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

Thermal Mass Flow Meter

for gases

measuring • monitoring • analysing

KEC

- 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} 100 bar, t_{max} 180 °C
- Fast response time
- No moving parts
- Analogue output, alarm contact, Modbus RTU and impulse output
- ATEX approval

S5

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KOBOLD Messring GmbH
Nordring 22-24
D-65719 Hofheim/Ts.
Head Office:
+49(0)6192 299-0
+49(0)6192 23398
info.de@kobold.com
www.kobold.com

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Description

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

Due to its robust design, the aluminium die cast housing, the robust sensor tip made from stainless steel 1.4571, new KEC are suitable for demanding industrial applications.

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 180 °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.

KEC 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 are also 2 x 4 - 20 mA analogue outputs available for flow and temperature 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

- Ideal also for the outdoor area
- Compressed air measurement and distribution
- Leakage measurement of compressed air and gases
- Flow measurement of gases like e. g. nitrogen, argon, carbon dioxide, oxygen etc.
- Flow measurement in vacuum systems
- Flow measurement of corrosive, acid gases like e. g. biogas with different gas mixtures
- 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
- Sensor tip very robust, easy to clean
- 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

KEC-Display

- 2" TFT colour display (320 x 420)
- Display and housing rotatable by 180°
- The following values are displayed on Display: Flow, total consumption, velocity and temperature
- Units freely adjustable via display

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

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Configuration of KEC via PC Service Software

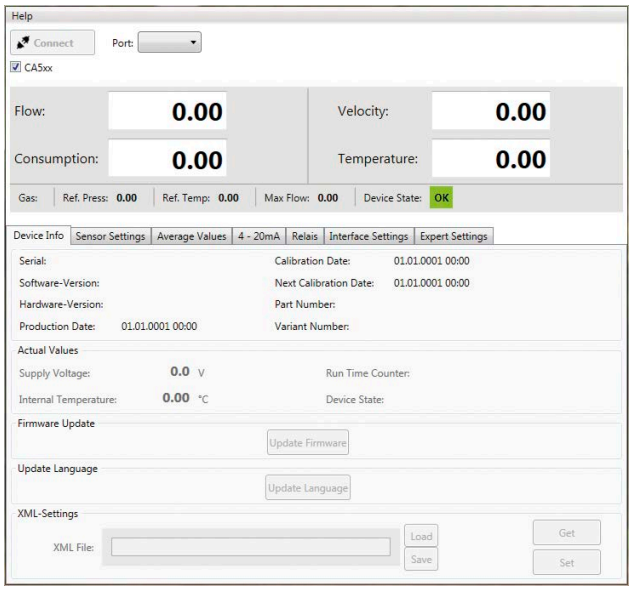
In general all configurations can be done via the integrated display. For sensors without display there is a PC Service Software available.

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

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

KEC-2 ... In-line version for NW 15 ... NW 80

KEC-1 Immersion Sensor

Flow sensor for heavy duty industrial applications inclusive temperature measurement.

The immersion sensor KEC-1 is the ideal flow sensor for installation into existing compressed air resp. gas lines from ¾" ... DN 1000.

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

Technical Details KEC-1/KEC-3

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
Repeatability:	0.25% of reading in case of correct mounting (mounting support, position, inlet section)
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:	-40 ... 180 °C standard version, probe tube -20 ... 120 °C for media O_2, natural gas, propane, methane, biogas or in combination with option silicone free or with ATEX version -40 ... 70 °C display unit
Adjustment possibilities via display, PC Service Software, remote diagnosis:	Nm³/h, Nm³/min, Nl/min, l/s, ft/min, cfm, kg/h, kg/min, inner diameter, reference conditions °C / °F, mbar / hPa, zero-point correction, leak flow volume suppression, scaling of analogue output 4-20 mA, pulse / alarm, error codes etc.
Outputs:	Modbus RTU, 2 x 4-20 mA galvanically isolated for °C and Nm³/h, pulse (pulse rate freely selectable), alarm max. 48 V_{DC} 0.5 A
Load:	500 Ω
3 internal counters:	1 x total counter deletable, freely adjustable counter between 1 minute and 1 day deletable, e. g. ½ hours counter, day counter
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 67
Material:	housing aluminium die cast, probe tube stainless steel 1.4571, glass
Screw-in thread:	G ½ ISO 228, ½" NPT
Operating pressure KEC-1:	50 bar; in special version 100 bar
Power supply:	18 ... 36 V_{DC}, 5 W
Approvals:	Ⓔx II 2G Ex db IIC T4 Gb II 2D Ex tb IIIC T90°C Db

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subject to change without prior notice.

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Order Details KEC-1/KEC-3 Immersion Version (Example: KEC-1 S 016 1 L S 00)

Model	Measuring range	Connection / sensor length	Display	Gas type	Max. pressure[5]	Calibration	Options
KEC-1 = Standard version **KEC-3** = ATEX 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	**016** = G ½, 160 mm **022** = G ½, 220 mm **030** = G ½, 300 mm **040** = G ½, 400 mm **050** = G ½, 500 mm **060** = G ½, 600 mm **116** = ½" NPT, 160 mm **122** = ½" NPT, 220 mm **130** = ½" NPT, 300 mm **140** = ½" NPT, 400 mm **150** = ½" NPT, 500 mm **160** = ½" NPT, 600 mm	**1** = with integrated display **0** = without display	**L** = air **N** = nitrogen **A**[2)4)] = argon, carbon dioxide, oxygen, nitrous oxide, methane, biogas, natural gas **E**[2)3)] = hydrogen[6)], helium, propane **S**[8)] = other gas or gas mixture	**S** = 50 bar (standard) **H** = 100 bar (high pressure)	**0** = standard **E**[7)] = real gas calibration **C**[1)] = 5 point calibration certificate **J** = ±1 % accuracy class of reading (precision)	**0** = without **R** = cleaning oil and fat free **S**[4)] = silicone free version incl. oil and fat free cleaning

[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 … 120 °C. Operating pressure must be specified when ordering. [5)] Operating pressure and operating temperature must be specified when ordering. [6)] with „hydrogen“ only up to 1" [7)] Required when selecting gas type E [8)] Other gas: Specify gas type; Gas mixture: Specify mixing ratio

A comprehensive list of gas types and related flow measuring ranges per pipe diameter can be found on pages 10 to 13.

Accessories

Model	Description	
KEC-Soft	Service software incl. PC-connector	
KEC-ZANR1500	Welding nipple, L = 35 mm, male thread, R½" st. st. 1.4571	

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KEC-2 with integrated measuring section

KEC-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 KEC-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*						
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	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 KEC-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*						
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	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 14 to 17.

Technical Details KEC-2/KEC-4

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
Repeatability:	0.25 % of reading in case of correct mounting (mounting support, position, inlet section)
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:	-40 ... 180 °C standard version, probe tube -20…120°C for media O_2, natural gas, propane, methane, biogas or in combination with option silicone free or with ATEX version -40 ... 70 °C display unit
Adjustment possibilities via display, PC Service Software, remote diagnosis:	Nm³/h, Nm³/min, Nl/min, l/s, ft/min, cfm, kg/h, kg/min, inner diameter, reference conditions °C / °F, mbar/hPa, zero-point correction, leak flow volume suppression, scaling of analogue output 4 - 20 mA, pulse/alarm, error codes etc.
Outputs:	Modbus RTU, 2 x 4 - 20 mA galvanically isolated for °C and Nm³/h, pulse (pulse rate freely selectable), alarm max. 48 V_{DC} 0.5 A
Load:	500 Ω
3 internal counters:	1 x total counter deletable, freely adjustable counter between 1 minute and 1 day deletable, e. g. ½ hours counter, day counter
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 67
Material:	Housing aluminium die cast, probe tube stainless steel 1.4571, glass
Operating pressure:	16 bar, in special version 40 bar
Power supply:	18...36 V_{DC}, 5 W
Approvals:	Ⓔx II 2G Ex db IIC T4 Gb II 2D Ex tb IIIC T90°C Db

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

Ordering Details KEC-2/KEC-4 In-Line version (Example: KEC-2 S R15 1 L S 0 0)

Model	Measuring range	Connection	Display	Gas type	Max. pressure[5]	Calibration	Options
KEC-2 = standard version **KEC-4** = ATEX 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	**R15** = R ½ male **R20** = R ¾ male **R25** = R 1 male **R32** = R 1¼ male **R40** = R 1½ male **R50** = R 2 male **Nxx** = NPT thread **Flange DIN EN 1092-1 PN40** **F15** = flange DN 15 **F20** = flange DN 20 **F25** = flange DN 25 **F32** = flange DN 32 **F40** = flange DN 40 **F50** = flange DN 50 **F65** = flange DN 65 **F80** = flange DN 80 **Flange ASME Class 150** **A15** = flange ½" ASME **A20** = flange ¾" ASME **A25** = flange 1" ASME **A32** = flange 1 ¼" ASME **A40** = flange 1 ½" ASME **A50** = flange 2" ASME **A65** = flange 2 ½" ASME **A80** = flange 3" ASME **Bxx** = flange ASME Class 300 **XXX** = special version	**1** = with integrated display **0** = without display	**L** = air **N** = nitrogen **A**[2)4)] = argon, carbon dioxide, oxygen, nitrous oxide, methane, biogas, natural gas **E**[2)3)] = hydrogen[6)], helium, propane **S**[8)] = other gas or gas mixture	**S** = 16 bar (standard) **H** = 40 bar (high pressure)	**0** = standard **E**[7)] = real gas calibration **C**[1)] = 5 point calibration certificate **J** = ± 1 % accuracy class of reading (precision)	**0** = without **R** = cleaning oil and fat free **S**[4)] = silicone free version incl. oil and fat free cleaning

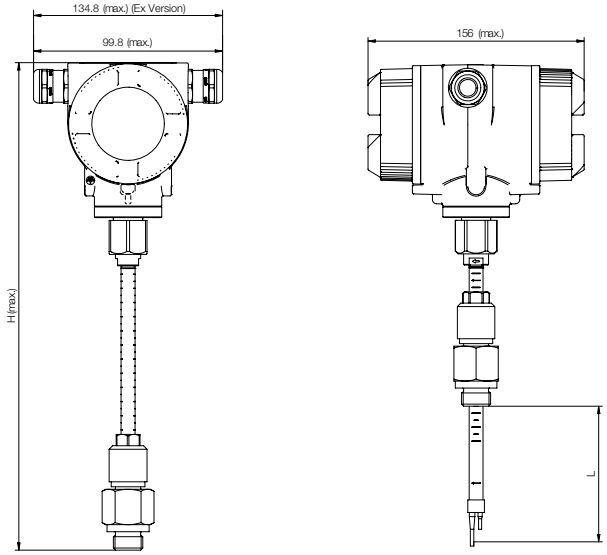
[1)] 3-point calibration certificate is included in standard version. Standard calibration is carried out at 5 bar and 20 °C. [2)] please specify gas in writing [3)] with real gas calibration only [4)] Reduced operating temperature range: -20…120°C. Operating pressure must be specified when ordering. [5)] Operating pressure and operating temperature must be specified when ordering. [6)] with „hydrogen“ only up to 1" [7)] Required when selecting gas type E [8)] Other gas: Specify gas type; Gas mixture: Specify mixing ratio

Accessories

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

Dimensions [mm]

KEC-1/KEC-3



L [mm]	H [mm]
220	441
300	521
400	621
500	721
600	821
160	381

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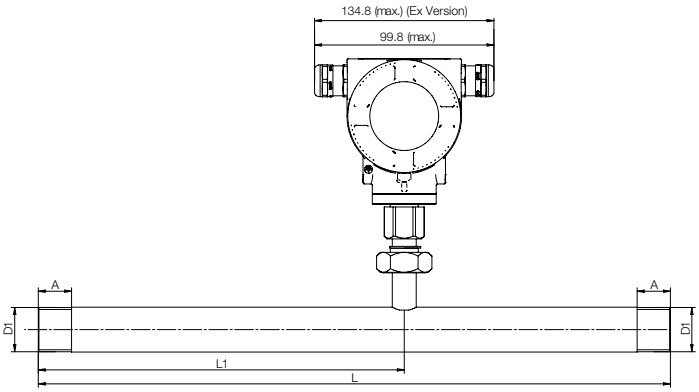
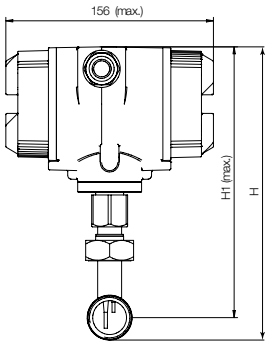
Dimensions [mm] (continuation)

KEC-2/KEC-4

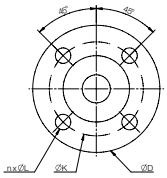


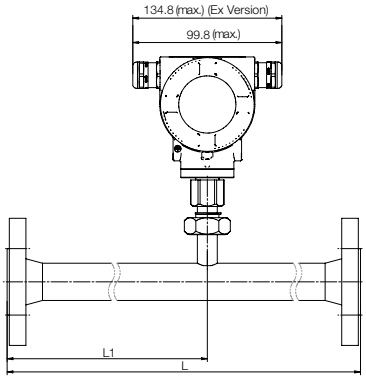


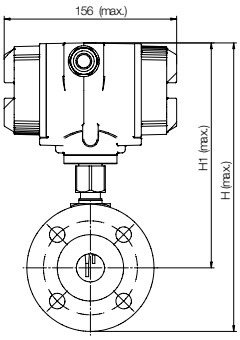
KEC-2/KEC-4 thread

Thread connection D1	Pipe outer Ø [mm]	Pipe inner Ø [mm]	L [mm]	L1 [mm]	H [mm]	H1 [mm]	A [mm]
R ½"	21.3	16.1	300	210	176.4	165.7	20
R ¾"	26.9	21.7	475	275	179.2	165.7	20
R 1"	33.7	27.3	475	275	182.6	165.7	25
R 1¼"	42.4	36.0	475	275	186.9	165.7	25
R 1½"	48.3	41.9	475*	275	186.9	165.7	25
R2"	60.3	53.1	475*	275	195.9	165.7	30

*Attention: Shortened inlet section! Please observe the recommended minimum inlet section (length = 10 x inner diameter).







KEC-2/KEC-4 flange

							Flange DIN EN 1092-1		
Flange connection	Pipe outer Ø [mm]	Pipe inner Ø [mm]	L [mm]	L1 [mm]	H [mm]	H1 [mm]	ØD	ØK	n x ØL
DN 15	21.3	16.1	300	210	213.2	165.7	95	65	4 x 14
DN 20	26.9	21.7	475	275	218.2	165.7	105	75	4 x 14
DN 25	33.7	27.3	475	275	223.2	165.7	115	85	4 x 14
DN 32	42.4	36.0	475	275	235.7	165.7	140	100	4 x 18
DN 40	48.3	41.9	475*	275	240.7	165.7	150	110	4 x 18
DN 50	60.3	53.1	475*	275	248.2	165.7	165	125	4 x 18
DN 65	76.1	68.9	475	275	268.2	175.7	185	145	8 x 18
DN 80	88.9	80.9	475	275	275.7	175.7	200	160	8 x 18

*Attention: Shortened inlet section! Please observe the recommended minimum inlet section (length = 10 x inner diameter).

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Flow measuring ranges KEC-1/KEC-3

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)	Methane natural gas (CH_4)	Helium (He)	Hydrogen (H_2)	Propane (C_3H_8)	
½"	16.1	DN 15	24 [14]	22 [13]	38 [22]	23 [13]	24 [14]	14 [8]	10 [6]	7 [4]	11 [6]	160 mm - 6.299 inch
¾"	21.7	DN 20	48 [28]	44 [26]	75 [44]	45 [26]	47 [27]	28 [16]	20 [11]	14 [8]	22 [13]	
1"	27.3	DN 25	79 [46]	73 [43]	124 [73]	75 [44]	78 [46]	47 [27]	33 [19]	23 [13]	36 [21]	
1 ¼"	36.0	DN 32	143 [84]	132 [77]	224 [132]	136 [80]	142 [83]	85 [50]	60 [35]	42 [24]	66 [38]	
1 ½"	41.9	DN 40	197 [116]	181 [107]	309 [182]	188 [111]	195 [115]	117 [68]	82 [48]	58 [34]	90 [53]	
2"	53.1	DN 50	323 [190]	297 [175]	506 [297]	308 [181]	320 [188]	191 [112]	135 [79]	95 [55]	148 [87]	
2 ½"	68.9	DN 65	554 [326]	509 [300]	866 [510]	528 [311]	548 [322]	328 [193]	231 [136]	162 [95]	254 [150]	220 mm - 8.661 inch
3"	80.9	DN 80	768 [452]	706 [415]	1201 [706]	732 [431]	760 [447]	454 [267]	321 [188]	225 [132]	353 [207]	
4"	110.0	DN 100	1426 [839]	1311 [772]	2230 [1312]	1360 [800]	1411 [830]	844 [496]	596 [350]	418 [246]	655 [386]	
5"	133.7	DN 125	2110 [1241]	1940 [1141]	3299 [1941]	2011 [1183]	2088 [1228]	1248 [734]	881 [519]	619 [364]	970 [570]	
6"	159.3	DN 150	2999 [1765]	2758 [1623]	4689 [2759]	2859 [1682]	2967 [1746]	1774 [1044]	1253 [737]	880 [518]	1379 [811]	300 mm - 11.811 inch
8"	200.0	DN 200	4738 [2788]	4357 [2564]	7409 [4360]	4517 [2658]	4689 [2759]	2804 [1650]	1980 [1165]	1391 [819]	2178 [1282]	
10"	250.0	DN 250	7413 [4362]	6817 [4011]	11590 [6820]	7067 [4159]	7336 [4317]	4386 [2581]	3098 [1823]	2177 [1281]	3408 [2005]	
12"	300.0	DN 300	10687 [6289]	9828 [5783]	16710 [9833]	10189 [5996]	10576 [6224]	6324 [3721]	4466 [2628]	3138 [1847]	4914 [2891]	

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	Corgon ®18	Forming gas 90% N_2 + 10% H_2	Natural gas (NG)	Biogas 50% CH_4 + 50% CO_2	Biogas 60% CH_4 + 40% CO_2	LPG 60% C_3H_8 + 40% C_4H_{10}	LPG 50% C_3H_8 + 50% C_4H_{10}	Nitrous oxide (N_2O)	Ethyne/ Acetylene (C_2H_2)	
½"	16.1	DN 15	35 [21]	20 [12]	15 [9]	17 [10]	17 [10]	13 [7]	12 [7]	24 [14]	13 [8]	160 mm - 6.299 inch
¾"	21.7	DN 20	70 [41]	40 [23]	30 [17]	34 [20]	34 [20]	25 [15]	25 [14]	47 [27]	26 [15]	
1"	27.3	DN 25	116 [68]	67 [39]	50 [29]	57 [34]	56 [33]	42 [24]	41 [24]	78 [45]	44 [26]	
1 ¼"	36.0	DN 32	209 [123]	121 [71]	91 [53]	104 [61]	101 [59]	76 [45]	74 [44]	140 [89]	80 [47]	
1 ½"	41.9	DN 40	288 [170]	167 [98]	125 [73]	143 [84]	140 [82]	105 [62]	103 [60]	194 [114]	110 [65]	
2"	53.1	DN 50	472 [278]	273 [161]	205 [120]	235 [138]	229 [135]	172 [101]	168 [99]	317 [186]	181 [106]	
2 ½"	68.9	DN 65	809 [476]	469 [276]	351 [207]	403 [237]	393 [231]	295 [173]	288 [169]	543 [320]	311 [183]	220 mm - 8.661 inch
3"	80.9	DN 80	1121 [660]	649 [382]	487 [286]	558 [328]	544 [320]	409 [240]	400 [235]	753 [443]	430 [253]	
4"	110.0	DN 100	2082 [1225]	1206 [710]	905 [532]	1037 [610]	1011 [595]	759 [447]	742 [437]	1399 [823]	800 [470]	
5"	133.7	DN 125	3080 [1813]	1785 [1050]	1338 [787]	1534 [903]	1496 [880]	1123 [661]	1098 [646]	2069 [1217]	1183 [696]	
6"	159.3	DN 150	4378 [2576]	2537 [1493]	1903 [1119]	2181 [1283]	2126 [1251]	1597 [939]	1561 [919]	2941 [1731]	1682 [990]	300 mm - 11.811 inch
8"	200.0	DN 200	6918 [4071]	4009 [2359]	3006 [1769]	3446 [2028]	3359 [1977]	2523 [1485]	2467 [1452]	4647 [2735]	2658 [1564]	
10"	250.0	DN 250	10823 [6369]	6271 [3690]	4703 [2768]	5392 [3173]	5255 [3093]	3947 [2323]	3860 [2271]	7270 [4278]	4158 [2447]	
12"	300.0	DN 300	15604 [9183]	9042 [5321]	6781 [3990]	7774 [4575]	7577 [4459]	5691 [3349]	5565 [3275]	10482 [6168]	5995 [3528]	

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

No responsibility taken for errors; subject to change without prior notice.
1/05 - 2025

Flow measuring ranges KEC-1/KEC-3

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)	Methane natural gas (CH_4)	Helium (He)	Hydrogen (H_2)	Propane (C_3H_8)	
½"	16.1	DN 15	45 [26]	41 [24]	71 [41]	43 [25]	45 [26]	26 [15]	19 [11]	13 [7]	20 [12]	160 mm - 6.299 inch
¾"	21.7	DN 20	89 [52]	81 [48]	139 [81]	84 [49]	88 [51]	52 [31]	37 [21]	26 [15]	40 [24]	
1"	27.3	DN 25	147 [86]	135 [79]	230 [135]	140 [82]	146 [86]	87 [51]	61 [36]	43 [25]	67 [39]	
1 ¼"	36.0	DN 32	266 [156]	244 [144]	416 [245]	253 [149]	263 [155]	157 [92]	111 [65]	78 [46]	122 [72]	
1 ½"	41.9	DN 40	366 [215]	337 [198]	573 [337]	349 [205]	363 [213]	217 [127]	153 [90]	107 [63]	168 [99]	
2"	53.1	DN 50	600 [353]	551 [324]	938 [552]	572 [336]	593 [349]	355 [208]	250 [147]	176 [103]	275 [162]	
2 ½"	68.9	DN 65	1028 [604]	945 [556]	1607 [945]	980 [576]	1017 [598]	608 [358]	429 [252]	301 [177]	472 [278]	220 mm - 8.661 inch
3"	80.9	DN 80	1424 [838]	1309 [770]	2227 [1310]	1358 [799]	1409 [829]	842 [496]	595 [350]	418 [246]	654 [385]	
4"	110.0	DN 100	2644 [1556]	2432 [1431]	4135 [2433]	2521 [1484]	2617 [1540]	1565 [921]	1105 [650]	776 [457]	1216 [715]	
5"	133.7	DN 125	3912 [2302]	3597 [2117]	6116 [3599]	3729 [2195]	3871 [2278]	2315 [1362]	1635 [962]	1149 [676]	1798 [1058]	
6"	159.3	DN 150	5560 [3272]	5113 [3009]	8693 [5116]	5301 [3119]	5502 [3238]	3290 [1936]	2324 [1367]	1633 [961]	2556 [1504]	300 mm - 11.811 inch
8"	200.0	DN 200	8785 [5170]	8079 [4754]	13736 [8083]	8376 [4929]	8694 [5116]	5198 [3059]	3672 [2160]	2580 [1518]	4039 [2377]	
10"	250.0	DN 250	13744 [8088]	12638 [7437]	21488 [12646]	13103 [7711]	13601 [8004]	8133 [4786]	5744 [3380]	4036 [2375]	6319 [3718]	
12"	300.0	DN 300	19814 [11661]	18221 [10723]	30980 [18232]	18891 [11117]	19609 [11539]	11725 [6900]	8281 [4873]	5819 [3424]	9110 [5361]	

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	Corgon ®18	Forming gas 90% N_2 + 10% H_2	Natural gas (NG)	Biogas 50% CH_4 + 50% CO_2	Biogas 60% CH_4 + 40% CO_2	LPG 60% C_3H_8 + 40% C_4H_{10}	LPG 50% C_3H_8 + 50% C_4H_{10}	Nitrous oxide (N_2O)	Ethyne/ Acetylene (C_2H_2)	
½"	16.1	DN 15	66 [39]	38 [22]	28 [17]	33 [19]	32 [19]	24 [14]	23 [13]	44 [26]	25 [15]	160 mm - 6.299 inch
¾"	21.7	DN 20	130 [76]	75 [44]	56 [33]	64 [38]	63 [37]	47 [27]	46 [27]	87 [51]	49 [29]	
1"	27.3	DN 25	215 [126]	124 [73]	93 [55]	107 [63]	104 [61]	78 [46]	76 [45]	144 [85]	82 [48]	
1 ¼"	36.0	DN 32	388 [228]	225 [132]	168 [99]	193 [114]	188 [111]	141 [83]	138 [81]	261 [153]	149 [87]	
1 ½"	41.9	DN 40	535 [315]	310 [182]	232 [136]	266 [157]	260 [153]	195 [114]	191 [112]	359 [211]	205 [121]	
2"	53.1	DN 50	876 [515]	507 [298]	380 [224]	436 [256]	425 [250]	319 [188]	312 [183]	588 [346]	336 [198]	
2 ½"	68.9	DN 65	1500 [883]	869 [511]	652 [383]	747 [440]	728 [428]	547 [322]	535 [315]	1008 [593]	576 [339]	220 mm - 8.661 inch
3"	80.9	DN 80	2079 [1223]	1205 [709]	903 [531]	1036 [609]	1009 [594]	758 [446]	741 [436]	1397 [822]	799 [470]	
4"	110.0	DN 100	3861 [2272]	2237 [1316]	1678 [987]	1923 [1132]	1875 [1103]	1408 [828]	1377 [810]	2594 [1526]	1483 [873]	
5"	133.7	DN 125	5711 [3361]	3309 [1947]	2482 [1460]	2845 [1674]	2773 [1632]	2083 [1226]	2037 [1198]	3837 [2258]	2194 [1291]	
6"	159.3	DN 150	8118 [4777]	4704 [2768]	3528 [2076]	4044 [2380]	3942 [2320]	2961 [1742]	2895 [1704]	5453 [3209]	3119 [1835]	300 mm - 11.811 inch
8"	200.0	DN 200	12827 [7548]	7432 [4374]	5574 [3280]	6390 [3760]	6229 [3665]	4678 [2753]	4575 [2692]	8616 [5071]	4928 [2900]	
10"	250.0	DN 250	20066 [11809]	11627 [6842]	8720 [5132]	9997 [5883]	9744 [5734]	7319 [4307]	7157 [4212]	13480 [7932]	7709 [4537]	
12"	300.0	DN 300	28930 [17025]	16763 [9865]	12572 [7399]	14413 [8482]	14048 [8267]	10552 [6209]	10318 [6072]	19434 [11437]	11115 [6541]	

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

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

Flow measuring ranges KEC-1/KEC-3

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)	Methane natural gas (CH_4)	Helium (He)	Hydrogen (H_2)	Propane (C_3H_8)	
½"	16.1	DN 15	90 [53]	83 [49]	142 [83]	86 [51]	90 [52]	53 [31]	38 [22]	26 [15]	41 [24]	160 mm - 6.299 inch
¾"	21.7	DN 20	177 [104]	163 [96]	278 [163]	169 [99]	175 [103]	105 [61]	74 [43]	52 [30]	81 [48]	
1"	27.3	DN 25	294 [173]	271 [159]	460 [271]	280 [165]	291 [171]	174 [102]	123 [72]	86 [50]	135 [79]	
1 ¼"	36.0	DN 32	531 [312]	488 [287]	830 [489]	506 [298]	525 [309]	314 [185]	222 [130]	156 [91]	244 [143]	
1 ½"	41.9	DN 40	732 [430]	673 [396]	1144 [673]	697 [410]	724 [426]	433 [254]	305 [180]	215 [126]	336 [198]	
2"	53.1	DN 50	1197 [704]	1101 [648]	1872 [1101]	1141 [671]	1185 [697]	708 [417]	500 [294]	351 [206]	550 [324]	
2 ½"	68.9	DN 65	2051 [1207]	1886 [1110]	3207 [1887]	1955 [1151]	2030 [1194]	1214 [714]	857 [504]	602 [354]	943 [555]	220 mm - 8.661 inch
3"	80.9	DN 80	2842 [1672]	2614 [1538]	4444 [2615]	2710 [1594]	2813 [1655]	1682 [989]	1188 [699]	834 [491]	1307 [769]	
4"	110.0	DN 100	5278 [3106]	4854 [2856]	8252 [4856]	5032 [2961]	5223 [3074]	3123 [1838]	2206 [1298]	1550 [912]	2427 [1428]	
5"	133.7	DN 125	7807 [4594]	7179 [4225]	12206 [7183]	7443 [4380]	7726 [4546]	4620 [2718]	3263 [1920]	2293 [1349]	3589 [2112]	
6"	159.3	DN 150	11096 [6530]	10204 [6005]	17349 [10210]	10579 [6226]	10981 [6462]	6566 [3864]	4637 [2729]	3259 [1917]	5102 [3002]	300 mm - 11.811 inch
8"	200.0	DN 200	17533 [10318]	16123 [9488]	27413 [16132]	16716 [9837]	17351 [10211]	10375 [6105]	7328 [4312]	5149 [3030]	8061 [4744]	
10"	250.0	DN 250	27428 [16141]	25223 [14843]	42884 [25237]	26150 [15389]	27143 [15974]	16231 [9552]	11463 [6746]	8055 [4740]	12611 [7421]	
12"	300.0	DN 300	39544 [23271]	36364 [21400]	61827 [36385]	37701 [22187]	39133 [23030]	23400 [13771]	16527 [9726]	11614 [6834]	18182 [10700]	

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	Corgon ®18	Forming gas 90% N_2 + 10% H_2	Natural gas (NG)	Biogas 50% CH_4 + 50% CO_2	Biogas 60% CH_4 + 40% CO_2	LPG 60% C_3H_8 + 40% C_4H_{10}	LPG 50% C_3H_8 + 50% C_4H_{10}	Nitrous oxide (N_2O)	Ethyne/ Acetylene (C_2H_2)	
½"	16.1	DN 15	132 [78]	76 [45]	57 [33]	66 [38]	64 [37]	48 [28]	47 [27]	89 [52]	51 [30]	160 mm - 6.299 inch
¾"	21.7	DN 20	259 [152]	150 [88]	112 [66]	129 [76]	126 [74]	94 [55]	92 [54]	174 [102]	99 [58]	
1"	27.3	DN 25	430 [253]	249 [146]	187 [110]	214 [126]	208 [122]	156 [92]	153 [90]	289 [170]	165 [97]	
1 ¼"	36.0	DN 32	775 [456]	449 [264]	337 [198]	386 [227]	376 [221]	283 [166]	276 [162]	521 [306]	298 [175]	
1 ½"	41.9	DN 40	1068 [629]	619 [364]	464 [273]	532 [313]	519 [305]	389 [229]	381 [224]	718 [422]	410 [241]	
2"	53.1	DN 50	1748 [1029]	1013 [596]	759 [447]	871 [512]	849 [499]	637 [375]	623 [367]	1174 [691]	671 [395]	
2 ½"	68.9	DN 65	2995 [1762]	1735 [1021]	1301 [766]	1492 [878]	1454 [856]	1092 [642]	1068 [628]	2012 [1184]	1150 [677]	220 mm - 8.661 inch
3"	80.9	DN 80	4150 [2442]	2404 [1415]	1803 [1061]	2067 [1216]	2015 [1186]	1513 [890]	1480 [871]	2788 [1640]	1594 [938]	
4"	110.0	DN 100	7706 [4535]	4465 [2628]	3349 [1971]	3839 [2259]	3742 [2202]	2811 [1654]	2748 [1617]	5177 [3046]	2961 [1742]	
5"	133.7	DN 125	11399 [6708]	6605 [3887]	4954 [2915]	5679 [3342]	5535 [3257]	4157 [2446]	4065 [2392]	7657 [4506]	4379 [2577]	
6"	159.3	DN 150	16201 [9534]	9388 [5524]	7041 [4143]	8071 [4750]	7867 [4630]	5909 [3477]	5778 [3400]	10883 [6405]	6224 [3663]	300 mm - 11.811 inch
8"	200.0	DN 200	25599 [15065]	14833 [8729]	11125 [6547]	12753 [7505]	12431 [7315]	9337 [5494]	9130 [5373]	17196 [10120]	9835 [5788]	
10"	250.0	DN 250	40046 [23567]	23205 [13656]	17404 [10242]	19951 [11741]	19447 [11444]	14606 [8596]	14283 [8406]	26901 [15831]	15386 [9054]	
12"	300.0	DN 300	57736 [33977]	33455 [19688]	25091 [14766]	28764 [16927]	28037 [16499]	21058 [12393]	20593 [12119]	38784 [22824]	22182 [13054]	

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

No responsibility taken for errors; subject to change without prior notice.
1/05 - 2025

Flow measuring ranges KEC-1/KEC-3

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)	Methane natural gas (CH_4)	Helium (He)	Hydrogen (H_2)	Propane (C_3H_8)	
½"	16.1	DN 15	110 [64]	101 [59]	172 [101]	105 [61]	109 [64]	65 [38]	46 [27]	32 [19]	50 [29]	160 mm - 6.299 inch
¾"	21.7	DN 20	215 [126]	198 [116]	336 [198]	205 [120]	213 [125]	127 [74]	89 [52]	63 [37]	99 [58]	
1"	27.3	DN 25	356 [210]	328 [193]	557 [328]	340 [200]	353 [207]	211 [124]	149 [87]	104 [61]	164 [96]	
1 ¼"	36.0	DN 32	643 [378]	591 [348]	1006 [592]	613 [361]	636 [374]	380 [224]	268 [158]	188 [111]	295 [174]	
1 ½"	41.9	DN 40	886 [521]	815 [479]	1385 [815]	845 [497]	877 [516]	524 [308]	370 [218]	260 [153]	407 [239]	
2"	53.1	DN 50	1450 [853]	1333 [784]	2267 [1334]	1382 [813]	1434 [844]	858 [504]	606 [356]	425 [250]	666 [392]	
2 ½"	68.9	DN 65	2484 [1461]	2284 [1344]	3883 [2285]	2368 [1393]	2458 [1446]	1469 [865]	1038 [611]	729 [429]	1142 [672]	220 mm - 8.661 inch
3"	80.9	DN 80	3441 [2025]	3165 [1862]	5381 [3166]	3281 [1931]	3406 [2004]	2036 [1198]	1438 [846]	1010 [594]	1582 [931]	
4"	110.0	DN 100	6391 [3761]	5877 [3458]	9992 [5880]	6093 [3586]	6324 [3722]	3782 [2225]	2671 [1572]	1877 [1104]	2938 [1729]	
5"	133.7	DN 125	9453 [5563]	8693 [5116]	14780 [8698]	9012 [5304]	9355 [5505]	5594 [3292]	3951 [2325]	2776 [1633]	4346 [2558]	
6"	159.3	DN 150	13436 [7907]	12355 [7271]	21007 [12362]	12810 [7538]	13296 [7825]	7950 [4679]	5615 [3304]	3946 [2322]	6177 [3635]	300 mm - 11.811 inch
8"	200.0	DN 200	21229 [12493]	19522 [11489]	33192 [19533]	20240 [11911]	21009 [12363]	12562 [7393]	8873 [5221]	6235 [3669]	9761 [5744]	
10"	250.0	DN 250	33211 [19544]	30540 [17973]	51925 [30557]	31663 [18633]	32865 [19341]	19652 [11565]	13880 [8168]	9753 [5740]	15270 [8986]	
12"	300.0	DN 300	47880 [28177]	44030 [25912]	74861 [44055]	45649 [26864]	47383 [27885]	28333 [16674]	20012 [11777]	14062 [8275]	22015 [12956]	

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	Corgon ®18	Forming gas 90% N_2 + 10% H_2	Natural gas (NG)	Biogas 50% CH_4 + 50% CO_2	Biogas 60% CH_4 + 40% CO_2	LPG 60% C_3H_8 + 40% C_4H_{10}	LPG 50% C_3H_8 + 50% C_4H_{10}	Nitrous oxide (N_2O)	Ethyne/ Acetylene (C_2H_2)	
½"	16.1	DN 15	160 [94]	93 [54]	69 [41]	80 [47]	78 [45]	58 [34]	57 [33]	108 [63]	61 [36]	160 mm - 6.299 inch
¾"	21.7	DN 20	314 [185]	182 [107]	136 [80]	156 [92]	152 [89]	114 [67]	112 [65]	211 [124]	120 [71]	
1"	27.3	DN 25	521 [306]	301 [177]	226 [133]	259 [152]	253 [148]	190 [111]	185 [109]	349 [205]	200 [117]	
1 ¼"	36.0	DN 32	939 [552]	544 [320]	408 [240]	468 [275]	456 [268]	342 [201]	335 [197]	631 [371]	360 [212]	
1 ½"	41.9	DN 40	1294 [761]	749 [441]	562 [331]	644 [379]	628 [369]	472 [277]	461 [271]	869 [511]	497 [292]	
2"	53.1	DN 50	2117 [1245]	1226 [721]	920 [541]	1054 [620]	1028 [605]	772 [454]	755 [444]	1422 [836]	813 [478]	
2 ½"	68.9	DN 65	3626 [2134]	2101 [1236]	1576 [927]	1806 [1063]	1761 [1036]	1322 [778]	1293 [761]	2436 [1433]	1393 [820]	220 mm - 8.661 inch
3"	80.9	DN 80	5025 [2957]	2911 [1713]	2183 [1285]	2503 [1473]	2440 [1436]	1832 [1078]	1792 [1054]	3375 [1986]	1930 [1136]	
4"	110.0	DN 100	9331 [5491]	5407 [3182]	4055 [2386]	4649 [2735]	4531 [2666]	3403 [2003]	3328 [1958]	6268 [3689]	3585 [2109]	
5"	133.7	DN 125	13802 [8122]	7997 [4706]	5998 [3530]	6876 [4046]	6702 [3944]	5034 [2962]	4923 [2897]	9271 [5456]	5302 [3120]	
6"	159.3	DN 150	19617 [11544]	11367 [6689]	8525 [5017]	9773 [5751]	9526 [5606]	7155 [4210]	6997 [4117]	13178 [7755]	7537 [4435]	300 mm - 11.811 inch
8"	200.0	DN 200	30996 [18241]	17960 [10569]	13470 [7927]	15442 [9087]	15051 [8858]	11305 [6653]	11055 [6506]	20821 [12253]	11908 [7008]	
10"	250.0	DN 250	48489 [28535]	28097 [16535]	21072 [12401]	24157 [14216]	23546 [13857]	17686 [10408]	17295 [10178]	32573 [19169]	18629 [10963]	
12"	300.0	DN 300	69907 [41140]	40508 [23839]	30381 [17879]	34828 [20496]	33947 [19978]	25498 [15005]	24934 [14674]	46961 [27636]	26858 [15806]	

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

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

Flow measuring ranges KEC-2/KEC-4

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)	Methane natural gas (CH_4)	Helium (He)	Hydrogen (H_2)	Propane (C_3H_8)
½"	16.1	DN 15	20 [14.4]	20 [13.2]	35 [20]	20 [13.5]	20 [14.1]	240 Nl/min [8.4]	170 Nl/min [6]	120 Nl/min [4.2]	185 Nl/min [6.6]
¾"	21.7	DN 20	45 [25]	40 [25]	75 [40]	45 [25]	45 [25]	25 [15]	20 [11.7]	235 Nl/min [8.1]	20 [12.9]
1"	27.3	DN 25	75 [45]	70 [40]	120 [70]	75 [40]	75 [45]	45 [25]	30 [15]	20 [13.5]	35 [20]
1 ¼"	36.0	DN 32	140 [80]	130 [75]	220 [130]	135 [80]	140 [80]	85 [50]	60 [35]	40 [20]	65 [35]
1 ½"	41.9	DN 40	195 [115]	180 [105]	305 [180]	185 [110]	195 [115]	115 [65]	80 [45]	55 [30]	90 [50]
2"	53.1	DN 50	320 [190]	295 [175]	505 [295]	305 [180]	320 [185]	190 [110]	135 [75]	95 [55]	145 [85]
2 ½"	68.9	DN 65	550 [325]	505 [300]	865 [510]	525 [310]	545 [320]	325 [190]	230 [135]	160 [95]	250 [150]
3"	80.9	DN 80	765 [450]	705 [415]	1200 [705]	730 [430]	760 [445]	450 [265]	320 [185]	225 [130]	350 [205]

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	Corgon ®18	Forming gas 90% N_2 + 10% H_2	Natural gas (NG)	Biogas 50% CH_4 + 50% CO_2	Biogas 60% CH_4 + 40% CO_2	LPG 60% C_3H_8 + 40% C_4H_{10}	LPG 50% C_3H_8 + 50% C_4H_{10}	Nitrous oxide (N_2O)	Ethyne/ Acetylene (C_2H_2)
½"	16.1	DN 15	35 [20]	20 [12]	15 [9]	15 [10.5]	15 [10.2]	215 Nl/min [7.5]	210 Nl/min [7.5]	20 [14.1]	225 Nl/min [8.1]
¾"	21.7	DN 20	70 [40]	40 [20]	30 [15]	30 [20]	30 [20]	25 [15]	25 [14.7]	45 [25]	25 [15]
1"	27.3	DN 25	115 [65]	65 [35]	50 [25]	55 [30]	55 [30]	40 [20]	40 [20]	75 [45]	40 [25]
1 ¼"	36.0	DN 32	205 [120]	120 [70]	90 [50]	100 [60]	100 [55]	75 [45]	70 [40]	140 [80]	80 [45]
1 ½"	41.9	DN 40	285 [170]	165 [95]	125 [70]	140 [80]	140 [80]	105 [60]	100 [60]	190 [110]	110 [65]
2"	53.1	DN 50	470 [275]	270 [160]	205 [120]	235 [135]	225 [135]	170 [100]	165 [95]	315 [185]	180 [105]
2 ½"	68.9	DN 65	805 [475]	465 [275]	350 [205]	400 [235]	390 [230]	295 [170]	285 [165]	540 [320]	310 [180]
3"	80.9	DN 80	1120 [660]	645 [380]	485 [285]	555 [325]	540 [320]	405 [240]	400 [235]	750 [440]	430 [250]

* Nm³/h in acc. with DIN 1343: 0 °C, 1013.25 hPa for gases
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Flow measuring ranges KEC-2/KEC-4

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)	Methane natural gas (CH_4)	Helium (He)	Hydrogen (H_2)	Propane (C_3H_8)
½"	16.1	DN 15	45 [25]	40 [20]	70 [40]	40 [25]	45 [25]	25 [15]	15 [11.1]	220 Nl/min [7.8]	20 [12.3]
¾"	21.7	DN 20	85 [50]	80 [45]	135 [80]	80 [45]	85 [50]	50 [30]	35 [20]	25 [15]	40 [20]
1"	27.3	DN 25	145 [85]	135 [75]	230 [135]	140 [80]	145 [85]	85 [50]	60 [35]	40 [25]	65 [35]
1 ¼"	36.0	DN 32	265 [155]	240 [140]	415 [245]	250 [145]	260 [155]	155 [90]	110 [65]	75 [45]	120 [70]
1 ½"	41.9	DN 40	365 [215]	335 [195]	570 [335]	345 [205]	360 [210]	215 [125]	150 [90]	105 [60]	165 [95]
2"	53.1	DN 50	600 [350]	550 [320]	935 [550]	570 [335]	590 [345]	355 [205]	250 [145]	175 [100]	275 [160]
2 ½"	68.9	DN 65	1025 [600]	945 [555]	1605 [945]	980 [575]	1015 [595]	605 [355]	425 [250]	300 [175]	470 [275]
3"	80.9	DN 80	1420 [835]	1305 [770]	2225 [1310]	1355 [795]	1405 [825]	840 [495]	595 [350]	415 [245]	650 [385]

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	Corgon ®18	Forming gas 90% N_2 + 10% H_2	Natural gas (NG)	Biogas 50% CH_4 + 50% CO_2	Biogas 60% CH_4 + 40% CO_2	LPG 60% C_3H_8 + 40% C_4H_{10}	LPG 50% C_3H_8 + 50% C_4H_{10}	Nitrous oxide (N_2O)	Ethyne/ Acetylene (C_2H_2)
½"	16.1	DN 15	65 [35]	35 [20]	25 [15]	30 [15]	30 [15]	20 [14.1]	20 [13.8]	40 [25]	25 [15]
¾"	21.7	DN 20	130 [75]	75 [40]	55 [30]	60 [35]	60 [35]	45 [25]	45 [25]	85 [50]	45 [25]
1"	27.3	DN 25	215 [125]	120 [70]	90 [55]	105 [60]	100 [60]	75 [45]	75 [45]	140 [85]	80 [45]
1 ¼"	36.0	DN 32	385 [225]	225 [130]	165 [95]	190 [110]	185 [110]	140 [80]	135 [80]	260 [150]	145 [85]
1 ½"	41.9	DN 40	535 [315]	310 [180]	230 [135]	265 [155]	260 [150]	195 [110]	190 [110]	355 [210]	205 [120]
2"	53.1	DN 50	875 [515]	505 [295]	380 [220]	435 [255]	425 [250]	315 [185]	310 [180]	585 [345]	335 [195]
2 ½"	68.9	DN 65	1500 [880]	865 [510]	650 [380]	745 [440]	725 [425]	545 [320]	535 [315]	1005 [590]	575 [335]
3"	80.9	DN 80	2075 [1220]	1205 [705]	900 [530]	1035 [605]	1005 [590]	755 [445]	740 [435]	1395 [820]	795 [470]

* Nm³/h in acc. with DIN 1343: 0 °C, 1013.25 hPa for gases
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Flow measuring ranges KEC-2/KEC-4

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)	Methane natural gas (CH_4)	Helium (He)	Hydrogen (H_2)	Propane (C_3H_8)
½"	16.1	DN 15	90 [50]	80 [45]	140 [80]	85 [50]	90 [50]	50 [30]	35 [20]	25 [15]	40 [20]
¾"	21.7	DN 20	175 [100]	160 [95]	275 [160]	165 [95]	175 [100]	105 [60]	70 [40]	50 [30]	80 [45]
1"	27.3	DN 25	290 [170]	270 [155]	460 [270]	280 [165]	290 [170]	170 [100]	120 [70]	85 [50]	135 [75]
1 ¼"	36.0	DN 32	530 [310]	485 [285]	830 [485]	505 [295]	525 [305]	310 [185]	220 [130]	155 [90]	240 [140]
1 ½"	41.9	DN 40	730 [430]	670 [395]	1140 [670]	695 [410]	720 [425]	430 [250]	305 [180]	215 [125]	335 [195]
2"	53.1	DN 50	1195 [700]	1100 [645]	1870 [1100]	1140 [670]	1185 [695]	705 [415]	500 [290]	350 [205]	550 [320]
2 ½"	68.9	DN 65	2050 [1205]	1885 [1110]	3205 [1885]	1955 [1150]	2030 [1190]	1210 [710]	855 [500]	600 [350]	940 [555]
3"	80.9	DN 80	2840 [1670]	2610 [1535]	4440 [2615]	2710 [1590]	2810 [1655]	1680 [985]	1185 [695]	830 [490]	1305 [765]

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	Corgon ®18	Forming gas 90% N_2 + 10% H_2	Natural gas (NG)	Biogas 50% CH_4 + 50% CO_2	Biogas 60% CH_4 + 40% CO_2	LPG 60% C_3H_8 + 40% C_4H_{10}	LPG 50% C_3H_8 + 50% C_4H_{10}	Nitrous oxide (N_2O)	Ethyne/ Acetylene (C_2H_2)
½"	16.1	DN 15	130 [75]	75 [45]	55 [30]	65 [35]	60 [35]	45 [25]	45 [25]	85 [50]	50 [30]
¾"	21.7	DN 20	255 [150]	150 [85]	110 [65]	125 [75]	125 [70]	90 [55]	90 [50]	170 [100]	95 [55]
1"	27.3	DN 25	430 [250]	245 [145]	185 [110]	210 [125]	205 [120]	155 [90]	150 [90]	285 [170]	165 [95]
1 ¼"	36.0	DN 32	775 [455]	445 [260]	335 [195]	385 [225]	375 [220]	280 [165]	275 [160]	520 [305]	295 [175]
1 ½"	41.9	DN 40	1065 [625]	615 [360]	460 [270]	530 [310]	515 [305]	385 [225]	380 [220]	715 [420]	410 [240]
2"	53.1	DN 50	1745 [1025]	1010 [595]	755 [445]	870 [510]	845 [495]	635 [375]	620 [365]	1170 [690]	670 [395]
2 ½"	68.9	DN 65	2995 [1760]	1735 [1020]	1300 [765]	1490 [875]	1450 [855]	1090 [640]	1065 [625]	2010 [1180]	1150 [675]
3"	80.9	DN 80	4150 [2440]	2400 [1415]	1800 [1060]	2065 [1215]	2015 [1185]	1510 [890]	1480 [870]	2785 [1640]	1590 [935]

* Nm³/h in acc. with DIN 1343: 0 °C, 1013.25 hPa for gases
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Flow measuring ranges KEC-2/KEC-4

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)	Methane natural gas (CH_4)	Helium (He)	Hydrogen (H_2)	Propane (C_3H_8)
½"	16.1	DN 15	110 [60]	100 [55]	170 [100]	105 [60]	105 [60]	65 [35]	45 [25]	30 [15]	50 [25]
¾"	21.7	DN 20	215 [125]	195 [115]	335 [195]	205 [120]	210 [125]	125 [70]	85 [50]	60 [35]	95 [55]
1"	27.3	DN 25	355 [210]	325 [190]	555 [325]	340 [200]	350 [205]	210 [120]	145 [85]	100 [60]	160 [95]
1 ¼"	36.0	DN 32	640 [375]	590 [345]	1005 [590]	610 [360]	635 [370]	380 [220]	265 [155]	185 [110]	295 [170]
1 ½"	41.9	DN 40	885 [520]	815 [475]	1385 [815]	845 [495]	875 [515]	520 [305]	370 [215]	260 [150]	405 [235]
2"	53.1	DN 50	1450 [850]	1330 [780]	2265 [1330]	1380 [810]	1430 [840]	855 [500]	605 [355]	425 [250]	665 [390]
2 ½"	68.9	DN 65	2480 [1460]	2280 [1340]	3880 [2285]	2365 [1390]	2455 [1445]	1465 [865]	1035 [610]	725 [425]	1140 [670]
3"	80.9	DN 80	3440 [2025]	3165 [1860]	5380 [3165]	3280 [1930]	3405 [2000]	2035 [1195]	1435 [845]	1010 [590]	1580 [930]

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	Corgon ®18	Forming gas 90% N_2 + 10% H_2	Natural gas (NG)	Biogas 50% CH_4 + 50% CO_2	Biogas 60% CH_4 + 40% CO_2	LPG 60% C_3H_8 + 40% C_4H_{10}	LPG 50% C_3H_8 + 50% C_4H_{10}	Nitrous oxide (N_2O)	Ethyne/ Acetylene (C_2H_2)
½"	16.1	DN 15	160 [90]	90 [50]	65 [40]	80 [45]	75 [45]	55 [30]	55 [30]	105 [60]	60 [35]
¾"	21.7	DN 20	310 [185]	180 [105]	135 [80]	155 [90]	150 [85]	110 [65]	110 [65]	210 [120]	120 [70]
1"	27.3	DN 25	520 [305]	300 [175]	225 [130]	255 [150]	250 [145]	190 [110]	185 [105]	345 [205]	200 [115]
1 ¼"	36.0	DN 32	935 [550]	540 [320]	405 [240]	465 [275]	455 [265]	340 [200]	335 [195]	630 [370]	360 [210]
1 ½"	41.9	DN 40	1290 [760]	745 [440]	560 [330]	640 [375]	625 [365]	470 [275]	460 [270]	865 [510]	495 [290]
2"	53.1	DN 50	2115 [1245]	1225 [720]	920 [540]	1050 [620]	1025 [605]	770 [450]	755 [440]	1420 [835]	810 [475]
2 ½"	68.9	DN 65	3625 [2130]	2100 [1235]	1575 [925]	1805 [1060]	1760 [1035]	1320 [775]	1290 [760]	2435 [1430]	1390 [820]
3"	80.9	DN 80	5025 [2955]	2910 [1710]	2180 [1285]	2500 [1470]	2440 [1435]	1830 [1075]	1790 [1050]	3375 [1985]	1930 [1135]

* 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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