

# Multi.HFM

Heat Flux Technique for  
Multi Mass Flow Measurements  
High End Reference System



- direct measurement of air mass flow
- 16 (optionally up to 32) air mass flows in real-time
- large measurement range
- high accuracy of measurement
- low pressure loss
- no wear, no maintenance
- evaluation device with USB connection
- complete system incl. sensors, sensor cables and software
- easy to use
- reference device for measurement of multiple air mass flows at leading car manufacturers and suppliers worldwide
- application in quality assurance, experimental rig applications, research and development

### Air mass flows

Multi.HFM allows for direct and simultaneous measurement of 16 (optionally up to 32) air mass flows and therefore offers a unique combination of high accuracy of measurement and highest user-friendliness.

### Complete system

Multi.HFM is a complete system consisting of:

- central evaluation device with software
- 16 (optionally up to 32) sensors
- custom made sensor cables

If desired, we can support your employees during the implementation phase of the system.

Multi.HFM is calibrated and has CE certification.

### USB connection

Connection to your measurement computer is done easily via USB cable. The included software allows for direct analysis of the measured data. Optionally, other more convenient software applications can be supplied. The measurement system can also be used directly in connection with leading measurement data acquisition and analysis tools, e.g. DIADEM.



### 19" Rack

Multi.HFM is mountable in a 19" rack. As all connections are at the front side, the system can easily be integrated into existing systems. Optionally it can be equipped for mobile use.

## Measuring methods

The supplied sensors use the thermal measuring principle of the hot-film anemometer. This measuring method allows for direct measurement of the air mass flow with just a small error of measurement, thereby eliminating the need to correct for pressure and temperature influences.



## Areas of application

Multi.HFM is applicable wherever there is the need for measurement of air mass flows such as:

- vehicle climate control
- engine technology
- process engineering
- household technique
- domestic care
- quality assurance
- research and development
- ▶ air distribution over all nozzles
- ▶ air intake flow for each cylinder; experimental rigs for turbo chargers
- ▶ process control
- ▶ testing of ventilation systems
- ▶ testing of air flow performance
- ▶ reference device for air flow measurements
- ▶ at universities and institutions



## SERVICES

You are enthusiastic about the possibilities of Multi.HFM, but do not want to carry out the measurements yourself? We will be glad to be at your disposal with our complete range of services in the area of planning and carrying out tests as well as in the area of engineering.

Please visit [www.multiHFM.com](http://www.multiHFM.com) and contact us.

## REFERENCES

Multi.HFM has been established at car manufacturers and well-known automotive system suppliers of climate systems successfully.

### Scope of delivery

- evaluation device (19" rack)
- sensors
- sensor cables
- USB cable
- software
- documentation
- certificate of calibration



### M-TEC

Creative engineering  
in plastics technology and  
fluid technics

Dornkaulstrasse 4  
52134 Herzogenrath · Germany

Phone  
+49 (0)24 07-95 73-0

Fax  
+49 (0)24 07-95 73-25

Web  
www.mtec-engineering.com  
www.multiHFM.com

### Technical data

measuring principle	<b>thermal:</b> hot-film anemometer
input	<b>measurement category:</b> air flow rate <b>measurement range of each sensor:</b> 0 – 800 kg/h
output	<b>connection to measurement computer:</b> USB interface compatible to USB 1.1
characteristic data	<b>error of measurement:</b> < ±3 % of the measured value at $T_{\text{intake}} = 23 \text{ °C}$ (tolerance of new system) <b>pressure drop at sensors:</b> $\Delta p$ sensor = 15 hPa at $\dot{m} = 800 \text{ kg/h}$ <b>measurement data acquisition:</b> resolution 12 bit, sampling rate 100 kHz
conditions of use	<b>recommended inlet zone before sensor:</b> <ul style="list-style-type: none"><li>– 10 x inner diameter of sensor pipe</li><li>– straight flow towards sensor</li><li>– no change of cross section in direction of flow</li></ul>
	<b>recommended outflow zone before sensor:</b> <ul style="list-style-type: none"><li>– 5 x inner diameter of sensor pipe</li><li>– straight flow away from sensor</li><li>– no change of cross section in direction of flow</li></ul>
	<b>requirements of measured medium:</b> <ul style="list-style-type: none"><li>– intake of filtered air only (filter required with separation efficiency of &gt;99 % during the product life) (acc. to ISO 5011)</li><li>– intake of water, oils, aggressive media and any kind of particles &gt;50 <math>\mu\text{m}</math> must be avoided</li></ul>
environmental conditions	<b>ambient air temperature of sensor:</b> -20 °C bis +80 °C <b>ambient air temperature for evaluation device:</b> 0 °C bis +45 °C
conditions of measured medium	<b>medium temperature:</b> -40 °C bis +120 °C
constructive setup	<b>size of evaluation device:</b> 19" rack with a height of 4 units (at 16 channels) <b>weight of evaluation device:</b> approx. 10,5 kg <b>weight of each sensor:</b> approx. 0,25 kg <b>housing material of evaluation device:</b> aluminium <b>housing material of sensor:</b> PBT GF 30 <b>connectors (all at the front side):</b> <ul style="list-style-type: none"><li>– 16 (optionally up to 32) connectors for sensors with custom made sensor cables (length 5 m)</li><li>– USB socket for connection to a measurement computer</li><li>– power supply</li></ul>
auxiliary power	<b>electrical plug at evaluation device:</b> 230 V AC, 50 Hz (connection to 12V DC optional) <b>electrical current consumption of evaluation device:</b> <1 A