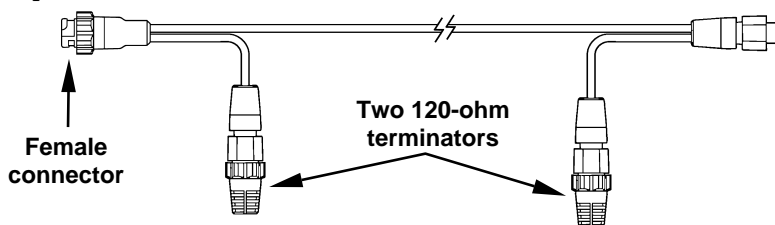


## NMEA 2000 Network Expansion Cable and 120-Ohm Terminators Installation Instructions

This package contains a 25-foot (7.62 meters) NMEA 2000 Network Expansion Cable, as well as two 120-ohm terminators. This product is intended for use with NMEA 2000-ready (blue connector) Lowrance or LEI products.



LEI NMEA 2000 Network Expansion Cable with two 120-ohm terminators

### Expanding Your Lowrance NMEA 2000 Network

The included 25-foot cable has Y-adapters at both ends. Each cable has one female connector and three male connectors. The male connectors can attach to either a terminating resistor (either the 60-ohm terminator packaged with your LGC-2000 or the two 120-ohm terminators included in this package), or to a Lowrance or LEI product with a blue connector.

We designed these cables to allow you to configure your NMEA 2000 network to best suit your needs. Depending on the equipment you want to attach to your network, you have several options available. In order for your network to operate, there are a few rules you must follow.

### Terminators

In order for the network to operate, you need 60-ohms of resistance attached *somewhere* on the network cable. We use terminators (either one 60-ohm terminator or two 120-ohm terminators in parallel) to create this resistance.

- **Never add terminators to an operational NMEA 2000 network buss.** If it's working, it's already terminated.
- If you are using two 120-ohm terminators, it's best to connect them to sockets on the network as far from *each other* as possible.

There are several ways to set up your NMEA 2000 network, and we'll explain them in the following pages. However, before we start, you need to understand the necessity of terminators. In order for it to work, a

NMEA 2000 network *must* have either **one** 60-ohm terminator or **two** 120-ohm terminators. How do you decide which option to use? We'll answer that question in the next section.

### Choosing a Network Configuration

The most basic Lowrance NMEA 2000 network is an LGC-2000 GPS module connected to a GPS or sonar/GPS combo unit using the LGC-2000's Y-adaptor extension cable. The cable plugs into the center Network socket on the back of the unit. This cable comes packed with a 60-ohm terminator plugged into the shorter branch of the Y-adaptor.

When you plug an expansion cable into a Lowrance NMEA 2000 network, you can either move the 60-ohm terminator onto the expansion cable, or replace it with the two 120-ohm terminators in parallel. Choosing which option to use is simple. Just remember, the NMEA 2000 buss is *powered*, so any empty plugs on the buss are exposed power sources.

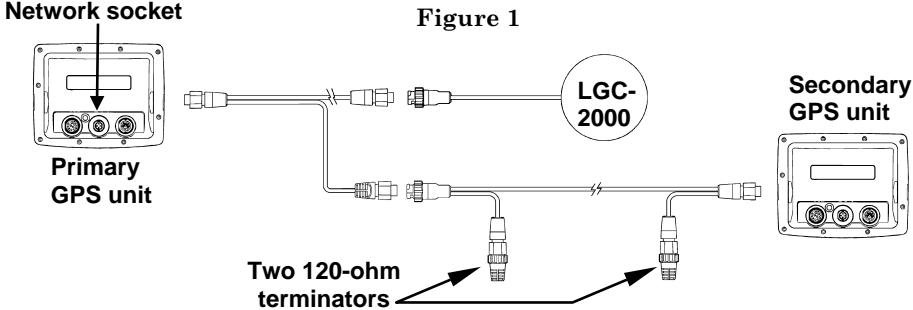
#### WARNING:

**An exposed power source presents a high risk of electrical short, which can cause damage to your network or boat, or even personal injury.**

So, to *avoid* leaving an exposed power source, we provide you with two options that should cover any scenario. Follow this rule:

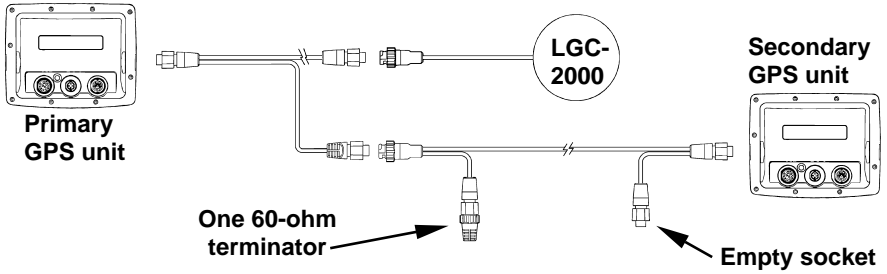
- **Always make sure your NMEA 2000 network has all of its plugs attached to *something*.**

As an example, let's say you've got two GPS display units on your boat, and you want them both to receive signal information from one GPS receiver. You can't simply disconnect the 60-ohm terminator from the Y-adaptor and connect the second unit, because then you'd have no terminator. Instead, disconnect the 60-ohm terminator and connect the included NMEA 2000 network expansion cable (as shown in the following figures).



Lowrance NMEA 2000 expanded network with two 120-ohm terminators.

Figure 2



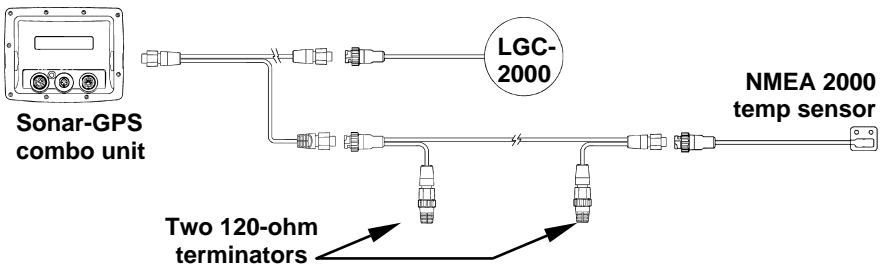
**Lowrance NMEA 2000 expanded network with one 60-ohm terminator.**

Either of these configurations will work. As long as one of the units (and *only* one of them) has the NMEA 2000 Power cable connected to a power source, the LGC-2000 will operate, and both units will receive position information from it along the network.

However, as shown in Figure 2, using one 60-ohm terminator leaves an empty, powered socket. To avoid this situation, we recommend the configuration in Figure 1. Remember, you can use either *one* 60-ohm terminator or *two* 120-ohm terminators, but always make sure every plug on the network is attached to *something*.

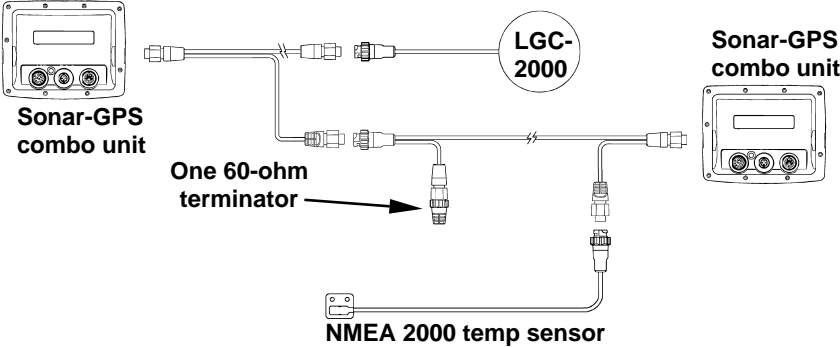
In this example, your network would be set up with two different GPS units (or sonar-GPS combo units, or one of each) both receiving GPS signal information from the LGC-2000.

If you wanted, instead of a secondary GPS unit, you could have the extra network port attached to a NMEA 2000 temp sensor. Then your sonar-GPS combo unit would receive both the GPS signal from the LGC-2000 and the temperature information from the temp sensor.



**Lowrance NMEA 2000 network with unit, GPS module and temp sensor.**

Or you could connect *two* sonar-GPS combo units to the network, and also attach an LGC-2000 *and* a temp sensor. To do that, we use the same cable configuration, but replace the two 120-ohm terminators with one 60-ohm terminator (as shown in Figure 2 earlier) and attach the empty socket to a temp sensor.



**Lowrance NMEA 2000 network with two sonar-GPS units, a GPS module and temp sensor.**

When attaching terminators, you can *only* use either **one** 60-ohm terminator or **two** 120-ohm terminators. So if you have a full network using two 120-ohm terminators and you want to add one more sensor, just remove *both* terminators, attach the sensor to one socket and the 60-ohm terminator to the other.

If you wanted to add another port beyond that, you'd have to buy a new network expansion cable, and switch *back* to two 120-ohm terminators. That would leave you with one empty port on your network.

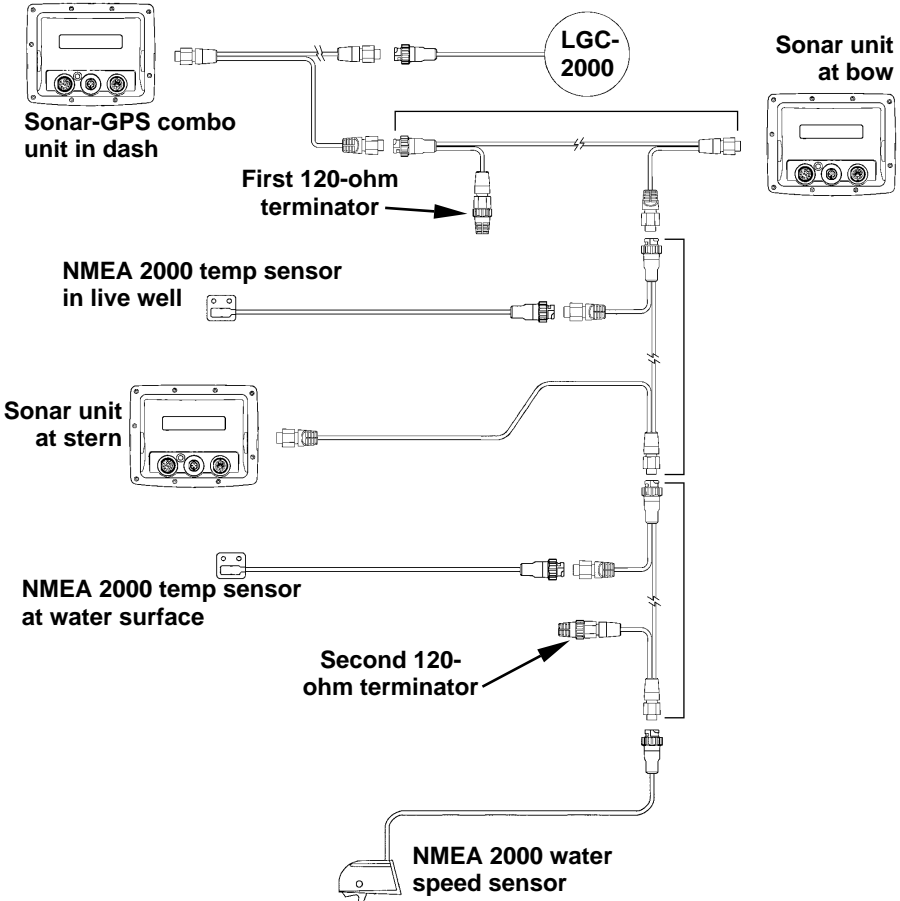
You can continue expanding with network expansion cables until your network contains everything you want to include. The following figure shows an extensive example network. It includes two different temperature sensors (one at the water surface, for instance, and another in your live well) as well as the reading from a paddlewheel speed sensor on the transom *and* the GPS signal from an LGC-2000. The network would then share all of this information with a sonar-GPS combo unit mounted in the dash, and with a smaller sonar-only unit at the stern and another up on the bow by your trolling motor.

In addition to all the units and sensors, you'll notice it includes two 120-ohm terminators, and three network expansion cables. There's virtually no limit to the expansion possibilities, but we do recommend you keep your network to less than about 300 feet (about 100 meters) of cable.

As long as the network is installed properly, all three units would have access to all of the sensor information from every accessory attached to the network.

**NOTE:**

You probably noticed there's no transducer mentioned in that list (or anywhere else in this document). The sonar signal from a transducer is far too powerful for a NMEA 2000 network, so sonar readings *cannot* be shared. Every sonar unit requires its own transducer to make sonar readings.



*Extensive NMEA 2000 network using LEI cables. Shown: Three sonar or sonar-GPS combo units, each receiving position information from the LGC-2000, temperature information from temp sensors at two different locations, and water speed from the paddlewheel speed sensor.*

## 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](http://www.lowrance.com), and look for the Dealer Locator. To locate an Eagle dealer, visit the web site, [www.eaglesonar.com](http://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](http://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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