Cert. No. LRQ 0963008
ISO 9001

7A.330-E
Issue 3 - 2013

Colima FLU Series
Vane Flow Switches

Description

Magnetically activated vane type flow switches for monitoring gas or liquid flow rates are present in most industrial applications.
The flow switches can be equipped with electrical contacts, SPDT or DPDT micro switches along with different protective housings and with optional two-colour visual indicator to suit most environmental and safety conditions.

Flu type O
with two-colour visual indicator and weather-proof housing

Versions

Flu A is the gas flow detection version while
Flu O is dedicted to liquid flow appications.

Applications

- Protects pumps, motors and other equipment against low or no flow
- Controls sequential operation of pumps
- Automatically starts auxiliary pumps and engines
- Stops liquid cooled engines, machines and processing when coolant flow is interrupted
- Shuts down burner when air flow through heating coil fails

DN	Approximate actuation / Deactuation Flow rates for cold water (m^3/h)		Approximate actuation / Deactuation Velocity for cold water (m/s)	
50	7,2	2,8	1,02	0,40
65	8,9	2,7	0,75	0,22
80	8,8	3,5	0,48	0,19
100	9,0	3,9	0,32	0,14
125	14,0	6,0	0,32	0,14
150	22,9	8,1	0,36	0,13
200	40,6	14,3	0,36	0,13

Available types

FLU A

Gas flow switch, with IP 67 aluminum housing.
Can not be fitted directly on the pipes but before the the cooling battery.

A

FLU O

Liquid flow switch, with IP 67 aluminum housing and two-colour visual indicator (optional).

O

Operating principle

Two oscillating magnets on the same axis, one integral with the vane and one integral with the electrical equipment, repel each other reciprocally through a non-magnetic material flange. The flange separates the housing, containing the electrical equipment, from the vane that is inserted in the pipe. The vane in absence of flow is maintained in its resting position by balance weight and repulsion between the two magnets that face each other with the same polarity. When the flow pushes the vane, the integral vane magnet moves and the magnetic field pushes the integral switch magnet. The switching of the electrical contact is quick and reliable.

Mounting

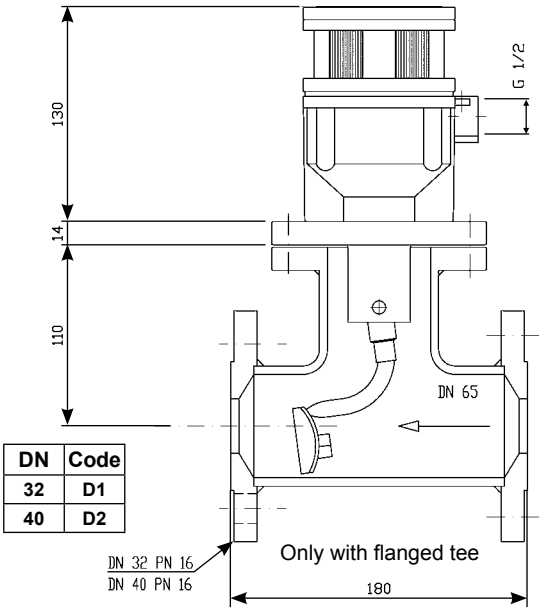
The Flu flow switches can be installed horizontally, directly into a pipe, or in a dedicated chamber connected between two pipes. Several type of flanges are available upon customer request.

Wetted parts

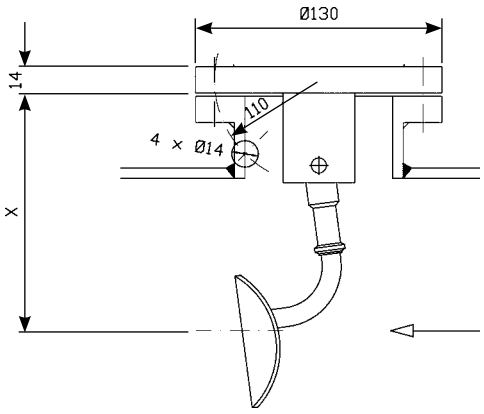
	Flange				Vane			
Steel	304SS	**1**	316SS	**2**	304SS	**A**	316SS	**B**

Process connections

Depending on pipe diameter different solutions can be provided, utilizing with customized vane arms.



DN	Code
32	D1
40	D2



Only with flange Ø 130		
DN	**X (mm)**	**Code**
50	**110**	**D3**
65	**110**	**D4**
80	**110**	**D5**
100	**110**	**D6**
125	**110**	**D7**
150	**125**	**D8**
200	**150**	**D9**

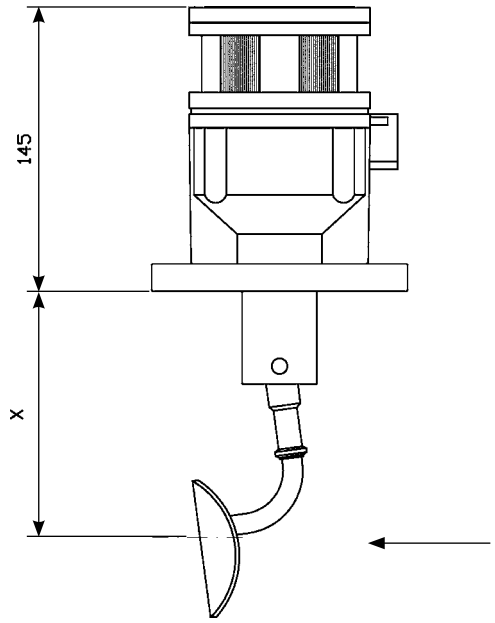
Note: several types of normalized flanges can be provided upon customer request.

DN PIPE	FLANGE EN		FLANGE ASME	
50	DN50 PN16	E3	2"ANSI 150	A3
65	DN50 PN16	E4	2"ANSI 150	A4
80	DN65 PN16	E5	2.½"ANSI 150	A5
100	DN80 PN16	E6	3"ANSI 150	A6
125	DN80 PN16	E7	3"ANSI 150	A7
150	DN80 PN16	E8	3"ANSI 150	A8
200	DN80 PN16	E9	3"ANSI 150	A9

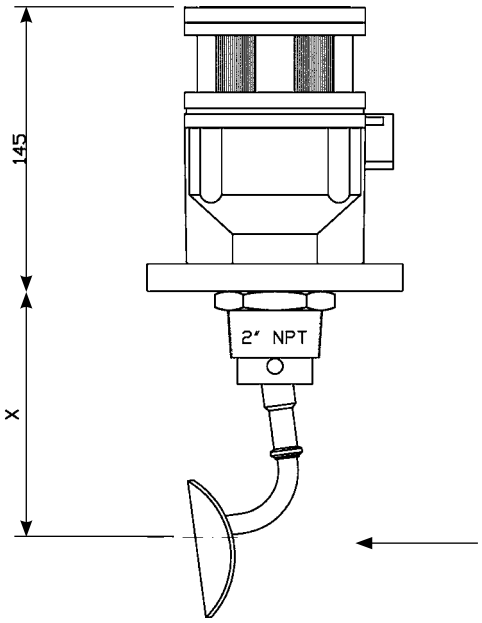
Design conditions

TMA - Maximum allowable temperature	Steel	-20 to +150 °C up to 350 °C with cooling extension
PMA - Maximum allowable pressure	Steel	< 16 bar g

Note: on request (subject to feasibility) flanges are available for pressure> 16 bar g.



Flu type O with two-colour visual indicator

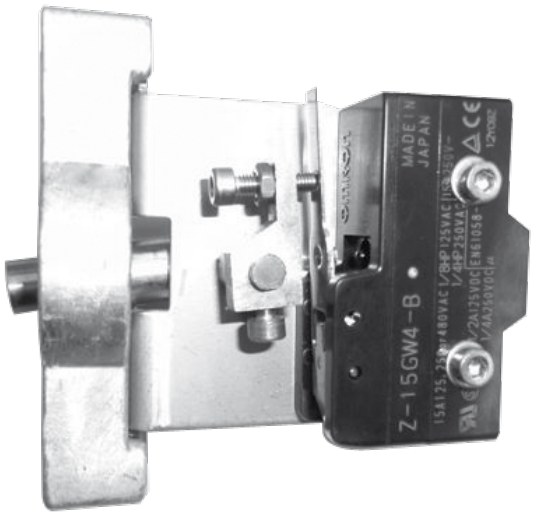


Note: DN tubo ≥ 80.

Electrical equipment and housings for Colima FLU series flow switches

Description

The electrical equipment for the FLU series level switches comprises a support and a contact.
The oscillating element includes a magnet whose south pole points towards the flange that separates the electrical equipment from the liquid or gas contained in the pipe. According to the pressure on the vane provided by the liquid or gas flow in the pipe, the vane works by pivoting a sealed cartridge containing a magnet, with south polarity on the end towards the flange.
As the two magnets on the two oscillating devices repel each other, they are never in line on the same axis. Consequently, the status of the electrical equipment switches from the normally open (NO) to normally closed (NC) position or vice versa.



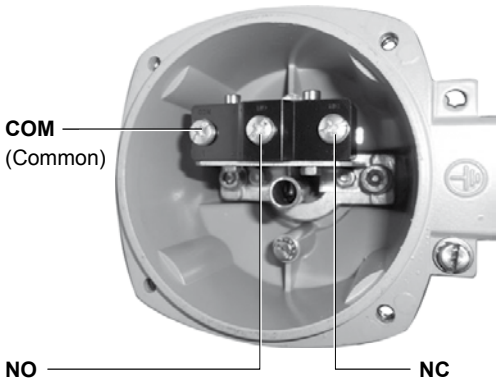
Electrical contact characteristics

Standard SPDT Contact

Standard microswitches are recommended for general purpose
Contact resistance: 15 mOhm Max (Initial value)
Mechanical life: >106
Electrical life: >105

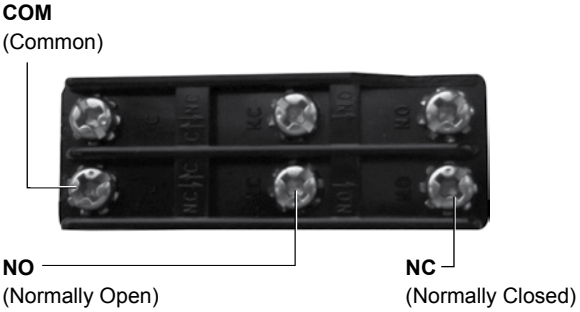
V	~	A	=	Load
250	15		0,25	Resistive
	15		0,03	Inductive
125	15		0,5	Resistive
	15		0,05	Inductive
30	NA		6	Resistive
	NA		5	Inductive

SPDT execution



DPDT execution

(two simultaneous SPDT contacts)



Housings

The FLU series flow switch housings are available in the weatherproof version for general use. The weatherproof housing is also available with a two-colour visual indicator to directly check the presence of flow: the indicator is white in absence of flow and it becomes red when the flow is present.

Weatherproof housing

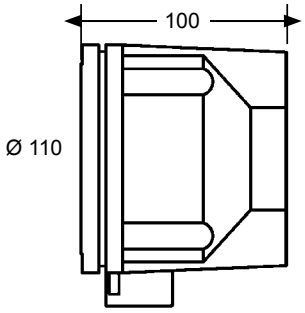
Type for general purpose, used in most industrial applications.
In pressure die-cast aluminium and protected with polyamide paint.
Protection degree IP67.
One cable entry point.

2

1

Two-colour visual flow indicator

Dimensions (approximate) in mm



Product selection and order placement

Each unit is identified by a unique alphanumeric code that defines the manufacturing characteristics that best suites the application. Please confirm the following information before commencement of the product configuration.

Process pressure = _____
Design pressure = _____
Fluid type = _____
Specific gravity of fluid = _____
Viscosity of fluid = _____

Process temperature = _____
Design temperature = _____

Range	Colima		Colima
Model	**FLU**		**F**
Type	**A**	Gas	**O**
	O	Liquid < 150°C	
	OT	With extention cooling (from 151°C to max 350°C)	
Housing	**1**	IP67 General purpose two-color visul flow indicator	**1**
	2	IP67 General purpose without two-color visul flow indicator	
Electrical connections	**1**	G ½"F	**1**
	2	Gk ½"F	
	3	½"NPT F	
	4	M20 x 1.5	
	5	PG 13.5	
DN Pipe (only type FO and FOT)	**D**	See page 2	**D3**
Flange material	**1**	304 Stainless steel	**1**
	2	316 Stainless steel	
Vane material	**A**	304 Stainless steel	**B**
	B	316 Stainless steel	
Electrical equipment	**A1**	Standard SPDT	**A1**
	A2	Standard DPDT	

How to order example: 1 off Spirax Sarco Colima F-O-1-1-D3-1-B-A1.

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