AFIS507VSX-BP Advanced Fast Idle System—Transit Application
2011-2016 Ford F250 - F550
2017-2019 Ford F250 - F550*
2020 Ford F250 - F550 (Gas Engines Only)*
2016-2017 Ford F650/F750
2020-2024 Ford Transit*
2021-2023 Ford E-Series*
2022-2023 F53/F59*
2022 Ford Transit with Sync4**
*Uses the Ford 24-Pin "T" Gateway Harness (option B-AFIS507VSX-BP)
**Uses the Ford 26-Pin "T" Gateway Harness (option G-AFIS507VSX-BP)

System Operation

The Advanced Fast Idle System (AFIS) elevates engine idle speed in response to a number of triggers in order to assist electrical or mechanical systems on the vehicle.

IMPORTANT—READ BEFORE 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. Avoid placing the module where it could encounter strong magnetic fields from high current cabling connected to motors, solenoids, etc. Avoid radio frequency energy from antennas or inverters next to the module. Avoid high voltage spikes in vehicle wiring by always using diode clamped relays when installing upfitter circuits.

Installation Instructions

Disconnect vehicle battery before proceeding with installation.

WARNING
Disconnect the battery to prevent setting a check engine light.

AFIS507VSX Module

Remove the lower dash panel below the steering column area and find a suitable location to mount the module so that the Diagnostic LEDs can be viewed with the lower dash panel removed. Secure using 2-sided foam tape, screws or wire ties. Locate the module in an area away from any high heat sources. Do not actually mount the module until all wire harnesses are routed and secure (last step of the installation is to mount the module).

Data Link Harness Options:

24 Pin Gateway "T" Connector	16 Pin OBDII "T" Connector	16 Pin OBDII Connector	26 Pin Gateway "T" Connector
B-AFIS507VSX-BP	A-AFIS507VSX-BP	A-AFIS507VSX-B	G-AFIS507VSX-BP

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OBDII Data Link Harness (A-AFIS507VSX-B)

1. Locate the vehicle's OBDII Data Link Connector, mounted below the lower left dash panel.

2. Plug the Red connector from the AFIS Data Link Harness into the vehicle OBDII connector. Ensure the connection is fully seated and secured with the supplied wire tie.

3. Secure the AFIS Data Link harness so that it does not hang below the lower dash and plug the (4-pin connector) from the Data Link Harness into the 4-Pin connector on the AFIS module.

## OBDII "T" Data Link Harness (A-AFIS507VSX-BP)

1. Locate the vehicle OBDII Data Link Connector, mounted below the lower left dash panel.

2. Remove the mounting screws for the OBDII connector. Plug the Red connector from the AFIS507VSX-BP Data Link Harness into the vehicle's OBDII connector. Ensure the connection is fully seated and secure with the supplied wire tie.

3. Mount the Black pass through connector from the AFIS507VSX-BP Data Link Harness in the former location of the vehicle's OBDII connector.

4. Secure the AFIS507VSX-BPP Data Link harness so that it does not hang below the lower dash and plug the 4-pin connector from the Data Link Harness into the 4-Pin connector on the AFIS507VSX-BP module.

Ford 24-pin "T" Gateway Harness (B-AFIS507VSX-BP)

1. Locate the vehicles Gateway Module. 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 the Gateway harness.

5. Secure the AFIS Gateway harness so that it does not hang below the lower dash panel.
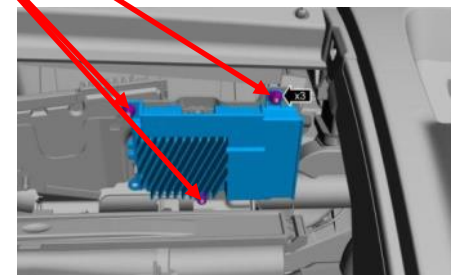
Gateway Module →
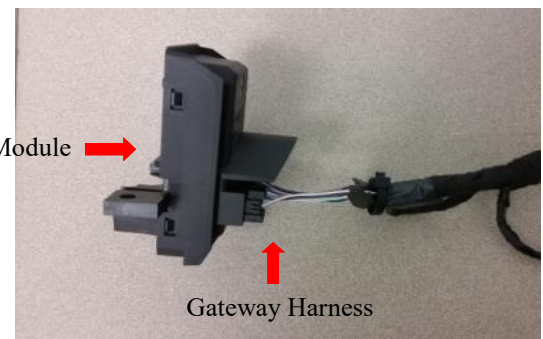
Gateway Harness

Gateway Plug and Play Harness (G-AFIS507VSX-BP)

1. Locate the vehicles Gateway Module. It will be mounted behind the glove compartment.

2. Press the tabs inward on the sides of the glove compartment and fully lower it.

3. Remove the 3 nuts securing the Gateway module to the vehicle.

4. Remove the 26-pin connector from the side of the Gateway module and plug into the mating connector on the G-AFIS507VSX-BP harness.

5. Plug the male 26-pin connector from the G-AFIS507VSX-BP harness into the Gateway module.

6. Reinstall the Gateway module and the glove compartment.

7. Plug the free end of the Data Link harness into the mating 6-pin connector on the G-AFIS507 module.

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AFIS Harness (8-Pin Connector)

Fast Idle Engage Input, Green wire

1. Attach the AFIS Harness connector Pin #8 Green wire to any equipment that provides a ground signal when the fast idle needs to be engaged. (PTO, pump, etc....)
2. Plug the 8-pin connector from the AFIS Harness into the 8-Pin connector on the module.

Note: The Green wire can also be connected to equipment providing a 12V signal, if programmed. See below for programming instructions.
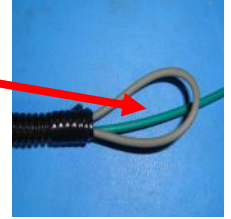
Configurable Idle Speed, Gray wire

The AFIS507VSX-B allows the user to change the fast idle RPM during installation. The default speed is 1500 RPM gas / 1200 Diesel, but any speed between 900 RPM and 2000 RPM can be selected in 50 RPM increments.

1. To change the idle speed, locate the Gray wire in the harness which connects to the 8 pin Molex connector.

2. Pull this wire out of the loom to expose the bare copper end. Place the vehicle in Fast Idle by grounding the Manual Trigger Green wire.

3. With the engine in Fast Idle, momentarily grounding the Gray wire (RPM Configuration input) increases the idle speed by 50 RPM. When the idle speed reaches the maximum allowable speed for the particular engine, it will roll back around to 900 RPM. Wherever the user stops, this RPM becomes the new default Fast Idle speed, even through key cycles.

4. After the vehicle is set to the desired fast idle speed, insert the end of the Gray wire into the harness tubing and use tape to secure.
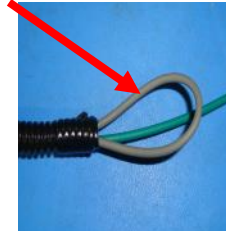
Note: Some vehicle PCM's will limit Fast Idle to less than 2000 RPM. Continue to momentarily ground the Gray wire and the RPM will eventually roll back around to 900 RPM. Do not leave the RPM's set in a range that the engine RPM is not responding to, as this may cause Fast Idle issues.

Park Brake Fast Idle Trigger Enable/Disable

The AFIS507VSX-B is configured from the factory for Fast Idle **not** to be triggered when the Park Brake is applied. If the Park Brake Fast Idle trigger is desired, it may be enabled (or disabled) by the following procedure:
With key on, place the transmission in neutral, apply the Park Brake and press the Service Brake three times within 5 seconds.
Upon successful reprogramming, the on-board LEDs will briefly flash as a confirmation. Cycle the key for the change to take affect.

A/C Fast Idle Trigger

TheAFIS507VSX-B is configured from the factory for Fast Idle to be triggered when the A/C clutch is engaged and will stay engaged until the next key cycle, or a precondition is violated.

Fast Idle Pin-8 Trigger, Active: Ground or 12V signal Enable/Disable

The module is configured from the factory for an active ground fast idle trigger. To change this to an active 12V trigger:
Turn the key on, place the transmission in neutral, apply the Service Brake, pull out on the Park Brake release and apply the Park Brake four times within 5 seconds.
Upon successful reprogramming, the LEDs will flash as a confirmation. Cycle the key for the change to take affect. Repeat to reverse back to a ground trigger.

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System Operation

The AFIS507VSX-B Advanced Fast Idle System (AFIS) elevates engine idle speed in response to a number of triggers in order to assist electrical or mechanical systems on the vehicle.

Fast Idle may be initiated by either a manual trigger (Green wire being grounded), a low battery voltage (low VBAT) condition, the A/C clutch engaging, or if enabled, by setting the Park Brake.

Fast Idle will only occur when the required preconditions are met, as listed below. Fast Idle operation will be terminated by a loss of **any** of the preconditions, or removal of the trigger(s).

Fast Idle Triggers		
Trigger Name	**Trigger Conditions**	**Disable Conditions**
Manual Engage	Fast Idle Engage Green wire grounded **Or** 12V input enabled (based on setting)	Fast Idle Engage Green wire not grounded **Or** not 12V based on setting
VBAT Low	VBAT < 12.5V	Precondition Violation
Parking Brake	Parking Brake applied	Parking Brake Released
A/C Boost	A/C Clutch (engaged)	Precondition Violation

Fast Idle Preconditions

The following preconditions must be met prior to initiating Fast Idle operation:

- Vehicle speed zero
- Transmission in Park
- Accelerator pedal must not be applied
- Engine Coolant temperature must be less than 230ºF
- Engine RPM must be greater than 200 and less than 2800.
- Service Brake not applied

Factory Options - The following are configurable at the factory for OEM customers. The default values are shown.

AFIS507VSX-B
Idle RPM: 1500 gas / 1200 Diesel
VBAT Low: 12.5V
A/C Trigger: Enabled
Parking Brake Trigger: Disabled

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# Post Installation System Operation Test

Perform the following tests before actually mounting the module, to allow easy viewing of the diagnostic LED's, if needed.

1. Place transmission in Park and start the engine. **NOTE**: Vehicle may enter Fast Idle if VBAT is low. Either wait to see if the battery charges and Fast Idle stops, or place a charger on the vehicle to disable the VBAT low trigger to allow testing of other triggers.
2. Manually engage Fast Idle by having aftermarket vehicle equipment ground the Green wire. Engine speed will increase to the set RPM level. If this does not occur, check harness connections. Also see diagnostics below.
3. When Fast Idle is engaged, keep the Green wire grounded, and depress the Service Brake for 1 second. Fast idle will temporarily disengage anytime the Service Brake is depressed, but will automatically reengage after approximately 2 seconds once the Brake pedal is released.
4. Place transmission shift lever in the "Neutral" position. (Green wire still grounded). Verify the system does <u>not</u> activate Fast Idle.

If the AFIS507VSX-B fails any of the above tests, check harnesses and review instructions, or check diagnostics below If necessary, call InterMotive Technical Support at (530) 823-1048.

Diagnostics

Diagnostic mode is entered by momentarily shorting the two gold "Test" pads together on the module. The module provides diagnostic LEDs which illuminate according to the following table. To exit this mode, cycle the key or momentarily ground the "Test" pad again.
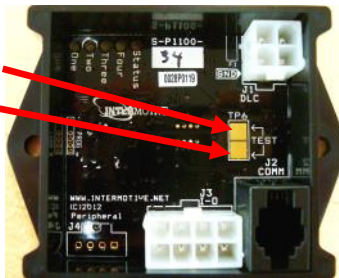
Fast Idle Status Codes

Status Codes provide the current status of the Fast Idle system. The on-board "Status" LED will flash a 2-digit code as shown in the table. The first digit will flash, wait half a second, flash the second digit, then wait one second before the next code. The Status Codes continue to flash until the module is reset (cycle key), or the test input is momentarily grounded again.
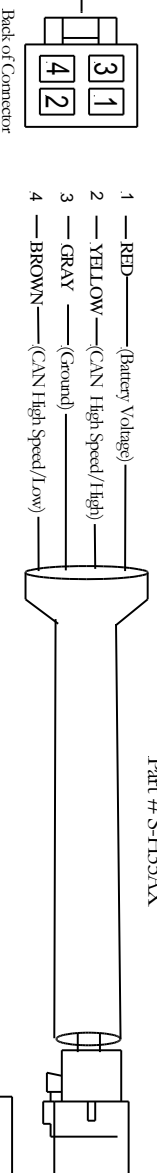
LED #	Diagnostic Mode LED Descriptions
1	On when fast idle is engaged
2	On when Green trigger wire is active
3	On when Gray RPM set wire is grounded
4	On when the Parking Brake is applied with the parking brake trigger enabled
STATUS	Continuously flashes two digit status codes. See Status Code table

AFIS Status Codes	
Status Code	Description
1-1	Ready for fast idle
2-3	Triggered: Parking Brake
2-4	Triggered: VBAT Low
2-5	Triggered: A/C Boost
2-8	Triggered: Manual Input
3-1	RPM > 2800
3-2	RPM < 200
3-3	TR not = to PARK
3-4	VSS not = to 0 MPH
3-5	Service Brake applied
3-7	Unsafe; Need to cycle TR
3-8	ECT > 230ºF

Module Mounting

Ensure all harnesses are properly connected and routed, and are not hanging below the dash area. Mount the AFIS507VSX-B module using screws or double sided tape. Reinstall the lower dash panel.
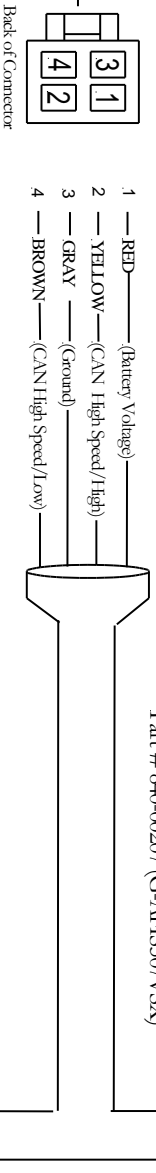
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AFIS507VSX-B Data Link Harness
Part # S-H35AX

Back of Connector

3 1
4 2

1 — RED ———————— (Battery Voltage)
2 — YELLOW ——— (CAN High Speed/High)
3 — GRAY ———— (Ground)
4 — BROWN ——— (CAN High Speed/Low)

Data Link Harness-
Attach To OEM OBDII
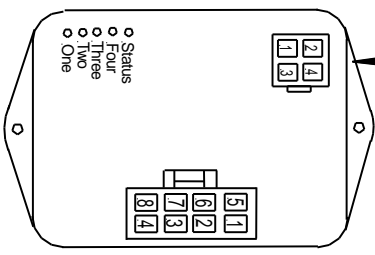Connector

Optional AFIS507VSXP-B Data Link Harness
Part # S-H07DX
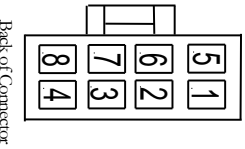Part # S-H107DX (B-AFIS507VSX)
Part # 840-00207 (G-AFIS507VSX)

Back of Connector

3 1
4 2

1 — RED ———————— (Battery Voltage)
2 — YELLOW ——— (CAN High Speed/High)
3 — GRAY ———— (Ground)
4 — BROWN ——— (CAN High Speed/Low)

1 — RED
2 — DK BLUE
3 — GRAY   840-00207 (G-AFIS507VSX) Option
4 — WHITE

Pass Through OBDII
Connector

Harness Part # S-H38AX

Back of Connector

5 1
6 2
7 3
8 4

1 — BLACK ⎤
2 — N/C   ⎥ VBAT Low Trigger
3 — BLACK ⎦
4 — GRAY — RPM Configuration (ground input)
5 — N/C
6 — N/C
7 — N/C
8 — GREEN — Fast Idle Engage Input 1 (active ground input)(default)

Status
Four
Three
Two
One

2 4
1 3

8 4
7 3
6 2
5 1

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If the AFIS507VSX-B fails any step in the Post Installation Test, review the installation instructions and check all connections. If necessary call InterMotive Technical Support at (530) 823-1048.