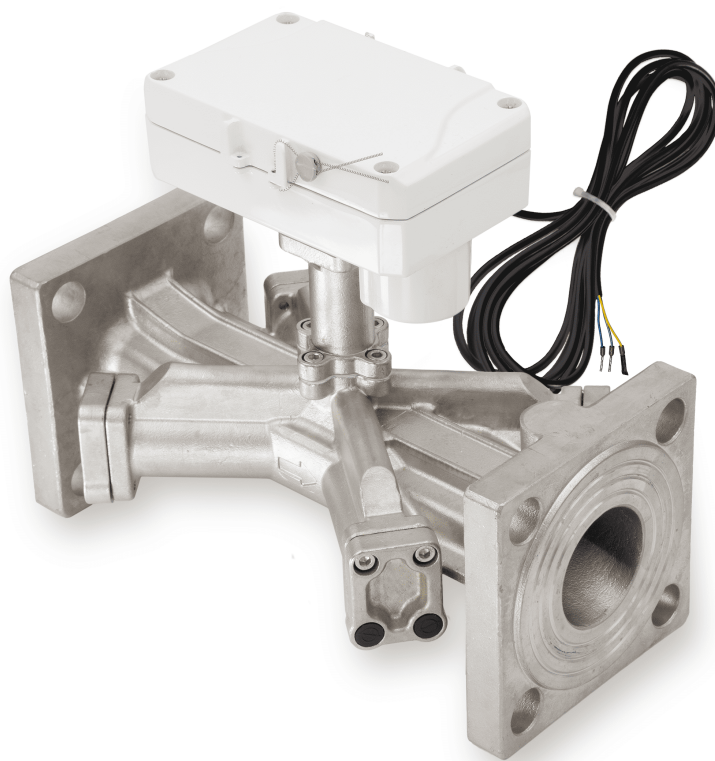


# K-BULK



## ULTRASONIC FLOW SENSOR

**K-BULK** is the ultrasonic flow sensor designed for precise thermal energy measurement in centralized heating and cooling systems. The measuring element, with no moving parts, ensures long-term reliability even under harsh operating conditions. The metallic body with IP68 protection includes battery-powered electronic (10+1 years lifetime), making the device suitable for humid or demanding environments. Thanks to the dual ultrasonic paths and compatibility with Maddalena KS3C calculators and KPTEG probes, K-BULK guarantees maximum accuracy and interoperability in direct metering systems.

# K-BULK

## GENERAL FEATURES

- Dual-path ultrasonic measurement principle
- DN: 50 ÷ 300
- Accuracy class: 2 (EN 1434)
- Environmental class: C – indoor use
- Mechanical class M2 and electromagnetic class E2
- Protection rating IP68 (electronic unit and sensor)
- Power supply: battery (10 + 1 years lifetime)
- Installation: U0-D0, any position
- Open-drain synchronous pulse output
- 3 m cable, max voltage 12 V DC, max current 10 mA DC
- Available with multiple pulse-resolution options (1/10 – 1/100 L)



## GENERAL TECHNICAL DATA

|                       |                                       |
|-----------------------|---------------------------------------|
| Measurement method    | Ultrasonic; time of flight (TOF)      |
| Accuracy class (MID)  | Class 2                               |
| Environmental class   | Class C                               |
| Mechanical class      | M2                                    |
| Electromagnetic class | E2                                    |
| Storage temperature   | -20°C ÷ +60°C                         |
| Protection class      | IP68                                  |
| Power supply          | 3.6 V battery<br>10+1 years (default) |
| Module B nr.          | DE-24-MI004-PTB0005                   |
| Module D nr.          | 0119-SJ-A010-08                       |

## PULSE OUTPUT TECHNICAL DATA

|                                |                                              |
|--------------------------------|----------------------------------------------|
| Type                           | Open drain                                   |
| Pulse length                   | 100 ms                                       |
| Pulse type                     | Synchronous                                  |
| Pulse options                  | DN50 ÷ DN100: 1/10L<br>DN125 ÷ DN300: 1/100L |
| Cable length                   | 3 m                                          |
| Voltage                        | Max: 12 Vdc                                  |
| Current                        | Max: 10 mAdc                                 |
| Closed-contact resistance      | 100 Ω                                        |
| Maximum output pulse frequency | 10 Hz                                        |

## FLOW SENSOR TECHNICAL DATA

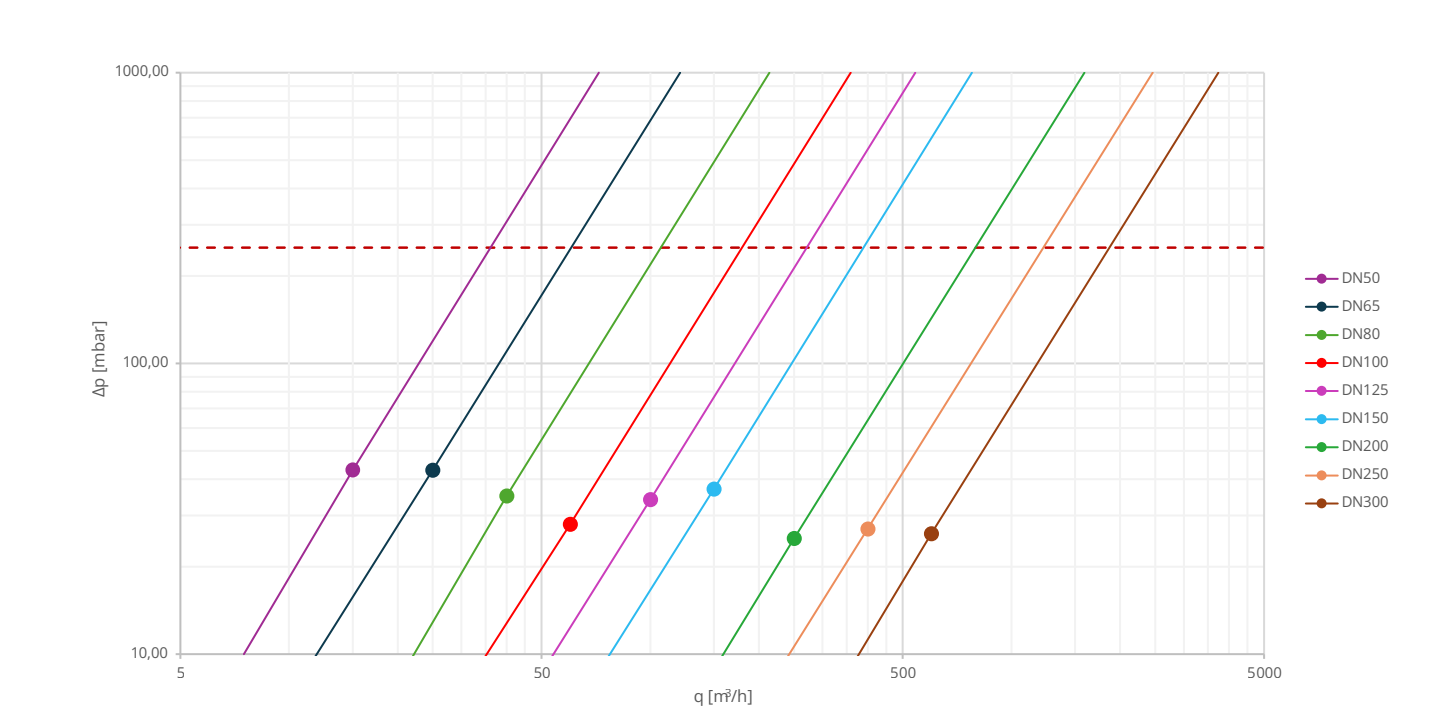
|                                                        |                         |
|--------------------------------------------------------|-------------------------|
| Installation position                                  | Any<br>U0-D0            |
| Sampling frequency                                     | 4 Hz                    |
| Flow range                                             | 1:100                   |
| Temperature range                                      | +1°C ÷ +130°C           |
| Recommended temperature range for heating applications | +10°C ÷ +130°C          |
| Maximum temperature                                    | 150°C for<br>2000 hours |
| Maximum overload                                       | 1,25 x q <sub>p</sub>   |
| Nominal pressure                                       | PN16 - PN25             |

METROLOGICAL CHARACTERISTICS

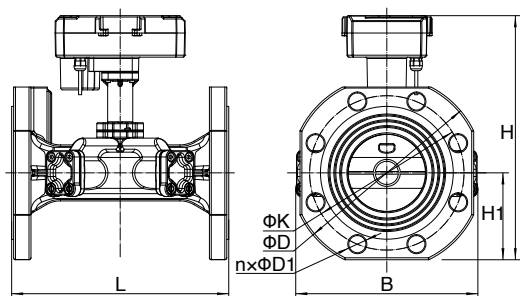
| Diameter          | mm                | 50   |      | 65   |      | 80   |      | 100  |      |
|-------------------|-------------------|------|------|------|------|------|------|------|------|
|                   | Inches            | 50   |      | 65   |      | 80   |      | 100  |      |
|                   |                   | PN16 | PN25 | PN16 | PN25 | PN16 | PN25 | PN16 | PN25 |
| q <sub>p</sub>    | m <sup>3</sup> /h | 15   |      | 25   |      | 40   |      | 60   |      |
| q <sub>s</sub>    | m <sup>3</sup> /h | 30   |      | 50   |      | 80   |      | 120  |      |
| q <sub>i</sub>    | l/h               | 150  |      | 250  |      | 400  |      | 600  |      |
| Starting flow     | l/h               | 19   |      | 30   |      | 41   |      | 66   |      |
| ΔP@q <sub>p</sub> | mbar              | 43   | 45   | 43   | 42   | 35   | 34   | 28   |      |
| kv                | m <sup>3</sup> /h | 72   | 71   | 121  | 122  | 214  | 217  | 359  |      |
| Q@0.25bar         | m <sup>3</sup> /h | 36   | 35   | 60   | 61   | 107  | 108  | 179  |      |

| Diameter          | mm                | 125  | 150  | 200  | 250  | 300  |
|-------------------|-------------------|------|------|------|------|------|
|                   | Inches            | 125  | 150  | 200  | 250  | 300  |
|                   |                   | PN25 | PN25 | PN25 | PN25 | PN25 |
| q <sub>p</sub>    | m <sup>3</sup> /h | 100  | 150  | 250  | 400  | 600  |
| q <sub>s</sub>    | m <sup>3</sup> /h | 200  | 300  | 500  | 800  | 1200 |
| q <sub>i</sub>    | l/h               | 1000 | 1500 | 2500 | 4000 | 6000 |
| Starting flow     | l/h               | 77   | 103  | 145  | 187  | 342  |
| ΔP@q <sub>p</sub> | mbar              | 34   | 37   | 25   | 27   | 26   |
| kv                | m <sup>3</sup> /h | 542  | 778  | 1591 | 2457 | 3735 |
| Q@0.25bar         | m <sup>3</sup> /h | 271  | 389  | 795  | 1229 | 1868 |

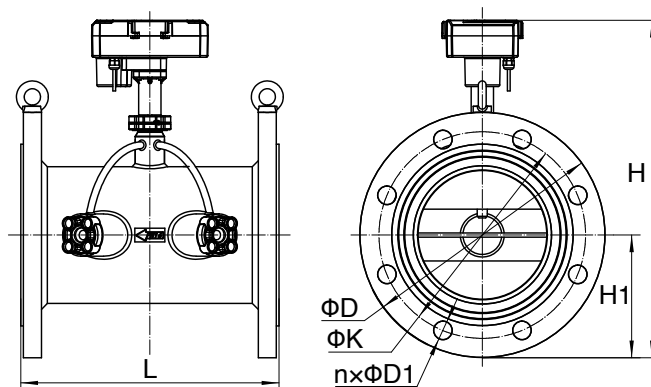
PRESSURE LOSS



## DIMENSIONAL CHARACTERISTICS



Da DN50 a DN100



Da DN125 a DN300

| Diameter | mm     | 50      |      | 65      |         | 80      |       | 100     |         |
|----------|--------|---------|------|---------|---------|---------|-------|---------|---------|
|          | Inches | 50      |      | 65      |         | 80      |       | 100     |         |
|          |        | PN16    | PN25 | PN16    | PN25    | PN16    | PN25  | PN16    | PN25    |
| L        | mm     | 200     | 270  | 200     | 300     | 225     | 300   | 250     | 360     |
| H        | mm     | 221     |      | 229     |         | 253     |       | 281     |         |
| D        | mm     | 165     |      | 185     |         | 200     |       | 220     | 235     |
| K        | mm     | 125     |      | 145     |         | 160     |       | 180     | 190     |
| B        | mm     | 120     |      | 135     | 165     | 180     |       | 212     | 200     |
| n x ΦL   | mm     | 4 x Φ18 |      | 4 x Φ18 | 8 x Φ18 | 8 x Φ18 |       | 8 x Φ18 | 8 x Φ22 |
| Weight   | kg     | 8,00    | 9,50 | 8,50    | 11,50   | 11,80   | 16,00 | 15,00   | 21,00   |

| Diameter | mm     | 125     | 150     | 200      | 250      | 300      |
|----------|--------|---------|---------|----------|----------|----------|
|          | Inches | 125     | 150     | 200      | 250      | 300      |
|          |        | PN25    | PN25    | PN25     | PN25     | PN25     |
| L        | mm     | 350     | 350     | 350      | 400      | 450      |
| H        | mm     | 370     | 400     | 459      | 520      | 575      |
| D        | mm     | 270     | 300     | 360      | 425      | 485      |
| K        | mm     | 220     | 250     | 310      | 370      | 430      |
| B        | mm     | n/a     | n/a     | n/a      | n/a      | n/a      |
| n x ΦL   | mm     | 8 x Φ26 | 8 x Φ26 | 12 x Φ26 | 12 x Φ30 | 16 x Φ30 |
| Weight   | kg     | 13,68   | 18,90   | 38,19    | 57,56    | 78,52    |