

Electro-Mechanical Flow Switch HFS 2500 for Water or Water-Based Media

Description:

The HYDAC Flow Switch in the series HFS 2500 is based on the variable area float principle. The test medium deflects a spring-loaded float in the direction of flow, depending on the flow rate. A reed contact is fitted to the outside of the instrument and is therefore separate from the flow circuit. When the magnet inside the float reaches the pre-set position, the reed contact will switch. To protect it from external influences, the switch is encapsulated in a casing designed to allow steplessly variable adjustment.

The instruments in the HFS 2500 series are available in two versions, with 5% accuracy and with 10% accuracy. Areas of application are to monitor flow rate in fluids (water / water-based) in the following areas, amongst others:

- Cooling systems and circuits
- Hydraulic systems
- Pumps
- Welding machines and laser systems
- Medical technology
- Pharmaceutical industry
- Chemical industry
- Research & development

Fluid:

- Water / water-based media

Special features:

- Accuracy $\leq \pm 5\%$ or $\leq \pm 10\%$ FS
- Any mounting position
- High level of function reliability
- High level of switching accuracy
- Stepless switch point setting by user
- High pressure resistance
- Threaded connection
- ATEX version also available for potentially explosive atmospheres

Note: FS (Full Scale) = relative to complete measuring range

1) Other seal materials available on request

2) The contact opens / switches when the flow falls below the pre-set switching point.

3) Minimum load 3 VA

Technical data:

Input data					
Switching ranges [l/min]	5 % accuracy		10 % accuracy		
			Size 1	Size 2	Size 3
0.2 .. 4.0	8 .. 90		0.005..0.06	0.02 .. 0.2	10 .. 30
0.6 .. 5.0	5 .. 110		0.04 .. 0.13	0.2 .. 0.6	15 .. 45
0.5 .. 8.0	10 .. 150		0.1 .. 0.6	0.4 .. 1.8	20 .. 60
1 .. 14	35 .. 220		0.2 .. 1.2	0.8 .. 3.2	30 .. 90
1 .. 28	35 .. 250		0.4 .. 2.0	2 .. 7	60 .. 150
2 .. 40			0.5 .. 3.0	3 .. 13	
4 .. 55			1.0 .. 5.0	4 .. 20	
1 .. 70				8 .. 30	
Operating pressure					
Brass version	200 bar		300 bar	300 bar	250 bar
Stainless steel version	300 bar		350 bar	350 bar	300 bar
Pressure drop [bar]	0.02 .. 0.8		0.02 .. 0.2	0.02 .. 0.3	0.02 .. 0.4
Mechanical connection	See dimensions				
Parts in contact with medium					
Brass version	Stainless steel 1.4571; NBR ¹⁾ ; Brass; nickel-plated; Brass; Hard ferrite				
Stainless steel version	Stainless steel 1.4571; FPM ¹⁾ ; Hard ferrite				
Output data					
Switching outputs ²⁾	1 or 2 reed contacts Change-over or N/O type ²⁾				
Accuracy	$\leq \pm 5\%$ or $\leq \pm 10\%$ FS				
Repeatability	2 % FS max.				
Switching capacity					
Change-over contact ³⁾	max.	max.	max.	max.	
Male connection	- 250 V	- 200 V	- 250 V	- 250 V	
EN175301-803 (DIN 43650)	- 1.5 A	- 1 A	- 1.5 A	- 1.5 A	
	- 50 VA	- 20 VA	- 50 VA	- 50 VA	
Male connection M12x1	max.	max.	max.	max.	
	- 250 V	- 125 V	- 125 V	- 250 V	
	- 1.5 A	- 1 A	- 1.5 A	- 1.5 A	
	- 50 VA	- 20 VA	- 50 VA	- 50 VA	
N/O contact	max.	max.	max.	max.	
Male connection	- 250 V	- 200 V	- 230 V	- 250 V	
EN175301-803 (DIN 43650)	- 3 A	- 1 A	- 3 A	- 3 A	
	- 100 VA	- 20 VA	- 60 VA	- 100 VA	
Male connection M12x1	max.	max.	max.	max.	
	- 250 V	- 125 V	- 125 V	- 250 V	
	- 3 A	- 1 A	- 3 A	- 3 A	
	- 100 VA	- 20 VA	- 60 VA	- 100 VA	
Environmental Conditions					
Operating temperature range	-20 .. + 70 °C				
Fluid temperature range					
Male connection					
EN175301-803 (DIN 43650)	-20 .. +100 °C (optional -20 .. +160 °C)				
Male connection M12x1	-20 .. +85 °C				
CE mark					
Directive 2006 / 95 / EC Directive 2004 / 108 / EC					
Protection class to IEC 60529	IP 65				
Other data					
Housing material	Brass (nickel-plated) or stainless steel 1.4571				
Electrical connection	Male connection EN175301-803 (DIN 43650) Male connection M12x1				

Model code:

HFS 2 5 X X - XX - XXXX-XXXX - X - X - X - 000

Measuring principle

2 = Variable area float

Test medium

5 = Water or water-based

Mechanical connection

4)5)

1 = 1/4 "

2 = 3/8 "

3 = 1/2 "

4 = 3/4 "

5 = 1 "

6 = 1 1/4 "

7 = 1 1/2 "

Electrical connection

5 = Male EN175301-803

(DIN 43650)

3 pole + PE

(connector supplied)

6 = Male M12x1, 4-pole

(connector not supplied)

Switching contacts

1S = 1 N/O contact

2S = 2 N/O contacts

1W = 1 Change-over contact

2W = 2 Change-over contacts

Switching ranges in l/min

Water 5 %

00.2-04.0; 00.6-05.0; 00.5-08.0;

01.0-0014; 01.0-0028; 02.0-0040; 04.0-0055;

01.0-0070; 08.0-0090; 0005-0110; 0010-0150;

0035-0220; 0035-0250;

Water 10 % - Size 1 - (only available without mech. indicator)

.005-0.06; 0.04-0.13; 00.1-00.6; 00.2-01.2;

00.4-02.0; 00.5-03.0; 01.0-05.0

Water 10 % - Size 2 -

0.02-00.2; 00.2-00.6; 00.4-01.8; 00.8-03.2;

02.0-07.0; 03.0-0013; 04.0-0020; 08.0-0030

Water 10 % - Size 3 -

0010-0030; 0015-0045; 0020-0060;

0030-0090; 0060-0150

Accuracy

6 = $\leq \pm 5.0$ % FS

7 = $\leq \pm 10.0$ % FS

Housing material

B = Brass (nickel-plated)

S = Stainless steel

Mechanical indicator

0 = Without indicator

1 = With indicator

Modification number

000 = Standard

4) Mechanical connection options depend on housing type (see Dimensions)

5) Other models available on request.

6) When the model with 2 switching contacts is selected, the second contact is fitted on the side of the instrument at 90° to the first contact.

Note:

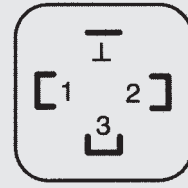
On instruments with a different modification number, please read the label or the technical amendment details supplied with the instrument.

Accessories:

Appropriate accessories, such as electrical connectors, can be found in the Accessories brochure.

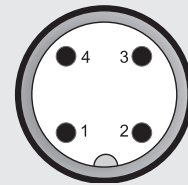
Pin connections:

EN175301-803 (DIN 43650)



Pin	HFS 25X5-XS	HFS 25X5-XW
1	Centre	Centre
2	N/O contact	N/C contact
3	n.c.	N/O contact
⊥	Housing	Housing

M12x1



Pin	HFS 25X6-XS	HFS 25X6-XW
1	Centre	Centre
2	n.c.	N/C contact
3	n.c.	n.c.
4	N/O contact	N/O contact

Notes on installation:

- The medium must not contain solid particles! We recommend using contamination strainers.
- External magnetic fields can affect the switching contact. Ensure sufficient distance from magnetic fields (e.g. from electric motors)!

Dimensions without indicator:

Type [l/min]	Installation dimensions [mm]							Weight (approx.) [g]
	SW	D	B	G	DN	T	L	

Water 5 % Accuracy

0.2 .. 4.0	27	30	86	1/4" 3/8" 1/2"	8 10 15	14	130	850
0.6 .. 5.0								
0.5 .. 8.0								
1 .. 14								
1 .. 28	27	30	86	1/2" 3/4"	15 20	14 16	148 174	900
2 .. 40								
4 .. 55								
1 .. 70	34 40	40 40	96 96	3/4" 1"	20 25	18 19	152 156	1400 1100
8 .. 90								
5 .. 110								
10 .. 150	50	50	101	1 1/4"	32	21	200	2750
35 .. 220	50	50	106	1 1/4"	32	21	200	3000
35 .. 250	60	50	107	1 1/2"	40	24	200	3800

Water 10 % Accuracy - Size 1-

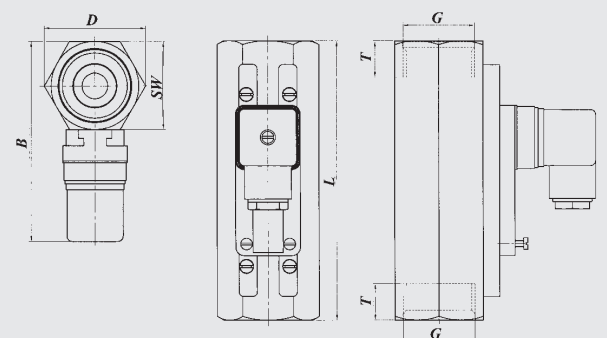
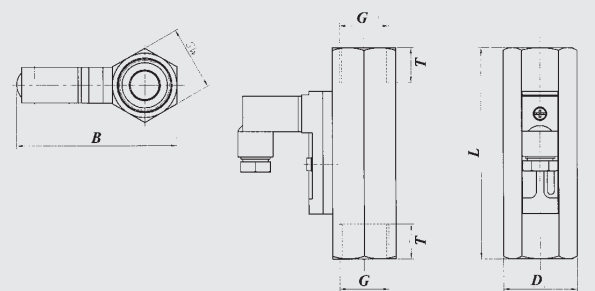
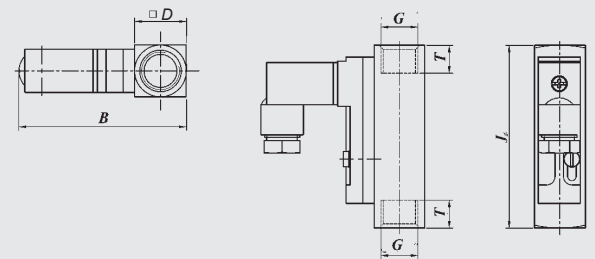
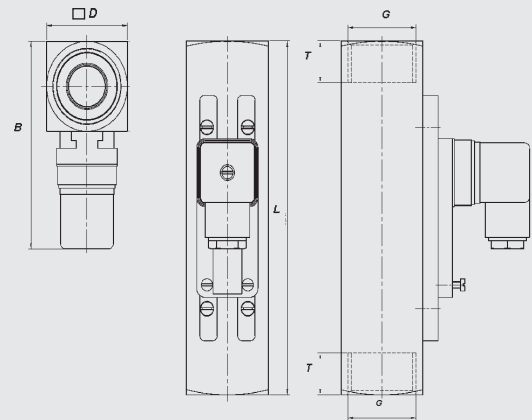
0.005..0.06	17	18	56	1/4"	8	10	65	140
0.04..0.13								
0.1..0.6								
0.2..1.2								
0.4..2.0								
0.5..3.0								
1.0..5.0								

Water 10 % Accuracy - Size 2 -

0.02 .. 0.2	27	31	67	1/2 "	15	15	90	350
0.2 .. 0.6								
0.4 .. 1.8								
0.8 .. 3.2								
2.0 .. 7.0								
3.0 .. 13.0								
4.0 .. 20.0								
8.0 .. 30.0								

Water 10 % Accuracy - Size 3 -

10 .. 30	41	47	93	3/4 " 1" *)	20 25	21 17	152 130	1200 1050
15 .. 45								
20 .. 60								
30 .. 90								
60 .. 150	41	47	93	1"	25	17	130	1050



*) Standard

Dimensions with indicator:

Type [l/min]	Installation dimensions [mm]							Weight (approx.) [g]
	SW	D	B	G	DN	T	L	

Water 5 % Accuracy

0.2 .. 4.0	27	30	86	1/4" 3/8" 1/2"	8 10 15	14	130	940
0.6 .. 5.0								
0.5 .. 8.0								
1 .. 14								
1 .. 28	27	30	86	1/2" 3/4"	15 20	14 16	148 174	990
2 .. 40								
4 .. 55								
1 .. 70	34	40	96	3/4"	20	18	152	1490
8 .. 90								
5 .. 110	40	40	96	1"	25	19	156	1190
10 .. 150	50	50	101	1 1/4"	32	21	200	2840
35 .. 220	50	50	106	1 1/4"	32	21	200	3090
35 .. 250	60	50	107	1 1/2"	40	24	200	3890

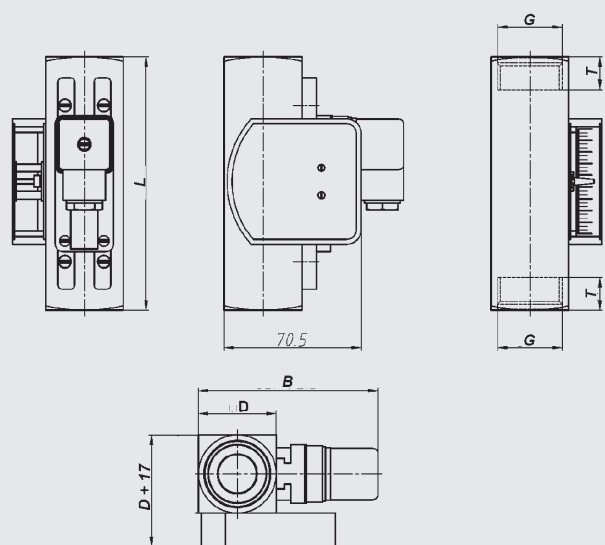
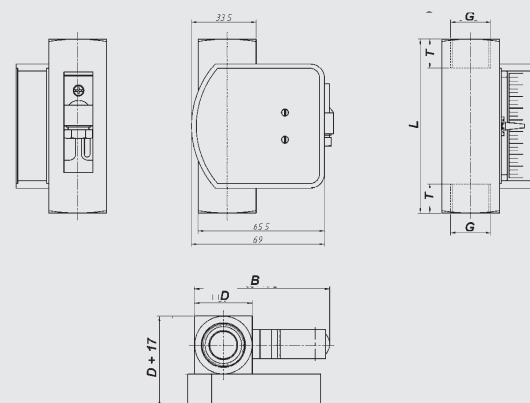
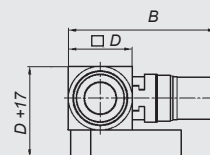
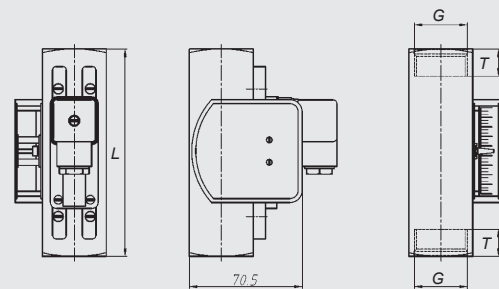
Water 10 % Accuracy - Size 2-

0.02 .. 0.2	30	30	70	1/2 "	15	15	90	570
0.2 .. 0.6								
0.4 .. 1.8								
0.8 .. 3.2								
2.0 .. 7.0								
3.0 .. 13.0								
4.0 .. 20.0								
8.0 .. 30.0								

Water 10 % Accuracy - Size 3 -

10 .. 30	41	47	93	3/4 " 1" *)	20 25	21 17	152 130	1430 1250
15 .. 45								
20 .. 60								
30 .. 90								
60 .. 150	41	47	93	1"	25	17	130	1250

*) Standard



Note:

The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

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