



## Flow Switch HFS 2100

Float

Any installation position

30–600 cSt

For oils / viscous fluids

### Description:

The HYDAC flow switches of the HFS 2100 series are based on a variable area float principle.

The measuring medium deflects a spring-loaded float in the direction of flow, depending on the flow rate. A reed contact is fitted outside of the device, therefore separated from the fluid circuit. When the magnet inside the float reaches the pre-set position, the reed contact will switch.

To protect it from external influences, the reed contact is encapsulated in a housing designed to allow steplessly variable adjustment. The devices are designed to be capable of monitoring threshold values reliably, even when the viscosity fluctuates. The kinematic viscosity may vary between 30 and 600 cSt.

The main fields of application are:

- Central lubrication systems
- Circulation oil lubrication systems
- Transformers
- Cooling systems and circuits
- Lubrication circuits
- Hydraulic systems
- Pumps
- Welding machines and laser plants
- Chemical industry
- Research and development

### Technical data:

#### Input data

Measuring ranges [l/min]	Size 1	Size 2
	0.5 .. 1.6	0.5 .. 1.5
0.8 .. 3.0	1 .. 4	
2.0 .. 7.0	2 .. 8	
	3 .. 10	
	5 .. 15	
	8 .. 24	
	10 .. 30	
	15 .. 45	
	20 .. 60	
	30 .. 90	
	35 .. 110	

Operating pressure		
Brass version [bar]	300	250
Stainless steel version [bar]	350	300
Pressure drop [bar]	0.02 .. 0.2	0.02 .. 0.4

Mechanical connection see dimensions

Parts in contact with fluid

Brass version St. steel 1.4571; FKM <sup>1)</sup>; brass nickel-pl.; brass; hard ferrite

Stainless steel version Stainless steel 1.4571; FKM <sup>1)</sup>; hard ferrite

Housing material Brass (nickel-plated) or stainless steel 1.4571

#### Output data

Switching outputs <sup>2)</sup> 1 or 2 reed contacts normally open or change-over type

Accuracy  $\leq \pm 10\%$  FS

Repeatability 2% FS max.

#### Switching capacity

Change-over contact <sup>3)</sup>	max.	max.
Male connector EN 175301-803	250 V / 1.5 A / 50 VA	250 V / 1.5 A / 50 VA
Male connector M12x1	125 V / 1.5 A / 50 VA	250 V / 1.5 A / 50 VA
N/O contact	max.	max.
Male connector EN 175301-803	230 V / 3 A / 60 VA	250 V / 3 A / 100 VA
Male connector M12x1	125 V / 3 A / 60 VA	250 V / 3 A / 100 VA

#### Environmental conditions

Operating temperature range -20 .. +70 °C

Fluid temperature range

Male connector EN 175301-803 -20 .. +120 °C (optional -20 .. +160 °C)

Male connector M12x1 -20 .. +85 °C

Viscosity range 30 .. 600 cSt

CE mark Directive 2014 / 35 / EU  
Directive 2014 / 30 / EU

Protection class acc. to DIN EN 60529 <sup>4)</sup> IP 65

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

<sup>1)</sup> Other seal materials on request

<sup>2)</sup> The contact opens / switches when the flow falls below the set switch point.

<sup>3)</sup> Minimum load 3 VA

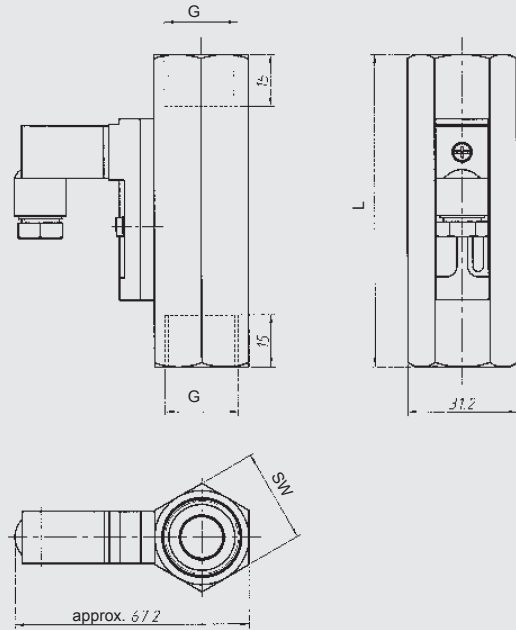
<sup>4)</sup> With mounted mating connector in corresponding protection class

## Dimensions without indicator:

### OIL -size 1- without indicator

Type [l/min]	Installation dimensions [mm]				Weight (approx.) [g]
	DN	SW	G	L	
0.5 .. 1.6	8	24	1/4"	98	400
	10	24	3/8"	118.6	450
	15	27	1/2"*)	90	350
0.8 .. 3.0	15	27	1/2"	90	350
2.0 .. 7.0					

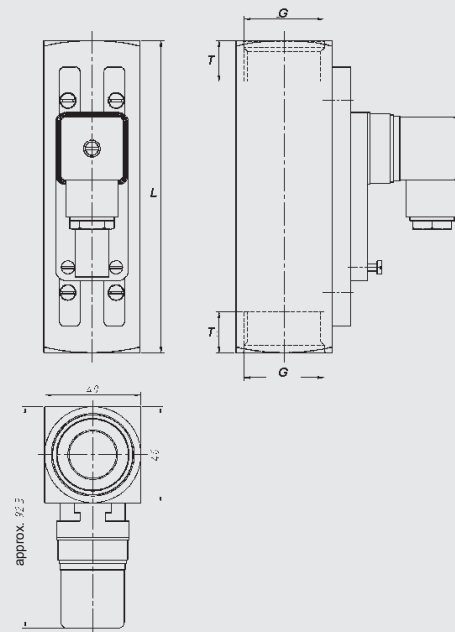
\*) Standard



### OIL -size 2- without indicator

Type [l/min]	Installation dimensions [mm]					Weight (approx.) [g]
	DN	SW	G	L	T	
0.5 .. 1.5	8	34	1/4"	152	10	1500
	15	34	1/2"	152	14	1425
1 .. 4	20	34	3/4"	152	15	1340
	25	40	1"*)	130	17	1160
2 .. 8	15	34	1/2"	152	14	1425
3 .. 10	20	34	3/4"	152	15	1340
5 .. 15	25	40	1"*)	130	17	1160
8 .. 24						
10 .. 30	20	34	3/4"	152	15	1340
15 .. 45						
20 .. 60						
30 .. 90	25	40	1"	130	17	1160
35 .. 110						

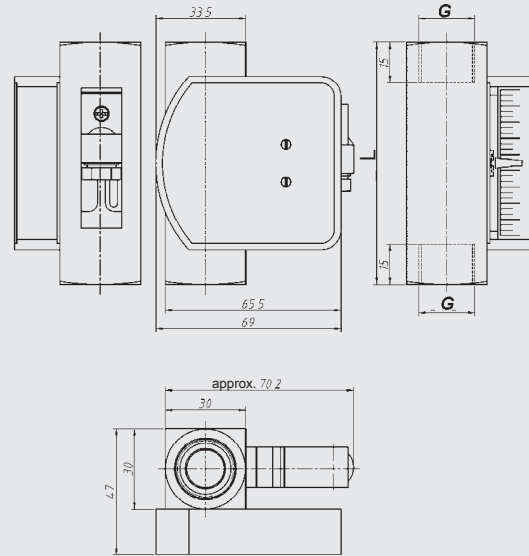
\*) Standard



## Dimensions with indicator:

### OIL -size 1- with indicator

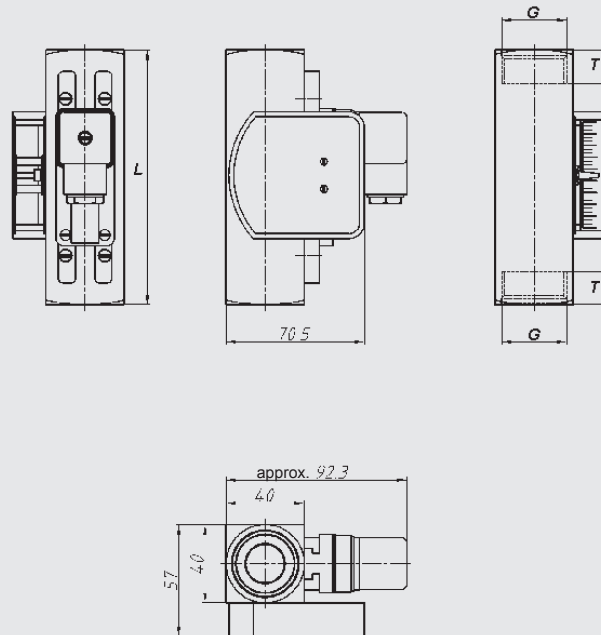
Type [l/min]	Installation dimensions [mm]				Weight (approx.) [g]
	DN	SW	G	L	
0.5 .. 1.6	15	30	1/2"	90	570
0.8 .. 3.0					
2.0 .. 7.0					



### OIL -size 2- with indicator

Type [l/min]	Installation dimensions [mm]					Weight (approx.) [g]
	DN	SW	G	L	T	
0.5 .. 1.5	8	34	1/4"	152	10	1550
	15	34	1/2"	152	14	1475
1 .. 4	20	34	3/4"	152	15	1390
	25	40	1")	130	17	1210
2 .. 8	15	34	1/2"	152	14	1475
3 .. 10						
5 .. 15	20	34	3/4"	152	15	1390
8 .. 24	25	40	1")	130	17	1210
10 .. 30	20	34	3/4"	152	15	1390
15 .. 45						
20 .. 60	25	40	1")	130	17	1210
30 .. 90	25	40	1"	130	17	1210
35 .. 110						

) Standard



## Model code:

HFS 2 1 X X - XX - XXXX-XXXX - 7 - X - X - 000

### Measuring principle

2 = variable area float

### Measuring medium

1 = oils / viscous fluids

### Mechanical connection <sup>5) 6)</sup>

1 = 1/4"

2 = 3/8"

3 = 1/2"

4 = 3/4"

5 = 1"

### Electrical connection

5 = male EN175301-803,

3 pole + PE

(mating connector supplied)

6 = male M12x1, 4 pole

(mating connector not supplied)

### Switching contacts <sup>7)</sup>

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 <sup>6)</sup>

#### Oil 10 % -size 1-

00.5-01.6; 00.8-03.0; 02.0-07.0

#### Oil 10 % -size 2-

00.5-01.5; 0001-0004; 0002-0008; 0003-0010;  
0005-0015; 0008-0024; 0010-0030; 0015-0045;  
0020-0060; 0030-0090; 0035-0110

### Accuracy

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

<sup>5)</sup> Mechanical connection options depend on housing type  
(see Dimensions)

<sup>6)</sup> Other types available on request

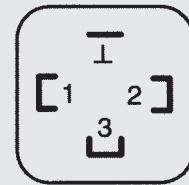
<sup>7)</sup> When the model with 2 switching contacts is selected, the second switching contact is fitted on the side of the instrument as standard.

### Accessories:

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

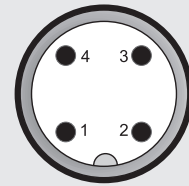
## Pin connections:

EN175301-803



Pin	HFS 21X5-XS	HFS 21X5-XW
1	Centre	Centre
2	N/O contact	N/C contact
3	n.c.	N/O contact
⊥	n.c.	n.c.

M12x1



Pin	HFS 21X6-XS	HFS 21X6-XW
1	Centre	Centre
2	n.c.	N/C contact
3	n.c.	n.c.
4	N/O contact	N/O contact

## 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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