Fuel flow sensor

Direct

Key benefits

- **High-precision measurement**
- Built-in temperature compensation
- High corrosion resistance
- **Strong** electronic circuit protection
- Sealed automobile connector on **sensor body**
- Magnetic field immunity

Application

- Engine fuel consumption monitoring;
- Fuel consumption rationing;
- Detecting and preventing theft of fuel;
- Real-time monitoring and optimization of fuel consumption;
- Engine fuel consumption testing.

Output Interfaces Available

Delta PN – Pulse Output
Delta RS – Serial Interfaces RS485 (Delta and Modbus RTU protocol support)
Delta CAN – Interface CAN J1939 (extended)

Technical data

Connecting thread	M14x1,5
Max pressure	2,5
Power voltage, V	10 – 50
Reverse polarity protection	Yes
Measuring accuracy*	±1%
Temperature range,°C	-40 - +85
Maximum flow rate in l/h**	500
Output interface	ISO 9141
Seal rating	IP 67

* — 2% for Direct PH
** — depends from modification

- There are several Direct modifications with max flow rate **100, 250, 500** litres/hour
- Built-in temperature compensation
- Smart CPU and several Hall-effect sensor allows to detect the direction of fuel flow. No need to install check valves.

Accessories

6m Cable included	T-Cable (extra)	Display F1 (extra)	Mounting kit (extra)

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BELL
Flow Systems

Fuel flow sensor

Direct RS / CAN

Key benefits

- **High-precision measurement**
- Built-in temperature compensation
- High corrosion resistance
- **Strong** electronic circuit protection
- Sealed automobile connector on **sensor body**

Application

Direct allows solving the following tasks:

- Engine fuel consumption monitoring;
- Fuel consumption rationing;
- Detecting and preventing theft of fuel;
- Real-time monitoring and optimization of fuel consumption;
- Engine fuel consumption testing

Fuel flow sensor Direct may be used both with vehicle tracking system and fuel monitoring system.

Technical data

Connecting thread	M14x1, 5
Max pressure	2.5 MPa
Power voltage, V	10 – 50
Reverse polarity protection	Yes
Measuring accuracy	±1%
Temperature range (°C)	-40 – +85
Maximum flow rate in l/h	**500***
Output interface	RS-485 or CAN J1939
Configuration interface	**ISO 9141**
Seal rating	IP 67

* Depends from modification

- There are several Direct modifications with max flow rate **100, 250, 500** litres/hour
- Sensor sends to CAN bus: fuel consumed since engine start, total fuel consumed, time of engine operation, instant fuel consumption, fuel temperature.
- All these parameters are standard CAN bus J1939 messages.

6m Cable included   T-Cable (extra)   Display RS / CAN (extra)   Mounting kit (extra)

Fuel flow sensor

Direct PN (RS / CAN) *Software counters: Modes*

Sensors independently take into account the amount of fuel (and in the presence of the screen and display) which flowed through them and spent a vehicle or unit in one of the following modes of work:

Idling - Vehicle virtually no useful work or works without a load. It can be classified as simple or inefficient use.

Optimal - Vehicle runs on rated speed, and perform useful work in accordance with the manufacturer's equipment. It can be classified as correct and economical to use.

Overloading - Vehicle operates at higher speeds, performs useful work in accordance with the manufacturer's technology, but it works in the inefficient modes. It can be classified as improper or wasteful use of machinery or work in difficult conditions. Operation in this mode can lead to equipment malfunction or saying that already have trouble.

Tamper - through the flow sensor passes over a large flow of fuel (flow rate is much greater than the set maximum value), which can be classified as a targeted increase of fuel consumed. Maybe even the use of compressed air for this purpose. Indications of this counter can only tell that the flow sensor worked in an evanescent mode, and these readings are not included in the total.

Reverse direction - work with the wrong sensor is connected to the fuel line (against the arrow indicating the direction of flow) or the presence of strong water hammer in the fuel line. This mode is possible thanks to software control the direction of rotation of the inner ring of the sensor. This is a unique feature that is only in the flow sensor eurosens.

The total volume - the volume of fuel which flowed through the flow sensor eurosens within acceptable operational modes, and is the sum of the volumes in the idle mode, the optimal mode, the overload mode.

Intervention time - the time during which an attempt was recorded the impact on the flow sensor by a strong magnetic field.

Important! Consumption thresholds for each mode are given in a special configuration software.

Fuel flow sensor with Built-in Display

Direct PN I

Software counters:
List Information on LCD

№	Counter	Measuring unit	Step
1.	Fuel: Volume Total	l	0.01
2.	Fuel: Volume Idle	l	0.01
3.	Fuel: Volume Optimal	l	0.01
4.	Fuel: Volume Overload	l	0.01
5.	Fuel: Volume Tamper	l	0.01
6.	Fuel: Volume Reverse direction	l	0.01
7.	Time: Total	h	0.01
8.	Time: Intervention	h	0.01
9.	Fuel: Flow rate	l/h	0.01
10.	Fuel: Temperature	°C	0.1
11.	Battery: Charge	%	
12.	Firmware: Version		