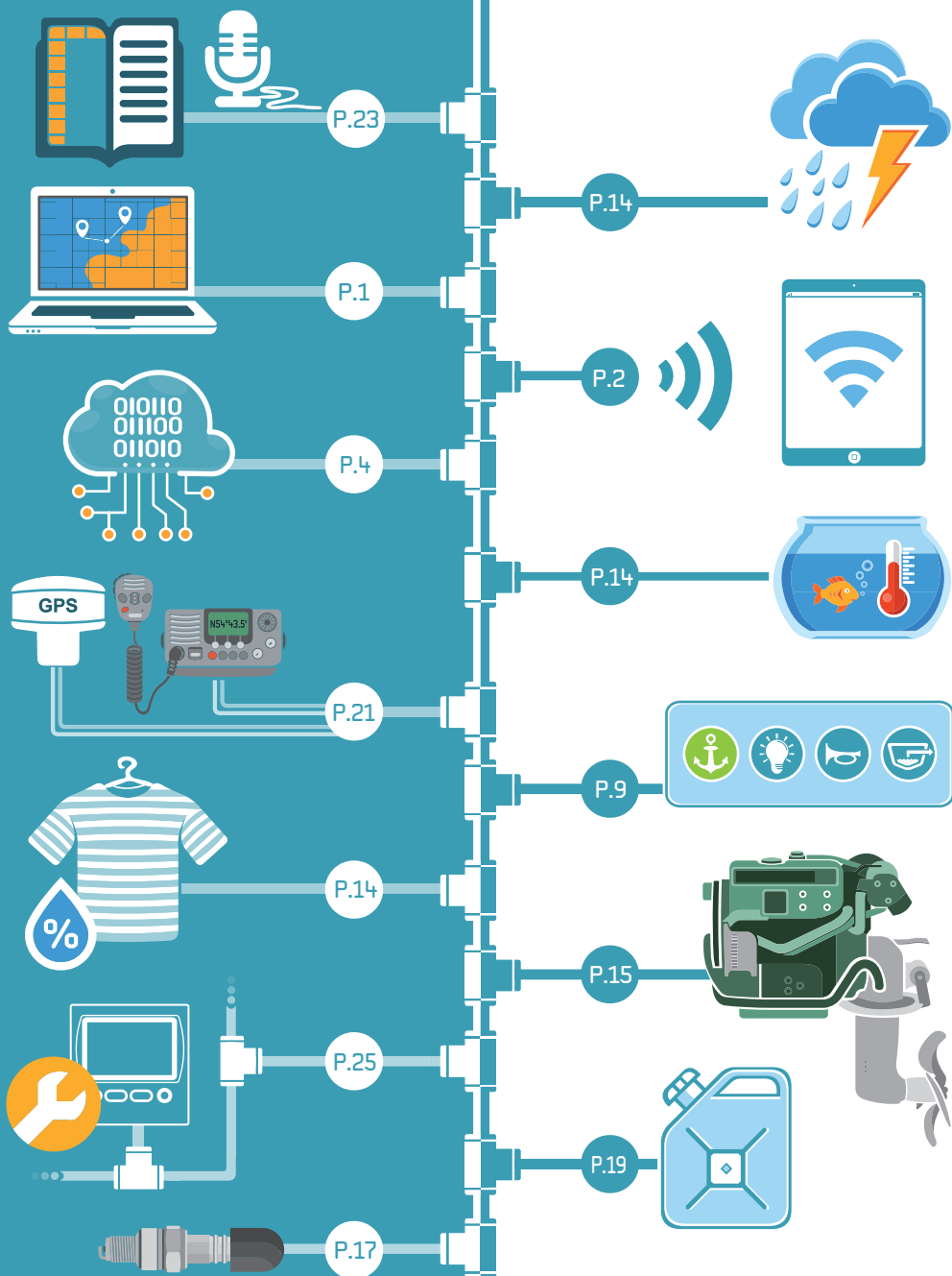
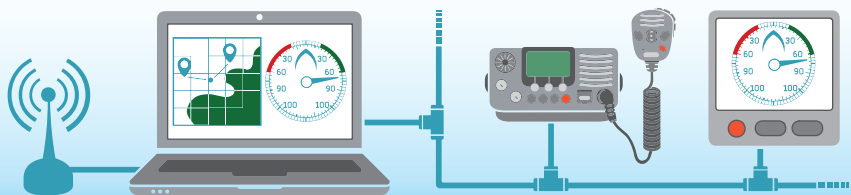


Yacht Devices

sailors for sailors



YACHTD.COM



NMEA 2000 USB GATEWAY YDNU-02

The gateway allows you to see data from a NMEA 2000 marine digital network on a PC, laptop or tablet PC with Microsoft Windows, Mac OS or Linux. With it, you get marine network data including vessel course, speed, position, wind speed and direction, water depth, AIS messages from vessels and aircrafts and other navigation data in PC applications.

The device works as a bi-directional gateway so it is also possible to send messages from PC applications to the NMEA 2000 network. That allows, for example, sending of AIS data from a PC USB receiver to a chart plotter, as well as controlling the autopilot.

Operation modes:

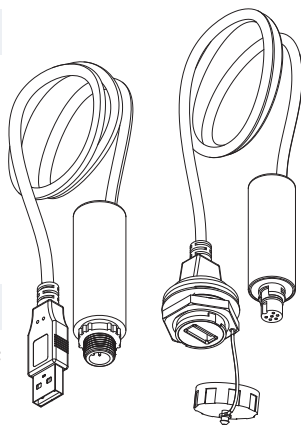
- ▶ **0183.** The Device performs conversion from NMEA 2000 to NMEA 0183 and vice versa. NMEA 0183 is supported by virtually all marine PC applications including **OpenCPN**. Conversion covers all significant data, including AIS, routes/waypoints, and autopilot.
- ▶ **N2K.** Device sends all messages from NMEA 2000 to a PC and vice versa in binary form and is compatible with **Coastal Explorer**, **Expedition**, **Polar View**, **OpenSkipper** and some other marine software.
- ▶ **RAW.** Device sends all messages from NMEA 2000 to a PC and vice versa in readable text format. You can record messages to a file and/or monitor NMEA 2000 data in real time with free CAN Log Viewer software (Mac OS X, Windows, Linux). Also supported in **Expedition 10**.
- ▶ **AUTO.** In this mode, the Device analyzes the connection with the PC application and automatically chooses one of the three modes above for the session.

Features:

- ▶ no driver required in Windows 10, Linux and Mac OS X;
- ▶ allows control of Raymarine SeaTalk NG autopilots from NMEA 0183;
- ▶ is compatible with J1939 networks;
- ▶ high-voltage galvanic isolation between NMEA 2000 and USB.

Options:

- ▶ IP67 waterproof USB female or non-waterproof male connector;
- ▶ Raymarine SeaTalk NG or NMEA 2000 Micro Male connector.





The gateway allows you to see data from an NMEA 2000 marine digital network on a laptop, tablet or smartphone. Colorful web gauges on the built-in website show vessel data right from a browser. Save on apps, save on additional instrument displays and monitor your boat from your cabin with a smartphone!

Features:



With NMAEA 2000 or SeaTalk NG Connectors

Wi-Fi module: 2.4 GHz 802.11b/g/n
Wi-Fi internal antenna range (open space): 30 m / 100 feet
Current consumption: 43 mA at 7.17 V
Device case length: 54 mm

2



NMEA 2000 Ethernet Gateway YDEN-02

The Gateway connects navigation PCs and laptops to NMEA 2000 over Ethernet, Garmin Marine Network, Raymarine SeaTalk HS and RayNet, Furuno NavNet, or NMEA OneNet, and allows bridging of NMEA 2000 networks.

The Gateway is equipped with a standard Ethernet RJ45 connector, and you may need a proprietary adapter to connect it with your vessel's network; direct connection to PC with standard computer cable is also supported.

The Device provides NMEA 0183 and NMEA 2000 data streams using TCP and/or UDP protocols, and has a **bi-directional converter between NMEA 0183 and NMEA 2000**. This allows viewing of navigational data including AIS as well as managing NMEA equipment including autopilot from virtually all marine software, e.g. OpenCPN (NMEA 0183 only) and Expedition 10 (both NMEA 0183 and NMEA 2000 protocols are supported). The Gateway has three data servers (TCP/UDP), which allows tailored settings for different applications.



Features of the Gateway:

- ▶ can be configured for static IP address, or to obtain an IP automatically, or work as a DHCP server;
- ▶ is compatible with 10 Mb/s, 100 Mb/s and 1000 Mb/s Ethernet networks;
- ▶ provides high-voltage galvanic isolation between NMEA 2000 and Ethernet interfaces;
- ▶ support mDNS and Bonjour protocols for easy discovery in the network;
- ▶ records vessel's data to the internal memory and can upload them to the Cloud (see page 4);
- ▶ has internal web server for configuration, firmware updates and hosting Web Gauges;
- ▶ pair of Gateways can bridge two NMEA 2000 segments over Ethernet.

- ✓ NAVIGATION
- ✓ WEATHER
- ✓ ENGINES & FUEL RATE
- ✓ TANKS AND BATTERIES
- ✓ DIGITAL SWITCHING

Yacht Devices Cloud

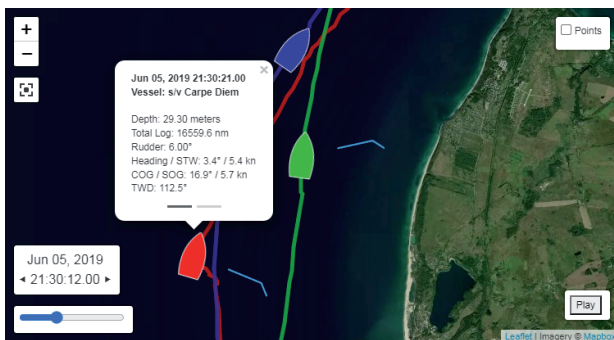
The Cloud Service is a free online service targeted at users of our NMEA 2000 gateways and routers. The Cloud service is supported in Wi-Fi Router YDNR-02, Wi-Fi Gateway YDWG-02, and Ethernet Gateway YDEN-02.

These devices can record to the internal memory the navigation, weather, engines, tanks and batteries data, and the state of digital switching equipment. The recorded data **can be exported** from the device's memory into a spreadsheet or to a GPS track from the built-in administrative web site.

If your boat's Wi-Fi or Ethernet networks has an Internet connection, devices can be configured to automatically upload your data to the Cloud. You only need to **register in the Cloud service**, obtain the boat's key for your device and enter it to the settings.

Benefits of using the Cloud service for private boat owners:

- ▶ Share your sailings with friends and family.
- ▶ Share multiple boats to a single page (to re-play regattas, etc).
- ▶ Unlimited backup for your sailing data.
- ▶ Access to your sailing records from home.
- ▶ Monitor your boat at anchorage or in a marina.
- ▶ Save on satellite traffic (2 KB to transmit 24 points).



Demo boats at YD Cloud

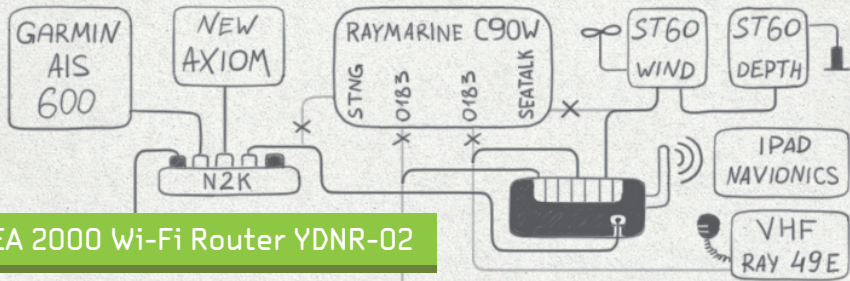
You can share your boat's data to registered users of the Cloud service or to anyone by a "secret" link. In both cases, no app is required. All data are available from a web browser, you can view the vessel's track on the map and run playback to virtually repeating your sailing.

Unlike popular boat tracking systems, we collect a lot of different boat data, like a rudder angle, atmospheric pressure, yaw, roll and pitch, fuel rate, engine coolant temperature, etc. It can help to analyze your races or sailings in all details.



Learn more: <https://cloud.yachtd.com/>

FREEWARE



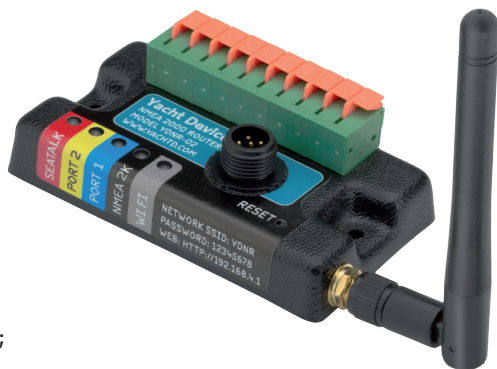
NMEA 2000 Wi-Fi Router YDNR-02

The Router easily connects to all marine and mobile devices. It supports all popular marine protocols, is compatible with virtually all marine software, and even allows management of your vessel from a web browser without an internet connection or installed software.

The Router is equipped with NMEA 2000 and SeaTalk ports, two NMEA 0183 ports, has three TCP/UDP data servers and a built-in web server, where you can easily configure it or update the firmware. It creates its own Wi-Fi network (Access Point) or can be connected to a boat's existing Wi-Fi.

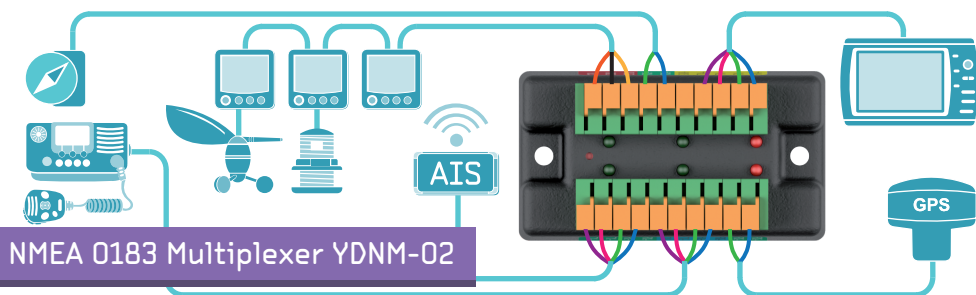
Features:

- ▶ built-in Web Gauges allow viewing the vessel's data in any web browser;
- ▶ automatically records your track and vital vessel's data to the internal memory and can upload them to the Cloud (see page 4);
- ▶ flexible routing, data conversion and filtering between all ports, servers and protocols;
- ▶ can act as a NMEA 2000, 0183 or SeaTalk wireless extender and allows wireless connection of two or more physical devices;
- ▶ free NMEA 2000 diagnostic software for Microsoft Windows, Mac OS X and Linux is supplied;
- ▶ all data streams can be viewed in a web-browser for debugging purposes.



Use cases:

- ▶ connecting old (NMEA 0183, SeaTalk) equipment (sensors, autopilots) to modern chart plotters with NMEA 2000 interface only;
- ▶ connecting of equipment with different port speed or protocol (e.g. SeaTalk sensors to NMEA 0183 and NMEA 2000 equipment, or 4800 bps GPS receiver to 38400 bps AIS or VHF with built-in AIS receiver);
- ▶ connect marine equipment with software and apps (compatible with virtually all marine software, including **OpenCPN**, **Expedition 10**, **Coastal Explorer**, **iNavx**, **Navionics Boating**, **iSailor** and others);
- ▶ managing and monitoring of a vessel over Internet (VPN access to boat's Wi-Fi is required).



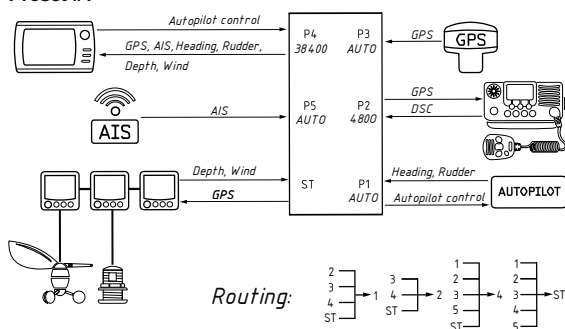
Smart multiplexer with five NMEA 0183 ports and one SeaTalk port, auto detection of port speed and easy configuration with a click of a button! And, of course, it has flexible filters, routing rules, and supports firmware updates.

It is the easiest multiplexer to install: instead of a laptop and software, you'll only need a paperclip. The Multiplexer has six configuration presets with different port speeds and routing schemes. Presets can be selected by pressing a hidden button. Ports can be configured to auto-detect the speed of connected equipment.

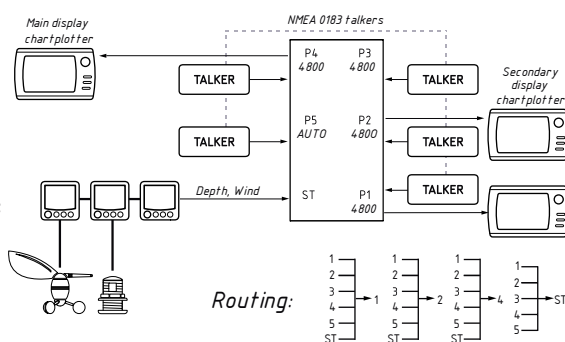
Features:

- ▶ 5 x NMEA 0183 ports (2 x TX/RX, 1 x TX/RX with galvanic isolation 2500 VRMS, 2 x RX only);
- ▶ 1 x SeaTalk port (multiple devices can be connected);
- ▶ both "single ended" (RS-232) and "differential" (RS-422) NMEA 0183 connections are supported;
- ▶ NMEA ports can be configured for any speed from 300 to 115200 bps, and to AUTO speed;
- ▶ bi-directional data conversion between SeaTalk and NMEA 0183 with autopilot support;
- ▶ individual filters on all ports (by datagram number, NMEA 0183 sentence formatter or talker ID) for incoming and outgoing messages;
- ▶ "tunnel" mode to connect old, non-standard and Navtex equipment;
- ▶ ports can be routed to themselves (preset #6), to use device as NMEA amplifier, expander or buffer.

Preset #1



Preset #6



Configuration presets #1 and #6

Supply voltage: 7..16 V
 Current consumption, maximum, all ports with 100 Ohm load: 60 mA
 Receiver input resistance (port #1, #2, #3, #5 / port #4): 12 / 96 kOhm
 Device case dimensions (LxWxH): 85x45x28 mm

USD \$ 149

6



NMEA 0183 Wi-Fi GATEWAY YDWN-02

The Gateway allows you to see data from NMEA 0183 marine devices on a PC or smartphone and control the vessel from software.

With this device, you get marine data including vessel course, speed, position, wind speed and direction, water depth, AIS messages from vessels and aircrafts and other navigation data in popular software applications. The Gateway works in both directions and enables control of the vessel from virtually any marine software including **OpenCPN**, **iNavx**, **Expedition**, **Coastal Explorer**, **MaxSea** and others.

NMEA 0183	SeaTalk	TCP/UDP	Web Gauges	Logging
2 TX/RX	NO	3	YES	YES

The Gateway has three TCP/UDP network servers with individual settings and filters; it allows setting an individual configuration for different software applications.

A built-in web server allows easily modifying Gateway's settings, updating firmware and monitoring messages flow. It also has built-in Web Gauges which allows viewing the vessel's data in any web browser. Web Gauges has four data pages with a configurable layout, set of gauges and data bars, and preferred units.



Built-in Web Gauges

The Gateway automatically records your track with weather, depth and other data to the internal memory (up to 32000 points). These data can be saved from the internal web site to GPX (for Garmin MapSource, Google Earth or other cartographic applications) or CSV (spreadsheet) files.

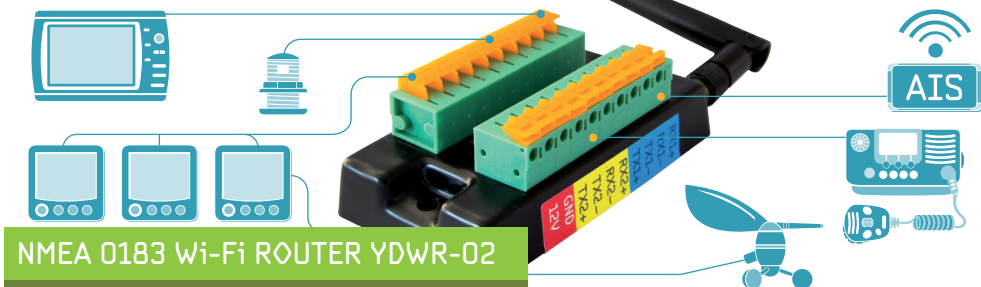
Features:

- configurable NMEA 0183 ports speed from 300 to 115200 baud;
- both "single ended" (RS-232) and "differential" (RS-422) NMEA 0183 connections are supported;
- can be used to pair equipment with different NMEA 0183 speed or connection type;
- creates it's own Wi-Fi network or can be connected to an existing Wi-Fi network;
- a pair can act as an NMEA 0183 wireless extender and allows connection of two or more physical devices.

7

Wi-Fi module: 2.4 GHz 802.11b/g/n
 Wi-Fi range (open space): 50 m / 160 feet
 Average current consumption: 47 mA
 Device case without antenna (LxWxH): 85x45x28 mm

USD \$ 189



The Router is a smart NMEA 0183 and SeaTalk multiplexer which also allows you to see data from marine devices on a PC or smartphone.

The Router has all the features of the Gateway YDWN-02 (on the left), but has four physical NMEA 0183 ports and a SeaTalk port (multiple SeaTalk devices can be connected). An internal bi-directional converter between SeaTalk and NMEA 0183 allows use of SeaTalk data in NMEA 0183 and vice versa, including SeaTalk autopilot control from NMEA 0183.

NMEA 0183	SeaTalk	TCP/UDP	Web Gauges	Logging
4 TX/RX	YES	3	YES	YES

For a price of a usual NMEA multiplexer, you are getting a device with very flexible settings which can be easily configured using a web browser on a smartphone or PC. You can change the port speed or stop forwarding data from one port to another with a click.

The Router can also multiplex Navtex data streams and NMEA 0183 sentences without a checksum. This is called "tunnel mode" and can be turned on for any physical port or data server.

This product is an ideal solution if your new chart plotter has only one NMEA 0183 port and you need to connect it with all your other older equipment.

Input		Output							
		NMEA Port				ST	TCP/UDP Server		
Port/Server	Tunnel	1	2	3	4	1	1	2	3
Port #1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Port #2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Port #3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Port #4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SeaTalk (ST)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Server #1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Server #2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Server #3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Update									

Routing Settings

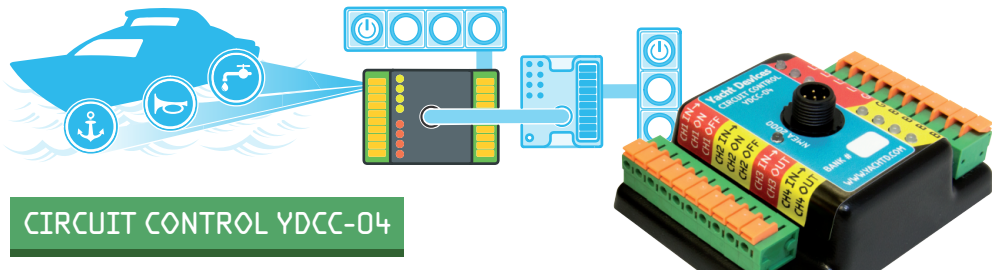
Features (in addition to YDWN-02):

- four NMEA 0183 ports, one is galvanically isolated (2500 VRMS);
- one SeaTalk port, can pair SeaTalk equipment with NMEA 0183 hardware or software;
- allows control of SeaTalk autopilots from NMEA 0183 hardware or software;
- a pair of routers can act as a SeaTalk or NMEA wireless extender and allows joining of two or more physical devices;
- supports \$STALK sentence of NMEA 0183 for raw SeaTalk datagrams.

Wi-Fi module: 2.4 GHz 802.11b/g/n
 Wi-Fi range (open space): 50 m / 160 feet
 Average current consumption: 47 mA
 Device case without antenna (LxWxH): 85x45x28 mm

USD \$ 249

8



CIRCUIT CONTROL YDCC-04

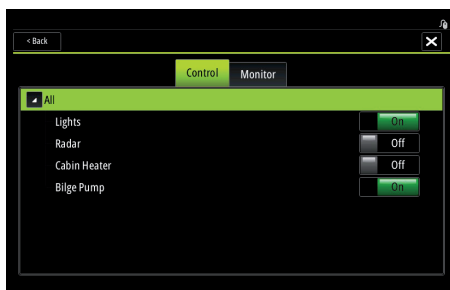
The Circuit Control contains four latching (bi-stable) relays, which can be managed from connected control buttons with LED indicators or over NMEA 2000 with standard messages.

The Circuit Control is the core component of our digital switching system. In addition to connected buttons, loads can be managed with "virtual buttons" on the Web Gauges of our NMEA 2000 Wi-Fi Gateway, or automatically from our sensors. To set up additional control posts with duplicate physical buttons and indication, use Switch Control YDSC-04.

Loads can also be managed from all chart plotters with **CZone** support: all modern models of **Garmin**, **B&G**, **Lowrance**, **Simrad**, **Furuno** and recent models from **Raymarine** (Axiom, eS, gS).

Electrical specifications of Circuit Control:

- four channels: two with normally open contacts (ON-OFF) and two with switching contacts;
- latching (bi-stable) relays consume electricity only during the process of switching and stay in their last state after the device is powered off;
- maximum constant load current per channel is 10A, peak is 20A (4 seconds, duty cycle 10%);
- capable of switching the direct current (DC) and alternating current (AC) loads up to 400 V;
- high voltage isolation from a load, 5000 VRMS;
- average device consumption is only 30 mA.

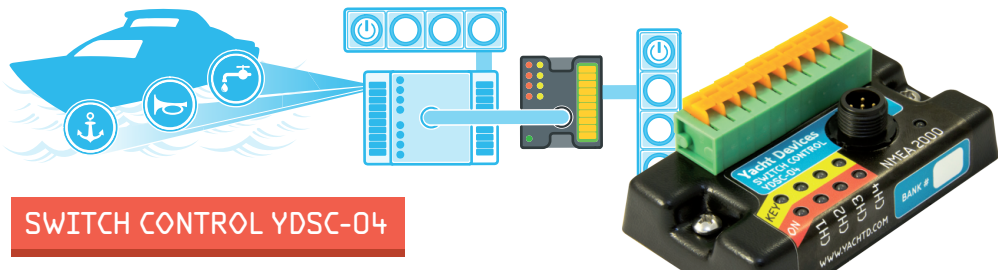


B&G Vulcan with YDCC-04 loads



Web Gauges of Wi-Fi Gateway YDWG-02

The Circuit Control and Switch Control are designed to be compatible with Oceanic Systems, Offshore Systems, Chetco Digital, Maretron and Carling Tech displays and relay modules, and with other NMEA 2000 digital switching devices managed with standard NMEA 2000 PGN 127501 "Binary Status Report" and PGN 127502 "Binary Switch Control".



SWITCH CONTROL YDSC-04

The Switch Control allows viewing of the state and the management of four channels of an NMEA 2000 switch bank from the connected buttons with LED indicators.

It is designed to work in tandem with Circuit Control YDCC-04 (contains four latching relays) and is compatible with other NMEA 2000 digital switching devices managed by standard NMEA 2000 PGNs 127501 and 127502.

The Device has terminals for connection of four momentary push buttons with an LED indicator. External buttons are not supplied with this device; you can choose any to match your boat's interior.

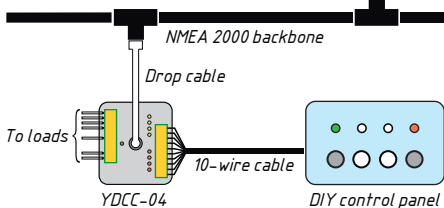
Benefits of Circuit Control and Switch Control:

- ▶ no special requirements for buttons, you can choose any momentary push buttons to match your boat's interior;
- ▶ no special knowledge, software or hardware is required for installation;
- ▶ price and size are suitable for small vessels;
- ▶ pure NMEA 2000 product, compliant to the Standard and certified by NMEA;
- ▶ support firmware updates, free software for PC is available (Wi-Fi or USB Gateway is required).

Smartphone,
tablet or PC



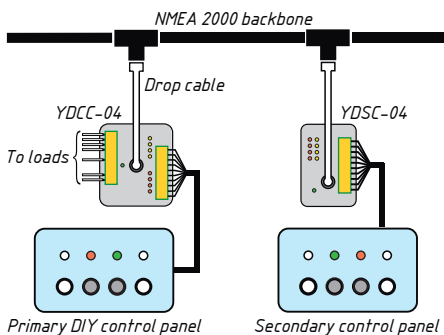
Wi-Fi Gateway



Basic system, with single Circuit Control unit

The Circuit Control unit can work in parallel with other units and can be managed from multiple Switch Control units with a matched bank number (252 unique bank numbers are allowed in NMEA 2000). Multiple independent digital switching systems (with different bank numbers) can co-exist in a single NMEA 2000 network.

If you have external access to your boat's Wi-Fi network, the NMEA 2000 Wi-Fi Gateway with built-in Web Gauges will allow you to manage loads from everywhere using a web browser on any device (smartphone, PC, tablet, etc.).



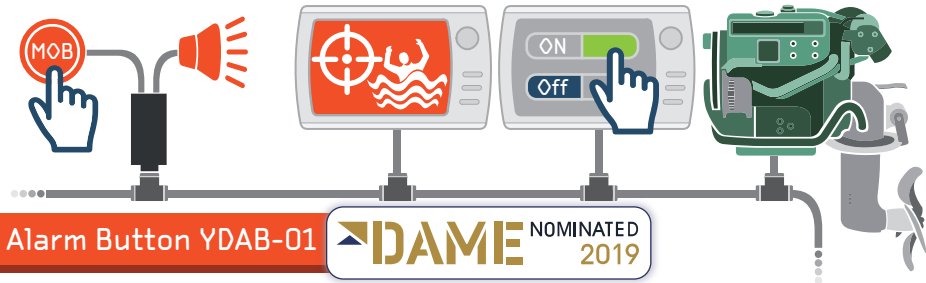
Typical system with multiple control panels



Certified by the National Marine Electronics Association
Operating voltage (from an NMEA 2000 network): 7..16 V
NMEA 2000 consumption current (max): 30 mA
Dimensions with connector (LxWxH): 85x45x28 mm

USD \$ 149

10



Alarm Button YDAB-01

DAME NOMINATED
2019

The Alarm Button is a multi-function NMEA 2000 device with wires for connecting an external button with an LED indicator and a standard 4 or 8 Ohm speaker. It contains a 10W amplifier and a bank with 28 sound signals (car anti-theft alarm, ship horns, whistles, tone signals, etc.).

The device can be configured for one of the following functions:

- ▶ **MOB button (default mode).** Pressing the connected button for two seconds sounds an alarm and sends AIS MOB messages (emulating the message received from EPIRB and SART devices with AIS VHF support) with the current GPS position. It sets an MOB mark position on a chart plotter. Pressing the button a second time cancels transmission of MOB messages. Note that messages sent from the Device are not transmitted externally via VHF or AIS, but are available to all NMEA 2000 devices on the vessel.
- ▶ **Digital switching alarm unit.** The device acts as an NMEA 2000 binary switch bank with 28 channels, each channel has a unique sound alarm and LED flashing sequence. Channels (and corresponding sound alarms) can be turned on/off from other equipment, including our smart sensors or from the screen of a modern chart plotter. The button connected to the device cancels the alarm.
- ▶ **Engine monitoring unit.** In this mode, the Device produces sound alarms according to engine alarms sent by the engine control unit or gateway to NMEA 2000. This mode is useful on boats where the regular engine monitoring instruments are already in need of replacement. The Device can also be programmed to produce a sound alarm itself at a specified temperature, engine revolution reading, etc.



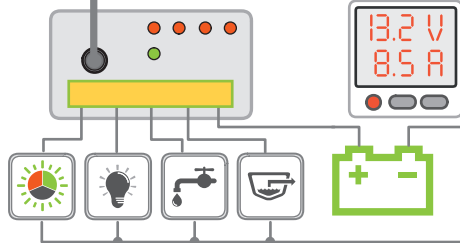
Features:

- ▶ updating firmware and uploading of user sound files with CAN Log Viewer (p.22);
- ▶ can work in parallel with other Alarm Button unit or Circuit Control (p.7);
- ▶ can be managed from modern Raymarine, B&G, Simrad, Furuno, Lowrance chart plotters.

11

Equipped with NMEA 2000 Micro Male or Raymarine SeaTalk NG connector
Compatible with 4 Ohm and 8 Ohm audio speakers
Audio amplifier output (8 Ohm load at 13V): 10 W
Device case length (without connector) / cable length: 54 / 600 mm

USD \$ 149



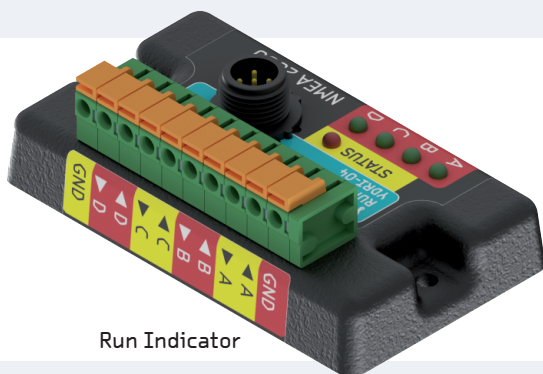
Run Indicator YDRI-04

The Run Indicator measures current and voltage of four connected loads (40V/10A constant load per channel, 15A peak), displays their status on a chart plotter and/or other NMEA 2000 equipment, and can be configured to manage digital switching equipment (including the Alarm Button) with a flexible rules system.

Flexible rules allow the activation of digital switching channels when the electrical circuit is energized or not, when the load is on for too long (water tap left on) or when switching is too frequent (leak in fresh water system).

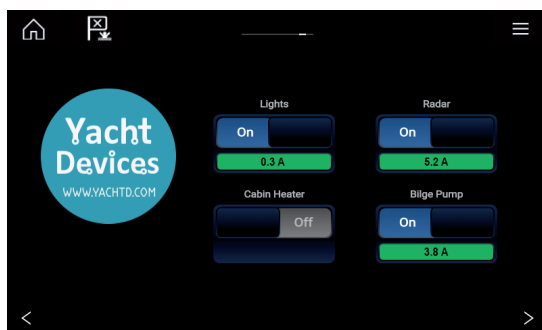
Well-suited for:

- ▶ visualizing of manually switching loads (running lights, water makers, etc.) on MFD screen;
- ▶ digitizing performance of solar panels (up to 200W per channel) and wind generators;
- ▶ monitoring bilge and fresh water pumps, detecting leaks.



Features:

- ▶ easy installation, no external shunts are required;
- ▶ compatible with legacy chart plotters (NMEA 2000 PGN 127508);
- ▶ compatible with modern chart plotters with CZone support;
- ▶ inexpensive web access using Web Gauges of our Wi-Fi Gateway or Router (see p.7-8);
- ▶ device can be programmed and firmware can be upgraded with the CAN Log Viewer (p.22).

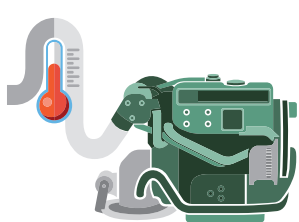


Raymarine Axiom with YDRI

With NMEA 2000 Micro Male connector and 10 wire terminals (AWG 14)
Operating voltage (from an NMEA 2000 network): 7 – 16 V
NMEA 2000 consumption current (max): 60 mA
Dimensions with connector (LxWxH): 85x45x28 mm

USD \$ 189

12



EXHAUST GAS SENSOR YDGS-01

The Sensor measures the temperature of extremely hot gases, solids and liquids within the range from 0 to +800 °C (+32 to 1472 °F).

The Exhaust Gas Sensor is designed not only for exhaust gas. With factory settings it transmits measured data as "Air Temperature" (because this data type is supported in all chart plotters), but can be reconfigured to display "Exhaust Gas Temperature", "Heating System Temperature", "Engine Room Temperature", etc.

Technical details:

Temperature is measured by the thermocouple which is placed outside the Sensor case and has a flexible 90-cm (3 foot) sheath with an internal heat-resistant fiberglass insulation layer. The trade-off for such a wide temperature range is that the accuracy is ± 5.5 Celsius in the range up to 330 °Celsius (and much better below 100 °Celsius), and at the upper limit (800 °C) the accuracy is ± 11.5 Celsius.



Digital Switching Support:



All our sensors can be configured by the user to turn on or off specified channels of digital switching equipment. One sensor can manage up to six different channels using six different conditions.



The Digital Thermometer and Exhaust Gas Sensor operate by actual temperature.



The conditions for the Digital Barometer can be either the actual atmospheric pressure or the difference between actual pressure and the pressure 30 minutes or 1 hour ago. This allows a warning to be set concerning the rise or fall of pressure and upcoming weather changes. The Humidity Sensor operates by air temperature, relative humidity and by the difference between air temperature and dew point temperature. In other words, it can ventilate your boat when she needs it or it can turn on the radar if fog is coming.



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Equipped with NMEA 2000 Micro Male or Raymarine SeaTalk NG connector
Current consumption: 34 mA, 7..16 V
Cable length: 900 mm
Device case length (without connector): 40 mm

USD \$ 149



Numbers		
Device Voltage 11.9 (V)	Time of Day 07:56:04 (PM)	GPS Position N 54°39.920' E 020°23.274'
Air Temperature 30.0 (°C)	Bait Well 27.4 (°C)	Barometer 1005 → (mb)
Back	Home	Mark
		Menu

DIGITAL BAROMETER YDBC-05

The Barometer is intended for measuring atmospheric pressure within the range of 300 to 1100 hPa (mbar). The sensor is located inside the device case. Many chartplotters and digital navigation instruments are able to display data on pressure in the form of graphs or show a trend indicator; this allows tracking of trends in weather changes. Absolute measurement accuracy ± 1 hPa between 0 and 65 °C. Output data resolution 0.01 hPa.

DIGITAL THERMOMETER YDTC-13

Performs measurements within the range from -55 to +125°C (-67 to 257°F), the sensor is placed outside the case on a flexible, 95cm wire in a sealed stainless steel sleeve and can be used to measure the temperature of gases or liquids. If necessary, the wire can be elongated up to 100 meters. The Thermometer can be configured by the user to display data as "Air temperature", "Sea temperature", "Temperature in the refrigerator", "Temperature in the engine room", "Bait well temperature", etc.

HUMIDITY SENSOR YDHS-01

This sensor provides chartplotters and instrumental displays with humidity and air temperature measurements and a calculated dew point temperature. This product can be used for weather monitoring and fog prediction; mold prevention by monitoring of water intake or moisture condensation in lockers. Equipped with a high-quality sensor that provides ± 2 % RH and ± 0.3 °C accuracy in most of the operating range. Operating range is 0 - 100% RH and -40..120 °C (-40..248 °F).



All sensors (including the Exhaust Gas Sensor) are:

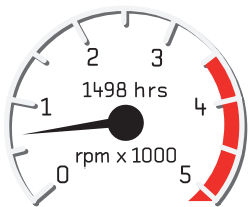
- ▶ plug and play; you only need to plug the sensor into a NMEA 2000 backbone to get readings on all chartplotters and instruments on board;
- ▶ supporting firmware updates and multiple configuration methods;
- ▶ able to turn on or off specified digital switching channels (see insert at left);
- ▶ equipped with NMEA 2000 Micro Male or Raymarine SeaTalk NG connectors.



Certified by the National Marine Electronics Association
Current consumption: 24 mA, 7..16 V
Cable length: 950 mm (Thermometer), 1000 mm (Humidity Sensor)
Device case length (without connector): 40 mm

USD **99/99**
149

14



J1708 ENGINE GATEWAY YDES-04

A gateway for engines with a J1708 serial interface to an NMEA 2000 marine digital network. With it, you can see engine revolutions, temperature, working hours, fuel rate and other engine data on the screen of a chart plotter and other display devices on your NMEA 2000 network.

The Gateway supports two protocols that work over J1708: the standard J1587 used by many manufacturers (Detroit Diesel, etc.) and the proprietary Volvo Penta protocol used in engines with EDC I (KAD 44, KAD 300, TAMD73..75); also compatible with EDC II (e.g. D12C-A MP).

Features:

- ▶ first (and only!) device with support of proprietary Volvo Penta KAD protocol;
- ▶ user alert settings for high revolutions, boost pressure, coolant temperature, low oil pressure and low alternator voltage;
- ▶ low-cost installation, no extra cables required in most cases;
- ▶ easy configuration with a simple text file on a MicroSD card;
- ▶ high-voltage galvanic isolation between J1708 and NMEA 2000 interfaces;
- ▶ J1708 data recording for diagnostics and configuration;
- ▶ one engine and transmission, 2 batteries and 2 fuel tanks may be reported by one Device.

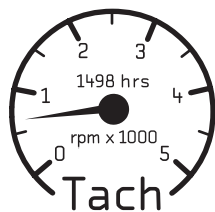
Connection:

The Device is equipped with a female connector compatible with Volvo Penta EDC diagnostics connectors used on EDC I and EDC II engines. Owners of other engines can use the disassembled male connector supplied with the Gateway to make a DIY adaptor cable. Models with NMEA 2000 Micro Male or Raymarine SeaTalk NG connector are available.

Reasons to buy:

- ▶ duplicate or replace broken instruments;
- ▶ monitor your engine from any cabin with a Wi-Fi-capable chart plotter;
- ▶ monitor your engines from PC or smartphone using a web browser with our Wi-Fi Gateway;
- ▶ log engine and fuel usage by crew or renters with our Voyage Recorder;
- ▶ record your engine data to apply for service remotely.





ENGINE GATEWAY YDEG-04

Gateway for Volvo Penta, Mercury, Yanmar, BRP Rotax and J1939 engines to NMEA 2000 marine electronics networks. It will provide you with engine revolutions, motor hours, coolant temperature, battery voltage, warning and alarms, fuel rate and other data on the screen of your chart plotter.

This gateway is compatible with BRP Rotax (tested with Rotax 1503 4-tec engines), SmartCraft (Mercury, MerCruiser), J1939 engines (Caterpillar, Yanmar 4JH, etc.) and most Volvo Penta engines manufactured since 2004, and even with some engines manufactured before 2000.

Compatible Volvo Penta engines:

- ▶ all versions of EVC-B, EVC-C, EVC-D, EVC-E (most modern engines since 2006);
- ▶ EVC-A MC (e.g. D3-160A-A) and EVC-A EC (also known as EVCmc and EVCec);
- ▶ D1 and D2 series with MDI (Mechanical Diesel Interface), for example D2-40F;
- ▶ EDC III and EDC IV diesel engines (EMS 2.0, EMS 2.2);
- ▶ EFI engines with MEFI4B ECU or later (gasoline, 2004-2005), with or without EVC;
- ▶ all EGC engines (gasoline, 2005 and later), with or without an EVC system installed.

Connection:

The Gateway is supplied with an NMEA 2000 Micro Male or Raymarine SeaTalk NG connector. On most vessels with Volvo Penta engines, all that you need is to plug the device into an empty socket of the NMEA 2000 network backbone and connect the engine cable to a Multilink hub or, using the built-in Y-connector on the engine cable of the Gateway, to connect it in series with any of the EVC tachometers. Inexpensive adaptor cables for other engines are available.

Features:

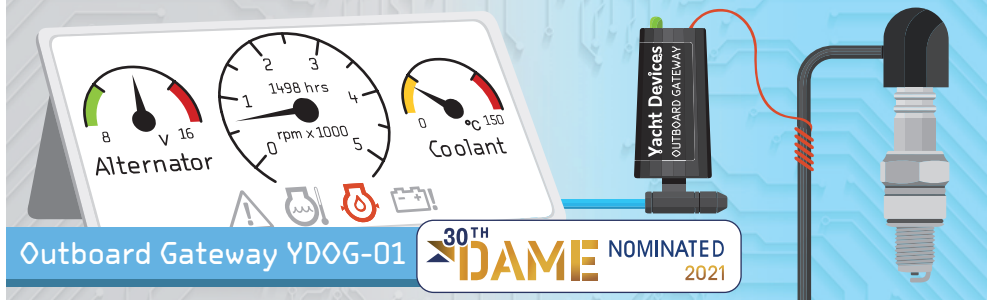
- ▶ low-cost installation, no extra cables required in most cases;
- ▶ high-voltage galvanic isolation between engine and NMEA 2000 interfaces;
- ▶ with factory settings, the Gateway only listens to J1939 network;
- ▶ easy configuration with a simple text file on MicroSD card;
- ▶ engine data recording for diagnostics and configuration;
- ▶ free diagnostic software for Microsoft Windows, Mac OS X and Linux is supplied;
- ▶ up to 8 engines and transmissions, 8 batteries and 10 fuel tanks are supported by one device;
- ▶ fuel tank capacity settings and 12-point sensor calibration for all tanks.



Certified by the National Marine Electronics Association
Average current consumption from NMEA 2000 network: 38 mA, 10..16 V
Engine cable length (to Deutsch male connector): 500 mm
Device case length (without connector): 54 mm

USD \$ 189

16



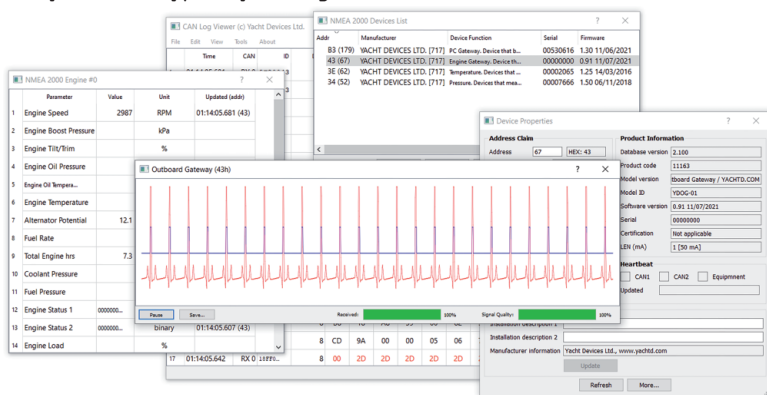
Outboard Gateway YDOG-01

30TH DAME NOMINATED
2021

The Gateway is designed for petrol engines without digital interfaces, and provides NMEA 2000 equipment with engine revolutions (RPM), alternator voltage (measured at the NMEA 2000 interface) and engine hours.

It can also be programmed to use data from NMEA 2000 temperature or pressure sensors and send these data as coolant and oil pressure or temperature, boost or fuel pressure. The Device can be programmed to issue high revolutions, **high temperature** and **low voltage** warnings, and set the state of the charge indicator (displayed on MFD or NMEA 2000 display).

To connect the Gateway, you only need to connect it to the NMEA 2000 backbone and make 4-5 turns of its wire around the spark plug wire, and affix the loops with tape. In most cases, no additional settings are required, but you might need to set the RPM divider according to the ignition system and type of your engine.



Free software

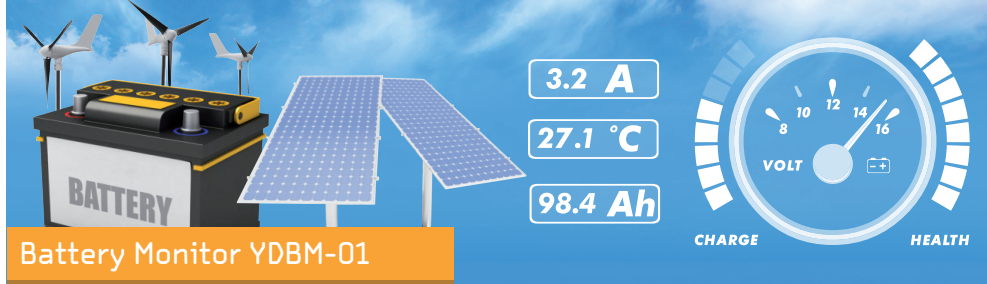
Features:

- ▶ can be configured with a hidden button or with N2K gateways (installation description strings);
- ▶ the firmware can be updated with our NMEA 2000 gateways;
- ▶ free diagnostic software for Windows, Mac OS and Linux allows viewing oscillograms in a real-time (see the screenshot above);
- ▶ pulse counting range (per minute): 200..70000;
- ▶ pulse divider can be set from 0.5 (multiply on 2) till 8;
- ▶ device's case length is only 40mm and it can be placed inside the engine.

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The Device wire has no electrical contact with the engine.
Wire temperature range: -50 to +180 °C
Supply voltage (from NMEA 2000 network): 9..16V
Current consumption: 30 mA (1 LEN)

USD \$ 99

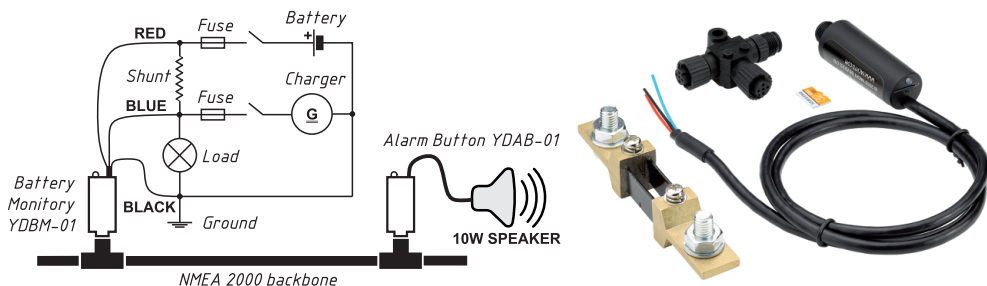


Battery Monitor YDBM-01

The device reports measured voltage and current, calculated health and charge state, and user programmed static data (e.g. nominal capacity and chemistry) to NMEA 2000 and can turn on the genset or warn when the battery state is critical.

The Battery Monitor can be used with any single DC source (i.e. alternator, wind generator, etc.) or load (**windlass**, **refrigerator**, etc.), but it is primarily designed for monitoring a marine battery. To operate as intended, it requires an appropriate external shunt (not supplied with the Device). It can be configured to use data from a **NMEA 2000 thermometer** connected to the battery to detect the charge state and health more accurately and report temperature along with voltage and current data. The Device can be configured and updated from MicroSD card or over NMEA 2000.

The Battery Monitor can be configured to manage channels of an NMEA 2000 **digital switching** system, and/or trigger a digital alarm unit compatible with standard NMEA 2000 PGNs 127501/127502. For example, you can configure the Battery Monitor to automatically raise a sound or voice alert about low battery charge with the Alarm Button (p.11), or to turn some equipment on or off, or to start a genset to recharge the battery with the **Circuit Control** (p.9).



Electrical characteristics:

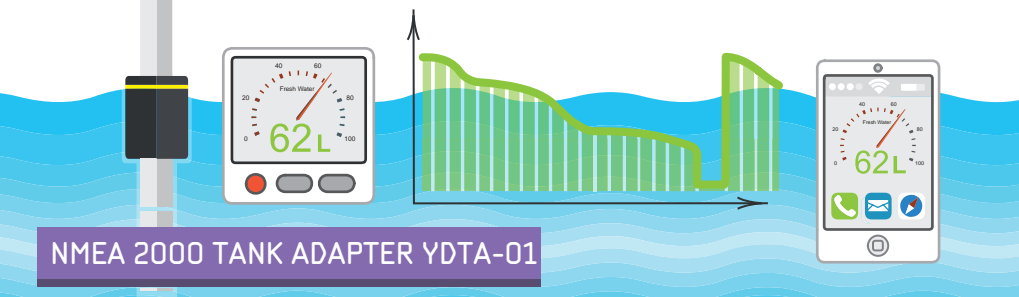
- ▶ External shunt rated current: 5..2500 A
- ▶ External shunt's nominal voltage drop (recommended): 75 mV
- ▶ Current measurement accuracy (see note below): $\pm 0.5\%$
- ▶ Maximum allowed DC voltage on inputs (with respect to GND input): 40 V
- ▶ Voltage measurement accuracy: 0.1 V
- ▶ Breakdown voltage between NMEA 2000 network interface and inputs: 2500 V_{RMS}



Note: do not account for shunt accuracy which is typically $\pm 0.25\%$ or $\pm 0.5\%$, and $\pm 20..25$ ppm/ $^{\circ}\text{C}$ for temperature drift.
Supply voltage (from NMEA 2000 interface): 7..16V
Consumption current (NMEA 2000 interface), average: 50 mA

USD \$ 149

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NMEA 2000 TANK ADAPTER YDTA-01

The NMEA 2000 Tank Adapter YDTA-01 allows you to connect an existing resistive type fluid level sensor installed on a tank and display the fluid level on NMEA 2000 devices, including chart plotters and instrumental displays.

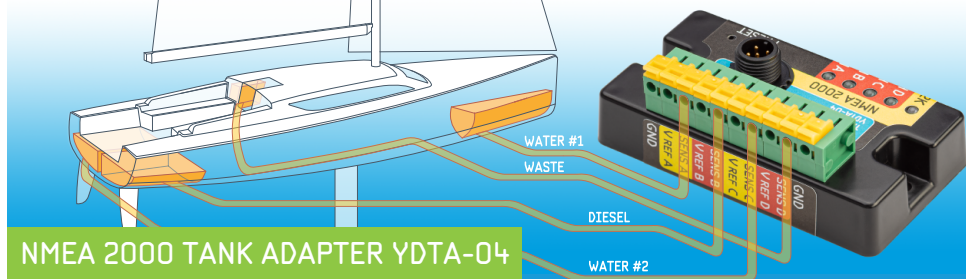
The Adaptor can be configured to report one of the seven fluid types defined in the NMEA 2000 standard: Diesel Fuel, Gasoline Fuel, Oil, Fresh Water, Waste Water, Black Water (Sewage), or Live Well. The tank number can be configured; up to 16 tanks of one type are allowed in NMEA 2000.

The Device can be used with European (10 to 180 Ohm range) American (240 to 33 Ohm range) or Japanese (0 to 310 Ohm range) standard fluid level sensors as well as with any nonstandard sensors with maximum resistance less than 400 Ohm.

Features:



- supplied with an NMEA 2000 Micro Male or Raymarine SeaTalk NG connector;
- can be installed as a standalone measuring device or in parallel with an existing analog gauge (2-coils and 1-coils gauges are supported);
- can be installed in parallel with Volvo Penta MDI (D1 and D2 engines);
- works smoothly in parallel with a combined gauge where you need to press a button to display the measured value;
- sensor readings can be calibrated with 12 calibration points;
- equipped with a MicroSD card slot, intended for configuration, logging and firmware updates;
- can record liquid level to the MicroSD card;
- high-voltage galvanic isolation between NMEA 2000 and sensor inputs.



NMEA 2000 TANK ADAPTER YDTA-04

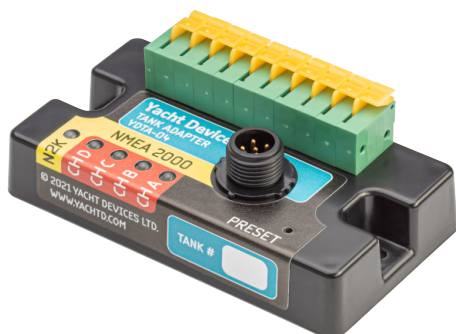
Offering the same connectivity capabilities as the YDTA-01 model (at left), it allows you to connect up to four tanks at the same time. The four measuring channels of the Tank Adapter YDTA-04 have individual reference inputs and may have individual settings.

The Device is equipped with a hidden button that allows switching among 15 configuration presets. For typical use cases (for example: two water tanks, one fuel and one black water tanks with EUR sensors), it allows to configure the Device in seconds! Just find suitable configuration in the manual and make a few clicks.

However, for advanced configuration (calibration curves, digital switching functions, connection in parallel with analog gauges, using voltage sensors) the NMEA 2000 PC gateway (from any manufacturer) is required. Firmware updates are available only with Yacht Devices gateways (Wi-Fi, USB or Ethernet).

Unlike the YDTA-01 model, YDTA-04 has no MicroSD slot and does not offer data logging capabilities. And it is supplied with the NMEA 2000 Micro Male connector only, and for Raymarine SeaTalk NG the adaptor cable is required. However, in the settings you can join several tanks for correct calculation of "Estimated Fuel Remaining" data for PGN 127496 "Trip Fuel Consumption, Vessel" which displays the sum of the fuel volume in selected tanks.

If you have more than one tank, the YDTA-04 model is a good choice, because it has the better price and less power consumption than two YDTA-01 adapters.



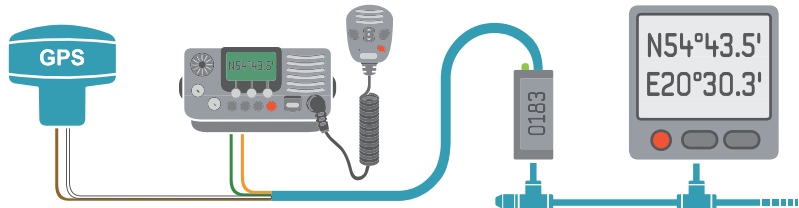
	YDTA-01	YDTA-04
Configuration	MicroSD / N2K	Button / N2K
Input channels	1	4
Digital switching	Yes	Yes
Logging to card	Yes	No
Consumption, mA	45	51
STNG / N2K	Yes / Yes	No / Yes



Certified by the National Marine Electronics Association
Average current consumption: 51 mA, 7..16 V
Number of measurement channels: 4
Device case dimensions (LxWxH): 85 x 46 x 29 mm

USD \$ 189

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NMEA 0183 GATEWAY YDNG-03

The NMEA 0183 Gateway allows you to connect NMEA 0183 equipment to an NMEA 2000 network and vice versa. It has a bi-directional converter with wide support of message types including AIS, VHF DSC/DSE, waypoints, routes, and autopilot.

The Gateway has one NMEA 2000 connection and one NMEA 0183 port with "transmit" and "receive" data lines. The baud rate is configurable from 300 to 115200 baud for the NMEA 0183 port and allows connection of AIS transceivers (38400 baud), fast NMEA 0183 multiplexers and PC adaptors, as well as standard NMEA 0183 equipment.

Features:

- ▶ allows control of Raymarine SeaTalk NG autopilots from NMEA 0183;
- ▶ flexible system of filters allows blocking of NMEA 0183 messages by sentence and NMEA 2000 messages by PGN, sender address, or 29-bit message identifier;
- ▶ powered from the NMEA 2000 with high voltage galvanic isolation between NMEA 2000 and NMEA 0183 ports;
- ▶ NMEA 2000 may act as a multiplexer for NMEA 0183 equipment;
- ▶ routing between RX and TX lines of NMEA 0183 port;
- ▶ fast heading (12 Hz) option for radar;
- ▶ compatible with PC via COM (serial) ports and with USB-to-serial adaptors;
- ▶ both "single-ended" (RS-232) and "differential" (RS-422) NMEA 0183 connections are supported.



The Device is equipped with a Micro SD card slot used for configuration, firmware updates and logging of diagnostic data. No special software is required to update or configure the Gateway. You only need a device (laptop or smartphone) with a MicroSD card reader and simple text editor.

Models with NMEA 2000 Micro Male or Raymarine SeaTalk NG connector are available.



NMEA 2000 RUDDER ADAPTER YDRA-01

The Adapter connects resistive angle sensors and sensors with 0-5V output voltage to NMEA 2000 and supplies NMEA 2000 autopilots, chart plotters and other devices with the rudder angle.

The Device can be used with a rudder angle sensor with maximal resistance less than 400 Ohm, including European (10 to 180 Ohm range) or American (240 to 330 Ohm range) standard sensors, and with 0-5V voltage output sensors.

You don't need to change anything in your current installation to add the Adapter. Seven-point calibration helps you avoid making mechanical adjustments. And it can be used standalone or together with digital gauges, or in parallel with most types of 12V analog gauges.

Connection schemes:

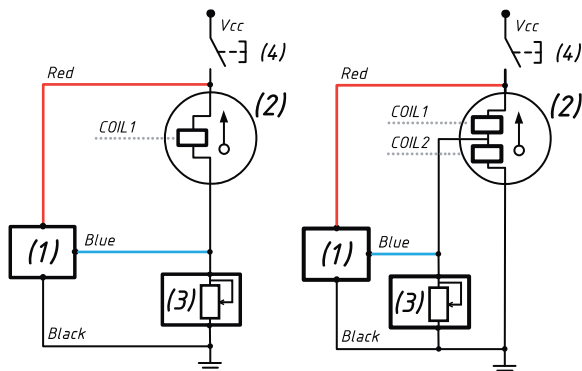
The Adapter can work together with a digital gauge, or in parallel with an existing analog gauge (2-coils and 1-coils gauges are supported). If you have a combined gauge where you choose the value to display with a button, the Adapter will smoothly work with it, too.

Rudder angle readings can be calibrated with up to 7 calibration points to compensate for non-linearity of the sensor's resistance value vs rudder angle.

The Adapter is equipped with a Micro SD card slot intended for configuration, firmware updates, diagnostics and data logging. No special software is required.

You only need a device (laptop or smartphone) with a MicroSD card reader and a simple text editor.

The Device is powered from the NMEA 2000 network and provides high voltage galvanic isolation between NMEA 2000 and sensor inputs.



Connection in parallel with an existing analog 1-coil (left) and 2-coil (right) gauges: (1) - YDRA, (2) - Gauge, (3) - Rudder sensor, (4) - Optional button



VOYAGE RECORDER YDVR-04

Voyage Recorder keeps GPS tracks, wind, depth, temperature, AIS, heeling and all other data which flow through the NMEA 2000 network on an SD card. Never forget exciting moments of your voyages, have proof of strong winds and great storms, accumulate data for future voyages, analyze your route, generate logbooks and diagnose problems.

The Recorder writes all NMEA 2000 data into the memory card and supports all message types broadcasted through the network by any other equipment present on the vessel's network. Estimated recording capacity for 16 GB card is 100..200 days of sailing.

How to view the data

The software that comes with the Recorder is available for Microsoft Windows, Mac OS X and Linux. It allows export of data into the following formats:



GPX files with the vessel's track and extensive information about sailing conditions, including weather, depth, engine, and even tracks of nearby vessels with

AIS. GPX files can be viewed in Google Earth, Garmin MapSource and other cartographic applications. They can also be loaded into a modern MFD from Garmin or Raymarine.



XML, CAN, OpenSkipper, CanBoat and Signal K formats. Load the data to open source OpenSkipper or CAN Log Viewer applications to decode NMEA

2000 messages and "replay" recording. With Voyage Recorder, you may also "replay" your recordings to a physical network to emulate the specific equipment or onboard network in a lab.



CSV files to open data in spreadsheet applications like Microsoft Excel or LibreOffice Calc to visualize data using charts and build the graphic reports.



Printable logbook file (ODF). With Voyage Recorder software you can get a real multi-page, editable and printable logbook of your voyage with just a few mouse clicks.

Voice or VHF recording



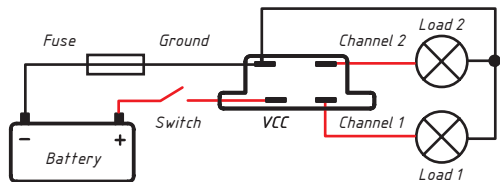
The device has a 3.5mm audio jack socket (line-in, adjustable gain and activation level). Audio data are stored to standard files with a .WAV extension. Data files contain internal links to the audio files, and the software places links to audio files at the geographical points in the GPX file where they were recorded. You can use it as a "voice log book" or to automatically save VHF weather forecasts and conversations.

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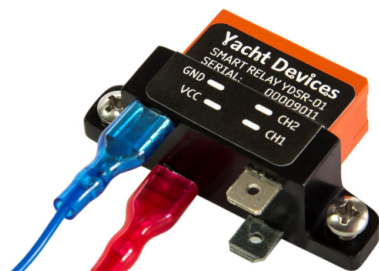


Equipped with Raymarine SeaTalk NG or NMEA 2000 Micro Male
Average current consumption: 23 mA, 10..16 V
Recommended MicroSD card (not included): Class 10, 16 – 32 GB
Device case length (without connector): 54 mm

USD \$ 249



SMART RELAY YDSR-01



The device helps you when you have two loads and only one power switch. Smart Relay powers the first channel when you turn the power switch on, and it powers the second channel when you cycle the power switch twice in one second.

Smart Relay contains a bi-stable RT424F05 relay and uses power only when the channels are switching; at all other times it consumes less than 0.5 mA. It can switch loads from 7 - 28V DC with continuous current up to 10A and peak current of 20A (4 seconds, 10% duty rate). To switch between channels, you should cycle the power in one second. If you need to have one load constantly on and the other should be on after the fast cycling of the power, just connect the first load to the incoming power terminals and the second load to channel 2.

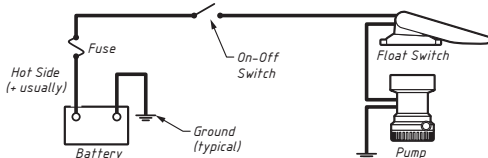
Use Case

For example, you have a bilge pump and wish to add a float switch. However, you also want to keep the manual control and do not wish to replace the 2-wire cable with a 3-wire one. And, of course, you do not like the idea of changing the button on your panel to 3-position switch.

The Smart Relay is an ideal solution for this case. It has two output channels (CH1 and CH2 in Picture 2). When powered, Smart Relay always turns on channel 1, and fast cycling of the power switch engages switching between channels.

In Picture 2, channel 2 of the Smart Relay is connected to the power terminal of the pump in parallel to the float switch. When you turn the On-Off Switch on, channel 2 of Smart Relay is not active and the float switch controls the pump. Cycle the On-Off Switch in one second and channel 2 becomes active, the current will flow from the VCC to CH2, and the pump will turn on.

Simple System - Provides Automatic Operation of Pump



Best System - Provides Manual On/Automatic Control of the Pump and Red Light Indication of Operation

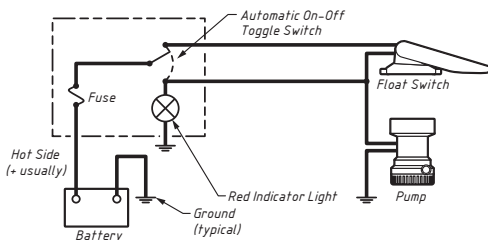


Fig. 1. Wiring diagram from the Rule Industries

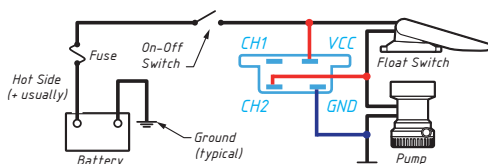


Fig. 2. Manual/automatic control with the Relay

```

match(CAN1, 0x1F50B00, 0x1ffff00)
{
  A = get(DATA+1, UINT32)
  if (A < 0xFFFFFFFF-20) {
    set(DATA+1, UINT32, A + 20)
  }
  send()
}

```

NMEA 2000 BRIDGE YDNB-07



Unifies two physical NMEA 2000 networks into a single logical network, smoothly exchanging messages between them. The Device also supports filtering and processing of transmitted messages.

The Bridge contains a built-in compiler of a simple programming language. You can create programs on any device with a MicroSD socket and a text editor, and upload these programs to the Bridge with a MicroSD card.

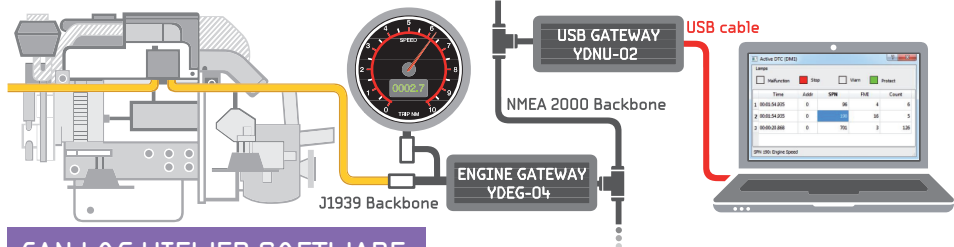
- **Bypass the physical limits of NMEA 2000 networks** concerning the length of networks (100 meters for regular cable and 250 meters for heavy or mid-type cable) and concerning the maximum number (50) of physical devices attached to the network. On a network with address capacity of 252, multiple bridges can be engaged to expand to around 250 physical devices.
- **Isolate devices from each other.** Using the simple filter, you can block transmission of all or of selected messages from a given device in a separate subnet.
- **Ensure proper functioning of equipment.** Correct the transducer offset of the depth sounder, or "delete" invalid data in messages from equipment that is only partially operational using a 2- or 3-line script.
- **Ensure compatibility of equipment** from different generations. You can create and send any type of NMEA 2000 message using data from other messages in the network.
- **Diagnose malfunctions** in the NMEA 2000 network. The Device can record network messages and debug data from custom programs on a MicroSD card in a text file. You can view the data in a standard text editor on a smartphone or tablet with a MicroSD slot, there is no need for a computer.
- **Safely connect devices** that do not meet NMEA 2000 standards. One of the CAN-interfaces on the device has high-voltage galvanic isolation and can operate at a higher supply voltage.
- **Create gateways** for networks based on CAN protocol operating at a speed from 50 to 1000 kbps (for example, a gateway from a J1939 to NMEA 2000). Bridge's language has math and trigonometric functions to convert data.
- **Distribute encrypted programs** protected from unauthorized copying and/or modification.

Programming the device requires knowledge of NMEA 2000 standard, which can be obtained from the National Marine Electronics Association: <http://www.nmea.org>.

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Power: 1) CAN1: 9..16 V, 38 mA; 2) CAN2: 9..30V, 13 mA
 Equipped with two SeaTalk NG or with two NMEA 2000 Micro Male connectors
 Case length (without connector): 54/40 mm
 Cable length : 500 mm

USD \$ 189



CAN LOG VIEWER SOFTWARE

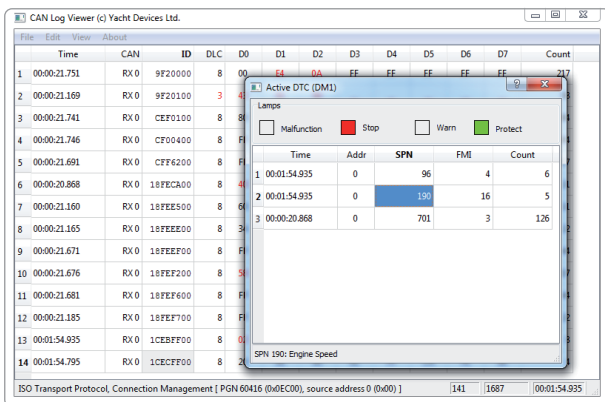
A freeware viewer, player, recorder and converter of CAN (Controller Area Network) logs. It can play your CAN recordings or display live data from our USB and Wi-Fi gateways on a PC screen in real time and highlight changing data.

CAN logs contain network level data and are compatible with any high-level protocol, including J1939 and NMEA 2000. The CAN Log Viewer runs on Microsoft Windows, Mac OS X and Linux.

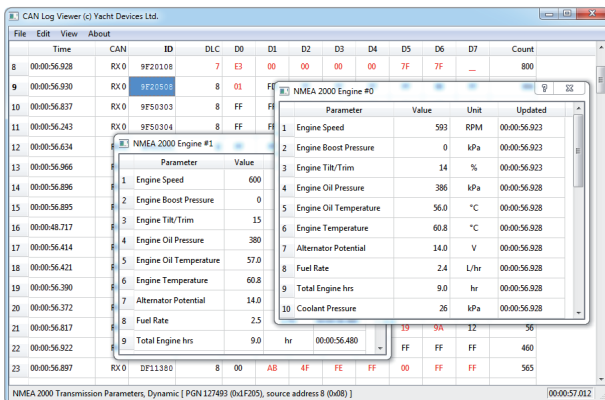
Features:

- ▶ record files from serial, TCP and UDP ports of USB and Wi-Fi gateways;
- ▶ list, configure and update NMEA 2000 devices;
- ▶ view Engine Gateway and NMEA 2000 Bridge log files;
- ▶ view SeaTalk NG log files of Raymarine chartplotters;
- ▶ built-in viewers for major J1939 and NMEA 2000 data types;
- ▶ convert data between different formats.

This product is designed for protocol analysis and troubleshooting of NMEA 2000, SeaTalk NG and J1939 equipment. It has an internal database with thousands of J1939 diagnostic trouble codes, J1939 and NMEA 2000 PGNs.



J1939 DTC Viewer



NMEA 2000 Engine Data Viewers

Free for commercial and non-commercial use
Runs on Microsoft Windows, Mac OS X and Linux
Compatible with PC Software of Voyage Recorder

FREEWARE

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AUTOPILOT



A tiny autopilot module that controls a 10A (16A peak) hydraulic pump or electrical linear drive, and the electrical clutch. To operate in the AUTO mode, it requires external NMEA 2000 heading sensor only. In the WIND or TRACK modes, wind sensor or GPS are also required.

The Autopilot can be managed from NMEA 2000 or from the connected buttons. It has 10 wire terminals to connect buttons, an external buzzer, clutch and the external LED indicator. It will be an inexpensive and simple solution for small crafts up to 8 meters. Nowadays, MFDs are not rare on small crafts, and the autopilot will be a great companion to them!

RESELLERS

**United Kingdom**

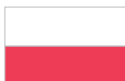
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www.yachtdevicesus.com

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