

High-accuracy flow and air consumption measurement for compressed air and gas



The new VA 300 range for flow and air consumption measurement

Compressed air is one of the most expensive forms of energy. A large share of the energy costs is due to leaks in the compressed air system.

The new VA 300 range enables a reliable and accurate measurement of flow and air consumption in compressed air and gas.

The measurement experts at

CS Messtechnik GmbH offer practical and economical solutions for almost every application. Air consumption can be accurately determined and recorded in a range of different gases (e.g. nitrogen, oxygen) thanks to special gas calibration.

We have the optimum solutions for both mobile and stationary measurements with meters.

Special features:

- Measurement independent of pressure, temperature and relative humidity
- Pressure range up to 50 bar
- Plug-in measuring station
- Current consumption display for m³/h and meter for m³
- 4 to 20 mA analogue output and pulse output for transmission
- Precise, easy installation and removal of probe under pressure
- PC-connected network of up to 32 devices via RS 485 with comfortable analysis software
- Service software for on-site parameterisation and calibration
- Certified precision tested with PTB (German national metrology institute) volume flow nozzles



Technical data

The principle of measurement is based on the evacuation of heat from an electrically heated sensor into the surrounding air flow.

The newly-developed electronic system in the VA 300 enables highly-accurate measurement of volume flow at both ends of the measuring range.

Measuring devices operate independently of pressure and temperature. The measuring accuracy takes into account humidity variations (no condensation).

Technical data

VA 300 flow sensor:

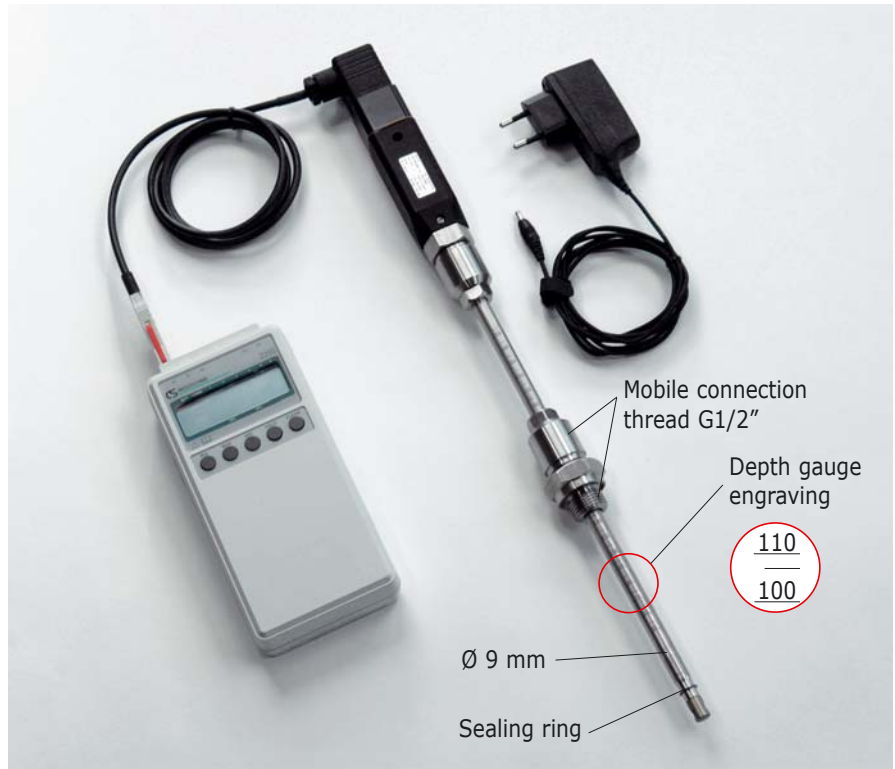
Measured variables:	m/s, m ³ /h acc. to DIN 1945, ISO1217 20°C, 1000 mbar
Adjustable in software:	- m ³ /h, m ³ /min, l/min, l/s, ft/min, cfm, m/s - various freely-selectable standard conditions - freely-selectable diameter for volume flow calculation
Principle of meas.:	calorimetric measurement
Sensor:	2 x PT100
Meas. medium:	Air, gas
Meas range:	See table below*
Flow:	in m/s on request
Accuracy:	+/- 4 % m.v. +/- 3 % m.v. via 5 point ISO precision calibration
Application temp.:	-30 to 140°C probe tube -30 to 80°C housing
Operating pressure:	up to 50 bar, higher pressures on request
Analogue output:	4 to 20 mA for m ³ /h on request: scale for cfm, m ³ /min, l/min, l/s, ft/min, m/s
Pulse output:	1 pulse per Nm ³ , High signal 24 VDC, for 2 ms
Digital output:	SDI Standard, RS 485 optional
Power supply:	24 V DC smoothed +/-15%
Working resis.:	< 500 Ohm
Housing:	Polycarbonate
Probe tube:	Stainless steel, 1.4301 Total length 220 mm Ø 9 mm
Screw thread.:	G1/2"

Volume flow measuring

Inch	mm	Meas. range	Standard version VA 300-80	Max. version VA 300-120
1/4"	6.0	0.8	85 l/min	120 l/min
1/2"	16.1	1.6	750 l/min	1100 l/min
3/4"	21.7	0.2	85 m ³ /h	120 m ³ /h
1"	27.3	0.2	140 m ³ /h	200 m ³ /h
1 1/4"	36.0	0.3	260 m ³ /h	350 m ³ /h
1 1/2"	41.8	0.5	360 m ³ /h	500 m ³ /h
2"	53.1	1	600 m ³ /h	800 m ³ /h
2 1/2"	71.1	1.8	1100 m ³ /h	1500 m ³ /h
3"	84.9	2.5	1600 m ³ /h	2200 m ³ /h
4"	100.3	4	2700 m ³ /h	3600 m ³ /h
5"	133.7	6	4000 m ³ /h	5300 m ³ /h
6"	162.3	8	5800 m ³ /h	8000 m ³ /h
8"	on request			

at 20°C, 1000 mbar.

Mobile flow and air consumption measurement VA 300



Data logger for long-term recordings



Flow processor incl. meter



Precise installation/removal under pressure, alignment aid

Description

Description	Part no.
Portable case set for air consumption measurement consisting of:	
VA 300-080 flow sensor standard version incl. certificate	3300 5600
CS 2390-5 hand-held instrument incl. mains unit and cable for VA 300 flow sensor	3300 0080
Transport case for probe and measuring instrument	0601 2390-5
Further accessories not included in set:	
VA 300-120 flow sensor, max. version incl. certificate	3200 0120
Flow processor for current flow in m ³ /h and air consumption in m ³ with analogue output	3200 0100
Portable pressure dew point probe (-80 to 50°C _{td}) incl. meas. chamber, 2 m cable	0699 3003
Pressure probe 40 bar, G 1/4" connection	3000 0040
Surface temperature probe, L=100 mm, type FTA 2222, up to max. 400°C	0604 2222
Penetration temperature probe, L = 100 mm, type FTA 2232, up to max. 400°C	0604 2232
Data logger with display, software, mains unit and RS 232 cable, connection cable for VA 300	3200 0020

Stationary flow and air consumption measurement VA 300

For stationary measurement and monitoring of operating air pressure and other gases. Stationary air consumption meters are available with and without an

inlet and outlet. For particularly accurate measurements we always recommend the version with a measuring section and 5 point ISO precision calibration.



◀ Plug-in VA 300 all-in-one flow station with measuring section

Flow station without measuring section on request

Special features:

- All-in-one solution requiring little installation
- 2 displays showing current air consumption and total air consumption
- Precise, easy installation and removal of sensor under pressure
- Utmost precision due to 5 point precision calibration
- 4 to 20 mA analogue output, pulse output

Technical data:

General probe data	
See flow probe on page 2	
Accuracy with	+/- 3% m.v.
meas. section:	+/- 2% m.v. via 5 point ISO precision calibration
Display:	- Flow in m ³ /h (instantaneous value), 9 figures - Meter in m ³ , (total air consumption), 9 figures
Selectable units:	m ³ /h, m ³ /min, l/min, l/s, ft ³ /min, cfm
Meas. section:	Stainless steel 1.4301
Length of inlet:	15 x inner diameter
Outlet:	5 x inner diameter
From inner diam. 80:	stainless steel flange
1/2" ball valve:	1.4301 stainless steel
Analogue output:	4 to 20 mA for the respective meas. range
Pulse output:	1 pulse per m ³ , High signal 24 VDC for 2 ms
Digital output:	RS 485 optional for network
Power supply:	90 to 260 V AC 50...60 Hz

Plug-in VA 300 all-in-one flow station (see picture)

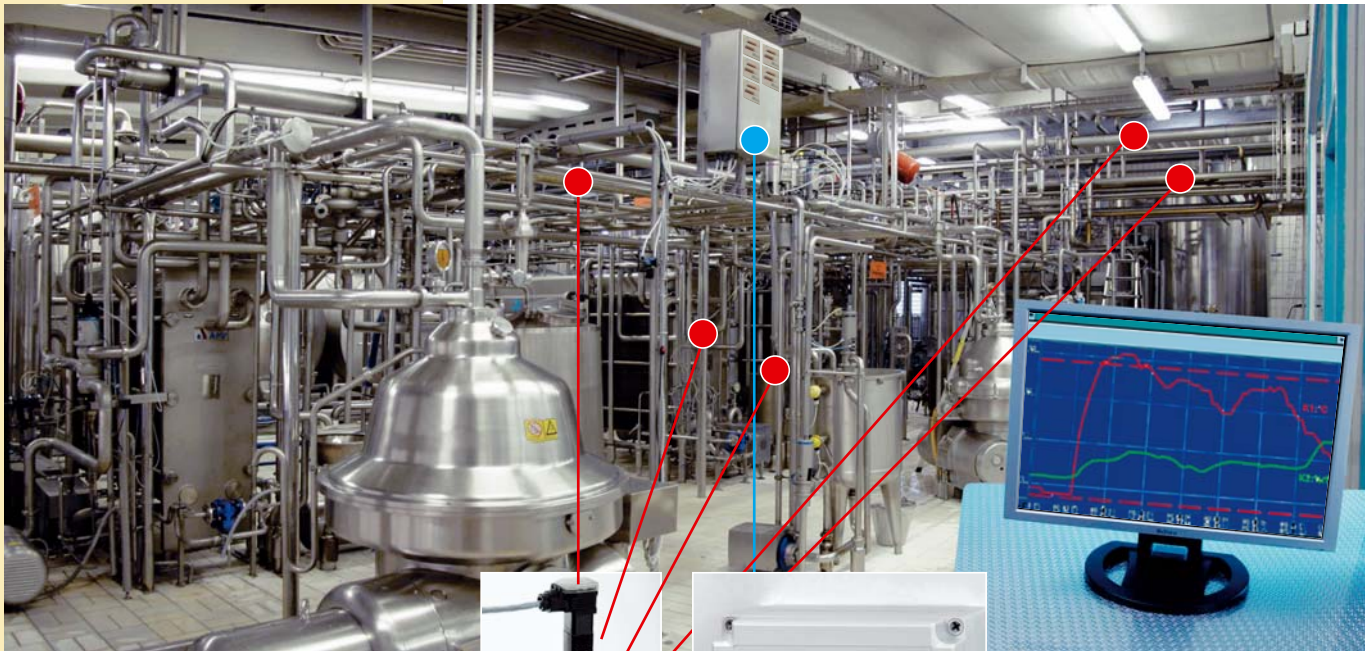
Consisting of:
Measuring section with flange for inner diameter 80 onwards, ball valve, flow sensor, flow processor with display in m³/h and m³, mains unit, analogue output, pulse output.



Measuring section 1/4 and 1/2"

Inner diameter		Meas. range		Standard version	Max. version	Part no.	
Inch	mm	from	to	VA 300-80	VA 300-120		
				Part no.	up to	Part no.	
1/4"	6.0	0.8	85 l/min	4004 0006	120 l/min	4005 0006	
1/2"	16.1	1.6	750 l/min	4004 0015	1100 l/min	4005 0015	
3/4"	21.7	0.2	85 m ³ /h	4004 0020	120 m ³ /h	4005 0020	
1"	27.3	0.2	140 m ³ /h	4004 0025	200 m ³ /h	4005 0025	
1 1/4"	36.0	0.3	260 m ³ /h	4004 0032	350 m ³ /h	4005 0032	
1 1/2"	41.8	0.5	360 m ³ /h	4004 0040	500 m ³ /h	4005 0040	
2"	53.1	1	600 m ³ /h	4004 0050	800 m ³ /h	4005 0050	
2 1/2"	71.1	1.8	1100 m ³ /h	4004 0065	1500 m ³ /h	4005 0065	
3"	84.9	2.5	1600 m ³ /h	4004 0080	2200 m ³ /h	4005 0080	
4"	110.3	4	2700 m ³ /h	4004 0100	3600 m ³ /h	4005 0100	
5"	133.7	6	4000 m ³ /h	4004 0125	5300 m ³ /h	4005 0125	
6"	162.3	8	5800 m ³ /h	4004 0150	8000 m ³ /h	4005 0150	
8"	on request			4004 0200		4005 0200	
at 20°C, 1000 mbar.							
5 point precision calibration with ISO certificate						3200 0001	
Special version for oxygen measurement						3200 0010	
Data logger with display , software, mains unit and RS 232 cable, connection cable for flow processor						3200 0021	
PC analysis software for analysis and proc. of meas. data, with RS 232 cable						3200 0030	

Data storage and PC analysis of up to 32 measuring instruments



Easy monitoring of up to 32 instruments on one PC via a RS 485 interface.

Up to 32 flow stations can be connected to one PC with user-friendly analysis software for monitoring and data analysis purposes.

Measuring results can be monitored online (current flow in m³/h, total air consumption in m³) and stored. The results from each flow station can be displayed in graphic or table form.



- ① Flow probe
- Flow processor incl. meter and RS 485 interface
- Points of measurement

Order information

Stationary VA 300 flow and air consumption measurement with RS 485 interface
VA 300 all-in-one stainless steel flow station consisting of:

Measuring section with ball valve in stainless steel 1.4301 with external thread up to inner diam. 65 (2½") and weld neck flange acc. to DIN 2633 for inner diam. 80 (3") onwards

Flow processor with 2-line display in wall unit with current volume flow in m³/h, total air consumption meter in m³, incl. mains unit for VA 300, other units of measurement on request with 4 to 20 mA output and pulse output

The measuring unit comes in a plug-in version for the following tube diameters:

Inch	mm	Meas. range	Standard version	Part no.	Max. version	Part no.
1/4"	6.0	0.8	85 l/min	4006 0006	120 l/min	4007 0006
1/2"	16.1	1.6	750 l/min	4006 0015	1100 l/min	4007 0015
3/4"	21.7	0.2	85 m ³ /h	4006 0020	120 m ³ /h	4007 0020
1"	27.3	0.2	140 m ³ /h	4006 0025	200 m ³ /h	4007 0025
1¼"	36.0	0.3	260 m ³ /h	4006 0032	350 m ³ /h	4007 0032
1½"	41.8	0.5	360 m ³ /h	4006 0040	500 m ³ /h	4007 0040
2"	53.1	1	600 m ³ /h	4006 0050	800 m ³ /h	4007 0050
2½"	71.1	1.8	1100 m ³ /h	4006 0065	1500 m ³ /h	4007 0065
3"	84.9	2.5	1600 m ³ /h	4006 0080	2200 m ³ /h	4007 0080
4"	110.3	4	2700 m ³ /h	4006 0100	3600 m ³ /h	4007 0100
5"	133.7	6	4000 m ³ /h	4006 0125	5300 m ³ /h	4007 0125
6"	162.3	8	5800 m ³ /h	4006 0150	8000 m ³ /h	4007 0150
8"	on request			4006 0200		4007 0200

at 20°C, 1000 mbar.

5 point precision calibration with ISO certificate 3200 0001

Special version for oxygen measurement 3200 0010

PC analysis software for analysis and proc. of meas. data, with RS 232 cable 3200 0030

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