

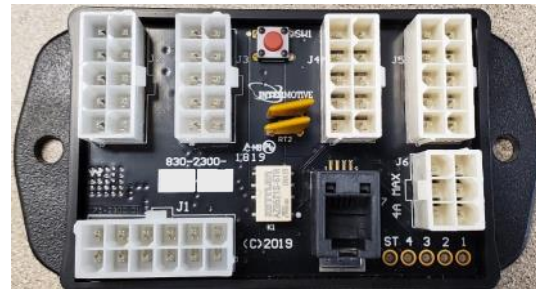
Break Out Box Enhanced 4xx

Supported Vehicles

2008+ Chevy Express
2014+ Chevy Tahoe/ GMC Yukon
2014+ Chevy Silverado/GMC Sierra
2019+ Chevy Silverado Medium Duty
2019+ International CV

2013+ RAM 1500-3500
2015+ Dodge Charger
2016+ Dodge Durango
2015+ Dodge Caravan
2014+ Ram Promaster

2009+ Ford E-Series
2015+ Ford F150
2011+ Ford F250-F750
2013+ Ford Utility (Explorer)
2013+ Ford Sedan (Taurus)
2015+ Ford Transit



Introduction

The Break Out Box Enhanced (BOBe) allows multiple devices to be on the vehicle network with just one connection to the OBDII connector. The BOBe can allow up to 5 different devices to be connected to the network.

The BOB has STN capability which was designed to minimize compatibility problems when multiple third party devices are connected to a vehicles OBDII connector. It can completely eliminate bandwidth robbing active network requests from the OEM network. It does this by passively acquiring proprietary OEM data from the vehicles network, and then makes this data available to 3rd party devices on a secondary CAN network. This allows 3rd party devices to coexist without causing safety concerns for Intermotive wheelchair lift interlock products.

Eliminating/minimizing active device requests on the vehicle network eliminates vehicle operational concerns that can result from too much CAN traffic on the network. In most cases, no change is required to 3rd party devices. They make their J1979 diagnostic request to the BOBe, which responds just like the PCM would respond.

The BOBe is completely compatible with all Intermotive products. In addition, the BOBe provides a number of proprietary data parameters to third party devices that may not be available in other cases.

Installation Instructions

Be sure the vehicle's battery is disconnected before proceeding with installation.

It is the installer's responsibility to route and secure all wiring harnesses where they cannot be damaged by sharp objects, mechanical moving parts and high heat sources. Failure to do so could result in damage to the system or vehicle and create possible safety concerns for the operator and passengers.

It is important to avoid placing the module where it could encounter strong magnetic fields from high current cabling connected to motors, solenoids, etc. Also avoid radio frequency energy from antennas or inverters next to the module. Finally, avoid high voltage spikes in vehicle wiring by always using diode clamped relays when installing upfitter circuits.

BOBe Module

Remove the lower dash panel below the steering column area and find a suitable location to mount the BOBe module. Locate the module in an area away from any high heat sources (engine heat, heater ducts, etc.). Do not mount the module until all wire harnesses are routed and secure. The last step of the installation is to mount the module.

Data Link Harness (12-pin connector)

The provided BOBe Data Link harnesses vary from model to model, depending on which chassis the BOBe is being installed on.

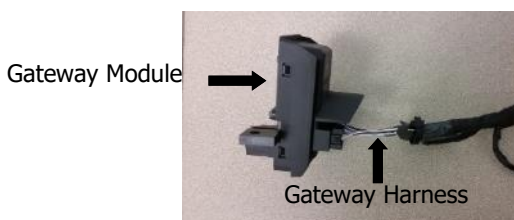
1. Locate the vehicle's OBDII Data Link Connector. It will be located below the lower left dash panel.
2. Remove the OEM Data Link connector, and mate it to the BOBe Data Link harnesses red connector. Ensure the connection is fully seated and secure with the supplied wire tie.
3. Mount the pass-through connector from the BOBe Data Link Harness in the former location of the vehicle's OBDII connector.
4. Secure the BOBe Data Link harness so that it does not hang below the lower dash panel.

NOTE: Do NOT plug the Data Link harness into the 12-pin connector on the BOBe module. This will be done at a later step.



Ford F Series and 2021+ E Series Gateway Plug and Play Harness

1. Locate the vehicle's Gateway Module (C2431). It will be mounted below the lower left dash panel.
2. Remove the harness behind the Gateway module by pressing the locking tab and pulling outward.
3. Plug the Female side of the InterMotive Gateway Harness into the back of the Gateway module. Ensure the connection is fully seated and secured by the locking tab.
4. Plug the Male side of the InterMotive Data Link Harness into Gateway harness.
5. Secure the BOM Gateway harness so that it does not hang below the lower dash panel.



InterMotive Plug and Play Gateway Harness

2018 RAM Data Link Harness Installation (S-H133TEX)

The 2018 Ram has a "Gateway" module connected to the OBDII connector. The module is located behind the OEM Radio. The data link harness T's into an 8-pin and 12-pin connector on this gateway module.



Follow the steps below to access the Gateway module.

1. Remove the upper (1) center bezel tray liner.
2. If equipped with the 115 V power outlet (4), remove the lower right (3) center bezel tray liner.



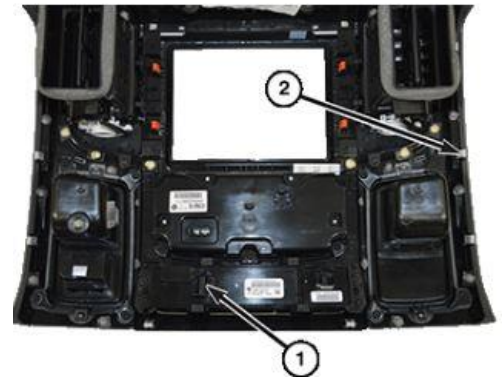
3. Remove the two fasteners (1) to the upper tray.



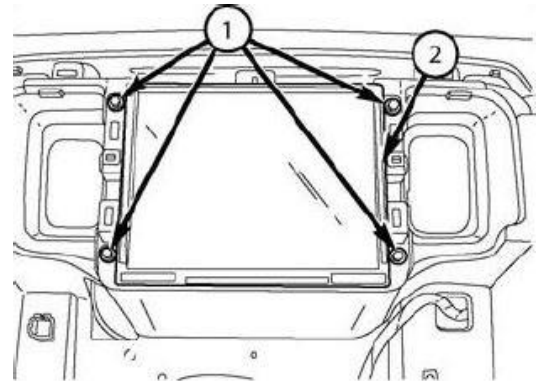
4. If equipped with the 115 V power outlet (2), remove the fastener (1) inside the lower right tray above the outlet.



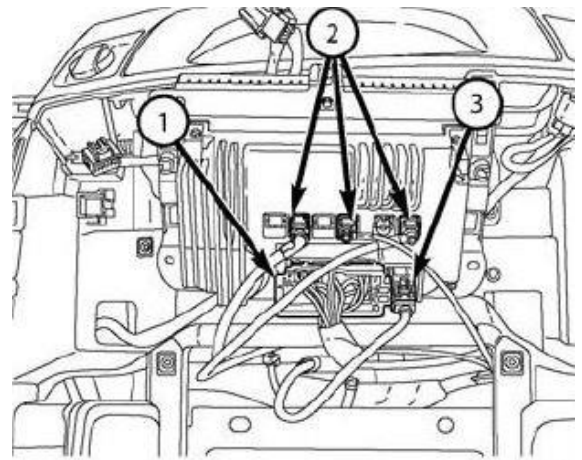
5. Using a trim removal tool, disengage the retainer clips (2) that secure the instrument panel center bezel to the instrument panel.
6. Disconnect the wire harness connectors (1) and remove the center bezel from the vehicle.



7. Remove the four fasteners (1) securing the Radio Receiver Module (RRM) (2) to the instrument panel.
8. Pull the RRM out far enough to access the back of the RRM.



9. Disconnect the antennas (2), and electrical connector (1).
10. If equipped, disconnect the USB connector (3).
11. Remove the RRM from the instrument panel.



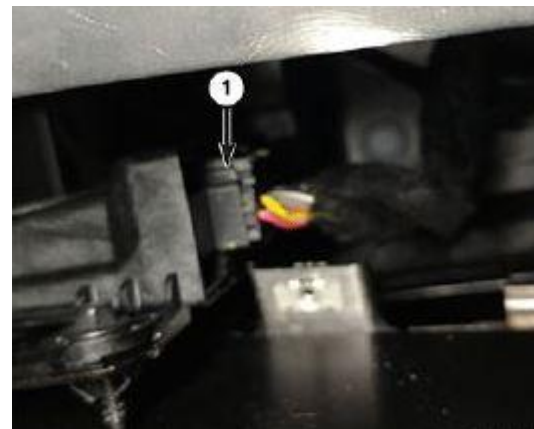
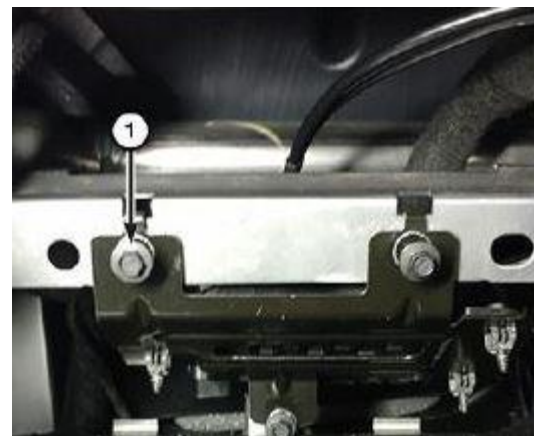
12. Remove the 2 bolts (1).

13. Disconnect the Gateway Module wire harness connectors (1).

14. Remove the Gateway Module from the vehicle.

15. Plug in the 12-pin and 8-pin connectors from the Intermotive C-BOBe Data Link harness. Plug the OEM 12-pin and 8-pin connectors into the mating connectors on the C-BOBe Data Link connector.

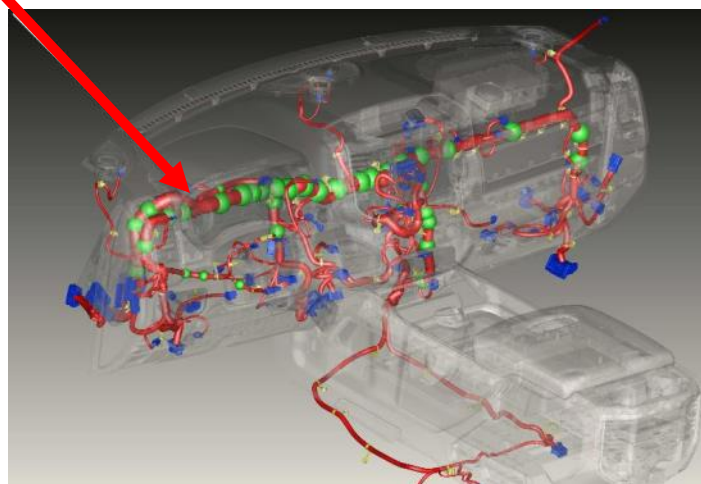
16. Plug the free end of the Data Link harness into the mating 6-pin connector on the C-BOBe module.



2019-2020 RAM Data Link Harness Insatllation (S-H133TEX)

The 2019-2020 Ram has a "Gateway" module connected to the OBDII connector. The module is located under the instrument panel, as shown in the image. The BOBe data link harness T's into an 8-pin and 12-pin connector on this gateway module.

1. Locate the OEM Gateway Module.
2. Disconnect the Gateway Module wire harness connectors.
3. If necessary, remove the Gateway Module from the vehicle.
4. Plug in the 12-pin and 8-pin connectors from the Intermotive C-BOBe Data Link harness. Plug the OEM 12-pin and 8-pin conetors into the mating connectors on the C-BOBe Data Link connector.
5. Plug the free end of the Data Link harness into the mating 6-pin connector on the C-BOBe module.



2018-2020 Dodge Durango Data Link Harness (S-H133TEX)

The 2018-2020 Durango has a "Gateway" module connected to the OBDII connector. The module is located in the underdash in the front passenger area (see Figure 1). The C-BOBe data link harness T's into an 8-pin and 12-pin connector on this gateway module.

Follow the steps below to access the Gateway module.

1. Remove the two trim pieces shown in Figure 2.
2. Locate the Gateway module in the location shown in Figure 1.
3. Remove the OEM 12 and 8-pin connectors from the Gateway module.
4. Plug in the 12-pin and 8-pin connectors from the Intermotive C-BOBe Data Link harness. Plug the OEM 12-pin and 8-pin connectors into the mating connectors on the Data Link connector.
5. Plug the free end of the Data Link harness into the mating 6-pin connector on the BOBe module.

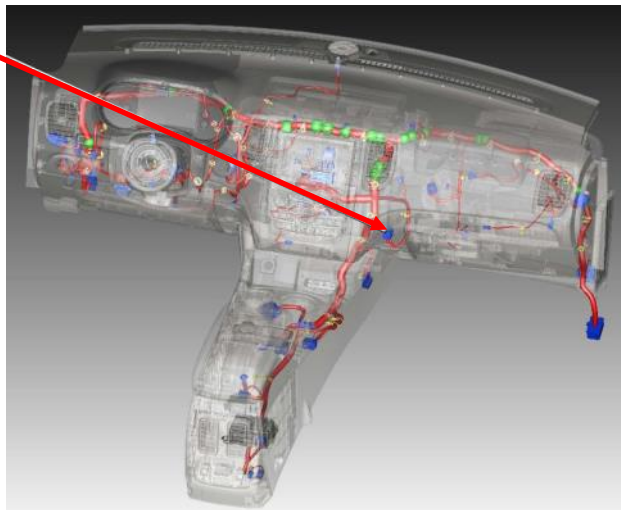


Figure 1

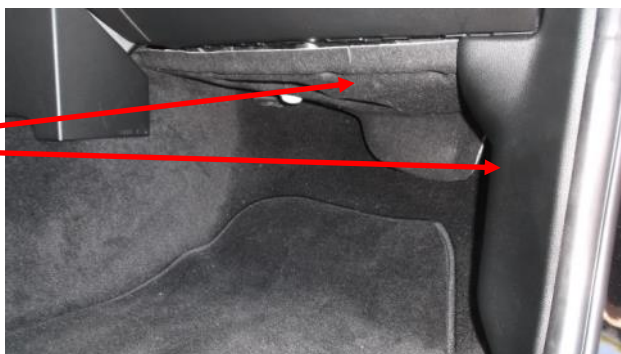
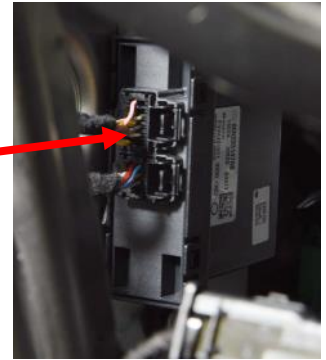


Figure 2



2018-2020 Dodge Charger Data Link Harness (S-H133TEX)

1. Remove the lower dash panel below the steering column.
2. Locate the vehicle's Gateway module located next to the BCM and above the Parking Brake.
3. Remove the 12-pin and 8-pin connectors from the Gateway module and plug in the 12-pin and 8-pin connectors from the Intermotive BOBe Data Link harness. Plug the OEM 12-pin and 8-pin connectors into the mating connectors on the BOBe Data Link harness.
4. Plug the free end of the Data Link harness into the mating 6-pin connector on the BOBe module.



2020-2022 Ram Promaster Data Link Harness (S-H133TEX)

The Promaster has an OEM Gateway module located behind the glovebox. Follow the steps below to access it:

1. Open the glovebox door.
2. Locate the 2 release tabs on the inside of the glovebox (one on the left and one on the right) and drop the door into the full down position.
3. Locate the two fasteners securing the glovebox assembly to the vehicle and remove them.
4. Locate the 4 fasteners on the outside of the glovebox assembly and remove them.
5. Remove the glove box assembly.
6. The Gateway module is located behind the glove box assembly as shown in the picture.
7. Remove the 12-pin and 8-pin connectors from the Gateway module and plug in the 12-pin and 8-pin connectors from the Intermotive BOBe Data Link harness. Plug the OEM 12-pin and 8-pin connectors into the mating connectors on the BOBe Data Link harness.
8. Plug the free end of the 6-pin Data Link harness into the mating 6-pin connector on the 4 foot extension harness (S-H94AX-04). Plug the other end of the extension harness into the mating 6-pin connector on the BOBe module.



Connector Definition

J1

- Connection point between the vehicle and the module.

J2 & J3

- Data Port for other InterMotive modules.

J4 & J5

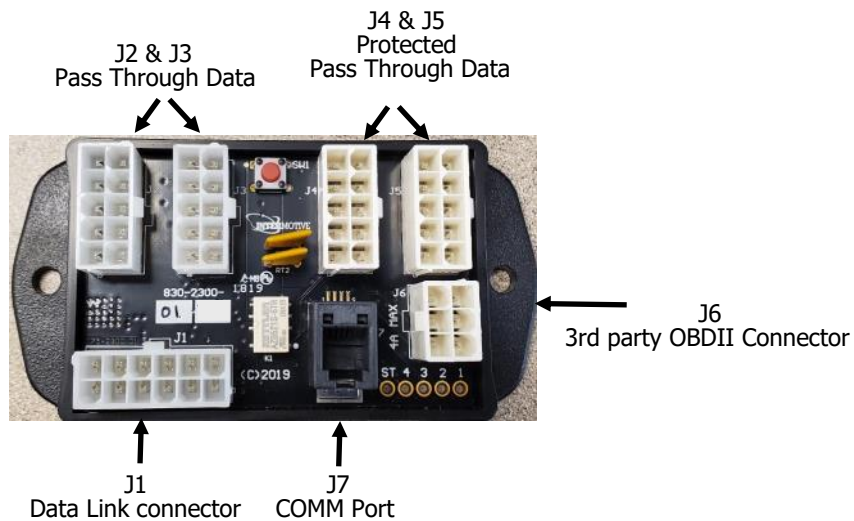
- Data Port for other InterMotive modules and 3rd Party modules. The power and ground is protected by a 4 AMP resettable fuse.

J6

- OBDII port for 3rd Party modules. The power and ground is protected by a 4 AMP resettable fuse.

J7

- Communication port.



| BOB DLC chart | | |
|----------------------|---|-------------|
| Ford | | Part Number |
| | E-Series | |
| | 2009-2019 | S-H33AKX |
| | 2020-2022 | S-H133AKX |
| | Transit | |
| | 2015-2019 | S-H33ATX |
| | 2020-2022 | S-H133AKX |
| | 2022-2023 w/ Sync 4 or 12" display | 840-00191 |
| | F250-550 | |
| | 2011-2016 | S-H33AKX |
| | 2017-2020 | S-H133AKX |
| | F250-600 | |
| | 2021-2022 | |
| | 2023 | 840-00298 |
| | F-150 | |
| | 2015-2020 | S-H133AKX |
| | 2021-2022 w/ Sync 4 or 12" display | 840-00191 |
| | Ford Expedition | |
| | 2015-2017 | S-H33AKX |
| | 2018-2020 | S-H133AKX |
| | Ford Interceptor Utility /Explorer | |
| | 2013-2015 | S-H33AKX |
| | 2016-2020 | S-H133AKX |
| | Ford Interceptor Sedan | |
| | 2013-2019(EOL) | S-H33AKX |
| | Ford F-53/F59 | |
| | | S-H33AKX |
| Chevy | | |
| | All Chevy and GM products | S-H33ANX |
| RAM | | |
| | RAM 1500-5500 | |
| | 2013-2017 | S-H33ATX |
| | 2018-2020 | S-H133TEX |
| | ProMaster | |
| | 2014-2019 | S-H33AMX |
| | 2020-2022 | S-H133TEX |

BOB DLC chart continued

| | | |
|--------------|----------------|-----------|
| Dodge | | |
| | Charger | |
| | 2015-2017 | S-H33ATX |
| | 2018-2020 | S-H133TEX |
| | Durango | |
| | 2016-2017 | S-H33ATX |
| | 2018-2020 | S-H133TEX |

BOB Jumper Harness Matrix

The chart below and on the next page show the available harnesses that will be necessary to attach to Intermotive products. The highlighted color represents the color of tape that will be on the harness.

| Product | Harness | Product | Harness |
|-----------------|------------|--------------------|-----------|
| AFIS-420/422 | S-HB07DX | ECO3-601/602 | S-HB33AX |
| AFIS-506/507 | S-HB07DX | ECO-501/507/515 | S-HB33AX |
| AFIS-515/516 | S-HB07DX | ECO-601/602 | S-HB33AX |
| AFIS-530/532 | S-HB07DX | ECO-950 | S-HB33AX |
| AFIS-706/707 | S-HB07DX | EMS-501/506 | S-HB33AX |
| AIM-505/506 | S-HB33AX | GTWY-505/506/515 | S-HB33AX |
| AIM-515/516 | S-HB33AX | GTWY-519 | S-HB133DX |
| AIM-605 | S-HB33AX | GTWY-605 | S-HB33AX |
| AIM-705 | S-HB33AX | HL-505/510/515/550 | S-HB33AX |
| A-PRPC-505/550 | S-HB33AX | HL-605 | S-HB33AX |
| A-PRPC-507/557 | S-HB33AX | HZF-515 | S-HB07DX |
| A-PRPC-509/559 | S-HB33AX | IDLE-502 | S-HB33AX |
| BOM-501 | S-HB07DX | IDLE-503 | S-HB133DX |
| BOM-503 | S-HB07DX | IDLE-505 | S-HB133DX |
| BOM-505 | S-HB133DX | IDLE-516 | S-HB33AX |
| BOM-507 | S-HB133DX | IDLE-555/556 | S-HB33PX |
| BOM-536 | S-HB133DX | IDLE-610/654 | S-HB33AX |
| BOM-560 | S-HB133DX | IDLE-750 | S-HB33AX |
| BOM-601/620 | S-HB33ABX | ILISC-301/320 | S-HB07DX |
| BOM-701 | S-HB33AX | ILISC-510/516 | S-HB07CX |
| BOM-750 | S-HB07DX | ILISC-511/515 | S-HB07DX |
| BOM-760 | S-HB133TDX | ILISC-610 | S-HB07DX |
| B-PRPC-507/557 | S-HB133DX | ILISC-702 | S-HB33PX |
| CAM-506/515 | S-HB07DX | ILISP-510/515 | S-HB07CX |
| CAM-510 | S-HB07CX | ILISP-610 | S-HB07DX |
| CAM-610 | S-HB07DX | ITC-515/520/550 | S-HB33AX |
| CAM-751 | S-HB07DX | ITC-620 | S-HB33AX |
| CCM-401 | S-HB07DX | ITC-950 | S-HB33AX |
| CVC-501/502/516 | S-HB33AX | ITD-707 | S-HB07DX |
| DLM-506 | S-HB07DX | J1939-50x_XR | S-HB142AX |
| DTS507 | S-HB33AX | J1939CM-401/405 | S-HB142AX |
| ECL-554 | S-HB33PX | J1939CM-50x/550 | S-HB142AX |
| ECL-555 | S-HB33PX | LOCK-510 | S-HB07CX |
| ECL-654 | S-HB33AX | LOCK-515 | S-HB07DX |
| ECO3-507/515 | S-HB33AX | LOCK-610 | S-HB07DX |

BOB Jumper Harness Matrix (Continued)

| Product | Harness |
|---------------------|------------|
| PIM-601 | S-HB33ABX |
| PIM-701 | S-HB33AX |
| PIM-760 | S-HB133TDX |
| PRPC-605/650 | S-HB33AX |
| PRPC-702/752 | S-HB33PX |
| PRPC-705/750 | S-HB33AX |
| PTM/BTM-505/515 | S-HB33AHX |
| PTM/BTM-506 | S-HB33AHX |
| PTM/BTM-605 | S-HB33UX |
| RSA-550 | S-HB33AX |
| RSA-750/751/752 | S-HB33AX |
| SMM-501 | S-HB07DX |
| SMM-511 | S-HB33AX |
| SMM-601/602 | S-HB33ABX |
| SMM-701/708 | S-HB33AX |
| SMM760 | S-HB133TDX |
| SOS-501/515 | S-HB33AX |
| SOS-502 | S-HB33PX |
| SOS-536 | S-HB33AX |
| SOS-601 | S-HB33AX |
| SOS-701/750 | S-HB33AX |
| SOS-760 | S-HB33AX |
| SSII- | S-HB42FX |
| UIM4-506 | S-HB07DX |
| UIM4-610 | S-HB07DX |
| UIM4-751 | S-HB07DX |
| UIM-501/516 | S-HB33AX |
| UIM-601 | S-HB33AX |
| UIM-701/750/752/760 | S-HB33AX |
| WIN-752 | S-HB33PX |
| WTSI-505/506/556 | S-HB33AX |

3rd Party Connectors

S-HB75BX (6-Pin to OBDII)



- The S-HB75BX BOB harness provides a 6-pin connector for interfacing to 3rd party devices. See pinout below. This 6 pin connector can also be plugged into the stub harness which provides the OBDII type connector, if desired.

| | |
|--------------------------------------|------------------------------------|
| Pin#1 Red—Battery Voltage | Pin#2 Pink/Black - J1979 CAN High |
| Pin#3 Dk Green - Vehicle CAN MS High | Pin#4 Gray - Ground |
| Pin#5 Orange/Black - J1979 CAN Low | Pin#6 Dk Blue - Vehicle CAN MS Low |

840-00070 (10-Pin to Gateway)

- The 840-00070 BOB harness provides a 10-pin connector for interfacing to 3rd party devices. See pinout below. This 10 pin connector can also be plugged into the stub harness which provides the Gateway connector, if desired.

| | |
|-------------------------------------|-------------------------------------|
| Pin#1 Red—Battery Voltage | Pin#2 Yellow - J1979 CAN High 1 |
| Pin#3 Pink - J1939 CAN High 2 | Pin#4 Orange - J1939 CAN High 3 |
| Pin#5 Dark Green - Vehicle CAN MS 1 | Pin#6 Gray - Ground |
| Pin#7 Brown - J1979 CAN High 1 | Pin#8 Tan - J1939 CAN High 2 |
| Pin#9 Violet - J1939 CAN High 3 | Pin#10 Dark Blue - Vehicle CAN MS 1 |

S-HB75FX (10-Pin to OBDII)

- The S-HB75FX BOB harness provides a 10-pin connector for interfacing to 3rd party devices. See pinout below. This 10 pin connector can also be plugged into the stub harness which provides the OBDII type connector, if desired.

| | |
|---------------------------------------|-------------------------------------|
| Pin#1 Red—Battery Voltage | Pin#2 Pink/Black - J1979 CAN High 1 |
| Pin#3 N/C | Pin#4 Orange - N/C |
| Pin#5 Dark Green - Vehicle CAN MS 1 | Pin#6 Gray - Ground |
| Pin#7 Orange/Black - J1979 CAN High 1 | Pin#8 N/C |
| Pin#9 Violet - N/C | Pin#10 Dark Blue - Vehicle CAN MS 1 |

Operation:

- By default there is always Power (+12V) provided on connectors J4, J5 and J6. If there is a need to remove power to 3rd party devices while in Park there is a special sequence to configure the module.

Removing 3rd Party Power

- Key in Run position, Engine OFF, Transmission in Park
- Put the vehicle in diagnostic mode by pressing the red test button.
Status LED should be flashing
- Press Accelerator pedal all the way down
- Cycle service brake until the LEDs on the board flash. About 3 times

LED2 on : Always provide 3rd party power

LED2 off : 3rd party power removed in Park

Active Mode Limitations

The BOBe is intended to be compatible with all Intermotive products. To accomplish this, it limits both the type and frequency of active messages transmitted on the vehicle network. This means that while in active mode not all messages will pass through to the vehicle network, and the rate at which they're passed through is limited. **The maximum rate at which active messages are transmitted on the vehicle network is 40ms. Note that the BOBe will reply immediately to any active request if it has available data, but the data parameters will not update faster than 40ms. See Table below for list of supported services in active mode.**

Diagnostics

Diagnostic Mode: During normal operation, momentarily pressing the red test button on the module puts it into diagnostic mode. Momentarily pressing the button again switches to the next diagnostic page. While in diagnostic mode, the LEDs illuminate in the following manner:

PAGE 1:

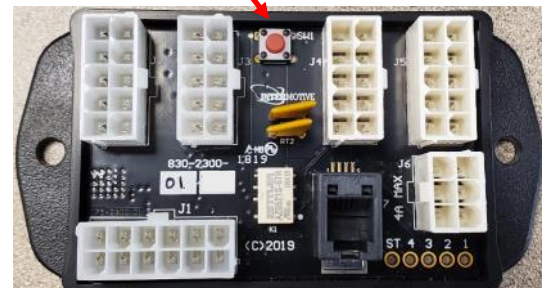
- LED1: Send tester present
- LED2: 3rd party Power
- LED3: Reserved
- LED4: TR is not in PARK

PAGE 2:

- LED1: Active response received from vehicle
- LED2: Active request sent to vehicle
- LED3: Request received from third party device
- LED4: Message sent to third party device

PAGE 3:

- LED1: Passive vehicle data received
- LED2: Reserved
- LED3: Reserved
- LED4: Reserved



J1979 Service \$01 - Request Current Powertrain Diagnostic Data

The description below refers to constructs used in the SAEJ1979 FEB2012 standard. Refer to this standard for further details. Service \$01 allows a third party device to request vehicle data. Table 4 lists the PID's available in Passive Mode. All other service \$01 PID's are available only in Active Mode. A number of PID's unique to the BOBe are available via service \$01. These are listed in Table 4.

The BOBe only allows one PID per service \$01 request.

Table 1 - Message Format

| Size (Bits) | 11 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
|-------------|----|---------|---------|---------|---------|---------|---------|---------|---------|
| Field | ID | Data #0 | Data #1 | Data #2 | Data #3 | Data #4 | Data #5 | Data #6 | Data #7 |

Table 2 - Service \$01 Request Format

| Data Byte | Parameter Name | Hex Value |
|--|--|-----------|
| #1 | Request Powertrain Data Request Service ID | 01 |
| #2 | PID (See table below, and/or J1979DA) | XX |
| PID value should be supported by this chassis. | | |

Table 3 - Service \$01 Request Response Format

| Data Byte | Parameter Name | Hex Value |
|--|---|-----------|
| #1 | Request Powertrain Data Response Service ID | 41 |
| | Data Record of PID: | |
| #2 | PID | XX |
| #3 | Data A | XX |
| #4 | Data B | XX |
| #5 | Data C | XX |
| #6 | Data D | XX |
| Data B-D depend on selected PID value. | | |

Table 4 - Service \$01 PID's available in Passive Mode

| PID | Description | Conversion |
|------------|--|--|
| 0x05 | Engine Coolant Temperature (ECT) | A-40, Degrees C |
| 0x0C | Engine Speed (RPM) | $((A*256)+B)/4$ |
| 0x0D | Vehicle Speed (VSS) | 1 bit = 1 kph |
| 0x11 | Throttle Position (TP) | $A*100/255, \%$ |
| 0x2F | Fuel Level (FLI) | $A*100/255, \%$ |
| 0xE1 | Park Brake (PB), Service Brake (SB), A/C (AC), ABS Event (ABS), Engine Oil Pressure Lamp (EOP), Malfunction Indicator Lamp (MIL), General Purpose Inputs (IN1/IN2) | Data A: PB - On=\$1x, Off=\$0x, Unknown=\$3x SB - On=\$x1, Off=\$x0, Unknown=\$x3 Data B: AC - On=\$1x, Off=\$0x, Unknown=\$3x ABS - On=\$x1, Off=\$x0, Unknown=\$x3 Data C: MIL - On=\$1x, Off=\$0x, Unknown=\$3x EOP - On=\$x1, Off=\$x0, Unknown=\$x3 Data D: IN1 - Active=\$1x, Inactive=\$0x, Unknown=\$3x IN2 - Active=\$x1, Inactive=\$x0, Unknown=\$x3 |
| 0xE2 | Transmission Range (TR), Key Position (KEY), Headlights (LIGHTS) | Data A: TR - 0=Park, 1=Reverse, 2=Neutral, 3=Drive, 7=Unknown Data B: KEY - 0 = Off, 1=Accessory, 2=On, 3=Crank, 7=Unknown Data C: LIGHTS - DRL On=\$1x, DRL Off=\$0x, DRL Unknown=\$3x Park Lamps On=\$x1, Park Lamps Off=\$x0, Park Lamps Unknown=\$x3 Data D: LIGHTS - Low Beams On=\$1x, Low Beams Off=\$0x, Low Beams Unknown=\$3x High Beams On=\$x1, Hi Beams Off=\$x0, High Beams Unknown=\$x3 |
| 0xE3 | Transmission Fluid Temperature (TFT) | A-40, Degrees C; \$FF = Unknown |
| 0xE4 | Ambient Air Temperature (AAT) | A-40, Degrees C; \$FF = Unknown |

Table 4 - Service \$01 PID's available in Passive Mode (Continued)

| | | |
|------|---|--|
| | Door Switch Status (DOORS), Door Lock Status (LOCKS), Turn Signal Status (TSIG) | Data A: DOORS - Front Driver Open=\$1x, Front Driver Closed=\$0x, Front Driver Unknown=\$3x Front Passenger Open=\$x1, Front Passenger Closed=\$x0, Front Passenger Unknown=\$x3 Data B: DOORS - Rear Driver Open=\$1x, Rear Driver Closed=\$0x, Rear Driver Unknown=\$3x Rear Passenger Open=\$x4, Rear Passenger Open=\$x0, Rear Passenger Unknown=\$xC Rear Open=\$x1, Rear Closed=\$x0, Rear Unknown=\$x3 Data C: LOCKS - All Locked=\$x1, All Unlocked=\$x2, Driver Unlocked=\$x4, Unknown=\$x7 Data D: TSIG - Left On=\$1x, Left Off=\$0x, Left Unknown=\$3x Right On=\$4x, Right Off=\$0x, Right Unknown=\$Cx Hazards On=\$x1, Hazards Off=\$x0, Hazards Unknown=\$x3 |
| 0xE6 | Seat Switch Status (SEATS), Seat Belt Status (BELTS), Audio Mute Status (MUTE) | Data A: SEAT - Driver Occupied=\$1x, Driver Unoccupied=\$0x, Driver Unknown=\$3x Passenger Occupied=\$x1, Passenger Unoccupied=\$x0, Passenger Unknown=\$x3 Data B: BELT - Driver Buckled=\$1x, Driver Unbuckled=\$0x, Driver Unknown=\$3x Passenger Buckled=\$x1, Passenger Unbuckled=\$x0, Passenger Unknown=\$x3 Data C: MUTE - Mute On=\$x1, Mute Off=\$x0, Mute Unknown=\$x3 |
| 0xE7 | Odometer (ODO)* | 1 km per bit. 32-bit value, A is MSB, D is LSB |

* Only available in Passive mode in some applications.

J1979 Service \$03 - Request Emission-Related Diagnostic Trouble Codes

The description below refers to constructs used in the SAEJ1979 FEB2012 Standard. Refer to this standard for further details. Service \$03 allows a third party device to request Diagnostic Trouble Codes from all modules on a vehicle. **This service is only available in Active Messaging Mode.**

When the BOBe receives a Service \$03 request, it passes it through to the vehicle network. Any responses from vehicle modules are passed back through to the third party device as they are received.

The third party device should use the message described in Table 5 to request trouble codes.

Table 5 - Service \$03 Request Trouble Codes (refer to Table 1 for message format)

| Data Byte | Parameter Name | Hex Value |
|-----------|--|-----------|
| #1 | Request Powertrain Data Request Service ID | 03 |

J1979 Service \$09 - Request Vehicle Information

The description below refers to constructs used in the SAE J1979 FEB2012 and ISO 15765 standards. Refer to these for further details. Service \$09 allows a third party device to request vehicle-specific vehicle information. **The SNT720 only supports a VIN request, described below. This works in both Passive and Active Modes.** The VIN request using service \$09 makes use of multiple frame communication, as described in ISO 15765. The message flow is outlined below, but refer to ISO 15765 for further details regarding multiple frame communications

Table 6 - Service \$09 Request VIN

| Data Byte | Parameter Name | Hex Value |
|-----------|--|-----------|
| #1 | Request Vehicle Information Request Service ID | 09 |
| #2 | Info Type - VIN | 02 |

Table 7 - Service \$09 Response 1 from BOBe

| Data Byte | Parameter Name | Hex Value |
|-----------|---|-----------|
| #0 | Multiple Message Communication: First Frame | 10 |
| #1 | Data Length | 14 |
| #2 | Request Vehicle Information Response Service ID | 49 |
| #3 | Info Type - VIN | 02 |
| #4 | Number of Data Items | 01 |
| #5 | VIN Character 1 | XX |
| #6 | VIN Character 2 | XX |
| #7 | VIN Character 3 | XX |

Table 8 - Service \$09 Response 2 from BOBe

| Data Byte | Parameter Name | Hex Value |
|-----------|--------------------------------------|-----------|
| #0 | Consecutive Frame: Sequence Number 1 | 21 |
| #1 | VIN Character 4 | XX |
| #2 | VIN Character 5 | XX |
| #3 | VIN Character 6 | XX |
| #4 | VIN Character 7 | XX |
| #5 | VIN Character 8 | XX |
| #6 | VIN Character 9 | XX |
| #7 | VIN Character 10 | XX |

Table 9 - Service \$09 Response 3 from BOBe

| Data Byte | Parameter Name | Hex Value |
|------------------|--------------------------------------|------------------|
| #0 | Consecutive Frame: Sequence Number 2 | 22 |
| #1 | VIN Character 11 | XX |
| #2 | VIN Character 12 | XX |
| #3 | VIN Character 13 | XX |
| #4 | VIN Character 14 | XX |
| #5 | VIN Character 15 | XX |
| #6 | VIN Character 16 | XX |
| #7 | VIN Character 17 | XX |

Proprietary Service \$22 - Read Parameter by identifier

Some vehicles support service \$22, which is used to request proprietary vehicle data. **This service is only available in Active Messaging Mode.**

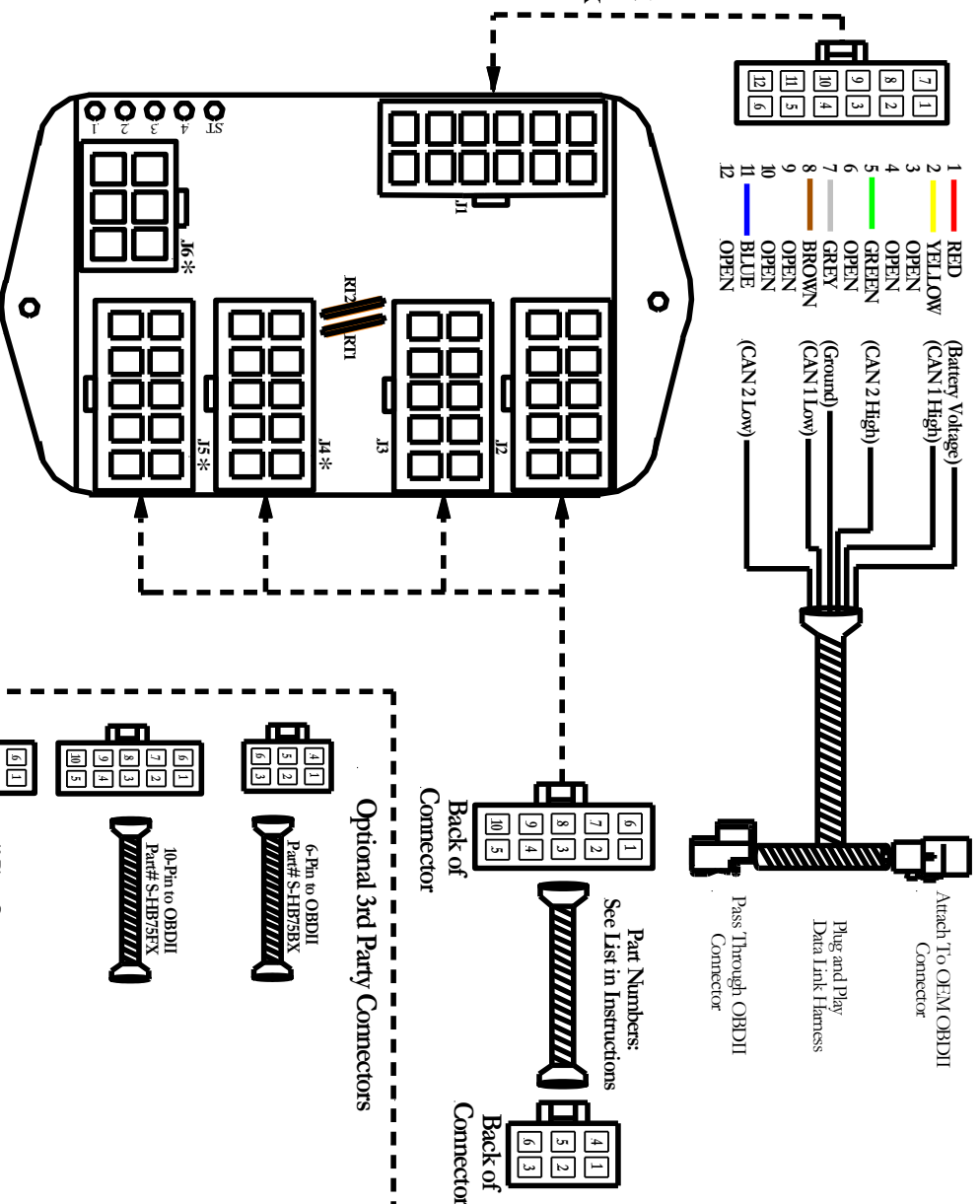
When the BOBe receives a service \$22 request addressed to a module ID greater than \$700, it passes it through to the vehicle network. Any responses from vehicle modules are passed back through to the third party device as they are received.

Data Link Part Numbers:

| | |
|----------------------------------|-----------|
| 2009-2019 Ford E-Series | S-HI33AKX |
| 2020-2022 Ford E-Series | S-HI33AKX |
| 2015-2019 Ford Transit | S-HI33ATX |
| 2020-2022 Ford Transit | S-HI33AKX |
| 2022-2023 Ford Transit | |
| w/ Sync 4 or 12" display | 840-00191 |
| 2011-2016 Ford F250-550 | S-HI33AKX |
| 2017-2020 Ford F250-550 | S-HI33AKX |
| 2021-2022 Ford F250-F600 | S-HI33AKX |
| 2023 Ford F250-F600 | 840-00298 |
| 2015-2020 Ford F150 | S-HI33AKX |
| 2021-2022 Ford F150 | |
| w/ Sync 4 or 12" display | 840-00191 |
| 2015-2017 Ford Expedition | S-HI33AKX |
| 2018-2020 Ford Expedition | S-HI33AKX |
| 2013-2015 Ford Explorer/Utility | S-HI33AKX |
| 2016-2020 Ford Explorer/Utility | S-HI33AKX |
| 2013-2019 Ford Interceptor Sedan | S-HI33AKX |
| Ford F-53/59 | S-HI33AKX |
| All Chevy and GM Products | S-HI33AKX |
| 2013-2017 Ram 1500-5500 | S-HI33AKX |
| 2018-2020 Ram 1500-5500 | S-HI33AKX |
| 2014-2019 Ram Promaster | S-HI33AKX |
| 2020-2022 Ram Promaster | S-HI33AKX |
| 2015-2017 Dodge Charger | S-HI33AKX |
| 2018-2020 Dodge Charger | S-HI33AKX |
| 2015-2019 Dodge Durango | S-HI33AKX |
| 2016-2017 Dodge Durango | S-HI33AKX |
| 2018-2019 Dodge Durango | S-HI33AKX |

* J14, J15, and J16 Output Protected
Pass-Through STIN Data

Part# 830-2300-03



Submit product registration at www.intermotive.net

If the BOBE fails any step in the Post Installation Test, review the installation instructions and check all connections. If necessary, call

InterMotive technical support @ (530) 823-1048.