



EP-10 Fuel Flow Electronic Sensor Installation Instructions

This instruction manual explains how to install your EP-10 fuel flow sensor and connect it to a NMEA 2000® network using LowranceNET™ network components. You must refer to your digital gauge, sonar or GPS unit's manual for sensor operation instructions.

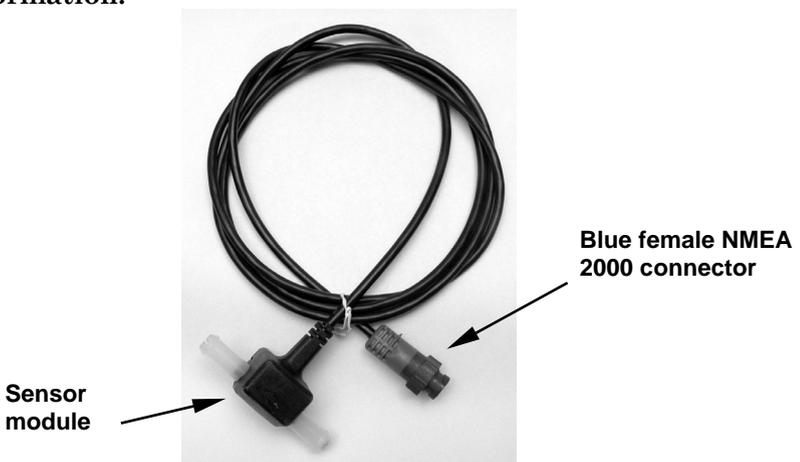
Caution:

*Installing LowranceNET NMEA 2000 devices is **significantly different** from installing earlier Lowrance components without NMEA 2000 features. You should read all of the installation instructions before proceeding. You should decide where to install all components before drilling any holes in your vessel.*

Some sonar or GPS units may require a software upgrade to display NMEA 2000 data correctly and a manual addendum describing how to operate the sensor. You can download these free and get additional information on the NMEA 2000® compatible LowranceNET™ system at our web site, www.lowrance.com.

WARNING:

Do not use this sensor with diesel engine fuel systems. The EP-10 is designed only for gasoline engines. Please see fuel filter warning on page 4 for additional information.



The EP-10 Fuel Flow sensor.

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

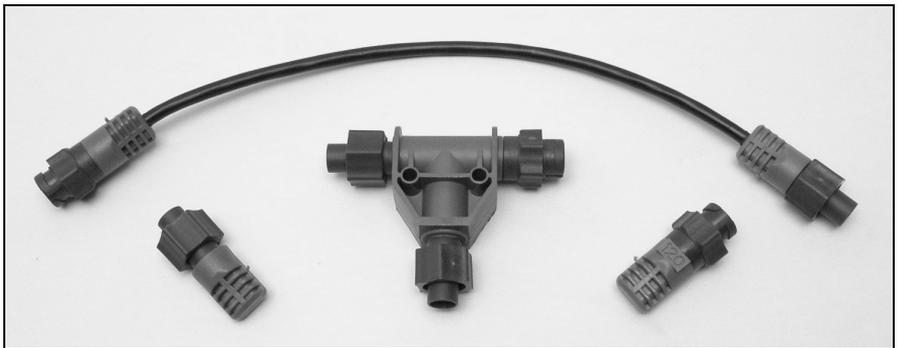
The EP-10 consists of a blue female locking cable connector and the sensor module. The sensor module contains a turbine to measure fuel flow and electronics which convert flow data to the NMEA 2000 data format. The cable length from the connector to the smart module is 10 feet. The EP-10 sensor is designed to work with **gasoline** engines only.

This sensor has been optimized to measure flow rates between 0.6 to 45 gallons (U.S.) per hour, but it will operate at flow rates outside that range. The sensor will add 0.5 PSI of back pressure on the fuel system with a flow rate of 20 gallons per hour. At the rate of 40 gallons per hour the back pressure will be 1 PSI.

The EP-10, like other Lowrance Electronic Probe (EP) sensors, 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

Your EP-10 sensor comes with a T connector. The T connector is needed to attach the sensor to a LowranceNET NMEA 2000 network. If you are connecting to an existing LowranceNET network, those are all the electronic components you need. If this is the first sensor you are connecting, you also will need a one-time purchase of a LowranceNET Node Kit.



LowranceNET Node Kit for a NMEA 2000 network. Includes a 2 foot extension cable, T connector, 120-ohm male terminator and 120-ohm female terminator.

For complete instructions on setting up a new NMEA 2000 network or expanding an existing one refer to the "*Setup and Installation of NMEA 2000 Networks, General Information*" document (part number 988-

0154-172) included with your EP-10 sensor. If that document is missing it can be downloaded free from the Lowrance web site.

Other supplies are not included unless otherwise indicated. Required supplies include cable ties or other fasteners to secure the hose and cable; an **in-line fuel filter** and any items needed to install the filter. Two 1" hose clamps are included with the sensor.

We assume you already have a fuel line installed. The EP-10 was designed to fit a typical 3/8" (9.5 mm) SAE USCG Type A1 fuel hose. If your engine has different diameter hoses or metal fuel lines a section of 3/8" fuel line must be installed between the sensor and the existing lines.

Recommended tools are a flathead screwdriver to tighten the clamps and a knife to cut the fuel hose. If you need to route the sensor connector through a bulkhead you will need a drill and a 3/4" drill bit.

Installation

Install one EP-10 sensor per engine. If you have multiple tanks, place the sensor after any Y or T in the line feeding the engine.

The sensor should be installed vertically and as close as possible to the fuel tank in an area where vibration is minimized. The housing has a molded-in fuel flow direction arrow which should be pointing up. (See the figures on the following page.)

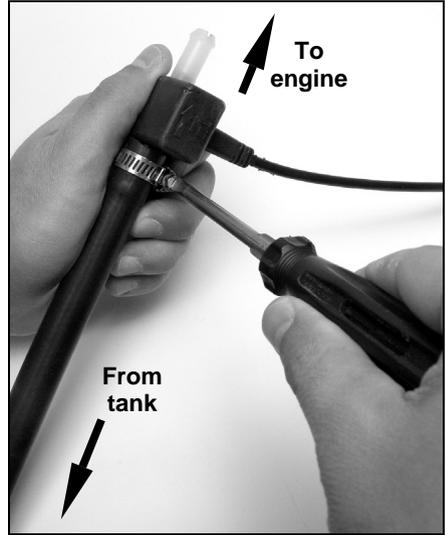
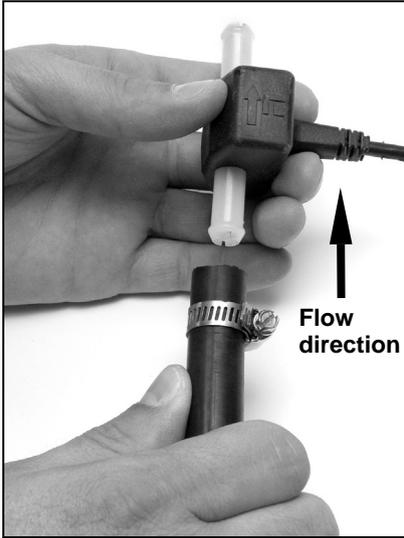
Mount the sensor above the tank's maximum fuel level to avoid accidental fuel leakage in case the sensor becomes disconnected.

Caution:

Gasoline is extremely flammable. If possible, drain the fuel line before you start or shut any flow valves located at the tank. Keep sparks and flame away from the work area. After installation remember to clean up any spilled fuel.

Cut the fuel hose where you intend to install the EP-10 sensor. Slide a clamp over the hose coming *from* the tank and push the hose onto the bottom (*inlet*) hose barb.

Seat the hose flush against the sensor housing and tighten the hose clamp. Attach the hose leading *to* the engine on the top (*outlet*) barb in the same way.



Push the fuel line onto the hose barb, then tighten the hose clamp. Orient the sensor vertically with the flow arrow pointing up.

WARNING:

You *must* install an in-line fuel filter or fuel water separator between the tank and the EP-10 sensor. This will prevent a malfunction caused by contaminated fuel. Debris in unfiltered fuel can clog the sensor's turbine and result in rough performance or engine shut down.

Caution:

As with any fuel system, we recommend you always carry onboard a spare fuel filter and an in-line 3/8" splice barb. This allows you to remove a clogged EP-10 fuel sensor or fuel filter and restore engine operation if the fuel filter fails. It is strongly recommend that you inspect your entire fuel system at regular intervals.

Secure the sensor/hose assembly so the sensor remains in a vertical position with the flow direction up. Clamp the hose on either side of the sensor to the hull or bulkhead to minimize vibration.

Route the sensor's cable connector to the T on the network backbone where you intend to attach it, 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, already connected to a power supply

and properly terminated. Such a bus provides network connection nodes at various locations around your boat.

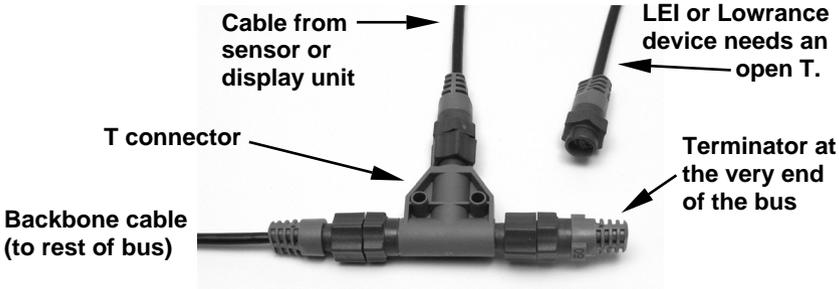
This is similar to the telephone wiring in a house. If you pick up a phone in your living room, you can hear someone talking into the phone in the bedroom.

Network Nodes

A network bus is built of network nodes spread along a backbone. Network nodes are made by fitting T-shaped connectors into the backbone (using the sockets on the sides), and attaching a display unit or sensor at the bottom of the T.

Using our telephone example, the T connectors are similar to telephone jacks. The backbone is like the phone wiring running through a house. Phones in a house must be connected to each other to communicate, and in the same way only sensors and display units plugged into the NMEA network can share information.

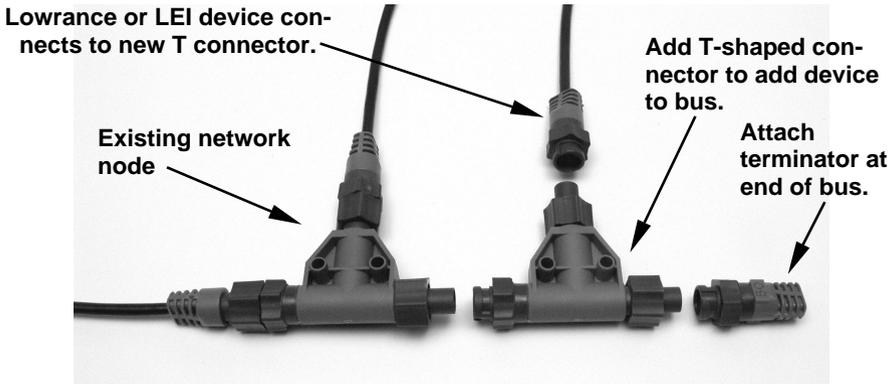
Connections found in the middle of the bus will have one or more of these T-shaped connectors with the backbone cables plugged into both sides. Connections at the end of a network will have the backbone plugged into one side, and a terminator plugged into the other, as shown in the following figure.



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

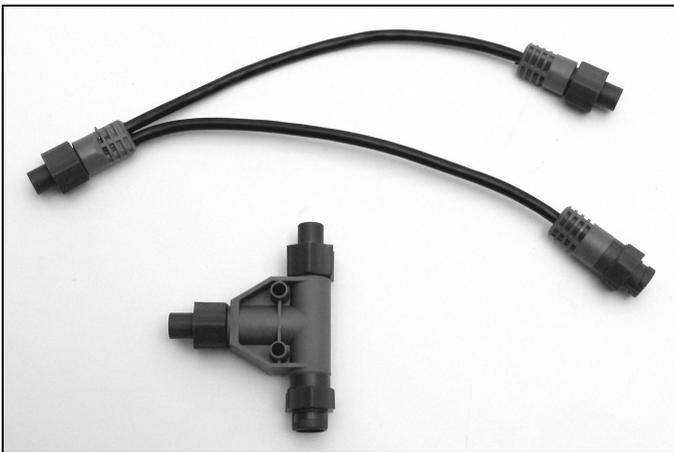
Adding a Network Node

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



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.

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.



The "soft" T connector, shown above with a "hard" T connector, is another option for connecting devices in a NMEA 2000 network. The soft T works the same as a hard T. The soft T is used to install a network node in areas where a hard T will not fit.

Additional Network Information

Further instructions on creating or expanding a network are illustrated in the NMEA 2000 network setup booklet (part number 988-0154-172) which came packed with this instruction manual.

LOWRANCE ELECTRONICS FULL ONE-YEAR WARRANTY

"We," "our," or "us" refers to LOWRANCE ELECTRONICS, INC., the manufacturer of this product. "You" or "your" refers to the first person who purchases this product as a consumer item for personal, family or household use.

We warrant this product against defects or malfunctions in materials and workmanship, and against failure to conform to this product's written specifications, all for one (1) year from the date of original purchase by you. **WE MAKE NO OTHER EXPRESS WARRANTY OR REPRESENTATION OF ANY KIND WHATSOEVER CONCERNING THIS PRODUCT.** Your remedies under this warranty will be available so long as you can show in a reasonable manner that any defect or malfunction in materials or workmanship, or any non-conformity with the product's written specifications, occurred within one year from the date of your original purchase, which must be substantiated by a dated sales receipt or sales slip. Any such defect, malfunction, or non-conformity which occurs within one year from your original purchase date will either be repaired without charge or be replaced with a new product identical or reasonably equivalent to this product, at our option, within a reasonable time after our receipt of the product. If such defect, malfunction, or non-conformity remains after a reasonable number of attempts to repair by us, you may elect to obtain without charge a replacement of the product or a refund for the product. **THIS REPAIR, OR REPLACEMENT OR REFUND (AS JUST DESCRIBED) IS THE EXCLUSIVE REMEDY AVAILABLE TO YOU AGAINST US FOR ANY DEFECT, MALFUNCTION, OR NON-CONFORMITY CONCERNING THE PRODUCT OR FOR ANY LOSS OR DAMAGE RESULTING FROM ANY OTHER CAUSE WHATSOEVER. WE WILL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO ANYONE FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, OR OTHER INDIRECT DAMAGE OF ANY KIND.**

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This warranty does NOT apply in the following circumstances: (1) when the product has been serviced or repaired by anyone other than us; (2) when the product has been connected, installed, combined, altered, adjusted, or handled in a manner other than according to the instructions furnished with the product; (3) when any serial number has been effaced, altered, or removed; or (4) when any defect, problem, loss, or damage has resulted from any accident, misuse, negligence, or carelessness, or from any failure to provide reasonable and necessary maintenance in accordance with the instructions of the owner's manual for the product.

We reserve the right to make changes or improvements in our products from time to time without incurring the obligation to install such improvements or changes on equipment or items previously manufactured.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

REMINDER: You must retain the sales slip or sales receipt proving the date of your original purchase in case warranty service is ever required.

**LOWRANCE ELECTRONICS
12000 E. SKELLY DRIVE, TULSA, OK 74128
(800) 324-1356**

How to Obtain Service...

...in the USA:

Contact the Factory Customer Service Department. Call toll-free:

For Lowrance: 800-324-1356. For Eagle: 800-324-1354

8 a.m. to 5 p.m. Central Standard Time, M-F

Lowrance Electronics and Eagle Electronics may find it necessary to change or end their shipping policies, regulations and special offers at any time. They reserve the right to do so without notice.

...in Canada:

Contact the Factory Customer Service Department. Call toll-free:

800-661-3983

905-629-1614 (not toll-free)

8 a.m. to 5 p.m. Eastern Standard Time, M-F

...outside Canada and the USA:

Contact the dealer in the country where you purchased your unit. To locate a dealer near you, see the instructions in paragraph number 1 below.

Accessory Ordering Information

LEI Extras™, Inc. is the accessory source for sonar and GPS products manufactured by Lowrance Electronics and Eagle Electronics. To order Lowrance or Eagle accessories, please contact:

1) Your local marine dealer or consumer electronics store. To locate a Lowrance dealer, visit the web site, www.lowrance.com, and look for the Dealer Locator. To locate an Eagle dealer, visit the web site, www.eaglesonar.com, and look for the Dealer Locator. Or, consult your telephone directory for listings.

2) U.S. customers: LEI Extras Inc., PO Box 129, Catoosa, OK 74015-0129
Call toll free in the U.S., 800-324-0045, 8 a.m. to 5 p.m. Central Standard Time, M-F, or visit our web site www.lei-extras.com.

3) Canadian customers: Lowrance/Eagle Canada, 919 Matheson Blvd. E. Mississauga, Ontario L4W2R7 or fax 905-629-3118.

Call toll free in Canada, 800-661-3983, or dial 905 629-1614 (not toll free), 8 a.m. to 5 p.m. Eastern Standard Time, M-F.



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