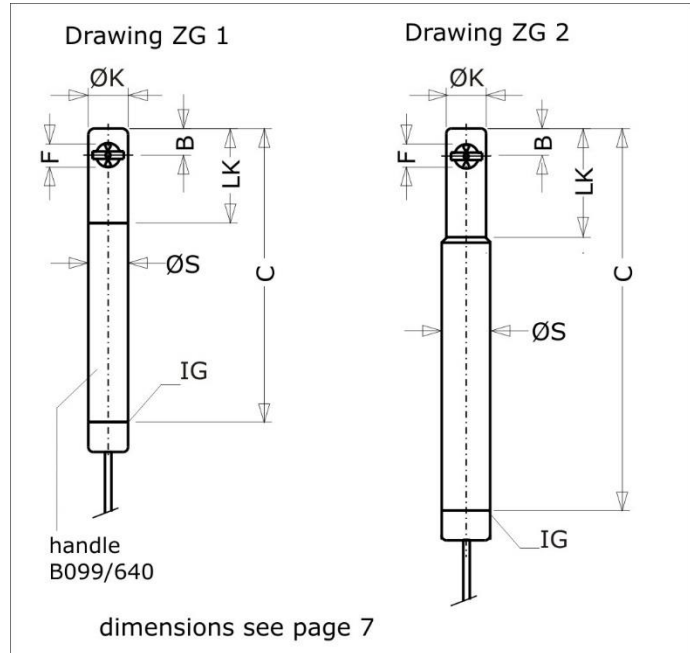


**Extendable vane wheel flow sensors,
 optional with \pm directional sensing and integrated PT100 sensor and accessories
 for connection to a fixed or portable evaluation unit**



Measurable variables

- flow velocity v [m/s] and
- flow rate [m³/h] in air/gases and water/liquids
- conversion to standard velocity/standard flow rate by measuring or entering working pressure and temperature parameters

Measuring range

- 0.2 ... 120 m/s gases
- 0.01 ... 10 m/s liquids

Medium

- air, gas mixtures and clean gases
- water/liquids

Funktionsprinzip

- vane wheel flow sensor
- sensing the vane rotation; non-contact by means of inductive proximity switch

Design

- insertion probe with fixed cable, extendable

Examples of application

- flow measurement e.g. of air, exhaust gas, process gas
- in processes with varying and/or unknown gas compositions
- flow monitoring in pharmaceutical installations
- monitoring neutralisation processes
- use up to 550 °C
- measurement of flammable liquids
- measuring in surface waters
- measuring in non-conducting liquids, for example such as ultra pure water in the semiconductor industry
- recommended according to DIN EN ISO 16911, normative for verification of automatic measuring equipment

Connection possibilities

- portable and fixed evaluation units with sensor input

Advantages

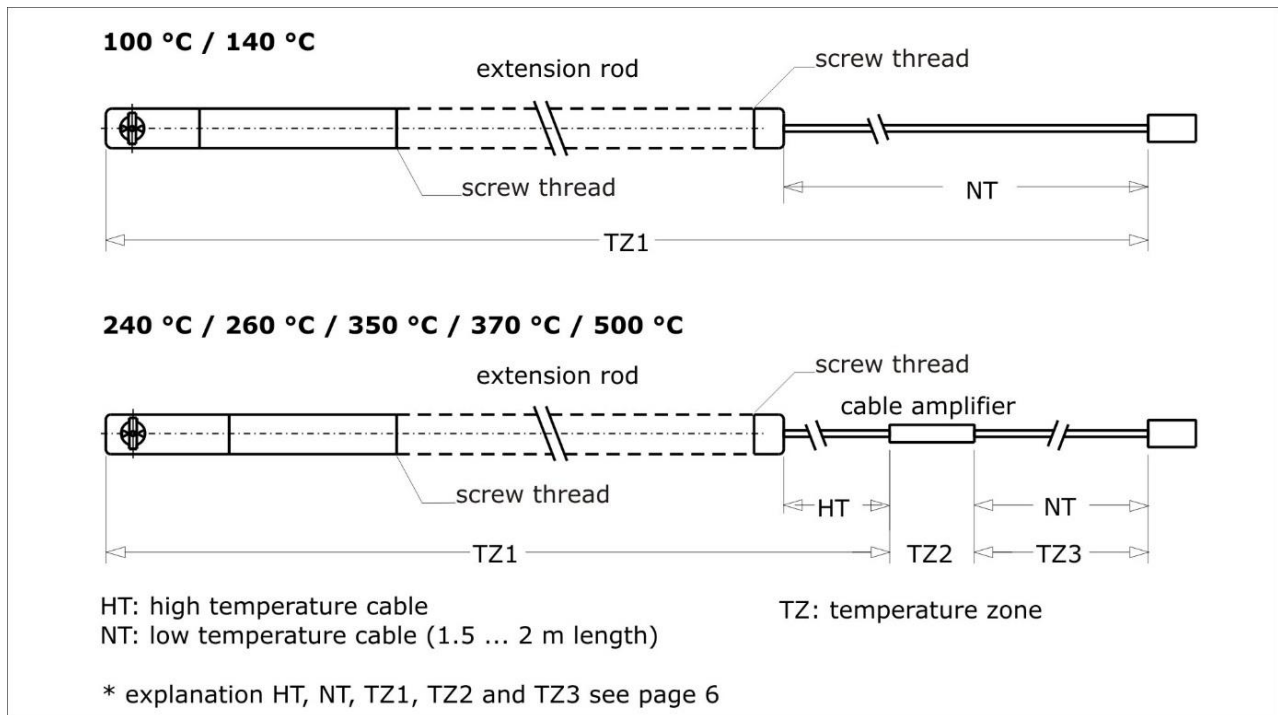
- accurate measured values even in varying and/or unknown gas compositions
- turndown ration approx. 1:100
- no distortion of values due to thermal radiation
- optional application in category 2 (zone 1)
- universal application spectrum
- extendable
- optional with \pm directional sensing
- optional with integrated PT100 sensor
- small pressure loss

Humidity in teh sample gas

- relative gas humidity of less than 100 % has no impact on the measurement uncertainty

Particles in the medium

- can cause restriction in the fatigue strength of the vane wheel set



Basic types

measurement in air and other gaseous media

| type | article no. | alt. MR* | article no. | alt. MR* | article no. | alt. MR* | article no. |
|---|-------------|----------|-------------|----------|-------------|----------|-------------|
| extendable sensors Ø 25 mm (s. page 1, drawing ZG1) | | | | | | | |
| ZS25GA-mn20/140/p6 | B002/000 | mn40 | B002/001 | mn80 | B002/002 | mn120 | B002/003 |
| ZS25GE-mn20/100/p10 | B002/100 | mn40 | B002/101 | mn80 | B002/102 | mn120 | B002/103 |
| ZS25GE-mn20/260-2/p10 | B002/112 | mn40 | B002/113 | mn80 | B002/114 | mn120 | B002/115 |
| ZS25GT-mn20/100/p10 | B002/400 | mn40 | B002/401 | mn80 | B002/402 | mn120 | B002/403 |
| ZS25GT-mn20/260-2/p10 | B002/412 | mn40 | B002/413 | mn80 | B002/414 | mn120 | B002/415 |
| extendable high temperature sensors Ø 25 mm (s. page 1, drawing ZG2) | | | | | | | |
| ZS25/27GE-mn20/370-2/p6 | B002/140 | mn40 | B002/141 | mn80 | B002/142 | mn120 | B002/143 |
| ZS25/27GE-mn20/500-2/p6 | B002/152 | mn40 | B002/153 | mn80 | B002/154 | mn120 | B002/155 |
| extendable sensors Ø 25 mm with ± directional sensing (s. page 1, drawing ZG1) | | | | | | | |
| ZSR25GA-mn20/140/p6 | B002/500 | mn40 | B002/501 | mn80 | B002/502 | mn120 | B002/503 |
| ZSR25GE-mn20/100/p6 | B002/504 | mn40 | B002/505 | mn80 | B002/506 | mn120 | B002/507 |
| ZSR25GE-mn20/240-2/p6 | B002/512 | mn40 | B002/513 | mn80 | B002/514 | mn120 | B002/515 |
| ZSR25GT-mn20/100/p6 | B002/508 | mn40 | B002/509 | mn80 | B002/510 | mn120 | B002/511 |
| ZSR25GT-mn20/240-2/p6 | B002/516 | mn40 | B002/517 | mn80 | B002/518 | mn120 | B002/519 |

*alt. MR = alternative measuring ranges

Basic types (cont.)

measurement in air and other gaseous media

| type | article no. | alt. MR* | article no. | alt. MR* | article no. | alt. MR* | article no. |
|---|-------------|----------|-------------|----------|-------------|----------|-------------|
| extendable sensors Ø 25 mm with integrated PT100 sensor (s. page 1, drawing ZG1) | | | | | | | |
| FT25GA-mn20/140/p3 | B002/600 | mn40 | B002/601 | mn80 | B002/602 | mn120 | B002/603 |
| FT25GE-mn20/100/p6 | B002/604 | mn40 | B002/605 | mn80 | B002/606 | mn120 | B002/607 |
| FT25GE-mn20/260-2/p6 | B002/608 | mn40 | B002/609 | mn80 | B002/610 | mn120 | B002/611 |
| FT25GT-mn20/100/p6 | B002/612 | mn40 | B002/613 | mn80 | B002/614 | mn120 | B002/615 |
| FT25GT-mn20/260-2/p6 | B002/616 | mn40 | B002/617 | mn80 | B002/618 | mn120 | B002/619 |

extendable sensors Ø 30 mm (s. page 1, drawing ZG1)

| | | | | | | | |
|------------------------|----------|--|--|--|--|--|--|
| ZS30GA-md20/140/p6 | B014/000 | | | | | | |
| ZS30GE-md20T/100/p10 | B014/100 | | | | | | |
| ZS30GE-md20T/260-2/p10 | B014/101 | | | | | | |
| ZS30GE-md20T/350-2/p10 | B014/102 | | | | | | |
| ZS30GT-md20/100/p10 | B014/300 | | | | | | |

extendable sensors Ø 30 mm with ± directional sensing (s. page 1, drawing ZG1)

| | | | | | | | |
|------------------------|----------|--|--|--|--|--|--|
| ZSR30GA-md20/140/p6 | B014/500 | | | | | | |
| ZSR30GE-md20T/100/p6 | B014/501 | | | | | | |
| ZSR30GE-md20T/240-2/p6 | B014/503 | | | | | | |
| ZSR30GT-md20/100/p6 | B014/502 | | | | | | |
| ZSR30GT-md20/240-2/p6 | B014/504 | | | | | | |

extendable sensors Ø 30 mm with integrated PT100 sensor (s. page 1, drawing ZG1)

| | | | | | | | |
|-----------------------|----------|--|--|--|--|--|--|
| FT30GA-md20/140/p3 | B014/600 | | | | | | |
| FT30GE-md20T/260-2/p6 | B014/602 | | | | | | |

measurement in water and other liquids

extendable sensors Ø 25 mm (s. page 1, drawing ZG1)

| | | | | | | | |
|------------------------|----------|------|----------|--|--|--|--|
| ZS25GFA-mn20/140/p6 | B002/060 | mn40 | B002/061 | | | | |
| ZS25GFE-mn20/100/p10 | B002/160 | mn40 | B002/161 | | | | |
| ZS25GFE-mn20/260-2/p10 | B002/162 | mn40 | B002/163 | | | | |
| ZS25GFT-mn20/100/p10 | B002/460 | mn40 | B002/461 | | | | |

extendable sensors Ø 25 mm with ± directional sensing (s. page 1, drawing ZG1)

| | | | | | | | |
|------------------------|------------|------|------------|--|--|--|--|
| ZSR25GFA-mn20/140/p6 | on request | mn40 | B002/560 | | | | |
| ZSR25GFE-mn20/100/p6 | B002/561 | mn40 | B002/562 | | | | |
| ZSR25GFE-mn20/240-2/p6 | B002/565 | mn40 | on request | | | | |

extendable sensors Ø 25 mm with integrated PT100 sensor (s. page 1, drawing ZG1)

| | | | | | | | |
|-----------------------|----------|------|----------|--|--|--|--|
| FT25GFA-mn20/140/p6 | B002/660 | mn40 | B002/661 | | | | |
| FT25GFE-mn20/100/p6 | B002/662 | mn40 | B002/663 | | | | |
| FT25GFE-mn20/260-2/p6 | B002/664 | mn40 | B002/665 | | | | |
| FT25GFT-mn20/100/p6 | B002/666 | mn40 | B002/667 | | | | |
| FT25GFT-mn20/260-2/p6 | B002/668 | mn40 | B002/669 | | | | |

***alt. MR = alternative measuring ranges**

Basic types (cont.)

measurement in water and other liquids

| type | article no. |
|------|-------------|
|------|-------------|

extendable sensors Ø 30 mm (s. page 1, drawing ZG1)

| | |
|-------------------------|----------|
| ZS30GFA-md20/140/p6 | B014/060 |
| ZS30GFE-md20T/100/p10 | B014/160 |
| ZS30GFE-md20T/260-2/p10 | B014/161 |
| ZS30GFE-md20T/350-2/p10 | B014/162 |
| ZS30GFT-md20T/100/p10 | B014/360 |

Model designation (examples)

| | | | | | | | | | |
|-----|-----|-----|---------|-----|-------|-----|-----|-----|------|
| ZS | 25 | | GF | E | -mn40 | | 100 | | p10 |
| ZSR | 30 | | G | A | -md20 | | 140 | | p6 |
| ZS | 25 | /27 | G | E | -mn20 | | 370 | -2 | p6 |
| FT | 30 | | G | E | -md20 | T | 260 | -2 | p6 |
| (1) | (2) | (3) | (4) ... | (5) | (6) | (7) | (8) | (9) | (10) |

(1) Sensor type

| Description | Design |
|-------------|--|
| ZS | cylindrical probe |
| ZSR | cylindrical probe with ± directional sensing |
| FT | cylindrical probe with integrated PT100 sensor |

(2) Sensor diameter

| | |
|---|---------------------|
| diameter of sensor head ØK (see page 1) | |
| 25 | head diameter 25 mm |
| 30 | head diameter 30 mm |

(3) Shaft diameter

| | |
|--|----------------------|
| diameter of sensor shaft ØS (s. page 1, drawing ZG2) | |
| /27 | shaft diameter 27 mm |

(4) Medium

| | |
|------------|-----------------------------|
| ... G ... | air/gases |
| ... GF ... | air/gases and water/liquids |

Ingress protection cable outlet

| | |
|--------------------------|------|
| sensor design ... GF ... | IP68 |
| sensor design ... G ... | IP50 |

(5) Materials in contact with the medium *

| Design | Material sensor | Material Sealing | others |
|------------------------------|--|---------------------|---|
| ... A ... aluminium | AlCuMgPb or AlCuBiPb | FKM, silicone | PSU, PVDF |
| ... E ... stainless steel | stainless steel 1.4404/AISI 316L, 1.4305, 1.4571 | FKM, PTFE, graphite | PVDF, vespel, ceramics Al ₂ O ₃ |
| ... T ... titanium | titanium 3.7035 (grade 2) | FKM, PTFE | PVDF, vespel, ceramics Al ₂ O ₃ |

* Not all mentioned materials are used in every sensor. Materials may differ for individual sensors. Detailed information about a desired sensor on request!

(6) (7) Measuring ranges (with an air/gas density of approx. 1.2 kg/m³) / vane wheel type if the vane wheel material differs to the sensor material, a material code is added to the vane wheel type (e.g. „T“ at md3T)

sensors with Ø 25 mm

| material sensor | material vane wheel | vane wheel type | measuring range air/gases | measuring range water/liquids (no cavitation) |
|-----------------|---------------------|-----------------|---------------------------|---|
| aluminium | aluminium | mn20 | 0.3 ... 20 m/s | 0.03 ... 7.5 m/s |
| | | mn40 | 0.4 ... 40 m/s | 0.04 ... 10 m/s |
| | | mn80 | 0.8 ... 80 m/s | |
| | | mn120 | 1.2 ... 120 m/s | |
| stainless steel | stainless steel | mn20 | 0.4 ... 20 m/s | 0.04 ... 7.5 m/s |
| | | mn40 | 0.5 ... 40 m/s | 0.05 ... 10 m/s |
| | | mn80 | 1.0 ... 80 m/s | |
| | | mn120 | 1.4 ... 120 m/s | |
| titanium | titanium | mn20 | 0.3 ... 20 m/s | 0.03 ... 7.5 m/s |
| | | mn40 | 0.4 ... 40 m/s | 0.04 ... 10 m/s |
| | | mn80 | 0.8 ... 80 m/s | |
| | | mn120 | 1.2 ... 120 m/s | |

sensors with Ø 30 mm

| material sensor | material vane wheel | vane wheel type | measuring range air/gases | measuring range water/liquids (no cavitation) |
|---------------------------|---------------------|-----------------|---------------------------|---|
| aluminium | aluminium | md20 | 0.2 ... 20 m/s | 0.01 ... 3 m/s |
| stainless steel, titanium | titanium | md20T | 0.3 ... 20 m/s | 0.01 ... 3 m/s |
| | | md3T | 0.3 ... 3 m/s | |

Measurement uncertainty / repeatability with a gas density of approx. 1.2 kg/m³

| | | |
|---|-------------|---|
| Linearisation of characteristics | all types | up to < 0.9 % of measured value + 0.25 % of terminal value *** |
| Frequency response characteristics (interchangeability is guaranteed) | ZS, ZSR, FT | < 1.5 % of measured value + 0.5 % of terminal value (up to 40 m/s) |
| Repeatability | | ±(0.05 % of measured value + 0.02 m/s) |

The lowest measurement uncertainties in the field are attained with calibrations as close as possible to the operating conditions. For this, the measurement results obtained can be implemented as characteristic in the evaluation unit. Information and details on the measurement uncertainties according to the calibrated measurement standards can be found in the calibration documents 'U325 and U183'.

*** on request, in the calibration range of the respective accredited test bench

Measurement uncertainty / repeatability in water *

| | | |
|---|-----------|---|
| Linearisation of characteristics | all types | < 1 % of measured value + 0.5 % of terminal value ** |
| Frequency response characteristics (interchangeability is guaranteed) | ZS, ZSR | < 1.5 % of measured value + 0.5 % of terminal value |
| Repeatability | | ±(0.05 % of measured value + 0.02 m/s) |

The lowest measurement uncertainties in the field are attained with calibrations as close as possible to the operating conditions. For this, the measurement results obtained can be implemented as characteristic in the evaluation unit. Information and details on the measurement uncertainties according to the calibrated measurement standards can be found in the calibration documents 'U325 and U183'.

* for water and liquids with a viscosity of up to approx. 0.0002 m²/s (200 cSt)

** on request, in the calibration range of the respective test bench

optional

ISO or DAkkS Calibration certificate v/FA*

calibration medium air, 6 calibration values in the measuring range

article no.: KLB

* An engraved dot on the sensor head indicates the upstream side during calibration. Details of additional calibration values or customised calibrations can be found in document 'U183 Calibration' or are available on request

(8) Permissible temperature of the medium* / ambient temperature*

| design | temperature of the medium | ambient temperature (see drawings, page 2) | | |
|-------------|--|--|-----------------|-----------------|
| | | TZ1 | TZ2 | TZ3 |
| ... 100 ... | -20 ... +100 °C (c) | -20 ... +100 °C | - | - |
| ... 140 ... | -20 ... +140 °C (c) | -20 ... +140 °C | - | - |
| ... 240 ... | -40 ... +240 °C (c) | -40 ... +240 °C | -40 ... +105 °C | -40 ... +105 °C |
| ... 260 ... | -40 ... +260 °C (c) -40 ... +300 °C (s) | -40 ... +260 °C | -40 ... +105 °C | -40 ... +105 °C |
| ... 370 ... | -40 ... +370 °C (c) -40 ... +400 °C (s) | -40 ... +400 °C | -40 ... +105 °C | -40 ... +105 °C |
| ... 500 ... | -40 ... +500 °C (c) -40 ... +550 °C (s) | -40 ... +550 °C | -40 ... +105 °C | -40 ... +105 °C |

(c) continuous; (s) short-time = max. 2 minutes

* When used in hazardous areas, the media and ambient temperature are limited according to the valid operating instructions

(9) Cable lengths of high temperature cable (HT-cable) in front of cable amplifier

| design | description |
|---|---|
| for sensor design up to 240 °C, 260 °C, 370 °C and 500 °C* | |
| ...-2/... | 2 m fixed high temperature cable in front of cable amplifier * + 1.5 m low temperature cable (max. +105 °C) behind cable amplifier * |

* special cable lengths for HT-cable in front of cable amplifier and standard cable after cable amplifier on request

Maximal lengths for high temperature cable (HT-cable) in front of cable amplifier

| sensor type | max. temperature of sensor | max. length of HT-cable |
|-------------|----------------------------|-------------------------|
| ZSR | 240 °C | 4 m |
| ZS | 260 °C | 6 m |
| FT | 260 °C | 4 m |
| ZS | 370 °C | 6 m |
| ZS | 500 °C | 6 m |

(10) Max. working pressure

| | |
|-------------|------------------------------------|
| ... p3 ... | up to 3 bar / 0.3 MPa overpressure |
| ... p6 ... | up to 6 bar / 0.6 MPa overpressure |
| ... p10 ... | up to 10 bar / 1 MPa overpressure |

| Design / dimensions | | | | | | | | | |
|----------------------------|-------------------------|----------------|---------------|----------------|-------------------|------------------------|-----------------|-----------------------|------------------|
| head | sensor-material A, E, T | drawing ZG ... | Ø K head [mm] | Ø S shaft [mm] | F vane wheel [mm] | LK length of head [mm] | B overhang [mm] | C length with HG [mm] | IG inside thread |
| ZS25 | A | ZG1 | 25 | 25 | 18.2 | 60 | 13.4 | 170 | M 22 x 1.5 |
| ZS25 | E, T | ZG1 | 25 | 25 | 18.2 | 81 | 13.9 | 169 | M 22 x 1.5 |
| ZS25/27 | E | ZG2 | 25 | 27 | 18.2 | 75 | 13.9 | 315 | M 22 x 1.5 |
| FT25 | A | ZG1 | 25 | 25 | 18.2 | 60 | 13.4 | 160 | M 22 x 1.5 |
| FT25 | E, T | ZG1 | 25 | 25 | 18.2 | 81 | 13.9 | 169 | M 22 x 1.5 |
| ZSR25 | A | ZG1 | 25 | 25 | 18.2 | 66 | 13.9 | 166 | M 22 x 1.5 |
| ZSR25 | E, T | ZG1 | 25 | 25 | 18.2 | 66 | 13.9 | 154 | M 22 x 1.5 |
| ZS30 | A, E, T | ZG1 | 30 | 30 | 24 | 90 | 18 | 170 | M 26 x 1.5 |
| ZSR30 | A, E, T | ZG1 | 30 | 30 | 24 | 90 | 18 | 178 | M 26 x 1.5 |
| FT30 | A | ZG1 | 30 | 30 | 24 | 90 | 18 | 178 | M 26 x 1.5 |
| FT30 | E, T | ZG1 | 30 | 30 | 24 | 90 | 18 | 170 | M 26 x 1.5 |

| Option 'Ex-protexion' | | |
|--|--|---|
| type of protection | article no. | remark |
| CE <Ex> II 3 G Ex ec IIC T6 Gc X gas-Ex: category 3G (zone 2) | FAEX2E * | in conjunction with evaluation unit |
| CE <Ex> II 3 D Ex tc IIIC TX Dc X dust-Ex: category 3D (zone 22) | FAEX2E * | in conjunction with evaluation unit |
| CE <Ex> II 2 G Ex ia IIC T6 Gb gas-Ex: category 2G (zone 1) | FAEX1 * FAEX1-3L * (for 500 °C sensor) | only in conjunction with: - isolation-/supply unit LDX2 <u>and</u> 'non-Ex evaluation unit' or - ATEX-conform, separate evaluation unit with v/FA-Ex or v/FAR-Ex input - not valid for FT-sensors |

* remark: media and ambient temperature according to the valid operating instructions

Smallest measurable values, density influence

The smallest measurable value for measurements in air/gases specified in our documents results from a measuring medium density $\rho_{real} \cong 1.204 \text{ kg/m}^3$. The smallest measurable value v_0 is also increased/decreased negligibly even with a considerably different medium density from 1.204 kg/m^3 and follows in good approximation the relation:

$$v_{0,real} = v_{0,specif.} * \sqrt{1.204 \text{ kg/m}^3 / \rho_{real}}$$

The characteristic is displaced by the difference

$$v_{0,specif.} - v_{0,real} = \Delta v$$

Readout of measured values is too great by the amount Δv when measuring in gases of a density of ρ_{real} greater than 1.204 kg/m^3 , and too small by the amount Δv when measuring in gases of a density of ρ_{real} less than 1.204 kg/m^3 . Δv is to be added to or subtracted from the respective output value.

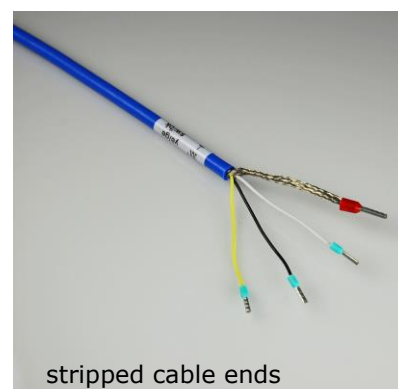
Evaluation unit connection

for unit with 8-pin screw-type connector

| | | article no. |
|------------|-------------------------|-------------|
| plug 423-8 | type of protection IP67 | A099/056 |
| plug 680-8 | type of protection IP40 | A099/055 |

for unit with connecting terminals

| | | |
|--------------------|---------------------------------|----------|
| stripped cable end | marked strands with end sleeves | A099/110 |
|--------------------|---------------------------------|----------|



Extension rods

| description | material | length | outside diameter | article no. |
|-------------|-----------------------------|---------|------------------|--------------|
| VS25A-350 | aluminium, FKM-O-ring | 350 mm | 25 mm | B099/003 |
| VS25A-1000 | aluminium, FKM-O-ring | 1000 mm | 25 mm | B099/004 |
| VS25E-350 | stainless steel, FKM-O-ring | 350 mm | 25 mm | B099/005 |
| VS25E-1000 | stainless steel, FKM-O-ring | 1000 mm | 25 mm | B099/006 |
| SR27E-400 | stainless steel, graphite | 400 mm | 27 mm | B099/506 |
| SR27E-1000 | stainless steel, graphite | 1000 mm | 27 mm | B099/507 |
| SR27E-1500 | stainless steel, graphite | 1500 mm | 27 mm | B099/508 |
| VS30A-350 | aluminium, FKM-O-ring | 350 mm | 30 mm | B099/007 |
| VS30A-1000 | aluminium, FKM-O-ring | 1000 mm | 30 mm | B099/007-S01 |
| VS30E-350 | stainless steel, FKM-O-ring | 350 mm | 30 mm | B099/008 |
| VS30E-1000 | stainless steel, FKM-O-ring | 1000 mm | 30 mm | B099/009 |

direction indicator

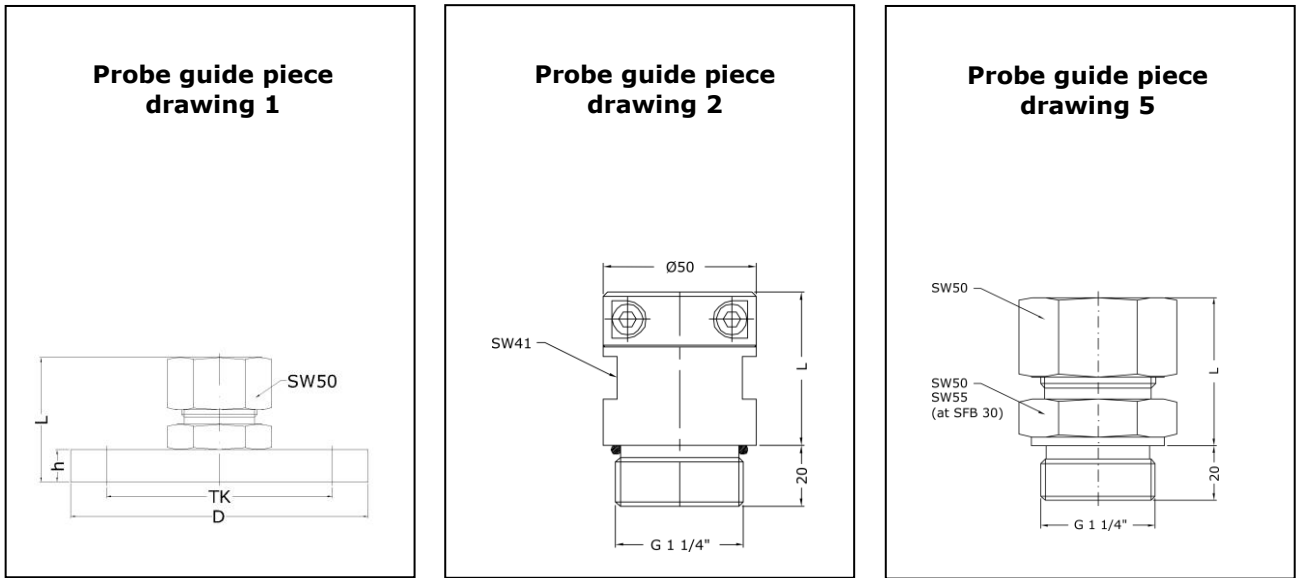


| description | article no. |
|--------------------------|-------------|
| direction indicator RZ25 | B099/953 |
| direction indicator RZ27 | B099/954 |
| direction indicator RZ30 | B099/955 |

| probe guide pieces * | | |
|---|--|---------------------|
| designation | description | articles no. |
| for diameter 25 mm | | |
| SFB 25 E-70 / F-DN50 PN16 according drawing 1 (see page 11) | connection: flange DN50PN16 EN1092-1 max. pressure: 2 bar / 200 kPa temperature: -40 ... 550 °C materials: stainless steel, graphite fixation: clamping bush length L: 70 mm | B004/110 |
| SFB 25 E-70 / F-ANSI 2" 150 lbs according drawing 1 (see page 11) | connection: flange 2" 150 lbs ANSI B16.5 max. pressure: 2 bar / 200 kPa temperature: -40 ... +240 °C materials: stainless steel, PTFE fixation: clamping bush length L: 70 mm | B004/110-S02 |
| SFK 25 E-50 / G 1 1/4" according drawing 2 (see page 11) | connection: outside thread G 1 1/4" max. pressure: 10 bar / 1 MPa temperature: -20 ... +240 °C materials: stainless steel, FKM fixation: clamp yoke length L: 50 mm | B004/211 |
| SFK 25 E-50 / NPT 1 1/4" according drawing 2 (see page 11) | connection: outside thread NPT 1 1/4" max. pressure: 10 bar / 1 MPa temperature: -20 ... +240 °C materials: stainless steel, FKM fixation: clamp yoke length L: 50 mm | B004/209 |
| SFB 25 E-54 / G 1 1/4" according drawing 5 (see page 11) | connection: outside thread G 1 1/4" max. pressure: 2 bar / 200 kPa temperature: -20 ... +240 °C materials: stainless steel, FKM, PTFE fixation: clamping bush length L: 54 mm | B004/510 |
| SFB 25 E-50 / NPT 1 1/4 " according drawing 5 (see page 11) | connection: outside thread NPT 1 1/4" max. pressure: 2 bar / 200 kPa temperature: -20 ... +240 °C materials: stainless steel, PTFE fixation: clamping bush length L: 50 mm | B004/523 |

* Probe guide pieces enable a process connection via threaded sleeve or flange connection. They are moveable and rotatable on the probe shaft. Other probe guide pieces on request.

| probe guide pieces * (cont.) | | |
|---|--|----------------------|
| designation | description | articles no. |
| for diameter 27 mm | | |
| SFB 27 E-70 / F-DN50 PN16 according drawing 1 (see page 11) | connection: flange DN50PN16 EN1092-1 max. pressure: 2 bar / 200 kPa temperature: -40 ... 550 °C materials: stainless steel, graphite fixation: clamping bush length L: 70 mm | B004/102- GRAPHIT |
| SFK 27 E-50 / G 1 1/4" according drawing 2 (see page 11) | connection: outside thread G 1 1/4" max. pressure: 10 bar / 1 MPa temperature: -20 ... +240 °C materials: stainless steel, FKM fixation: clamp yoke length L: 50 mm | B004/212 |
| SFB 27 E-54 / G 1 1/4" according drawing 5 (see page 11) | connection: outside thread G 1 1/4" max. pressure: 2 bar / 200 kPa temperature: -40 ... 550 °C materials: stainless steel, graphite fixation: clamping bush length L: 54 mm | B004/502-S04 |
| SFB 27 E-50 / NPT 1 1/2" according drawing 5 (see page 11) | connection: outside thread NPT 1 1/2" max. pressure: 2 bar / 200 kPa temperature: -40 ... 550 °C materials: stainless steel, graphite fixation: clamping bush length L: 50 mm | B004/502-S05 |
| for diameter 30 mm | | |
| SFB 30 E-45 / G 1 1/2" according drawing 5 (see page 11) | connection: outside thread G 1 1/2" max. pressure: 2 bar / 200 kPa temperature: -20 ... +240 °C materials: stainless steel, FKM, PTFE fixation: clamping bush length L: 45 mm | B004/508 |
| * Probe guide pieces enable a process connection via threaded sleeve or flange connection. They are moveable and rotatable on the probe shaft. Other probe guide pieces on request. | | |

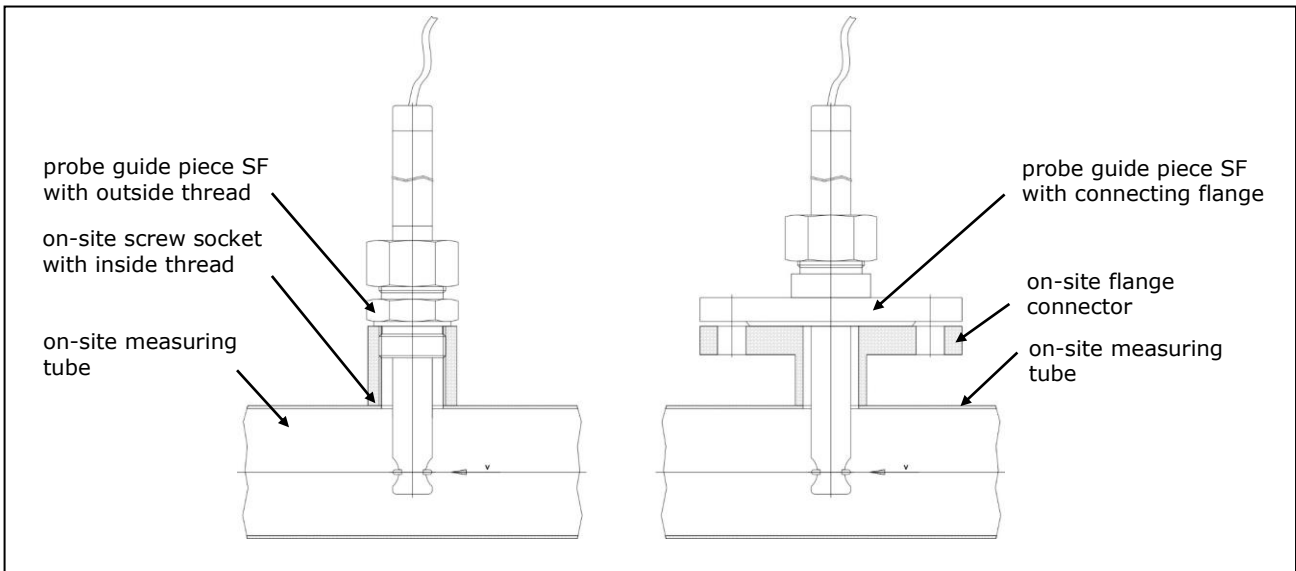


Profile factors depending on pipe inside diameter

| measuring tube inside diameter Di [mm] | profile factor PF* [-] | measuring tube inside diameter Di [mm] | profile factor PF* [-] |
|--|------------------------|--|------------------------|
| 50 | 0.735 | 120 | 0.882 |
| 60 | 0.760 | 170 | 0.938 |
| 70 | 0.784 | 180 | 0.945 |
| 80 | 0.807 | 220 | 0.955 |
| 90 | 0.829 | 230 | 0.960 |
| 100 | 0.849 | ... | 0.960 |

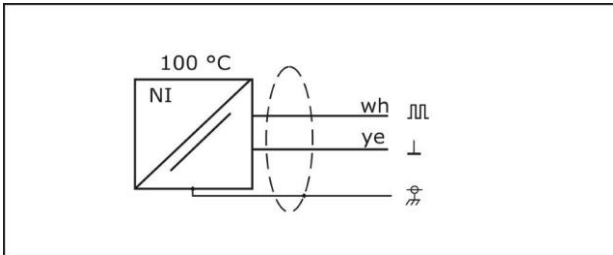
* These profile factors are only accurate with centric sensor positioning, turbulent, non-rotational inlet flow and sufficiently dimensioned input and output sections (see Operating Instructions). The profile factor describes the ratio of average flow velocity in the measurement cross section area and the flow velocity measured from the sensor. The above mentioned operating conditions apply.

Sensor installation

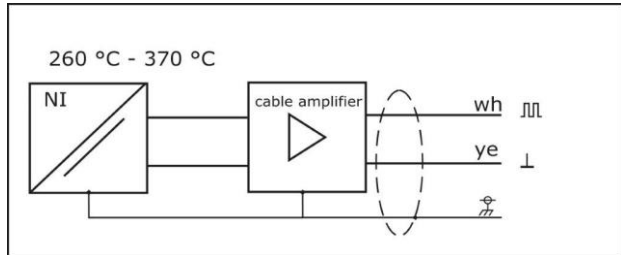


Wiring diagrams

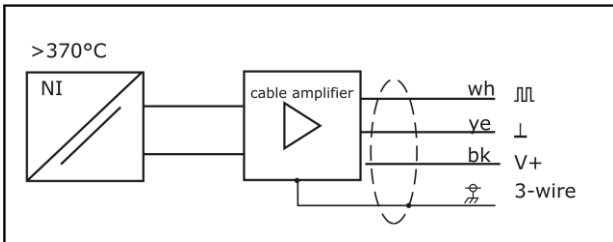
ZS25_ZS30_100 °C_140 °C sensors



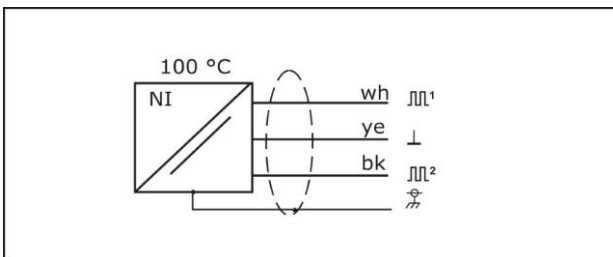
ZS25_ZS30_260 °C_350 °C_370 °C sensors



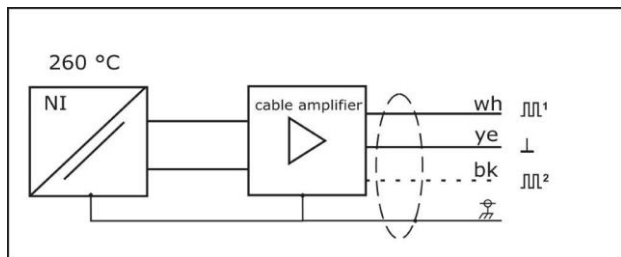
ZS25_500 °C sensors



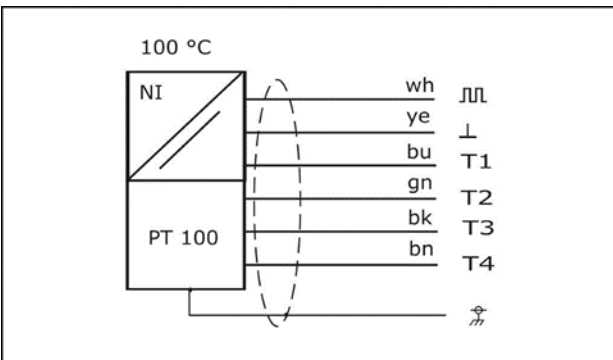
ZSR25_ZSR30_100 °C_140 °C sensors



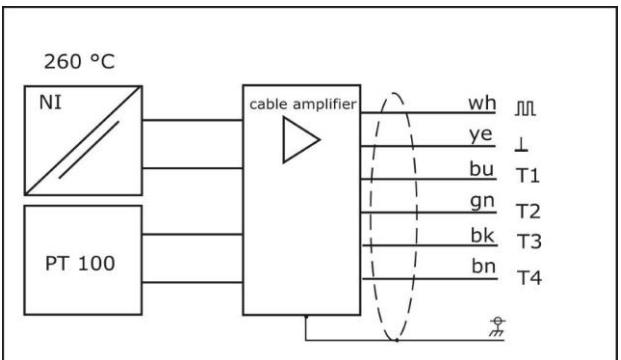
ZSR25_ZSR30_240 °C_ sensors



FT25_FT30_100 °C_140 °C sensors



FT25_FT30_260 °C sensors



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Subject to alteration