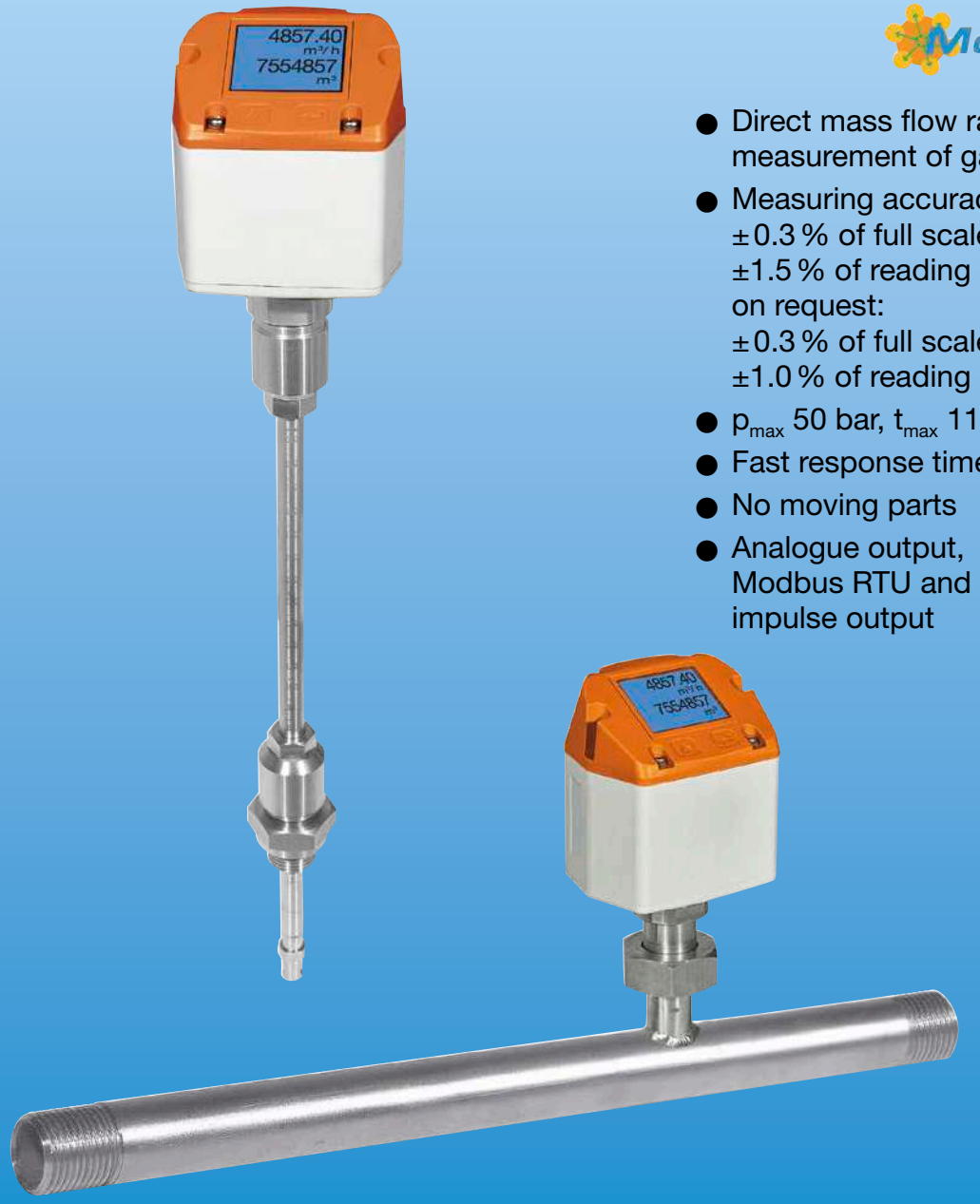
Zertifiziertes QM-System
DIN EN ISO 9001
Zertifikat-Nr. 01017

Thermal Mass Flow Meter

for gases

measuring • monitoring • analysing

KEP



Modbus

- Direct mass flow rate measurement of gases
- Measuring accuracy:
  ±0.3 % of full scale
  ±1.5 % of reading
  on request:
  ±0.3 % of full scale
  ±1.0 % of reading
- p_{max} 50 bar, t_{max} 110 °C
- Fast response time
- No moving parts
- Analogue output, Modbus RTU and impulse output

S5

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Description

The new flow sensors KEP work according to the calorimetric measuring principle. Therefore an additional temperature and pressure compensation is not necessary.

Contrary to the previously used bridge circuit, the newly developed evaluation electronics records all measured values digitally. This allows very precise and fast measurements with a wide temperature range of up to 110 °C. The measuring span is 1... 1000 and therefore enables measurements in very low as well as very high flow speeds of up to 224 m/s.

KEP has an integrated Modbus output as a standard with which all parameters like Nm³/h, Nm³, Nm/s, Nl/min, Nl/s, kg/h, kg/min, ft/min, °C etc. can be transferred. All parameters can be adjusted directly at the instrument (via display) or via Service Software. Of course there is also 1 x 4 ... 20 mA analogue output available for flow and a galvanically isolated pulse output for the total consumption.

A remote diagnosis can be carried out via Modbus and all relevant parameters can be checked and changed if necessary. So it is possible to change e. g. the gas type, the inner diameter, the scaling and so on or the zero point resp. the leak flow volume suppression in case of changed process conditions.

Via remote diagnosis and status update e. g. temperature exceedings, failures of the sensor or the calibration date can be determined.

Utilising Industries

- Chemistry, petro chemistry
- Natural gas, methane
- Pharmaceutical industry
- Food production
- Breweries
- Diaries
- Power plants
- Semiconductor / electronics
- Automotive industry

Application Range

- Compressed air measurement and distribution
- Leakage measurement of compressed air and gases
- Flow measurement in vacuum systems
- Measurement of oxygen and natural gas at gas burners
- Flow measurement of gas mixtures like e. g. forming gas

Special Features

- No moving parts, no wearout
- Easy mounting and dismounting under pressure via ½" ball valve
- Safety ring for mounting and dismounting under pressure
- Depth scale for precise installation
- All measured values, settings like gas type, inner diameter, serial number etc. retrievable via Modbus RTU
- Notification in case of exceeding of the calibration cycle
- Measuring span of 1 : 1000 (0.1 ... 224 m/s)
- Configuration and diagnosis via display, PC service software on-site
- Gas type (air, nitrogen, oxygen, argon etc.) freely adjustable via PC service software
- Reference conditions °C and mbar/hPa freely adjustable
- Zero-point adjustment, leak flow volume suppression
- Pressure loss negligible
- Flow measurement in both directions via flow direction switch

KEP-Display

- 1.8" display (220 x 176)
- Display and housing rotatable by 180°
- The following values are displayed on Display: Flow, total consumption, velocity and temperature
- Units freely adjustable via display

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Configuration of KEP via PC Service Software

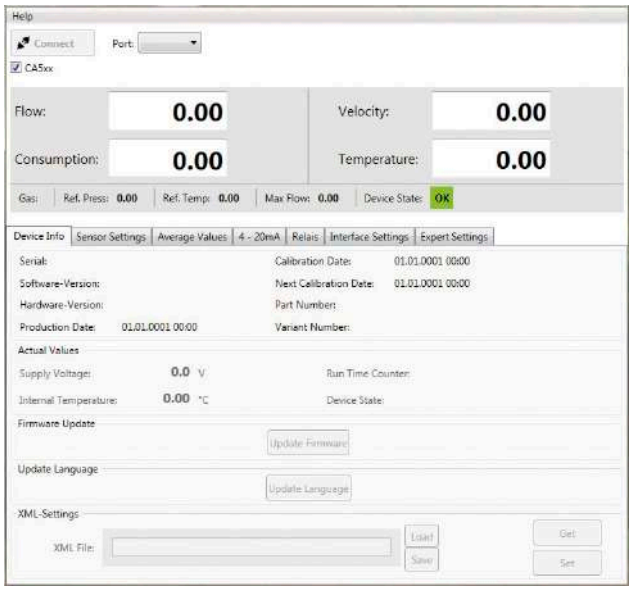
In general all configurations can be done via the integrated display. For sensors without display there is a PC Service Software available.

The following adjustment can be carried out directly at the display resp. by means of the PC Service Software:

- Adjustment of inner diameter of pipe
- Selection of units: e.g. m^3/h, m^3/min, l/min, kg/s
- Reset of counter
- Zero point adjustment / leak flow volume suppression
- Scaling of 4 ... 20 mA output / setting of pulse weight
- Adjustment of Modbus settings

The following adjustments can only be executed via PC Service Software:

- Gas type selection
- Adjust standard temperature and pressure



Available Models

KEP-1 ... Immersion version with ½" connection

KEP-2 ... In-line version for NW 08 ... NW 80

KEP-1 Immersion Sensor

Flow sensor for heavy duty industrial applications inclusive temperature measurement.

The immersion sensor KEP-1 is the ideal flow sensor for installation into existing compressed air resp. gas lines from ½" ... DN 700.

Technical Details KEP-1

Measuring range:	0.1 ... 50 Nm/s, low speed version 0.1 ... 92.7 Nm/s, stand. version* 0.1 ... 185 Nm/s, max. version* 0.1 ... 224 Nm/s, high speed version * All measured values referred to DIN 1343 standard conditions 0° and 1013 mbar ex factory
Accuracy:	± 1.5 % of reading ± 0.3 % of full scale on request: ± 1.0 % of reading ± 0.3 % of full scale
Accuracy indications:	referred to ambient temperature 22 °C ± 2 °C, system pressure 6 bar
Measuring principle:	thermal mass flow sensor, the measuring effect is based on the cooling down of a heated sensor PT 45 by bypassing gas. The ambient temperature is measured with a PT 100. An additional pressure and temperature compensation is not necessary.
Operating temperature range:	-30 ... 110 °C standard version, probe tube -20 ... 70 °C display
Display:	optional TFT 1.8" resolution 220 x 176
Units adjustable via keyboard at display:	Nm³/h, Nm³/min, Nl/min, l/s, ft/min, cfm, kg/h, kg/min, g/s, lb/min, lb/h, °F, °C etc.
Adjustable via display:	Diameter for volume flow calculation, counter resettable
Outputs:	Modbus RTU, 4-20 mA galvanically not isolated, pulse output (pulse rate freely selectable)
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
Load:	<500 Ω
Counter:	The counter is reset to Zero, when 1 000 000 000 m³ is reached
Additional average value calculation:	for all parameters freely adjustable from 1 minute up to 1 day, e. g. ½ hours average value, average day value
Protection:	IP 65
Material:	housing polycarbonate, probe tube stainless steel 1.4301
Screw-in thread:	G ½ ISO 228, ½" NPT
Operating pressure KEP-1:	16 bar; in special version 50 bar
Power supply:	18 ... 36 V_{DC}, 5 W

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Order Details KEP-1 Immersion Version (Example: **KEP-1 S 016 1 L S 0 0**)

Model	Version	Measuring range	Connection (& sensor length for KEP-1)
KEP = Thermal mass flow meter	1 = immersion version	**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	**Immersion Version** **012** = G ½, length 120 mm **016** = G ½, length 160 mm **022** = G ½, length 220 mm **030** = G ½, length 300 mm **040** = G ½, length 400 mm **050** = G ½, length 500 mm **060** = G ½, length 600 mm **070** = G ½, length 700 mm **112** = ½" NPT, length 120 mm **116** = ½" NPT, length 160 mm **122** = ½" NPT, length 220 mm **130** = ½" NPT, length 300 mm **140** = ½" NPT, length 400 mm **150** = ½" NPT, length 500 mm **160** = ½" NPT, length 600 mm **170** = ½" NPT, length 700 mm

Display	Gas type	Max. pressure	Calibration	Options
1 = with integrated display **0** = without display	**L** = air **N** = nitrogen **A**[2)4)] = argon, carbon dioxide, oxygen, nitrous oxide, natural gas, methane **E**[2)3)4)] = helium, propane **S**[4)] = gas mixture or special gas (specify in writing)	**S** = 16 bar (standard for KEP-1 and KEP-2, for KEP-1 from 10 bar ordering a high-pressure safety device model KEP-ZHS is necessary!) **H** = 50 bar (high pressure, ordering a high-pressure safety device model KEP-ZHS is necessary!)	**0** = standard **E** = real gas calibration **C**[1)] = 5-point calibration certificate **J** = ±1 % of reading ± 0.3 % of FS	**0** = without **R** = cleaning oil and fat free **S**[4)] = silicone free version incl. oil and fat free cleaning **A** = Additional calibration curve stored in the sensor **B** = bidirectional measuring (includes 2 x 4 ... 20 mA analog outputs and 2x pulse outputs)

[1)] 3-point calibration certificate is included in standard version. Standard calibration is carried out at 5 bar and 20 °C
[2)] Please specify gas in writing
[3)] With real gas calibration only
[4)] Reduced operating temperature range: -20 ... 110 °C for media O_2, natural gas, propane, methane or with option silicon-free. Operating pressure must be specified when ordering.
[5)] Operating pressure and operating temperature must be specified when ordering.

A comprehensive list of gas types and related flow measuring ranges per pipe diameter can be found on pages 12 to 15.

Accessories

Model	Description	
KEC-Soft	Service software incl. PC connection	
KEP-Z HS R15 16*	High-pressure safety device (up to 50 bar); G ½ for sensor length 160 mm	
KEP-Z HS R15 22*	High-pressure safety device (up to 50 bar); G ½ for sensor length 220 mm	
KEP-Z HS R15 30*	High-pressure safety device (up to 50 bar); G ½ for sensor length 300 mm	
KEP-Z HS R15 40*	High-pressure safety device (up to 50 bar); G ½ for sensor length 400 mm	
KEP-Z HS R15 50*	High-pressure safety device (up to 50 bar); G ½ for sensor length 500 mm	
KEP-Z HS R15 60*	High-pressure safety device (up to 50 bar); G ½ for sensor length 600 mm	
KUG-ZER15	Ball valve G ½ female st. st., installation KEC-1/ KEP-1 also under pressure	
KEP-ZANR1500	Welding nipple, L = 35 mm, male thread, R ½" st. st. 1.4571	

* for connection ½" NPT replace "R" with "N"

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KEP-2 with integrated measuring section

KEP-2 is supplied with an integrated measuring section. The measuring sections are available in flanged version or with R or NPT thread.

A special feature is the removable measuring head. So the measuring unit can be removed easily and quickly for calibration or cleaning purposes without having to dismount the measuring section intricately. During this period, the measuring section is sealed by a closing cap (accessory).

The screw with centering device ensures that the sensor is positioned accurately in the center when screwing it into the measuring section, furthermore it grants an exact positioning in the flow direction. This avoids unnecessary measuring faults.

Measuring range flow KEP-2 In-Line version

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*						
Zoll	[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)
¼			25 Nl/min	45 Nl/min	25 Nl/min	25 Nl/min	25 Nl/min	25 Nl/min	15 Nl/min	50 Nl/min	85 Nl/min	50 Nl/min	50 Nl/min	50 Nl/min	50 Nl/min	30 Nl/min
⅜"			225 Nl/min	330 Nl/min	225 Nl/min	205 Nl/min	215 Nl/min	220 Nl/min	130 Nl/min	25	35	25	20	20	20	14
½"	16.1	DN15	20	35	20	20	20	20	15	45	70	45	40	40	40	25
¾"	21.7	DN20	45	75	45	40	45	45	25	85	135	85	80	80	85	50
1"	27.3	DN25	75	120	75	70	75	75	45	145	230	145	135	140	140	85
1¼"	36.0	DN32	140	220	140	130	135	140	85	265	415	260	240	250	260	155
1½"	41.9	DN40	195	305	195	180	185	190	115	365	570	360	335	345	355	215
2"	53.1	DN50	320	505	320	295	305	315	190	600	935	590	550	570	585	355
2½"	71.1	DN65	550	865	545	505	525	540	325	1025	1605	1015	945	980	1005	605
3"	84.9	DN80	765	1200	760	705	730	750	450	1420	2225	1405	1305	1355	1395	840

Measuring range flow KEP-2 In-Line version (continuation)

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*						
Zoll	[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)
¼			105 Nl/min	170 Nl/min	105 Nl/min	100 Nl/min	100 Nl/min	105 Nl/min	60 Nl/min	130 Nl/min	205 Nl/min	130 Nl/min	120 Nl/min	125 Nl/min	125 Nl/min	75 Nl/min
⅜"			50	75	50	45	45	45	25	60	95	60	55	55	60	35
½"	16.1	DN15	90	140	90	80	85	85	50	110	170	105	100	105	105	65
¾"	21.7	DN20	175	275	175	160	165	170	105	215	335	210	195	205	210	125
1"	27.3	DN25	290	460	290	270	280	285	170	355	555	350	325	340	345	210
1¼"	36.0	DN32	530	830	525	485	505	520	310	640	1005	635	590	610	630	380
1½"	41.9	DN40	730	1140	720	670	695	715	430	885	1385	875	815	845	865	520
2"	53.1	DN50	1195	1870	1185	1100	1140	1170	705	1450	2265	1430	1330	1380	1420	855
2½"	71.1	DN65	2050	3205	2030	1885	1955	2010	1210	2480	3880	2455	2280	2365	2435	1465
3"	84.9	DN80	2840	4440	2810	2610	2710	2785	1680	3440	5380	3405	3165	3280	3375	2035

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

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

A comprehensive list of gas types and related flow measuring ranges per pipe diameter can be found on pages 16 to 19.

Technical Details KEP-2

Measuring range:	0.1 ... 50 Nm/s, low speed version 0.1... 92.7 Nm/s, stand. version* 0.1...185 Nm/s, max. version* 0.1... 224 Nm/s, high speed version * Measuring ranges Nm³/h for different pipe diameters and gases, see table flow measuring ranges * All measured values referred to DIN 1343 standard conditions 0° and 1013 mbar ex factory
Accuracy:	± 1.5 % of reading ± 0.3 % of full scale on request: ± 1.0 % of reading ± 0.3 % of full scale
Accuracy indications:	referred to ambient temperature 22 °C ± 2 °C, system pressure 6 bar
Measuring principle:	Thermal mass flow sensor, the measuring effect is based on the cooling down of a heated sensor PT 45 by bypassing gas. The ambient temperature is measured with a PT 100. An additional pressure and temperature compensation is not necessary.
Response time:	t 90 < 3 s
Operating temperature range probe tube/ display unit:	-30 ... 80 °C standard version, probe tube -20 ... 70 °C display unit
Display:	optional TFT 1.8" resolution 220 x 176
Units adjustable via keyboard at display:	Nm³/h, Nm³/min, Nl/min, l/s, ft/min, cfm, kg/h, kg/min, g/s, lb/min, lb/h, °F, °C etc.
Adjustable via display:	Diameter for volume flow calculation, counter resettable
Outputs:	Modbus RTU, 4-20 mA galvanically not isolated, pulse output (pulse rate freely selectable)
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
Load:	<500 Ω
Counter:	The counter is reset to Zero, when 1 000 000 000 m³ is reached
Additional average value calculation:	for all parameters freely adjustable from 1 minute up to 1 day, e.g. ½ hours average value, average day value
Protection:	IP 65
Material:	housing polycarbonate, probe tube stainless steel 1.4301
Operating pressure:	16 bar, in special version 40 bar
Power supply:	18 ... 36 V_{DC}, 5 W

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Order Details KEP-2 In-Line Version (Example: **KEP-2 L R08 1 L S 00**)

Model	Version	Measuring range	Connection
KEP = Thermal mass flow meter	**2** = In-Line version	**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	**In-Line Version (stainless steel 1,4404)** **R08** = R ¼ with integrated measuring section **R10** = R ⅜ with integrated measuring section **R15** = R ½ with integrated measuring section **R20** = R ¾ with integrated measuring section **R25** = R 1 with integrated measuring section **R32** = R 1¼ with integrated measuring section **R40** = R 1½ with integrated measuring section **R50** = R 2 with integrated measuring section **Nxx** = NPT thread **F15** = flange DN 15, DIN EN 1092-1 PN40 with integrated measuring section **F20** = flange DN 20, DIN EN 1092-1 PN40 with integrated measuring section **F25** = flange DN 25, DIN EN 1092-1 PN40 with integrated measuring section **F32** = flange DN 32, DIN EN 1092-1 PN40 with integrated measuring section **F40** = flange DN 40, DIN EN 1092-1 PN40 with integrated measuring section **F50** = flange DN 50, DIN EN 1092-1 PN40 with integrated measuring section **F65** = flange DN 65, DIN EN 1092-1 PN40 with integrated measuring section **F80** = flange DN 80, DIN EN 1092-1 PN40 with integrated measuring section **A15** = ½" ASME flange Class 150 with integrated measuring section **A20** = ¾" ASME flange Class 150 with integrated measuring section **A25** = 1" ASME flange Class 150 with integrated measuring section **A32** = 1¼" ASME flange Class 150 with integrated measuring section **A40** = 1½" ASME flange Class 150 with integrated measuring section **A50** = 2" ASME flange Class 150 with integrated measuring section **A65** = 2½" ASME flange Class 150 with integrated measuring section **A80** = 3" ASME flange Class 150 with integrated measuring section **B15** = ½" ASME flange Class 300 with integrated measuring section **B20** = ¾" ASME flange Class 300 with integrated measuring section **B25** = 1" ASME flange Class 300 with integrated measuring section **B32** = 1¼" ASME flange Class 300 with integrated measuring section **B40** = 1½" ASME flange Class 300 with integrated measuring section **B50** = 2" ASME flange Class 300 with integrated measuring section **B65** = 2½" ASME flange Class 300 with integrated measuring section **B80** = 3" ASME flange Class 300 with integrated measuring section **XXX** = special version

Order Details KEP-2 In-Line Version (Example: **KEP-2 L R08 1 L S 0 0**) (continued)

Display	Gas type	Max. pressure	Calibration	Options
1 = with integrated display	**L** = air **N** = nitrogen **A**[2] = argon, carbon dioxide, oxygen, nitrous oxide, natural gas, methane **E**[1] = helium, propane **S** = gas mixture or special gas (specify in writing)	**S** = 16 bar (standard for KEP-1 and KEP-2, for KEP-1 from 10 bar ordering a high-pressure safety device model KEP-ZHS is necessary!) **H** = 40 bar (high pressure for In-line)	**0** = standard **E** = real gas calibration **C** = 5-point calibration certificate **J** = ±1.0 % of reading ± 0.3 % of FS	**0** = without **R** = cleaning oil and fat free **S**[4] = silicone free version incl. oil and fat free cleaning **A** = Additional calibration curve stored in the sensor **B** = bidirectional measuring (includes 2 x 4 ... 20 mA analog outputs and 2x pulse outputs)

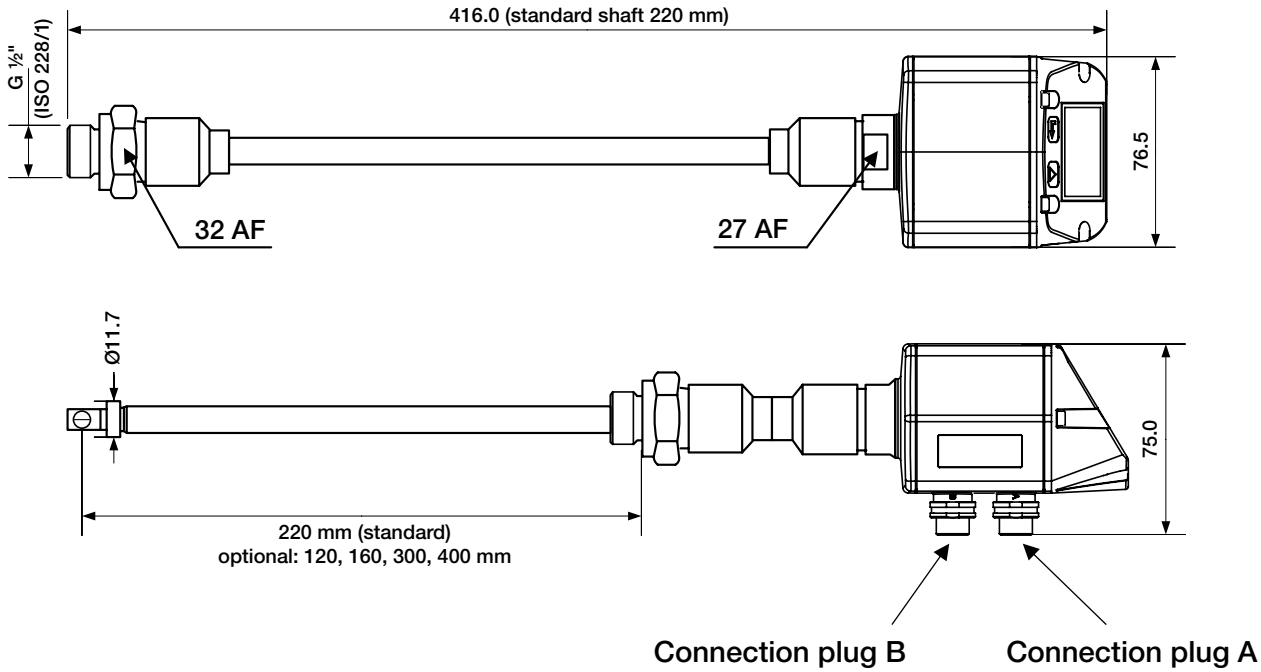
[1] 3-point calibration certificate is included in standard version. Standard calibration is carried out at 5 bar and 20 °C.
[2] please specify gas in writing
[3] with real gas calibration only
[4] Reduced operating temperature range: -20 ... +80°C for media O_2, natural gas, propane, methane or with option silicone free. Operating pressure must be specified when ordering.
[5] Operating pressure and operating temperature must be specified when ordering.

Accessories

Model	Description	
KEC-Soft	Service software incl. PC-connector	

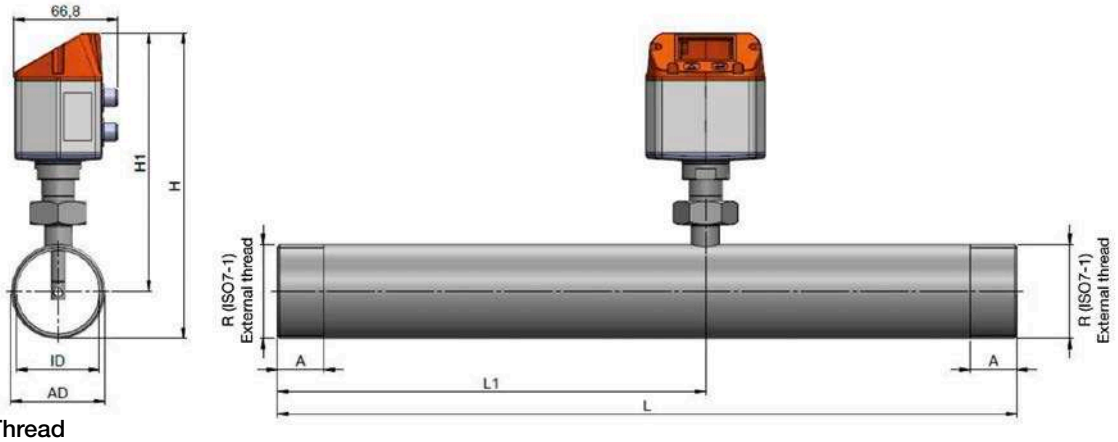
Dimensions [mm]

KEP-1



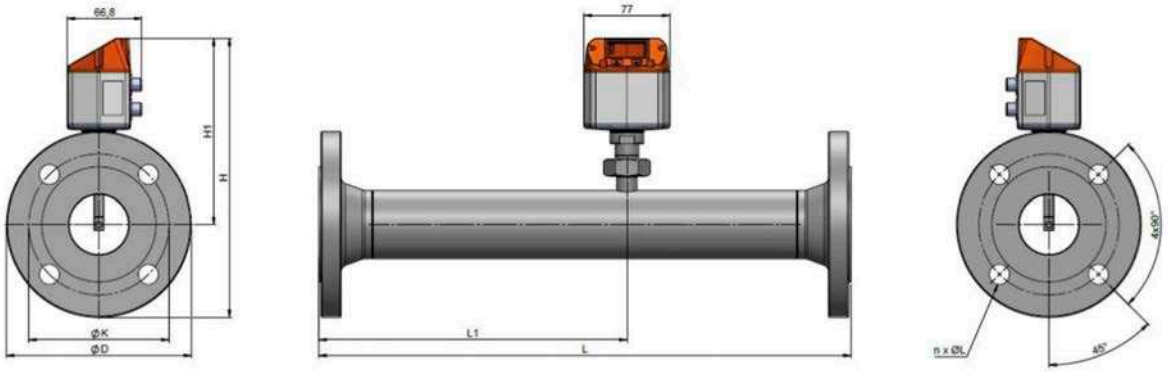
Dimensions [mm] (continuation)

KEP-2



KEP-2 Thread

	Pipe size	od / id [mm]	L [mm]	L1 [mm]	H [mm]	H1 [mm]	R	A [mm]
KEP-2 ¼"	DN 8	13.7 / 8.5	194	137	176.6	166.3	R ¼"	15
KEP-2 ⅜"	DN 10	17.2 / 12.5	300	200	174.9	166.3	R ⅜"	15
KEP-2 ½"	DN 15	21.3 / 16.1	300	210	177.0	166.3	R ½"	20
KEP-2 ¾"	DN 20	26.9 / 21.7	475	275	179.8	166.3	R ¾"	20
KEP-2 1"	DN 25	33.7 / 27.3	475	275	183.2	166.3	R 1"	25
KEP-2 1¼"	DN 32	42.4 / 36.0	475	275	187.5	166.3	R 1¼"	25
KEP-2 1½"	DN 40	48.3 / 41.9	475	275	190.5	166.3	R 1½"	25
KEP-2 2"	DN 50	60.3 / 53.1	475	275	196.5	166.3	R 2"	30



KEP-2 Flange

							Flange DIN EN 1092-1		
	Pipe size	od / id [mm]	L [mm]	L1 [mm]	H [mm]	H1 [mm]	ØD [mm]	ØK [mm]	n x ØL [mm]
KEP-2 ½"	DN 15	21.3 / 16.1	300	210	213.8	166.3	95	65	4 x 14
KEP-2 ¾"	DN 20	26.9 / 21.7	475	275	218.8	166.3	105	75	4 x 14
KEP-2 1"	DN 25	33.7 / 27.3	475	275	223.8	166.3	115	85	4 x 14
KEP-2 1¼"	DN 32	42.4 / 36.0	475	275	263.3	166.3	140	100	4 x 18
KEP-2 1½"	DN 40	48.3 / 41.9	475	275	240.7	166.3	150	110	4 x 18
KEP-2 2"	DN 50	60.3 / 53.1	475	275	248.2	166.3	165	125	4 x 18
KEP-2 2½"	DN 65	76.1 / 68.9	475	275	268.2	175.7	185	145	8 x 18
KEP-2 3"	DN 80	88.9 / 80.9	475	275	275.7	175.7	200	160	8 x 18

Flow measuring ranges KEP-1

Measuring ranges low-speed version

Inside diameter of pipe			**Low-speed version** (50 m/s) Measuring range full scales in Nm³/h* / [cfm]					Recommended probe length
Inch	**mm**	**DN**	**Air****	**Nitrogen (N_2)**	**Argon (Ar)**	**Oxygen (O_2)**	**Carbon dioxide (CO_2)**	
½"	16.1	DN 15	24 [14]	22 [13]	38 [22]	23 [13]	24 [14]	160 mm - 6.299 inch
¾"	21.7	DN 20	48 [28]	44 [26]	75 [44]	45 [26]	47 [27]	
1"	27.3	DN 25	79 [46]	73 [43]	124 [73]	75 [44]	78 [46]	
1 ¼"	36.0	DN 32	143 [84]	132 [77]	224 [132]	136 [80]	142 [83]	
1 ½"	41.9	DN 40	197 [116]	181 [107]	309 [182]	188 [111]	195 [115]	
2"	53.1	DN 50	323 [190]	297 [175]	506 [297]	308 [181]	320 [188]	
2 ½"	68.9	DN 65	554 [326]	509 [300]	866 [510]	528 [311]	548 [322]	220 mm - 8.661 inch
3"	80.9	DN 80	768 [452]	706 [415]	1201 [706]	732 [431]	760 [447]	
4"	110.0	DN 100	1426 [839]	1311 [772]	2230 [1312]	1360 [800]	1411 [830]	
5"	133.7	DN 125	2110 [1241]	1940 [1141]	3299 [1941]	2011 [1183]	2088 [1228]	
6"	159.3	DN 150	2999 [1765]	2758 [1623]	4689 [2759]	2859 [1682]	2967 [1746]	300 mm - 11.811 inch
8"	200.0	DN 200	4738 [2788]	4357 [2564]	7409 [4360]	4517 [2658]	4689 [2759]	
10"	250.0	DN 250	7413 [4362]	6817 [4011]	11590 [6820]	7067 [4159]	7336 [4317]	
12"	300.0	DN 300	10687 [6289]	9828 [5783]	16710 [9833]	10189 [5996]	10576 [6224]	

Measuring ranges low-speed version (continued)

Inside diameter of pipe			**Low-speed version** (50 m/s) Measuring range full scales in Nm³/h* / [cfm]					Recommended probe length
Inch	**mm**	**DN**	**Methane natural gas (CH_4)**	**Helium (He)**	**Propane (C_3H_8)**	**Natural gas (NG)**	**Nitrous oxide (N_2O)**	
½"	16.1	DN 15	14 [8]	10 [6]	11 [6]	15 [9]	24 [14]	160 mm - 6.299 inch
¾"	21.7	DN 20	28 [16]	20 [11]	22 [13]	30 [17]	47 [27]	
1"	27.3	DN 25	47 [27]	33 [19]	36 [21]	50 [29]	78 [45]	
1 ¼"	36.0	DN 32	85 [50]	60 [35]	66 [38]	91 [53]	140 [89]	
1 ½"	41.9	DN 40	117 [68]	82 [48]	90 [53]	125 [73]	194 [114]	
2"	53.1	DN 50	191 [112]	135 [79]	148 [87]	205 [120]	317 [186]	
2 ½"	68.9	DN 65	328 [193]	231 [136]	254 [150]	351 [207]	543 [320]	220 mm - 8.661 inch
3"	80.9	DN 80	454 [267]	321 [188]	353 [207]	487 [286]	753 [443]	
4"	110.0	DN 100	844 [496]	596 [350]	655 [386]	905 [532]	1399 [823]	
5"	133.7	DN 125	1248 [734]	881 [519]	970 [570]	1338 [787]	2069 [1217]	
6"	159.3	DN 150	1774 [1044]	1253 [737]	1379 [811]	1903 [1119]	2941 [1731]	300 mm - 11.811 inch
8"	200.0	DN 200	2804 [1650]	1980 [1165]	2178 [1282]	3006 [1769]	4647 [2735]	
10"	250.0	DN 250	4386 [2581]	3098 [1823]	3408 [2005]	4703 [2768]	7270 [4278]	
12"	300.0	DN 300	6324 [3721]	4466 [2628]	4914 [2891]	6781 [3990]	10482 [6168]	

* Nm³/h in acc. with DIN 1343: 0 °C, 1013.25 hPa for gases
** ISO 1217: 20 °C, 1000 hPa for air

1/01 - 2024

Flow measuring ranges KEP-1

Measuring ranges standard version

Inside diameter of pipe			**Standard version** (92.7 m/s) Measuring range full scales in Nm³/h* / [cfm]					Recommended probe length
Inch	**mm**	**DN**	**Air****	**Nitrogen (N_2)**	**Argon (Ar)**	**Oxygen (O_2)**	**Carbon dioxide (CO_2)**	
½"	16.1	DN 15	45 [26]	41 [24]	71 [41]	43 [25]	45 [26]	160 mm - 6.299 inch
¾"	21.7	DN 20	89 [52]	81 [48]	139 [81]	84 [49]	88 [51]	
1"	27.3	DN 25	147 [86]	135 [79]	230 [135]	140 [82]	146 [86]	
1 ¼"	36.0	DN 32	266 [156]	244 [144]	416 [245]	253 [149]	263 [155]	
1 ½"	41.9	DN 40	366 [215]	337 [198]	573 [337]	349 [205]	363 [213]	
2"	53.1	DN 50	600 [353]	551 [324]	938 [552]	572 [336]	593 [349]	
2 ½"	68.9	DN 65	1028 [604]	945 [556]	1607 [945]	980 [576]	1017 [598]	220 mm - 8.661 inch
3"	80.9	DN 80	1424 [838]	1309 [770]	2227 [1310]	1358 [799]	1409 [829]	
4"	110.0	DN 100	2644 [1556]	2432 [1431]	4135 [2433]	2521 [1484]	2617 [1540]	
5"	133.7	DN 125	3912 [2302]	3597 [2117]	6116 [3599]	3729 [2195]	3871 [2278]	
6"	159.3	DN 150	5560 [3272]	5113 [3009]	8693 [5116]	5301 [3119]	5502 [3238]	300 mm - 11.811 inch
8"	200.0	DN 200	8785 [5170]	8079 [4754]	13736 [8083]	8376 [4929]	8694 [5116]	
10"	250.0	DN 250	13744 [8088]	12638 [7437]	21488 [12646]	13103 [7711]	13601 [8004]	
12"	300.0	DN 300	19814 [11661]	18221 [10723]	30980 [18232]	18891 [11117]	19609 [11539]	

Measuring ranges standard version (continued)

Inside diameter of pipe			**Standard version** (92.7 m/s) Measuring range full scales in Nm³/h* / [cfm]					Recommended probe length
Inch	**mm**	**DN**	**Methane natural gas (CH_4)**	**Helium (He)**	**Propane (C_3H_8)**	**Natural gas (NG)**	**Nitrous oxide (N_2O)**	
½"	16.1	DN 15	26 [15]	19 [11]	20 [12]	28 [17]	44 [26]	160 mm - 6.299 inch
¾"	21.7	DN 20	52 [31]	37 [21]	40 [24]	56 [33]	87 [51]	
1"	27.3	DN 25	87 [51]	61 [36]	67 [39]	93 [55]	144 [85]	
1 ¼"	36.0	DN 32	157 [92]	111 [65]	122 [72]	168 [99]	261 [153]	
1 ½"	41.9	DN 40	217 [127]	153 [90]	168 [99]	232 [136]	359 [211]	
2"	53.1	DN 50	355 [208]	250 [147]	275 [162]	380 [224]	588 [346]	
2 ½"	68.9	DN 65	608 [358]	429 [252]	472 [278]	652 [383]	1008 [593]	220 mm - 8.661 inch
3"	80.9	DN 80	842 [496]	595 [350]	654 [385]	903 [531]	1397 [822]	
4"	110.0	DN 100	1565 [921]	1105 [650]	1216 [715]	1678 [987]	2594 [1526]	
5"	133.7	DN 125	2315 [1362]	1635 [962]	1798 [1058]	2482 [1460]	3837 [2258]	
6"	159.3	DN 150	3290 [1936]	2324 [1367]	2556 [1504]	3528 [2076]	5453 [3209]	300 mm - 11.811 inch
8"	200.0	DN 200	5198 [3059]	3672 [2160]	4039 [2377]	5574 [3280]	8616 [5071]	
10"	250.0	DN 250	8133 [4786]	5744 [3380]	6319 [3718]	8720 [5132]	13480 [7932]	
12"	300.0	DN 300	11725 [6900]	8281 [4873]	9110 [5361]	12572 [7399]	19434 [11437]	

* Nm³/h in acc. with DIN 1343: 0 °C, 1013.25 hPa for gases
** ISO 1217: 20 °C, 1000 hPa for air

Flow measuring ranges KEP-1

Measuring ranges max version

Inside diameter of pipe			**Max version** (185.0 m/s) Measuring range full scales in Nm³/h* / [cfm]					Recommended probe length
Inch	mm	DN	Air**	Nitrogen (N_2)	Argon (Ar)	Oxygen (O_2)	Carbon dioxide (CO_2)	
½"	16.1	DN 15	90 [53]	83 [49]	142 [83]	86 [51]	90 [52]	160 mm - 6.299 inch
¾"	21.7	DN 20	177 [104]	163 [96]	278 [163]	169 [99]	175 [103]	
1"	27.3	DN 25	294 [173]	271 [159]	460 [271]	280 [165]	291 [171]	
1 ¼"	36.0	DN 32	531 [312]	488 [287]	830 [489]	506 [298]	525 [309]	
1 ½"	41.9	DN 40	732 [430]	673 [396]	1144 [673]	697 [410]	724 [426]	
2"	53.1	DN 50	1197 [704]	1101 [648]	1872 [1101]	1141 [671]	1185 [697]	
2 ½"	68.9	DN 65	2051 [1207]	1886 [1110]	3207 [1887]	1955 [1151]	2030 [1194]	220 mm - 8.661 inch
3"	80.9	DN 80	2842 [1672]	2614 [1538]	4444 [2615]	2710 [1594]	2813 [1655]	
4"	110.0	DN 100	5278 [3106]	4854 [2856]	8252 [4856]	5032 [2961]	5223 [3074]	
5"	133.7	DN 125	7807 [4594]	7179 [4225]	12206 [7183]	7443 [4380]	7726 [4546]	
6"	159.3	DN 150	11096 [6530]	10204 [6005]	17349 [10210]	10579 [6226]	10981 [6462]	300 mm - 11.811 inch
8"	200.0	DN 200	17533 [10318]	16123 [9488]	27413 [16132]	16716 [9837]	17351 [10211]	
10"	250.0	DN 250	27428 [16141]	25223 [14843]	42884 [25237]	26150 [15389]	27143 [15974]	
12"	300.0	DN 300	39544 [23271]	36364 [21400]	61827 [36385]	37701 [22187]	39133 [23030]	

Measuring ranges max version (continued)

Inside diameter of pipe			**Max version** (185.0 m/s) Measuring range full scales in Nm³/h* / [cfm]					Recommended probe length
Inch	mm	DN	Methane natural gas (CH_4)	Helium (He)	Propane (C_3H_8)	Natural gas (NG)	Nitrous oxide (N_2O)	
½"	16.1	DN 15	53 [31]	38 [22]	41 [24]	57 [33]	89 [52]	160 mm - 6.299 inch
¾"	21.7	DN 20	105 [61]	74 [43]	81 [48]	112 [66]	174 [102]	
1"	27.3	DN 25	174 [102]	123 [72]	135 [79]	187 [110]	289 [170]	
1 ¼"	36.0	DN 32	314 [185]	222 [130]	244 [143]	337 [198]	521 [306]	
1 ½"	41.9	DN 40	433 [254]	305 [180]	336 [198]	464 [273]	718 [422]	
2"	53.1	DN 50	708 [417]	500 [294]	550 [324]	759 [447]	1174 [691]	
2 ½"	68.9	DN 65	1214 [714]	857 [504]	943 [555]	1301 [766]	2012 [1184]	220 mm - 8.661 inch
3"	80.9	DN 80	1682 [989]	1188 [699]	1307 [769]	1803 [1061]	2788 [1640]	
4"	110.0	DN 100	3123 [1838]	2206 [1298]	2427 [1428]	3349 [1971]	5177 [3046]	
5"	133.7	DN 125	4620 [2718]	3263 [1920]	3589 [2112]	4954 [2915]	7657 [4506]	
6"	159.3	DN 150	6566 [3864]	4637 [2729]	5102 [3002]	7041 [4143]	10883 [6405]	300 mm - 11.811 inch
8"	200.0	DN 200	10375 [6105]	7328 [4312]	8061 [4744]	11125 [6547]	17196 [10120]	
10"	250.0	DN 250	16231 [9552]	11463 [6746]	12611 [7421]	17404 [10242]	26901 [15831]	
12"	300.0	DN 300	23400 [13771]	16527 [9726]	18182 [10700]	25091 [14766]	38784 [22824]	

* Nm³/h in acc. with DIN 1343: 0 °C, 1013.25 hPa for gases
** ISO 1217: 20 °C, 1000 hPa for air

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Measuring ranges high-speed version

Inside diameter of pipe			**High-speed version** (224.0 m/s) Measuring range full scales in Nm³/h* / [cfm]					Recommended probe length
Inch	**mm**	**DN**	**Air****	**Nitrogen (N_2)**	**Argon (Ar)**	**Oxygen (O_2)**	**Carbon dioxide (CO_2)**	
½"	16.1	DN 15	110 [64]	101 [59]	172 [101]	105 [61]	109 [64]	160 mm - 6.299 inch
¾"	21.7	DN 20	215 [126]	198 [116]	336 [198]	205 [120]	213 [125]	
1"	27.3	DN 25	356 [210]	328 [193]	557 [328]	340 [200]	353 [207]	
1 ¼"	36.0	DN 32	643 [378]	591 [348]	1006 [592]	613 [361]	636 [374]	
1 ½"	41.9	DN 40	886 [521]	815 [479]	1385 [815]	845 [497]	877 [516]	
2"	53.1	DN 50	1450 [853]	1333 [784]	2267 [1334]	1382 [813]	1434 [844]	
2 ½"	68.9	DN 65	2484 [1461]	2284 [1344]	3883 [2285]	2368 [1393]	2458 [1446]	220 mm - 8.661 inch
3"	80.9	DN 80	3441 [2025]	3165 [1862]	5381 [3166]	3281 [1931]	3406 [2004]	
4"	110.0	DN 100	6391 [3761]	5877 [3458]	9992 [5880]	6093 [3586]	6324 [3722]	
5"	133.7	DN 125	9453 [5563]	8693 [5116]	14780 [8698]	9012 [5304]	9355 [5505]	
6"	159.3	DN 150	13436 [7907]	12355 [7271]	21007 [12362]	12810 [7538]	13296 [7825]	300 mm - 11.811 inch
8"	200.0	DN 200	21229 [12493]	19522 [11489]	33192 [19533]	20240 [11911]	21009 [12363]	
10"	250.0	DN 250	33211 [19544]	30540 [17973]	51925 [30557]	31663 [18633]	32865 [19341]	
12"	300.0	DN 300	47880 [28177]	44030 [25912]	74861 [44055]	45649 [26864]	47383 [27885]	

Measuring ranges high-speed version (continued)

Inside diameter of pipe			**High-speed version** (224.0 m/s) Measuring range full scales in Nm³/h* / [cfm]					Recommended probe length
Inch	**mm**	**DN**	**Methane natural gas (CH_4)**	**Helium (He)**	**Propane (C_3H_8)**	**Natural gas (NG)**	**Nitrous oxide (N_2O)**	
½"	16.1	DN 15	65 [38]	46 [27]	50 [29]	69 [41]	108 [63]	160 mm - 6.299 inch
¾"	21.7	DN 20	127 [74]	89 [52]	99 [58]	136 [80]	211 [124]	
1"	27.3	DN 25	211 [124]	149 [87]	164 [96]	226 [133]	349 [205]	
1 ¼"	36.0	DN 32	380 [224]	268 [158]	295 [174]	408 [240]	631 [371]	
1 ½"	41.9	DN 40	524 [308]	370 [218]	407 [239]	562 [331]	869 [511]	
2"	53.1	DN 50	858 [504]	606 [356]	666 [392]	920 [541]	1422 [836]	
2 ½"	68.9	DN 65	1469 [865]	1038 [611]	1142 [672]	1576 [927]	2436 [1433]	220 mm - 8.661 inch
3"	80.9	DN 80	2036 [1198]	1438 [846]	1582 [931]	2183 [1285]	3375 [1986]	
4"	110.0	DN 100	3782 [2225]	2671 [1572]	2938 [1729]	4055 [2386]	6268 [3689]	
5"	133.7	DN 125	5594 [3292]	3951 [2325]	4346 [2558]	5998 [3530]	9271 [5456]	
6"	159.3	DN 150	7950 [4679]	5615 [3304]	6177 [3635]	8525 [5017]	13178 [7755]	300 mm - 11.811 inch
8"	200.0	DN 200	12562 [7393]	8873 [5221]	9761 [5744]	13470 [7927]	20821 [12253]	
10"	250.0	DN 250	19652 [11565]	13880 [8168]	15270 [8986]	21072 [12401]	32573 [19169]	
12"	300.0	DN 300	28333 [16674]	20012 [11777]	22015 [12956]	30381 [17879]	46961 [27636]	

* Nm³/h in acc. with DIN 1343: 0 °C, 1013.25 hPa for gases
** ISO 1217: 20 °C, 1000 hPa for air

Flow measuring ranges KEP-2

Measuring ranges low-speed version

Inside diameter of pipe			**Low-speed version** (50 m/s) Measuring range full scales in Nm³/h* / [cfm]				
Inch	**mm**	**DN**	**Air****	**Nitrogen (N_2)**	**Argon (Ar)**	**Oxygen (O_2)**	**Carbon dioxide (CO_2)**
¼"	8,9	DN 8	25 Nl/min [0.9]	25 Nl/min [0.9]	45 Nl/min [1.5]	25 Nl/min [0.9]	25 Nl/min [0.9]
⅜"	12,5	DN 10	225 Nl/min [8]	205 Nl/min [7.2]	330 Nl/min [11.7]	215 Nl/min [7.5]	225 Nl/min [7.9]
½"	16.1	DN 15	20 [14.4]	20 [13.2]	35 [20]	20 [13.5]	20 [14.1]
¾"	21.7	DN 20	45 [25]	40 [25]	75 [40]	45 [25]	45 [25]
1"	27.3	DN 25	75 [45]	70 [40]	120 [70]	75 [40]	75 [45]
1 ¼"	36.0	DN 32	140 [80]	130 [75]	220 [130]	135 [80]	140 [80]
1 ½"	41.9	DN 40	195 [115]	180 [105]	305 [180]	185 [110]	195 [115]
2"	53.1	DN 50	320 [190]	295 [175]	505 [295]	305 [180]	320 [185]
2 ½"	68.9	DN 65	550 [325]	505 [300]	865 [510]	525 [310]	545 [320]
3"	80.9	DN 80	765 [450]	705 [415]	1200 [705]	730 [430]	760 [445]

Measuring ranges low-speed version (continued)

Inside diameter of pipe			**Low-speed version** (50 m/s) Measuring range full scales in Nm³/h* / [cfm]				
Inch	**mm**	**DN**	**Methane natural gas (CH_4)**	**Helium (He)**	**Propane (C_3H_8)**	**Natural gas (NG)**	**Nitrous oxide (N_2O)**
¼"	8,9	DN 8	15 Nl/min [0.6]	735 Nl/h [0.3]	810 Nl/min [0.3]	15 Nl/min [0.6]	25 Nl/min [0.9]
⅜"	12,5	DN 10	130 Nl/min [4.5]	95 Nl/min [3.3]	100 Nl/min [3.5]	140 Nl/min [4.9]	220 Nl/min [7.7]
½"	16.1	DN 15	240 Nl/min [8.4]	170 Nl/min [6]	185 Nl/min [6.6]	15 [9]	20 [14.1]
¾"	21.7	DN 20	25 [15]	20 [11.7]	20 [12.9]	30 [15]	45 [25]
1"	27.3	DN 25	45 [25]	30 [15]	35 [20]	50 [25]	75 [45]
1 ¼"	36.0	DN 32	85 [50]	60 [35]	65 [35]	90 [50]	140 [80]
1 ½"	41.9	DN 40	115 [65]	80 [45]	90 [50]	125 [70]	190 [110]
2"	53.1	DN 50	190 [110]	135 [75]	145 [85]	205 [120]	315 [185]
2 ½"	68.9	DN 65	325 [190]	230 [135]	250 [150]	350 [205]	540 [320]
3"	80.9	DN 80	450 [265]	320 [185]	350 [205]	485 [285]	750 [440]

* Nm³/h in acc. with DIN 1343: 0 °C, 1013.25 hPa for gases
** ISO 1217: 20 °C, 1000 hPa for air

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Flow measuring ranges KEP-2

Measuring ranges standard version

Inside diameter of pipe			**Standard version** (92.7 m/s) Measuring range full scales in Nm³/h* / [cfm]				
Inch	**mm**	**DN**	**Air****	**Nitrogen (N_2)**	**Argon (Ar)**	**Oxygen (O_2)**	**Carbon dioxide (CO_2)**
¼"	8,9	DN 8	50 Nl/min [1.8]	50 Nl/min [1.5]	85 Nl/min [3]	50 Nl/min [1.8]	50 Nl/min [1.8]
⅜"	12,5	DN 10	25 [14.7]	20 [11.7]	35 [20.5]	20 [11.7]	25 [14.7]
½"	16.1	DN 15	45 [25]	40 [20]	70 [40]	40 [25]	45 [25]
¾"	21.7	DN 20	85 [50]	80 [45]	135 [80]	80 [45]	85 [50]
1"	27.3	DN 25	145 [85]	135 [75]	230 [135]	140 [80]	145 [85]
1¼"	36.0	DN 32	265 [155]	240 [140]	415 [245]	250 [145]	260 [155]
1½"	41.9	DN 40	365 [215]	335 [195]	570 [335]	345 [205]	360 [210]
2"	53.1	DN 50	600 [350]	550 [320]	935 [550]	570 [335]	590 [345]
2½"	68.9	DN 65	1025 [600]	945 [555]	1605 [945]	980 [575]	1015 [595]
3"	80.9	DN 80	1420 [835]	1305 [770]	2225 [1310]	1355 [795]	1405 [825]

Measuring ranges standard version (continued)

Inside diameter of pipe			**Standard version** (92.7 m/s) Measuring range full scales in Nm³/h* / [cfm]				
Inch	**mm**	**DN**	**Methane natural gas (CH_4)**	**Helium (He)**	**Propane (C_3H_8)**	**Natural gas (NG)**	**Nitrous oxide (N_2O)**
¼"	8,9	DN 8	30 Nl/min [0.9]	20 Nl/min [0.6]	25 Nl/min [0.6]	30 Nl/min [1.2]	50 Nl/min [1.8]
⅜"	12,5	DN 10	245 Nl/min [8.6]	175 Nl/min [6.1]	190 Nl/min [6.7]	15 [8.8]	20 [11.7]
½"	16.1	DN 15	25 [15]	15 [11.1]	20 [12.3]	25 [15]	40 [25]
¾"	21.7	DN 20	50 [30]	35 [20]	40 [20]	55 [30]	85 [50]
1"	27.3	DN 25	85 [50]	60 [35]	65 [35]	90 [55]	140 [85]
1¼"	36.0	DN 32	155 [90]	110 [65]	120 [70]	165 [95]	260 [150]
1½"	41.9	DN 40	215 [125]	150 [90]	165 [95]	230 [135]	355 [210]
2"	53.1	DN 50	355 [205]	250 [145]	275 [160]	380 [220]	585 [345]
2½"	68.9	DN 65	605 [355]	425 [250]	470 [275]	650 [380]	1005 [590]
3"	80.9	DN 80	840 [495]	595 [350]	650 [385]	900 [530]	1395 [820]

* Nm³/h in acc. with DIN 1343: 0 °C, 1013.25 hPa for gases
** ISO 1217: 20 °C, 1000 hPa for air

Flow measuring ranges KEP-2

Measuring ranges max version

Inside diameter of pipe			**Max version** (185.0 m/s) Measuring range full scales in Nm³/h* / [cfm]				
Inch	**mm**	**DN**	**Air****	**Nitrogen (N_2)**	**Argon (Ar)**	**Oxygen (O_2)**	**Carbon dioxide (CO_2)**
¼"	8,9	DN 8	105 Nl/min [3,6]	100 Nl/min [3,3]	170 Nl/min [6]	100 Nl/min [3,6]	105 Nl/min [3,6]
⅜"	12,5	DN 10	50 [29,4]	45 [26,4]	75 [44,1]	45 [26,4]	50 [29,4]
½"	16.1	DN 15	90 [50]	80 [45]	140 [80]	85 [50]	90 [50]
¾"	21.7	DN 20	175 [100]	160 [95]	275 [160]	165 [95]	175 [100]
1"	27.3	DN 25	290 [170]	270 [155]	460 [270]	280 [165]	290 [170]
1¼"	36.0	DN 32	530 [310]	485 [285]	830 [485]	505 [295]	525 [305]
1½"	41.9	DN 40	730 [430]	670 [395]	1140 [670]	695 [410]	720 [425]
2"	53.1	DN 50	1195 [700]	1100 [645]	1870 [1100]	1140 [670]	1185 [695]
2½"	68.9	DN 65	2050 [1205]	1885 [1110]	3205 [1885]	1955 [1150]	2030 [1190]
3"	80.9	DN 80	2840 [1670]	2610 [1535]	4440 [2615]	2710 [1590]	2810 [1655]

Measuring ranges max version (continued)

Inside diameter of pipe			**Max version** (185.0 m/s) Measuring range full scales in Nm³/h* / [cfm]				
Inch	**mm**	**DN**	**Methane natural gas (CH_4)**	**Helium (He)**	**Propane (C_3H_8)**	**Natural gas (NG)**	**Nitrous oxide (N_2O)**
¼"	8,9	DN 8	60 Nl/min [2,1]	45 Nl/min [1,5]	50 Nl/min [1,5]	65 Nl/min [2.4]	105 Nl/min [3.6]
⅜"	12,5	DN 10	25 [14,7]	20 [11,7]	20 [11,7]	30 [17.6]	45 [26.4]
½"	16.1	DN 15	50 [30]	35 [20]	40 [20]	55 [30]	85 [50]
¾"	21.7	DN 20	105 [60]	70 [40]	80 [45]	110 [65]	170 [100]
1"	27.3	DN 25	170 [100]	120 [70]	135 [75]	185 [110]	285 [170]
1¼"	36.0	DN 32	310 [185]	220 [130]	240 [140]	335 [195]	520 [305]
1½"	41.9	DN 40	430 [250]	305 [180]	335 [195]	460 [270]	715 [420]
2"	53.1	DN 50	705 [415]	500 [290]	550 [320]	755 [445]	1170 [690]
2½"	68.9	DN 65	1210 [710]	855 [500]	940 [555]	1300 [765]	2010 [1180]
3"	80.9	DN 80	1680 [985]	1185 [695]	1305 [765]	1800 [1060]	2785 [1640]

* Nm³/h in acc. with DIN 1343: 0 °C, 1013.25 hPa for gases
** ISO 1217: 20 °C, 1000 hPa for air

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Flow measuring ranges KEP-2

Measuring ranges high-speed version

Inside diameter of pipe			**High-speed version** (224.0 m/s) Measuring range full scales in Nm³/h* / [cfm]				
Inch	**mm**	**DN**	**Air****	**Nitrogen (N_2)**	**Argon (Ar)**	**Oxygen (O_2)**	**Carbon dioxide (CO_2)**
¼"	8,9	DN 8	130 Nl/min [4.5]	120 Nl/min [4.2]	205 Nl/min [7.2]	125 Nl/min [4.2]	130 Nl/min [4.5]
⅜"	12,5	DN 10	60 [35.3]	55 [32.3]	95 [55.9]	55 [32.3]	60 [35.3]
½"	16.1	DN 15	110 [60]	100 [55]	170 [100]	105 [60]	105 [60]
¾"	21.7	DN 20	215 [125]	195 [115]	335 [195]	205 [120]	210 [125]
1"	27.3	DN 25	355 [210]	325 [190]	555 [325]	340 [200]	350 [205]
1¼"	36.0	DN 32	640 [375]	590 [345]	1005 [590]	610 [360]	635 [370]
1½"	41.9	DN 40	885 [520]	815 [475]	1385 [815]	845 [495]	875 [515]
2"	53.1	DN 50	1450 [850]	1330 [780]	2265 [1330]	1380 [810]	1430 [840]
2½"	68.9	DN 65	2480 [1460]	2280 [1340]	3880 [2285]	2365 [1390]	2455 [1445]
3"	80.9	DN 80	3440 [2025]	3165 [1860]	5380 [3165]	3280 [1930]	3405 [2000]

Measuring ranges high-speed version (continued)

Inside diameter of pipe			**High-speed version** (224.0 m/s) Measuring range full scales in Nm³/h* / [cfm]				
Inch	**mm**	**DN**	**Methane natural gas (CH_4)**	**Helium (He)**	**Propane (C_3H_8)**	**Natural gas (NG)**	**Nitrous oxide (N_2O)**
¼"	8,9	DN 8	75 Nl/min [2.7]	55 Nl/min [1.8]	60 Nl/min [2.1]	80 Nl/min [2.7]	125 Nl/min [4.5]
⅜"	12,5	DN 10	35 [20.5]	25 [14.7]	25 [14.7]	35 [20.5]	60 [35.3]
½"	16.1	DN 15	65 [35]	45 [25]	50 [25]	65 [40]	105 [60]
¾"	21.7	DN 20	125 [70]	85 [50]	95 [55]	135 [80]	210 [120]
1"	27.3	DN 25	210 [120]	145 [85]	160 [95]	225 [130]	345 [205]
1¼"	36.0	DN 32	380 [220]	265 [155]	295 [170]	405 [240]	630 [370]
1½"	41.9	DN 40	520 [305]	370 [215]	405 [235]	560 [330]	865 [510]
2"	53.1	DN 50	855 [500]	605 [355]	665 [390]	920 [540]	1420 [835]
2½"	68.9	DN 65	1465 [865]	1035 [610]	1140 [670]	1575 [925]	2435 [1430]
3"	80.9	DN 80	2035 [1195]	1435 [845]	1580 [930]	2180 [1285]	3375 [1985]

* Nm³/h in acc. with DIN 1343: 0 °C, 1013.25 hPa for gases
** ISO 1217: 20 °C, 1000 hPa for air