling, misuse, neglect, or accident.

This Warranty is in lieu of all other expressed warranties or liabilities. Any implied warranties, including any implied warranty of merchantability, shall be limited to the duration of this written warranty. No person or representative is authorized to assume, for Dakota Digital, any liability other than expressed herein in connection with the sale of this product.

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