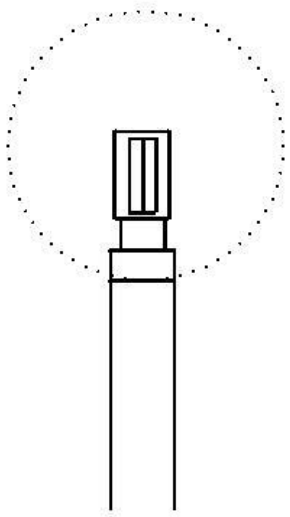
In addition to this User Information please also consult the **Technical Data Sheet** with order-specific details as well as the data sheet **Thermal Flow Sensors TA10**.

The time response t_{95} of TA10 sensors is approx. 1s at air velocities of 5 Nm/s.

Hazard note
Probes in a pressurized pipeline:
- always use a probe guide with chain guard!
- insert/retract probes in depressurized conditions only!
- probe guide pieces with Teflon® clamping bush: increase the tension on the clamping bush from time to time (Teflon® creeps causing the clamping fixture to lose its initial gripping power)

Probes with probe guide piece: ensure that the probe tube is locked in place when fitting in a pipeline!

Flow direction TA10



Pay attention to the engraved arrow on TA10…ZG1b probes.

Installation tips
The probes should be fitted so that:
- flow is in the intended direction of flow. In the case of sensors with connection housing the arrow/direction indicator is to be aligned in the direction of flow. An adjustable direction indicator can be used on probes without such housing to determine direction of flow and insertion depth. Visual alignment does not influence the measurement; although major deviations from the nominal position may do so
- the support does not influence the flow
- no drops hit the sensor
- they are fitted vibration-free and not in the immediate vicinity of electromagnetic or thermal sources of interference

Warning
Do not shorten or lengthen the cable between TA10…ZG1b and transducer U10a.

Installation position
Positioning of TA10 sensors is freely selectable.
When fitting vertically ensure that the incident flow is always from below so that the zero flow can be detected correctly.

Probe alignment
Thermal flow sensors are to be aligned in the direction of flow.

Cleaning the sensor
TA sensors should be cleaned at regular intervals, especially in applications where dirt is likely to settle on the sensor. Initially, carry out visual checks at short intervals, as a precautionary measure, to establish optimal cleaning intervals.

Soiled probes can be cleaned with a suitable residue-free cleaning agent such as alcohol or distilled water. Always make sure that the sensor material and the cleaning agent are compatible. Move the sensor carefully in the cleaning fluid and avoid the use of mechanical aids.

Input/output sections
When measuring in a section with inside diameter Di optimal accuracy when converting the local velocity v_p to the average velocity v_m

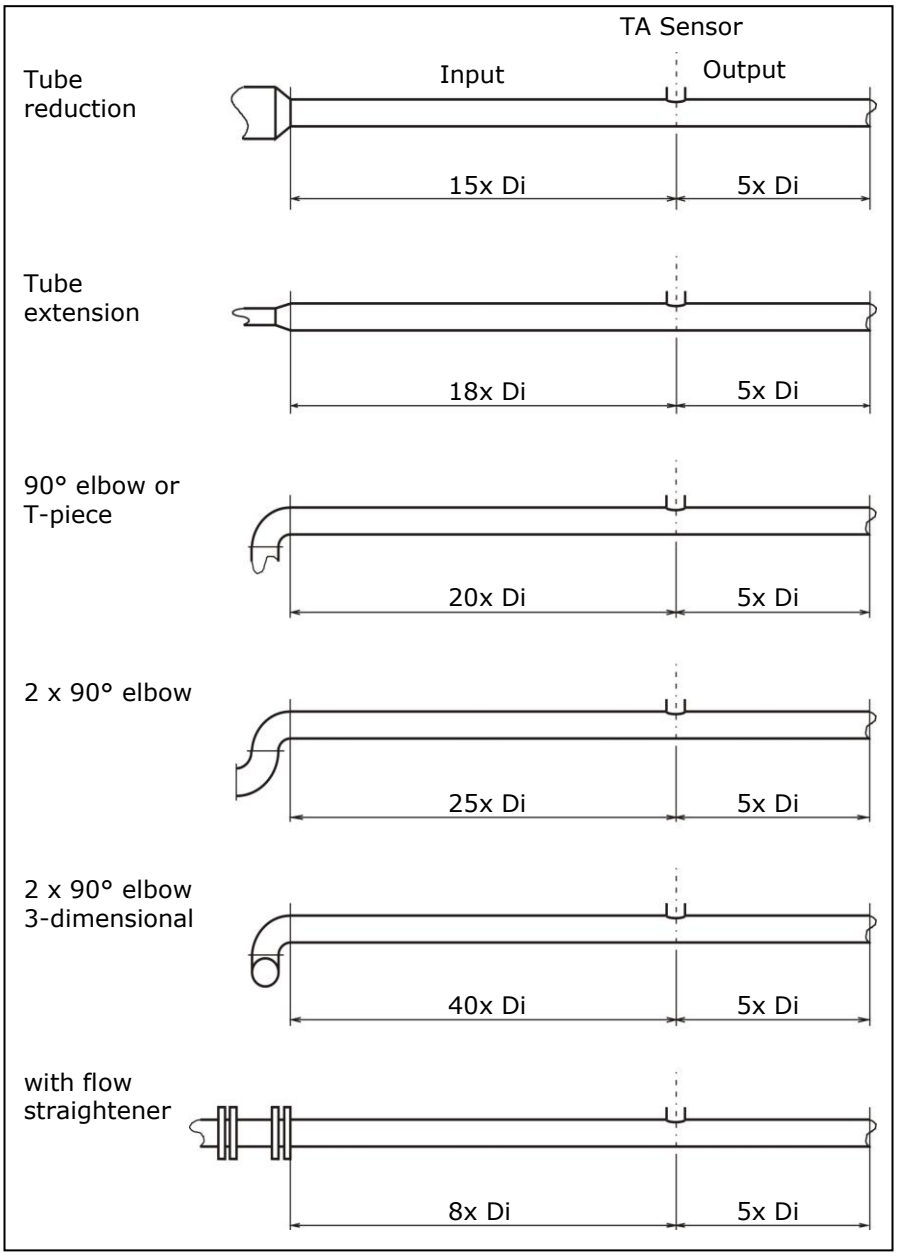
$$v_m = v_p * PF$$

(PF = Profile Factor) can only ensue when input/output sided irrotational flow prevails, and sufficient straight, undisturbed input/output sections are available.

The illustrations show the minimum recommended tube length as a multiple of Di, whereby longer lengths are always advisable.

If an adequately long, straight tube run is not available, the measurement cross section must be located so that 2/3 of the straight pipe section are upstream and 1/3 downstream of the cross section.

Refer to DIN EN ISO 5167-1 "Measurement of fluid flow by means of pressure differential devices" for standard types of flow straighteners.



Larger cross sections
To determine the average flow velocity v_m in larger measurement cross sections a preliminary examination to determine the flow profile/measurement cross section topography is to be carried out. As a result, an optimum measuring point is to be fixed and the relevant profile factor for conversion of local velocity v_p to average velocity v_m to be taken as a basis.

Other supporting documents:
- VDI/VDE 2640-3 "Measurement of gas flow in circular, annular or rectangular sections of conduits velocity area method"
- DIN EN ISO 16911: "Stationary source emissions - Manual and automatic determination of velocity and volume flow rate in ducts"
- Data Sheet TA 10, header "Profile Factor PF"

Calibration number (KKZ)
This number describes the course of a calibration curve and is the basis for the linearization of a TA sensor characteristic.
The KKZ is individually determined for each sensor and stored in the evaluation unit (with the exception of U10M).

Pairs of values (alternative to KKZ)
Specifically adapted to the measuring task, based on up to 30 data points.

EMC information
for installation in facilities with interference emitting components:

- spatially separate interference-emitting cables from measuring lines and evaluation units
- when using frequency converters there is a risk of interference by HF emissions from the outset. To avoid this, decouple the power input of the converter against active transient emissions using an interference suppression filter, which also increases the passive interference immunity of the equipment
- motor cables between the inverter and motor must be shielded with shield contact on both sides
- metallic components within the enclosure, subracks with control logic, subplates, etc. must have a large surface area and are to be connected with a high level of RF conductivity
- relays, contactors, and solenoid valves in the same circuit are to be connected with arc extinguishing combinations or overvoltage-limiting components
- analog signal cables should be shielded on one side only, preferably in the evaluation unit, with low resistance connections. Twist any unshielded cables against symmetrical interference
- add suitable primary protection against lightning
- use shielded connectors for coupling joints. Terminals should be in an RF-shielded housing using EMC cable glands and the outer cable shield should be contacted on the cable gland
- keep all connecting cables as short as possible and avoid large cable loops! Lay both sides of free strands on protection potential and lay current-carrying cables as close as possible to reference potential, such as side panels, mounting plates, steel girders

Repair and maintenance
to be carried out solely by Höntzsch GmbH.
Please enclose a detailed problem report when sending equipment for repair.
If the instruments have been used in a hazardous medium, please inform us of any safety precautions to be taken by completing a "Declaration of Hazard Potential" which can be downloaded here: www.hoentzsch.com/en/services/
We see it as our duty of care to our staff to ask you to furnish us with this information.

Functional errors

Measured value too low:
- profile factor set too low
- profile factor too low for the measuring position. See "Larger cross sections": flow profile other than expected, for example, by subsequent structural alterations to the measuring section.
  Please note: if the input/output sections are too short, the flow profile may alter depending on the velocity
- quantity measurement: pipe inside diameter Di set too small
- rotational flow with centric positioning of sensor
- sensor not optimally aligned to the flow
- sensor contaminated; causes reduced thermal coupling
- effective electromagnetic interference (EMI)
- resistance at current output greater than specified in the Technical Data Sheet, causing correct output values at the lower end of the measuring range and non-increasing values at the upper end of the measuring range
- incorrect scaling of analog output
- gases other than air

Measured value too high:
- profile factor set too high
  profile factor too high for the measuring position. See "Larger cross sections": flow profile other than expected, for example, by subsequent structural alterations to the measuring section.
  Please note: if the input/output sections are too short, the flow profile may alter depending on the velocity
- quantity measurement: pipe inside diameter Di set too small
- effective electromagnetic interference (EMI)
- gases other than air

No measured value:
- profile factor set at 0.000
- sensor not or incorrectly connected
- cable break or short-circuit
- analog output set at 20 mA = 0.00 m/s

Measured value fluctuates:
- time constant/damping set too low
- anticipated measured value fluctuation lower than that from the sensor: time constant/ damping set too high
- effective electromagnetic interference (EMI)

Other errors:
- all parameters altered: effective electromagnetic interference (EMI). Incorrect parameter settings caused by electro-magnetic interference cannot be mistaken for operating error
- anticipated measured value fluctuation lower than that from the sensor: time constant/ damping set too low

No connection to bus system (U10M):
- bus address incorrectly set
- baud rate incorrectly set
- check power supply

Teflon® Dupont™

Höntzsch GmbH
Gottlieb-Daimler-Straße 37
D-71334 Waiblingen (Hegnach)
Telephone +49 7151/1716-0
Telefax +49 7151/58402
E-Mail info@hoentzsch.com
Internet www.hoentzsch.com

Subject to alteration