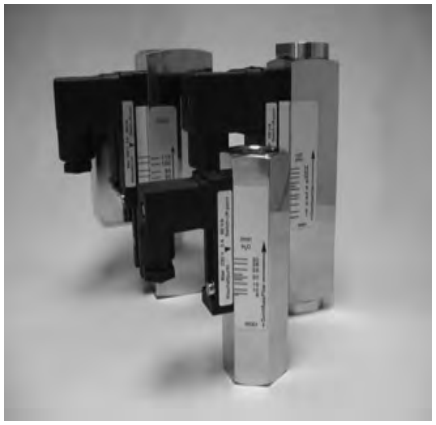


# Electro-Mechanical Flow Switch HFS 2500 for Water or Water-Based Media



## 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 ≤ ± 5 % or ≤ ± 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** (**F**ull **S**cale) = 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<br>Change-over or N/O type [2] | | | | |
| Accuracy | ≤ ± 5 % or ≤ ± 10 % FS | | | | |
| Repeatability | 2 % FS max. | | | | |
| **Switching capacity** | | | | | |
| Change-over contact [3]<br>Male connection<br>EN175301-803 (DIN 43650) | max.<br>- 250 V<br>- 1.5 A<br>- 50 VA | | max.<br>- 200 V<br>- 1 A<br>- 20 VA | max.<br>- 250 V<br>- 1.5 A<br>- 50 VA | max.<br>- 250 V<br>- 1.5 A<br>- 50 VA |
| Male connection M12x1 | max.<br>- 250 V<br>- 1.5 A<br>- 50 VA | | max.<br>- 125 V<br>- 1 A<br>- 20 VA | max.<br>- 125 V<br>- 1.5 A<br>- 50 VA | max.<br>- 250 V<br>- 1.5 A<br>- 50 VA |
| N/O contact<br>Male connection<br>EN175301-803 (DIN 43650) | max.<br>- 250 V<br>- 3 A<br>- 100 VA | | max.<br>- 200 V<br>- 1 A<br>- 20 VA | max.<br>- 230 V<br>- 3 A<br>- 60 VA | max.<br>- 250 V<br>- 3 A<br>- 100 VA |
| Male connection M12x1 | max.<br>- 250 V<br>- 3 A<br>- 100 VA | | max.<br>- 125 V<br>- 1 A<br>- 20 VA | max.<br>- 125 V<br>- 3 A<br>- 60 VA | max.<br>- 250 V<br>- 3 A<br>- 100 VA |
| **Environmental Conditions** | | | | | |
| Operating temperature range | -20 .. + 70 °C | | | | |
| Fluid temperature range<br>Male connection<br>EN175301-803 (DIN 43650)<br>Male connection M12x1 | <br><br>-20 .. +100 °C (optional -20 .. +160 °C)<br>-20 .. +85 °C | | | | |
| CE mark | Directive 2006 / 95 / EC<br>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)<br>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** [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)]

**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 = ≤ ± 5.0 % FS
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

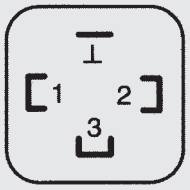
4) Mechanical connection options depend on housing type (see Dimensions)
5) Other models available on request.
6) When the model with 2 switching contacts is selected, the second contact is fitted on the side of the instrument at 90° to the first contact.

**Note:**
On 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.

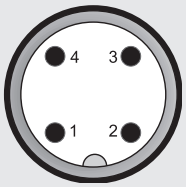
## Pin connections:

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



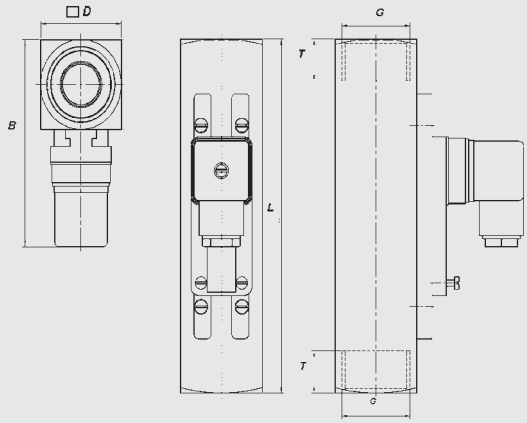

| Pin | HFS 25X6-XS | HFS 25X6-XW |
|---|---|---|
| 1 | Centre | Centre |
| 2 | n.c. | N/C contact |
| 3 | n.c. | n.c. |
| 4 | N/O contact | N/O contact |

## Notes on installation:

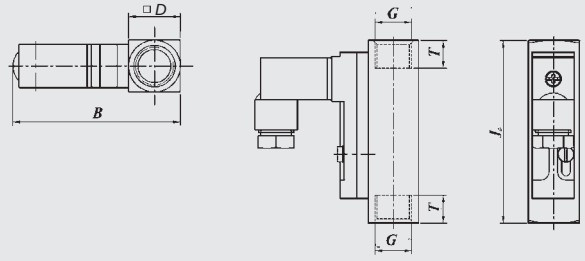
- The medium must not contain solid particles! We recommend using contamination strainers.
- External magnetic fields can affect the switching contact. Ensure sufficient distance from magnetic fields (e.g. from electric motors)!

## Dimensions without indicator:

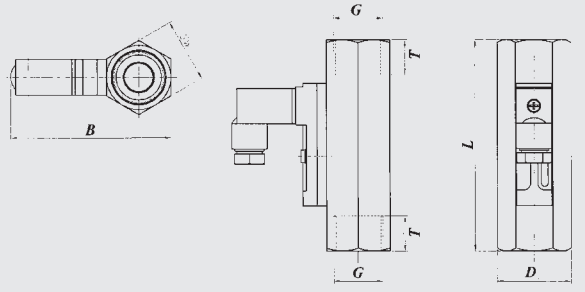
| Type [l/min] | Installation dimensions [mm] | | | | | | | Weight (approx.) [g] |
|---|---|---|---|---|---|---|---|---|
| | SW | D | B | G | DN | T | L | |
| **Water 5 % Accuracy** | | | | | | | | |
| 0.2 .. 4.0 | 27 | 30 | 86 | 1/4“ 3/8“ 1/2“ | 8 10 15 | 14 | 130 | 850 |
| 0.6 .. 5.0 | | | | | | | | |
| 0.5 .. 8.0 | | | | | | | | |
| 1 .. 14 | | | | | | | | |
| 1 .. 28 | | | | | | | | |
| 2 .. 40 | 27 | 30 | 86 | 1/2“ 3/4“ | 15 20 | 14 16 | 148 174 | 900 |
| 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 |



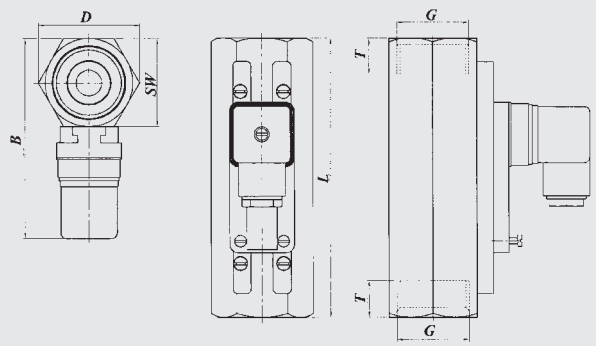

| **Water 10 % Accuracy - Size 1-** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.005..0.06 | 17 | 18 | 56 | 1/4“ | 8 | 10 | 65 | 140 |
| 0.04..0.13 | | | | | | | | |
| 0.1..0.6 | | | | | | | | |
| 0.2..1.2 | | | | | | | | |
| 0.4..2.0 | | | | | | | | |
| 0.5..3.0 | | | | | | | | |
| 1.0..5.0 | | | | | | | | |




| **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 | | | | | | | | |



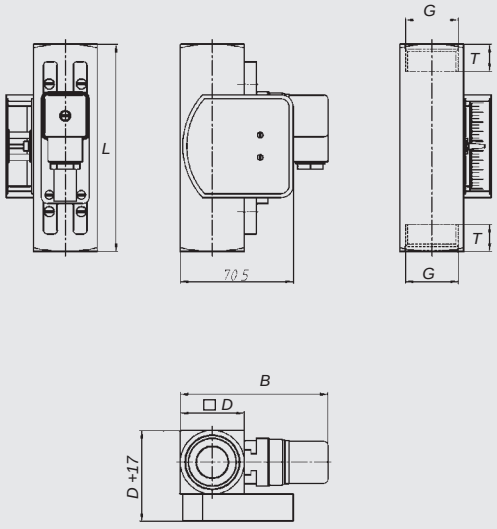

| **Water 10 % Accuracy - Size 3 -** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10 .. 30 | 41 | 47 | 93 | 3/4 “ 1“ *) | 20 25 | 21 17 | 152 130 | 1200 1050 |
| 15 .. 45 | | | | | | | | |
| 20 .. 60 | | | | | | | | |
| 30 .. 90 | | | | | | | | |
| 60 .. 150 | 41 | 47 | 93 | 1“ | 25 | 17 | 130 | 1050 |



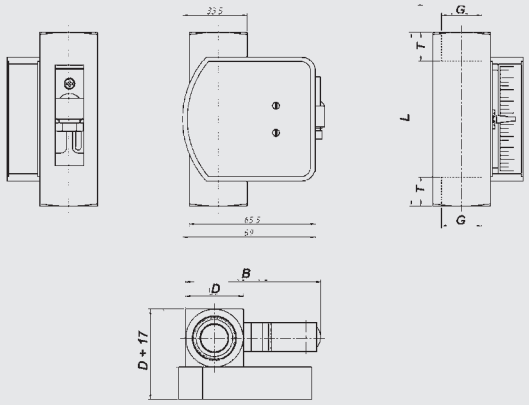

*) Standard

## 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“<br>3/8“<br>1/2“ | 8<br>10<br>15 | 14 | 130 | 940 |
| 0.6 .. 5.0 | | | | | | | | |
| 0.5 .. 8.0 | | | | | | | | |
| 1 .. 14 | | | | | | | | |
| 1 .. 28 | | | | | | | | |
| 2 .. 40 | 27 | 30 | 86 | 1/2“<br>3/4“ | 15<br>20 | 14<br>16 | 148<br>174 | 990 |
| 4 .. 55 | | | | | | | | |
| 1 .. 70 | 34<br>40 | 40<br>40 | 96<br>96 | 3/4“<br>1“ | 20<br>25 | 18<br>19 | 152<br>156 | 1490<br>1190 |
| 8 .. 90 | | | | | | | | |
| 5 .. 110 | | | | | | | | |
| 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 |

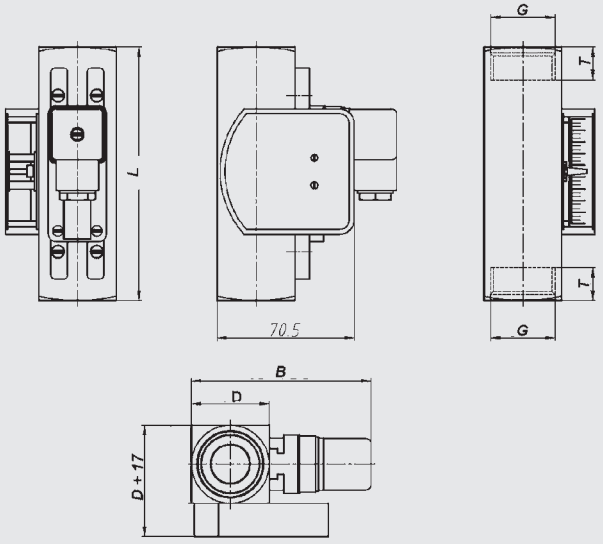



| **Water 10 % Accuracy - Size 2-** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.02 .. 0.2 | 30 | 30 | 70 | 1/2 ” | 15 | 15 | 90 | 570 |
| 0.2 .. 0.6 | | | | | | | | |
| 0.4 .. 1.8 | | | | | | | | |
| 0.8 .. 3.2 | | | | | | | | |
| 2.0 .. 7.0 | | | | | | | | |
| 3.0 .. 13.0 | | | | | | | | |
| 4.0 .. 20.0 | | | | | | | | |
| 8.0 .. 30.0 | | | | | | | | |




| **Water 10 % Accuracy - Size 3 -** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10 .. 30 | 41 | 47 | 93 | 3/4 “<br>1“ *) | 20<br>25 | 21<br>17 | 152<br>130 | 1430<br>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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