email: tziecik@zimetronic.com
www.zimetronic.com

Fuel flow meter MTF-4 i MTF-8

Features:

- whole system accuracy + / - 1.5%
- maximum flow of 80 l/h and 200 l/h (MTL-4 and MTL-8)
- digital output (230 V reed switch 0,005 l/pulses for MTF-4 and 0,0125 l/pulses for MTF-8)
- integrated deaerator
- waterproof and resistant for bad conditions
- easy to clean fuel filter
- temperature measurement in flowmeter chamber as option

1. Application

Motoflow MTL and MTL-4-8 is a device used to measure the actual fuel consumption of vehicles with diesel engines. It is used in fleet management systems and fuel consumption control systems. This is the most accurate way to control against fuel thefts and improper use of vehicles (eg, too much engine load). Fuel gauges MTL-4 and MTL-8 can be used with any fleet management system.

MTL-4 and MTL-8 can be used in:
- trucks
- buses
- tractors
- construction machinery
- vans and cars
- stationary diesel

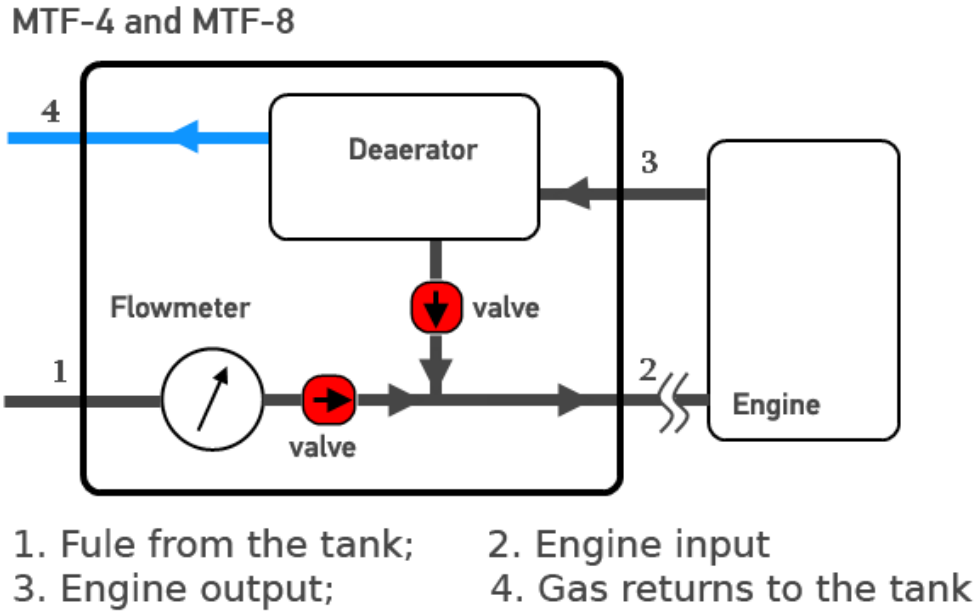
The device can be to installed for common rail engines (CUMMINS) with some experience in installation if fuel flow does not exeed maximum parameters of MTF flowmeter.

2. Principle of operation

The measuring instrument in the device is a Swiss precise flow meter that counts used fuel dose. Measurement device uses the principle of returning the fuel from the engine to the engine input. The fuel from the tank flows through the flow meter where it is counted. Part of the fuel is burned by the engine and the remainder returns to a special chamber of the meter. Chamber with an integrated deaerator removes gas from the fuel to prevent foaming. Foam on engine input can cause improper engine operation. When the chamber is filled with the fuel, the fuel is fed to the engine again. This way only the fuel that has actually burned by the engine is counted.

email: tziecik@zimetronic.com
www.zimetronic.com

Way of the fuel is secure by appropriate pressure valves that control the flow and prevent backflow of the fuel flow meter.



This method of measurement unlike the commonly used differential flow measurement is accurate regardless of the quantity actually combusted fuel. Average accuracy of the differential flow solutions is up to ten times greater. Please note the influence of temperature difference between the input and output return. Both the fuel and the flow chamber changes size with the increase of this difference, which significantly affects the differential flow accuracy. The method of returning the fuel used in our meter eliminates the effect of high temperature heat exchange returning fuel and supply fuel temperatures. In addition, this method allows to eliminate the problem of foaming in the engine return which is very troublesome problem in differential flow meters.

Fuel flow meter as a measuring instrument is extremely sensitive to any contamination. Dirt such as a metal chip is able to damage the flow meter by damaging a sealed chamber in which the dosing piston works.

Because of this flow meters should not be used without prior thorough filtration. Our meters are equipped with integrated filters to prevent damage and blocking the flow meter. The first filter in the fuel circuit is a filter that traps larger dirt particles. Just before the entrance to the flow meter there is a second filter with special grid mesh that provides protection for the meter.

The accuracy of the meter is significantly dependent of a leakage. Air bubbles passing through the flow meter cause a very large measurement errors. The meter is developed in such a way that all its components provide a total tightness of the system.

email: tziecik@zimetronic.com
www.zimetronic.com

3. Technical specification

Measuring instrument is suitable for use with petroleum fuels. It can not work either with water or air. The flow meter provides accurate measurements for the parameters:

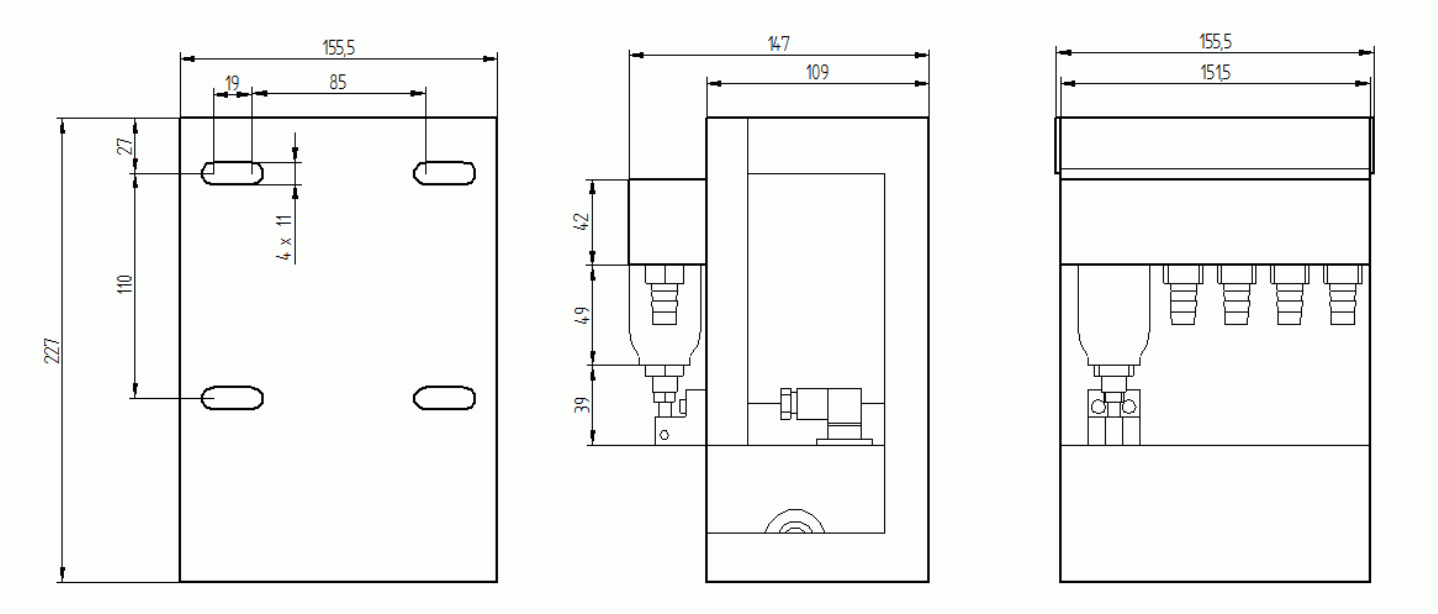
Model:		**MTF-4**	**MTF-8**
Nominal pressure		32 bar	25 bar
Maximum operating temperature	T_{max}	60°C	60°C
Maximum flow rate	Q_{max}	80 l/h	200 l/h
Nominal flow rate	Q_{cont}	50 l/h	135 l/h
Minimal flow rate	Q_{min}	1 l/h	4 l/h
Approx. starting flow rate		0.4 l/h	1.6 l/h
Maximum measurement error		+/- 1%	+/- 1%
Repeatability		+/- 0.2%	+/- 0.2%
Safety filter mesh size		-	0.150 mm
Dirt filter mesh size		0.080 mm	0.100 mm

Meter as a whole system ensures accuracy within + / - 1.5%.

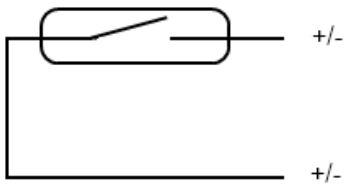
The meter has a powder coated housing, which provides easy installation of the system in the vehicle. The device is small and modular. All connections to the fuel circuit can be provided with 10 mm or 12 mm diameter outlets (depending on your needs).

Our meters are made from high quality materials ensure resistance to bad working conditions. The system has been designed to minimize exposure to water and corrosive salt. The measuring element is carefully protected and enclosed in a solid aluminum chamber.

email: tziecik@zimetronic.com
www.zimetronic.com



The device has digital output and can be used in all fleet management systems. Each pulse corresponds to the appropriate dose of used fuel. Basic electrical parameters shown in the table below:



Model:	**MTF-4**	**MTF-8**
Fuel dose per liter	0.005 l/pulse	0.0125 l/pulse
Pulse frequency for Q_{max}	4.444 Hz	4.444 Hz
Pulse frequency for Q_{min}	0.056 Hz	0.089 Hz

Reed switch parameters:	
Switching element:	Reed switch with dry contact (inert gas)
Switching voltage:	max. 230 VAC/DC
Switching current:	max. 50 mA
Quiescent current:	Open Contact
Switching power:	max. 3 VA

The meter can be connected to a data logger by pin socket on the side of the meter. It has a 4-pin socket in which 2 are used for flowmeter and the other 2 are free.
As an option additional electronics can be installed inside a chamber with a flow meter (eg. for the temperature measurement).

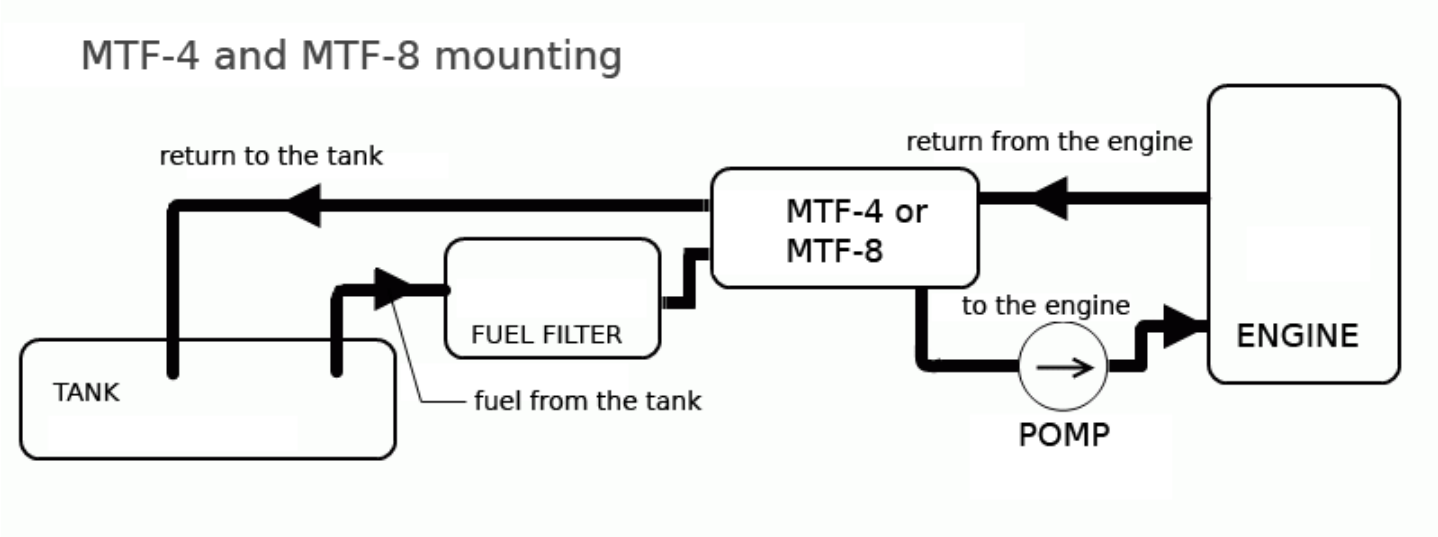
Pinout of socket is shown on the figure:

Top view

1 - reed switch output
2 - reed switch output
3 - free pin
4 - free pin

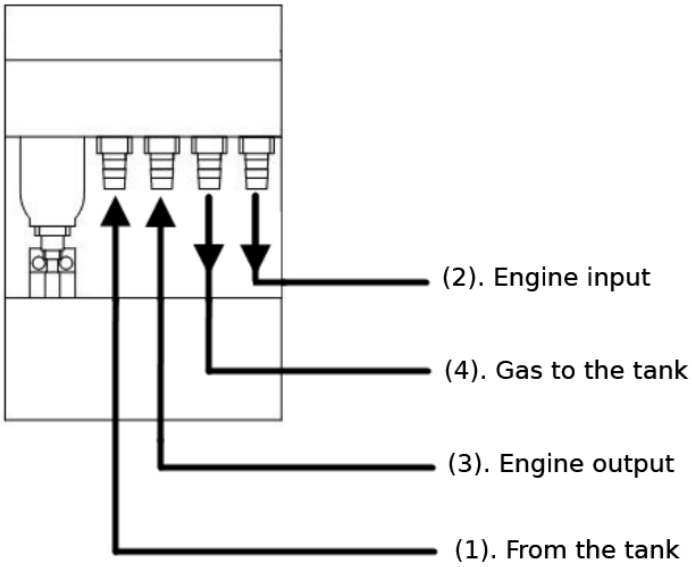
4. Mounting

MTL fuel meter have to be installed according to schema:



email: tziecik@zimetronic.com
www.zimetronic.com

Inputs and outputs of the fuelmeter MTF-4 and MTF-8 is shown in the figure below:



The system must operate in a vertical position due to the deaerator. The correct counting of the fuel meter is guaranteed only if the appropriate tightness of the fuel system is provided. Fuel line have to be secured from getting in the air. Leaks often manifest by the presence of air bubbles in the filter with a glass clarifier. This is a tip for the installer to check the tightness of the system. Poor quality of fuel and pollution can lead to clogged filters. Filter can be cleaned in-house by removing the attachment. Clogged filter at the flow meter (precise filter) must be regenerated or replaced with a new one. To do this contact us. Meters have a modular structure, making it very easy to service them by exchanging proper module.

5. Guarantee

MTF products have 12 month warranty from the date of purchase.
The basis for examining warranty purchase is an invoice.

Device have to be delivered to our company for repairs.
Costs of unjustified complaints borne by the purchaser.

The warranty does not cover cases when:
- Contaminated fuel was used
- The device is not used properly
- There were external mechanical damage