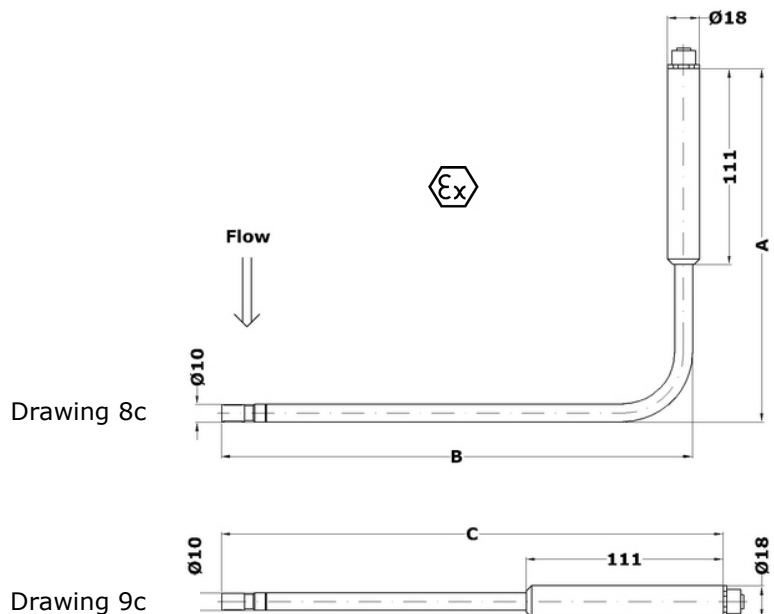


Thermal flow sensors BTA10-ZG8c and BTA10-ZG9c for accurate measurement with long-term stability of lower flow velocities (laminar flow)



### Measurable variable

- standard velocity  $N_v$  norm:  
temperature  $t_n = +21\text{ °C}$ ,  
pressure  $p_n = 1014\text{ hPa}$

### 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
- transducer integrated in the sensor
- ex-protection for application in Category 3G (Zone 2)
- sensor has no moving parts
- GMP-compliant design
- protective stainless steel sensor housing
- can be sterilised with hydrogen peroxide ( $H_2O_2$ ), formaldehyde and alcohol
- low installation and starting-up costs
- easy to mount on clean room ceilings or wall units
- fatigue endurance
- self-monitoring: discontinuity, soiling, parameter inconsistency
- configurable via serial interface

### Medium

- clean, condensation-free air, nitrogen, other gases on request

### Range and examples of application

- measurement of laminar flow in clean rooms, under fan filter units
- flow measurement in production rooms of pharmaceutical, food and semiconductor industries
- flow monitoring in glove boxes, insulators ...

### Model designation (examples)

BTA10	200/300	G	E	80	p16	4-20mA	ZG8c
BTA10	283	G	E	80	p16	0-10V	ZG9c
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

### Basic types

Type							
<b>with output 4-20 mA</b>							
BTA10 200/300	GE	80	/	p16	4-20mA	ZG8c	
BTA10 183	GE	80	/	p16	4-20mA	ZG9c	
BTA10 283	GE	80	/	p16	4-20mA	ZG9c	
<b>with output 0-10 V</b>							
BTA10 200/300	GE	80	/	p16	0-10V	ZG8c	
BTA10 183	GE	80	/	p16	0-10V	ZG9c	
BTA10 283	GE	80	/	p16	0-10V	ZG9c	

### (1) Sensor type / probe diameter

Thermal flow sensor, epoxy resin coated thin-film sensor element  
Probe diameter 10 mm

### (2) Dimensions

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

### (3) Medium

Air, clean gases, gas mixtures with consistent mixture ratio

### (4) Material in contact with the medium

Stainless steel 1.4571, 1.4305, glass, silicone ...

### (5) Permissible temperature of the medium

-10 ... +80 °C

### (6) Max. working pressure

up to 16 bar / 1.6 MPa above atmospheric

### (7) Analog output

4-10 mA or 0-10 V

See 'Further technical data', Page 3

### (8) Design

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

### Measuring ranges

	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

### Measuring uncertainty / time constant

Measuring uncertainty for flow velocities Nv	: 2 % of average + 0.02 m/s
Time constant	: in seconds

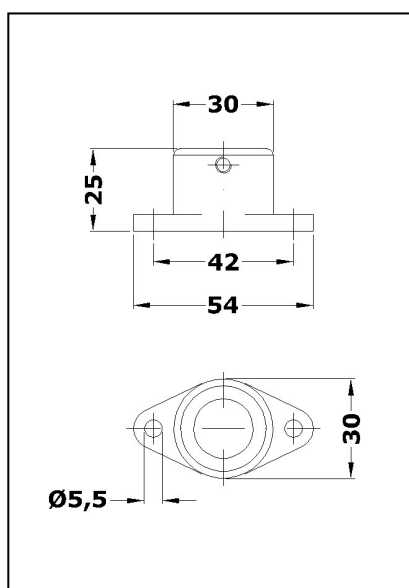
### Implementing a characteristic for application in other gases

based on	Article No.
calibration in air and conversion of the air characteristic for another gas, measurement uncertainty totalling 5 ... 7 % of average (on request)	ta_transfo
real gas calibration for achieving slightest measurement uncertainties (only necessary for gases other than air)	

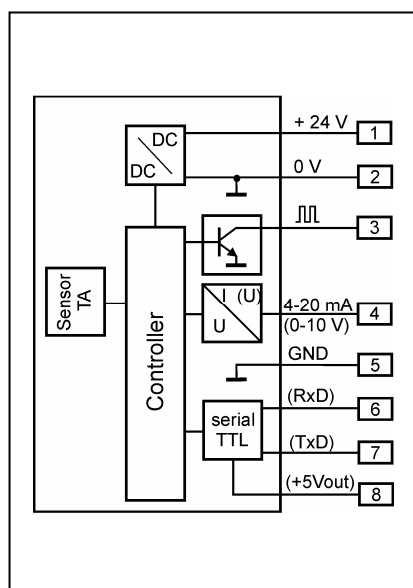
### Further technical data

Ex-protection	Ex nA IIC T4 for application in Category 3G (Zone 2)
Marking	CE <sub>0820</sub> Ex II 3 G
Analog output flow	<b>Option 'current output 4-20 mA'</b> resistance max. 400 Ohm, <b>alternative:</b> <b>Option 'voltage output 0-10 V'</b> impedance 1 kOhm,  Output linear, updating 500 ms with discontinuity, damage of sensor element, intense soiling 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	cable socket M12x8 integrated in sensor shaft, for cable connectors see Accessories,
Power supply	16 ... 27 V DC
Power input/ current input	less than 1.5 W/ less than 50 mA at 24 V DC
EMC	EN 61 000-6-2:2001
Protection class	sensor : IP68 (max. working pressure 1.6 MPa/16 bar) plug connection : IP67
Setting parameter	analog output, time constant, profile factor, tube inside diameter, limit value or quantity pulse (quality rating adjustable), mean absolute pressure. Parameters are preset and can be adjusted on-site with the adapter and PC software UCOM (see Accessories).
Sterilisation sensor head	with hydrogen peroxide (H <sub>2</sub> O <sub>2</sub> ), formaldehyde and alcohol, sterilisation with water vapour not recommended

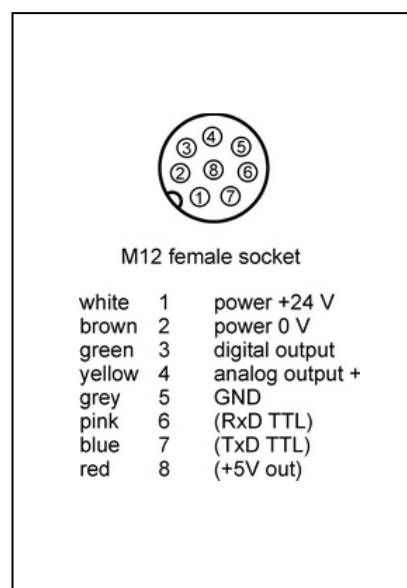
Accessories		
	Description	Article No.
Cable connector 2 m	for sensor connection, length 2 m, extension with 5-core cable possible	a010/030
Cable connector 5 m	for sensor connection, length 5 m, extension with 5-core cable possible	a010/031
PC software UCOM	for configuration of transducer U10a via RS232	a010/052
Adapter M12x8 / TTL-USB	for software UCOM, PC-USB connection, adapter plug 230VAC/24VDC	a010/005
Probe attachment SH18 ZG1	for fixing the TA10 ... ZG8c and TA10 ... ZG9c probes to a smooth ceiling or wall surface, VITON® O-Ring seal	b004/610
Calibration certificate Nv	minimum 6 standard calibration values	klbneu



Probe attachment SH18 ZG1



Terminal connection diagram



Pin assignment female socket

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