

Suzuki Engine Interface Sensor Installation Instructions

This instruction sheet tells how to install your Suzuki Engine Interface and connect it to a NMEA 2000[®] network using SMIS (Suzuki Modular Instrument System) network components. You must refer to your digital gauge, sonar or GPS unit's manual for sensor operation instructions.

Important

WARNING / CAUTION / NOTE

Please read this manual and follow its instructions carefully. To emphasize special information, the symbol **A** and the words **WARNING**, **CAUTION** and *NOTE* have special meanings. Pay special attention to the messages highlighted by these signal words:

A	WA	RN	INC

Indicates a potential hazard that could result in death or injury.

CAUTION

Indicates a potential hazard that could result in boat or equipment damage.

NOTE: Indicates special information to make maintenance easier or instructions clearer.

CAUTION

Installing SMIS network devices is significantly different from installing components without NMEA 2000 features. Read all of the installation instructions before proceeding. You should decide where to install all components before drilling any holes.

All Suzuki NMEA 2000-capable devices are either NMEA 2000certified or certification is pending. See our web site for the latest product status information.



The Suzuki Engine Interface module.

This sensor consists of a smart module, black cable connector, Engine Interface connector and Engine Trim connector. The sensor converts engine information into a format compatible with the NMEA 2000 data format.

The Engine Interface is designed only for use with a NMEA 2000 Network. It MUST be connected to a NMEA 2000 network or it WILL NOT function.

Tools and Supplies

A T connector is the only electronic component needed to attach it to an existing NMEA 2000 network.



The photo above includes a 2 foot extension cable, T connector, 120ohm male terminator and 120-ohm female terminator.

NOTE: All connectors used to add an engine interface to a NMEA 2000 network will be black Devicenet connectors as shown above.

For complete instructions on setting up a new NMEA 2000 network or expanding an existing one, see the NMEA 2000 Network Installation Instructions packed with your Suzuki Engine Interface.

Installation

Install one Engine Interface sensor per engine in all applications. On the DF300, you must use the Interface Adapter Harness to connect your interface into the instrument network connection at the main station harness (main helm location).

CAUTION

When installing this sensor, make sure its cable will not come in contact with any moving parts or parts of the engine that will get hot. Make sure there is enough slack in the cable to allow the engine to freely move up, down and side to side.



DF300 Single Interface adapter harness with network power connection

Interface connection to instrument network through adapter harness

The DF300 interface adapter harness is available in single, dual and triple configurations. When connecting the Suzuki engine interface on the DF300 it is not necessary to use the 2 pin trim connection. There is a Black and Grey wire included on the interface adapter harness for instrument network power connection via the instrument power cable.

On DF40 through DF250 models refer to your engine operation manual to remove the engine cover. After the cover has been removed, pass the Engine Interface connector and Trim connector through a wiring opening. in the back of the boat.



Trim connector (left) Engine Interface connector (right).

Connect the Engine Interface connector to the interface connector on the engine. Apply even pressure to the connector until it snaps into place. Next, attach the Trim connector to the trim connector on the engine. Apply even pressure to the connector until it snaps into place. For more detailed instructions, contact your Suzuki Marine dealer.

Route the sensor black connector to the desired T connector on the network backbone and plug it in. The sensor is ready to use.

Connecting to a NMEA 2000 Network

A network bus is an installed and operational network cable (backbone) running the length of your boat, connected to a power supply and properly terminated. Like your home's telephone wiring with phones in different rooms connected to the same communications line, a network bus is the communications line into which NEMA 2000 sensors, devices and display units are attached at various locations in a boat.

Network Nodes

A network bus is built of network nodes attached to a backbone. A network node is made by inserting a T-shaped connector into the backbone (using the side sockets) and attaching a display unit or sensor to the bottom socket of the T.

The T connectors are similar to telephone jacks. The backbone is similar to a phone line running through the boat. As phones must be connected to each other to communicate, only sensors and display units plugged into the NMEA network can share information.

Connections found in the middle of the bus will have one or more of these T-shaped connectors with the backbone cables plugged into both sides. Connections at the end of a network will have the backbone plugged into one side, and a terminator plugged into the other, as shown below.



NMEA 2000 network node located at the end of a NMEA 2000 bus. Adding a Network Node

You can add a node anywhere along the network backbone where a connection already exists. This connection could be at the end of the network (between a T connector and a terminator), between two T connectors, between a T connector and a backbone extension cable, or between two extension cables.



Add a new device to a NMEA 2000 bus by attaching a T connector between two T connectors, between a T connector and the end terminator, or between two backbone extension cables.

Wherever you want to add the new node, simply separate the sockets of the old connection and attach your new T connector between them.

If you want to add a node at the end of the line (as shown in the previous figure), remove the terminator from the very last connector, securely attach the new T connector, and then attach the terminator on the new connector. Either method will allow you to add a device.

NOTE: During the next sections of these instructions it will be necessary to go to the **"System Setup"** screen. There is now a shortcut to take you directly to the **System Setup** screen by hitting the **Menu** button twice.

Suzuki Engine Interface Configuration

You can have up to three Suzuki Engine Interface's installed on your vessel, one for each engine the SMIS 4" gauge supports. In a three engine-tank configuration, the interfaces will be listed as Port Engine, Center Engine and Stbd Engine. If the engine interface is unconfigured, it will be listed as Uncfg Eng Int. When accessing an Engine Interface, its menu will appear with the following options: Change Engine (for two or more engines only), Fuel Warning, Unset Engine, Reset Values, Reset Fuel Calibration and Reset Trim Calibration.

To configure a Suzuki Engine Interface:

1. Press $\ensuremath{\mathsf{MENU}}$, use the $\ensuremath{\mathsf{UP}}$ and $\ensuremath{\mathsf{DOWN}}$ keys to select $\ensuremath{\mathsf{System}}$ Setup and press $\ensuremath{\mathsf{ENTER}}$.

2. Highlight **Bus Devices** and press **ENTER**. The Bus Devices list will appear.

3. Select UNCFG ENG INT and press ENTER. The following message will appear: *Press Enter to Configure Eng Intrfc*.

4. Press **ENTER**. and you will be asked to enter the year model of the engine, then the following list of Suzuki engine models will appear: DF40, DF50, DF60, DF70, DF80, DF90, DF100, DF115, DF140, DF150, DF175, DF200/225, DF250 and DF300.

5. Select your engine model from the list and press **ENTER**. The Select Engine menu will appear with up to three options (Port, Center and Starboard), depending on your engine-tank configuration. (If you chose a single engine configuration during Boat Setup, you will be taken back to the main display.)

6. Highlight the engine (Port, Center or Starboard) connected to your engine interface and press **ENTER**. Press **EXIT** repeatedly to return to the main display.

To unconfigure an Suzuki Engine Interface (Unset Engine):

1. Press $\ensuremath{\mathsf{MENU}}$, use the $\ensuremath{\mathsf{UP}}$ and $\ensuremath{\mathsf{DOWN}}$ keys to select $\ensuremath{\mathsf{System}}$ Setup and press $\ensuremath{\mathsf{ENTER}}$.

2. Highlight **Bus Devices** and press **ENTER** to open the Bus Devices list.

3. Select the desired engine interface and press **ENTER**. The Engine Interface menu will appear. Select **UNSET ENGINE** and press **ENTER**. The following message will appear: *Press Enter to UnConfig Device Name*.

4. Press **ENTER** and you will be directed back to the Bus Devices list., where the engine interface you unconfigured will be shown as UnCfg Eng Int.

Reconfiguring Suzuki engine interface (multiple engines only):

The Change Engine command is used to switch the current configuration of a Suzuki Engine Interface with the configuration from a different engine. Change Engine, however, will only appear on your gauge's menu if you are using an engine-tank configuration for two or more engines. If all engine interfaces on your vessel are configured, you will have to unconfigure an engine interface to free up its configuration name (Port, Center, Starboard).

To reconfigure an engine interface (Change Engine):

The steps below show how to switch the configuration name of an engine interface from the Port engine to the Starboard engine.

If all three engine interfaces are configured, leaving no name configuration available, follow the first set of instructions below. If the desired configuration name is available, follow the second set of instructions below.

All engine interfaces configured (Configuration name unavailable):

1. Press $\ensuremath{\mathsf{MENU}}$, use the $\ensuremath{\mathsf{UP}}$ and $\ensuremath{\mathsf{DOWN}}$ keys to select $\ensuremath{\mathsf{System}}$ Setup and press $\ensuremath{\mathsf{ENTER}}$.

2. Highlight **Bus Devices** and press **ENTER**. The Bus Devices list will appear.

3. Select **PORT ENGINE** and press **ENTER**. Highlight **UNSET ENGINE** and press **ENTER**. The following message will appear: *Press Enter to UnConfig Device Name*.

4. Press **ENTER**. You will be taken back to the Bus Devices list, where the engine interface will now be displayed as UnCfg Eng Int.

5. Select Starboard Engine and press ENTER.

6. Highlight **CHANGE ENGINE** and press **ENTER**. The Select Engine menu will appear with up to three options (Port, Center and Starboard).

7. Select **PORT** and press **ENTER**. You will be taken back to the Bus Devices list.

8. Highlight UnCfg Eng Int and press **ENTER**. The following message will appear: *Press Enter to Configure Eng Intrfc*.

9. Press **ENTER**, which will ask for engine year model and then you select the model of Suzuki engine on your vessel and press **ENTER**. The Select Engine menu will appear with up to three options (Port Center and Starboard).

10. Choose Starboard and press **ENTER**. You will be taken back to the Bus Devices list where the engine interfaces will be shown with their new configuration names.

If desired configuration name available:

1. Press $\ensuremath{\mathsf{MENU}}$, use the $\ensuremath{\mathsf{UP}}$ and $\ensuremath{\mathsf{DOWN}}$ keys to select $\ensuremath{\mathsf{System}}$ Setup and press $\ensuremath{\mathsf{ENTER}}$.

2. Highlight **Bus Devices** and press **ENTER**. The Bus Devices list will appear.

3. Select the engine interface you want to reconfigure and press **ENTER**. Highlight **CHANGE ENGINE** and press **ENTER**. The Select Engine menu will appear with up to three options (Port, Center or Starboard).

4. Choose the desired configuration name and press **ENTER**. You will be taken back to the Bus Devices list, where the engine interface you reconfigured will be displayed with its new configuration name.

Fuel Warning (Fuel Wrng)

Fuel Warning allows you to set a Low level or High level alarm for each Suzuki Engine Interface on the network. A pop-up window will appear if the fuel rises above or falls below a threshold of your choosing.

To set a fuel warning:

1. Press $\ensuremath{\mathsf{MENU}}$, use the $\ensuremath{\mathsf{UP}}$ and $\ensuremath{\mathsf{DOWN}}$ keys to select $\ensuremath{\mathsf{System}}$ Setup and press $\ensuremath{\mathsf{ENTER}}$.

2. Highlight **Bus Devices** and press **ENTER** to open the Bus Devices list.

3. Select the desired engine interface and press **ENTER**. That will open the engine interface menu.

4. Highlight **FUEL WRNG** and press **ENTER**. The Select Level menu will appear with two options: Low Level and High Level. Typically, a Fuel Level warning is used to alert you when your vessel is running low on fuel, so highlight **Low Level** and press **ENTER**. The Set Level Percentage window will appear, allowing you to set the level warning to the desired percentage of tank capacity (0-100%). It will be set to **OFF** by default. (To turn off a level warning select Off.)

5. Use the **UP** and **DOWN** keys to set the desired fuel warning percentage and press **ENTER**. You will be taken back to the Bus Devices list.

Reset Values

Accessing the Reset Values command from the Engine Interface menu, allows you to reset configuration and calibration settings for a particular engine interface.

To reset values:

1. Press $\ensuremath{\mathsf{MENU}}$, use the $\ensuremath{\mathsf{UP}}$ and $\ensuremath{\mathsf{DOWN}}$ keys to select $\ensuremath{\mathsf{System}}$ Setup and press $\ensuremath{\mathsf{ENUR}}$.

2. Highlight **Bus Devices** and press **ENTER**. Select the engine connected to the interface you want to reset and press **ENTER**.

3. Choose **RESET VALUES** from the Engine Interface menu and press **ENTER**. The following message will appear: *Press Enter to Reset Device Values*.

4. Press **ENTER** and you will be taken back to the Bus Devices list, where the engine interface now will be displayed as UnCfg Eng Int.

Calibrating Fuel Flow in an Engine Interface

The default calibration for a Suzuki Engine Interface is adequate in most cases, but if fuel used readings are off by more than 3 percent, calibration is recommended.

NOTE:

Make sure the fuel flow has been set as the Fuel Remaining Source; otherwise, you will not be able to calibrate the engine interface.

Engine Interface Accuracy

To check the accuracy of an engine interface, add the Fuel Manager page to the page screen rotation then customize it to show Fuel Used data.

To check engine interface accuracy:

1. Fill up the tank connected to engine that is attached to your engine interface.

2. Press $\ensuremath{\mathsf{MENU}}$, use the $\ensuremath{\mathsf{UP}}$ and $\ensuremath{\mathsf{DOWN}}$ keys to select $\ensuremath{\mathsf{System}}$ Setup and press $\ensuremath{\mathsf{ENTER}}$.

3. Highlight **FUEL SETUP** and press **ENTER**.

4. Select **REFILL TANK** and press **ENTER**. If your unit is configured for more than one tank, the Select Tank menu will open with up to three options: Port, Center and Starboard. (If your vessel is configured for one engine, you will be directed to the recalibration menu.)

5. Select the tank you refilled and press **ENTER**. The Recalibration menu will appear with two options: Yes and No. Select **No** and press **ENTER**. The following message will appear: *Press Enter after refilling the fuel tank*. Press **ENTER**.

6. Take your boat out, but run only ONE engine — the engine connected to the engine interface. Burn at least 5 gallons of fuel, then fill up the tank again, noting how much fuel was added to the tank. Check the Fuel Manager page for the fuel used figure calculated by engine interface.

7. Compare the amount of fuel added when you filled up the tank with the Fuel Used figure shown on your gauge. If the difference between these two numbers is greater than 3 percent, you need to calibrate the unit.

To calibrate an engine interface:

8. Fill up the fuel tank connected to the engine that is attached to your engine interface.

9. Press MENU, use the UP and DOWN keys to select System Setup and press ENTER.

10. Highlight **FUEL SETUP** and press **ENTER**.

11. Select **REFILL TANK** and press **ENTER**. If your unit is configured for more than one tank, the Select Tank menu will open with up to three options: Port, Center and Starboard. (If your vessel is configured for one engine, you will be directed to the recalibration menu.) Select the tank you refilled and press **ENTER**.

12. The Recalibration menu will appear with two options: Yes and No. Select **Yes** and press **ENTER**.

13. The Filled Quantity window will appear. Use the **UP** and **DOWN** keys to input the amount of fuel you added to the tank and press **ENTER**.

14. Repeat these steps for each engine interface you want to calibrate.

Calibrating Engine Trim

You must add the Engine Trim page to the main display before you will be able to proceed with engine trim calibration.

NOTE:

You will not use the engine trim feature with 300 horsepower Suzuki engines.

To calibrate Engine Trim:

1. Use the **ENTER** and **EXIT** keys to scroll the Engine Trim on to the main display. Press **MENU**.

2. Highlight **TRIM CAL** and press **ENTER**. The Select Engine menu will appear with up to three options: Port, Center and Starboard. (If you selected a single-engine tank configuration you will be taken to the engine's Trim Calibration menu.)

3. Select the engine connected to the engine interface and press **ENTER**. The engine's Trim Calibration menu will appear with two options: Lower Limit and Upper Limit.

4. Select **LOWER LIMIT** and press **ENTER**. The following Trim Cal message will appear: *Set Engine All Down and Press Enter*. Put your engine in the full down position, then press **ENTER**.

5. Highlight UPPER LIMIT and press ENTER. The following Trim Cal message will appear: *Set Engine All Up and Press Enter*. Put your engine in the full up position, then press ENTER. Press EXIT repeatedly to return to the main display.

Reset Calibration

The Reset Fuel Calibration command allows you to reset engine interface fuel calibration back to default settings. The Reset Trim Calibration command allows you to set engine interface engine trim calibration settings back to default settings.

To reset fuel calibration:

1. Press MENU, select System Setup and press ENTER.

2. Highlight **Bus Devices** and press **ENTER**. Highlight the engine connected to the engine interface you want to reset and press **ENTER**.

3. Select **Rst Fuel Cal** from the engine interface menu and press **ENTER**. The following message will appear: *Press Enter to reset the Fuel Cal*.

4. Press **ENTER** to set calibration back to default settings. To recalibrate the engine interface, follow the steps in the previous segment regarding engine interface calibration.

To reset engine trim calibration:

1. Press $\ensuremath{\mathsf{MENU}}$, use the $\ensuremath{\mathsf{UP}}$ and $\ensuremath{\mathsf{DOWN}}$ keys to select $\ensuremath{\mathsf{System}}$ Setup and press $\ensuremath{\mathsf{ENTER}}$.

2. Highlight **Bus Devices** and press **ENTER**. Highlight the engine connected to the engine interface you want to reset and press **ENTER**.

3. Select **RST TRIM CAL** from the engine interface menu and press **ENTER**. The following message will appear: *Press Enter to reset the Trim Cal*.

4. Press **ENTER** to set calibration back to default settings. To recalibrate the engine interface, follow the steps in the previous segment covering engine interface calibration.

Additional Network Information

Further instructions on creating or expanding a network are illustrated in the NMEA 2000 network setup booklet, which came packed with this instruction sheet.

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How to Obtain Service...

... in the USA:

Contact your nearest Suzuki Marine Dealer

...in Canada:

Contact your nearest Suzuki Marine Dealer

...outside Canada and the USA:

Contact the dealer in the country where you purchased your unit.

Accessory Ordering Information

Please contact your local Suzuki Marine dealer. To locate a Suzuki Marine dealer, visit the web site, <u>www.suzukimarine.com</u>, and look for the Dealer Locator. To locate a Canadian Suzuki Marine dealer, visit the web site, <u>http://www.suzuki.ca</u>, and look for the Dealer Locator. Or, consult your telephone directory for listings.





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