

Parameters and Counters:

hourly fuel consumption rate;

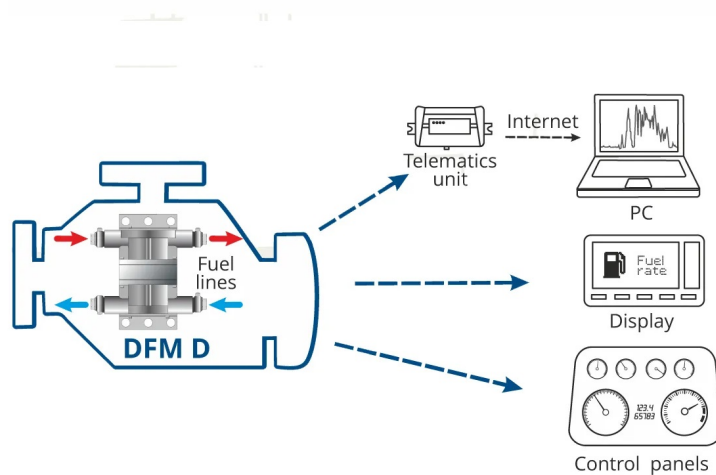
engine mode by fuel rate;

fuel temperature;

total fuel consumption and engine working time;

total fuel consumption and engine working time – “Idle”, “Optimal”, “Overload”, “Cheat”, “Interference” operation mode ;

total fuel consumption – feed and reverse chamber.



Exceptional features:

Inbuilt battery – data recording without external power supply.

Configuration over Bluetooth – using smartphone and service adapter.

Inbuilt mud filter – additional protection of measuring chamber.

Event recognition:

- cheating (tampering) fuel consumption counter,
- interference time into flow meter's normal operation,
- ignition on/off.

Trip fuel reset.

Applications:

- Fuel consumption on river vessels, boats, ships.
- Engine performance testing.
- Engine time monitoring to proactively signal maintenance.
- Real-time fuel monitoring and consumption reduction.
- Fuel theft detection and prevention.

Specification

Model	Consumption in each chamber, L/H			Interface
	MIN	MAX	HP* version, MAX	
DFM 100D	10	100	–	K – pulse output, 232 – interface RS-232, 485 – interface RS-485, CAN CAN – interface CAN NMEA – interface NMEA
DFM 250D	50	250	350	
DFM 500D	100	500	600	

1 DFM D general information and technical specifications

1.1 Purpose of use and application area

DFM D fuel flow meters are designed for fuel consumption measurement directly in fuel line of engines.

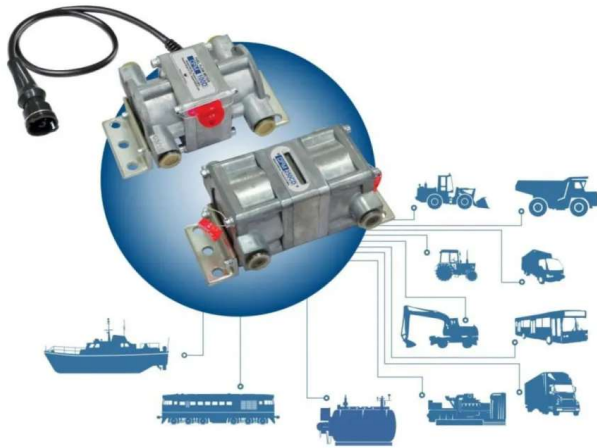


Figure 2 — DFM D purpose of application

Application area — DFM D differential fuel flow meters are used both as a part of Telematics system and as a stand-alone solution.

DFM D with pulse output interface provide data on actual fuel consumption of engine (overall fuel consumption and average instant fuel consumption).

DFM D with digital output interface provide real-time control over extended set of information:

- instant fuel consumption;
- engine operation time – overall and in different engine operation modes;
- fuel consumption – overall and in different engine operation modes;
- voltage in on-board power network;
- total operation time of flow meter and duration of power-supply from embedded battery;
- flow meter's malfunctions;
- evidence of interference to flow meter's operation.

* Only for DFM DCAN.

Using J1939 output protocol makes possible DFM DCAN operation as a part of **S6** Telematics interface together with DUT-E DCAN fuel level sensors and other factory-built or additional equipment (see figure 3 b). Tracking device with a single CAN interface port can receive data from up to 8 DUT-E CAN sensors and up to 8 DFM DCAN meters. This possibility is especially useful with several engines (river boats, locomotives, technological machinery, diesel genset stations) are equipped.

Use of DFM D provides owners with the following:

- actual fuel consumption records;
- registration of machinery working time;
- normalizing of fuel consumption quotas;
- fuel theft detection and prevention;
- real-time monitoring and fuel consumption optimization;
- fuel consumption tests for engines.

1.2 Exterior view and delivery set



- | | |
|--|---------|
| 1 DFM D differential fuel flow meter | – 1 pc; |
| 2 7.5m connection cable CABLE DFM 98.20.003 (7.5 m) * | – 1 pc; |
| 3 Fuse with holder (2 A) ** | – 1 pc; |
| 4 Verification certificate | – 1 pc; |
| 5 Specification | – 1 pc. |

Figure 3 — DFM delivery set

1.3 DFM D modifications

Dual-chamber (bidirectional or differential) fuel flow meters measure fuel consumption as the difference in volume of fuel flowing through the supply and return fuel lines.

- The following modifications of dual-chamber meters with output interface are available:
 - differential meters with pulse output;
 - differential meters with digital output interfaces.
- Differential autonomous meters with display.

1.3.1 Differential fuel flow meters with interface cable

Dual-chamber differential fuel flow meters with interface cable (**DFM DK/D232/D485/DCAN** models) (see figure 4) are used for fuel consumption measurement in automated monitoring and fuel consumption control systems with modern diesel engines EURO (TIER) 3/4/5.



Figure 4 — Exterior of differential fuel flow meters with interface cable

DFM D has two LED indicators on its body. Flashing light signal indicates the correct operation of each of the measuring chambers.

Differential meters calculate fuel consumption as the difference in volume of fuel flowing through the supply and return fuel lines. Data is sent out via pulse output interface (**DFM D**).

RS-232 (**DFM D232**), RS-485 (**DFM D485**), CAN 2.0B (**DFM DCAN**) digital interfaces contain fuel consumption data together with Counters values, data on engine operation modes, flow meter settings and malfunctions, Events.