Technical
Information
TI_5004-5008_e_11.18

FUEL FLOW METER
AIC - 5004 / 5008 FUEL FLOW MASTER

Diesel consumption flow meter for engines up to 735 KW (1000 HP) Stationnary fuel flow meter with an accuracy better than 1%

888
Instruktor

900
Veritas

1000

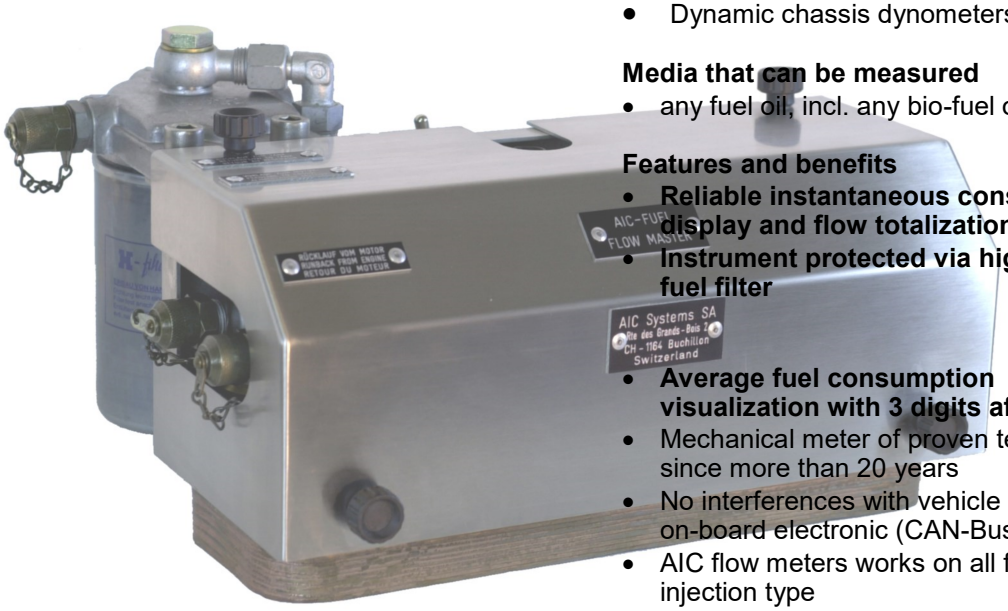
4000
Veritas

**5000
Fuel flow
Master**

6000
Swissline

FS

Board
computers
Remote
totalizers



The AIC-5000 UNIFLOWMETER flow meter has been designed for easy mounting for stationary testing applications.
Made for pulsating liquids, the true consumption of the vehicle engine is measured by switching the return flow from the tank, directly to the fuel supply line.

Application

- Engine Test stands
- Dynamic chassis dynometers

Media that can be measured

- any fuel oil, incl. any bio-fuel oil.

Features and benefits

- **Reliable instantaneous consumption display and flow totalization**
- **Instrument protected via high-end fuel filter**
- **Average fuel consumption visualization with 3 digits after coma**
- Mechanical meter of proven technology since more than 20 years
- No interferences with vehicle existing on-board electronic (CAN-Bus)
- AIC flow meters works on all fuel injection type
- Suitable for engines with fuel injection of latest generation

CE Zertifiziert
EMC geprüft
Laut Euro-Norm
95/54/CE

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Measuring Systems

A complete measuring systems consist of :

- Flowmeter AIC 5004 or 5008
- fuel oil filter (included)
- Signal cable
- 24 VDC Power Supply
- Connection kit (Pipe + Box)

Flowmeter AIC-5004
AIC Ref. S5004.00

Power Supply
230 VAC - 24 VDC

4 x 3.00 m Connection Pipe

Connection Kit

Universal connection kit Ref. S1465.0

Signal Cabel 10 m
AIC Ref. 5710.0

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Measuring principle

Each unit is produced as one module in the interests of simple installation. All holders and housing parts are made of stainless steel or anodized aluminium.

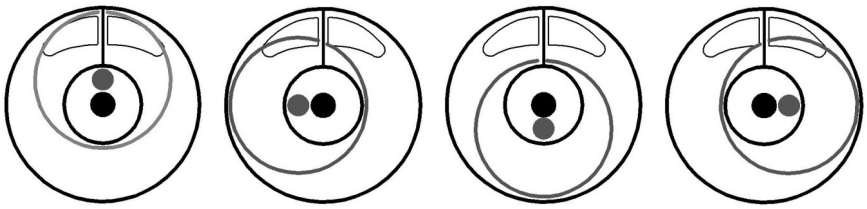
Fuel flow measurement:
The consumption of fuel for engines can be measured by 2 ways :

- Direct (means that there is no fuel returning to the tank, the return flow is reinjected in the fuel circulation flow of the injection circuit.
- Differential (means that the supply and return flow are subtracted. The return fuel flow goes back in the tank.

AIC SYSTEMS Ltd. has strongly developed the best measuring solution : the **DIRECT flow** measurement. This solution allows a true measurement of the fuel flow, within a uncertainty better than +/- 1 % (+/- 0.2 % repeatability). The differential fuel flow allows only an accuracy of best 5 % or worse.

High pulse rate output:
The control and pulse technology is based on the latest SMD technology and is moulded to be water tight and vibration resistant (Pat. AIC). This allows high pulse count per flow quantity unit. The AIC-5004 Swissline Uniflowmaster is supplied with 2000 ppl, and the AIC-5008 Swissline Uniflowmaster is supplied with 804 ppl (pulses per one litre).

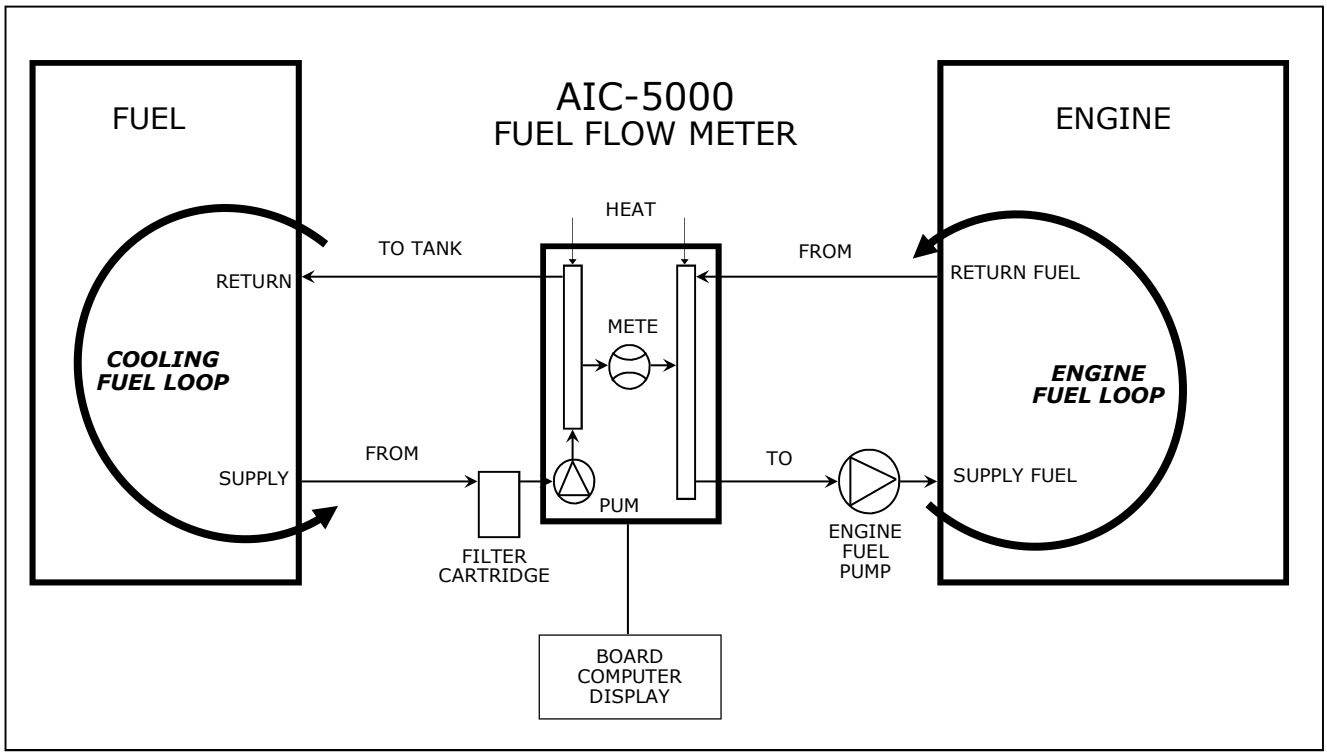
Rotary piston technology:
After decades of experience, AIC SYSTEMS Ltd. make his choice for the most reliable volumetric flow meter technology existing, with the less weir and moving parts.
The rotary piston technology fits the fuel consumption measuring principle perfectly, a single moving piston oscillates softly in a measuring chamber protected by a thin layer of fuel maintaining the piston self floating. This allows the meter to have the less possible mechanical friction. Under normal working conditions the pressure loss ahead of the measuring cell is of max. 100 mbar.



Calibration

Each flow meter unit, is subject to careful calibration at the factory. Customer calibration can also be saved on simple demand.

Operation Principle



The fuel consumption meter AIC-5000 consist of 3 basic parts as shown above : an electric fuel pump, a fuel flow meter and a heat exchanger.
The fuel consumption meter is mounted into 2 fuel loops :

- **fuel loop 1 : tank side**
- **fuel loop 2 : engine side**

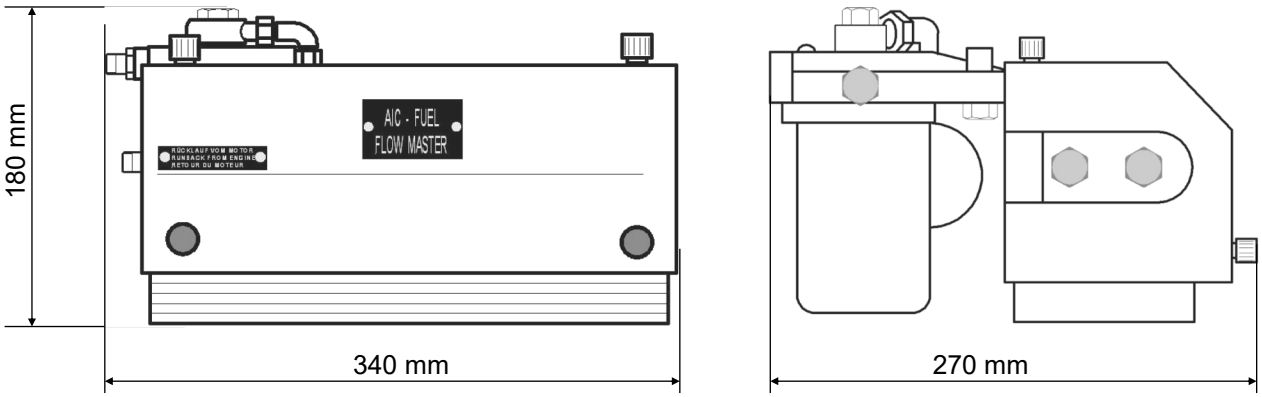
The fuel loop 1 is powered by the fuel pump into the AIC-5000 meter.

The fuel is constantly pumped from the tank through the heat exchanger and back to the tank. This loop is used to cool the engine return fuel.
The fuel loop 2 supplies fuel to the engine.
The warm unburned fuel returns to the AIC-5000 meter, through the heat exchanger to be cooled.

This fuel is then routed back to the engine on the supply line and recirculated. The engine fuel pump keep the fuel circulated continuously.

As the engine operates, the fuel is been consumed from it, and the lack of fuel in loop 2 is than drawing fuel from the loop 1 instantly through the fuel flow meter.
This fuel flow represents the fuel consumption of the engine.

Dimensions



Flowmeter AIC - 5004 FUEL FLOW MASTER

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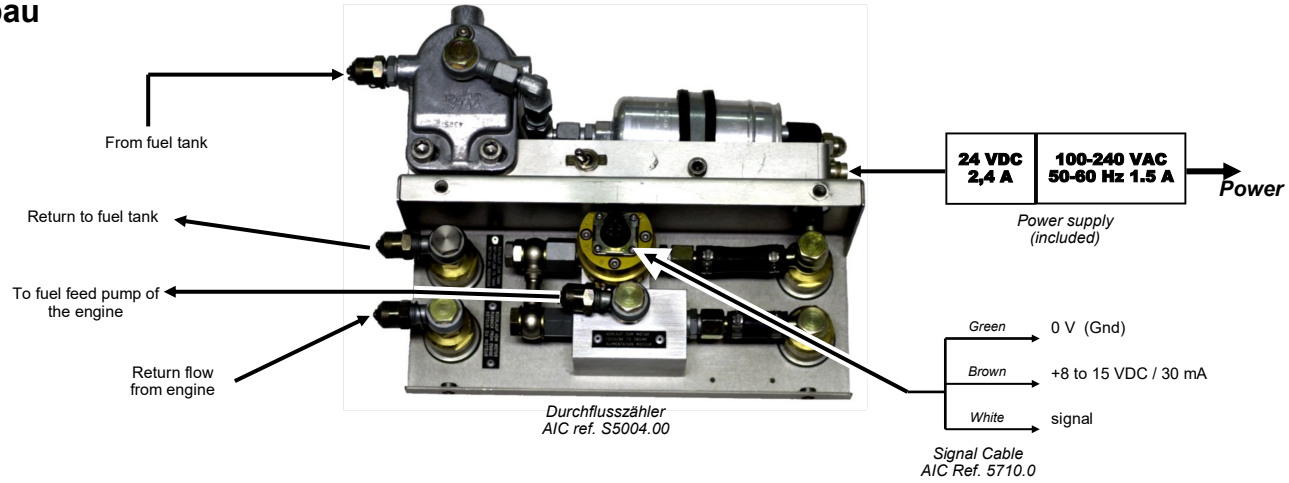
Aufbau



Technical data

AIC 5004 and 5008 UNIFLOWMASTER

General data

Manufacturer	AIC SYSTEMS AG
Product designation	AIC-5004 UNIFLOWMASTER AIC-5008 UNIFLOWMASTER

Mechanical data

Dimensions (L x l x p)	AIC-5004 340 x 180 x 270 mm (incl. filter) AIC-5008 340 x 180 x 270 mm (incl. filter)
Weights	AIC-5004 9,6 kg (incl. filter) AIC-5008 10.1 kg (incl. filter)

Materials

Flow meter sensor	Brass, aluminium
O-rings	Viton®
Connectors	Chrome Steel M 16 x 1,5
Casing	Stainless steel

Flow meter

Measurement Principle	Volumetric, oscillating piston, with microprocessor controlled pulse emitter (Pat. AIC)
Measuring range	AIC-5004 : 1 to 120 l/h AIC-5008 : 4 to 200 l/h
Accuracy	better than 1 % of reading
Repeatability	better than 0.2 % of reading
Admissible pressure	- 1 to 6 bar
Mounting position	vertical
Operating temperature	-30 ... 90°C
Ingress protection	Sensor, IP 67

Electrical connection

Power supply	8 - 25 VDC
Pulse signal	Square pulse, NPN Open-Collector, pulse width 0.7 ms
Pulse rate	AIC-5004 : 2000 ppl AIC-5008 : 804 ppl

Bestell Nummer

Typ	Bezeichnung	Artikel Nr.
AIC 5004 FFM	for engines up to max. 515 KW (700 HP) 2000 ppl, pulse NPN Open-Collector, pulse width 0.7 ms	S5004.00
AIC 5008 FFM	for engines up to max. 735 KW (1000 HP) 804 ppl, pulse NPN Open-Collector, pulse width 0.7 ms	S5008.00
	Option: 12 VDC pompe Bio-Fuel piping	
Zubehör		
Connection kit	Universal connection kit, for 24V power supply (Not for Bio-Fuel).	S1465.24
	Universal connection kit, for 12V power supply (Not for Bio-Fuel).	S1465.12
	For Bio-Fuel connection Kits please contact AIC	
Signal cable	10 m cable connecting the fuel oil meter	5710.10
	10 m cable connecting the fuel oil meter with wires end free	5620.10
Transport box	Protection and easy transport of the flowmeter	460 140

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