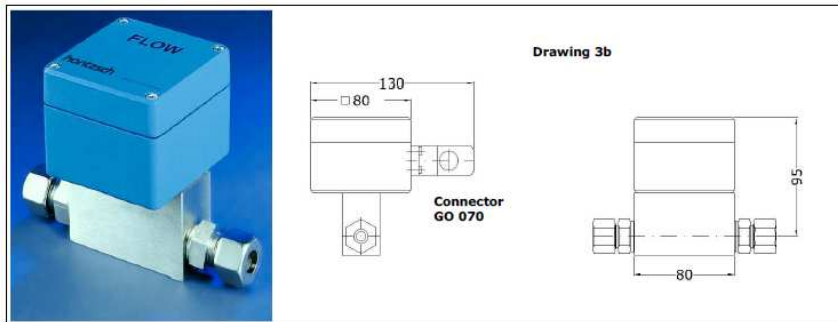
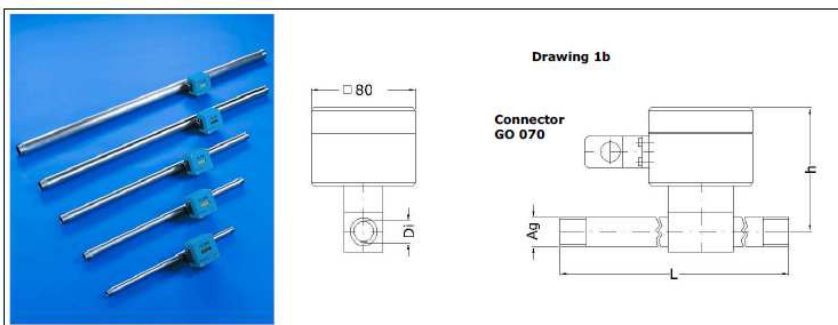


Thermal Measuring Tube TA Di - standard - with integrated transducer



Sensor TA Di 8



Sensor TA Di 16 ... 41.8

Examples of application

- measuring
 - compressed air and gas consumption of oxygen, nitrogen, argon, for example in technical welding applications
 - leakage flows
 - in exhaust air, burner supply air
 - for the inertisation of nuclear processes
 - in air in low vacuum range with pressures greater than 200 hPa abs.

Advantages

- high measuring dynamics N_v (0.2 ... 150 m/s)
- measuring range from 0.04 Nm³/h (0.6 litre/min)
- low measurement uncertainty, even at lowest flow velocities
- direct air/gas mass flow proportional measuring; additional measurement of pressure and temperature is not necessary
- sensor has no moving parts
- stainless steel sensor housing
- greater temperature and pressure resistance ranges
- low installation costs
- negligible pressure drop thanks to virtually free passageway
- durable
- sterilisable (material resistance of sensor allowing)
- configurable and optimal integration via PC software

Functional principle

- flow measurement according to the heat transfer method
- temperature-compensated Measurement

Measurable variable

- standard flow rate [m³/h, l/min], mass flow [kg/h], standard velocity [m/s], norm:
temperature $t_n = +21\text{ °C}$,
pressure $p_n = 1014\text{ hPa}$

Design / Sensor

- measuring tube with transducer integrated in the connection housing
- thin film sensor element

Gases

- pure gases, gas mixtures: air, nitrogen, oxygen, methane, natural gas, argon, hydrogen, butane, propane, carbon dioxide, helium, sulphur hexafluoride, landfill gas ...
- calibration can be carried out with a multitude of gases or gas mixtures to achieve the lowest measuring uncertainty
- deviations in values as a result of variable air humidity in normal atmospheric conditions are covered by the measuring uncertainty specifications

Particles, humidity in the gas

- charges in the gas caused by particles such as dust and fibres do not affect the measurement, as long as abrasion and agglomeration do not occur on the sensor

Model designation (example)

TA Di	8	G	E	60 m/s	140	p16	ZG3b
1	2	3	4	5	6	7	8

Basic-types

TA Di 8 GE 60 m/s / 140 / p16 ZG3b
 TA Di 8 GE 120 m/s / 140 / p16 ZG3b
 TA Di 8 GE 150 m/s / 140 / p16 ZG3b
 TA Di 16 GE 60 m/s / 140 / p16 ZG1b
 TA Di 16 GE 120 m/s / 140 / p16 ZG1b
 TA Di 16 GE 150 m/s / 140 / p16 ZG1b
 TA Di 21,6 GE 60 m/s / 140 / p16 ZG1b
 TA Di 21,6 GE 120 m/s / 140 / p16 ZG1b
 TA Di 21,6 GE 150 m/s / 140 / p16 ZG1b
 TA Di 27,2 GE 60 m/s / 140 / p16 ZG1b
 TA Di 27,2 GE 120 m/s / 140 / p16 ZG1b
 TA Di 27,2 GE 150 m/s / 140 / p16 ZG1b
 TA Di 35,9 GE 60 m/s / 140 / p16 ZG1b
 TA Di 35,9 GE 120 m/s / 140 / p16 ZG1b
 TA Di 35,9 GE 150 m/s / 140 / p16 ZG1b
 TA Di 41,8 GE 60 m/s / 140 / p16 ZG1b
 TA Di 41,8 GE 120 m/s / 140 / p16 ZG1b
 TA Di 41,8 GE 150 m/s / 140 / p16 ZG1b

(1) Sensor type / Design

Thermal flow sensor TA Di designed as measuring tube

(2) Dimensions

measuring tube inside Ø Di [mm]	installation length L [mm]	installation height h [mm]	tube connection on both sides
8	80 mm + SRV *	95	with on-site tubes 12 x 2 mm
16	480	95	Ag R 1/2" **, Gg RP 1/2"
21,6	650	100	Ag R 3/4" **, Gg RP 3/4"
27,2	820	100	Ag R 1" **, Gg RP 1"
35,9	1080	100	Ag R 1 1/4" **, Gg RP 1 1/4"
41,8	1250	105	Ag R 1 1/2" **, Gg RP 1 1/2"

* SRV : cutting ring tube fitting on both sides

** Ag : Whitworth tapered pipe thread according to DIN 2999

Gg : counter thread

Input / output section

for TA Di 8 provided on site: tubes 12 x 2, 160 mm (input) / 80 mm (output) running straight; for all other measuring tubes no additional on site input/output section necessary; length of the input section 2/3 of the installation length L, length of the output section 1/3 of L

(3) Gases

air, pure gases, gas mixtures with constant mix ratio

(4) Materials in contact with the medium

stainless steel, glass, epoxy resin, Viton®

(5) Measuring ranges* air/nitrogen

Basic type / measuring range	in m ³ /h	in kg/h	in litre/min	in m/s	1 m ³ /h equivalent to [m/s]
TA Di 8 ...					
... 60 m/s ...	0,04 ... 11	0,05 ... 13	0,6 ... 181	0,2 ... 60	5,53
... 120 m/s ...	0,04 ... 22	0,05 ... 26	0,6 ... 362	0,2 ... 120	5,53
... 150 m/s ...	0,04 ... 27	0,05 ... 33	0,6 ... 452	0,2 ... 150	5,53
TA Di 16 ...					
... 60 m/s ...	0,15 ... 43	0,18 ... 52	2,4 ... 729	0,2 ... 60	1,38
... 120 m/s ...	0,15 ... 86	0,18 ... 104	2,4 ... 1448	0,2 ... 120	1,38
... 150 m/s ...	0,15 ... 109	0,18 ... 130	2,4 ... 1810	0,2 ... 150	1,38

TA Di 21,6 ...					
... 60 m/s ...	0,27 ... 79	0,32 ... 95	4,4 ... 1319	0,2 ... 60	0,758
... 120 m/s ...	0,27 ... 158	0,32 ... 190	4,4 ... 2638	0,2 ... 120	0,758
... 150 m/s ...	0,27 ... 198	0,32 ... 238	4,4 ... 3298	0,2 ... 150	0,758
TA Di 27,2 ...					
... 60 m/s ...	0,42 ... 125	0,50 ... 151	7,0 ... 2092	0,2 ... 60	0,478
... 120 m/s ...	0,42 ... 250	0,50 ... 300	7,0 ... 4184	0,2 ... 120	0,478
... 150 m/s ...	0,42 ... 314	0,50 ... 377	7,0 ... 5230	0,2 ... 150	0,478
TA Di 35,9 ...					
... 60 m/s ...	0,73 ... 219	0,88 ... 263	12,1 ... 3644	0,2 ... 60	0,274
... 120 m/s ...	0,73 ... 438	0,88 ... 526	12,1 ... 7288	0,2 ... 120	0,274
... 150 m/s ...	0,73 ... 547	0,88 ... 657	12,1 ... 9110	0,2 ... 150	0,274
TA Di 41,8 ...					
... 60 m/s ...	1,0 ... 296	1,2 ... 356	16,5 ... 4949	0,2 ... 60	0,202
... 120 m/s ...	1,0 ... 592	1,2 ... 712	16,5 ... 9880	0,2 ... 120	0,202
... 150 m/s ...	1,0 ... 741	1,2 ... 890	16,5 ... 12350	0,2 ... 150	0,202

* all standard flow rate and standard flow velocity specifications relating to a standard atmospheric pressure $p_N = 1014 \text{ hPa}$ and a standard temperature $t_P = +21 \text{ }^\circ\text{C}$ (294.15 K)

Measurement uncertainty / time constant

measurement uncertainty for flow rates NV/t with 1014 hPa and +21 °C
 less than/equal to 40 m/s : 2 % of measured value + 0.02 m/s
 greater than 40 m/s : 2.5 % of measured value
 time constant : in seconds

Storing a characteristic for application in other gases (on request) based on Article No.

calibration in air and conversion of the air characteristic for another gas, up to '60 m/s'; additional measurement uncertainty approx. 3.5 % of measured value (on request) real gas calibration for achieving lowest measurement uncertainties

(6) Permissible temperature

medium -10 ... +140 °C
 ambient -25 ... +50 °C
 -5 ... +50 °C with option 'LCD display'

(7) Max. working pressure

max. 16 bar / 1.6 MPa above atmospheric
 greater than 16 bar / 1.6 MPa on request

(8) Design

TA Di 8 measuring tube with connection housing and integrated transducer U10a, as in Drawing 3b
 TA Di 16 ... 41.8 measuring tube with connection housing and integrated transducer U10a, as in Drawing 1b

Type of protection / mounting attitude

sensor IP68, IEC 529 and EN 60 529
any mounting attitude with atmospheric pressure,
with pressures above atmospheric direction of flow not from above

Connection housing AS80

dimensions 80 / 80 / 60 mm (L / B / H)
connection GO 070 connector with screw contacts
terminal connections see Page 6
type of protection IP65, IEC 529 and EN 60 529
material aluminium, coated

Transducer U10a, integrated in the sensor connection housing

analog output flow	4 ... 20 mA (linear), output every second, resistance max. 400 Ohm
pulse output	quantity measurement, Open Collector / max. 30 V, 20 mA / duration 0.1 s, max. pulse frequency 1 Hz per volume unit NV
PC interface	RS232
Potential separation	are electrically isolated from the power supply
connection	plug with flange GO 070 FAM fitted to connection housing, cable socket GO 070 WF for screw contacts, for wiring with outside diameter 4 ... 10 mm and conductor size 0.14 ... 0.5 mm ²
power supply	24 V DC +/- 5 %
power consumption	less than 5 W, the supply lines are electrically isolated from the connector cables
housing	sensor connection housing AS80
EMC	EN 61 000-6-2:2001
setting parameter	analog output, time constant, profile factor, tube inside diameter, quantity pulse (rating adjustable), 'working pressure'

setting parameter alterable using PC software UCOM and programming adapter

Option

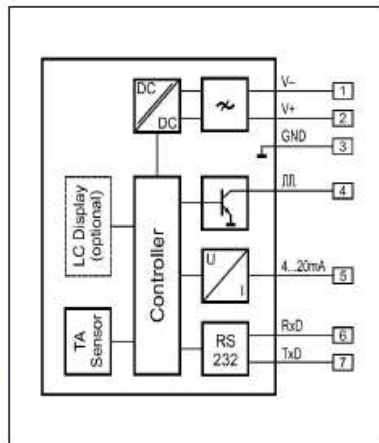
	Description
protective system Ex nA IIC T4 Ex tD A22 IP6X T135°C	category 3G (zone 2) category 3D (zone 22)
local LCD display with counter	illuminated, fitted in the housing cover, 2 x 16 digit, 3 mm high, working temperature range -5 ... +50 °C, 1st line: instantaneous value (flow rate) 2nd line: counter (volume)

Accessories

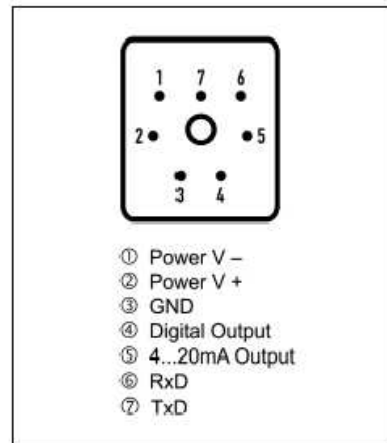
	Description
PC software UCOM	for configuration the transducer U10a via RS232
programming adapter GO 070 / RS232	for software UCOM, connection PC Sub-D 9-pin, adapter plug 230VAC/24VDC
interface converter USB / RS232	connects PC with USB port and Höntzsch programming adapter with RS232 interface, PC connection: USB plug Typ A programming adapter connection: Sub-D 9-pin
Calibration certificate	



optional LCD display in housing cover



Wiring diagram transducer U10a



Pin assignment GO 070

Option

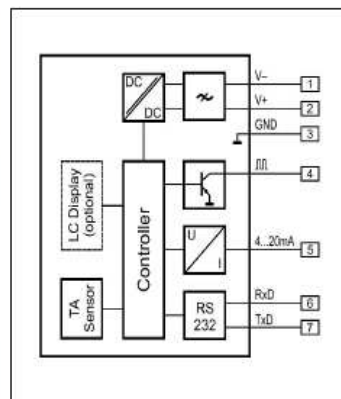
	Beschreibung
Explosionsschutz Ex nA IIC T4	Kategorie 3G/Zone2
Örtliche LCD-Anzeige mit Mengenzähler	beleuchtet, eingebaut im Gehäusedeckel, 2 x 16 stellig, Ziffernhöhe 3 mm, Temperaturbeständigkeit -5 ... +50 °C, 1. Zeile Momentanwert (Volumenstrom), 2. Zeile Mengenzähler (Volumen)

Zubehör

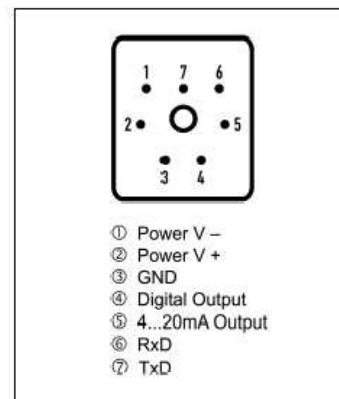
Beschreibung	
PC Software UCOM	zur Konfiguration des Umformers U10a über RS232
Programmieradapter GO 070 / RS232	für Software UCOM, Anschluss PC Sub-D 9-polig, Steckernetzteil 230VAC/24VDC
Schnittstellenkonverter USB / RS232	zur Verbindung von PC mit USB-Schnittstelle und Höntzsch Programmier-Adapter mit RS232-Schnittstelle, Anschluss PC: USB Stecker Typ A Anschluss Prog.-Adapter: Sub-D 9-polig
Kalibrierschein	



optionale LCD-Anzeige im Gehäuse-deckel



Anschlussschema Umformer U10a



Anschlussbelegung Stecker GO 070