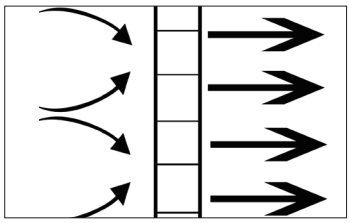
VA 521 - Compact inline flow sensor for compressed air and other types of gas

No inlet section necessary – integrated flow straightener – sensor unit removable

The newly developed VA 521 combines modern digital interfaces for connection to energy monitoring systems with a small, compact design. The VA 521 is always used when many machines (compressed air consumers) are to be integrated into an energy monitoring network.



Integrated flow straightener - no inlet section necessary

With a key stroke:

- Reset counter reading
- Select units
- Implement Parameters

The sensor can be removed from the measuring section and cleaned.

Readout values in the display can be rotated by 180°, e.g. for overhead installation

Display shows 2 values at the same time:

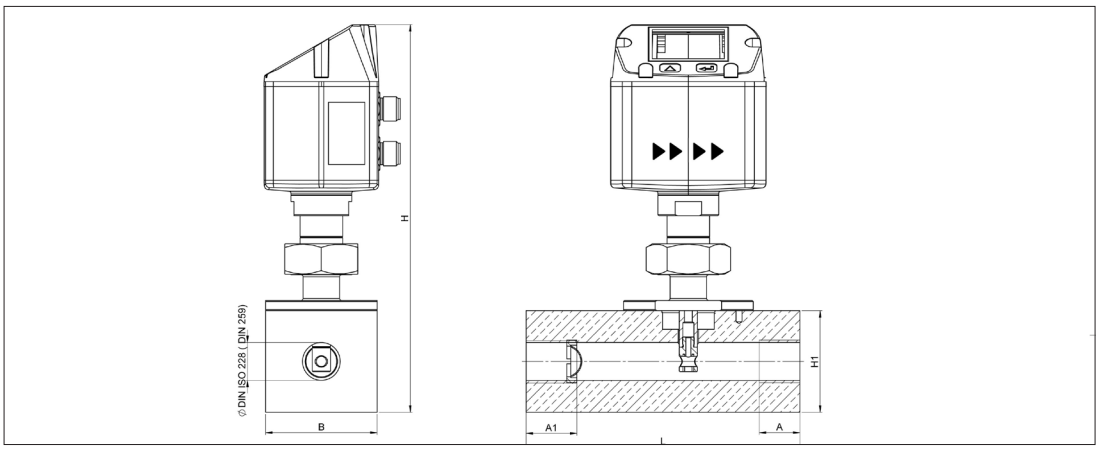
- Present flow in, CFM, l/min/m³/min
- Total consumption (counter reading) in CF, l, kg
- Temperature measurement

Screw-in thread:

Easy installation into the existing pipe via the integrated measuring section (suitable for 1/2", 3/4", 1", 1 1/4", 1 1/2" or 2" lines)

Advantages at a glance:

- Compact, small design - for use in machines, behind maintenance unit on the end consumer
- All interfaces are freely programmable via the display
- Modbus-RTU output
- 4...20 mA analog output for present flow
- Pulse output total flow (counter reading), electrically isolated. Optional: M-Bus, Ethernet interface or PoE
- **NEW:** Integrated pressure sensor (optional)



Flow measuring ranges VA 521 (max version 185 m/s) for compressed air (ISO 1217: 1000 mbar, 20 °C)
Measuring ranges for other types of gas see pages 104 to 107

Measuring section	Thread	Measuring range full scales		L	B	H1	H	A1	A
		m³/h	cfm	mm	mm	mm	mm	mm	mm
DN 15	NPT 1/2″	90 m³/h	50	135	55	50	190.65	25	20
DN 20	NPT 3/4″	170 m³/h	100	135	55	50	190.65	26	20
DN 25	NPT 1″	290 m³/h	170	135	55	50	190.65	33	25
DN 32	NPT 1 1/4″	530 m³/h	310	135	80	80	215.45	35	25
DN 40	NPT 1 1/2″	730 m³/h	430	135	80	80	215.45	36	25
DN 50	NPT 2″	1195 m³/h	700	135	80	80	215.45	44	30

Example order code VA 521:
0696 0521_A2_B1_C1_D1_E1_F1_G1_H1_I1_J1_K1_L1_M1_N1_R1

Measuring section	
A2	1/2″
A3	3/4″
A4	1″
A5	1 1/4″
A6	1 1/2″
A7	2″

Threaded version	
B1	G female thread
B2	NPT female thread

Material type	
C1	Aluminum
C2	Stainless steel 316L

Adjustment/calibration	
D1	No real gas adjustment - gas type configuration per gas constant
D2	Real gas adjustment in the gas type selected below

Gas type	
E1	Compressed air
E2	Nitrogen (N2)
E3	Argon (Ar)
E4	Carbon dioxide (CO2)
E5	Oxygen (O2)
E6	Nitrous oxide (N2O)
E7	Natural gas (NG)
E90	Further gas / please indicate gas type (on request)
E91	Gas mixture / please indicate mixture ratio (on request)

Measuring range (see table)	
F1	Low-speed version (164 ft/s)
F2	Standard version (304 ft/s)
F3	Max version (607 ft/s)
F4	High-speed version (735 ft/s)

Reference standard	
G1	20 °C, 1000 mbar
G2	0 °C, 1013,25 mbar
G3	15 °C, 981 mbar
G4	15 °C, 1013,25 mbar

Display option	
H1	with integrated display
H2	without display

Option pressure measurement (only with: E1, E2, E3, M1, N1, O1)	
I1	without pressure sensor
I2	with integrated pressure sensor 0...232 psi(g) (Output only via digital interfaces)
I3	with integrated pressure sensor 0.15...29 psi (Output only via digital interfaces)

Signal / bus connection option	
J1	1 x 4…20 mA analog output (not electrically isolated), pulse output, RS 485 (Modbus-RTU)
J2	Ethernet interface (Modbus / TCP), 1 x 4…20 mA analog output (not electrically isolated), RS 485 (Modbus-RTU)
J3	Ethernet interface PoE (Modbus / TCP), 1 x 4…20 mA analog output (not electrically isolated), RS 485 (Modbus-RTU)
J4	M-Bus, 1 x 4…20 mA analog output (not electrically isolated), RS 485 (Modbus-RTU)

Flow straightener	
K1	with integrated flow straightener, no additional inlet section necessary (with measuring section 1/2" to 2")

Accuracy class	
L1	± 1.5% of m.v. ± 0.3% of f.s.
L2	± 1% of m.v. ± 0.3% of f.s.

Maximum pressure	
M1	16 Bar (232 psi)
M2	40 bar (580 psi) (not available with NPT thread >1”)

Surface conditon	
N1	standard version
N2	Special cleaning oil and grease free (e. g. for oxygen applications and so on)
N3	Silicone-free version including special cleaning oil and grease-free

Special measuring range	
O1	no approval
O2	DVGW approval for natural gas (max. 16 bar)

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

Order no. VA 521

DESCRIPTION	ORDER NO.
Compact inline flow meter	0696 0521 + Order code A_…R_

For further accessories refer to pages 126 to 132

TECHNICAL DATA VA 521	
Parameters:	m³/h, CFM (1000 mbar, 20 °C) in case of compressed air or Nm³/h, Nl/min (1013 mbar, 0 °C) in case of gases
Units adjustable via keys at display:	m³/h, m³/min, CFM, l/s, ft/min, cfm, m/s, kg/h, kg/min, g/s, lb/min, lb/h
Sensor:	Thermal mass flow sensor
Measured medium:	Air, gases
Gas types are adjustable over CS service software or CS data logger:	Air, nitrogen, argon, CO2, oxygen
Measuring range:	See table
Accuracy: (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% of m.v. ± 0.3% of f.s.
Operating temperature:	-22...176 °F; -25...349 °F with pressure sensor
Operating pressure:	Up to 232 psi, optionally 580 psi
Digital output:	RS 485 interface, (Modbus-RTU), optional M-Bus, Ethernet interface or PoE
Analog output:	4…20 mA for CFM
Pulse output:	1 pulse per m³ or per litre electrically isolated. Pulse weight can be set on the display. Alternatively, the pulse output can be used as an alarm relay.
Supply:	18…36 VDC, 5 W
Burden:	< 500 Ω
Housing:	Polycarbonate (IP 65)
Measuring section:	Aluminum, 316L
Connection thread of measuring sections:	G 1/2” to G 2” or NPT 1/2” to NPT 2”
Mounting position:	any