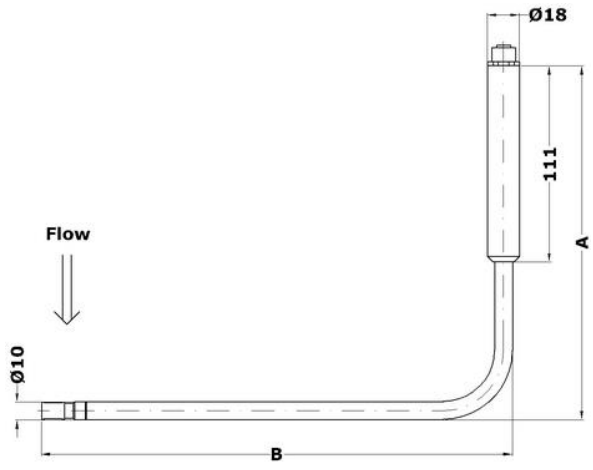
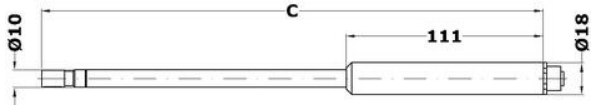
Thermal flow sensors TA10-ZG8c and TA10-ZG9c for exact and stable, long-term measuring of lower flow velocities (Laminar Flow)

Drawing 8c



Drawing 9c



Measured variable
- standard velocity Nv
  default:
  temperature t_n = +21 °C
  pressure p_n = 1014 hPa
  adjustable

Functional principle
- flow measurement according to the heat transfer method

Design
- probe, straight or angular
- with integrated transducer

Advantages
- accurate measurement of lowest flow velocities
- integrated transducer
- ATEX protection for applications in Category 3G and 3D (Zone 2 and 22)
- no moving parts
- GMP compliant
- protective stainless steel body
- sterilisable with hydrogen peroxide (H_2O_2), formaldehyde and alcohol
- easy to install and commission
- easy ceiling or wall mounting
- high durability
- self-monitoring: discontinuity, damage to sensor element, heavy soilage, parameter inconsistency
- easy adjustment of parameters via serial interface

Media
- clean and condensate-free gases, see (3) for more details

Examples of application
- measuring laminar flow in clean rooms, under fan filter units
- measuring flow in production facilities of pharmaceutical, food processing and semiconductor industries
- monitoring flow in glove boxes, isolators, ...
- measuring the rate of sedimentation in spray booths

Model designations (examples)							
TA10	**200/300**	**G**	**E**	**80**	**p16**	**4-20mA**	**ZG8c**
TA10	**283**	**G**	**E**	**80**	**p16**	**0-10V**	**ZG9c**
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**

Basic types					
Type					**Article No.**
with output 4-20 mA					
TA10 200/300	GE	80 / p16	4-20mA	ZG8c	B013/100
TA10 300/300	GE	80 / p16	4-20mA	ZG8c	B013/101
TA10 183	GE	80 / p16	4-20mA	ZG9c	B013/110
TA10 283	GE	80 / p16	4-20mA	ZG9c	B013/111
w**ith output 0-10 V**					
TA10 200/300	GE	80 / p16	0-10V	ZG8c	B013/120
TA10 300/300	GE	80 / p16	0-10V	ZG8c	B013/121
TA10 183	GE	80 / p16	0-10V	ZG9c	B013/130
TA10 283	GE	80 / p16	0-10V	ZG9c	B013/131

(1) Sensor type / probe diameter

Thermal flow sensor
Diameter 10 mm

(2, 8) Dimensions

Drawing 8c (angular)	A : 200 or 300 mm B : 300 mm
Drawing 9c (straight)	C : 183 or 283 mm

(3) Media

Air, nitrogen, natural gas, argon, helium, propane, butane, CO_2, …,
Gas mixtures with consistent mix ratio
Real gas calibration for achieving the slightest measurement uncertainties (on request)

(4) Materials in contact with the medium

Stainless steel 1.4571, 1.4305, 1.4404, glass, epoxy resin, silicone, (silicone-free on request)

(5) Permissible temperature

media	-10 ... +80 °C
ambient	-20 ... +60 °C

(6) Pressure resistance

Up to 16 bar / 1.6 MPa overpressure

(7) Analog output

4-20 mA or 0-10 V	**s**ee also 'Additional technical data', Page 4

(8) Design

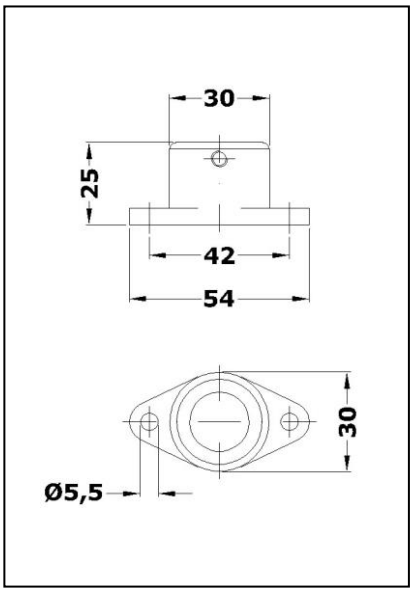
Probe as in Drawing 8c (ZG8c) or Drawing 9c (ZG9c) (see Page 1)

Measuring ranges	
Flow velocity Nv	**Article No.**
0.2 ... 1 m/s	V_TA10_C_1
0.2 ... 2 m/s	V_TA10_C_2
0.2 ... 20 m/s	V_TA10_C_20

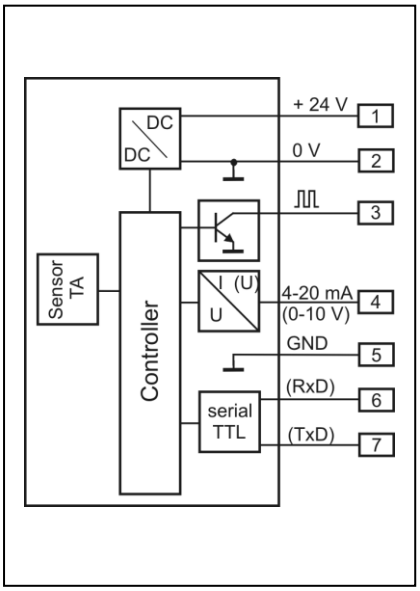
Measurement uncertainty / Time constant	
Measurement uncertainty for flow velocities Nv: 2 % of measured value + 0.02 m/s	
Time constant	: within seconds

Additional technical data	
ATEX protection	CE <Ex> II 3 G Ex ec IIC T4 Gc X and CE <Ex> II 3 D Ex tc IIIC T135°C Dc X for applications in Category 3G and 3D (Zone 2 and 22)
Analog output flow	**current output 4-20 mA** resistance max. 400 Ohm alternatively: **voltage output 0-10 V** impedance 1 kOhm output linear, update 500 ms in the case of discontinuity, damage to the sensor element, heavy soilage and parameter inconsistency: analog output < 3.6 mA or < -0.2 V
Output limit value or quantity pulse	Open Collector / max. 27 V, 20 mA
Electrical connection	M12x8 connector integrated in the sensor shaft (see Accessories)
Power supply	16 ... 27 V DC
Power consumption Current consumption	< 1.5 W/ < 50 mA (24 V DC)
EMC	EN 61 000-6-2, EN 61 000-6-4
Degree of protection	sensor : IP68 (pressure resistance 1.6 MPa/16 bar) plug connector : IP67
Setting parameters	analog output, time constant, profile factor, pipe inside diameter, default, limit value or quantity pulse (rating adjustable), average absolute pressure. Parameters are factory-set and can be adjusted on site at any time using the programming adapter and UCOM software (see Accessories).
Sterilising sensor head	with hydrogen peroxide (H_2O_2), formaldehyde and alcohol. Steam sterilisation is not recommended.

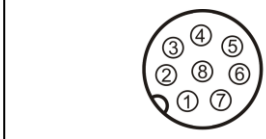
Accessories /Options		
	Description	**Article No.**
Cable connector 2 m	extension possible with 5-core cable	A010/030
Cable connector 5 m	Extension possible with 5-core cable	A010/031
PC software UCOM	for sensor configuration	A010/052
Programming adapter M12x8 / TTL-USB	for UCOM software, PC-USB connection, adapter plug 230VAC/24VDC	A010/005
Probe fitting SH18 ZG1	for fixing the probe to a smooth ceiling or wall surface, sealed with FKM O-ring	B004/610
Transformed characteristic	for other gases	TA-TRANSFO
Calibration certificate Nv	minimum 6 standard values	KLB
DAkkS calibration	6 values within the measuring range; measurement uncertainty < 0.5 %, at least 0.01 m/s (only in conjunction with KLB)	CV-40 DAKKS



Probe fitting SH18 ZG1



Wiring diagram



white	1	power +24 V
brown	2	power 0 V
green	3	digital output
yellow	4	analog output +
grey	5	GND
pink	6	(RxD TTL)
blue	7	(TxD TTL)
red	8	n.c.

Pin assignment

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Subject to alteration