

FUEL VIEW

The compact and light weight fuel flow meter for monitoring fuel consumption

> Introduction

Mass Flow ONLINE B.V., sells flow measuring and controlling products through the internet. From the website www.massflow-online.com flow meters or controllers can be ordered 24 hours a day 7 days a week. Most products are on stock and will be shipped world wide within two working days.

> Description

The new FUEL-VIEW series of flow meters offer a compact, light weight and very cost-effective solution for measuring fuel consumption and operating time of vehicles, tractors, river vessels or any mobile or fixed installations with diesel engines. Its unique features for protecting and preventing theft of fuel, the protection against overstatement of readings and intervention and the patented method of measuring different engine operating times makes FUEL-VIEW the best solution on the market today. The FUEL-VIEW offers a local display and has several secure onboard counters that can be operated via the selector magnet as supplied rather than by user contact.

> FUEL-VIEW series

The FUEL-VIEW series operate on the principle of a rotary piston that is mounted into a chamber ring which rotates in a chamber case. The rotating speed is measured by electronic sensors which measure a magnetic pulse. The number of pulses in time is proportional to the fuel flow rate. The unique design of the flow meter allows fuel flow, even if the chamber is locked or clogged up. A fuel filter effectively protects the measuring chamber from contamination and can be removed and washed without disassembling the flow meter. FUEL-VIEW flow meters can be supplied in full scale ranges from 50 l/h up to 400 l/h with the standard configuration being a blind meter together with a signal cable. As an option, an LCD display allows reading of actual flow [l/h], total flow consumption [l], total engine operating time [h], engine operating time in "idling", "optimal" and "overload" mode. The instruments can work with an external power supply or with an embedded battery. We have a differential fuel flow meter for special applications. This meter has a separate input and output connection for the supply and return line to measure the consumption of the fuel.



> FUEL-VIEW features

- ◆ Indication in:
 - Actual flow (l/h)
 - Consumption in "normal" mode (l)
 - Consumption in "tampering" mode (l)
 - Engine operating time (h)
 - Engine "idling" time (h)
 - Engine "optimal" time (h)
 - Engine "overload" time (h)
 - Interference time (h)
- ◆ Strong metal moulded case
- ◆ Flow meter design provides a fuel flow even when measuring ring has stopped, for example, by clogging the chamber
- ◆ Ease of mounting and operation
- ◆ Special model for measuring the difference (consumption) between supply and return line
- ◆ Protection from overstatement of readings and intervention
- ◆ Mounting in any position
- ◆ Wide flow ranges
- ◆ Built-in fuel filter
- ◆ Optional pulse output with external power
- ◆ Extended work range and accurate measurement ensured by digital processing of signal
- ◆ Stable to vibrations and hydraulic shock
- ◆ Wide clearing section minimizes hydraulic resistance of fluid flow
- ◆ Sustainable product design
 - Battery powered model available and low battery indication
 - Low power consumption
 - Lightweight and compact

> Technical specifications

Performance

Acceptable liquids	: diesel fuel, petrol*, mineral oil. <i>Other liquids with kinematic viscosity from 1.5 to 6mm²/sec are possible but maximal flow rate could be lower than the specified flow range and pressure drop over the instrument can be higher.</i>
Operating pressure	: 2 .. 25 bar(a)
Operating temperature	: -40 .. 80°C for flowmeters with blind cover -20 .. 60°C for flowmeters with display
Accuracy	: DFM-400, ± 2%RD DFM-250D ± 0.5%RD per chamber; all other models, ±1%RD
Rangeability	: up to 1:50
Repeatability	: <0.1% RD typical
Humidity	: 95% at environmental temperature of 40°C
Vibration	: with acceleration of 100 m/s ² in frequency range of 5 .. 250 Hz
Aggressive environment	: steady to fuel and lubricant materials

Mechanical specifications

Materials (wetted parts)	: housing: Zinc-Aluminium alloy (ZA4) O-ring: aluminium gasket: oil-resistant rubber chamber bridge: steel bushing with magnets: plastic mud filter: plastic and steel grid chamber cover: Zinc-Aluminium alloy
Protection	: IP54

Electrical specifications

Output	: scaled pulse, Min. 0.7V, Max. U _{supply}
Power	: Battery powered if LCD screen is present (2 years of life)
External power supply	: 10 ... 50 Vdc
Current consumption	: For 12 Vdc - 50 mA For 24 Vdc - 25 mA

Process connections (in/out)

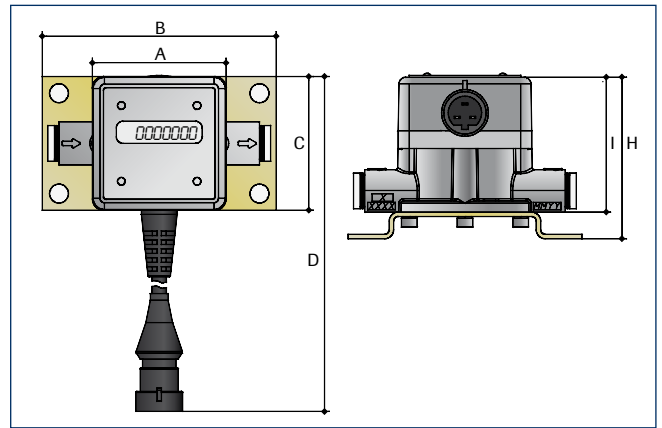
Each model has an R female M14 x 1.5 thread. Optional connection kits are available.

*DFM fuel flowmeters are manufactured of petrol-proof materials.
While working with petrol, national legislation safety measures must be applied.



Wired FUEL-VIEW meter with selector key

> Dimensions



Model	A	B	C	D	H	I
DFM-50	60	105	60	260	80	65
DFM-100	60	105	60	260	80	65
DFM-250	60	105	60	260	90	75
DFM-250D	120	160	90	260	72	60
DFM-400	60	105	60	260	90	75

> Model number identification

DFM - NNN A - A

Capacity

50	50 l/h
100	100 l/h
250	250 l/h
400	400 l/h

Wired output

no wired output
K normalised pulse

Functionality

A	blind cover
B	cover with LCD screen
C	cover with LCD screen, extended functionality
D	blind cover, differential fuel flow meter

> Flow ranges

Modelcode	Nom. diameter	Min. Flow	Nom. Flow	Max. Flow	Scaled pulse (ml/pulse)	Engine power (kW)
DFM-50	6 mm	1 l/h	25 l/h	50 l/h	5	80
DFM-100	6 mm	2 l/h	50 l/h	100 l/h	5	150
DFM-250	8 mm	5 l/h	125 l/h	250 l/h	12.5	300
DFM-250D	8 mm	25 l/h	125 l/h	250 l/h	12.5	300
DFM-400	10 mm	30 l/h	200 l/h	400 l/h	20	> 300

> Counter modes

	Operating mode	Flow rate	B*	C*
Normal Flow Rate	Idling mode	0 < Q < 0.1 Q _{nom}		•
	Optimal mode	0.1 Q _{nom} < Q < 1.5 Q _{nom}		•
	Overload mode	1.5 Q _{nom} < Q < 2 Q _{nom}		•
Tampering Rate	Tampering mode	2 Q _{nom} < Q < 10 Q _{nom}	•	•
	Air blowing submode	Q > 10 Q _{nom}	•	•

* Corresponds to the model number.

> FUEL-VIEW counters

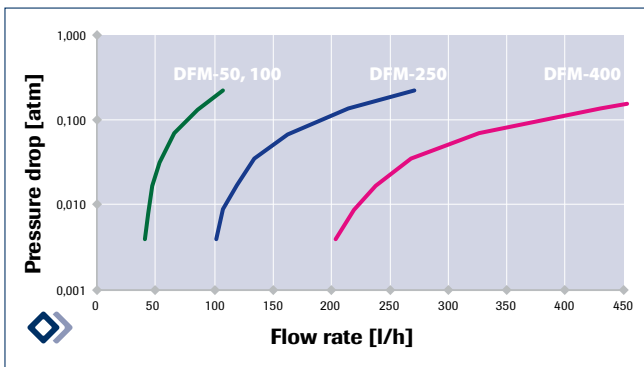
Counter	Resolution	Maximum value	B*	C*
Total fuel consumption	0.1 litre	9999 litre	•	•
Total fuel consumption increased resolution	0.001 litre	999 litre	•	•
Total fuel consumption in "tampering" mode	0.1 litre	9999 hour	•	•
Total engine time in "interference" mode	0.1 hour	9999 hour	•	•
Total engine time	0.1 hour	9999 hour		•
Total engine time in "optimal" mode	0.1 hour	9999 hour		•
Total engine time in "idle" mode	0.1 hour	9999 hour		•
Total engine time in "overload" mode	0.1 hour	9999 hour		•

* Corresponds to the model number.

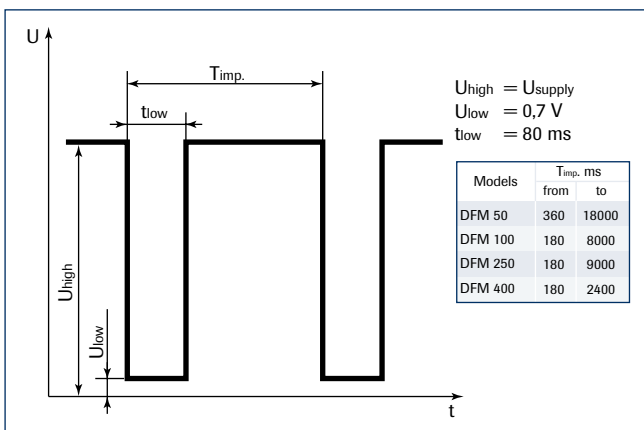
> Interference protection

Interference	security method
Blowing with air	If flowrate is higher than 10 x nominal flowrate the "fuel consumption counter" does not count but the "air blowing submode" counter counts.
Magnetic field interference	Special reed switch is activated when exposed to static magnetic field interference for more than 5 seconds and the time of interference is counted by "interference time" counter.
Supply power switched off	Embedded battery supplies autonomous operation of the flowmeter up to 2 years.
Disconnection from the fuel system	Installation kit elements have openings for sealing.

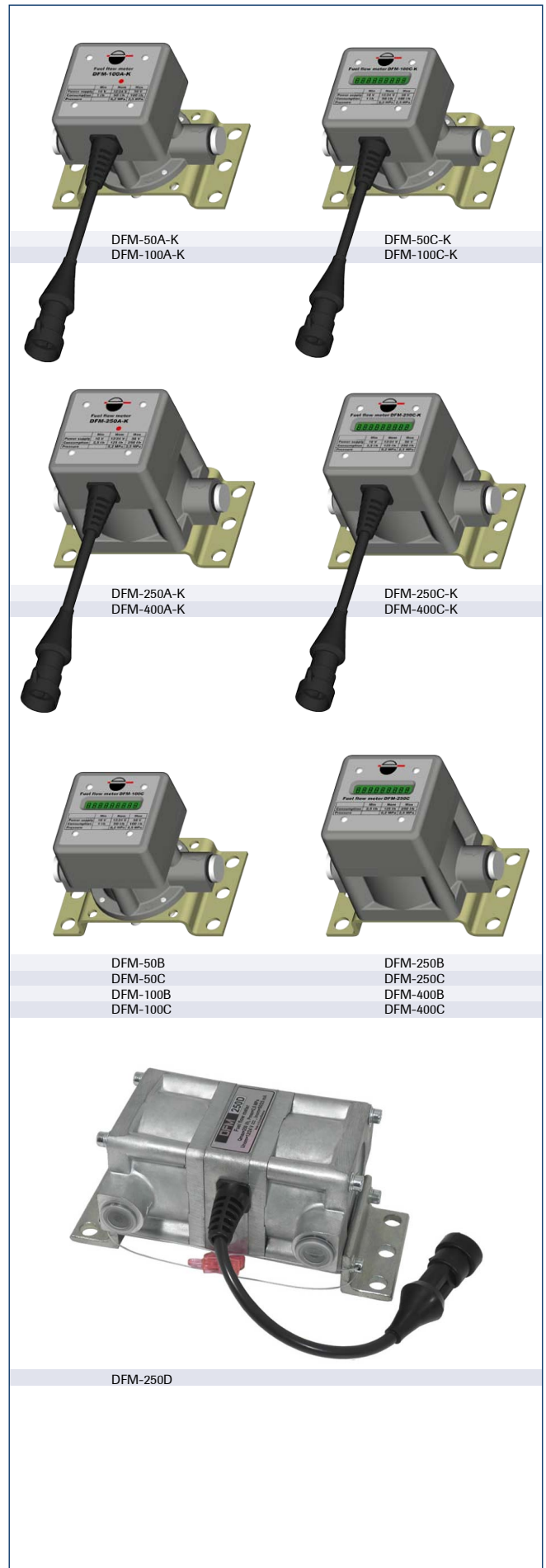
> Pressure drop



> Impulse parameters



> DFM models



> Applications

- ◆ Fuel consumption on:
 - vehicles
 - river vessels
 - diesel generators
 - burners/boilers
- ◆ Engine performance testing
- ◆ Engine time monitoring to pro-actively signal maintenance
- ◆ Real-time fuel monitoring and consumption reduction
- ◆ Signalling fuel theft

> Fuel flow meter mounting kits



Purpose

Mounting kit № 2 is a multipurpose kit and is designed for connection of the fuel flow meters DFM to the fuel system or engine using the fuel pipe $d=8$ mm.

To ensure minimal resistance to the fuel flow is recommended to use multipurpose mounting kit № 4, designed for the fuel tube $d=10$ mm.

Advantages

- ◆ Unions, valves, bolts of a rotary square have bores for sealing;
- ◆ High-quality components: seal rings (D18-055F) and sealing washer (08 Cu) made of high quality soft copper (not aluminum!); square rotary - from a steel (not aluminum!), calibrated valve, mounting kit components have corrosion protection.

Attention! The longevity and accuracy of the fuel flow meters depend on mounting kit components quality.

The manufacturer reserves the right to put changes in the composition of sets, as well as replace the components to similar without notice to the buyer.

> Mounting kit parts

Form	Symbol	Name	Kit №2	Kit №4
	Screw 026	The square rotary screw	3 pcs	3 pcs
	Screw 027	The square rotary screw	1 pc	1 pc
	Screw M8x16	Screw	4 pcs	4 pcs
	Nut M8	Nut	4 pcs	4 pcs
	Washer 8	Washer	4 pcs	4 pcs
	Washer 8.65G	Lock washer	4 pcs	4 pcs
	Washer CU D-18	The sealing washer copper	16 pcs	6 pcs
	Washer CU 2026	The sealing washer copper	1 pc	1 pc
	K1	The return valve	1 pc	1 pc
	K2	The bypass valve	1 pc	1 pc
	TR 8	The rotary angle	8 pcs	-
	TR 10	Anchor with a ring tip	-	8 pcs
	Clamp 008	The worm clamp	8 pcs	8 pcs
	Connection 012	Connection-adapter double	1 pc	1 pc
	Connection 015	Connection-adapter unary	1 pc	1 pc
	Connection 016	Connection-adapter unary	1 pc	1 pc
	Connection 016-01	Connection-adapter double	1 pc	1 pc
	Stopper	The carving stopper	1 pc	1 pc

Bronkhorst distributor



MASS-FLOW ONLINE BV
www.massflow-online.com