Technical Bulletin

TB-132594 / February 26, 2020

Product:	NA
Product Description:	NMEA 2000 NETWORK
Software Version:	NA
Effective Date:	**NA**
Inspect/Update Current Inventory:	NA

NMEA 2000® NETWORK INSTALLATION

We frequently receive questions regarding issues that arise from problematic NMEA 2000 installations.

Here are a few steps that can help eliminate these issues:

NMEA 2000 Shield Connection

Requirements as defined in the NMEA 2000 specifications.

- Shielded cables must be used to meet radio frequency interference requirements.
- The shield should not be electrically connected within the interface to the electronic device chassis or ground.
- The shield shall be electrically continuous through the network connection.
- The shield shall be connected to ground at a single point, normally the ship's ground at the source of network power.

Recommendation:

Best results have been achieved by connecting the shield and the DC negative of the backbone to the same DC negative of the power supply. The shield is to be connected to this single point only.

If using a fused power cable (000-0119-75). Then the shield is already connected to the negative power wire.

MX61x junction box and AC85/SI80 board. Connect the shield from the drop cable in parallel to the BLACK wire and connect to NET-C on the green SIMNET/N2K plug.

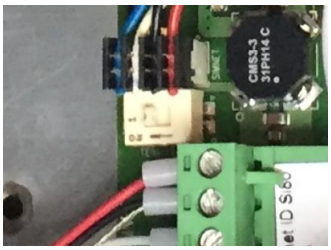
AC70 computer. Connect the shield from the included power cable (drop cable with 120 Ohm terminator) in parallel to the BLACK wire and connect to minus of external 12 V DC (15 V DC is recommended).

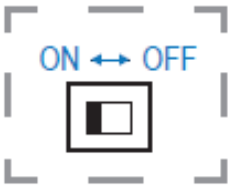
Terminating the NMEA 2000 bus

The NMEA 2000 bus must be terminated at each end of the backbone (2 terminators).

As the MX61x junction box for GPS and autopilot systems come with built-in selectable terminator or power cable with terminator, the installations require extra focus. The MX61xJB and SI80 board, featured in the AC80S or AC85, have a selectable built-in terminator.

- Set the terminator switch to ON when JB or SI80 board is at one end of the NMEA 2000 bus.
- Set the switch to OFF when the JB or SI80 board is not at the end or used as additional power supply to the NMEA 2000 bus, which already has a terminator at each end.





Important verification:

To ensure termination is done correctly, we recommended the resistance on the data wires be measured with the NMEA 2000 bus power off. The measured value should be close to 60 Ohm. A lower value will indicate too many terminators on the bus. A high value can indicate only one or no termination on the bus. As a tip: Add an extra, spare T-connector close by the power insertion point, so it is easily accessible when checking the bus.

Powering the NMEA 2000 bus

GPS and autopilot systems are normally powered from a junction box or SI80 with 15 V DC or from an external 12 V DC power supply, using a power cable. The standard NMEA 2000 power supply is normally 12V DC, but we recommend using a 15 V DC power supply from a DC/DC converter. This to ensure better/higher voltage at the ends of the backbone. Our SI80 board supplies 15 V DC.
Again as a tip: Add an extra, spare T-connector on each end of the backbone so that it is easy to measure the voltage.

To ensure power is distributed correctly, we recommended splitting **large** backbones using a power isolator or NMEA 2000 Network Bridge and adding power to both sections.

Important verification:

Insert a MICRO-C, T-Joiner, at each end of the backbone and measure the voltage when system is powered and all units are in operation. Even though NMEA 2000 rules allow the voltage to drop to 10 V DC, to ensure a reliable network performance, we recommend that the voltage drops no lower than 12 V DC anywhere on the bus when using a 15 V DC power supply.

It is also important to note that the NMEA 2000 power supply should only be connected to the SI80 and **not** to an SD80 or AD80 board.

General powering

- IMO installations require a Power Failure Alarm. In such installations, the AP70/80 or AP70MK2 master control unit and the autopilot computer – with the SI80 board supplying power to the NMEA 2000 backbone – must be connected to two independent power supplies.

- We recommend an external on/off switch for Autopilot Computer power supply be installed.
- Do not connect the power cable to the same terminals as the start batteries, drive units, thruster or other high-current products.

NMEA 2000 bus cabling

- Plan the NMEA 2000 network carefully and create a diagram for the network prior to installation.
- Run the backbone between the locations of all NMEA 2000 devices, you plan to install. Ensure the cables running from the backbone to devices (drop cables) are less than 6 m.
- If NMEA 2000 cables are not supplied by Simrad, ensure they meet NMEA 2000/IEC61162-1/2 requirements.
- For long back bones (> 50 meter), we recommend using NMEA 2000 Micro-C Medium Duty cables to ensure sufficient power throughout the system.

For more information:

Order Support: (800) 324-4737 x4702
Technical support: (918) 438-8668
You may also send any inquiries via email to the addresses listed below, according to your sales-group classification:

- orders@navico.com
- cmd.service@navico.com