

### Ultrasonic Measurement of Water Flow

Permanently installed ultrasonic clamp-on system for flow measurement of water

#### Features

- Non-intrusive flow measurement with high measuring accuracy for stationary use
- Precise bi-directional, highly dynamic flow measurement
- Water-tight transducers (IP67) are characterised by their high robustness
- Simple retrofitting of measurements in existing networks and systems without interrupting the supply or the need for pipe work
- For inner pipe diameters of 10...2500 mm
- High measuring accuracy, even at low flow velocities
- Cost-efficient for large rated diameters
- Installation and commissioning can be carried out during operation
- Digital signal processor (DSP) and signal processing ensure stable and reliable results even under difficult measurement conditions
- User-friendly menu navigation - the firmware is specifically adapted to the needs of the water industry

#### Applications

- Water and wastewater industry
- Clean measurement process for drinking water systems
- Leakage detection
- Hydroelectric power plants (reservoirs)
- Reservoirs



FLUXUS ADM 5107



FLUXUS ADM 5207



Flow transducers in transducer shoe, mounted with tension strap

## Flow Transmitter

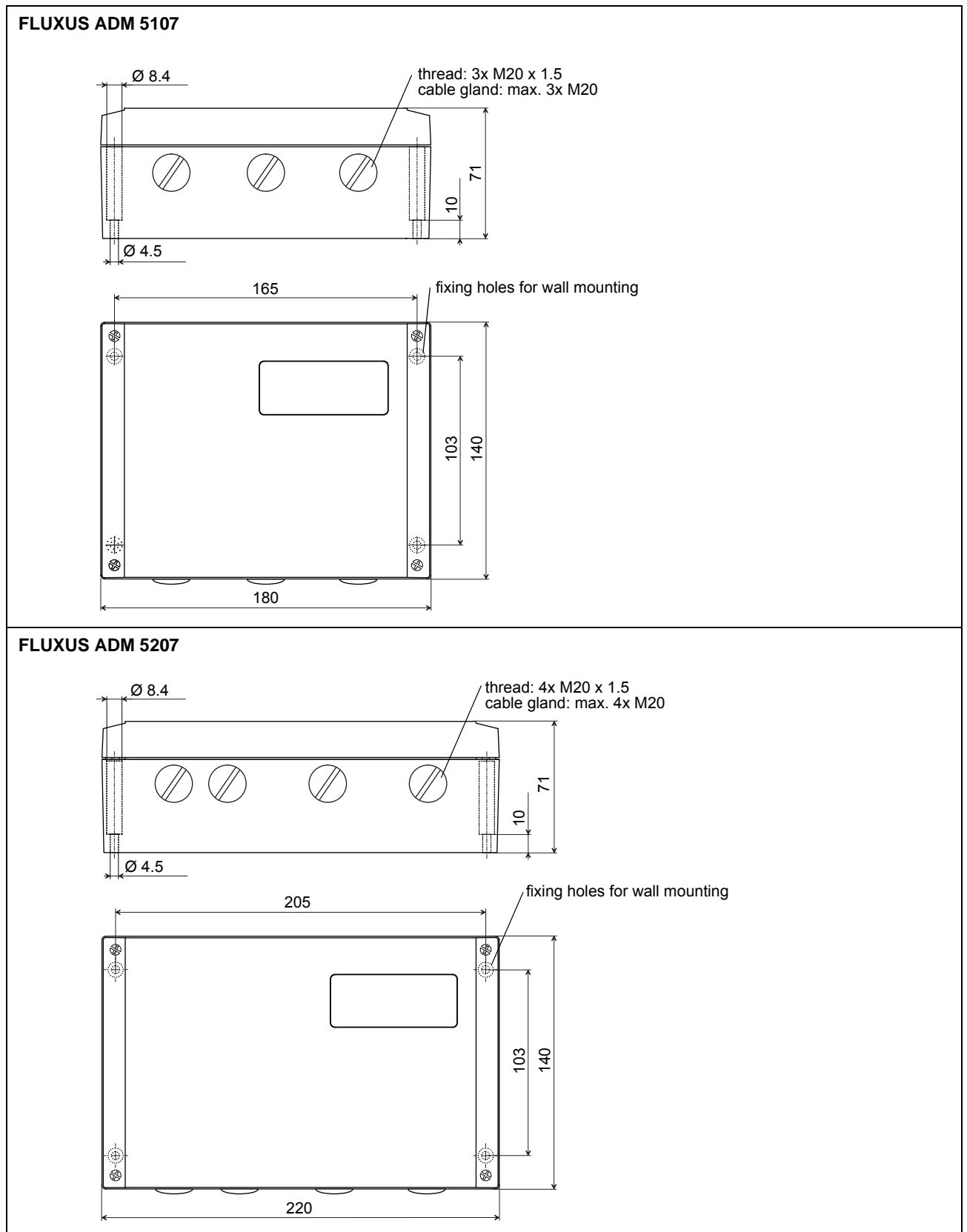
### Technical Data

| FLUXUS  | ADM 5107   | ADM 5207                               |
|---|--|--|
| design  | field device with 1 measuring channel  | field device with 2 measuring channels |
| <b>measurement</b>  |  |  |
| measurement principle   | transit time difference correlation principle  |  |
| flow velocity   | 0.01...25 m/s  |  |
| resolution  | 0.025 cm/s   |  |
| repeatability   | 0.25 % of reading $\pm 0.01$ m/s   |  |
| medium  | water and acoustically similar liquids with < 6 % gaseous or solid content by volume |  |
| accuracy <sup>1</sup><br>- volumetric flow rate                 | $\pm 2$ % of reading $\pm 0.01$ m/s  |  |
| <b>flow transmitter</b>   |  |  |
| power supply  | 100...240 V/50...60 Hz or<br>20...32 V DC  |  |
| power consumption   | < 10 W   |  |
| number of flow measuring channels <sup>2</sup>                  | 1  | 2 (for transducers of the same type)   |
| attenuation   | 0...100 s, adjustable  |  |
| measuring cycle (1 channel)                                     | 10 Hz  |  |
| response time   | 1 s  | 1 s (1 channel)                        |
| housing material  | aluminum, powder coated  |  |
| degree of protection according to IEC/EN 60529                  | IP66   |  |
| dimensions  | see dimensional drawing  |  |
| weight  | 1.5 kg   | 1.7 kg                                 |
| fixation  | wall mounting, optional: 2" pipe mounting  |  |
| ambient temperature   | -10...+60 °C   |  |
| display   | 2 x 16 characters, dot matrix, backlight   |  |
| menu language   | English, German, French, Dutch, Spanish  |  |
| <b>measuring functions</b>                                      |  |  |
| physical quantities   | volumetric flow rate, mass flow rate, flow velocity                                  |  |
| totalizer   | volume, mass   |  |
| calculation functions   | -  | average, difference, sum               |
| <b>outputs</b>  |  |  |
| The outputs are galvanically isolated from the transmitter.     |  |  |
| <b>current output</b>   |  |  |
| number  | 1  | 2                                      |
| range   | 0/4...20 mA  | 0/4...20 mA                            |
| accuracy  | 0.1 % of reading $\pm 15$ $\mu$ A  | 0.1 % of reading $\pm 15$ $\mu$ A      |
| active output   | $R_{ext} < 500 \Omega$   | $R_{ext} < 500 \Omega$                 |
| <b>binary output</b>  |  |  |
| number  | 2 Optorelais   |  |
| optorelay   | 28 V/100 mA  |  |
| binary output as alarm output<br>- functions                    | limit, change of flow direction or error   |  |
| binary output as pulse output<br>- pulse value<br>- pulse width | 0.01...1000 units<br>80...1000 ms  |  |

<sup>1</sup> for reference conditions and  $v > 0.25$  m/s

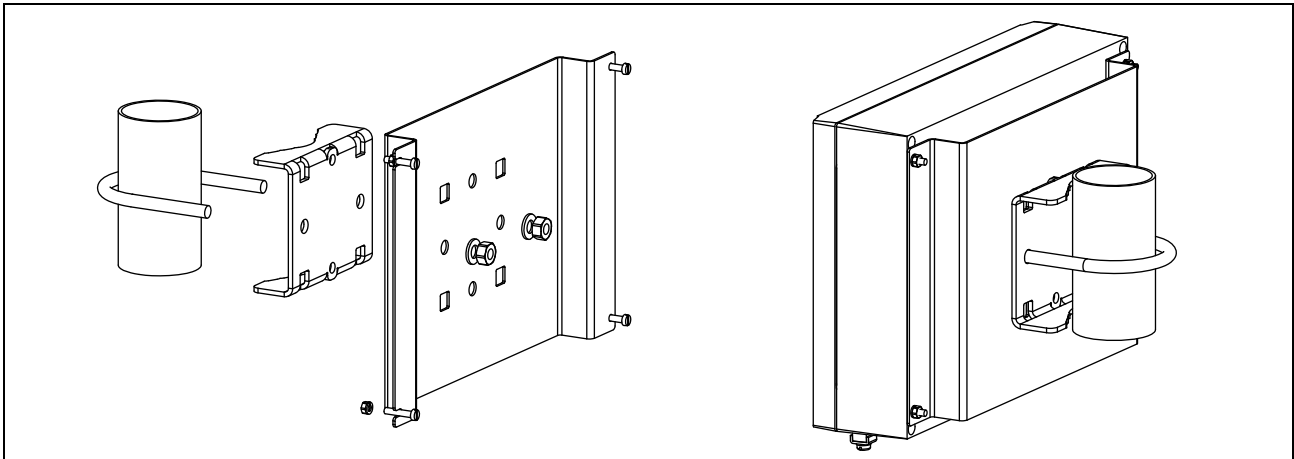
<sup>2</sup> only connection of the supplied transducer type possible

### Dimensions



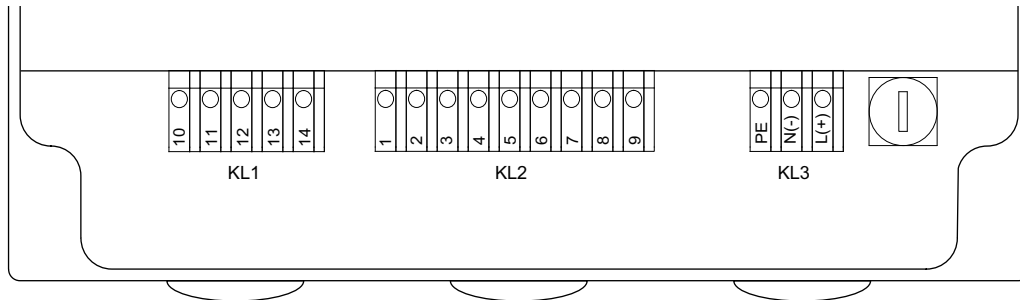
in mm

### 2 " Pipe Mounting Kit (optional)



## Terminal Assignment

### FLUXUS ADM 5107



#### power supply

terminal strip KL3

| terminal | connection (AC) | connection (DC) |
|----------|-----------------|-----------------|
| PE       | earth           | earth           |
| N(-)     | neutral         | -               |
| L(+)     | phase           | +               |

#### transducers

terminal strip KL1

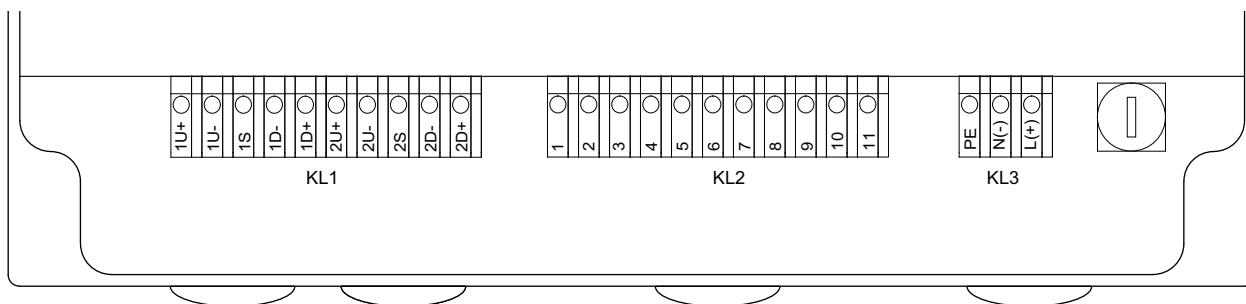
| extension cable, transducer cable |                               |
|-----------------------------------|-------------------------------|
| measuring channel A               |                               |
| terminal                          | connection                    |
| 10                                | transducer ↗, signal          |
| 11                                | transducer ↗, internal shield |
| 13                                | transducer ↗, internal shield |
| 14                                | transducer ↗, signal          |
| cable gland                       | external shield               |

#### outputs

terminal strip KL2

| terminal   | connection                   |
|------------|------------------------------|
| 1(-), 2(+) | binary output B1 (optorelay) |
| 3(-), 4(+) | binary output B2 (optorelay) |
| 5(-), 6(+) | current output I1            |

**FLUXUS ADM 5207**



**power supply**

terminal strip KL3

| terminal | connection (AC) | connection (DC) |
|----------|-----------------|-----------------|
| PE       | earth           | earth           |
| N(-)     | neutral         | -               |
| L(+)     | phase           | +               |

**transducers**

terminal strip KL1

| extension cable, transducer cable |                               |                     |                               |
|-----------------------------------|-------------------------------|---------------------|-------------------------------|
| measuring channel A               |                               | measuring channel B |                               |
| terminal                          | connection                    | terminal            | connection                    |
| 1U+                               | transducer ↗, signal          | 2U+                 | transducer ↗, signal          |
| 1U-                               | transducer ↗, internal shield | 2U-                 | transducer ↗, internal shield |
| 1D-                               | transducer ↘, internal shield | 2D-                 | transducer ↘, internal shield |
| 1D+                               | transducer ↘, signal          | 2D+                 | transducer ↘, signal          |
| cable gland                       | external shield               | cable gland         | external shield               |

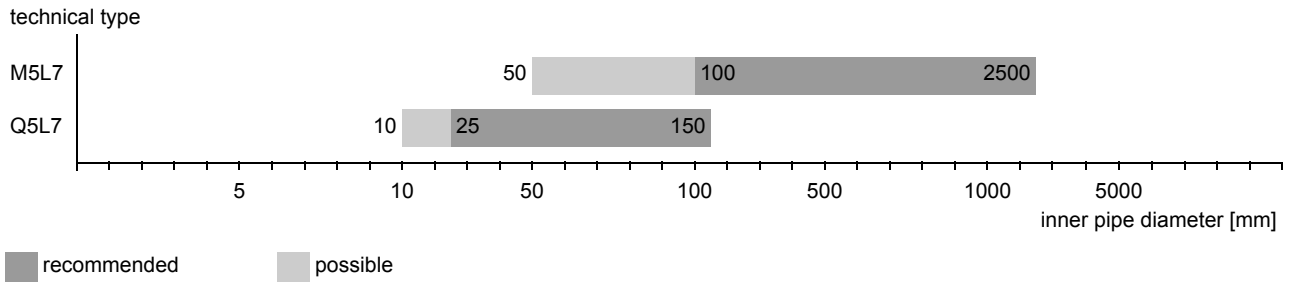
**outputs**

terminal strip KL2

| terminal   | connection                |
|------------|---------------------------|
| 1(-), 2(+) | binary output (optorelay) |
| 3(-), 4(+) | binary output (optorelay) |
| 5(-), 6(+) | current output I1         |
| 7(-), 8(+) | current output I2         |

## Transducers

### Transducer Selection

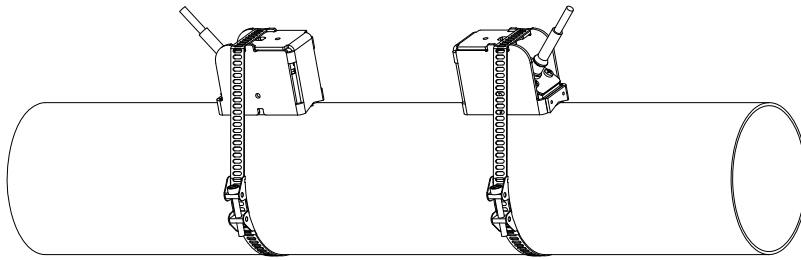


### Technical Data

| technical type                                 |     | M5L7                                       | Q5L7                                       |
|--|-----|--|--|
| transducer frequency                           | MHz | 1  | 4  |
| <b>inner pipe diameter d</b>                   |     |  |  |
| min. extended                                  | mm  | 50   | 10   |
| min. recommended                               | mm  | 100  | 25   |
| max.   | mm  | 2500                                       | 150  |
| <b>material</b>                                |     |  |  |
| housing  |     | PEEK with stainless steel cap 304 (1.4301) | PEEK with stainless steel cap 304 (1.4301) |
| contact surface                                |     | PEEK                                       | PEEK                                       |
| degree of protection according to IEC/EN 60529 |     | IP67                                       | IP67                                       |
| <b>transducer cable</b>                        |     |  |  |
| type   |     | 2606                                       | 2606                                       |
| length   | m   | 10   | 10   |
| <b>dimensions</b>                              |     |  |  |
| length l                                       | mm  | 59   | 35   |
| width b  | mm  | 28   | 18   |
| height h                                       | mm  | 29.5                                       | 21   |
| dimensional drawing                            |     |  |  |
| <b>ambient temperature</b>                     |     |  |  |
| min.   | °C  | -40  | -40  |
| max.   | °C  | +100                                       | +100                                       |

### Transducer Mounting Fixture

**tension straps, clasps and transducer shoes**



material: stainless steel 304  
 (1.4301), 303 (1.4305)  
 tension strap length:  
 ADM 5107: 10 m  
 ADM 5207: 20 m

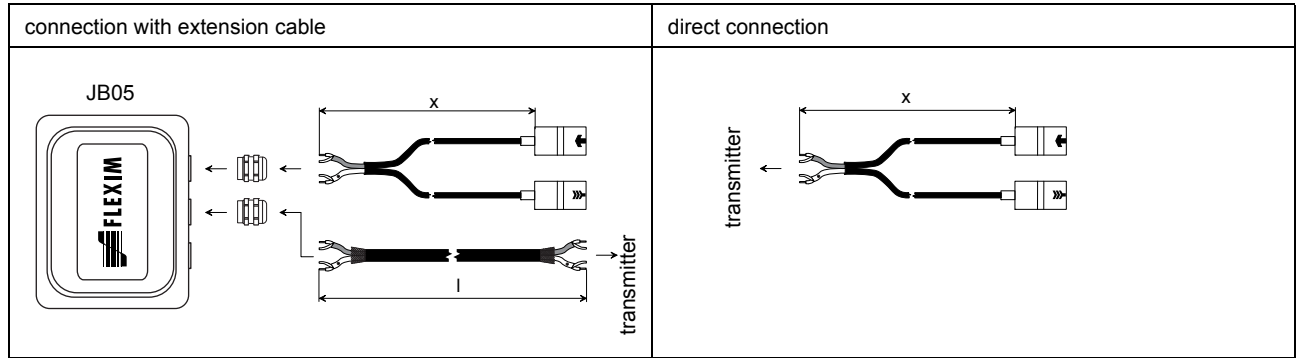
### Coupling Materials for Transducers

**Technical Data**

| type                  | order code | ambient temperature<br>°C | material        |
|-----------------------|------------|---------------------------|-----------------|
| coupling foil type VT | 990739-5   | -10...+200                | fluoroelastomer |



### Connection Systems



x - transducer cable length  
 l - max. length of extension cable

### Transducer Cable

#### Technical Data

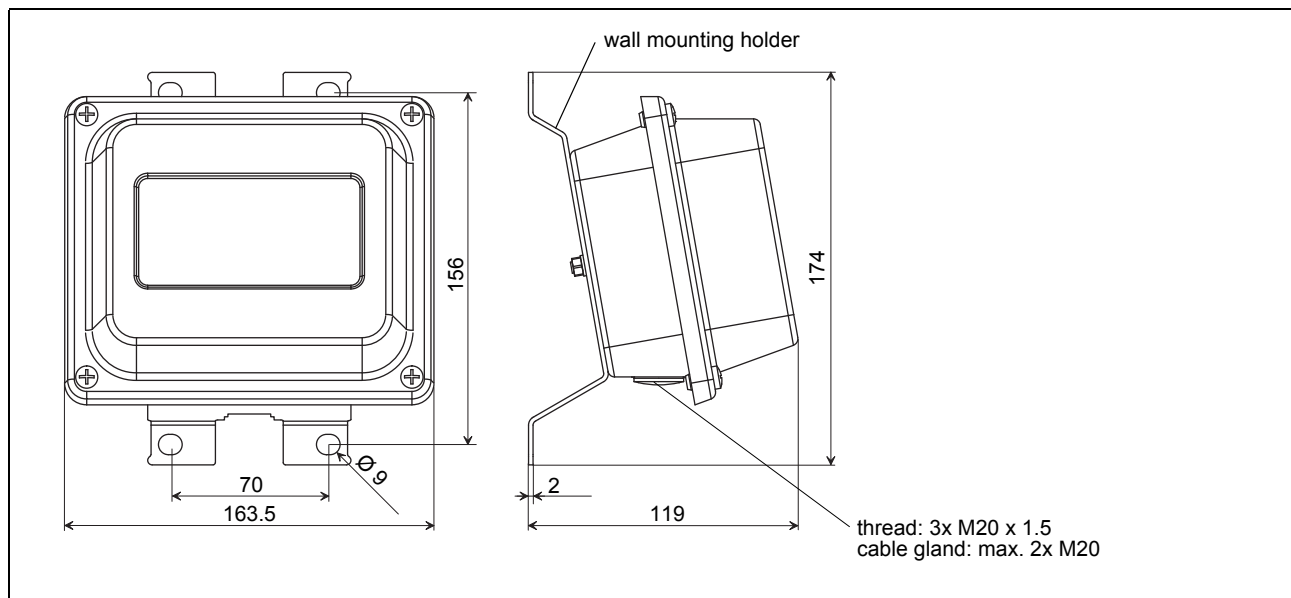
|                     |    | transducer cable |                       | extension cable  |  |
|---------------------|----|------------------|-----------------------|--|--|
| type                |    | 2606             | 2552                  | 2615   |  |
| standard length x   | m  | 10               | -                     | -  |  |
| max. length l       | m  | -                | M5L7: 300<br>Q5L7: 90 | M5L7: 300<br>Q5L7: 90  |  |
| ambient temperature | °C | -30...+100       | -25...+80             | -40...+70  |  |
| properties          |    |                  |                       | halogen free<br>fire propagation test according to IEC 60332-1<br>combustion test according to IEC 60754-2 |  |
| <b>cable jacket</b> |    |                  |                       |  |  |
| material            |    | PUR              | TPV                   | PUR  |  |
| outer diameter      | mm | 5                | 12                    | 12   |  |
| thickness           | mm |                  |                       | 2  |  |
| color               |    | gray             | black                 | black  |  |
| shield              |    | x                | x                     | x  |  |

## Junction Box

### Technical Data

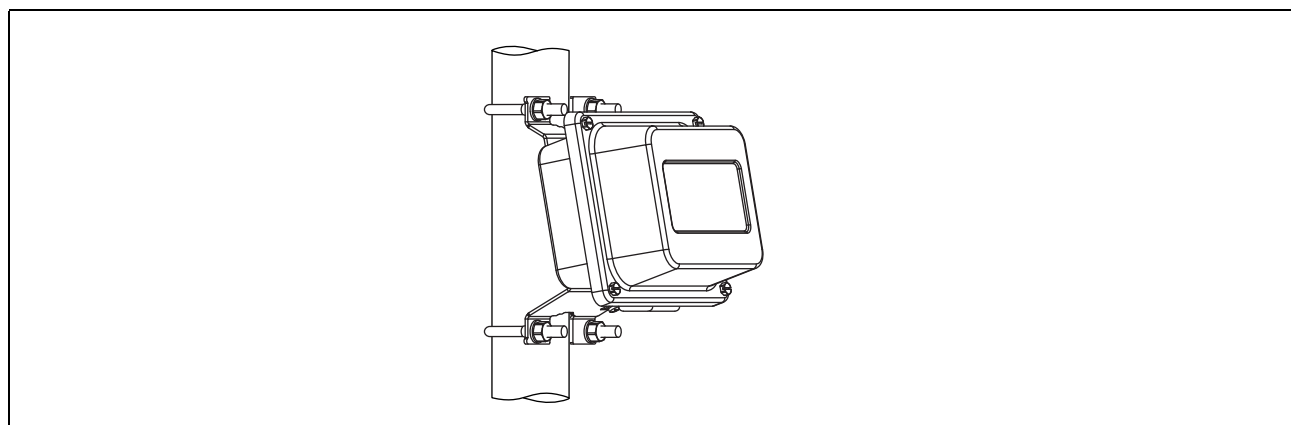
|   |  |     |
|---|--|-----|
| technical type                                  | <b>JB05</b>                                |     |
| dimensions                                      | see dimensional drawing                    |     |
| fixation  | wall mounting, optional: 2 " pipe mounting |     |
| <b>material</b>                                 |  |     |
| housing   | stainless steel 304 (1.4301)               |     |
| gasket  | silicone                                   |     |
| degree of protection according to IEC/ EN 60529 | IP67                                       |     |
| <b>ambient temperature</b>                      |  |     |
| min.  | °C   | -40 |
| max.  | °C   | +80 |

### Dimensions



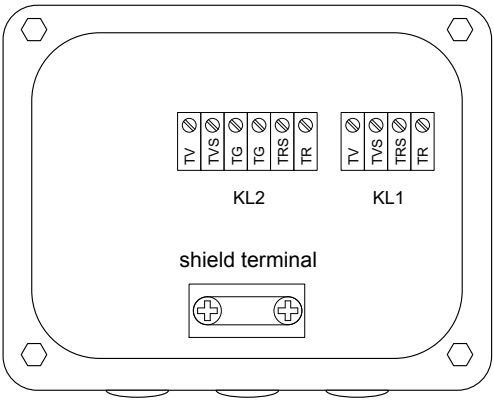
in mm

### 2 " Pipe Mounting Kit (optional)



## Terminal Assignment

**JB05**



**transducers**

terminal strip KL1

| terminal    | connection                    |
|-------------|-------------------------------|
| TV          | transducer ↗, signal          |
| TVS         | transducer ↗, internal shield |
| TRS         | transducer ↘, internal shield |
| TR          | transducer ↘, signal          |
| cable gland | external shield               |

**extension cable**

terminal strip KL2

| terminal        | connection      |
|-----------------|-----------------|
| TV              | signal          |
| TVS             | internal shield |
| TRS             | internal shield |
| TR              | signal          |
| shield terminal | external shield |



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