

DS15

Plastic Variable Area Flowmeter

- for industrial applications
- for liquid and gaseous media
- simple and robust construction with high reliability
- measuring tubes in PVC, PA, PS or PVDF
- low pressure loss
- simple mounting
- scale with high resolution
- alarm contacts or analog output optionally



Description

The flowmeters model DS15 works according to the proven variable area principle. The float is moved upward by the flowing medium and its upper edge indicates the flow rate by means of a scale affixed onto the measuring tube.

By using a float with an integrated magnet optional alarm contacts or an analog output transducer may be operated. All flowmeters have a male thread on the measuring tube and are additionally equipped with PVC glue-in connectors. Also possible are connectors with female thread (bsp) made of PVC, PP, PVDF, brass or st. steel.

Applications

The variety of different materials used and the simple to exchange measuring scales make these meters universally suitable for most liquid and gaseous media.

Main applications are in the water treatment industry, in waste water applications, chemical and food industry and many more.

Materials

Measuring tube	PVC-U transparent, Polyamide, Polysulfone or PVDF (with alarm contacts or analog output transducer only)
Float	PVDF, optionally st. steel AISI 304 and PVDF with integrated magnet
O-rings	EPDM, optionally Viton
Pipe connections	PVC, optionally PP, PVDF, brass (caps nuts galvanized steel), st. steel

Technical Specifications

max. pressure	10 bar at 20 °C
max. temperature:	
without connectors:	
PVC:	60 °C
Polyamid:	75 °C
Polysulfon:	100 °C
PVDF:	110 °C
with connectors made of:	
PVC:	60 °C
PP:	according to the temperature limits of the measuring tube, however max. 80 °C
PVDF, brass, st. steel:	according to the temperature limits of the measuring tube
mounting position:	vertically, flow from bottom to top
mounting:	with straight pipe, 5-7 x pipe dia. in front and behind meter
measuring accuracy:	class 4 acc. to VDI/VDE 3513, Bl. 2 (+/- 4% f.s.)

Accessories

alarm contacts	bistable, N/C or N/O contact function
analog output	transducer with output 4-20 mA, RS-232 interface

Attention: alarm contacts or analog output transducer only operate if a float with integrated magnet is used.

Order Code

Order No.: DS15. 2. 1. 202. 102. 1. 0

Plastic Variable Area Flowmeter

material of measuring tube:

- 1 = PVC-U (scales for water only)
- 2 = Polyamid
- 3 = Polysulfon
- 4 = PVDF

Scale:

- 1 = water
- 2 = air (0 bar g)
- 3 = air (1 bar g)
- 4 = air (2 bar g)
- 5 = air (3 bar g)
- 9 = special scale

Measuring ranges:

101... 612 = acc. to table 1

Process connections:

acc. to table 2

Floats:

- 1 = PVDF (Standard)
- 2 = st. steel AISI 304
- 3 = PVDF with integrated magnet (for meters with alarm contacts or analog output only)

Options:

- 00 = without
- 11 = 1 alarm contact (N/C)
- 21 = 2 alarm contacts (N/C)
- 12 = 1 alarm contact (N/O)
- 22 = 2 alarm contacts (N/O)
- 50 = analog output transducer, 4...20 mA

Scales

Water scales (in LPH) and air scales (in Nm³/h) referenced to 0, 1, 2, or 3 bar g and 20 °C are standard.

For other media, i.e. gases with higher pressures, HCL (30%), NaOH (30%) as well as other units of measurement (m³/h, l/sec, USGPM or IGPM) special scales may be supplied.

These special scales may be easily affixed later on the meter, thus making the unit suitable for changed operating conditions or other media.

Also special scales for other media and operating conditions may be calculated if the following data are known:

- medium
- operating pressure
- operating temperature
- operating density
- operating viscosity



Table 1 – Measuring Ranges

Measuring tube	Range no.	Measuring range				
		Water (l/h)	Air at 20 °C (Nm ³ /h) not for PVC measuring tubes			
			0 bar rel.	1 bar rel.	2 bar rel.	3 bar rel.
1	101	3-24	0.2-1	0.2-1.2	0.25-1.55	0.3-1.75
	102	5-60	0.2-2.5	0.4-3.2	0.2-3.8	0.3-4.4
	103	10-100	0.6-3.6	0.6-5.0	0.75-6.0	0.8-7.0
	104	25-250	0.5-9.0	1.0-13.0	1.0-16.0	1.5-19.5
2	201	5-50	0.4-2.8	0.2-3.2	0.4-3.6	0.3-4.0
	202	15-150	0.8-6.2	1.0-9.0	1.0-11.0	1.5-12.0
	203	25-250	0.9-9.5	1.0-13.0	1.0-16.0	2.0-20.0
	204	40-400	2.0-15.0	2.0-20.0	3.0-26.0	3.0-30.0
3	301	15-150	0.5-5.5	1.0-9.0	1.0-11.0	1.0-10.5
	302	40-400	2.0-14.0	2.0-20.0	3.0-26.0	3.0-30.0
	303	60-600	2.5-22.0	4.0-31.0	4.0-38.0	5.0-45.0
	304	100-1000	4.0-34.0	5.0-45.0	6.0-58.0	7.5-67.5
4	401	25-250	1.0-8.0	1.5-13.0	1.5-16.0	1.5-19.5
	402	40-400	2.0-14.0	2.0-20.0	3.0-26.0	3.0-30.0
	403	100-1000	4.0-34.0	5.0-45.0	5.0-55.0	6.0-66.0
	404	150-1500	5.0-50.0	6.0-70.0	7.5-86.0	7.5-98.0
5	501	15-150	0.7-5.0	1-7.5	1-9	1.6-10
	502	60-600	2.5-20	3.5-28	4-35	5-40
	503	100-1000	4-34	5-50	8-60	8-70
	504	200-2000	8-70	12-90	10-120	15-130
	505	300-3000	10-90	15-140	20-160	20-190
	506	600-6000	22-190	30-260	40-380	40-400
	507	1000-10000	35-300	50-420	60-510	70-600
	508	2500-25000	80-720	115-1050	140-1240	166-1400
	509	10000-50000	400-1500	500-2100	600-2500	700-2900
6	601	15-150	0.7-5.5	1-7.5	1-9	1.6-10
	602	30-300	1-10	1.5-14	2-18	2.8-20
	603	60-600	2.5-20	3.5-28	4-35	5-40
	604	100-1000	4-34	5-50	8-60	8-70
	605	150-1500	5-50	7.5-67	9.5-83	11-96
	606	250-2500	8.5-76	10-115	14-131	17-152
	607	400-4000	14-125	10-170	24-210	28-245
	608	600-6000	22-190	30-260	40-380	40-400

Alarm Contacts

- version:** Reed contact, bistable
- contact function:** N/O or N/C with rising flow
- mounting:** adjustable on measuring tube
- contact rating:** max. 220 VAC, max. 0,5 A, max. 10 A / 10 VA
- operating temperature:** 0...+55 °C
- hysteresis:** 3 mm of float height
- electrical connection:** 2-wire, independent of polarity

Analog Output Transducer

The optional analog output transducer is mounted onto the measuring tube of the DS15 flowmeter and registers the height of the float by means of an analog Hall sensor. The integrated electronic converts this signal to a 4-20 mA output.

To utilize the analog output transducer, the standard float must be exchanged against a float with integrated magnet.

The transducer is equipped with an EPROM which is programmed especially for the application. Therefore it is not possible to change the transducers without consulting the manufacturer.

Features:

- 2-wire system
- analog output 4...20mA
- supply voltage 8...28VDC
- programmed individually to DS15
- 11 point calibration
- non volatile storage of parameters
- 0-push button for compensation of environmental magnetic influences.
- factory set low-cutoff value (0-99%)
- factory set low-pass-filter (0,1...2,5s)
- accuracy better than 0,5 % f.s.



Table 2 – Process Connections

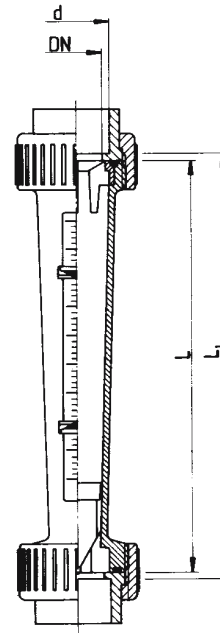
Measuring tubes no 1 - 4

Measuring tube no. (L in mm)	Range no.	Male thread (R)	Connectors						Con- nec- tion no.
			Stan- dard glue-in con- nec- tion (mm)	Female thread (G)					
				P V C	P P		Brass	St. steel	
0	1	2	3		5	6			
1 (165)	101	3/4"	d : 16	3/8					01
	102		DN: 10						
	103		L1:171						
	104								
2 (170)	201	1"	d : 20	1/2					02
	202		DN: 15						
	203		L1:176						
	204								
3 (185)	301	1 1/4"	d : 25	3/4					03
	302		DN: 20						
	303		L1:191						
	304								
4 (200)	401	1 1/2"	d : 32	1					04
	402		DN: 25						
	403		L1:206						
	404								
5 (335)	501	1 1/2"	d : 32	1					05
	502		DN: 25						
	503		L1:341						
	504		2 1/4"						
	505	DN: 40							
	506	2 3/4"	d : 63	2					07
	507		DN: 50						
	508	3 1/2"	d : 75	2 1/2					08
509	DN: 65								
6 (350)	601	1 1/2"	d : 32	1					09
	602		DN: 25						
	603		L1:356						
	604								
	605	2"	d : 40	1 1/4					10
	606		DN: 32						
	607	2 3/4"	d : 63	2					11
	608		DN: 50						
609	L1:356								
610	3 1/2"	d : 75	2 1/2					12	
611		DN: 65							
612		L1:356							

Attention: PVDF has measuring tube as different dimensions L and L1.

The connection code consists of the no. for the material and the connector no.

Example: PVC female thread G1 for measuring tube no. 5:
material no: 2, connector no. 05, connection code 205



Measuring tubes no. 5 - 6

