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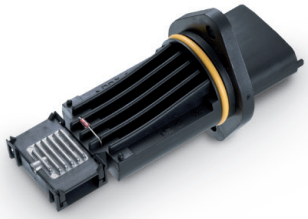
LMS mass air flow sensor

For emission control and motor management

DESCRIPTION

The LMS mass air flow sensor was specially developed for measuring air volume in connection with emission and motor control in vehicles. Based on the measurement principle of a hot film anemometer, the mass air flow sensor consists of temperature sensors and heaters each arranged in pairs. This arrangement permits bi-directional measurement, which makes backflow and pulsations detectable. The modern semi-conductor hot film technology ensures fast response times as well as reliable, stable measurements over the entire life cycle. Application-specific, electronic calibration of the mass air flow sensor also guarantees high precision and a characteristic curve that is fully attuned to the respective system. Its compact design featuring a flange mount not only permits simple integration in the flow channel (pipe), but also guarantees flexible installation in a wide range of systems. The LMS can also be optionally equipped with a temperature sensor for additional measurement of the media temperature.



FIELDS OF APPLICATION	
· Emission and motor control of vehicles · Heating technology · Air conditioning technology · Process control · Gas flow monitoring · Filter monitoring	

KEY FEATURES	BENEFITS
Semi-conductor hot film measurement element	· Fast response time · Reliable, stable measurement over the entire life cycle
Individual electronic calibration	· High level of accuracy · Application-specific characteristic curves · Diagnostic options
Integrated temperature sensor	· Simultaneous media temperature measurement
Compact and robust design with flange connection	· Simple and flexible integration in flow channels (pipes) and a wide variety of systems · Twist-proof installation
Bi-directional flow measurement	· Detection of backflows and pulsations

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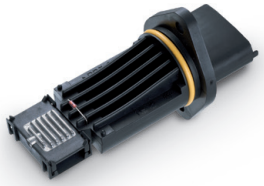
Technical specification

LMS mass air flow sensor



Measurement ranges	
Air mass	0 – 50 … 0 – 3,000 kg/h [1]
Temperature	-30 … 120 °C

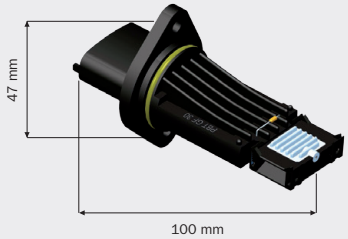
Electrical characteristics	
Supply voltage	12 V (9 … 17 V)
Air mass output signal	1 … 4.85 V, ratiometric to the reference voltage (main flow) 1 … 0.33 V, ratiometric to the reference voltage (backflow)
Temperature output signal	NTC resistance output 2 kΩ (25 °C)
Reference voltage	5 V ± 0.2 V
Overvoltage protection	17 V
Reverse polarity protection	17 V
Diagnostic areas (detected sensor error)	< 4 % and > 97.5 % of the reference voltage

Mechanical characteristics	
Measurement element	Al, Si and Si_3N_4, NiCr, Al_2O_3
Material case	PBT
Mechanical connection	Flange [2]
Electrical connector	Bosch Compact, VDA Task Force [3]
Installation position	Defined by the reference pipe, inlet to the sensor element should be located approximately in the middle of the reference pipe diameter.
Weight	Approx. 56 g

Accuracy	
Total air mass error	2 % of the measurement value (25 °C) [4]
Total temperature error	± 1 % (25 °C), corresponding to the NTC characteristic curve
Response time (t63)	< 20 msec

Environmental conditions	
Ambient temperature range	-30 … 120 °C
Operating temperature range	-30 … 85 °C
Media compatibility	Air [5]
ESD (ISO/TR 10605)	4 kV to contacts
EMC (ISO 11452-5)	100 V/m (Stripline)

Dimension



1) Depending on the pipe diameter and calibration
2) Reference pipe available on request
3) Others available on request
4) On the reference test bench
5) Other gases available on request

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