## **ELECTRONICS** BY BEN ELLISON



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## Small Stuff

## Furuno and Airmar squeeze large IQs into little packages.

Are you familiar with R2D2, the cute, little 'droid from the *Star Wars* series? In movies full of dazzling technology, he—I mean it—is the rather homely machine that nonetheless serves as a bright and able sidekick to the human star. As I study Furuno's

new RD-30 display device, I can't help but draw some parallels. The RD-30 is also diminutive—about eight by five inches—and its 4½-inch (diagonal) monochrome screen is downright doughty in this world of big, bright color displays. Even its essential function of manipulating, presenting, and distributing data via the plain old NMEA 0183 protocol is not exactly futuristic. But this

"lil' feller" could be a smart and handy mate to today's dataswamped skipper.

For instance, what method of boat speed display works best for you? Do you want to have one big digital readout filling the RD-30's entire screen? Okay, boss. Or perhaps you want that screen shared two or four ways with other data? No problem, cap. Or how about a needle-on-dial, automobile-style speedometer customized exactly to your boat's top end? My specialty, sir! Of course you can choose the unit of measurement that suits you, and you can also set high, low, and range alarms and even spec an alternate screen graphing your speed over a variable time period.

Depending how you feed it, the

RD-30 can slice and dice wind, heading, depth, water temperature, and other sensor data in a similar fashion. It can also receive waypoint calculations from your GPS or plotter and put



WIND



The RD-30 from Furuno can take simple NMEA 0183 data from multiple sources, then mix and display it in all sorts of ways.

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the values in data windows or present them in a familiar highway display. So what's the appeal of this feature if your plotter can already do it? Well, it's turning out that predictions of an all-in-one navigation screen may rank accuracy-wise with the famous "paperless office" (I'm among the guilty). I observed two experienced navigators as they got to know their new ten-inch, high-bright color plotters last summer. I wasn't surprised that they both fell in love, but I learned something when each complained about having to obscure

even a few square inches of their glorious electronic charts with needed data windows. Like money and horsepower, "enough" screen space may turn out to be an elusive goal.

That's why some skippers adopt a strategy of offloading easy data display chores to small, relatively inexpensive monochrome screens and hoard bright color for complex chart, radar, and fishfinder imagery. This is not an entirely new idea. For years, instrument systems have been pushing numbers around boats, usually using some sort of proprietary networking. And some clever folks have been using NMEA 0183 to move numbers from a busy device to an underused corner of a radar or autopilot display. Raymarine's brand new ST290 system adds so many new graphic and networking capabilities to the instrument strategy that it deserves its own column (stay tuned). Meanwhile, the RD-30 kicks up the 0183 technique several notches.

Besides the ability to set up and page through as many as five highly customized screens as I described earlier, Furuno's box has some other significant smarts under its little hood. For one thing, the RD-30 can do some math, such as watching the Speed Over Ground output from a GPS and keeping its own trip and vessel logs. It also contains a whole database of Loran to lat/lon conversion corrections and is quite adept at mixing NMEA data. The Achilles heel of the 0183 protocol is its intolerance of multiple data "talkers," or inputs. The RD-30 can listen to two inputs at once, display any desired info, and simultaneously send out a custom mix to either or both of its outputs. The user-or perhaps the user's electronics tech-can exercise on/off control of those outputs right down to the individual data string. This can be very handy in sophisticated systems, or for feeding a PC navigation program. The auxiliary output port also has a 12-volt feed, making it easy to daisy chain another RD-30 for more display options and/or more data mixing.

All the RD-30's features happen to match up quite nicely with a line of similarly innocuous but witty devices recently developed by Airmar. I'm referring to Smart Sensors, which look like standard through-hull, in-hull, and transom-mount depth transducers with water temperature and speed (through the water) options. Indeed they are transducers, but also much



Airmar packs an entire depthsounder in its smart transducer.

more. Each housing also contains the brains to turn raw sensor readings into NMEA 0183 data. Its cable leads not to a control head and display, but to any device capable of showing 0183 numbers.

The simplicity of a Smart Sensor is impressive on its own, but Airmar also claims that the design delivers high performance. Putting the electronic guts right into the transducer eliminates signal degradation from cable runs, which can subsequently extend up to 330 feet, plus Airmar equipped those guts with fast, sensitive digital signal processing. The purported results are accurate speed readings up to the 40-knot range, temperature readings to hundredths of a degree, and depth readings even in very shallow water, or under the duress of backing prop wash; I've heard confirmation of these claims from testers. The transducers run at 170-kHz or 235-kHz frequencies so that they can be used with regular 200-kHz fish finders without interference.

The RD-30 can do presentation magic with the Smart Sensor's precision data streams, a happy relationship that Furuno's marketing department is celebrating, but bear in mind that each is an independent player capable of other 0183 friendships. And I've seen more innovative display, data mixing, and sensor devices being developed with 0183. It seems a little ironic that just as the world of marine electronics focuses on fast networks, multitasking, and color everything, there's a spurt of originality largely employing older technologies. I'm heading off to the winter boat shows soon, where I'm sure to be dazzled by all sorts of gizmos. I'm also going to keep an eye out for R2D2-type gadgets that make much smarter and more useful sidekicks than they may first appear.

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