



SW-01

Miniature Variable Area Flowmeter and Switch



Features

- / Small dimensions for assembly
- / Brass and stainless steel versions
- / Scales for water and air
- / Mounting in any position
- / Highly accurate switching
- / Very low switching hysteresis

Description:

The SW-01 series of flowmeters and switches operates according to a modified variable area principle. Using a spring, the float is introduced into a cylindrical sight glass. The flowing medium moves the float in the direction of flow and the upper edge of the float indicates the flowing volume on the scale mounted on the sight glass. A reed contact is situated outside the device. This reed contact is infused in a stepless adjustable housing and thus protected from external influences. When the float reaches along with its integrated magnet the position of the reed contact, the contact blades get closed. If the volume of flow is higher the float continues to move (maximum up to the stopper that prevents overriding of the operating range). This ensures a bistable switching action at any time.

Application:

The SW-01 series of variable area flowmeters and switches is intended for measuring and monitoring low-viscosity fluid or gaseous media, for example, in cooling systems for welding machines, laser and pipe installations, pump monitoring, compressors and so on. In actual application, a switching hysteresis of only 0.5-1.5 mm float stroke has been achieved by careful selection of the reed contacts being used.



Ordering Codes:

Order number	SW-01.	1.	1.	1.	06.	1.	1.	1.	0
SW-01 Miniature Variable Area Flowmeter and Switch									
Process connection /									
1 = female thread G 1/4"									
2 = female thread G 1/2"									
3 = female thread G 3/4"									
4 = female thread G 1"									
Material /									
1 = brass, spring stainless steel 1.4571									
2 = stainless steel 1.4571									
Scale /									
1 = for water (20°C)									
2 = for air (at 1.013 bar abs., 20°C)									
Operating ranges / deactuation flow rates									
SW-01.1 only:									
	Water	Air							
00 =		0.2...13 NI/min							
01 =	5... 60 ml/min	0.5...2 NI/min							
02 =	25...130 ml/min								
02a =	60...300 ml/min								
03 =	0.1...0.6 l/min	0.8...3 NI/min							
04 =	0.2...1.2 l/min	1.5...5 NI/min							
05 =	0.4...2.0 l/min	2...8 NI/min							
06 =	0.5...3.0 l/min	3...12 NI/min							
07 =	1.0...5.0 l/min	3.5...14 NI/min							
08 =		5.5...20 NI/min							
09 =		7...24 NI/min							
10 =		10...35 NI/min							
10a =		10...42 NI/min							
SW-01.2 only:									
11c =	0.2...0.5 l/min	3...12 NI/min							
12c =	0.3...1.0 l/min	7...30 NI/min							
13c =	0.7...2.0 l/min	12...40 NI/min							
13d =		20...80 NI/min							
14c =	1.6...4.0 l/min	28...125 NI/min							
14a =		50...200 NI/min							
15c =	3.0...8.0 l/min	100...420 NI/min							
16c =	4.5...12.0 l/min	200...500 NI/min							
16d =	6.0...15.0 l/min								
17c =	8.0...20.0 l/min								
17d =	9.5...24.0 l/min								
17e =	12.0...28.0 l/min								
SW-01.3 or SW-01.4:									
18a =	8...30 l/min								
19 =	15...45 l/min	22.5...80 NI/min							
20 =	30...90 l/min	50...130 NI/min							
21 =		130...420 NI/min							
22 =		200...625 NI/min							
SW-01.4 only:									
21 =	60...150 l/min								
Number of contacts /									
0 = none									
1 = 1 contact									
2 = 2 contacts									
Contact functions /									
0 = no contacts									
1 = NO-contact									
2 = change-over contact									
3 = Ex m-change-over contact with 2 m infused cable SW-01.3 and SW-01.4 only									
4 = Ex m-NO-contact 2 m infused cable, SW-01.3 and SW-01.4 only									
5 = change-over contact for PLC (not for SW-01.1)									
6 = Ex ib-NO contact, SW-01.1 and SW-01.2 only									
7 = Ex ib-change-over, SW-01.1 and SW-01.2 only									
Electrical connection /									
0 = none, if no contacts									
1 = plug conn. DIN43650, counter plug incl.									
2 = plug M12x1, counter plug incl. (-20...+85°C)									
3 = 1 m infused cable (2 m for EX), (not for Ex ib-change-over contact)									
Special issues /									
0 = none									
1 = please specify in detailed text									

Technical Specifications:

Operating ranges /

H₂O: 5...60 ml/min to 60...150 l/min

air: 0.2...1.3 NI/min to 200...625 NI/min
(with refer. to 1.013 bar abs., 20°C)

Materials /

brass- and stainless steel versions

Protection class /

IP65 with plug DIN43650,
IP67 with cable connection or
plug M12x1, (ranges 18a-22, else IP65)

max. Pressure /

SW-01.1 / SW-01.2: 16 bar
SW-01.3 / SW-01.4: 10 bar

Pressure drop /

SW-01.1: 0.02...0.2 bar
SW-01.2: 0.02...0.3 bar
SW-01.3 / SW-01.4: 0.02...0.4 bar

max. Temp. /

100°C (160° optional)

El. Connection /

plug as per DIN 43650 C

Accuracy /

± 10% of full scale value

Setpoint adjustment /

The contact opens respectively changes, when the upcoming flow falls below the adjusted setpoint.



Wetted parts:

Element	brass version	st. steel version
Window	Duran® 50	Duran® 50
Spring	st. steel 1.4571	st. steel 1.4571
Seals	NBR (optional FKM, EPDM)	NBR (optional FKM, EPDM)
Magnet	hard ferrite	hard ferrite
Other parts	brass nickel-plated	st. steel 1.4571

Dry parts:

Element	brass version	st. steel version
shell	aluminium, anodized	aluminium, anodized

Contacts (max. V):

Element	SW-01.1	SW-01.2	SW-01.3 / SW-01.4
NO-contact	150V, 1A, 20VA	230V, 3A, 60VA	250V, 3A, 100VA
Change-over	200V, 1A, 20VA ⁽³⁾	250V, 1.5A, 50VA ^{(2),(3)}	250V, 1.5A, 50VA ⁽²⁾
Ex m-NO ⁽¹⁾			250V, 2A, 60VA
Ex m-CO ⁽¹⁾			250V, 1A, 30VA
Change-over SPS		250V, 1A, 60VA	250V, 1A, 60VA
NO M12x1	125 V, 1A, 20VA	125 V, 3 A, 60VA	250V, 3A, 100VA
Change-over M12x1	125 V, 1A, 20VA	125 V, 1.5 A, 50VA ⁽²⁾	250V, 1.5A, 50VA ⁽²⁾
Ex ib-NO	see Table		
Ex ib-CO	see Table		

⁽¹⁾ ATEX II 2 G Ex mb IIC T6 Gb & ATEX II 2 D Ex tb IIIC T80°C Db - (max. Amb.temp. 75°C)
ATEX II 2 G Ex mb IIC T5 Gb & ATEX II 2 D Ex tb IIIC T100°C Db - (max. Amb.temp. 90°C)

⁽²⁾ Minimum load 3VA

⁽³⁾ Only with plug connection

EX ib NO contact and change-over contact

Gas			Dust		
Ui	Ii	Pi	Ui	Ii	Pi
< 12.1 V	1.0 A	3.0 W	< 12.1 V	0.25 A	0.75 W
< 20 V	0.309 A	1.55 W	< 20 V	0.25 A	0.75 W
< 25 V	0.158 A	0.99 W	< 25 V	0.25 A	0.75 W
< 30 V	0.101 A	0.76 W	< 30 V	0.25 A	0.75 W

The switching units have to be connected only to intrinsically safe circuits.

Li = 0; Ci = 0

protection class with plug DIN 43650 C or plug M12: IP65

protection class with 1 m infused cable: IP67

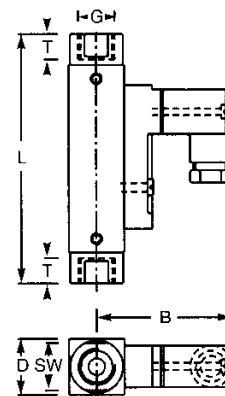
marking: II 2G Ex ib IIC and II 2D Ex ib IIIC

operating temperature -5°C < TService < +45°C

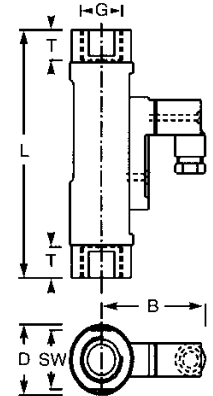
Dimensions in mm:

Type	SW	D	B	G	T	L	weight
SW-01.1	17	20	49	1/4"	10	90	140 g
SW-01.2	27	32	53	1/2"	14	114	300 g
SW-01.3	41	50	77	3/4"	18	139	850 g
SW-01.4	41	50	77	1"	18	158	900 g

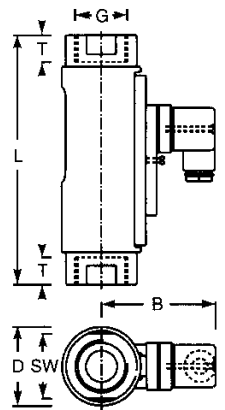
SW-01.1



SW-01.2



SW-01.3/
SW-01.4



Electrical connection

