



Electro-Mechanical Flow Switch

HFS 2100 for Oils / Viscous Fluids

Description:

The HYDAC Flow Switch in the series HFS 2100 is based on the variable area float principle. The test medium moves 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 are designed to be capable of monitoring threshold values reliably, even when the viscosity fluctuates. The viscosity may fluctuate between 30 and 600 cSt.

The main areas of application are:

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

Fluid type:

- Oils / viscous fluids

Special features:

- Accuracy $\leq \pm 10\%$ FS
- Viscosity compensation from 30 .. 600 cSt
- Optional 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 use in potentially explosive atmospheres

Technical specifications:

Input data

Switching 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	300 bar	250 bar
Stainless steel version	350 bar	300 bar
Pressure drop [bar]	0.02 .. 0.2	0.02 .. 0.4
Mechanical connection	See dimensions	
Parts in contact with medium		
Brass version	Stainl. st. 1.4571; FKM ¹⁾ ; Brass (nickel-pl.); Brass; Hard ferrite	
Stainless steel version	Stainl. st. 1.4571; FKM ¹⁾ ; Hard ferrite	

Output data

Switching outputs ²⁾	1 or 2 reed contacts Change-over or N/O type	
Accuracy	$\leq \pm 10\%$ FS	
Repeatability	2 % FS max.	

Switching capacity

Change-over contact ³⁾	max.	max.
Male connection DIN 43650	250V / 1.5 A / 50 VA	250V / 1.5 A / 50 VA
Male connection M12x1	125V / 1.5 A / 50 VA	250V / 1.5 A / 50 VA
N/O contact	max.	max.
Male connection DIN 43650	230 V / 3 A / 60 VA	250 V / 3 A / 100 VA
Male connection 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 connection DIN 43650	-20 .. +120 °C (optional -20 .. +160 °C)
Male connection M12x1	-20 .. +85 °C
Viscosity range	30 .. 600 cSt
CE mark	Directive 2006 / 95 / EC Directive 2004 / 108 / EC
Protection class to DIN 40050	IP 65

Other data

Housing material	Brass (nickel-pl.) or stainl. steel 1.4571
Electrical connection	Male connection DIN 43650 Male connection M12x1

Note: **FS (Full Scale)** = relative to the 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

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 ^{4) 5)}

1 = 1/4"

2 = 3/8"

3 = 1/2"

4 = 3/4"

5 = 1"

Electrical connection

5 = Male connection DIN 43650 3-pole + PE, (including female connector)

6 = Male connection M12x1, 4-pole (without connector)

Switching contacts ⁶⁾

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 ⁵⁾

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 = ≤ 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:

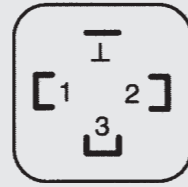
On units with a different modification number, please read the label or the technical amendment details supplied with the instrument.

Accessories:

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

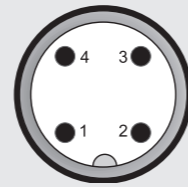
Pin connections:

DIN 43650



Pin	HFS 21x5-xS	HFS 21x5-xW
1	Centre	Centre
2	N/O contact	N/C contact
3	n.c.	N/O contact
⊥	PE	PE

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

Notes on installation:

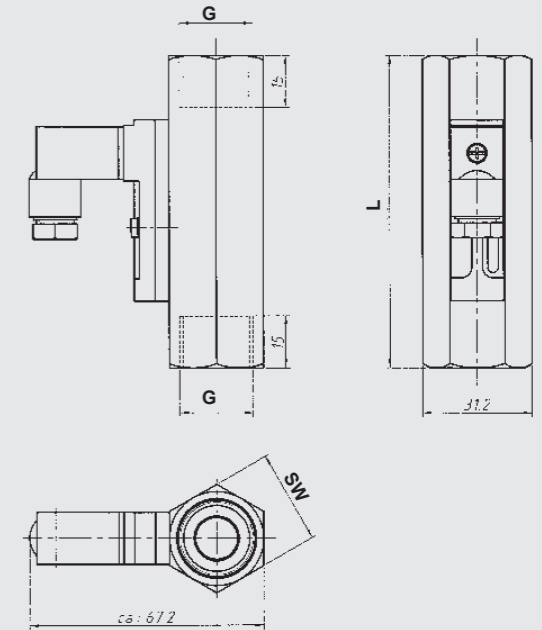
- The medium must not contain solid particles! We recommend using a contamination strainer.
- External magnetic fields can affect the switching contact. Ensure sufficient distance from magnetic fields (e.g. from electric motors)

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"	108	450
	15	27	1/2" ^{*)}	90	350
0.8 .. 3.0	15	27	1/2"	90	350
2.0 .. 7.0					

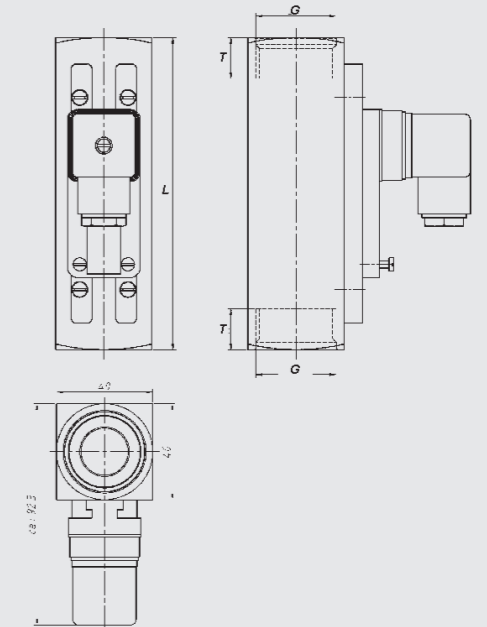
^{*)} Standard



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
	20	34	3/4"	152	15	1340
1 .. 4	25	40	1" ^{*)}	130	17	1160
	8 .. 24					
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	15	34	1/2"	152	14	1425
10 .. 30	20	34	3/4"	152	15	1340
15 .. 45	25	40	1" ^{*)}	130	17	1160
20 .. 60	25	40	1"	130	17	1160

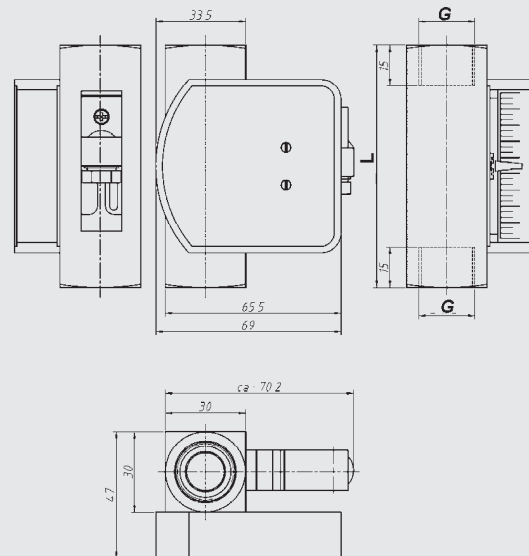
^{*)} Standard



Dimensions with indicator:

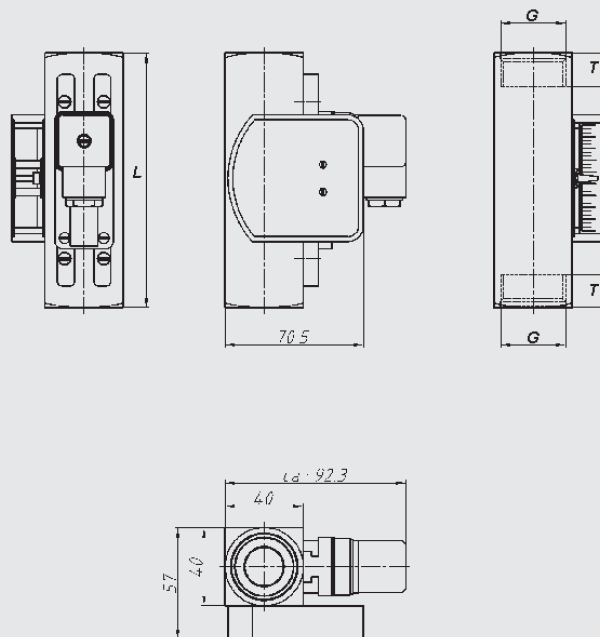
OIL -Size 1- with indicator

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	1590
	15	34	1/2"	152	14	1515
1 .. 4	20	34	3/4"	152	15	1430
	25	40	1" *)	130	17	1250
2 .. 8	15	34	1/2"	152	14	1515
3 .. 10						
5 .. 15						
8 .. 24	25	40	1" *)	130	17	1250
10 .. 30	20	34	3/4"	152	15	1430
15 .. 45						
20 .. 60						
30 .. 90	25	40	1"	130	17	1250
35 .. 110						



*) Standard

Note:

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