



FLSX

Liquid flow switch

FLS is a series of electro-mechanical flow switches for use in heating and cooling systems.

- Fits pipe sizes ranging from 1" to 8"
- Available for use in seawater or corrosive media
- Adjustable or fixed hysteresis

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

Material

FLSX is available in brass (suitable for normal media) and stainless steel AISI 316L (suitable for seawater and corrosive media).

Applications

FLSX is well-suited for pipes used in general industrial plants, such as:

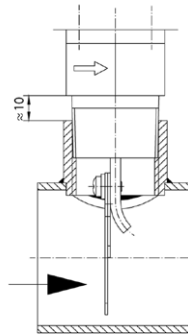
- Heating and air conditioning systems
- Refrigeration systems
- Sprinkler or anti-fire systems
- Heat pumps
- Devices for oil monitoring
- Lubrication circuits

- Breaking capacity 15 A at 230 V AC
- Protection class IP65
- Models with TÜV approval available

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, FLSX 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

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

* Body in brass

** Body in stainless steel AISI 316L


Special models

Model	Description
NPT	1" NPT connector

Accessories

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

Technical data

Contacts	Dust-tight microswitch with switching contacts (NC/NO)
Switch capacity	15 (8) A. 24...250 V AC
Operating temperature	-40...+85°C
Humidity	10...90 % RH (non-condensing)
Max. liquid temperature	-40...+120°C
Fitting	See flow rate schedule
Paddles	Stainless steel AISI 316L
Housing	Base in ABS, transparent Polycarbonate (PC) cover
Protection class	IP65, class I
Size	140 x 62 x 65 mm
	TÜV approval: The FLS...XT (FLS304XT, FLS305XT) models of FLV are granted the TÜV SW(SB) 11 - 032 type-test approval mark.
	Low Voltage Directive (LVD) standards: This product conforms to the requirements of the European Low Voltage Directive (LVD) 2006/95/EC through product standard EN 60730-2-15:2010-03.
	EMC emissions & immunity standards: This product conforms to the requirements of the EMC Directive 2004/108/EC through product standard EN 60730.
	RoHS: This product conforms to the Directive 2011/65/EU of the European Parliament and of the Council.

H₂O flow rate FLS304X / FLS304XT / FLS305XT

Pipe connector	Qmax (m ³ /h) recommended	Min. adjustment (m ³ /h) Cut-off (Cut-in)	Max. adjustment (m ³ /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)

H₂O flow rate FLS304XRE / FLS305XRE

Pipe connector	Min. adjustment (m ³ /h) Cut-off (Cut-in)	Max. adjustment (m ³ /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*	ø 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 models, the longest paddle must be used in order to obtain the values indicated in the table.

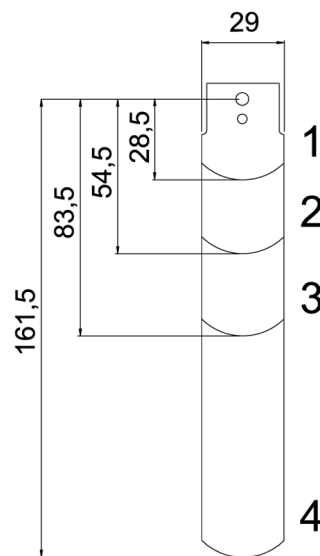
Pressure drop at the maximum flow (Qmax): 0.08 bar

"T" pipe fitting flow rate FLS306X / 07X/08X

DBSF	Pipe connector with "T" pipe fitting	Min. adjustment (m ³ /h) Cut-off (Cut-in)	Max. adjustment (m ³ /h) (Cut-off (Cut-in)
3E	ø 1/2"	0.174 (0.48)	0.846 (0.948)
4E	ø 3/4"	0.138 (0.408)	0.768 (0.858)
6E	ø 1"	0.2 (0.6)	1.0 (1.1)

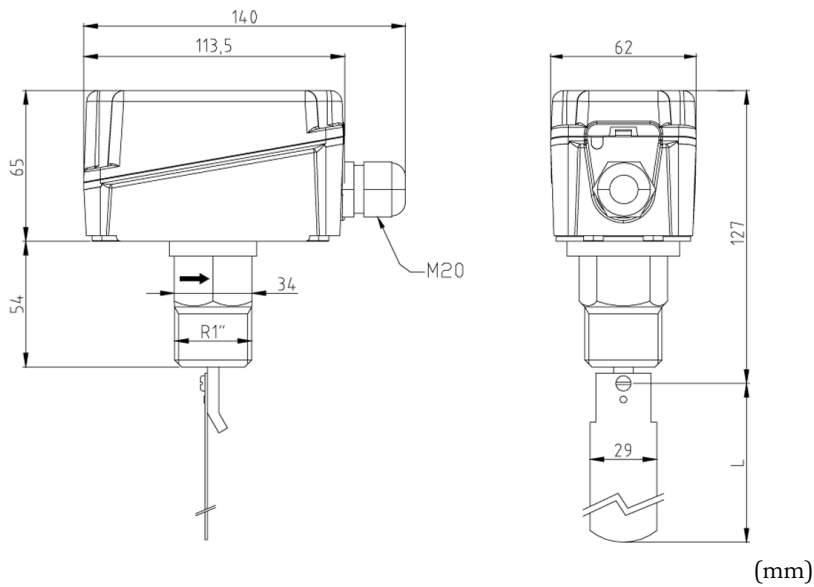
The T models have a cylindrical "G" thread.

Paddles (models without "T" pipe fitting)



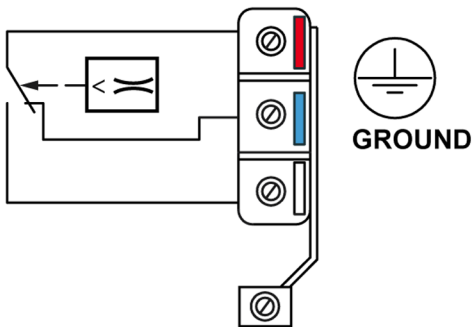
Pipe	Paddles
1"	1
1 1/4"	1
1 1/2"	1
2"	1.2
2 1/2"	1.2
3"	1.2.3
4"	1.2.3
4" Z	1.2.3.4
5"	1.2.3
5" Z	1.2.3.4
6"	1.2.3
6" Z	1.2.3.4
8"	1.2.3
8" Z	1.2.3.4

Dimensions



Wiring

The below diagram details wiring for flow presence:



Connect to the red and white contacts of the microswitch. They will open when the flow drops below the set level.

When no flow is present, the red/blue contacts will close and can be used for a signal or alarm.

Product documentation

Document	Type
FLSX_inst	Instruction for FLSX

The document can be downloaded from www.regin.se.