Zertifiziertes QM-System
DIN EN ISO 9001
Zertifikat-Nr. 01017

Compact Inline Thermal Flow Sensor

for compressed air and other gases

measuring • monitoring • analysing

KET

- No inlet section necessary
- Integrated flow straightener
- Sensor unit removable
- Direct mass flow rate measurement of gases
- Measuring accuracy:
  ±1.5% of reading
  ± 0.3% of full scale
  on request:
  ±1.0% of reading
  ± 0.3% of full scale
- p_{max} 16 bar (optionally 40 bar)
- Fast response time
- No moving parts
- Analogue output, alarm contact, Modbus RTU and impulse output

S5

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Description

The newly developed KET combines modern digital interfaces for connection to energy monitoring systems with a small, compact design. The KET is always used when many machines (compressed air consumers) are to be integrated into an energy monitoring network.

Readout values in the display can be rotated by 180°, e.g. for overhead installation.

Display shows 2 values at the same time:

- Present flow in m³/h, l/min, ...
- Total consumption (counter reading) in m³, l, kg
- Temperature measurement

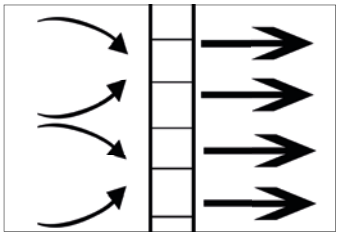
Screw-in thread:

Easy installation into the existing pipe due to integrated measuring section (suitable for ½", ¾", 1", 1¼", 1½" or 2" lines)

Advantages at a glance:

- Compact, small design - for use in machines, behind maintenance unit on the end user
- All interfaces are freely programmable via the display
- Modbus-RTU output
- 4...20 mA analogue output for present flow
- Pulse output total flow (counter reading), electrically isolated. Optional: M-Bus, Ethernet interface or PoE.

Integrated
flow straightener -
no inlet section necessary



With a key stroke:
reset counter reading,
select units,
parameterise interfaces

The sensor can
be removed from the
measuring section
and cleaned.

Technical Details

Parameters:	m³/h, l/min (1000 mbar, 20 °C) in case of compressed air or Nm³/h, Nl/min (1013 mbar, 0 °C) in case of gases
Units:	m³/h, m³/min, l/min, l/s, ft/min, cfm, m/s, kg/h, kg/min, g/s, lb/min, lb/h (adjustable via keys at display)
Sensor:	Thermal mass flow sensor
Measured medium:	Air, gases
Gas types:	Air, nitrogen, argon, CO_2, oxygen (adjustable over KEC service software)
Measuring range:	See table
Accuracy:	± 1,5 % of reading ± 0,3 % of full scale on request: ± 1 % of reading ± 0,3 % of full scale
Operating temperature:	-30 ... 80 °C
Operating pressure:	up to 16 bar, optionally 40 bar
Digital output:	RS 485 interface, (Modbus-RTU)
Analogue output:	4 ... 20 mA for m³/h or l/min
Pulse output:	1 pulse per m³ or per litre electrically isolated. Pulse weight can be set on the display. Alternatively, the pulse output can be used as an alarm relay.
Supply:	18 ... 36 V_{DC}, 5 W
Burden:	< 500 Ω
Housing:	Polycarbonate (IP65)
Measuring section:	Aluminium, 316L
Connection thread of measuring sections:	G½ to G2 (BSP British Standard Piping) or ½" to 2" NPT-thread
Mounting position:	any

No responsibility taken for errors;
subject to change without prior notice.

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Flow measuring ranges (Max version 185 m/s) for compressed air (ISO 1217:1000 mbar, 20 °C)
Measuring ranges for other types of gas see tables below

Measuring section	Thread	Measuring range full scales	
		m³/h	cfm
DN 15	G ½"	90	50
DN 20	G ¾"	170	100
DN 25	G 1"	290	170
DN 32	G 1 ¼"	530	310
DN 40	G 1 ½"	730	430
DN 50	G 2"	1195	700

Measuring ranges flow
(other gases on request)

Inner diameter of pipe			Low-Speed Version (50 m/s)							Standard Version (92.7 m/s)						
			Full scale values in Nm³/h*							Full scale values in Nm³/h*						
Inch	[mm]	DN	Air**	Ar	CO_2	N_2	O_2	N_2O	Natural gas (NG)	Air**	Ar	CO_2	N_2	O_2	N_2O	Natural gas (NG)
½"	16.1	DN 15	20	35	20	20	20	20	15	45	70	45	40	40	40	25
¾"	21.7	DN 20	45	75	45	40	45	45	25	85	135	85	80	80	85	50
1"	27.3	DN 25	75	120	75	70	75	75	45	145	230	145	135	140	140	85
1¼"	36.0	DN 32	140	220	140	130	135	140	85	265	415	260	240	250	260	155
1½"	41.9	DN 40	195	305	195	180	185	190	115	365	570	360	335	345	355	215
2"	53.1	DN 50	320	505	320	295	305	315	190	600	935	590	550	570	585	355

Inner diameter of pipe			Max. Version (185.0 m/s)							High-Speed Version (224.0 m/s)						
			Full scale values in Nm³/h*							Full scale values in Nm³/h*						
Inch	[mm]	DN	Air**	Ar	CO_2	N_2	O_2	N_2O	Natural gas (NG)	Air**	Ar	CO_2	N_2	O_2	N_2O	Natural gas (NG)
½"	16.1	DN 15	90	140	90	80	85	85	50	110	170	105	100	105	105	65
¾"	21.7	DN 20	175	275	175	160	165	170	105	215	335	210	195	205	210	125
1"	27.3	DN 25	290	460	290	270	280	285	170	355	555	350	325	340	345	210
1¼"	36.0	DN 32	530	830	525	485	505	520	310	640	1005	635	590	610	630	380
1½"	41.9	DN 40	730	1140	720	670	695	715	430	885	1385	875	815	845	865	520
2"	53.1	DN 50	1195	1870	1185	1100	1140	1170	705	1450	2265	1430	1330	1380	1420	855

* Nm³/h according to DIN 1343: 0 °C, 1013.25 mbar for gases

** DIN 1945 / ISO 1217: 20 °C, 1000 mbar for air

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Order Details (Example: **KET-ALR15ALS00**)

Model	Version	Measuring range	Connection
KET-	**A** = Aluminium **E** = Stainless steel	**L** = Low-Speed Version 50 m/s **S** = Standard 92.7 m/s **M** = Max-version 185 m/s **H** = High-Speed-Version 224 m/s	**R15** = G½ female with integrated measuring section **R20** = G¾ female with integrated measuring section **R25** = G1 female with integrated measuring section **R32** = G1¼ female with integrated measuring section **R40** = G1½ female with integrated measuring section **R50** = G2 female with integrated measuring section **Nxx**[1] = NPT thread[2] **XXX** = Special version

[1] replace xx with desired size [2] available in high-pressure version up to 1"

Display	Gas type	Max. pressure	Calibration	Options
A = with integrated display **0** = without display	**L** = Air **N** = Nitrogen **C** = CO_2 **A** = Argon **X** = Oxygen **D** = Nitrous oxide (N_2O) **M** = Natural Gas **Y** = Further gas (on request) **S** = Gas mixture (please indicate mixture ratio, on request)	**S** = 16 bar **H** = 40 bar[3]	**0** = No real gas adjustment - gas type configuration per gas constant **E** = Real gas adjustment	**0** = without **M** = Special measuring range (please specify in clear text) **J** = improved accuracy +/- 1% of reading +/- 0,3% of full scale **R** = Special cleaning oil and grease free (e. g. for oxygen) **S** = Silicone-free version including special cleaning oil and grease-free

[3] only with KET-E

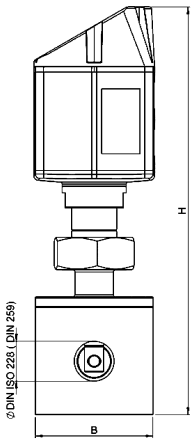
Software

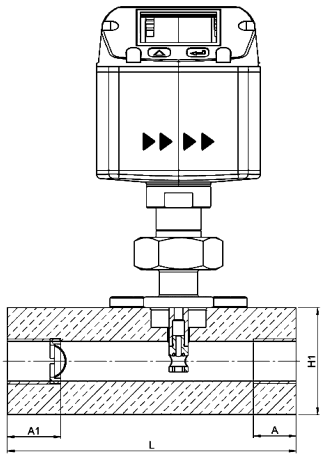
KEC-Soft	Service software incl. PC-connector

Always valid:

* Nm^3/h acc. to DIN 1343: 0 °C, 1013.25 mbar with gases (DIN 1945/ISO 1217: 20 °C, 1000 mbar with air)
** 1 x 4 ... 20 mA analog output (galvanically not isolated), pulse output, RS 485 (Modbus-RTU)
*** with integrated flow straightener, no additional inlet section necessary
**** standard accuracy ± 1,5 % of reading ± 0,3 % of full scale

Dimensions





Measuring section	Thread	L [mm]	B [mm]	H1 [mm]	H [mm]	A1 [mm]	A [mm]
DN15	G½"	135	55	50	109.65	25	20
DN20	G¾"	135	55	50	109.65	26	20
DN25	G1"	135	55	50	109.65	33	25
DN32	G1¼"	135	80	80	215.45	35	25
DN40	G1½"	135	80	80	215.45	36	25
DN50	G2"	135	80	80	215.45	44	30

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