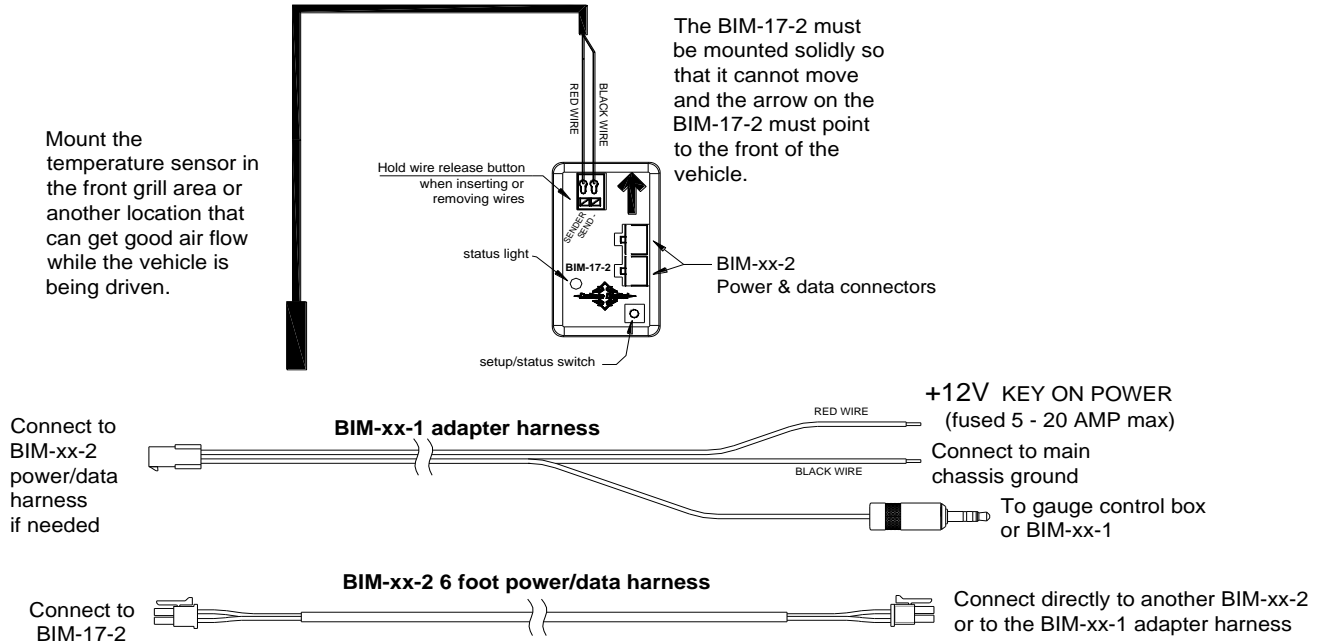


## BIM-17-2 Bus Interface Module for compass and outside temperature



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. The unit comes preset with an ID value that should not conflict with any other BIM connected to your system. If needed the ID can be automatically reset to an unused value. **The compass must be calibrated in the vehicle before it can begin reading properly.** The status light will flash between red and green until it has been calibrated in your vehicle.

### 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:

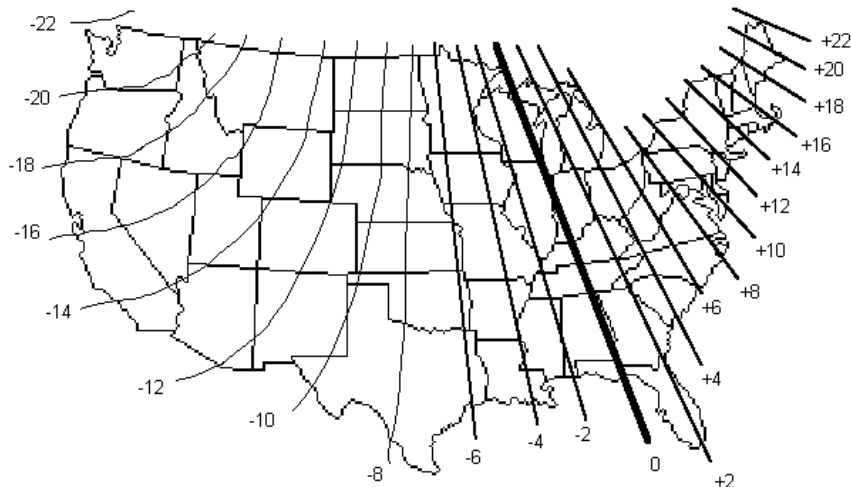
Do not mount the module in the engine compartment; it should be mounted in interior of the vehicle. Avoid any strong magnets such as fan motors and speakers, high current wiring such as alternator or fan wires, or steel bars. Sheet steel is much better than steel bars or brackets since the bars and brackets 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 solidly so that it cannot move or shift. The arrow on the BIM should point directly to the front of the vehicle. Any error in the mounting direction will cause an error in the compass heading. If the BIM moves or shifts then the calibration will no longer be correct and the readings will be wrong.

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 BIM-xx-1 data cables or BIM-xx-2 power/data harnesses.
- 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 “[ 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.



### To set or change the ID number:

The ID will not normally need to be changed. A green-red-red flash on the BIM-17-2 status light indicates an ID conflict with another connected BIM. The following procedure will allow the BIM-17-2 to automatically select a new, unused ID.

- Hold the switch on BIM while turning the key on. The BIM status light will be steady RED.
- Release the switch.
- When the status light begins flashing, it is finished.

### VFD/VHX wiring tip:

When connecting to a VFD or VHX display system you can easily get power and ground from the control box FUEL+ and FUEL- terminals. These terminals are normally not used. Connect the BIM-xx-1 adapter harness RED wire to the FUEL+ terminal and connect the BIM-xx-1 adapter harness BLACK wire to the FUEL- terminal.

### Troubleshooting quick tips:

While the BIM is operating, the status light will flash green. A steady green indicates it is powered up but not receiving any bus activity.

The display will flash green-yellow-green-yellow-red-red (rapid red flash with slow green flash) until it has been calibrated in your vehicle. It cannot begin reading correctly until after this is completed.

A flashing yellow-red (steady red with a flashing green) indicates an open or shorted temperature sensor connection.

### Interference notes:

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 wire does not have power. GND wire does not have a good ground. Power/data harness is damaged. Module is damaged.	Connect to a location that has power. Connect to a different ground location. Inspect harness. Repair or replace any damaged areas. Return for service. (see instructions)
Sensor does not show on gauge readout. BIM has a steady green light.	Interface cable is not connected. Interface cable is loose. Another BIM is set with the same channel ID.	Connect the supplied 3.5mm data cable between the module and the gauge control box. Make sure both ends of the cable are seated in securely. Test module works when connected to control box alone. Change ID on one of the modules so each module uses unique ID.
Sensor does not show on gauge readout. BIM light is flashing green-red-red	Another BIM is set with the same channel ID.	Test module works when connected to control box alone. Change ID on one of the modules so each module uses unique ID.
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. True North offset is incorrect.	Follow Compass calibration instructions on third page. Change the North offset to correct the compass heading.
Gauge lights up, but does not read correctly.	Loose connection on sensor wires. Connector not seated on sensor. Channel sensor label setup is incorrect. Voltage or wiring problem in the vehicle wiring harness.	Inspect and reconnect wires. Reattach the sensor plug, making sure the locking tab clicks in place. Change label by entering BIM setup through gauge system. Check wiring harness for loose or damaged wires.
Gauge lights up, but displays “---”.	SND terminal is shorted to ground. Sender is damaged.	Check wire for damaged insulation. Replace if necessary. Replace sender.
Gauge lights up, but displays “EEE”.	Sender is not connected to gauge. Wire between gauge and sender is broken. Sender is damaged. Module is damaged.	Connect SND terminal on gauge to sender terminal. Test and replace wire. Replace sender. Return module for service. (see instructions)

**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 °F	1°F	-24 – 40

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

**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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