

# Engine Monitoring System (Yanmar)

- Converts Analog Data to NMEA 2000® Digital Data
- Converts Following Data if Engine is Equipped with Sensors
  - ✓ Tach, Hours, Water Temp, Oil & Boost Pressure, Volts, Trim
- Converts Engine Alarms if Engine is Equipped with Switches
  - ✓ Fuel, Boost, Coolant Level & Temp, Oil Pressure, Exhaust Flow
- Plugs Directly into Engine Wiring Harnesses
- Used With or Without Analog Gauges

**EMS100** Analog Engine Monitoring System

Maretron's EMS100 plugs directly into engine wiring harnesses and converts analog signals such as water temperature and oil pressure to the new marine digital interface (NMEA 2000®). Critical engine data is then distributed throughout the vessel over a single cable where it can be monitored by any NMEA 2000® compatible display.

The EMS100 is compatible with existing instrument panels and key switches so you don't need to remove them while upgrading to newer digital technology. For new installations, the EMS100 and a compatible NMEA 2000® display can replace the traditional analog instrument panel.

The EMS100 provides these functions:

- Tachometer
- Engine Hours
- Coolant Water Temperature
- Engine Oil Pressure
- Boost Pressure
- Charging Voltage
- Drive Trim
- Fuel Filter Alarm
- Boost Alarm
- Coolant Water Level Alarm
- Engine Oil Pressure Alarm
- Exhaust (Salt Water Flow) Alarm
- Coolant Water Temperature Alarm

The EMS100 is compatible with these Yanmar engines (other engines supported soon, check our web page [www.maretron.com](http://www.maretron.com)):

- GM Series
- YM Series
- JH Series
- LH Series
- LP Series
- LY Series

**Products**

PART NUMBER	DESCRIPTION
EMS100-01	Analog Engine Monitoring System
EMSWH01	Yanmar Harness

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Leading the way in NMEA 2000 standards

[www.maretron.com](http://www.maretron.com) | 1-866-550-9100

# Fluid Flow Monitor (FFM100)

- Monitors Two Independent Flow Meters (Gas Engines) or Two Flow Meters Associated with Single Diesel Engine
- Flow Meters Powered Directly from NMEA 2000® Network
- True Temperature Compensation with Built In Thermistors
- Reverse Flow Detection and Compensation Due to Lift and Injector Pump Pulsations
- Positive Displacement Meter Doesn't Require Flow Conditioning Like Turbine Meters (i.e., Pulsation Dampers and Straighteners)
- Accessory Fuel Flow Meters



## FFM100 Fuel/Fluid Flow Monitoring

Maretron's FFM100 provides precision fuel flow information to help optimize fuel consumption, which can save thousands of dollars in fuel operating cost. The FFM100 uses state-of-the-art, positive displacement metering technology for unprecedented accuracy. In fact, the accuracy of the FFM100 is nearly that of commercial vessel systems costing tens of thousands of dollars, yet the FFM100 costs less than existing recreational systems found on the market today. Additional benefits of the positive displacement metering technology are the elimination of flow conditioning components such as straighteners and pulsation dampers. Other increase technologies require flow conditioning components that increase system and installation cost. The FFM100 also uses true temperature compensation with embedded temperature sensors within the meters. The returning fuel is generally hotter than the supply fuel and if not properly compensated, inaccuracies as much as 5% can occur in computing the engine's fuel consumption. The FFM100 also detects momentary reverse flow in the fuel lines due to fluctuating pressure caused by the injection pump. Less accurate systems count the reverse fuel flow as part of the consumed fuel where the FFM100 properly accounts for momentary reverse flow. Lastly, the FFM100 can be used for fluid types other than fuel (e.g., water, oil, etc.) by ordering the appropriate flow sender.

**Products**

PART NUMBER	DESCRIPTION
FFM100-01	Fuel Flow Monitor
M1RSP-2R-EB	Fuel Flow Sender 20 to 200 HP (0.53 to 26.4 GPH, 2 to 100 LPH)
M2RSP-2R-EB	Fuel Flow Sender 200 to 1000 HP (4 to 132 GPH, 15 to 500 LPH)
M4RSP-2-EB	Fuel Flow Sender 1000 to 3000 HP (48 to 396 GPH, 180 to 1500 LPH)



The following accessories are available for the FFM100:





- FFM100 converts a variety of flow senders (e.g., fuel, water, etc.) to NMEA 2000® Network Data
- All flow senders ordered separately depending on application (i.e., single fuel flow sender for gas engine, dual fuel flow senders for diesel engine, water flow sender for sea water, etc.) reduced fuel operating cost
- Fuel flow senders to facilitate fuel consumption optimization for reduced fuel operating cost
- Fuel flow senders use positive displacement metering technology for superior accuracy over other measurement technology such as turbine meters
- Fuel flow senders do not require costly fuel conditioning components like flow straighteners and pulse dampers
- Fuel flow senders implement true temperature compensation with precision built-in thermistors for increased accuracy
- Fuel flow senders automatically detect reverse flow due to fluctuating pressure difference from injection pumps
- Fuel flow senders pass particle sizes up to 70 micrometers (diesel fuel filters normally filter down to 2 micrometers to prevent clogging injectors)



Vessel Monitoring & Control Systems

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# J1939 to NMEA 2000® Gateway

- Attaches to Any J1939 Engine, Transmission, or Genset
  - ✓ Caterpillar, Cummins, Detroit Diesel, John Deere, Kohler, Northern Lights, Onan, Perkins, Steyr, Volvo Penta, Yanmar, etc.
- Converts Following J1939 Data to NMEA 2000® for Display on Compatible Equipment (Furuno, Garmin, Maretron, Raymarine)
  - ✓ AC Generator Current, Freq, & Voltage, Tach, Hours, Coolant Pressure & Temp, Oil Pressure & Temp, Fuel Rate, etc.
- Interfaces to Dometic AC and Icemakers
  - ✓ Observe and Set Room Temperature, Control Modes and Fan Speeds

## J2K100 J1939 to NMEA 2000® Gateway

Maretron's J2K100 attaches directly into J1939 networks of compatible engines, transmissions, and gensets and converts the J1939 data to the new marine digital interface (NMEA 2000®). Critical engine, transmission, and genset data is then distributed throughout the vessel over a single cable where it can be monitored by any NMEA 2000® compatible display.

The J2K100 can also be used as part of a complete fuel computer. Simply connect the J2K100 together with Maretron universal displays (DSM200/DSM250/N2KView®) and GPS antenna/receiver (GPS100) and you have a system capable of displaying gallons per hour and/or miles per gallon.



The J2K100 converts the following information:

- AC Generator Current
- AC Generator Frequency
- AC Generator Voltage
- Tachometer
- Engine Hours
- Coolant Pressure
- Coolant Water Temperature
- Engine Oil Pressure
- Engine Oil Temperature
- Boost Pressure
- Fuel Rate Monitoring
- Charging Voltage
- Percent Engine Load
- Percent Engine Torque
- Rated Engine Speed
- VIN
- Software ID
- Transmission Gear
- Transmission Oil Pressure
- Transmission Oil Temperature

The J2K100 is compatible with any engine, transmission, or genset equipped with a J1939 interface, including products from the following manufacturers:

- Caterpillar
- Cummins
- Detroit Diesel
- John Deere
- Kohler
- Northern Lights
- Onan
- Perkins
- Steyr
- Volvo Penta
- Yanmar



Products	
PART NUMBER	DESCRIPTION
J2K100-01	J1939 to NMEA 2000® Gateway
MF-3M-01	J2K100 adaptor Micro female to Distributor 4 Pin 2 Meter Cordset
CF-2M-012	J2K100 adaptor Micro female to Distributor 12 Pin 2 Meter Cordset
MF-3M-012SR	J2K100 adaptor Micro female to Distributor 12 Pin 2 T cable

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