VDR100 *Vessel Data Recorder*

Maretron's Vessel Data Recorder (VDR100) is used to record messages transmitted from every product interconnected on the vessel's NMEA 2000® network. Each message is stored using solid-state memory technology with simple data retrieval via a removable USB flash drive. Depending on the chosen USB flash drive memory size, a year or more of data can be stored. And you never have to worry about losing the most recent data because the VDR100 uses a circular buffer where the oldest data is overwritten only after the entire memory is filled.

Recorded vessel data can be used in many ways including performance analysis, vessel tracking, preventative maintenance, network diagnostics, warranty incident, and accident investigation, all in an effort to reduce operating cost and improve safety. As an example of how the recorded data might be used, consider an NMEA 2000® fuel flow monitor plugged into the network, which will provide a complete record of how much fuel was used and how fast it was used. With a GPS antenna/receiver plugged into the NMEA 2000® network, you will have a complete record of where the vessel has been including its speed and course over ground.

Analyzing or graphing recorded data is done using a spreadsheet program like Microsoft® Excel®. Simply remove the USB flash drive and plug it into a PC or Mac and run Maretron's free extraction software (N2KExtractor™). Choose any or all of the recorded data including the associated dates and times and the program will create a comma delimited file (.csv) that can be read into a spreadsheet for graphing or any other type of data analysis.

With the VDR100, you have a complete record of all the information produced by NMEA 2000® products connected to the vessel's network. And because the VDR100 is engineered and manufactured to the highest standards (IEC 60945 Maritime Navigation and Radio Communication Equipment), your data is safely protected in a compact waterproof housing.

Products

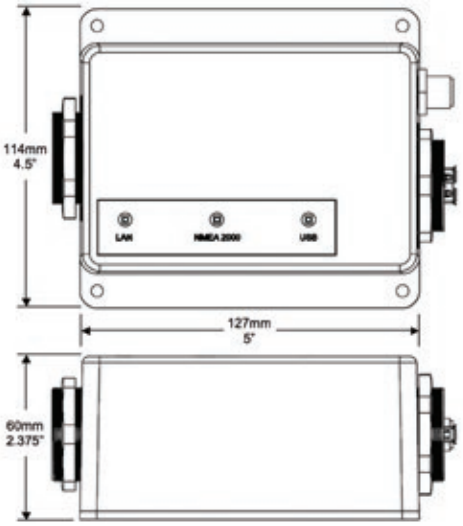
PART NUMBER	DESCRIPTION
VDR100-01	Vessel Data Recorder
PX0852	USB Waterproof Cover
PX0837/5M00	Waterproof Ethernet Cable 16.4'
M003029	16GB USB Flash Drive

The following accessories are available for the VDR100:

PX0852

PX0837/5M00

- Data Recorded on Solid State Memory via Removable USB Flash Drive
- Circular Buffer Preserves Latest Recorded Data while Oldest Data Overwritten when Memory is Full
- Recorded Data Available for Performance Analysis, Vessel Tracking, Preventive Maintenance, and More
- Optional Waterproof USB Flash Drive Cover
- Free Data Extraction Software (N2KExtractor™) Builds Comma Delimited Files for your customized Data Analysis



N2KExtractor™ Software

Free with Purchase of VDR100

USB Flash Drive Sizing Guidelines

Recording Period	Media Storage Capacity
1 second	7862 Bytes
1 minute	471,750 Bytes
1 hour	29 MBytes
1 day	680 MBytes
1 week	5 GBytes
1 month (30 days)	21 GBytes
1 year (365.25 days)	248 GBytes

Table figures are estimated assuming 25% loaded system (approximately 463 frames/sec) running continuously 24 hours/day, 7 days/week, 365 days/year.

Specifications

Parameter	Value	Comment
NMEA 2000® Connector	DeviceNet Micro-C	Industry Standard Waterproof
NMEA 2000® Isolation	Opto-Isolated	No Electrical Connection Across Bridge
USB Standard	USB 1.1	
USB Connector	USB Type A	Industry Standard Waterproof, for Connection of USB Flash Memory Device for Recording Data
USB Supported Signals	D+, D-, +5V, GND	Bi-directional Gateway
USB Auxiliary Power	+5 Volts < 200 mA	
USB Baud Rate	Up to 12 Mb/s	Full Speed USB Data Rate
Ethernet Interface	100 Mb/s	Not used in initial firmware revision
Ethernet Connector	RJ-45	Industry Standard Waterproof

Certifications

Parameter	Comment
NMEA 2000® Standard	Level A
Maritime Navigation and Radiocommunication Equipment & Systems	IEC 61162-3
Maritime Navigation and Radiocommunication Equipment & Systems	IEC 60945
FCC and CE Mark	Electromagnetic Compatibility

NMEA 2000® Parameter Group Numbers (PGNs)

Description	PGN #	PGN Name	Default Rate
Response to Requested PGNs	126464	PGN List (Transmit and Receive)	N/A
	126996	Product Information	N/A
	126998	Configuration Information	N/A
Protocol PGNs	059392	ISO Acknowledge	N/A
	059904	ISO Request	N/A
	060416	ISO Transport Protocol, Connection Management	N/A
	060160	ISO Transport Protocol, Data Transfer	N/A
	060928	ISO Address Claim	N/A
	065240	ISO Address Command	N/A
	126208	NMEA Request/Command/Acknowledge	N/A
PGNs Recorded	All	All	N/A

Electrical

Parameter	Value	Comment
Operating Voltage	9 to 32 Volts	DC Voltage
Power Consumption	<200mA	Average Current Drain
Load Equivalence Number (LEN)	4	NMEA 2000® Spec. (1LEN = 50 mA)
Reverse Battery Protection	Yes	Indefinitely
Load Dump Protection	Yes	Energy Rated per SAE J1113

Mechanical

Parameter	Value	Comment
Size	5.000" x 4.500" x 2.375" 127mm x 114mm x 60 mm)	Including Flanges for Mounting
Weight	12 oz. (340 g)	

Environmental

Parameter	Value
IEC 60945 Classification	Exposed
Degree of Protection	IP67
Operating Temperature	-25°C to 55°C
Storage Temperature	-40°C to 70°C
Relative Humidity	93%RH @40° per IEC60945-8.2
Vibration	2-13.2Hz @ ±1mm, 13.2-100Hz @ 7m/s2 per IEC 60945-8.7
Rain and Spray	12.5mm Nozzle @ 100liters/min from 3m for 30min per IEC 60945-8.8
Solar Radiation	Ultraviolet B, A, Visible, and Infrared per IEC 60945-8.10
Corrosion (Salt Mist)	4 times 7days @ 40°C, 95%RH after 2 hour Salt Spray Per IEC 60945-8.12
Electromagnetic Immunity	Conducted, Radiated, Supply, and ESD per IEC 60945-10
Safety Precautions	Dangerous Voltage, Electromagnetic Radio Frequency per IEC 60945-12