



Front side (top) and rear side (bottom)

The calibration system LMF-KAL evaluates Laminar Flow Elements (LFE), subcritical orifices, nozzles or other pressure drop elements, as well as critical nozzles, which were used for the calibration of air and gas volume and mass flow.

- Universal calibration unit for pressure drop flow elements
- Electronical flow computing of Laminar Flow Elements, orifices or nozzles
- Compact design in 19"-rack
- Incl. factory calibration certificate

Technical Description

This compact unit with its accurate sensors allows an automated calibration and offers also very useful additional functions like averaging and differential pressure zeroing.

The standard version contains sensors for the measurement of the differential pressure, the absolute pressure and the temperature. To achieve higher accuracies optionally a humidity sensor and sensors in higher accuracy classes can be supplied.

Specification

Flow-Elements

Flow elements to use with this system are Laminar Flow Elements, orifices, nozzles, Venturi tubes and all types of subcritical pressure drop devices as well as sonic nozzles. If the calibration of these flow elements is better $\pm 0,25\%$ o.R. in the differential pressure turn down of 1:10, a system accuracy of $\pm 1,0\%$ o.R. without and $\pm 0,8\%$ o.R. with humidity measurement is possible.

Media Compatibility

Air, dry, dustfree, not condensing humidity.

Temperature Conditions

Storage and operation 0 ... +50 °C

Overpressure Limits

Pressure sensors: double full scale range of DP, if only plus side is pressurized and up to double full scale range of static pressure if applied on both sides at the same time.

Process Connections

Tube compression fitting for 4/6 mm pneumatic tube (absolute pressure: 1 x, differential pressure 2 x). Temperature sensor and optional humidity sensor with 2 m connection cable each for external connection.

Measurement Ranges and Accuracy

Differential pressure 0 – 10 mbar $\pm 0,1\%$ F.S.
 Up to: 0 – 50 mbar $\pm 0,05\%$ F.S.
 Absolute pressure 0 – 1,2 bar $\pm 0,025\%$ F.S.
 bis: 0 – 10 bar $\pm 0,25\%$ F.S.
 Temperature 0 – 50°C $\pm 0,14^\circ\text{C}$
 Humidity 0 – 100%r.H. $\pm 3\%$ r.H.
 Linearity, repeatability and hysteresis included
 temperature effect abt. 0,01%/°C.

Display

Controller S320 front panel mounted housing acc. DIN IEC 61554 with six independent red LED display lines, 3 x 6 digits LED displays (10 mm) and 3 x 4 digits text-LED displays (6 mm). With the integrated five function keys the complete operation and setting of parameter is possible.

Housing

Measures: 450 x 150 x 316 mm (WxHxD) 3HE, 84TE
 Material: Aluminium profile, cover plates coated
 Weight: abt. 5 kg
 Protection class: IP20, on request higher classes are possible up to IP 54.

Supply

90 - 260 V AC, 50/60 Hz max. 80 Watt

Interfaces

Ethernet, RS 232 und 2x RS 485

Necessary Sizing Data

For sizing please specify the min and flow range, the operation conditions in terms of pressure and temperature as well as the flowing media.

Ordering Information

Part Number Structure: LMF-KAL-aaa-bbbb-ccc-ddd

LMF-KAL-	Standard LMF calibration unit
aaa	Differential pressure range
10A	0 – 10 mbar, $\pm 0.1\%$ F.S., analogue
20A	0 – 20 mbar, $\pm 0.1\%$ F.S., analogue
50A	0 – 50 mbar, $\pm 0.1\%$ F.S., analogue
50S	0 – 50 mbar, $\pm 0.05\%$ F.S., RS485
bbbb	Absolut pressure range
012A	0 – 1200 mbar, $\pm 0.25\%$ F.S., analogue
012S	0 – 1200 mbar, $\pm 0.025\%$ F.S., RS485
026S	0 – 2600 mbar, $\pm 0.025\%$ F.S., RS485
040A	0 – 4000 mbar, $\pm 0.25\%$ F.S., analogue
070A	0 – 7000 mbar, $\pm 0.25\%$ F.S., analogue
100A	0 – 10 bar, $\pm 0.25\%$ F.S., analogue
ccc	Temperature range
PTS	0 – 50 °C, $\pm 0.14^\circ\text{C}$, Pt100-Sonde 100 mm with 2 m connection cable
ddd	Humidity range
xxx	No humidity sensor
RHA	Humidity sensor 0 – 100 %rH, $\pm 3\%$ with 2 m connection cable

Special versions, accessories and parts on request