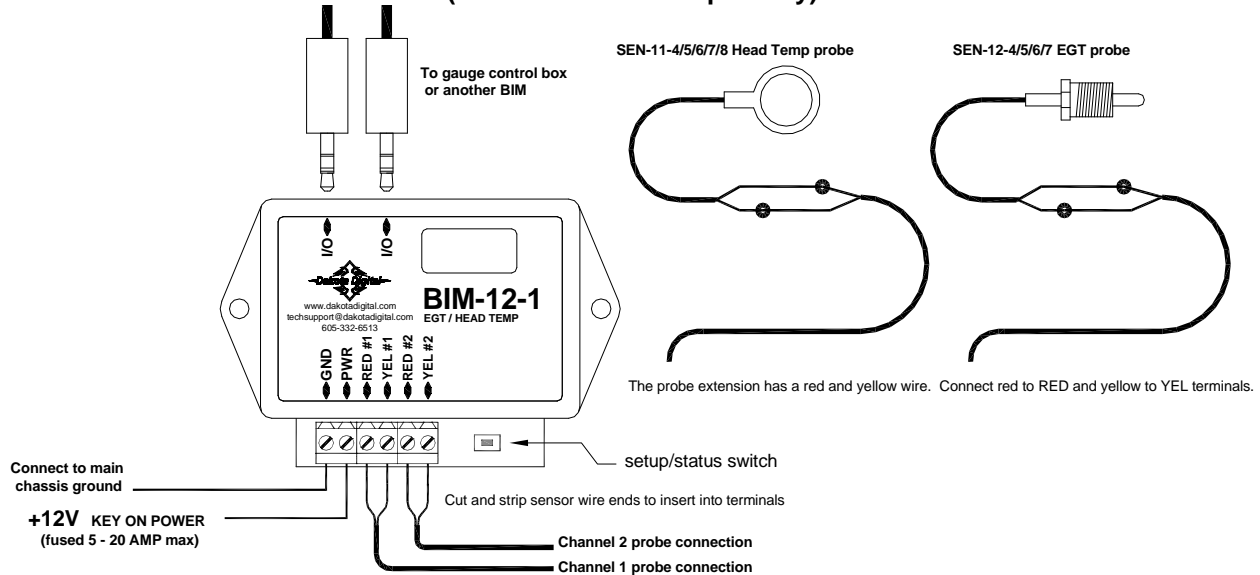




BIM-12-1 Bus Interface Module for EGT and Head Temp (Sensors are sold separately)



This Bus Interface Module has inputs for up to two thermocouple probe sensors, Dakota Digital part numbers SEN-11 or SEN-12. Each input can be configured individually. There are two interface (I/O) 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. The sensor harness cannot be extended with standard wire. The sensors are available with different length harnesses. If you need a longer harness, contact Dakota Digital. Each sensor connected to the bus needs a unique ID number assigned to it. This module has two inputs so it can use one or two ID numbers. Each of the two inputs can be assigned an ID from 1 – 16, or turned off. The factory default ID numbers are 11 and OFF for the two inputs respectively. The factory default labels are EGT and HEAD respectively.

Labels available for each input are:

- EGT - Exhaust gas temperature input. This will display EGT, E, or EGT TEMP.
- EGT A - Exhaust gas temperature input. This will display EGT A, EA, or EGT TEMP A.
- EGT B - Exhaust gas temperature input. This will display EGT B, EB, or EGT TEMP B.
- HEAD - Cylinder head temperature input. This will display HEAD, HT, or HEAD TEMP.
- HEAD A - Cylinder head temperature input. This will display HEAD A, HA, or HEAD TEMP A.
- HEAD B - Cylinder head temperature input. This will display HEAD B, HB, or HEAD TEMP B.

Specs for each input are:

	Sensor	resolution	high warning
HEAD -	SEN-11-4/5/6/7/8	2°F	300 – 600
EGT -	SEN-12-4/5/6/7	5°F	1140 – 1760

Temperature unit will follow the unit set for the main water temp gauge, Fahrenheit or Celsius.

Sender harness lengths:

SEN-11-4	6 feet with ½" ring	SEN-12-4	6 feet
SEN-11-5	10 feet with ½" ring	SEN-12-5	10 feet
SEN-11-6	14 feet with ½" ring	SEN-12-6	14 feet
SEN-11-7	18 feet with ½" ring	SEN-12-7	18 feet
SEN-11-8	18 feet with 14mm ring	SEN-12-9	weld-on bung

Mounting the cylinder head temperature sensor:

The sensor ring terminal can be installed under a cylinder head bolt on the engine or installed under a spark plug. Using, or not using, the crush washer on the spark plug is up to the individual. It should not make that much difference if it is used. The gapping of the plug is more important. Not using a washer when it is required, could place the plug closer to the piston head than tolerance requires.

To set or change the ID numbers:

- 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 “-[-”.
- Press the switch. The BIM display will show “[- 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 “[- 2”.
- Release the switch. The display will show the current ID for channel 2.
- 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 will restart with the new settings.

The labels and warning points are set up through the gauge display system.

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. The message display should show SETUP.
- Release SW1.
- Press and release 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.
- Press and release 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.
- Press and release SW1 until the desired label is shown.
- Press and hold SW1. The message display will show “WARN”.
- Release SW1. The message display will show “H” followed by the current high warning point or will flash the warning point.
- Press and release SW1 to change the high warning point to the desired value.
- Press and hold SW1. The message display will now show “DONE”.
- This can be repeated for additional channels, or the key can be turned off to exit setup.

For HDX systems follow these steps:

- Make sure the BIM units are all connected to the gauge control box.
- With the ignition on, press and hold both switches to enter SETUP. With external switches hold either one while turning the ignition on. Release the switches when SETUP is shown.
- Press and release either switch until BIM is selected. Press and hold either switch to enter BIM setup menu.
- Release the switch. A list of the BIM's found should be shown. If NONE FOUND is displayed then check connections to the BIM-12.
- Press and release either switch until BIM-12 is selected.
- Press and hold either switch to enter setup for this module.
- Release the switch. The menu will show FORMAT, LABEL, WARN LO, WARN HI, CALIBRATE, BACK. Any menu that does not apply to this BIM will be grey and cannot be selected.
- Use either switch to select the option you wish to change. When you are finished select BACK to return to the BIM selection menu.
- When you are finished, select BACK to return to the BIM list menu, select BACK to return to the main menu, and then select EXIT SETUP to return to normal operation.

With HDX systems the setup can also be done with the Dakota Digital app for Apple and Android devices.

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.

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. Each digit on the display will show the status for one of the channels. 'E' indicates there is a bus ID conflict on that channel ID. '-' indicates the sender is connected properly. 'H' indicates the sender is not connected or the signal is too high. 'L' indicates an internal measurement problem. If the input is turned off the digit will be blank.

The second screen will show the ID assigned to channel 1. The third screen will show the ID assigned to channel 2.

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. GND terminal does not have a good ground. Module is damaged.	Connect to a location that has power. Connect to a different ground location. Return for service. (see instructions)
Sensor does not show on gauge readout. BIM has a steady dot lit	Interface cable is not connected. Interface cable is loose. On VHX systems, the BIM display for this channel is disabled. Another BIM is set with the same channel IDs.	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. Follow instructions in VHX manual to enable the BIM display screen. Test module works when connected to control box alone. Change ID's on one of the modules so each module uses unique IDs.
Gauge lights up, but does not read correctly.	Loose connection on sensor wires. Probe is mounted incorrectly. Sensor wires are reversed. Voltage or wiring problem in the vehicle wiring harness.	Inspect and reconnect wires. Check probe mounting location. Check that red is to RED and yellow is to YEL. Check wiring harness for loose or damaged wires.
Gauge lights up, but displays "---". ('L' on BIM)	Internal temperature measurement problem.	Return for service. (see instructions)
Gauge lights up, but displays "EEE". ('H' on BIM)	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)
BIM display shows "BB-B"	Data cable is damaged. Another module on the bus is damaged or connected improperly.	Inspect and replace 3.5mm data cable. 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 diagnosis, 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. Dakota Digital assumes no responsibility for loss of time, vehicle use, owner inconvenience nor related expenses.

Dakota Digital will cover the return standard freight once the product has been evaluated for warranty consideration, however the incoming transportation is to be covered by the owner.

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.

⚠ WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov



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