

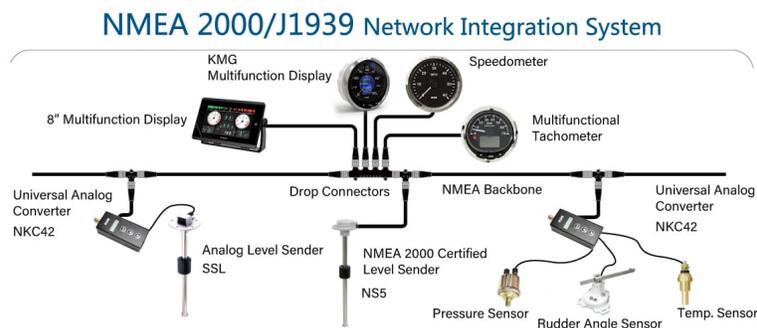


## NMEA 2000® COMMUNICATION AND THE KICKER KMCS MEDIA CENTER (June 2021)



### What is NMEA 2000®? (N2K for short)

The NMEA 2000/N2K system is quite literally a marine CAN-bus communications system, very similar to the CAN bus that exists in your late-model car. The system has been in place, at least in bits and pieces, for many years. In theory, on the N2K communications bus, you can install depth finders, radar antennae, temperature sensors, engine sensors, GPS systems, etc. It all connects via the N2K backbone as shown here:



Display of data from all these sensors and devices can be shown at a SINGLE point for the data to be seen by the boat operator. This digital display or “glass helm” has an MFD, or Multi-Function Display, as its centerpiece. There are several brands of MFD screens, including those under the Navico® family of products, (SIMRAD® / Lowrance® / B&G®), as well as Garmin®, Raymarine®, Furuno®, and others.



The following is a history and deeper understanding of how these components all work together, and when they do not. All these brands existed long before N2K communications standards were written. Because of that, much of the communication between MFDs and the connected devices entailed proprietary code to each individual brand. Nowadays, they transmit this data over the N2K backbone, but the code and commands are STILL NOT necessarily the N2K standard. For example, SIMRAD has used SIMNET® communications for a long time. Raymarine uses its SeaTalk<sup>ng</sup> language. Furuno uses its

own proprietary language simply called Furuno CAN. While each of these computer “languages” can be sent through the N2K wiring backbone, in general it’s only same-brand devices that understand the language. A Garmin temperature sensor might not work well with a SIMRAD MFD, as an example. Sort of like trying to connect a Clarion® radio to a Sony® remote control.

## **AUDIO CONTROL**

**(The feature, not the brand 😊 )**

Since at least the early 2000s, there has been talk about the desire to be able to use that huge, beautiful screen at the helm of a boat to not only view GPS and radar data, but also to control stuff... like the stereo. In 2015 (N2K Entertainment Suite of PGNs Corrigenda, February), the NMEA amended the N2K communications software package to include and allow the control of audio systems through an MFD. This software package provided documentation for not only the COMMANDS an MFD would send out, but also the REPLIES with which a radio/head unit would respond. The language standardized what the audio-control portion of the MFD display would look like, and provided a standard set of controls – volume up / down, play / pause, track forward / back, source select, etc. IN THEORY this would provide what in effect would be a UNIVERSAL REMOTE CONTROL for all radios that subscribed and were certified to be N2K compliant.



### **The GARMIN-FUSION® Issue**

While arguments and discussions were going on regarding the N2K audio control software standardization, Garmin bought FUSION. FUSION had already worked up its own proprietary remote-control software in the FUSION-Link™ communications package. Any FUSION-Link remote would work with any FUSION-Link radio. It was a standard, but it was not the N2K standard. Garmin quickly implemented the FUSION-Link software into its MFDs, and, voila, Garmin MFDs could now control FUSION radios. This success at vertical software integration still works for Garmin/FUSION today, and it is FUSION-Link that has everyone excited about using Garmin and FUSION products in their boats. To be clear, it is NOT the NMEA N2K software at work here, but it is FUSION-Link, connected through the N2K communications backbone.

## **N2K Provides for UNIVERSAL Remote**

**(But does it?)**

The promise of the N2K software package and its implications for the control of audio systems is awesome! Connect your radio to your MFD and you added a remote, right? Well, it’s not that simple. Consider this: if you go out and buy a Sony radio, will you expect a Rockford Fosgate® remote to work with it? Mix any two brands of radios and remotes and you will find that they do not work together. Each built its own communications language. And these are all audio companies!

Consider some radios’ volume control goes to 50. Others go to 80. Still others go to 100. Tone controls? What are the ranges? Some go +/-6 while others go +/-10. Is there a zone 2 or not? Subwoofer output, with or without independent level control from the radio? It turns out that even with basic control items, variances must be considered.

## **Perception vs. Reality**

Set Garmin aside, since they don't count in this discussion. It owns FUSION. It speaks its own language, and ONLY its language, called FUSION-Link. For the remaining world brands, we are looking at a universal-remote-control scenario. For this to happen, each N2K-compliant radio from every brand must be designed to work on the N2K communications backbone in the same fashion. KICKER radios must work just like Rockford. JL Audio® radios must work just like Sony. Additionally, each MFD manufacturer is expected to work exactly the same way, delivering and responding to N2K answers from each brand of radio the same way. Unfortunately, that is not where we are today.

Put quite simply, for the promise of NMEA 2000 to be real, every one of the MFD manufacturers has to have perfectly designed a universal remote control into its own MFD controller screen, a remote that controls all of the N2K radios on the market – radios from KICKER, JL Audio, Rockford Fosgate, FUSION, etc. Easy, right? This of course assumes all the radios work the same, and they don't. It also assumes all MFDs work the same, and they don't.

## **KICKER KMC5 Media Center and NMEA 2000**

As of this writing, (and it is a dynamic situation as the programming keeps changing/improving), the [KICKER KMC5 Premium Media Center](#) is arguably the best marine radio on the market with regards to N2K compatibility. The KMC5 has passed ALL NMEA testing and follows the N2K standard. It works better than other radios on the market that claim N2K compatibility. KICKER engineers have worked diligently to ensure that the command codes input into the radio deliver a result that matches what the NMEA 2000 programming is expecting. Put another way, if we were testing a perfect N2K controller, KICKER's KMC5 would work perfectly with the controller.

Presently, the problem of the KICKER KMC5 not working well with some MFDs is not a KMC5 issue – it is an MFD issue. The MFD companies are not audio companies. They don't really care if their units control our radios. Garmin for sure doesn't, as it would prefer to sell more FUSION radios.

## **What Works with KICKER KMC5?**

KICKER is currently testing three of the major MFD brands. We want to KNOW what works and what doesn't. To date, when we look at MFDs, more don't work unfortunately, than do.

## **Navico – THE BEST FOR KICKER KMC5**

As for MFDs currently on the market, we know that Navico (SIMRAD, Lowrance, B&G) is the MFD manufacturer who has the audio-control portion of the N2K language down the best. As a result, we find that the KICKER KMC5 works best with the Navico brand of MFD screens.

## **Garmin – WORKS WELL WITH KICKER KMC5, BUT...**

The KICKER KMC5 also works well with Garmin screens, especially if you have the most current Garmin software. To be clear, there are some functions missing (at this writing) when you have a KICKER KMC5 connected to a Garmin screen. Volume control seems to be most apparent. KICKER engineers are

working away at this, sniffing real-time code going in and out of the Garmin screens in an effort to emulate FUSION-Link commands.

### **Raymarine – SPEND SOME TIME ON THE AUDIO**

Many of you likely haven't heard of Raymarine. That's because mostly commercial vessels are equipped with Raymarine, and while they are bigger in Europe, they are not currently an MFD leader in the U.S. Our look into the Raymarine MFD shows there is an audio-control portion in its software coding, but it simply is not working presently. It should not be able to correctly control any NMEA 2000-compliant radio at this writing.

### **Furuno - POSSIBILITIES**

We know Furuno makes a heck of a fish finder. We know little about its MFDs and whether they are set up for audio control of a separate stereo. We will be looking further into the KICKER KMC5's compatibility with the Furuno brand of products. As a Japanese company, we are inclined to suggest Furuno's software is solid, and the chances are high that KICKER will have good functionality with the brand. We have yet to test it.

### **Bottom Line**

After reading this, you should understand that NMEA and the N2K interface promised a universal radio remote control that works with every radio brand. However, the industry is simply not there yet. And it may take some time to get there.

The reality is, domestically, better than 80% of the MFD market is owned by Navico and Garmin. KICKER can confirm our brand works very well with the Navico brands, and we work well with Garmin, short of volume control and minor issues.

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