

# DS02

## Miniature Variable Area Flow Switch

- small mounting dimensions
- materials brass or stainless steel
- scales for water and air
- universal mounting position
- high switching accuracy
- very small switch hysteresis



### Description:

The flow switch model DS02 works according to a modified variable area principle. The float is guided in a cylindrical measuring tube by means of a spring. The flowing medium moves the float in the flow direction. A Reed contact is mounted outside the meter in a sealed housing. When the float reaches the position of the Reed contact the switch will close. With higher flows the float moves further upward until it reaches a built-in float stop, still keeping the switch closed. This ensures a bistable switch function at any time. The Reed contact is adjustable over the full switching range of the meter.

### Application:

The variable area flow switch model DS02 is used for monitoring the flow of low viscosity liquids and gases, i.e. in cooling circuits of welding machines and laser systems, for pump monitoring, compressors and many other applications.

### Switching hysteresis:

By careful selection of the Reed contacts the switching hysteresis could be reduced to only 0.02" - 0.06" / 0.5 - 1.5 mm float movement.

## Measuring Ranges:

Water: 0.08 - 0.95 GPH ... 16 - 40 GPM  
5 - 60 ml/min ... 60-150 l/min  
Air: 0.4 - 2.75 SCFH ... 7.0 - 22.0 SCFM  
0.6 - 2.2 NI/min ... 200 - 650 NI/min  
(at 14.7 psia / 1.013 bar abs. and 68 °F / 20 °C)

## Materials:

brass or stainless steel

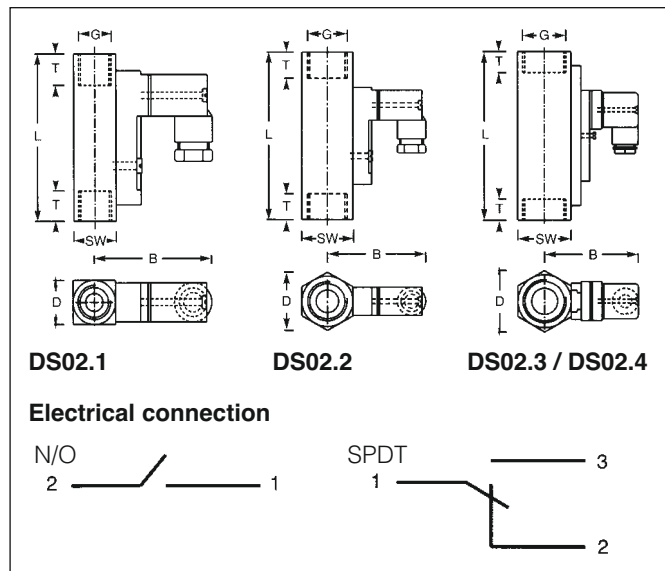
## Contacts:

Contact function	DS02.1	DS02.2	DS02.3 / DS02.4
N/O	200 V, 1A, 20 VA	230 V, 3A, 60 VA	250 V, 3A, 100 VA
SPDT	200 V, 1A, 20 VA	250 V, 1.5A, 50 VA	250 V, 1.5A, 50 VA
N/O*			250 V, 2A, 60 VA
Ex-SPDT*			250 V, 1A, 30 VA

\* according to ATEX 100a Ex II 2 G, EEx m II T6

## Dimensions:

Model	Mounting dimensions in inch / mm						Weight (lbs / g)
	SW	D	B	NPT / G	T	L	
DS02.1	0.67 / 17	0.67 / 17	1.85 / 47	1/4	0.39 / 10	2.56 / 65	0.31 / 140
DS02.2	1.06 / 27	1.22 / 31	2.05 / 52	1/2	0.55 / 14	3.53 / 90	0.77 / 350
DS02.3	1.61 / 41	1.85 / 47	2.99 / 76	3/4	0.83 / 21	5.98 / 152	2.43/1100
DS02.4	1.61 / 41	1.85 / 47	2.99 / 76	1	0.67 / 17	5.12 / 130	2.65/1200



## Technical Specifications:

**max. pressure:** DS02.1/2 4350 psi / 300 bar (brass),  
5000 psi / 350 bar (stainless steel)  
DS02.3/4 3600 psi / 250 bar (brass),  
4350 psi / 300 bar (stainless steel)

**pressure drop:** DS02.1: 0.29-2.9 psi / 0.02-0.2 bar  
DS02.2: 0.29-4.35 psi / 0.02-0.3 bar  
DS02.3/4: 0.29-5.8 psi / 0.02-0.8 bar

**max. temperature:** 212 °F / 100 °C (optionally 320 °F / 160 °C)  
for liquids, 194 °F / 90 °C for gases

**materials:**  
brass version: housing: nickel plated brass  
st. steel version: stainless steel: 316 Ti / 1.4571

**electr. connection:** plug acc. to DIN 43650  
(optionally: 1m cable connection  
for DS02.1, N/O only)

**accuracy:** ± 10% f.s.

**analog output:** see model DSxx-A in section "accessory"

## Ordering Code:

Order number: **DS02. 1. 1. 1. W13 1. 1. 0**

### Miniature variable area flow switch

#### Connection:

1 = G 1/4 female  
2N = 1/2" NPTF  
2 = G 1/2 female  
3N = 3/4" NPTF  
3 = G 3/4 female  
4 = G 1 female

#### Material:

1 = brass, spring of st. steel 304 / 1.4310  
2 = all stainless steel 316 Ti / 1.4571

#### Scale:

1 = for water  
2 = for air (14.7 psia / 1.013 bar abs. and 68 °F / 20 °C)

#### Measuring ranges:

##### DS02.1 only:

**Water:** WU101 = 0.08-0.95 GPH W101 = 5-60 ml/min  
WU102 = 0.65-2.05 GPH W102 = 40-130 ml/min  
WU106 = 1.6-9.5 GPH W106 = 0.1-0.6 l/min  
WU11 = 3-19 GPH W11 = 0.2-1.2 l/min  
WU12 = 6.5-41.5 GPH W12 = 0.4-2 l/min  
WU13 = 8.0-48.0 GPH W13 = 0.5-3 l/min  
WU15 = 16.0-80.0 GPH W15 = 1.0-5 l/min  
**Air:** LU1002 = 1.30-4.70 SCFH L1002 = 0.6-2.2 NI/min  
LU1006 = 3.50-12.70 SCFH L1006 = 1.7-6.0 NI/min  
LU1008 = 5.3-17.0 SCFH L1008 = 2.5-8.0 NI/min  
LU1012 = 6.5-25.5 SCFH L1012 = 3-12 NI/min  
LU1022 = 6.0-47.0 SCFH L1022 = 3-22 NI/min  
LU1024 = 15.0-51.0 SCFH L1024 = 7-24 NI/min  
LU1034 = 25.0-72.0 SCFH L1034 = 12-34 NI/min  
LU1056 = 34-119 SCFH L1056 = 16-56 NI/min  
LU1080 = 42-170 SCFH L1080 = 20-80 NI/min

##### DS02.2 only:

**Water:** WU202 = 0.30-3.35 GPH W202 = 0.02-0.2 l/min  
WU206 = 3.20-9.50 GPH W206 = 0.2-0.6 l/min  
WU21 = 6.5-28.5 GPH W21 = 0.4-1.8 l/min  
WU23 = 13.0-51.0 GPH W23 = 0.8-3.2 l/min  
WU27 = 32.0-111 GPH W27 = 2-7 l/min  
WU213 = 48.0-205 GPH W213 = 3-13 l/min  
WU220 = 65.0-315 GPH W220 = 4-20 l/min  
WU230 = 130-480 GPH W230 = 8-30 l/min  
**Air:** LLU2010 = 5.5-21.0 SCFH L2010 = 2.5-10 NI/min  
LU2020 = 12.0-42.0 SCFH L2020 = 5.5-20 NI/min  
LU2030 = 17.0-64.0 SCFH L2030 = 8-30 NI/min  
LU2035 = 21.0-74.0 SCFH L2035 = 10-35 NI/min  
LU2090 = 50.0-190 SCFH L2090 = 24-90 NI/min  
LU2220 = 115-465 SCFH L2220 = 55-220 NI/min  
LU2240 = 140-510 SCFH L2240 = 65-240 NI/min  
LU2300 = 170-640 SCFH L2300 = 80-300 NI/min  
LU2525 = 5.00-18.50 SCFH L2525 = 140-525 NI/min

##### DS02.3 or DS02.4:

**Water:** WU3030 = 160-480 GPH W3030 = 11-30 l/min  
WU3045 = 240-710 GPH W3045 = 15-45 l/min  
WU3060 = 320-950 GPH W3060 = 20-60 l/min  
WU3090 = 8.00-24.0 GPM W3090 = 30-90 l/min  
**Air:** LU30180 = 125-380 SCFH L30180 = 60-180 NI/min  
LU30300 = 210-635 SCFH L30300 = 100-300 NI/min  
LU30650 = 7.00-23.0 SCFH L30650 = 200-650 NI/min

##### DS02.4 only:

**Water:** WU3150 = 16.0-40.0 GPM W3150 = 60-150 l/min

#### No. of contacts:

1 = 1 contact  
2 = 2 contacts

#### Contact function:

1 = N/O  
2 = SPDT  
3S = Ex-N/O (EEx m II T6), DS02.3, DS02.4 only  
3U = Ex-SPDT (EEx m II T6), DS02.3, DS02.4 only

#### Options:

0 = without  
1 = please indicate