



## FLS...X

Liquid flow switch

*FLS is a series of electromechanical flow switches for use in heating and cooling systems.*

- ✓ Fits pipe sizes ranging from ½" to 8"
- ✓ Available for use in certain corrosive media
- ✓ Breaking capacity 15 (8) A, 24...250 V AC
- ✓ Protection class IP65
- ✓ Models with TÜV approval available

### Function

The FLS...X range of flow switches is intended for flow control of water or certain corrosive media. They have a built-in safety switch with an alarm signal for flow shortage signalling.

### Material

FLS...X is available in brass (suitable for normal media) and stainless steel AISI 316L (suitable for certain corrosive media).

### Applications

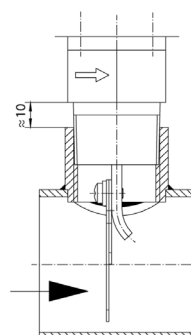
FLS...X is well-suited for pipes used in general industrial plants, such as:

- Heating and air conditioning systems
- Refrigeration systems
- Sprinkler or anti-fire systems
- Heat pumps

### Installation

The flow switch can be installed in either a horizontal or vertical position. It must be fitted far from any pipe elbows or choke points. If the paddle is located close to the bottom of the pipe, care should be taken to ensure that the pipe is free from slag.

The device should be mounted so that the arrows match the flow direction of the media inside the pipe (see picture below).



If the pipe is vertical, the range of the flow switch must be recalibrated so that the paddle weight is properly balanced.

If fitted for downward flow, FLS...X must be installed in a straight pipe, far from any filters or valves, etc. An unimpeded length of pipe at least 5 times the pipe diameter must be available both upstream and downstream of the unit.

**Note:** If the flow switch is used as a minimum flow controller, it is necessary to add another device downstream of the first one for alarm condition activation.

## Models

| Model     | Pipe     | Max. pressure | Normal media (body in brass) | Corrosive media (body in stainless steel AISI 316L) | "T" pipe fitting | TÜV approved |
|-----------|----------|---------------|------------------------------|---|------------------|--------------|
| FLS304X   | ø 1...8" | 11 bar        | •                            |   |                  |              |
| FLS304XT  | ø 1...8" | 11 bar        | •                            |   |                  | •            |
| FLS304XRE | ø 1...8" | 11 bar        | •                            |   |                  |              |
| FLS305XT  | ø 1...8" | 30 bar        |                              | •   |                  | •            |
| FLS305XRE | ø 1...8" | 30 bar        |                              | •   |                  |              |
| FLS306X   | ø 1/2"   | 11 bar        | •                            |   | •                |              |
| FLS307X   | ø 3/4"   | 11 bar        | •                            |   | •                |              |
| FLS308X   | ø 1"     | 11 bar        | •                            |   | •                |              |

## Spare parts for FLS304..., FLS305...

| Name   | Description  |
|--------|--|
| FLZ-09 | Stainless steel AISI 316L paddles for liquid flow switch |

## Technical data

|                              |  |
|------------------------------|--|
| <b>Contacts</b>              | Dust-tight microswitch with switching contacts (NC/NO) |
| <b>Switch capacity</b>       | 15 (8) A. 24...250 V AC                                |
| <b>Operating temperature</b> | -40...+85°C  |
| <b>Humidity</b>              | 10...90 % RH (non-condensing)                          |
| <b>Liquid temperature</b>    | -40...+120°C   |
| <b>Paddles</b>               | Stainless steel AISI 316L                              |
| <b>Housing</b>               | Base in ABS, transparent Polycarbonate (PC) cover      |
| <b>Protection class</b>      | IP65   |
| <b>Size</b>                  | 140 x 62 x 65 mm                                       |

## CE

This product carries the CE-mark. More information is available at [www.regincontrols.com](http://www.regincontrols.com).

**TÜV approval:** The FLS304XT, FLS305XT models are granted the TÜV SW(SB) 11 - 032 type-test approval mark.

H<sub>2</sub>O flow rate FLS304X, FLS304XT,  
FLS305XT

| Nominal pipe size | Qmax (m <sup>3</sup> /h) recommended | Min. adjustment (m <sup>3</sup> /h) Cut-off (Cut-in) | Max. adjustment (m <sup>3</sup> /h) Cut-off (Cut-in) |
|-------------------|--------------------------------------|--|--|
| ø 1"              | 3.6                                  | 0.6 (1.0)  | 2.0 (2.1)  |
| ø 1 1/4"          | 6.0                                  | 0.8 (1.3)  | 2.8 (3.0)  |
| ø 1 1/2"          | 9.0                                  | 1.1 (1.7)  | 3.7 (4.0)  |
| ø 2"              | 15.0                                 | 2.2 (3.1)  | 5.7 (6.1)  |
| ø 2 1/2"          | 24.0                                 | 2.7 (4.0)  | 6.5 (7.0)  |
| ø 3"              | 36.0                                 | 4.3 (6.2)  | 10.7 (11.4)  |
| ø 4"              | 60.0                                 | 11.4 (14.7)  | 27.7 (29.0)  |
| ø 4" Z*           | 60.0                                 | 6.1 (8.0)  | 17.3 (18.4)  |
| ø 5"              | 94.0                                 | 22.9 (28.4)  | 53.3 (55.6)  |
| ø 5" Z*           | 94.0                                 | 9.3 (12.9)   | 25.2 (26.8)  |
| ø 6"              | 120.0                                | 35.9 (43.1)  | 81.7 (85.1)  |
| ø 6" Z*           | 120.0                                | 12.3 (16.8)  | 30.6 (32.7)  |
| ø 8"              | 240.0                                | 72.6 (85.1)  | 165.7 (172.5)  |
| ø 8" Z*           | 240.0                                | 38.6 (46.5)  | 90.8 (94.2)  |

H<sub>2</sub>O flow rate FLS304XRE, FLS305XRE

| Nominal pipe size | Min. adjustment (m <sup>3</sup> /h) Cut-off (Cut-in) | Max. adjustment (m <sup>3</sup> /h) Cut-off (Cut-in) |
|-------------------|--|--|
| ø 1"              | 0.2 (0.6)  | 1.0 (1.1)  |
| ø 1 1/4"          | 0.25 (0.9)   | 1.4 (1.6)  |
| ø 1 1/2"          | 0.5 (1.2)  | 1.6 (2.2)  |
| ø 2"              | 0.9 (2.3)  | 3.6 (4.1)  |
| ø 2 1/2"          | 1.2 (3.1)  | 4.9 (5.5)  |
| ø 3"              | 2.1 (4.9)  | 7.4 (8.2)  |
| ø 4"              | 4.9 (11.3)   | 17.1 (19.1)  |
| ø 4" Z*           | 3.3 (7.7)  | 11.6 (13.0)  |
| ø 5"              | 9.7 (22.4)   | 34.0 (37.9)  |
| ø 5" Z*           | 5.0 (11.5)   | 17.5 (19.6)  |
| ø 6"              | 13.6 (31.5)  | 47.6 (53.2)  |
| ø 6" Z*           | 6.1 (14.1)   | 21.4 (23.9)  |
| ø 8"              | 25.7 (59.6)  | 90.1 (100.7)   |
| ø 8" Z*           | 21.7 (36.5)  | 55.3 (61.8)  |

\* For these diameters, the longest paddle must be used in order to obtain the values indicated in the table.

Pressure drop at the maximum flow (Qmax): 0.08 bar

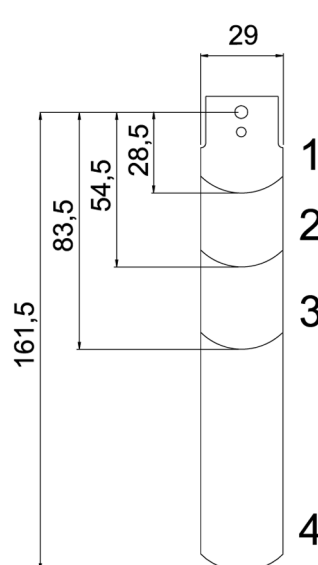
H<sub>2</sub>O flow rate FLS306X, FLS07X, FLS08X

| Model   | Pipe connector with "T" pipe fitting | Min. adjustment (m <sup>3</sup> /h) Cut-off (Cut-in) | Max. adjustment (m <sup>3</sup> /h) (Cut-off (Cut-in) |
|---------|--------------------------------------|--|---|
| FLS306X | ø 1/2"                               | 0.174 (0.480)  | 0.846 (0.948)   |
| FLS307X | ø 3/4"                               | 0.138 (0.408)  | 0.768 (0.858)   |
| FLS308X | ø 1"                                 | 0.200 (0.6)  | 1.000 (1.1)   |

The T models have a cylindrical "G" thread.

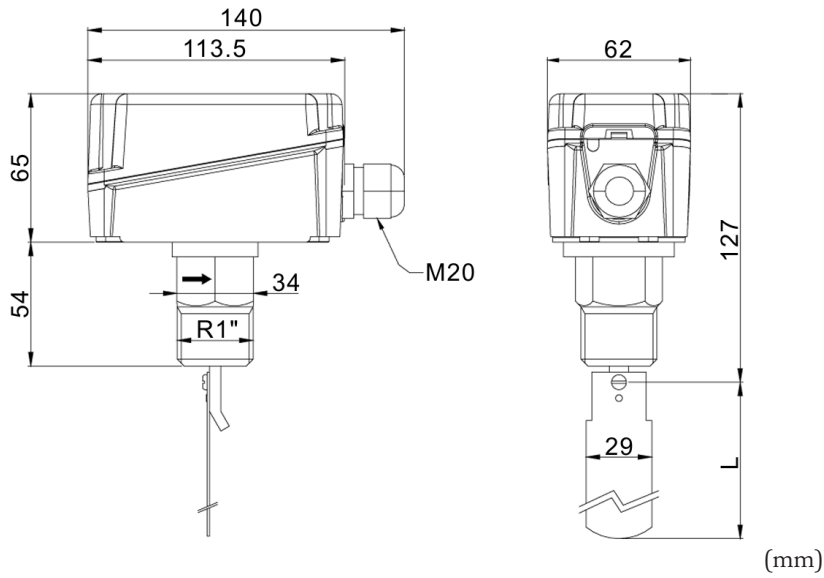
**Note!** The values indicated in the schedules have been measured with the flow switch mounted in horizontal position.

## Paddles for models without "T" pipe fitting



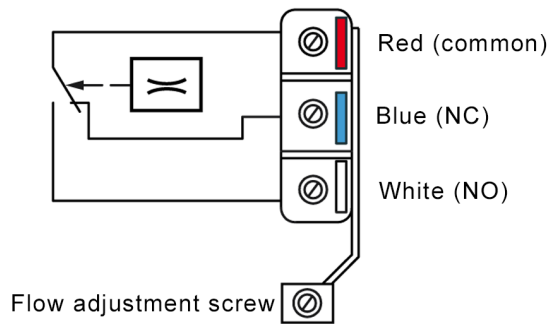
| Pipe   | Paddles |
|--------|---------|
| 1"     | 1       |
| 1 1/4" | 1       |
| 1 1/2" | 1       |
| 2"     | 1+2     |
| 2 1/2" | 1+2     |
| 3"     | 1+2+3   |
| 4"     | 1+2+3   |
| 4" Z   | 1+2+3+4 |
| 5"     | 1+2+3   |
| 5" Z   | 1+2+3+4 |
| 6"     | 1+2+3   |
| 6" Z   | 1+2+3+4 |
| 8"     | 1+2+3   |
| 8" Z   | 1+2+3+4 |

## Dimensions



## Wiring

The below diagram shows flow absence:



## Product documentation

The documentation can be downloaded from [www.regincontrols.com](http://www.regincontrols.com)