Raymarine MFD Integration

1. Introduction

This document explains how to connect to Raymarine MFDs using an Ethernet connection. Also, the last chapter explains the Raymarine specifics when connecting on NMEA2000.

The integration technology used is called LightHouse Apps by Raymarine.

Make sure to also study the Marine MFD Integration by App chapter in the manual.

Note that there is an alternative method to connect, which is NMEA2000. See the NMEA2000 chapter in the main manual, as well as the last chapter in this manual.

2. Compatibility

The MFD integration is compatible with the Axiom, Axiom Pro and Axiom XL MFDs running on LightHouse 3. The eS & gS Series multifunction displays which have been upgraded to LightHouse 3 are **not** compatible.

Raymarine MFDs need at least LightHouse v3.11 for compatibility, which was released in November 2019.

From Victron side, all GX devices (Cerbo GX, CCGX, Venus GX, and so forth) can be used and are compatible. For details on detailed product compatibility with regarding to inverter/chargers and other components, see the main Marine MFD App chapter in the GX Manual.

3. Wiring

The MFD needs to be connected to the GX device using ethernet. It is **not** possible to connect over Wi-Fi. For the ethernet connection, a RayNet adapter is required.

The RayNet adapters can be purchased from Raymarine:

- A62360 - RayNet (F) to RJ45 (M) - 1m
- A80151 - RayNet (F) to RJ45 (M) - 3m
- A80159 - RayNet (F) to RJ45 (M) - 10m
- A80247 - RayNet (F) to RJ45 (F) Adapter
- A80513 - RayNet male to RJ45 adaptor cable

To connect the GX device to the internet as well, use Wi-Fi. If the Axiom MFD is connected to internet (using Wi-Fi), it will automatically share its connection with the GX device over ethernet.

Connecting a Axiom MFD to a network router over Ethernet leads to IP address conflicts, due to the integrated DHCP server in the Axiom MFD.

It is not possible to use a GX GSM, due to the integrated DHCP server in the Axiom MFD.

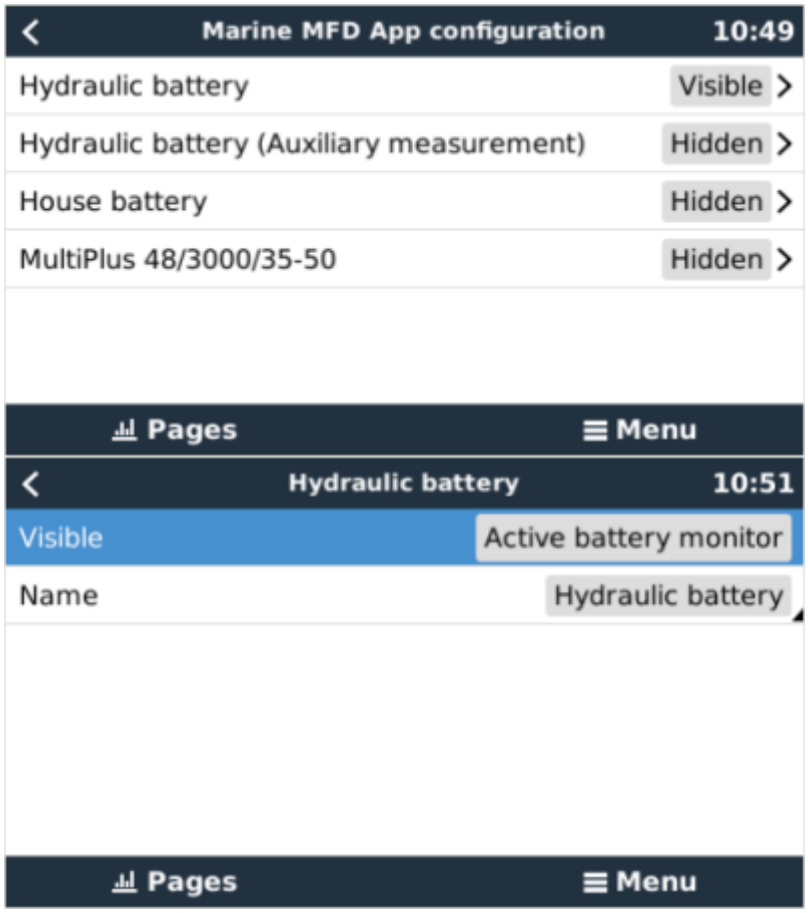
Note: As of Raymarine LightHouse v3.15, there is an option to toggle DHCP. Disabling this option does not mean that the Axiom MFD will work with third party network routers. See this post on Victron Community for more information.

4. Configuration

On the Victron GX Device, go to *Settings* → *Services*, and there enable both *MQTT on LAN (SSL)* and *MQTT on LAN (Plaintext)*.



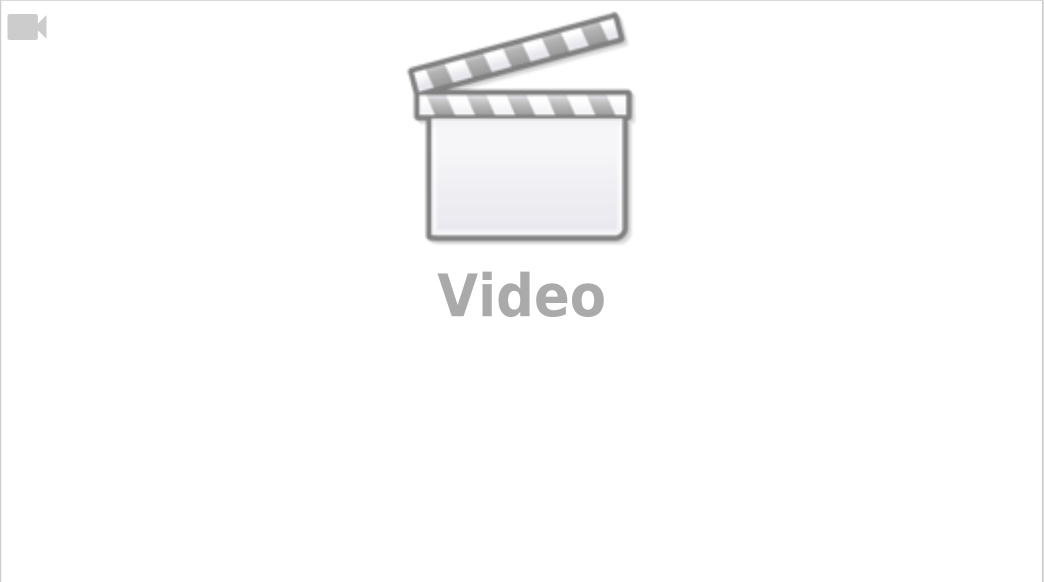
Next, go to Menu → Settings → System Setup → Battery Measurements. And there set up what batteries you want to see on the MFD; and by what name.



No other settings, such as IP addresses or similar are required, since the Axiom MFDs have an integrated DHCP server.

5. Configuring Multiple Battery Measurements

This video explains how to setup multiple battery measurements, and naming them.



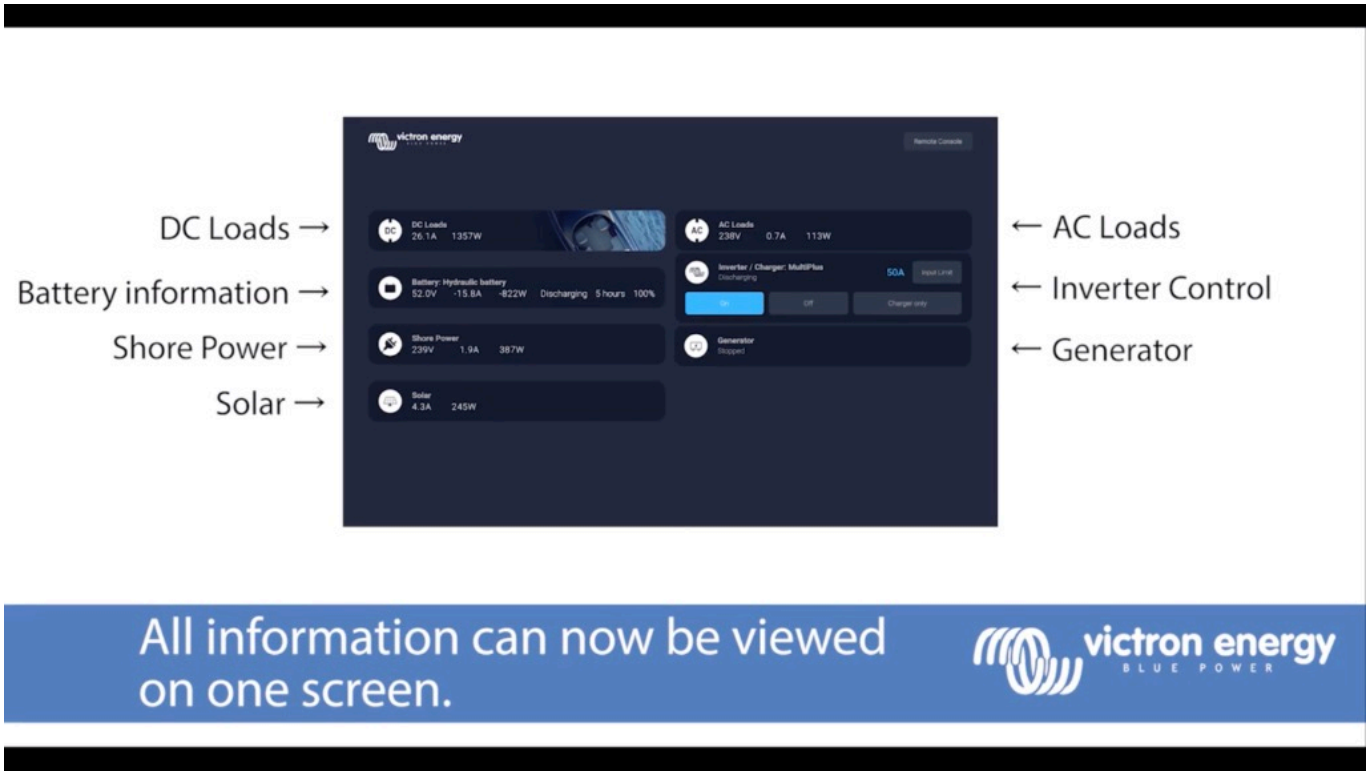
6. Step by Step

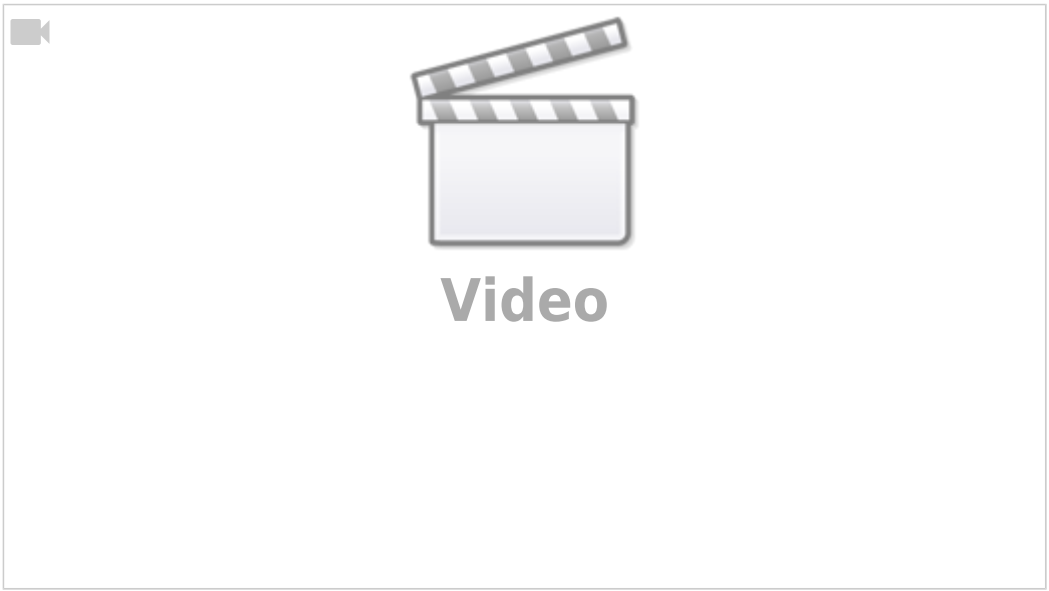



Raymarine
25°42'.398 N 080°12'.768 W
12:13:48am
CRUISING
CHART
RADAR
YAMAHA
DASHBOARD
VIDEO
CHART COMBO
CHART/RADAR
CHART/DASHBOARD
My data
MOB
Apps
Alarms
Settings
Venus GX
Step 2: Connect RJ45 into Victron Venus GX, Color Control GX or Octo GX.
victron energy
BLUE POWER


Raymarine
25°43'.081 N 080°12'.768 W
12:16:46am
CRUISING
CHART
RADAR
YAMAHA
DASHBOARD
VIDEO
CHART COMBO
CHART/RADAR
CHART/DASHBOARD
My data
MOB
Alarms
Settings
Venus GX
Then go to Apps and select the Victron logo.
victron energy
BLUE POWER


Raymarine
Not connected
GRIBview
Lumishore
Mazu
Netflix
Seakeeper
Shadow Caster
Spotify
Victron
Install from SD / USB
Venus GX
Then go to Apps and select the Victron logo.
victron energy
BLUE POWER
Raymarine
victron energy
DC Loads
24.5A 1272W
AC Loads
239V 0.5A 109W
Battery: Hydraulic battery
52.0V -15.8A -822W Discharging 5 hours 100%
Inverter / Charger: MultiPlus
Discharging
50A
Shore Power
238V 1.9A 368W
Generator
Stopped
Solar
4.3A 240W
Venus GX
And... you're done!
victron energy
BLUE POWER





After connecting the Ethernet cable the GX device receives an IP number from the Axiom DHCP. If you start the Victron App on the Axiom and it shows “hardware devices not found”, just restart the Axiom and see… it works!

7. NMEA 2000

Besides connecting over ethernet, a Raymarine MFD can also be connected to the Victron system using NMEA 2000. If you’re new to NMEA2000 & Victron, start with reading the Marine Integration Guide.

This chapter explains the specifics of NMEA2000 when connecting Victron to a Raymarine MFD.

7.1. Generic and supported PGNs

To setup the data sources on the Raymarine, go to *Settings* > *Network* > *Sources* > *Advanced...*

If you have more than 1 battery be sure to adjust the settings of the Axiom to the correct amount of battery(banks).

The following Victron related PGNs are supported by Raymarine:

- 127505 - Fluid level (tank levels)
- 127506 - DC Detailed Status (State-of-charge, Time-to-go)
- 127507 - Charger status
- 127508 - Battery Status (Battery Voltage, Battery Current)
- 127509 - Inverter status

This PGN is not supported by Raymarine:

- J1939 - AC data

When the NMEA2000/STNG network has GPS data the GX device sees this as a GPS source and is able to use the GPS position in VRM.

7.2. LightHouse 4.1.75 and newer

As of LightHouse version 4.1.75, the battery instances no longer need to be unique. This means that you can leave the battery instance to its default value, which is typically set to 0. The batteries are automatically detected by the Axiom display.

7.3. Before LightHouse 4.1.75

If there are more than 1 (for example) SmartShunts in the NMEA2000 network, or a Solar Charger and a SmartShunt, or any other device that transmits the same type of PGNs, then the Data instances of those PGNs need to changed to make each data instance unique.

Typically this concerns the Battery instance, used in the Battery Status and DC Detailed PGNs.

See here for how to do that: Changing NMEA2000 Instances, section Data instances. This requires an Actisense NGT-1 NMEA to USB interface.

Note: this requirement of data instances being globally unique for a PGN is specific to Raymarine. Other brands do not require this. And, although perhaps besides the point, also the NMEA2000 standard does not require it. More specifically, it says: “Data instances shall be unique in the same PGNs transmitted by a device. Data instances shall not be globally unique on the network.”.

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