An ISO 9001:2015 Registered Company



Speed Sentinel™ SS502-D, SS502-DX

2011-2019 Ford E Series
2011-2016 Ford F250-F550 Series
2017-2021 Ford F250-F550 (B-SS502-D*, B-SS502-DX*)
2021 - 2022 Ford E Series (B-SS502-D*, B-SS502-DX*)
2008-2019 Ford F650-F750 Series (gas engine only)
2021 - 2022 Ford F600, F650, and F750 (B-SS502-D*, B-SS502-DX*)
2020-2025 Ford Transit w/Sync3 (B-SS502-D*, B-SS502-DX*)
***Uses the Ford 24-pin Data Link Harness**
Contact InterMotive for specific engine applications.

System Overview

Speed Sentinel is a programmable road speed limiter for Ford vehicles. Speed Sentinel is a micro-processor controlled unit that limits maximum vehicle speed but does not limit maximum engine output.

Speed Sentinel interfaces with the vehicle through the use of "Plug & Play" connectors that plug directly into the vehicle's factory OEM connectors. This method of installation reduces the installation time and improves the connection reliability.

Speed Sentinel has been designed with internal safeguards to insure the safe operation of the vehicle. If it senses any unsafe or unknown condition it automatically reverts back to full driver control.

Speed Sentinel can be set up for either single or dual speed operation.

Optional Switch Controlled setting, preprogrammed by InterMotive, includes Optional Forced Engine Idle Functions—flip an operator installed switch and Speed Sentinel forces the engine to stay in idle mode as a theft deterrent.

Optional System Controlled Electronic Override of Speed Sentinel is available for Emergency vehicles when in Code 3 mode.

For activation and installation instructions of the optional modes, contact InterMotive.

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 the installation.



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

Speed Sentinel Module

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

Accelerator Pedal T– Harness (Plug & Play)





1. Unplug the OEM harness from the accelerator pedal assembly.
2. Plug the OEM harness into the Speed Sentinel Accelerator Pedal T-harness.
3. Plug the Speed Sentinel Accelerator Pedal Harness into the OEM pedal assembly.
4. Ensure all connectors are secure. If connectors are equipped with Red locking tabs, ensure the tabs are in the locked position.
5. Plug the 12-Pin Speed Sentinel Pedal harness connector into the "Pedal" connector on the SS502-D module.

LED Display Panel (SS502-D only)



Note: The SS502-DX does not include the LED Display Panel.

1. Locate a suitable position on the dashboard, within view of the driver, for the mounting of the LED display panel. It must be within 36 inches of the module and allow room for the LED harness installation.
2. Drill a ¾" hole in the dashboard where the center of the display will be located. Plug the 10-pin connector of the LED harness in connector cavity labeled "Display" on the SS502-D control module.
3. Run the other end of the harness under the dash and out through the ¾" hole. Plug the 6-pin connector of the display harness into the LED display panel. Ensure that the panel is level and secure using the supplied screws.

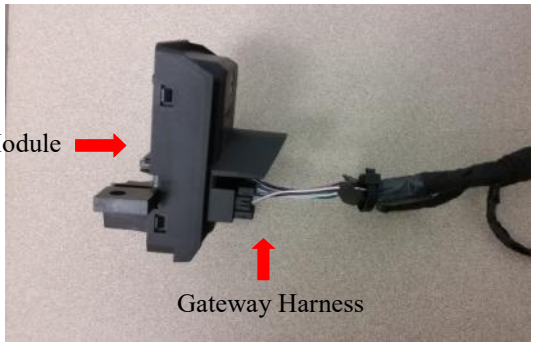
Data Link Harness (6—Pin connector)



1. Locate the vehicle OBDII Data Link Connector, which is mounted below the lower dash panel.
2. Remove the mounting screws for the OEM Data Link Connector.
3. Plug the Red connector from the Speed Sentinel Data Link T-Harness into the OEM Data Link connector.
4. Ensure the connection is fully seated and secure with supplied wire tie.
5. Mount the Black connector from the Speed Sentinel Data Link Harness in the former location of the OEM connector.
6. Attach the Black ground wire with eyelet to a chassis ground.
7. Secure the Data Link Harness so that it does not hang below the lower dash panel.
8. Plug the 6-Pin connector from the Data Link Harness into the SS502-D control module in the cavity labeled "Data Link".

Ford 24-pin Data Link Harness (6-pin connector)

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 PRPC Gateway harness so that it does not hang below the lower dash panel.



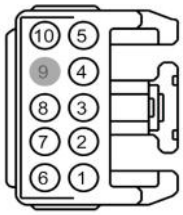
Cruise Control Inhibit (Vehicle equipped with cruise control)

Note: If the vehicle does not have cruise control, skip to section "Setting Vehicle Speed".



Ford E-Series (2010-2019)

1. Locate the Gray 10-Pin Ford connector (C218B) on the lower right side of the steering column.
2. Find the White wire in Pin #3.
3. Attach the Brown wire Pin #5 from the 8-Pin "Auxiliary" connector to this circuit as a parallel tap using solder and heat shrink tubing.
4. Route and secure the Brown wire.
5. Insert the 8-Pin Auxiliary connector into the SS502-D control module in the cavity labeled "Auxiliary".



Connector C218B

Ford F250-F550 (2011-2021), Ford Transit w/Sync3 (2020-2025), Ford E-Series (2021-2022), Ford F600-F650-F750

Cruise control is handled automatically on these models. The Brown wire from the 8 Pin "Auxiliary" connector is not needed and can be cut off.

Optional System Override Input

The Blue wire on the Auxilary Connector (J3 Pin #7) serves two purposes. If configured for Single Speed mode, applying 12V to this input will disable Speed Sentinel. In Dual Speed mode, GND (or no applied voltage) will select Speed #1 and applying 12V will select Speed #2.

Setting Vehicle Speed Limit(s)

Single/Dual mode: Speed Sentinel can be configured for Single or Dual Speed mode operation. In the Single Speed mode, Speed #1 is set by the factory but can be overridden by the rotary switch position.

In Dual Speed mode, two speeds can be set and used to limit the vehicle. Both Speed settings are set by the factory, but Speed #1 can also be set by the rotary switch position. Speed #2 is configured for a customer requested speed. Speed #1/#2 selection is determine by a discrete input voltage level at J3 Pin #7 (Blue wire). A 12V input on this pin selects Speed #2. If no voltage is present on this input, Speed#1 is selected.

With power disconnected from the module, remove the lid of the Speed Sentinel module. Locate the rotary switch and adjust the speed limit according to the chart shown. Speed Limit can be adjusted in 1 mph increments in the factory configuration.

Contact InterMotive for programming information.

⚠ WARNING ⚠

The Speed Sentinel II control module must be disconnected from the vehicle battery power during rotary switch adjustment.





0* = factory set (user specified)	**8 = 45mph**
1 = 10mph	**9 = 50mph**
2 = 15mph	**A = 55mph**
3 = 20mph	**B = 60mph**
4 = 25mph	**C = 65mph**
5 = 30mph	**D = 70mph**
6 = 35mph	**E = 75mph**
7 = 40mph	**F = 80mph**

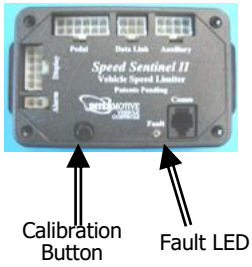
Reconnect vehicle battery

Accelerator Pedal Calibration (required)

Note: Accelerator pedal calibration has changed from previous instructions. Use the following calibration technique for all Speed Sentinel modules with firmware versions 1.2.0.0 and higher.

Prior to calibration, ensure the following:

- Speed Sentinel pedal harness is installed
- Speed Sentinel Data Link connector is disconnected from module
- Key on, engine off



1. Hold down the Black calibration button on the Speed Sentinel module and plug in the 6 pin Data Link connector.
2. When Red fault light LED illuminates continuously, release the calibration button.
3. When Red LED flashes off and back on, press and hold accelerator pedal to the floor.
4. When Red LED goes off, calibration is complete and pedal can be released.

If the Red fault LED starts flashing, the calibration was unsuccessful. Repeat Steps 1-4.
Once calibration is complete, connect a scan tool to the OBD II and check for diagnostic trouble codes (DTC's). If any codes are present, they must be cleared prior to delivery of the vehicle.

SS502 Module Mounting

Ensure all harnesses are properly connected and routed, and are not hanging below the dash area. Mount the Speed Sentinel module using screws or double sided tape. Reinstall all removed panels.

Post Installation Instructions

The following checks must be performed prior to releasing the vehicle to the driver.

Note: If module is set for dual-speed mode, Speed Sentinel operation must be checked at each speed as described below.

1. Test drive the vehicle to verify proper Speed Sentinel operation. The Speed Sentinel must limit vehicle speed at the preset speed limit and pass the following steps:
2. When the Speed Sentinel engages (green LED will illuminate) and the vehicle speed is limited, press the accelerator pedal to wide-open throttle and verify that vehicle speed has been limited.
3. Ensure that the preset speed is set to the desired limit. (See Setting Vehicle Speed Limit(s) of the instructions for adjustment procedure).
4. Check passing mode operation by going from wide-open throttle to closed throttle three times in a three-second span. The Speed Sentinel passing mode will allow a temporary override of speed limiting. The override lasts for 10 seconds then resumes limiting vehicle speed. If enabled, the green LED will flash once after prove out. Passing mode is optional and may be removed by contacting InterMotive Technical Support.
5. If the vehicle has cruise control, check the cruise control operation and inhibit. Verify that cruise control is operational when vehicle speed is below the limited speed and not operational during speed limiting.
6. If equipped with system override input, verify the Speed Sentinel activates when chosen equipment is activated.
7. Verify that the check engine light has not been set. (Turning the ignition switch to the "on" position with the accelerator pedal unplugged during installation will set a check engine light).

If the Speed Sentinel 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.

Submit product registration at www.intermotive.net

Diagnostic Trouble Codes

- If the Speed Sentinel has a stored fault code, the "fault" LED will blink twice a second and codes can be retrieved by entering diagnostic mode.
- If the Speed Sentinel requires calibration with the vehicle, the "fault" LED will blink on for two seconds and off for a half second. Call InterMotive for assistance.
- If the Speed Sentinel has an internal programming fault, the "fault" LED will blink on/off rapidly. Call InterMotive for assistance.



Entering Diagnostic Mode

- Diagnostic mode is entered by pressing and releasing the Yellow "Diag" button on the LED display. Once in diagnostic mode, all codes will be displayed by the blinking "fault" LED.
- The codes will be displayed as blink codes. For example, if there is 1 blink, a short pause, and then 2 blinks, the code is 1 2. These two sets of blinks are combined to form the code.
- A zero will not blink, so when the vehicle is safe (ready to be active) it will blink once every three seconds. Diagnostic codes will change depending on the safe status of the vehicle.

Clearing codes:

1. Place the vehicle in Park.
2. Press the Yellow "Diag" button and at the same time pump the service brake three times.

Note: The SS502-DX does not include the LED Display Panel. Fault Codes can be read at the module by pressing and releasing the calibration button and reading the Fault LED.



LED Code	Terminal Code	VSS state	Drive Train state	Service Brake state
1 - 0	10	> 0	In Drive	Not applied
1 - 1	11	> 0	In Drive	Applied
1 - 2	12	> 0	Not In Drive	Not applied
1 - 3	13	> 0	Not In Drive	Applied
1 - 4	14	= 0	In Drive	Not applied
1 - 5	15	= 0	In Drive	Applied
1 - 6	16	= 0	Not In Drive	Not applied
1 - 7	17	= 0	Not In Drive	Applied
1 - 8	18	> 0	In Drive	Not applied
1 - 9	19	> 0	In Drive	Applied
1 - 10	1A	> 0	Not In Drive	Not applied
1 - 11	1B	> 0	Not In Drive	Applied
1 - 12	1C	= 0	In Drive	Not applied
1 - 13	1D	= 0	In Drive	Applied
1 - 14	1E	= 0	Not In Drive	Not applied
1 - 15	1F	= 0	Not In Drive	Applied

Contact InterMotive for assistance with codes and diagnostics of the Speed Sentinel.

LEAVE WITH VEHICLE
Speed Sentinel™ Operating Instructions SS502-D, SS502-DX
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Contact InterMotive for specific engine applications

The Speed Sentinel is a road speed limiter, which limits maximum vehicle speed to a preset limit. Once the driver attains the limited speed, any additional input on the throttle pedal will not increase the speed of the vehicle. If the throttle is pushed beyond the maximum speed, the Speed Sentinel will maintain the preset speed. The Speed Sentinel will maintain vehicle speed on varying terrain, much like a cruise control. However, while coasting down hills, the vehicle can exceed the limit since Speed Sentinel does not apply the vehicle brakes.

When the Speed Sentinel reaches the limited speed, the green LED (limit) on the LED Display will illuminate to show that maximum speed has been achieved. If the red LED is illuminated, a fault code is present and should be reported to the fleet manager.

Optional passing mode allows for a short-time override of the limited speed (for use in passing at critical moments). To verify passing mode is programmed, an extra "blink" on the green LED during prove out indicates passing mode is programmed. Passing mode is entered by going from wide-open throttle to idle three times in a three second span. The override lasts for 10 seconds then resumes limited vehicle speed. For SS502-DX (no LED panel), the passing mode function has to be performed in order to be verified.

The Speed Sentinel also has a mode that will return the engine to base idle if the service brake is applied at the same time as the accelerator pedal. This mode will only activate while the Speed Sentinel is limiting vehicle speed. To remove Speed Sentinel from this mode: release and reapply the accelerator pedal to reactivate control of the accelerator pedal. This can be done anytime after this mode has been activated.

Optional Dual Speed mode allows 2 speeds to be limited by a flip of a switch. For instance, a truck with a snow plow may have a primary speed limited at 55 MPH, but when the plow is down, the vehicle is limited to 20MPH.

WARNING

Do NOT press and hold the accelerator pedal all the way to the floor while Speed Sentinel is active and limiting speed. If the Speed Sentinel is disabled for any reason, it will stop limiting speed and the driver will immediately be in control of the accelerator. Sudden acceleration may occur if the pedal is held all the way to the floor, and Speed Sentinel becomes disabled.

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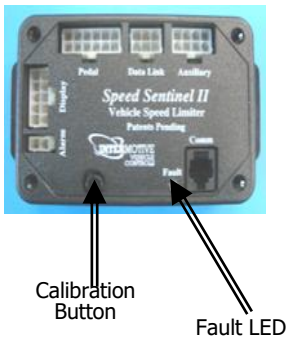
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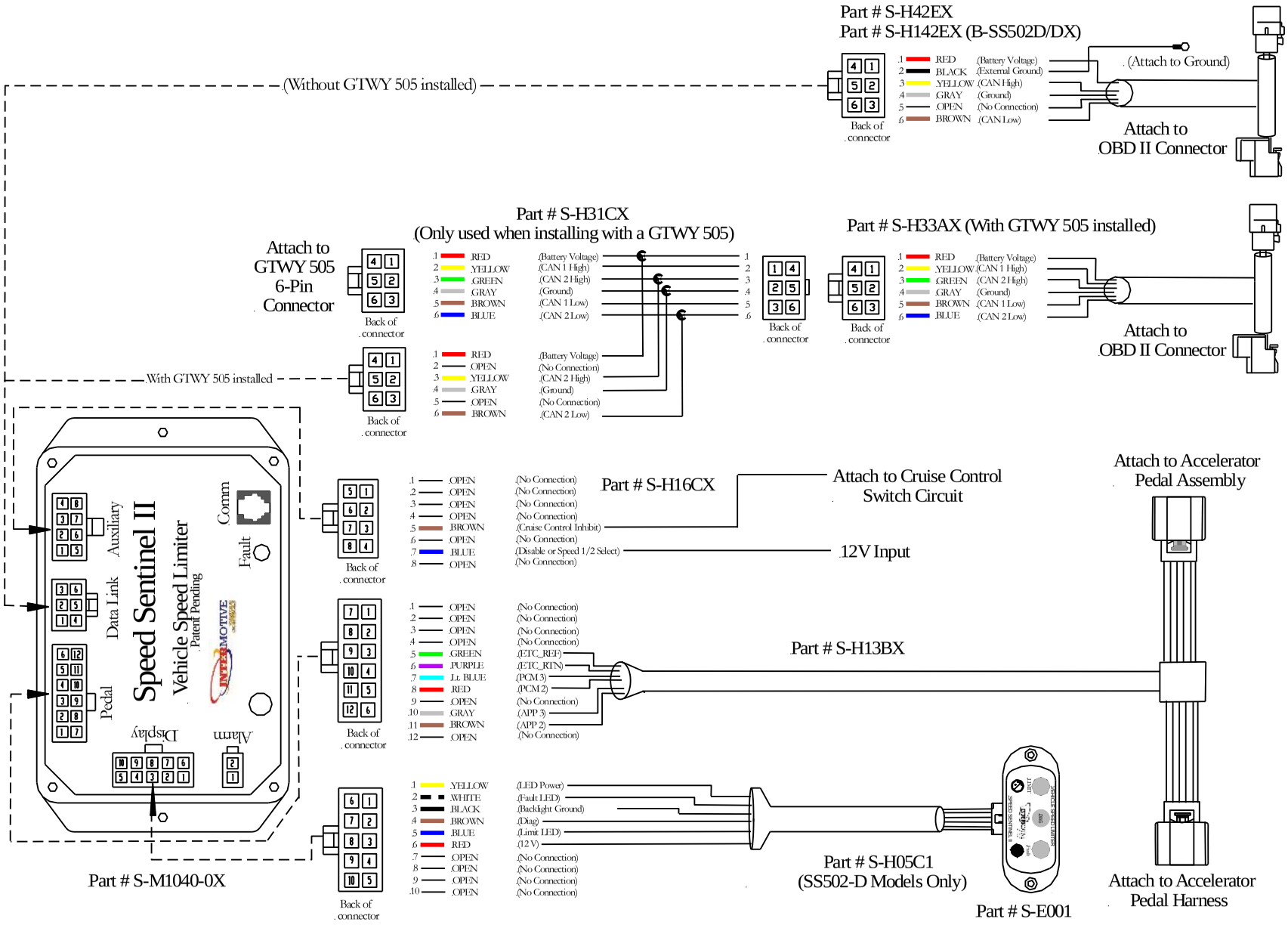
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1 - 11	1B	> 0	Not In Drive	Applied
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Note: The SS502-DX does not include the LED Display Panel.
Fault Codes can be read at the module by pressing and releasing the calibration button and reading the Fault LED.



Contact InterMotive for assistance with codes and diagnostics of the Speed Sentinel.

U.S. Patent #9,469,261



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