



PKP Process Instruments Inc.

10 Brent Drive

Hudson, MA 01749

Tel: +1-978-212-0006

Fax: +1-978-568-0060

PKP Prozessmesstechnik GmbH

Borsigstrasse 24

D-65205 Wiesbaden-Nordenstadt

Tel: 06122 / 7055 - 0

Fax: 06122 / 7055 – 50

Operating Instructions

DS05

*Variable Area Flowmeter And Switch
Mounting Independent*

General

1. Before installation, make sure that the materials of the flowmeter are suitable for the medium to be measured.

Installation

A spring, which pushes the float back towards its zero position against the flow makes it possible to use the meter in any mounting position. Flow is always from the lowest to the highest scale value.

The medium must be free of particles (especially ferrous particles which may cause a clogging of the measuring tube. If this is not the case we recommend the use of filters, in case of ferrous particles with a magnetic insert with a max. mesh size of 0,02" / 0.6 mm.

All applications which deviate from the standard conditions (monitoring of continuous flow) should be discussed first with our technical personnel.

Flow meters with Reed contact may not be used within an inductive or strong magnetic field. All standard threads are made according to DIN 2999 Part 1. Please make sure that only appropriate counter threads and sealing material is used for installation, in order to ensure proper function and tightness.

To avoid measurement errors, straight pipe runs of 10 x D upstream and 5 x D downstream of the meter should be installed.

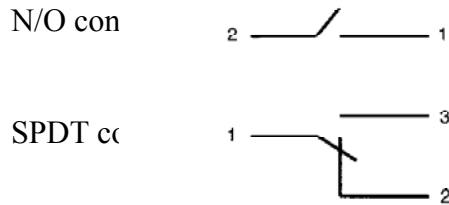
While mounting the flowmeter the fittings have to be countered by means of a suitable wrench. If this is not done the fitting may rotate within its aluminium housing which in turn may cause the flowmeter to leak or may damage the measuring glass.

While connecting flowmeters with Reed contact make sure that the max. contact ratings on the unit are not exceeded (not even for short times), as Reed contact are very sensitive to overloads. This especially applies when inductive loads are connected. When switching inductive loads current surges of up to 10 times the rated value of the coil may occur. In such cases we recommend the use of a contact protection relay.

The Reed contacts are coated with tungsten, gold or rhodium and may therefore be connected directly to a PLC without any problems.

Electrical connection

The drawing shows the Reed contacts in the no-flow position.



Adjustment of switch point

The contact is open in the no-flow position. With flow, the contact will close

1. Loosen the tightening screws of the switch housing and move the housing all the way down.
2. Increase the flow until the upper edge of the float shows the desired min. flow rate (contact is now closed)
3. Move the switch housing upwards until the contact opens. Increase the flow the normal flow rate (the contact is now closed).

Maintenance

The flowmeter and switch has only very few moving parts. Therefore maintenance is limited to occasional cleaning and a function check of the unit. With corrosion inhibitors or additives in the medium please check whether they may affect the materials of the flowmeter.

DS05

Variable Area Flowmeter And Switch, Mounting Independent

- any mounting position without recalibration
- small mounting dimensions
- materials brass or stainless steel
- high switching accuracy
- very small switch hysteresis
- measuring glass with burnt-in scale



Description:

The flowmeter and switch model DS05 works according to a modified variable area principle.

The float is guided in a cylindrical measuring glass by means of a spring. The flowing medium moves the float in the flow direction. The upper edge of the float shows the momentary flow via a burnt-in scale on the measuring glass. 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.

Mounting Position and Reliability:

The built-in spring and the magnetic float guarantee an absolute reliability of the meter. This spring, which pushes the float back towards its zero position against the flow makes it possible to use the meter in any mounting position. The spring is artificially aged, thus eliminating the need for recalibration to the different mounting positions.

Application:

The variable area flowmeter and switch model DS05 is used for measuring and monitoring the flow of low viscosity liquids, i. e. in cooling circuits of welding machines and laser systems, for pump monitoring, compressors and many other applications.

Measuring Ranges:

3.0-63 GPH ... 9.0-66 GPM water
0.2 - 4 l/min ... 35 - 250 l/min water

Materials: brass or stainless steel

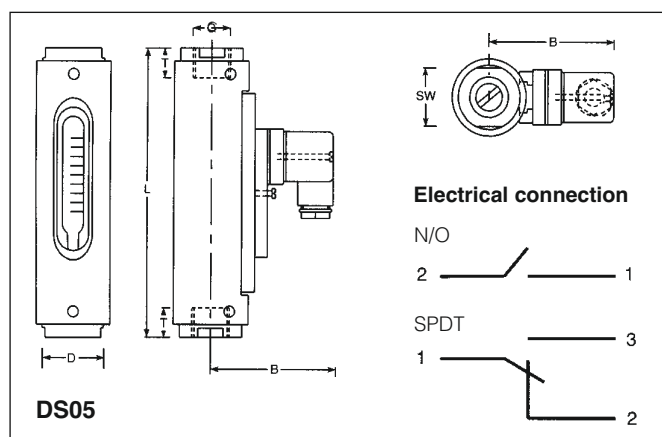
Contacts:

N/O: 250 V, 3 A, 100 VA
SPDT : 250 V, 1.5 A, 30 VA
Ex-N/O* : 250 V, 2 A, 60 VA
Ex-SPDT*: 250 V, 1 A, 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	
DS05.1.x.x.x	1.26 / 32	1.69 / 43	2.87 / 73	1/4"	0.55 / 14	5.20 / 132	1.38 / 625
DS05.2.x.x.x	1.26 / 32	1.69 / 43	2.87 / 73	1/2"	0.59 / 15	5.31 / 135	1.38 / 625
DS05.2.x.x.05	1.26 / 32	1.69 / 43	2.87 / 73	1/2"	0.59 / 15	6.42 / 163	1.43 / 650
DS05.3.x.x.06	1.26 / 32	1.69 / 43	2.87 / 73	3/4"	0.71 / 18	6.57 / 167	1.87 / 850
DS05.3.x.x.07	1.61 / 41	1.97 / 50	2.99 / 76	3/4"	0.71 / 18	5.98 / 152	2.20 / 1000
DS05.4.x.x.07	1.61 / 41	1.97 / 50	2.99 / 76	1"	0.75 / 19	6.14 / 156	2.20 / 1000
DS05.4.x.x.08/09	1.61 / 41	1.97 / 50	2.99 / 76	1"	0.75 / 19	7.48 / 190	2.20 / 1000
DS05.5.x.x.10	1.81 / 46	2.36 / 60	3.19 / 81	1 1/4"	0.83 / 21	8.27 / 210	3.08 / 1400
DS05.5.x.x.11	1.81 / 46	2.17 / 55	3.11 / 79	1 1/4"	0.83 / 21	8.74 / 222	3.08 / 1400



Technical Specifications:

max. pressure: 145 psi / 10 bar
pressure drop: 0.15-11.6 psi / 0.01-0.8 bar
max. temperature: 212 °F / 100 °C
(320 °F / 160 °C on request)
materials: Measuring glass: Duran 50
Housing: anodized aluminium
O-rings: Buna
(optionally: Viton, EPDM)
electr. connection: plug acc. to DIN 43650
(optionally: 1 m cable connection)
accuracy: ± 5% f. s.
analogue output: see model DSxx-A
in section "accessory"

Ordering Code:

Order number: DS05. 3. 1. 1. 06. 1. 1. 0

Variable area flowmeter and switch

Connection:

1N = 1/4" NPT female 1 = G 1/4 female
2N = 1/2" NPT female 2 = G 1/2 female
3N = 3/4" NPT female 3 = G 3/4 female
4N = 1" NPT female 4 = G 1 female
5N = 1 1/4" NPT female 5 = G 1 1/4 female

Material:

1 = brass, spring of steel 1.4310
2 = all st. steel 1.4571

Scale:

1 = for water

Measuring ranges (water):

DS05.1 and DS05.2:

01U = 3.0 - 63 GPH 01 = 0.2 - 4 l/min
02U = 8.0 - 95 GPH 02 = 0.5 - 6 l/min
03U = 8.0 - 127 GPH 03 = 0.5 - 8 l/min
04U = 8.0 - 222 GPH 04 = 0.5 - 14 l/min

DS05.2 only:

05AU = 32 - 350 GPH 05A = 2 - 22 l/min
05U = 16 - 444 GPH 05 = 1 - 28 l/min

DS05.3 only:

06U = 40 - 710 GPH 06 = 2 - 45 l/min

DS05.3 and DS05.4:

07U = 0.5 - 21 GPM 07 = 2 - 80 l/min
07AU = 1.6 - 23.8 GPM 07A = 6 - 90 l/min.

DS05.4 only:

08U = 1.6 - 29 GPM 08 = 6 - 110 l/min

DS05.5 only:

09U = 4 - 39.5 GPM 09 = 15 - 150 l/min
10U = 8 - 58 GPM 10 = 30 - 220 l/min
11U = 9 - 66 GPM 11 = 35 - 250 l/min

No. of contacts:

0 = without contact
1 = 1 contact
2 = 2 contacts

Contact function:

0 = without contact
1 = N/O
2X = SPDT for SPS application
3S = Ex-N/O (EEx m II T6)
3U = Ex-SPDT (EEx m II T6)

Options:

0 = without
1 = please indicate