


DS07

Viscosity Compensated Variable Area Flowmeter and Switch, Mounting Independent

- for viscous media up to 600 cSt
- any mounting position without recalibration
- brass (nickel plated) or stainless steel version
- high switching accuracy
- scales burned into the sight glass
-  optional Ex- version acc. to ATEX
- analogue transmitter 4...20 mA optional
- P_{max} : 16 bar, T_{max} : 160 °C



Description:

The flowmeter and switch model DS07 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 measuring range of the meter.

The high preload of the spring in combination with a perforated orifice in the float reduces the influence of viscosity fluctuations of the medium to a minimum compared to normal variable area flow meters.

Typical application:

The variable area flowmeter and switch model DS07 is used for measuring and monitoring the flow of viscous liquids, i. e. in central lubricating systems, any other lubricating circuitry, hydraulics, transformer oils etc.

Models:

Measuring ranges: 0,1–0,8 l/min
30–90 l/min liquids with viscosities up to
max. 600 cSt

Materials: brass (nickel plated) and
stainless steel

Technical Data:

Max. pressure: DS03.M : 16 bar
DS03.S : 10 bar

Pressure loss: 0,02-0,4 bar (0,2 bar DS07.M)

**Max. media-
temperature:** 100 °C
(optional 160 °C)
Ex-devices acc. to. ATEX-marking

Electr. Connection:
DS07.M: angle plug acc. to EN 175301-803,
form C, (DIN 43650)
DS07.S: angle plug acc. to EN 155301-803,
form A (DIN 43650),
Ex-contact 3S and 3U with 2 m cable
optional: cable connection
round plug M12 x 1 acc. to EN 50044
angle plug with LED or glow lamp

Accuracy: ± 10 % of full scale
(for vertical mounting)

Viscosity range: 30 cSt... 600 cSt

Materials:

Protective housing:
(non-wetted parts) aluminium anodized

Brass version (nickel-plated):

Wetted parts:
float: stainless steel 1.4571
sight glass: borosilicate glass
spring: stainless steel 1.4571
gaskets: FKM, optional NBR, EPDM
magnet: hard ferrite

all other wetted parts: brass, nickel plated

Stainless steel version (1.4571):

Wetted parts:
sight glass: borosilicate glass
gaskets: FKM, optional NBR, EPDM
magnet: hard ferrite

all other wetted parts: stainless steel 1.4571

Order Code:

Order number: DS07. M. 2. 1. 1. 05. 1. 1. 0

**Variable area flowmeter-
and switch**

Model:

M = miniature
S = standard

Connection female thread:

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

Material:

1 = brass nickel-plated
2 = stainless steel 1.4571

Scale:

1 = for viscous media up to 600 cSt

Measuring ranges:

only DS07.M 1/2": 03 = 0,5-1,7 l/min
03A = 0,8-2,5 l/min
04 = 1,3-4 l/min
05 = 2,5-8 l/min
only DS07.S 1/4": 06A = 0,1-0,8 l/min
07A = 0,5-1,5 l/min
08A = 1-4 l/min
**only DS07.S 1/2",
3/4", 1":** 06 = 0,1-0,8 l/min (up to 400 cSt)
07 = 0,5-1,5 l/min
08 = 1-4 l/min
09 = 2-8 l/min
10 = 3-10 l/min
11 = 5-15 l/min
12 = 8-24 l/min
**only DS07.S 3/4",
1":** 13 = 10-30 l/min
14 = 15-45 l/min
15 = 20-60 l/min
16 = 30-90 l/min

Number of contacts:

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

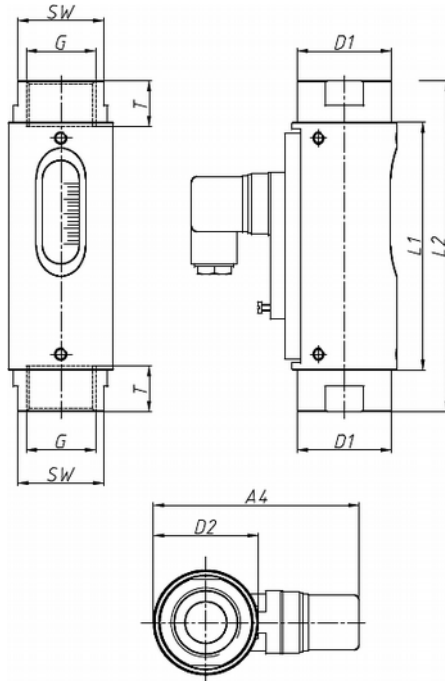
Contact function / analogue output:

0 = without
1 = N/O
2 = SPDT
2X = SPDT for SPS application
3ST5 = Ex-N/O, T5 (100 °C), with 2 m cable, for DS07.S
3ST6 = Ex-N/O, T6 (80 °C), with 2 m cable, for DS07.S
3UT5 = Ex-SPDT, T5 (100 °C), with 2 m cable, for DS07.S
3UT6 = Ex-SPDT, T6 (80 °C), with 2 m cable, for DS07.S
3SM = Ex-N/O for DS07.M
3UM = Ex-SPDT for DS07.M
SU20 = analogue transmitter 4...20 mA and 0...10 V

Options:

0 = without
1 = please specify in plain text
HT = high temperature version 160 °C
M12 = round plug M12 x 1 acc. to EN 50044 (Tmax. 85 °C)
Kx = cable version 1 m, 2 m, 5 m or 10 m

Dimensions:



Dimensions:

Type	Dimensions [mm]						Weight [g]
	SW	D2	A4	G	T	L2	
DS07.MXXX	27	32	70	G 1/2	15	114	300
DS07.SXXX	41	50	99	G 1/4	10	145	850
DS07.SXXX	41	50	99	G 1/2	14	145	850
DS07.SXXX	41	50	99	G 3/4	15	139	850
DS07.SXXX	41	50	99	G 1	17	159	850

Contacts:

The contact opens/changes, if the flow level has fallen under the adjusted value

Type	Size	Contact function	Switching capacity		
			Angle plug IP65	M12x1 plug IP67	Cable connection (1 m) IP67
DS07.M	1/2"	1 = N/O	230 V / 3 A / 60 VA	125 V / 3 A / 60 VA	230 V / 3 A / 60 VA
		2 = SPDT	250 V / 1,5 A / 50 VA, min load: 3 VA	125 V / 1,5 A / 50 VA, min load: 3 VA	-/-
		2X = SPDT for SPS	250 V / 1 A / 60 VA	-/-	-/-
		3SM = Ex-N/O*	gas: < 30 V / 0,101 A / 0,76 W dust: < 30 V / 0,25 A / 0,75 W		gas: < 30 V / 0,101 A / 0,76 W dust: < 30 V / 0,25 A / 0,75 W
		3UM = Ex SPDT*			-/-
DS07.S	1/4" 1/2" 3/4" 1"	1 = N/O	250 V / 3 A / 100 VA		
		2 = SPDT	250 V / 1,5 A / 50 VA, min load: 3 VA		
		2X = SPDT for SPS	250 V / 1 A / 60 VA	-/-	-/-
		3ST5 = Ex-N/O, T5* 3ST6 = Ex-N/O, T6*	-/-	-/-	250 V / 2 A / 60 VA (2 m cable)
		3UT5 = Ex-SPDT, T5* 3UT6 = Ex-SPDT, T6*	-/-	-/-	250 V / 1 A / 30 VA, min load: 3 VA (2 m cable)

Exact max. switching capacity: see ATEX documents

** protection class M12x1 plug for DS07.M: IP65

ATEX-Bezeichnungen:

Contacts 3SM and 3UM for DS07.M:

ATEX II 2 G Ex ib IIC and ATEX II 2 D Ex ib IIIC
for connection to a certified intrinsically safe circuit,
temperature range $-5\text{ °C} < T_{\text{Service}} < 45\text{ °C}$, $L=0$, $C=0$

Contacts 3ST5, 3ST6, 3UT5, 3UT6 for DS07.S.:

ATEX II 2 G Ex mb IIC T6 Gb, ATEX II 2 D Ex tb IIIC T80 °C Db
ATEX II 2 G Ex mb IIC T5 Gb, ATEX II 2 D Ex tb IIIC T100 °C Db
(with cable connection, standard 2 m only)

Analogue Transmitter SU20:

The position of a magnetic float / piston is detected by means of Hall sensors and converted into an analogue signal. .

- analogue signal 4...20 mA and 0...10 V
- operating temperature: -20... +70 °C
- accuracy: +/- 10 % of full scale
- Aluminium housing, anodized



Technical Data:

Accuracy*:	+/- 1 % of full scale
Operating temperature:	-20...+70 °C
Storage temperature:	-20...+80 °C
Repeatability:	tbd.
Housing material:	Aluminium, blue anodized
Protection class:	IP67

* The actual accuracy depends on the flow sensor used. On request the accuracy of the flow sensor used can be significantly increased by a customized calibration.

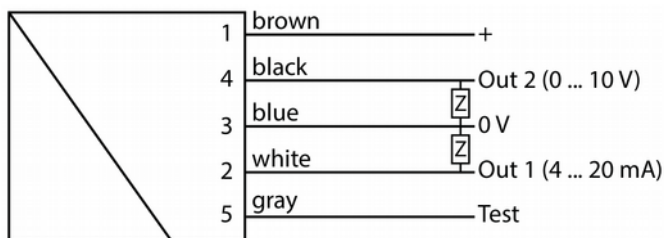
Electrical Data:

Analogue output:	4...20 mA and 0...10 V
Power supply:	24 V _{CD} (19...30 V _{DC})
Power consumption:	< 1 W
Current output:	max. load 600 Ohm
Voltage output	max. current 10 mA
Connection:	round plug M12x1, 5-pole

Notes:

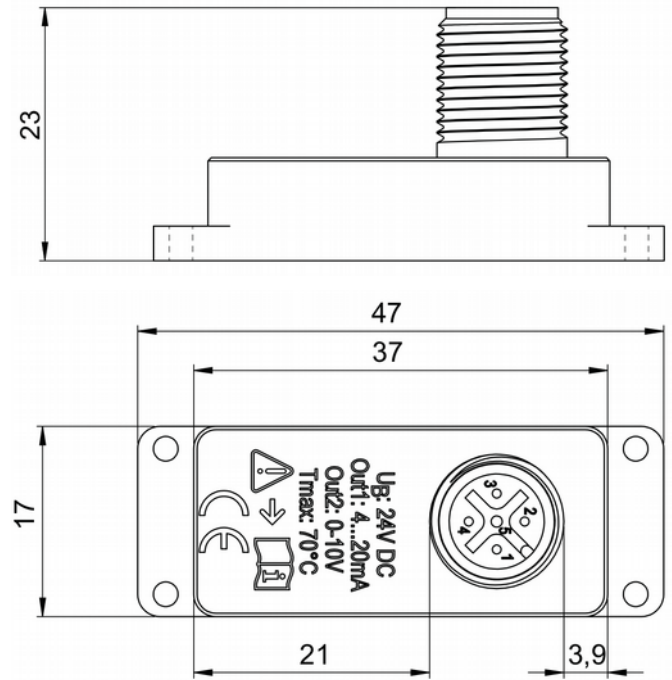
Flowmeter and analogue transmitter SU20 have been optimally adjusted to each other and may not be exchanged.

Electrical Connection:



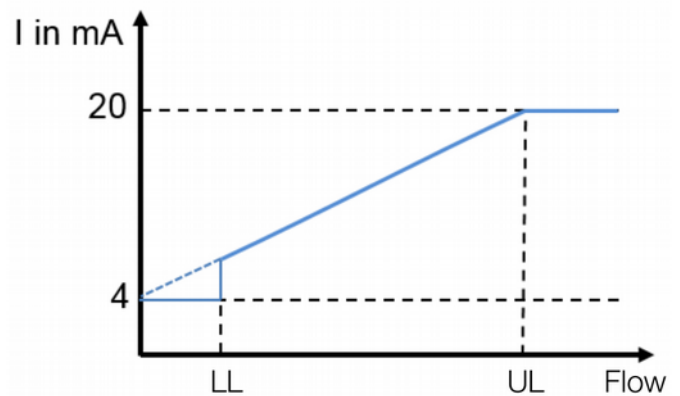
Attention: Pin 5 must not be electrically connected! We strongly recommend use of a four core cable.

Dimensions:

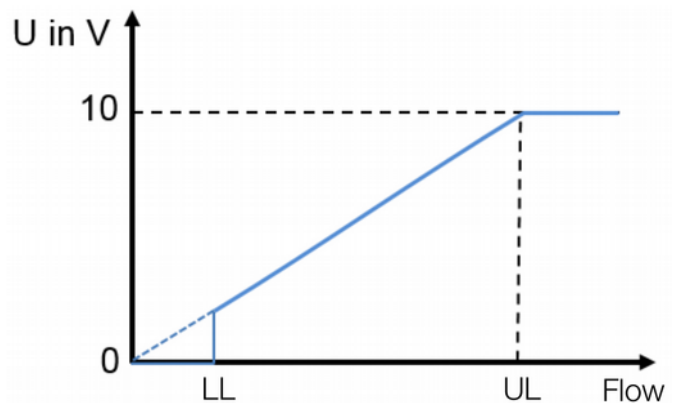


Characteristics:

Current-Flow characteristic:



Voltage-Flow characteristic:



LL: lower limit of measuring range
UL: upper limit of measuring range

Accessories (see separate data sheets):

- Needle valves SNV01, SNV02



- Ball valves SKG01, SKG02



- Dirt traps SF00, SF01



- Protection relay MSR01



- M12 Plug connector PVC-cable SM12



Notes:

The specified measuring/switching ranges apply when the instrument is installed vertically and the flow rate is from bottom to top.

Other installation positions or operating densities deviating from the specified specifications increase the specified measuring error.

Special scales for different media and operating conditions are available on request.

The specified switching points are shut-off points at falling flow rates. Please note that the switch-on points are higher due to the hysteresis.

For applications where pressure surges are to be expected, please contact PKP!