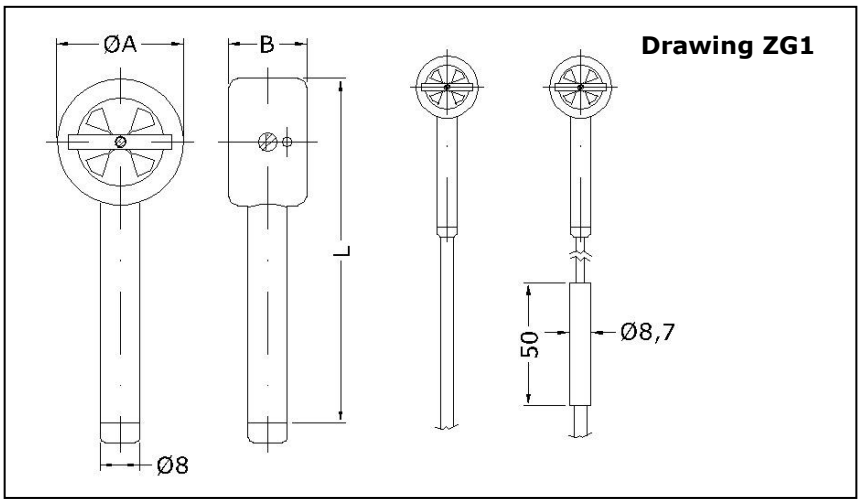
Probe in optimised design also for measurement of flow even in demanding oncoming flow conditions, ±directional sensing optional



probe line of sight in flow direction,
probe sideview,
probe without cable amplifier,
probe with cable amplifier (in combination with probes for max. +260 °C), from left to right

Measurable variable
- actual flow velocity v [m/s] in air/gases
- sensing the ±direction of flow (probes TSR)

Measuring range
- up to 40 and 80 m/s

Functional principle
- vane wheel flow sensor
- scanning the vane wheel rotation; non-contact inductive proximity switches

Design
- probe with T-head and direct cable outlet

Medium
- air, clean gases or gas mixtures

Advantages
- low sensitivity to indirect oncoming flow
- low pressure drop thanks to flow-optimised design
- recording the ±direction of flow possible
- low starting value
- corrosion resistant
- high working temperature range up to +260 °C
- operates to a large extent irrespective of gas density and compostion
- compact design
- optional application in category 2 (zone 1)

Range and examples of application
- measuring flow velocity e.g. of air, exhaust gas, process gas
- vehicle wind tunnel tests
- cooling air measurement around radiators and brake systems in mass-production and motor sport vehicles
- measuring air flow patterns of components in aircraft

Humidity in the gas
- relative gas humidity of less than 100 % does not affect the measurement uncertainty in any way

Model designation (example)

TSR	26/16	G	E	mn40A	125	p0	ZG1
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

Basic types

Type	Measuring range	Article No.
without ±directional sensing, working temperature range -15 °C ... +125 °C		
TS16/15 GE-mc40A/ 125/p0/ZG1	0.6 ... 40 m/s	B008/010
TS16/15 GE-mc80A/ 125/p0/ZG1	1.2 ... 80 m/s	B008/011
TS26/16 GE-mn40A/ 125/p0/ZG1	0.4 ... 40 m/s	B008/015
TS26/16 GE-mn80A/ 125/p0/ZG1	0.8 ... 80 m/s	B008/016
without ±directional sensing, working temperature range -15 °C ... +260 °C		
TS26/16 GE-mn40T/ 260/p0/ZG1	0.4 ... 40 m/s	B008/020
TS26/16 GE-mn80T/ 260/p0/ZG1	0.8 ... 80 m/s	B008/021
with ±directional sensing, working temperature range -15 °C ... +125 °C		
TSR16/15 GE-mc40A/125/p0/ZG1	±0.6 ... ±40 m/s	B008/030
TSR16/15 GE-mc80A/125/p0/ZG1	±1.2 ... ±80 m/s	B008/031
TSR26/16 GE-mn40A/125/p0/ZG1	±0.4 ... ±40 m/s	B008/035
TSR26/16 GE-mn80A/125/p0/ZG1	±0.8 ... ±80 m/s	B008/036

(1) Sensor type

Vane wheel flow sensor with T-head
TS : without ±directional sensing
TSR : with ±directional sensing

(2) Sensor dimensions (see ZG1, Page 1)

Type	Sensor head diameter A [mm]	Sensor head length B [mm]	Shaft diameter [mm]
... 16/15 ...	16	15	8
... 26/16 ...	26	16	8

(3) Medium

... G ...	air / gases

(4) Materials in contact with the medium

Design	Probe	Material
... E ...	for max. +125 °C	stainless steel, epoxy resin, aluminium vane wheel ...
	for max. +260 °C	stainless steel, epoxy resin, titanium vane wheel ...

(5) Measuring ranges / Calibration / Measurement uncertainty

with a gas density of approx. 1.2 kg/m³, see Basic types, Page 2

DAkkS Calibriation

Description	**Article no.**
6 calibration values in the measuring range up to 40 m/s	CV-40 DAKKS
6 calibration values in the measuring range up to 70 m/s	CV-70 DAKKS
DAkkS calibration certificate (mandatory)	KLB
Measurement uncertainty	< 0.9 % of measured value + 0.25 % of terminal value with linearisation of characteristics (pairs of values, see doc. U183)
Repeatability	±(0.05 % of measured value + 0.02 m/s)

ISO Calibration

Description	**Article no.**
standard calibration with 6 values in the measuring range	
ISO calibration certificate (optional)	KLB
Measurement uncertainty	< 1.5 % of measured value + 0.5 % of terminal value with standard characteristic
Repeatability	±(0.05 % of measured value + 0.02 m/s)

Probes TSR are adjusted for both oncoming flow directions. The subsequent calibration is, as a rule, based on the '+'-oncoming flow direction which is marked with a dot on the sensor.

(6) Permissible temperature of the medium

Design	
... 125 ...	-15 ... +125 °C
... 260 ...	-15 ... +260 °C

(7) Type of protection

IP50 (sensor and connection cable exit point)

(8) Design (see Page 1)

Drawing ZG1	**probe for max. +125 °C** with 2 m cable with direct outlet for max. +125 °C, cable socket (order related) **probe for max. +260 °C** with 2 m cable with direct outlet for max. +260 °C, cable amplifier with 8 mm diameter for max. +80 °C and approx. 2 m cable für max. +125 °C, cable socket (order related)

Output

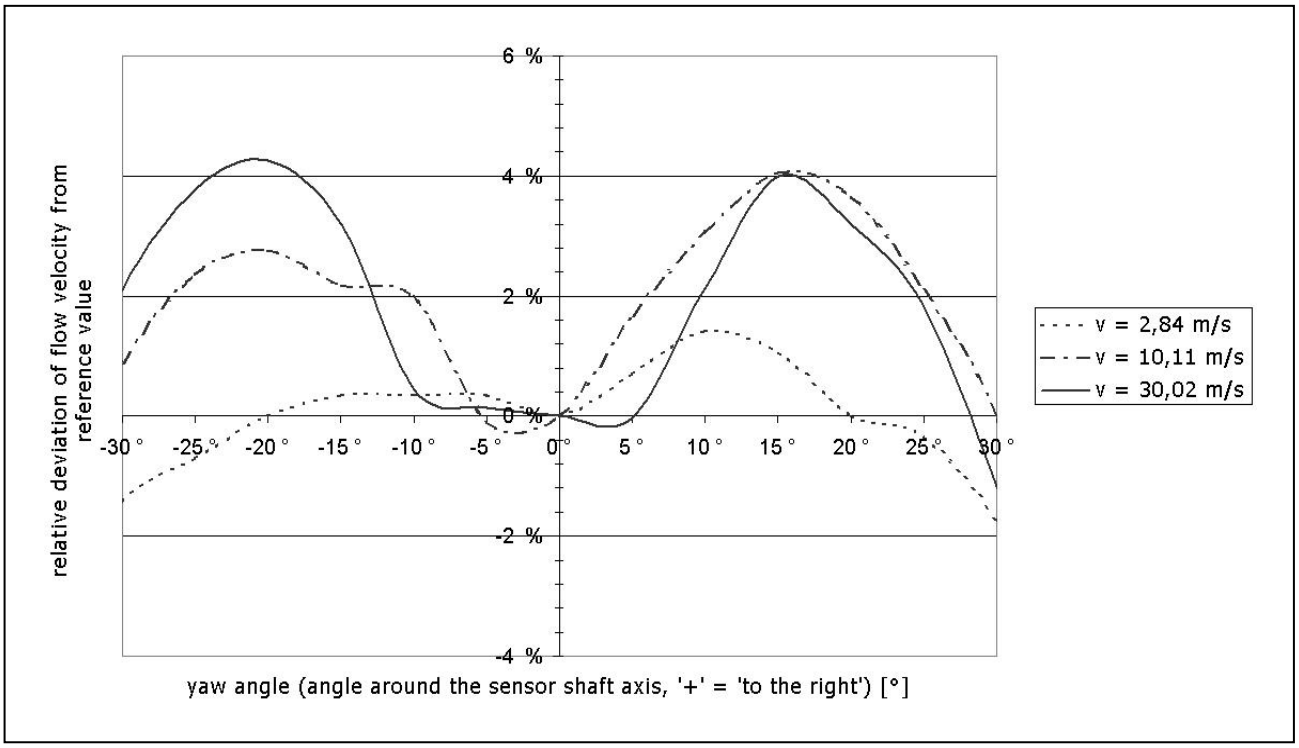
Sensor	**separate Höntzsch unit** for signal evaluation:**
TS : v/FA	transducer UFA, hand-held unit flowtherm NT, system unit µP-ASD ...
TSR : v/FAR	transducer UFA, hand-held unit flowtherm NT, system unit µP-ASD-R ....

** implementation of pairs of variates for linearising of characteristics is possible with all the above mentioned evaluation units (where applicable - optional, see relevant data sheet)

Sensor length (head incl. shaft)	
Sensor length L	**Article No.**
70 mm	L_TS_070
100 mm	L_TS_100
200 mm	L_TS_200
350 mm	L_TS_350

Option 'Ex-protextion'		
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	only in conjunction with: - isolation-/supply unit LDX2 and 'non-Ex evaluation unit' or - ATEX-conform, separate evaluation unit with v/FA-Ex or v/FAR-Ex input

Sensitivity to indirect oncoming flow of
TS and TSR sensors with measurement range terminal value 40 m/s



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Subject to alteration