VA 550 - Flow meter insertion type

Flow sensor for installation in existing compressed air or gas line of 3/4" to > DN 1000

Housing IP 67



Outputs:
4…20 mA, pulse, Modbus, M-Bus, Profi Bus, Ethernet, HART

Housing rotatable, display 180° rotatable (on the head). Settings can be modified via display, flow meter can be reset



Advantages of optical keys:
The sensor can also be configured in the ATEX + IECEx area, without the housing needing to be opened.

All wetted parts made from stainless steel



Approvals:

- II 2G Ex db IIC T4 Gb
- II 2D Ex tb IIIC T90°C Db
- Ex db IIC T4 Gb
- Ex tb IIIC T90°C Db



The sensor can be removed and cleaned

Special measurement technology features:

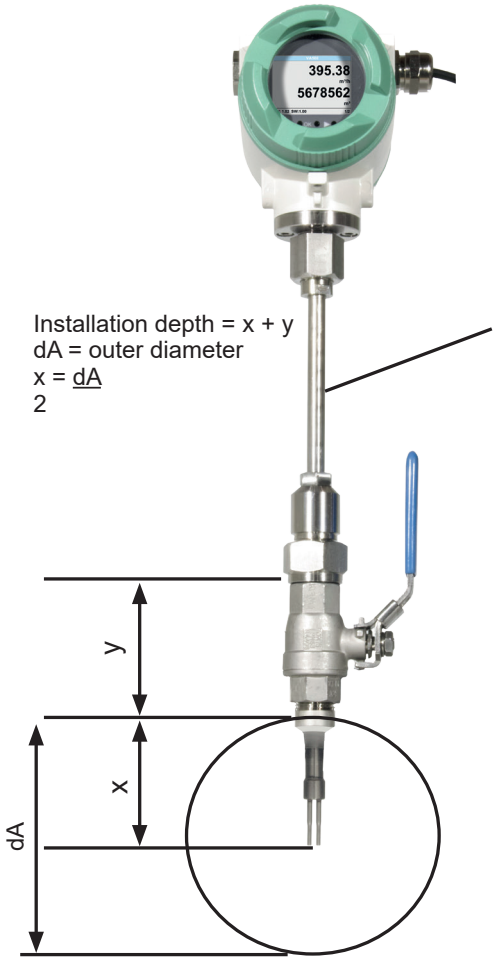
- 4 values on the display: Flow, total consumption, velocity, temperature. Units freely adjustable
- All measured values, settings such as gas type, inner diameter, serial number and so on can be accessed via Modbus-RTU
- Comprehensive diagnostic functions readable on the display or remote access via Modbus such as calibration cycle, error codes, serial number
- Notification in case of exceeding the calibration cycle
- Standard version accuracy 1.5% of m.v. ± 0.3% of f.s.
- Precision version accuracy 1.0% of m.v. ± 0.3% of f.s
- Measuring span of 1 : 1000 (0.1 up to 224 m/s)
- Configuration and diagnosis via display, hand-held device PI 500, PC service software on-site
- Gas type (air, nitrogen, oxygen, argon and so on) freely adjustable via PC service software or external device DS 400, DS 500, PI 500
- Reference conditions °C and mbar/hPa freely adjustable
- Zero-point adjustment, leak flow volume suppression
- Pressure loss negligible

Special mechanical features:

- Robust impact-proof aluminium die cast housing for the outdoor area IP 67
- All wetted parts made from stainless steel 1.4571
- Suitable as an insertion version for 3/4" to DN >1000
- On request with DVGW approval for natural gas (up to 16 bar)
- Pressure range up to 50 bar, special version up to 100 bar
- Media temperature range up to 180 °C (ATEX + IECEx version up to 120 °C)
- No moveable parts, no wear
- Sensor tip very robust, easy to clean
- Easy installation and removal under pressure via 1/2" ball valve
- Housing rotatable, display rotatable by 180°
- Safety ring for installation and removal under pressure
- Depth scale for precise installation

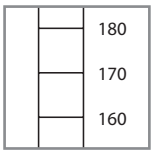
VA 550_ATEX_V.05

Easy mounting/dismounting of **VA 550** under pressure - without disconnection of the line - without emptying the line



Installation depth = x + y
dA = outer diameter
x = dA
2

Engraved depth scale for precise installation



If there is no suitable measuring site with 1/2" ball valve, there are two simple possibilities to set up a measuring site:

A Weld on a 1/2" screw neck and screw on a 1/2" ball valve

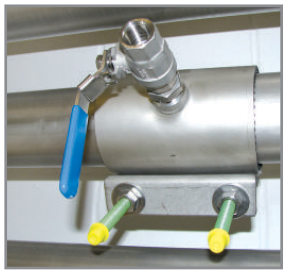
B Mount spot drilling collar including ball valve

By means of the drilling jig, it is possible to drill under pressure through the 1/2" ball valve into the existing pipe. The drilling chips are collected in a filter. Then the probe can be mounted.



A Screw neck

Order no.: 3300 0006



B Hot tapping saddle

Order no.: see page 130



Drill under pressure with the CS drilling jig

Order no.: 0530 1108



Optional: Connection to different Bus systems

There are different options available for connection to modern Bus systems:

- Ethernet interface (Modbus-TCP) / PoE
- M-BUS
- Modbus-RTU
- Profibus DP interface (in process)
- Profinet interface (in process)
- HART
- IO-Link

Ethernet Modbus TCP

M12 Ethernet port, x-coded

For further accessories refer to pages 126 to 130

IO-Link HART PROFIBUS PROFINET M-Bus

VA 550_ATEX_V.05

VA 550 - Flow meter insertion meter

Example order code VA 550:

0695 0550_A1_B1_C1_D1_E1_F1_G1_H1_I1_J1_K1_L1_M1_R1_Y1

Measuring range (see table page 136 to 139)	
A1	Standard version (92,7 m/s)
A2	Max version (185 m/s)
A3	High-speed version (224 m/s)
A4	Low-speed version (50 m/s)

Screw-in thread	
B1	G 1/2" male thread
B2	1/2" NPT male thread

Installation length / shaft length	
C1	220 mm
C2	300 mm
C3	400 mm
C4	500 mm
C5	600 mm
C6	700 mm
C7	160 mm
C8	1000 mm
C9	1500 mm

Display option	
D1	with integrated display
D2	without display

Signal outputs / bus connection option	
E1	2 units 4...20 mA analogue output (electrically isolated), pulse output, RS 485 (Modbus-RTU)
E4	1 x 4…20 mA analogue output (not electrically isolated), pulse output, RS 485 (Modbus-RTU)
E5	Ethernet interface (Modbus / TCP), 1 x 4...20 mA analogue output (not electrically isolated), pulse output, RS 485 (Modbus-RTU)
E6	HART protocol, 1 x 4…20 mA output (not galvanically isolated), pulse output, without RS 485 (Modbus RTU)
E8	M-Bus, 1 x 4…20 mA analogue output (not electrically isolated), pulse output, RS 485 (Modbus-RTU)
E9	Ethernet interface PoE (Power over Ethernet) (Modbus/TCP), 1 x 4…20 mA analogue output (not electrically isolated), pulse output, RS 485 (Modbus-RTU)
E10	IO-Link, 1 x 4…20 mA output (not galvanically isolated), pulse output, RS 485 (Modbus RTU)

Adjustment / calibration	
F1	No real gas adjustment - gas type configuration per gas constant
F2	Real gas adjustment in the gas type selected below

Gas type	
G1	Compressed air
G2	Nitrogen (N2)
G3	Argon (Ar)
G4	Carbon dioxide (CO2)
G5	Oxygen (O2) (max. 120 °C)
G6	Nitrous oxide (N2O)
G7	Natural gas (NG)
G8	Helium (He) (real gas adjustment **F2** required)
G9	Propane (C3H8) (real gas adjustment **F2** required)
G10	Methane (CH4)
G11	Biogas (methane 50% : CO2 50%)
G12	Hydrogen (H2) (real gas adjustment **F2** required)
G90	Further gas / please indicate gas type (on request)
G91	Gas mixture / please indicate mixture ratio (on request)

Maximum pressure (more than 10 bar high-pressure protectection required!)	
H1	50 bar
H2	100 bar
H3	16 bar
H4	2 bar

Surface conditon	
I1	standard version
I2	special cleaning - oil and grease free (e.g. for oxygen applications and so on)
I3	Silicone-free version including special cleaning oil- and grease-free

Accuracy class	
J1	± 1.5% of the measured value ± 0.3% f.s. (standard)
J2	± 1% of the measured value ± 0.3% f.s. (precision)

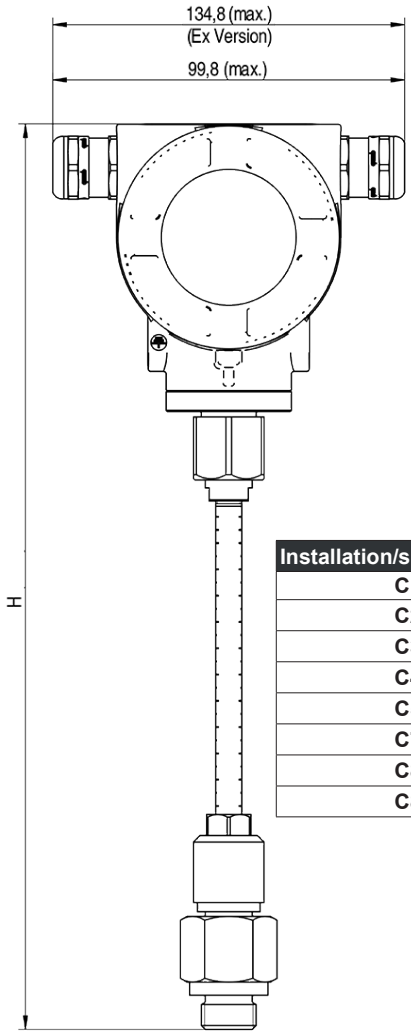
Maximum gas temperature on the sensor tip	
K1	up to 120 °C gas temperature (only for ATEX + IECEx version)
K2	up to 180 °C gas temperature (standard)

Approvals	
L1	Non-explosive area - no approval
L2	ATEX: II 2G Ex db IIC T4 Gb II 2D Ex tb IIIC T90°C Db IECEx: Ex db IIC T4 Gb Ex tb IIIC T90°C Db
L3	DVGW approval for natural gas (max. pressure 16 bar)

Reference standard	
M1	20 °C, 1000 mbar
M2	0 °C, 1013.25 mbar
M3	15 °C, 981 mbar
M4	15 °C, 1013.25 mbar

Special measuring range	
R1	Special measuring range (please specify when placing order)

Option pressure measurement (only with L1 and K1), G1 - G4 + G6	
Y1	without pressure sensor
Y2	with integrated pressure sensor -1...0 bar(g)
Y3	with integrated pressure sensor 10...2000 mbar(abs)
Y4	with integrated pressure sensor 0...1,6 bar(g)
Y5	with integrated pressure sensor 0...16 bar(g)
Y6	with integrated pressure sensor 0...50 bar(g)



Installation/shaft length	L (mm)	H (mm)
C1	220	441
C2	300	521
C3	400	621
C4	500	721
C5	600	821
C7	160	381
C8	1000	1221
C8	1500	1721

Order no. VA 550

DESCRIPTION	ORDER NO.
VA 550 Flow meter, measuring head in robust aluminium die casting housing	0695 0550 + Order code A_…R_

TECHNICAL DATA VA 550	
Measuring range VA 550:	up to 50 Nm/s, low-speed version* up to 92.7 Nm/s, standard version* up to 185 Nm/s, max. version* up to 224 Nm/s, high-speed version* * Measuring range Nm³/h for different pipe diameters and gases, see table measuring ranges flow * All measured values related to DIN 1343 standard conditions 0° and 1013 mbar ex works
Accuracy: Accuracy class (o. M. V. = of measured value) (o. F. S. = of full scale)	± 1.5 % of m.v. ± 0.3 % of f.s. on request: ± 1.0 % of m.v. ± 0.3 % of f.s.
Accuracy indications:	relative to ambient temperature 22 °C ± 2 °C, system pressure 6 bar
Repeatability:	0.25 % of m.v. in case of correct mounting (mounting aid, position, inlet section)
Measuring principle:	Thermal mass flow sensor
Response time:	t 90 < 3 s
Operating / ambient temperature range:	-20…70 °C
Media temperature range:	-20 °C …. 180 °C (ATEX + IECEx version: -20°C ... 120 °C)
Adjustment possibilities via display, external hand-held device PI 500, PC Service Software, remote diagnosis:	Nm³/h, Nm³/min, Nl/min, l/s, ft/min, cfm, kg/h, kg/min, inner diameter, reference conditions ° C/° F, mbar/hPa, zero point correction, leak flow volume suppression, scaling analogue output 4...20 mA, pulse/alarm, error codes etc.
Outputs:	**Standard**: 1 x 4…20 mA analogue output (electrically not isolated), pulse output, RS 485 (Modbus-RTU) **Optional**: 2 x 4...20 mA active, Modbus TCP, HART, Profibus DP, Profinet, M-Bus, IO-Link
Burden:	< 500 ohm
Additional average value calculation:	for all parameters freely adjustable from 1 minute up to 1 day, e. g. 1/2 hours average value, average day value
Protection class:	IP 67 IP 65 for ATEX + IECEx
Material:	Die-cast aluminum housing, sensor tube stainless steel 1.4404
Screw-in thread:	G 1/2" ISO 228, NPT 1/2", R 1/2", PT 1/2"
Operating pressure VA 550:	50 bar, in special version 100 bar (with DVGW approval max. 16 bar)
Power supply:	18…36 VDC, 5 W
Approval:	ATEX: II 2G Ex db IIC T4 Gb II 2D Ex tb IIIC T90°C Db IECEx: Ex db IIC T4 Gb Ex tb IIIC T90°C Db DVGW

Further accessories:

DESCRIPTION	ORDER NO.
Connection cable for probes 5 m with open ends	0553 0108
Connection cable for probes 10 m with open ends	0553 0109
Ethernet connection cable length 5 m, M12 plug x-coded (8 pin) to RJ 45 plug	0553 2503
Ethernet connection cable length 10 m, M12 plug x-coded (8 pin) to RJ 45 plug	0553 2504
Mains unit in wall housing for maximum 2 sensors of the series VA/FA 5xx, 100-240 V, 23 VA, 50-60 Hz / 24 VDC, 0.35 A	0554 0110
ISO calibration certificate at 5 measuring points for VA 500/550	3200 0001
Additional calibration point for volume flow (point freely selectible)	0700 7720
CS Service Software VA 550 incl. interface cable to PC (USB) and power supply - for configuration / parametrization of VA 550	0554 2007
High-pressure protection recommended for installation from 10 to 100 bar (for VA 550)	0530 2205
High-pressure protection recommended for installation from 10 to 16 bar DVGW (for VA 550)	0530 2205
PNG cable screwing - standard VA 550/570	0553 0552
PNG cable screwing - for ATEX + IECEx version VA 550/570	0553 0551

VA 550_ATEX_V.05