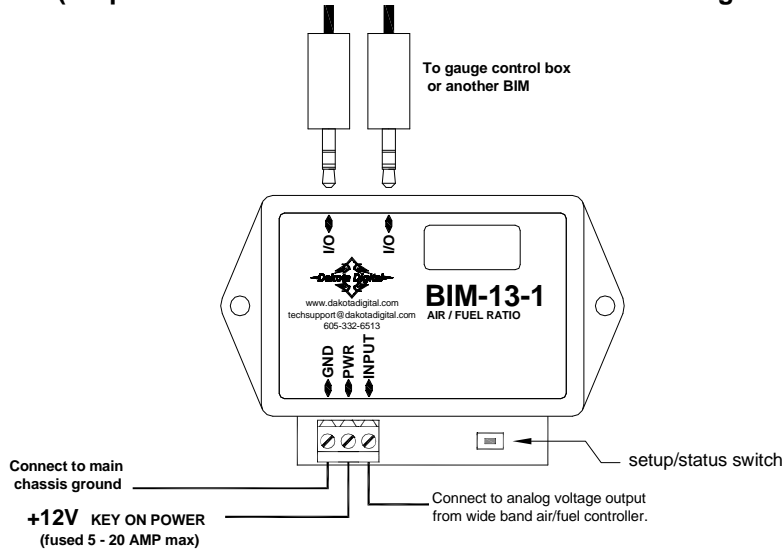


BIM-13-1 Bus Interface Module for Air/Fuel ratio

(Requires a wide band air/fuel controller with a voltage output)



This Bus Interface Module has one input to monitor the air/fuel ratio output from a wide band air/fuel controller with an analog voltage output. It is programmable to provide either an air/fuel ratio display or a lambda display. The module can be programmed to work with different scaling values of a voltage between 0 – 5 volts. This allows it to be set for nearly any wide band system available. 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.

Each sensor connected to the bus needs a unique ID number assigned to it. This module has an input for one channel so it can use only one ID numbers. The channel can be assigned an ID from 1 – 16, or turned off. The factory default ID number is 4.

Label for the input is:

AIR/FUEL - voltage input. This will display A-F, AF, A/F, or AIR/FUEL.

Specs for each input mode are:

	Mode	Range	resolution	0V setting	5V setting
Air / Fuel	A-F ratio	0 – 5.00 V	0.1	00.0 – 12.6	4.4 – 74.0
Air / Fuel	lambda	0 – 5.00 V	0.01	0.00 – 0.63	1.00 – 5.00

Common LO and HI settings for popular analog output signals:

Consult your wide band air fuel installation and operation manual for details on the type of analog output provided.

Output type	A/F LO	A/F HI	Lambda LO	Lambda HI
10 = 1.0V, 20 = 2.0V	0.0	50.0	0.00	3.40
0 = 0.0V, 50 = 5.0V	0.0	50.0	0.00	3.40
9 = 0.0V, 16 = 5.0V	9.0	16.0	0.61	1.10
7.35 = 0.0V, 22.39 = 5.0V	7.4	22.4	0.50	1.50
Lambda 0.5 = 0.5V, 1.5 = 1.5V	0.0	74.0	0.00	5.00
8.5 = 0.5V, 18 = 4.5V	7.4	19.2	0.50	1.30

Different fuel types will require different scaling values for the air fuel ratios. Consult your wide band air fuel installation and operation manual for more details on using different fuel types.

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 channel ID this module.
- 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 “CAL”.
- Release the switch. The display will show the current mode setting, “A-F” for air/fuel ratio or “L” for lambda.
- Press and release the switch to change the mode.
- Press and hold the switch to save the setting. The BIM will restart with the new settings.

This module does not use warning points, so the warning setup is used to program the display range matching your wide band controller analog output. These settings are changed on the gauge system display. Common settings are listed on the front page of the manual.

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.
- This label cannot be changed, so [ress and hold SW1. The message display will show “WARN”.
- Release SW1. The message display will show “L” followed by the current 0 volt display setting.
- Press and release SW1 to change the 0 V display setting to the desired value.
- Press and hold SW1 until the speed display shows “-”.
- Release SW1. The message display will show “H” followed by the current 5 volt display setting.
- Press and release SW1 to change the 5 V display setting 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.

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 two 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. If the input is turned off the digit will be blank.

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

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.
Sensor does not show on gauge readout. BIM has a steady dot lit	Module is damaged.	Return for service. (see instructions)
	Interface cable is not connected.	Connect the supplied 3.5mm data cable between the BIM unit and the gauge control box.
	Interface cable is loose. On VHX systems, the BIM display for this channel is disabled. Another BIM is set with the same channel IDs.	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.	Inspect and reconnect wires.
	Connector not seated on sensor.	Reattach the sensor plug, making sure the locking tab clicks in place.
	Wrong setting for 0V display	Reset the 0V display setting using the system BIM setup menu.
	Wrong setting for 5V display	Reset the 5V display setting using the system BIM setup menu.
BIM display shows "BB-B"	Voltage or wiring problem in the vehicle wiring harness.	Check wiring harness for loose or damaged wires.
	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.

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