

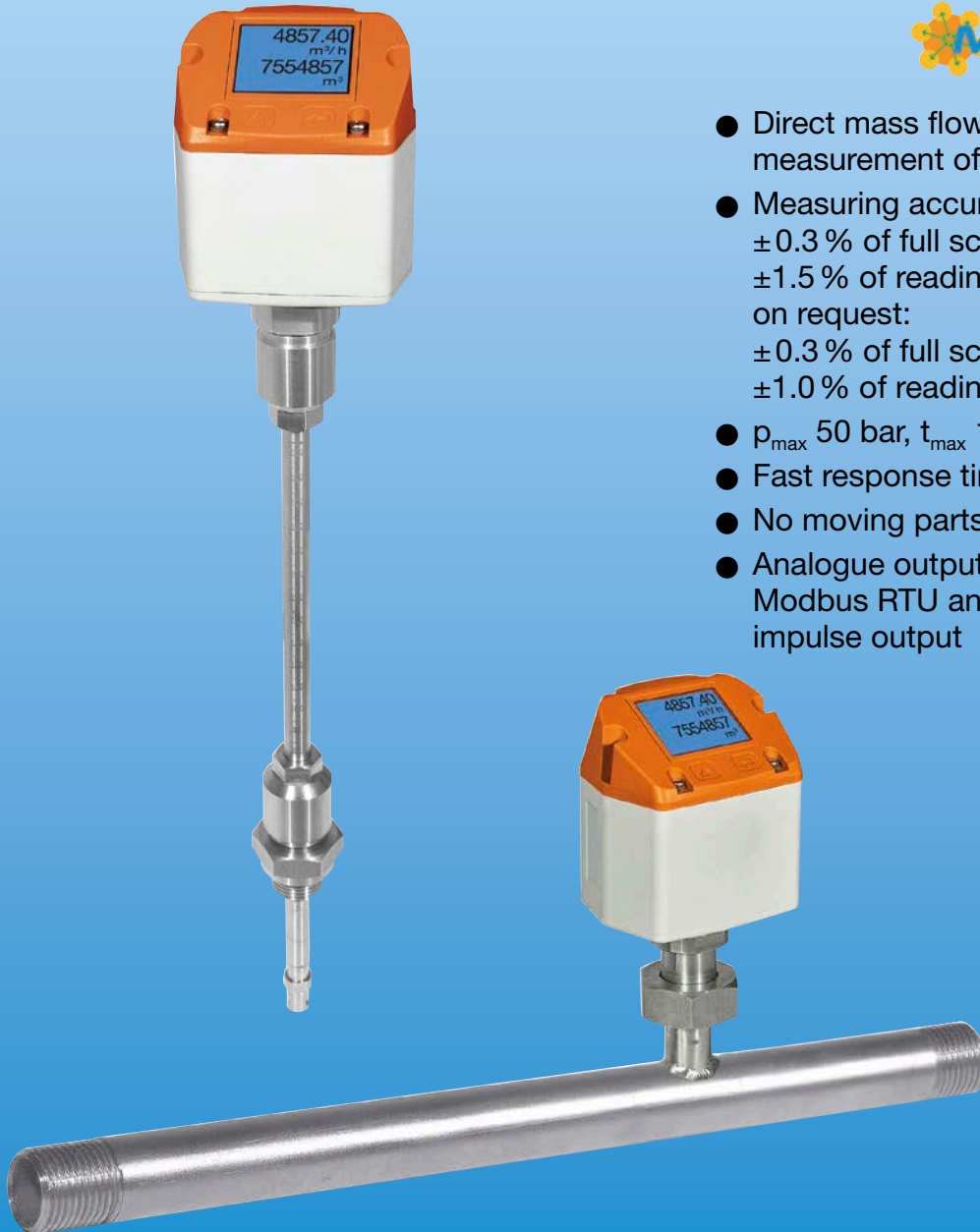


# Thermal Mass Flow Meter for gases



measuring  
•  
monitoring  
•  
analysing

KEP



- 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

SS

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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, NI/min, NI/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 1x4...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

|  |  |   |                              |
|--|--|---|------------------------------|
| <b>83.25</b><br>m/s<br><br><b>24.1</b><br>°C<br><small>Air</small> | <small>*** Mittelwert Min Max ***</small><br><b>Durchfl. m³/h</b> <b>AV</b> <b>Min</b> <b>Max</b><br>395.38    391.23    410.34    0 | <small>*** Mittelwert Min Max ***</small><br><b>Geschw. m/s</b> <b>AV</b> <b>Min</b> <b>Max</b><br>83.25    82.46    91.32    0 |                              |
|  | <b>Verbrauch: m³</b><br>78562<br>391   | <b>Temperatur: °C</b><br>24.1    21.3<br>23.7    24.6   |                              |
|  | <small>HW: 1.02 SW:1.00 MBID:127 2/4</small>   | <b>MW-Zeit: 1 Minute</b> 3/4  | <b>MW-Zeit: 1 Minute</b> 4/4 |
|  | <small>2/4</small>   |   | <small>4/4</small>           |



### Configuration of KEP via PC Service Software

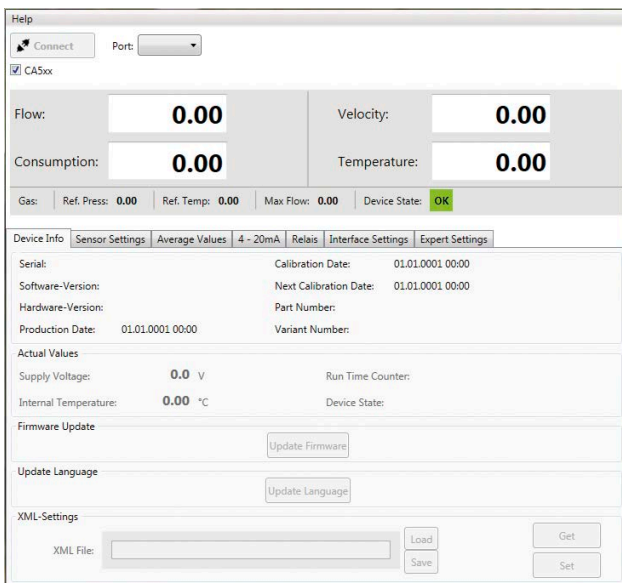
In general all configurations can be done via the integrated display. For sensors without display there is a PC Service Software available.

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<sup>3</sup>/h, m<sup>3</sup>/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 1/2" connection

KEP-2 ... In-line version for NW08 ... NW80

### 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 1/2" ... DN 700.



**Technical Details KEP-1**

|   |   |  |   |
|---|---|--|---|
| Measuring range:                                | 0.1 ... 50 Nm/s, low speed version<br>0.1 ... 92.7 Nm/s, stand. version*<br>0.1 ... 185 Nm/s, max. version*<br>0.1 ... 224 Nm/s, high speed version<br>* All measured values referred to DIN 1343<br>standard conditions 0° and 1013 mbar ex<br>factory             | Additional average<br>value calculation: | for all parameters freely adjustable<br>from 1 minute up to 1 day, e. g. ½<br>hours average value, average day<br>value |
| Accuracy:                                       | ± 1.5 % of reading<br>± 0.3 % of full scale<br>on request:<br>± 1.0 % of reading<br>± 0.3 % of full scale   | Protection:                              | IP65  |
| Accuracy indications:                           | referred to ambient temperature<br>22 °C ± 2 °C, system pressure 6 bar  | Material:                                | housing polycarbonate,<br>probe tube stainless steel 1.4301   |
| Measuring principle:                            | thermal mass flow sensor, the<br>measuring effect is based on the<br>cooling down of a heated sensor<br>PT45 by bypassing gas. The<br>ambient temperature is measured<br>with a PT 100. An additional<br>pressure and temperature<br>compensation is not necessary. | Screw-in thread:                         | G ½ ISO228, ½" NPT  |
| Operating temperature<br>range:                 | -30 ... 110 °C standard version,<br>probe tube<br>-20 ... 70 °C display   | Operating pressure<br>KEP-1:             | 16 bar; in special version 50 bar   |
| Display:  | optional TFT 1.8"<br>resolution 220x176   | Power supply:                            | 18 ... 36 V <sub>DC</sub> , 5 W   |
| Units adjustable<br>via keyboard<br>at display: | Nm <sup>3</sup> /h, Nm <sup>3</sup> /min, NI/min, l/s, ft/min,<br>cfm, kg/h, kg/min, g/s, lb/min, lb/h,<br>°F, °C etc.  |  |   |
| Adjustable via<br>display:                      | Diameter for volume flow<br>calculation, counter resettable   |  |   |
| Outputs:  | Modbus RTU, 4-20 mA galvanically<br>not isolated,<br>pulse output (pulse rate freely<br>selectable)   |  |   |
| Pulse output:                                   | 1 pulse per m <sup>3</sup> or per litre<br>electrically isolated. Pulse weight<br>can be set on the display.<br>Alternatively, the pulse output can<br>be used as an alarm  |  |   |
| Load:   | <500 Ω  |  |   |
| Counter:  | The counter is reset to Zero, when<br>1 000 000 000 m <sup>3</sup> is reached   |  |   |



**Order Details KEP-1 Immersion Version** (Example: KEP-1 S 016 1 L S 00)

| Model                         | Version               | Measuring range   | Connection<br>(& sensor length for KEP-1)  |
|-------------------------------|-----------------------|---|--|
| KEP = Thermal mass flow meter | 1 = immersion version | <b>L</b> = low-speed-Version<br>50 m/s<br><b>S</b> = standard<br>92.7 m/s<br><b>M</b> = max-Version 185 m/s<br><b>H</b> = high-speed-version<br>224 m/s | <b>Immersion Version</b><br><b>012</b> = G ½, length 120 mm<br><b>016</b> = G ½, length 160 mm<br><b>022</b> = G ½, length 220 mm<br><b>030</b> = G ½, length 300 mm<br><b>040</b> = G ½, length 400 mm<br><b>050</b> = G ½, length 500 mm<br><b>060</b> = G ½, length 600 mm<br><b>070</b> = G ½, length 700 mm<br><b>112</b> = ½" NPT, length 120 mm<br><b>116</b> = ½" NPT, length 160 mm<br><b>122</b> = ½" NPT, length 220 mm<br><b>130</b> = ½" NPT, length 300 mm<br><b>140</b> = ½" NPT, length 400 mm<br><b>150</b> = ½" NPT, length 500 mm<br><b>160</b> = ½" NPT, length 600 mm<br><b>170</b> = ½" NPT, length 700 mm |

| Display  | Gas type  | Max. pressure   | Calibration   | Options  |
|--|---|---|---|--|
| <b>1</b> = with integrated display<br><b>0</b> = without display | <b>L</b> = air<br><b>N</b> = nitrogen<br><b>A<sup>2)4)</sup></b> = argon, carbon dioxide, oxygen, nitrous oxide, natural gas, methane<br><b>E<sup>2)3)4)</sup></b> = helium, propane<br><b>S<sup>4)</sup></b> = gas mixture or special gas (specify in writing) | <b>S</b> = 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!)<br><b>H</b> = 50 bar (high pressure, ordering a high-pressure safety device model KEP-ZHS is necessary!) | <b>0</b> = standard<br><b>E</b> = real gas calibration<br><b>C<sup>1)</sup></b> = 5-point calibration certificate<br><b>J</b> = ±1 % of reading ± 0.3 % of FS | <b>0</b> = without<br><b>R</b> = cleaning oil and fat free<br><b>S<sup>4)</sup></b> = silicone free version incl. oil and fat free cleaning<br><b>A</b> = Additional calibration curve stored in the sensor<br><b>B</b> = bidirectional measuring (includes 2x4 ... 20 mA analog outputs and 2x pulse outputs) |

<sup>1)</sup> 3-point calibration certificate is included in standard version. Standard calibration is carried out at 5 bar and 20 °C

<sup>2)</sup> Please specify gas in writing





<sup>3)</sup> With real gas calibration only

<sup>4)</sup> Reduced operating temperature range: -20 ... 110 °C for media O<sub>2</sub>, natural gas, propane, methane or with option silicon-free. Operating pressure must be specified when ordering.

<sup>5)</sup> 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 1/2 for sensor length 160 mm        |   |
| KEP-Z HS R15 22* | High-pressure safety device (up to 50 bar); G 1/2 for sensor length 220 mm        |  |
| KEP-Z HS R15 30* | High-pressure safety device (up to 50 bar); G 1/2 for sensor length 300 mm        |  |
| KEP-Z HS R15 40* | High-pressure safety device (up to 50 bar); G 1/2 for sensor length 400 mm        |  |
| KEP-Z HS R15 50* | High-pressure safety device (up to 50 bar); G 1/2 for sensor length 500 mm        |  |
| KEP-Z HS R15 60* | High-pressure safety device (up to 50 bar); G 1/2 for sensor length 600 mm        |  |
| KUG-ZER15        | Ball valve G 1/2 female st. st.,<br>installation KEC-1/ KEP-1 also under pressure |   |
| KEP-ZANR1500     | Welding nipple, L = 35 mm, male thread, R 1/2" st. st. 1.4571                     |  |

\* for connection 1/2" NPT replace "R" with "N"



**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<br>(50 m/s) |            |                 |                |                |                  |                  | Standard Version<br>(92.7 m/s) |           |                 |                |                |                  |                  |
|------------------------|------|-------|-------------------------------|------------|-----------------|----------------|----------------|------------------|------------------|--------------------------------|-----------|-----------------|----------------|----------------|------------------|------------------|
|                        |      |       | Full scale values in Nm³/h*   |            |                 |                |                |                  |                  |                                |           |                 |                |                |                  |                  |
| Zoll                   | [mm] | DN    | Air**                         | Ar         | CO <sub>2</sub> | N <sub>2</sub> | O <sub>2</sub> | N <sub>2</sub> O | Natural gas (NG) | Air**                          | Ar        | CO <sub>2</sub> | N <sub>2</sub> | O <sub>2</sub> | N <sub>2</sub> O | Natural gas (NG) |
| ¼                      |      |       | 25 NI/min                     | 45 NI/min  | 25 NI/min       | 25 NI/min      | 25 NI/min      | 25 NI/min        | 15 NI/min        | 50 NI/min                      | 85 NI/min | 50 NI/min       | 50 NI/min      | 50 NI/min      | 50 NI/min        | 30 NI/min        |
| ⅜                      |      |       | 225 NI/min                    | 330 NI/min | 225 NI/min      | 205 NI/min     | 215 NI/min     | 220 NI/min       | 130 NI/min       | 25                             | 35        | 25              | 20             | 20             | 20               | 14               |
| 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              |
| 2½"                    | 71.1 | DN 65 | 550                           | 865        | 545             | 505            | 525            | 540              | 325              | 1025                           | 1605      | 1015            | 945            | 980            | 1005             | 605              |
| 3"                     | 84.9 | DN 80 | 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<br>(185.0 m/s) |            |                 |                |                |                  |                  | High-Speed Version<br>(224.0 m/s) |            |                 |                |                |                  |                  |
|------------------------|------|-------|-----------------------------|------------|-----------------|----------------|----------------|------------------|------------------|-----------------------------------|------------|-----------------|----------------|----------------|------------------|------------------|
|                        |      |       | Full scale values in Nm³/h* |            |                 |                |                |                  |                  |                                   |            |                 |                |                |                  |                  |
| Zoll                   | [mm] | DN    | Air**                       | Ar         | CO <sub>2</sub> | N <sub>2</sub> | O <sub>2</sub> | N <sub>2</sub> O | Natural gas (NG) | Air**                             | Ar         | CO <sub>2</sub> | N <sub>2</sub> | O <sub>2</sub> | N <sub>2</sub> O | Natural gas (NG) |
| ¼                      |      |       | 105 NI/min                  | 170 NI/min | 105 NI/min      | 100 NI/min     | 100 NI/min     | 105 NI/min       | 60 NI/min        | 130 NI/min                        | 205 NI/min | 130 NI/min      | 120 NI/min     | 125 NI/min     | 125 NI/min       | 75 NI/min        |
| ⅜                      |      |       | 50                          | 75         | 50              | 45             | 45             | 45               | 25               | 60                                | 95         | 60              | 55             | 55             | 60               | 35               |
| 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              |
| 2½"                    | 71.1 | DN 65 | 2050                        | 3205       | 2030            | 1885           | 1955           | 2010             | 1210             | 2480                              | 3880       | 2455            | 2280           | 2365           | 2435             | 1465             |
| 3"                     | 84.9 | DN 80 | 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<br>0.1 ... 92.7 Nm/s, stand. version*<br>0.1 ... 185 Nm/s, max. version*<br>0.1 ... 224 Nm/s, high speed version<br>* Measuring ranges Nm <sup>3</sup> /h for different pipe diameters and gases, see table flow measuring ranges<br>* All measured values referred to DIN 1343 standard conditions 0° and 1013 mbar ex factory | 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 |
| Accuracy:   | ± 1.5% of reading<br>± 0.3% of full scale<br>on request:<br>± 1.0% of reading<br>± 0.3% of full scale  | Protection:                           | IP 65   |
| Accuracy indications:                                 | referred to ambient temperature 22°C ± 2°C, system pressure 6 bar  | Material:                             | housing polycarbonate, probe tube stainless steel 1.4301  |
| Measuring principle:                                  | Thermal mass flow sensor, the measuring effect is based on the cooling down of a heated sensor PT45 by bypassing gas. The ambient temperature is measured with a PT100. An additional pressure and temperature compensation is not necessary.  | Operating pressure:                   | 16 bar, in special version 40 bar   |
| Response time:  | t <sub>90</sub> < 3 s  | Power supply:                         | 18 ... 36 V <sub>DC</sub> , 5 W   |
| Operating temperature range probe tube/ display unit: | -30 ... 80 °C standard version, probe tube<br>-20 ... 70 °C display unit   |                                       |   |
| Display:  | optional TFT 1.8"<br>resolution 220 x 176  |                                       |   |
| Units adjustable via keyboard at display:             | Nm <sup>3</sup> /h, Nm <sup>3</sup> /min, NI/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 m <sup>3</sup> 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 m <sup>3</sup> is reached   |                                       |   |





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

| Model                                       | Version                           | Measuring range   | Connection  |
|---|-----------------------------------|---|---|
| <p><b>KEP</b> = Thermal mass flow meter</p> | <p><b>2</b> = In-Line version</p> | <p><b>L</b> = low-speed-Version<br/>50 m/s</p> <p><b>S</b> = standard<br/>92.7 m/s</p> <p><b>M</b> = max-Version<br/>185 m/s</p> <p><b>H</b> = high-speed-version<br/>224 m/s</p> | <p><b>In-Line Version (stainless steel 1,4404)</b></p> <p><b>R08</b> = R ¼ with integrated measuring section<br/> <b>R10</b> = R ⅜ with integrated measuring section<br/> <b>R15</b> = R ½ with integrated measuring section<br/> <b>R20</b> = R ¾ with integrated measuring section<br/> <b>R25</b> = R 1 with integrated measuring section<br/> <b>R32</b> = R 1¼ with integrated measuring section<br/> <b>R40</b> = R 1½ with integrated measuring section<br/> <b>R50</b> = R 2 with integrated measuring section</p> <p><b>Nxx</b> = NPT thread</p> <p><b>F15</b> = flange DN 15, DIN EN 1092-1 PN40 with integrated measuring section<br/> <b>F20</b> = flange DN 20, DIN EN 1092-1 PN40 with integrated measuring section<br/> <b>F25</b> = flange DN 25, DIN EN 1092-1 PN40 with integrated measuring section<br/> <b>F32</b> = flange DN 32, DIN EN 1092-1 PN40 with integrated measuring section<br/> <b>F40</b> = flange DN 40, DIN EN 1092-1 PN40 with integrated measuring section<br/> <b>F50</b> = flange DN 50, DIN EN 1092-1 PN40 with integrated measuring section<br/> <b>F65</b> = flange DN 65, DIN EN 1092-1 PN40 with integrated measuring section<br/> <b>F80</b> = flange DN 80, DIN EN 1092-1 PN40 with integrated measuring section</p> <p><b>A15</b> = ½" ASME flange Class 150 with integrated measuring section<br/> <b>A20</b> = ¾" ASME flange Class 150 with integrated measuring section<br/> <b>A25</b> = 1" ASME flange Class 150 with integrated measuring section<br/> <b>A32</b> = 1¼" ASME flange Class 150 with integrated measuring section<br/> <b>A40</b> = 1½" ASME flange Class 150 with integrated measuring section<br/> <b>A50</b> = 2" ASME flange Class 150 with integrated measuring section<br/> <b>A65</b> = 2½" ASME flange Class 150 with integrated measuring section<br/> <b>A80</b> = 3" ASME flange Class 150 with integrated measuring section</p> <p><b>B15</b> = ½" ASME flange Class 300 with integrated measuring section<br/> <b>B20</b> = ¾" ASME flange Class 300 with integrated measuring section<br/> <b>B25</b> = 1" ASME flange Class 300 with integrated measuring section<br/> <b>B32</b> = 1¼" ASME flange Class 300 with integrated measuring section<br/> <b>B40</b> = 1½" ASME flange Class 300 with integrated measuring section<br/> <b>B50</b> = 2" ASME flange Class 300 with integrated measuring section<br/> <b>B65</b> = 2½" ASME flange Class 300 with integrated measuring section<br/> <b>B80</b> = 3" ASME flange Class 300 with integrated measuring section</p> <p><b>XXX</b> = special version</p> |



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

| Display                            | Gas type   | Max. pressure   | Calibration  | Options  |
|------------------------------------|--|---|--|--|
| <b>1</b> = with integrated display | <b>L</b> = air<br><b>N</b> = nitrogen<br><b>A<sup>2)</sup></b> = argon, carbon dioxide, oxygen, nitrous oxide, natural gas, methane<br><b>E<sup>1)</sup></b> = helium, propane<br><b>S</b> = gas mixture or special gas (specify in writing) | <b>S</b> = 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!)<br><b>H</b> = 40 bar (high pressure for In-line) | <b>0</b> = standard<br><b>E</b> = real gas calibration<br><b>C</b> = 5-point calibration certificate<br><b>J</b> = ±1.0% of reading ± 0.3% of FS | <b>0</b> = without<br><b>R</b> = cleaning oil and fat free<br><b>S<sup>4)</sup></b> = silicone free version incl. oil and fat free cleaning<br><b>A</b> = Additional calibration curve stored in the sensor<br><b>B</b> = bidirectional measuring (includes 2x4 ... 20 mA analog outputs and 2x pulse outputs) |

<sup>1)</sup> 3-point calibration certificate is included in standard version. Standard calibration is carried out at 5 bar and 20 °C.


<sup>2)</sup> please specify gas in writing

<sup>3)</sup> with real gas calibration only

<sup>4)</sup> Reduced operating temperature range: -20 ... +80°C for media O<sub>2</sub>, natural gas, propane, methane or with option silicone free. Operating pressure must be specified when ordering.

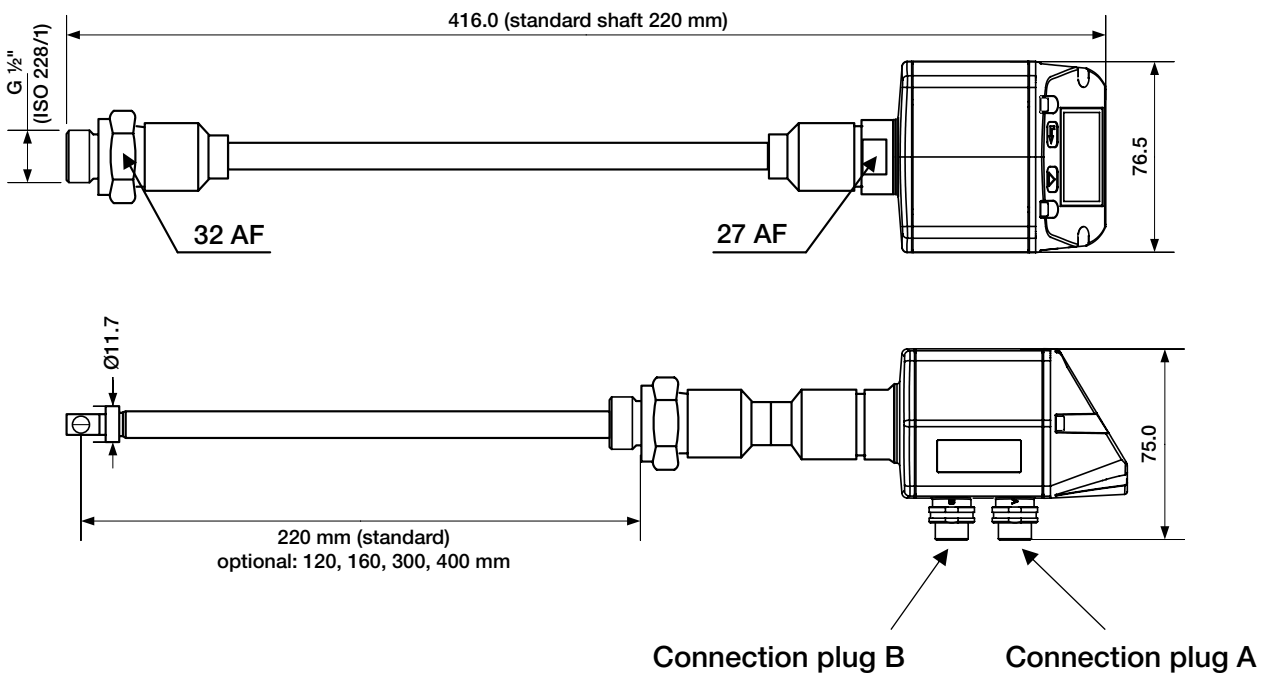
<sup>5)</sup> Operating pressure and operating temperature must be specified when ordering.

**Accessories**

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

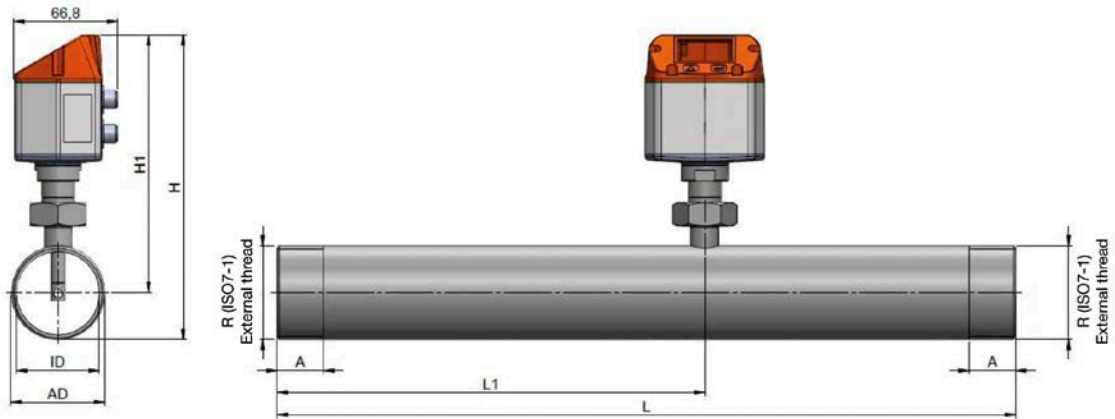
**Dimensions [mm]**

**KEP-1**



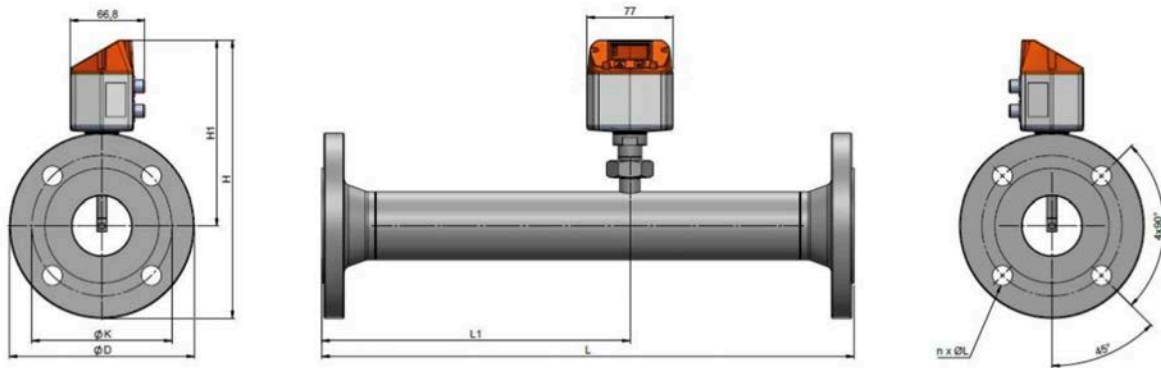
Dimensions [mm] (continuation)

KEP-2



KEP-2 Thread

|              | Pipe size | od / id [mm] | L [mm] | L1 [mm] | H [mm] | H1 [mm] | R        | A [mm] |
|--------------|-----------|--------------|--------|---------|--------|---------|----------|--------|
| KEP-2 1/4"   | DN8       | 13.7/8.5     | 194    | 137     | 176.6  | 166.3   | R 1/4"   | 15     |
| KEP-2 3/8"   | DN10      | 17.2/12.5    | 300    | 200     | 174.9  | 166.3   | R 3/8"   | 15     |
| KEP-2 1/2"   | DN15      | 21.3/16.1    | 300    | 210     | 177.0  | 166.3   | R 1/2"   | 20     |
| KEP-2 3/4"   | DN20      | 26.9/21.7    | 475    | 275     | 179.8  | 166.3   | R 3/4"   | 20     |
| KEP-2 1"     | DN25      | 33.7/27.3    | 475    | 275     | 183.2  | 166.3   | R 1"     | 25     |
| KEP-2 1 1/4" | DN32      | 42.4/36.0    | 475    | 275     | 187.5  | 166.3   | R 1 1/4" | 25     |
| KEP-2 1 1/2" | DN40      | 48.3/41.9    | 475    | 275     | 190.5  | 166.3   | R 1 1/2" | 25     |
| KEP-2 2"     | DN50      | 60.3/53.1    | 475    | 275     | 196.5  | 166.3   | R 2"     | 30     |



KEP-2 Flange

|              | Pipe size | od / id [mm] | L [mm] | L1 [mm] | H [mm] | H1 [mm] | Flange DIN EN 1092-1 |         |             |
|--------------|-----------|--------------|--------|---------|--------|---------|----------------------|---------|-------------|
|              |           |              |        |         |        |         | ØD [mm]              | ØK [mm] | n x ØL [mm] |
| KEP-2 1/2"   | DN15      | 21.3/16.1    | 300    | 210     | 213.8  | 166.3   | 95                   | 65      | 4x14        |
| KEP-2 3/4"   | DN20      | 26.9/21.7    | 475    | 275     | 218.8  | 166.3   | 105                  | 75      | 4x14        |
| KEP-2 1"     | DN25      | 33.7/27.3    | 475    | 275     | 223.8  | 166.3   | 115                  | 85      | 4x14        |
| KEP-2 1 1/4" | DN32      | 42.4/36.0    | 475    | 275     | 263.3  | 166.3   | 140                  | 100     | 4x18        |
| KEP-2 1 1/2" | DN40      | 48.3/41.9    | 475    | 275     | 240.7  | 166.3   | 150                  | 110     | 4x18        |
| KEP-2 2"     | DN50      | 60.3/53.1    | 475    | 275     | 248.2  | 166.3   | 165                  | 125     | 4x18        |
| KEP-2 2 1/2" | DN65      | 76.1/68.9    | 475    | 275     | 268.2  | 175.7   | 185                  | 145     | 8x18        |
| KEP-2 3"     | DN80      | 88.9/80.9    | 475    | 275     | 275.7  | 175.7   | 200                  | 160     | 8x18        |



**Flow measuring ranges KEP-1**

**Measuring ranges low-speed version**

| Inside diameter of pipe |       |        | Low-speed version (50 m/s)                                 |                            |              |                          |                                   | Recommended probe length |
|-------------------------|-------|--------|--|----------------------------|--------------|--------------------------|-----------------------------------|--------------------------|
|                         |       |        | Measuring range full scales in Nm <sup>3</sup> /h* / [cfm] |                            |              |                          |                                   |                          |
| Inch                    | mm    | DN     | Air**  | Nitrogen (N <sub>2</sub> ) | Argon (Ar)   | Oxygen (O <sub>2</sub> ) | Carbon dioxide (CO <sub>2</sub> ) |                          |
| 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]                           |                          |
| 1¼"                     | 36.0  | DN 32  | 143 [84]   | 132 [77]                   | 224 [132]    | 136 [80]                 | 142 [83]                          |                          |
| 1½"                     | 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]                         |                          |
| 2½"                     | 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]                       | 300 mm - 11.811 inch     |
| 6"                      | 159.3 | DN 150 | 2999 [1765]  | 2758 [1623]                | 4689 [2759]  | 2859 [1682]              | 2967 [1746]                       |                          |
| 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)                                 |             |  |                  |                                  | Recommended probe length |
|-------------------------|-------|--------|--|-------------|--|------------------|----------------------------------|--------------------------|
|                         |       |        | Measuring range full scales in Nm <sup>3</sup> /h* / [cfm] |             |  |                  |                                  |                          |
| Inch                    | mm    | DN     | Methane natural gas (CH <sub>4</sub> )                     | Helium (He) | Propane (C <sub>3</sub> H <sub>8</sub> ) | Natural gas (NG) | Nitrous oxide (N <sub>2</sub> O) |                          |
| 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]                          |                          |
| 1¼"                     | 36.0  | DN 32  | 85 [50]  | 60 [35]     | 66 [38]                                  | 91 [53]          | 140 [89]                         |                          |
| 1½"                     | 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]                        |                          |
| 2½"                     | 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]                     |                          |

\* Nm<sup>3</sup>/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 standard version**

| Inside diameter of pipe |       |        | Standard version (92.7 m/s)                                |                            |               |                          |                                   | Recommended probe length |
|-------------------------|-------|--------|--|----------------------------|---------------|--------------------------|-----------------------------------|--------------------------|
|                         |       |        | Measuring range full scales in Nm <sup>3</sup> /h* / [cfm] |                            |               |                          |                                   |                          |
| Inch                    | mm    | DN     | Air**  | Nitrogen (N <sub>2</sub> ) | Argon (Ar)    | Oxygen (O <sub>2</sub> ) | Carbon dioxide (CO <sub>2</sub> ) |                          |
| 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]                          |                          |
| 1¼"                     | 36.0  | DN 32  | 266 [156]  | 244 [144]                  | 416 [245]     | 253 [149]                | 263 [155]                         |                          |
| 1½"                     | 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]                         |                          |
| 2½"                     | 68.9  | DN 65  | 1028 [604]   | 945 [556]                  | 1607 [945]    | 980 [576]                | 1017 [598]                        |                          |
| 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]                       | 300 mm - 11.811 inch     |
| 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]                       |                          |
| 8"                      | 200.0 | DN 200 | 8785 [5170]  | 8079 [4754]                | 13736 [8083]  | 8376 [4929]              | 8694 [5116]                       | 300 mm - 11.811 inch     |
| 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)                                |             |  |                  |                                  | Recommended probe length |
|-------------------------|-------|--------|--|-------------|--|------------------|----------------------------------|--------------------------|
|                         |       |        | Measuring range full scales in Nm <sup>3</sup> /h* / [cfm] |             |  |                  |                                  |                          |
| Inch                    | mm    | DN     | Methane natural gas (CH <sub>4</sub> )                     | Helium (He) | Propane (C <sub>3</sub> H <sub>8</sub> ) | Natural gas (NG) | Nitrous oxide (N <sub>2</sub> O) |                          |
| 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]                         |                          |
| 1¼"                     | 36.0  | DN 32  | 157 [92]   | 111 [65]    | 122 [72]                                 | 168 [99]         | 261 [153]                        |                          |
| 1½"                     | 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]                        |                          |
| 2½"                     | 68.9  | DN 65  | 608 [358]  | 429 [252]   | 472 [278]                                | 652 [383]        | 1008 [593]                       |                          |
| 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]                      | 300 mm - 11.811 inch     |
| 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]                      |                          |
| 8"                      | 200.0 | DN 200 | 5198 [3059]  | 3672 [2160] | 4039 [2377]                              | 5574 [3280]      | 8616 [5071]                      | 300 mm - 11.811 inch     |
| 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]                    |                          |

\* Nm<sup>3</sup>/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)                                    |                            |               |                          |                                   | Recommended probe length |
|-------------------------|-------|--------|--|----------------------------|---------------|--------------------------|-----------------------------------|--------------------------|
|                         |       |        | Measuring range full scales in Nm <sup>3</sup> /h* / [cfm] |                            |               |                          |                                   |                          |
| Inch                    | mm    | DN     | Air**  | Nitrogen (N <sub>2</sub> ) | Argon (Ar)    | Oxygen (O <sub>2</sub> ) | Carbon dioxide (CO <sub>2</sub> ) |                          |
| 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]                         |                          |
| 1¼"                     | 36.0  | DN 32  | 531 [312]  | 488 [287]                  | 830 [489]     | 506 [298]                | 525 [309]                         |                          |
| 1½"                     | 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]                        |                          |
| 2½"                     | 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]                       | 300 mm - 11.811 inch     |
| 6"                      | 159.3 | DN 150 | 11096 [6530]   | 10204 [6005]               | 17349 [10210] | 10579 [6226]             | 10981 [6462]                      |                          |
| 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)                                    |              |  |                  |                                  | Recommended probe length |
|-------------------------|-------|--------|--|--------------|--|------------------|----------------------------------|--------------------------|
|                         |       |        | Measuring range full scales in Nm <sup>3</sup> /h* / [cfm] |              |  |                  |                                  |                          |
| Inch                    | mm    | DN     | Methane natural gas (CH <sub>4</sub> )                     | Helium (He)  | Propane (C <sub>3</sub> H <sub>8</sub> ) | Natural gas (NG) | Nitrous oxide (N <sub>2</sub> O) |                          |
| 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]                        |                          |
| 1¼"                     | 36.0  | DN 32  | 314 [185]  | 222 [130]    | 244 [143]                                | 337 [198]        | 521 [306]                        |                          |
| 1½"                     | 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]                       |                          |
| 2½"                     | 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]                    |                          |

\* Nm<sup>3</sup>/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 high-speed version**

| Inside diameter of pipe |       |        | High-speed version (224.0 m/s)                             |                            |               |                          |                                   | Recommended probe length |
|-------------------------|-------|--------|--|----------------------------|---------------|--------------------------|-----------------------------------|--------------------------|
|                         |       |        | Measuring range full scales in Nm <sup>3</sup> /h* / [cfm] |                            |               |                          |                                   |                          |
| Inch                    | mm    | DN     | Air**  | Nitrogen (N <sub>2</sub> ) | Argon (Ar)    | Oxygen (O <sub>2</sub> ) | Carbon dioxide (CO <sub>2</sub> ) |                          |
| 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]                         |                          |
| 1¼"                     | 36.0  | DN 32  | 643 [378]  | 591 [348]                  | 1006 [592]    | 613 [361]                | 636 [374]                         |                          |
| 1½"                     | 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]                        |                          |
| 2½"                     | 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]                       | 300 mm - 11.811 inch     |
| 6"                      | 159.3 | DN 150 | 13436 [7907]   | 12355 [7271]               | 21007 [12362] | 12810 [7538]             | 13296 [7825]                      |                          |
| 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)                             |               |  |                  |                                  | Recommended probe length |
|-------------------------|-------|--------|--|---------------|--|------------------|----------------------------------|--------------------------|
|                         |       |        | Measuring range full scales in Nm <sup>3</sup> /h* / [cfm] |               |  |                  |                                  |                          |
| Inch                    | mm    | DN     | Methane natural gas (CH <sub>4</sub> )                     | Helium (He)   | Propane (C <sub>3</sub> H <sub>8</sub> ) | Natural gas (NG) | Nitrous oxide (N <sub>2</sub> O) |                          |
| 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]                        |                          |
| 1¼"                     | 36.0  | DN 32  | 380 [224]  | 268 [158]     | 295 [174]                                | 408 [240]        | 631 [371]                        |                          |
| 1½"                     | 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]                       |                          |
| 2½"                     | 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]                    |                          |

\* Nm<sup>3</sup>/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 Nm <sup>3</sup> /h* / [cfm] |                            |                   |                          |                                   |
| Inch                    | mm   | DN    | Air**  | Nitrogen (N <sub>2</sub> ) | Argon (Ar)        | Oxygen (O <sub>2</sub> ) | Carbon dioxide (CO <sub>2</sub> ) |
| ¼"                      | 8,9  | DN 8  | 25 NI/min [0.9]  | 25 NI/min [0.9]            | 45 NI/min [1.5]   | 25 NI/min [0.9]          | 25 NI/min [0.9]                   |
| ⅜"                      | 12,5 | DN 10 | 225 NI/min [8]   | 205 NI/min [7.2]           | 330 NI/min [11.7] | 215 NI/min [7.5]         | 225 NI/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 Nm <sup>3</sup> /h* / [cfm] |                 |  |                  |                                  |
| Inch                    | mm   | DN    | Methane natural gas (CH <sub>4</sub> )                     | Helium (He)     | Propane (C <sub>3</sub> H <sub>8</sub> ) | Natural gas (NG) | Nitrous oxide (N <sub>2</sub> O) |
| ¼"                      | 8,9  | DN 8  | 15 NI/min [0.6]  | 735 NI/h [0.3]  | 810 NI/min [0.3]                         | 15 NI/min [0.6]  | 25 NI/min [0.9]                  |
| ⅜"                      | 12,5 | DN 10 | 130 NI/min [4.5]   | 95 NI/min [3.3] | 100 NI/min [3.5]                         | 140 NI/min [4.9] | 220 NI/min [7.7]                 |
| ½"                      | 16.1 | DN 15 | 240 NI/min [8.4]   | 170 NI/min [6]  | 185 NI/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]                        |

\* Nm<sup>3</sup>/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 standard version**

| Inside diameter of pipe |      |       | Standard version (92.7 m/s)                                |                            |               |                          |                                   |
|-------------------------|------|-------|--|----------------------------|---------------|--------------------------|-----------------------------------|
|                         |      |       | Measuring range full scales in Nm <sup>3</sup> /h* / [cfm] |                            |               |                          |                                   |
| Inch                    | mm   | DN    | Air**  | Nitrogen (N <sub>2</sub> ) | Argon (Ar)    | Oxygen (O <sub>2</sub> ) | Carbon dioxide (CO <sub>2</sub> ) |
| ¼"                      | 8,9  | DN 8  | 50 NI/min [1.8]  | 50 NI/min [1.5]            | 85 NI/min [3] | 50 NI/min [1.8]          | 50 NI/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]                          |
| 1 ¼"                    | 36.0 | DN 32 | 265 [155]  | 240 [140]                  | 415 [245]     | 250 [145]                | 260 [155]                         |
| 1 ½"                    | 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]                         |
| 2 ½"                    | 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 Nm <sup>3</sup> /h* / [cfm] |                  |  |                  |                                  |
| Inch                    | mm   | DN    | Methane natural gas (CH <sub>4</sub> )                     | Helium (He)      | Propane (C <sub>3</sub> H <sub>8</sub> ) | Natural gas (NG) | Nitrous oxide (N <sub>2</sub> O) |
| ¼"                      | 8,9  | DN 8  | 30 NI/min [0.9]  | 20 NI/min [0.6]  | 25 NI/min [0.6]                          | 30 NI/min [1.2]  | 50 NI/min [1.8]                  |
| ⅜"                      | 12,5 | DN 10 | 245 NI/min [8.6]   | 175 NI/min [6.1] | 190 NI/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]                         |
| 1 ¼"                    | 36.0 | DN 32 | 155 [90]   | 110 [65]         | 120 [70]                                 | 165 [95]         | 260 [150]                        |
| 1 ½"                    | 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]                        |
| 2 ½"                    | 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]                       |

\* Nm<sup>3</sup>/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 Nm <sup>3</sup> /h* / [cfm] |                            |                |                          |                                   |
| Inch                    | mm   | DN    | Air**  | Nitrogen (N <sub>2</sub> ) | Argon (Ar)     | Oxygen (O <sub>2</sub> ) | Carbon dioxide (CO <sub>2</sub> ) |
| ¼"                      | 8,9  | DN 8  | 105 NI/min [3,6]   | 100 NI/min [3,3]           | 170 NI/min [6] | 100 NI/min [3,6]         | 105 NI/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]                         |
| 1 ¼"                    | 36.0 | DN 32 | 530 [310]  | 485 [285]                  | 830 [485]      | 505 [295]                | 525 [305]                         |
| 1 ½"                    | 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]                        |
| 2 ½"                    | 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 Nm <sup>3</sup> /h* / [cfm] |                 |  |                  |                                  |
| Inch                    | mm   | DN    | Methane natural gas (CH <sub>4</sub> )                     | Helium (He)     | Propane (C <sub>3</sub> H <sub>8</sub> ) | Natural gas (NG) | Nitrous oxide (N <sub>2</sub> O) |
| ¼"                      | 8,9  | DN 8  | 60 NI/min [2,1]  | 45 NI/min [1,5] | 50 NI/min [1,5]                          | 65 NI/min [2,4]  | 105 NI/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]                        |
| 1 ¼"                    | 36.0 | DN 32 | 310 [185]  | 220 [130]       | 240 [140]                                | 335 [195]        | 520 [305]                        |
| 1 ½"                    | 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]                       |
| 2 ½"                    | 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]                      |

\* Nm<sup>3</sup>/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 high-speed version**

| Inside diameter of pipe |      |       | High-speed version (224.0 m/s)                             |                            |                  |                          |                                   |
|-------------------------|------|-------|--|----------------------------|------------------|--------------------------|-----------------------------------|
|                         |      |       | Measuring range full scales in Nm <sup>3</sup> /h* / [cfm] |                            |                  |                          |                                   |
| Inch                    | mm   | DN    | Air**  | Nitrogen (N <sub>2</sub> ) | Argon (Ar)       | Oxygen (O <sub>2</sub> ) | Carbon dioxide (CO <sub>2</sub> ) |
| ¼"                      | 8,9  | DN 8  | 130 NI/min [4.5]   | 120 NI/min [4.2]           | 205 NI/min [7.2] | 125 NI/min [4.2]         | 130 NI/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]                         |
| 1 ¼"                    | 36.0 | DN 32 | 640 [375]  | 590 [345]                  | 1005 [590]       | 610 [360]                | 635 [370]                         |
| 1 ½"                    | 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]                        |
| 2 ½"                    | 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 Nm <sup>3</sup> /h* / [cfm] |                 |  |                  |                                  |
| Inch                    | mm   | DN    | Methane natural gas (CH <sub>4</sub> )                     | Helium (He)     | Propane (C <sub>3</sub> H <sub>8</sub> ) | Natural gas (NG) | Nitrous oxide (N <sub>2</sub> O) |
| ¼"                      | 8,9  | DN 8  | 75 NI/min [2.7]  | 55 NI/min [1.8] | 60 NI/min [2.1]                          | 80 NI/min [2.7]  | 125 NI/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]                        |
| 1 ¼"                    | 36.0 | DN 32 | 380 [220]  | 265 [155]       | 295 [170]                                | 405 [240]        | 630 [370]                        |
| 1 ½"                    | 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]                       |
| 2 ½"                    | 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]                      |

\* Nm<sup>3</sup>/h in acc. with DIN 1343: 0 °C, 1013.25 hPa for gases

\*\* ISO 1217: 20 °C, 1000 hPa for air