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Planning a Raymarine Micronet installation for Carbon Fibre, Steel or Aluminium boats, or for GRP boats over 50 feet

Micronet is the innovative wireless networking technology developed by Raymarine for leisure marine applications. Individual units on the network are linked by radio signals, so, to function effectively, all units must receive an adequate radio signal.


Installation is normally straightforward, but this guide, intended mainly for distributors, provides guidance for the rare situations when problems occur.

Radio signals and antenna performance can be affected by some boat construction materials.


 **Safe Materials** GRP is transparent to wireless signals. GRP includes most common forms of 'fibreglass' resin and reinforcement, with the exception of carbon fibre. It also includes sandwich construction using foam or balsa. If in doubt, please contact Raymarine support at www.raymarine.com.


 **Conductive Materials** include carbon fibre, aluminium and steel. Mounting units on these materials can reduce the signal transmitted or received by up to 95 percent. A clearance of at least 10 cm is required to completely eliminate the ground effect from Conductive Materials. This applies to transmitters as well as to displays. **Note:** in rare circumstances, wood can also inhibit wireless signals.

If you are planning a new installation for a boat built with Conductive Materials, or an existing installation has problems, follow this guide to optimize wireless performance.

 Before following this guide, ensure that all units are networked by following the Autonetworking Guide.

 If possible, complete all the steps in this guide before drilling fixing or clearance holes. Use double sided tape to temporarily fix units in place.

 Refer to the relevant display user guides for details of Setup and the HEALTH and OPTIONS chapters.

 If your system contains Raymarine mn30 Entry Level displays, they must be connected to a power source before commencing this guide. Installing these units requires the drilling of holes; great care must be taken during step 2 below to ensure they are not mounted on Conductive Materials. If in doubt about the suitability of an installation location, contact Raymarine support.

Fundamental Principles

The "Master" unit is responsible for management of the network. By default, the display used to power on the network is the "Master". If required, a specific display can be set as the "Master" by setting its SETUP/OPTIONS/MASTER parameter to ON.

Every display on the network must receive a reliable signal from the "Master" and from the relevant transmitters (Wind Transmitter, Hull Transmitter, Wireless NMEA Interface, Speed/Depth Pod, Mast Rotation transmitter).

Conductive Materials in the path between antennas can block the exchange of signals; choose locations for displays where they have a clear signal path to the "Master" and the transmitters.

Radio antennas are directional; they do not transmit or receive signals equally in all directions.

Experiment with the orientation or position of the units to maximize the signal strength before finalising their location. A small change in position can result in a significant change in the signal strength.

How to check signal strength

Signal strength is indicated on a scale of 1 (weakest) to 9 (strongest).

A signal steady at strength 4 or above will give reliable performance. Units showing a signal of strength 3 or lower may not be reliable and action should be taken to enhance the installation.

To check the strength of the signal a display is receiving from the "Master", go to the first page of the HEALTH setup chapter on the display.



Example: these displays are receiving a signal of strength 9.



If the display is the current "Master", the number of units (nodes) in the system is shown instead of the signal strength.

To check the strength of the signal a display is receiving from a specific transmitter, go to the named transmitter page in the HEALTH setup chapter on the display.



Example: Wind Transmitter has signal strength 7.

1. Check your software version

Over time, improvements have been made to Micronet, enhancing performance in challenging environments.

Use the first page of the HEALTH setup chapter on each display to check the software version for the display.



Example: the first two displays have software version 34, the Remote Display has software version 07.

Use the named transmitter pages in the HEALTH chapter on any display to check the software version of each transmitter.

Product Name	Product Id	Software version
Digital, Dual Digital Display	T110, T111	31
Analogue Display	T112	32
Remote Display	T113	07
Maxi Display	T210	08
Dual Maxi Display	T215	03
Wind Transmitter	T120, T220	29
Mast Rotation Transmitter	T221	06
Hull Transmitter	T121	29
NMEA Interface	T122	30
Speed/Depth Pod	T127	01
Race Master	T070	10



Example: the Wind Transmitter has software version 29.

The software versions in the table (or higher) are recommended for the best wireless performance.

If you require a software update, please contact your local Raymarine dealer.

2. Choose a location for the displays and transmitters

Temporarily mount each unit in its preferred location:


Avoid mounting units directly on Conductive Materials.

- Mount on GRP or dry wooden bulkheads if available.
- If mounting displays in a "pod" (e.g. on the coachroof or at the steering position) ensure that the mounting panel, and preferably the complete pod, is made from Safe Materials.
- Do not mount transmitters inside a locker or enclosure made from Conductive Materials.

3. Optimise the Master Display for wind




for this step, the wind transmitter must be installed at the masthead, with the mast in the boat.

Power on the system by pressing and holding the  button on any display.

Ensure that every display has the MASTER parameter set to OFF.

Check that wind data is being received.

If there is no wind data, Power off the system. Holding a display, stand just in front of the mast and power on the system, then return the display to its normal location.

On each display, go to SETUP/HEALTH/WIND. Press and hold  for two seconds. The display will show "DSIG" (or "WINDDD" on the Analogue displays), the direct signal from the Wind Transmitter.

Monitor the readings on all displays for a period of at least 5 minutes and note the readings of the direct signal at each display.




Example: these displays have a wind direct signal value of 5.

Choose the display with the highest and most consistently high direct signal reading during the 5 minute monitoring period (this should be at least a steady 5).

Set this display as the master by setting SETUP/OPTIONS/MASTER to ON.


Check that MASTER is set to OFF (the factory default) on all other displays.

 when a display has been specified to act as the master, as above, control is passed to this unit whenever the system is powered on.

4. Optimise the location of the transmitters

Check that every display is showing the expected data.

If some displays are showing dashes (--) instead of the expected data, these displays probably do not have a clear signal from the appropriate data transmitters. On each affected display, go to SETUP/HEALTH and check the signal from the transmitter.

 A Hull Transmitter or Speed/Depth pod will not transmit data unless a transducer is connected. If you have no transducers installed, connect a link across the brown and white terminals to simulate a speed transducer. A NMEA interface will not transmit data unless an appropriate NMEA data source is connected.

If any displays show a signal strength of less than 4 for a transmitter:

- Try alternative locations for the transmitter to maximise the signal strength to the displays; e.g. try locations below a hatch or skylight or near to a window.
- Try moving problem units at least 10cm away from their mounting surface. If that fixes the problem, consider cutting an antenna clearance hole behind the unit.



Do not cut clearance holes until all steps of this guide have been completed.

- Try alternative locations for the affected displays.

Remaining problems

If, after completing all the above, there are still some required display locations that have missing data, contact Raymarine support at www.raymarine.com, giving full details of the problem and of your installation.