Data Sheet
DS-LP-CCB311-FS-eng
November, 2009

Type CCB311
Flow Switch

Features and Benefits
- Suitable for liquids or gases to meet Customers'-requirements
- Low pressure allows switch to be placed in many locations without increasing pressure loss
- Certified explosion-proof or intrinsically safe

Description
The flow switch CCB 311 is designed to detect low flows in horizontal or vertical pipes with an upward flow direction. The type CCB 311 flow switch is very robust with high repeatability and a very basic design.
An articulated flap placed perpendicular to the flow, moves according to the flow changes. An extemal reed switch is activated by the magnet installed on the flap. (The magnet is protected from corrosive medium by a stainless steel jacket) An external housing contains the reed switch and connection terminal block for wiring.

Construction
This flow switch consists of:
- A stainless steel 316L body
- A stainless steel 316L flap
- A stainless steel 316L diaphragm
- The connection is made by stainless steel fixed flanges (Standard ISO PN NF EN1092 or ANSI B16-5)
- Alarm contacts
- 1 or 2 reed switches inside aluminium housing IP65 equipped with a packing gland
- 1 or 2 reed switches inside explosion proof housing Ex dIIC T6 equipped with a packing gland
- 1 or 2 reed switches inside housing Ex ia IIC T6 equipped with a packing gland

Standard Operating Conditions
Pressure: 16 bar / 232 psig
Temperature: -30°C to +125°C /(-22°F to +1257°F)

Contact
Bistable reed switch contact (SPDT)
Max. power 60VA/60W (resistive load)
Max. current: 1A
Max. voltage: 250Vac/Vdc
(Double switch on request) (DPDT)

Technical Characteristics

DN	Max. flow (1) (3) m^3/h Liquid SG=1	Switching flow (1) (3) m^3/h Liquid SG=1		Possible range of switching flow on request (2) (3) m^3/h Liquid SG=1	
		HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL
40 (1"1/2)	20	0.4	0.8	0.2 to 1.7	0.3 to 2
50 (2")*	20	0.4	0.8	0.2 to 1.7	0.3 to 2
65 (2"1/2)	35	0.6	1	0.3 to 2.4	0.35 to 3
80 (3")*	55	0.7	1.4	0.4 to 2.7	0.5 to 4
100 (4")*	85	1	2	0.5 to 3.8	0.6 to 6.5
125 (5")	132	1.5	3	0.8 to 4.8	1 to 8
150 (6")*	190	1.8	3.7	1.2 to 5.5	1.5 to 11.5
200 (8")	340	3.7	7.5	2.7 to 10	2.5 to 21

*Recommended DN

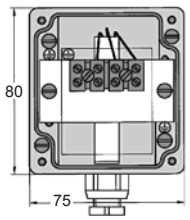
Flow Switch

Product Certifications

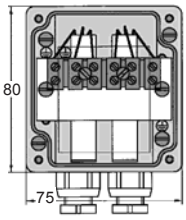
Pressure Equipment Directive (PED)

Sound Engineering practice
Standard design:
- Fluid: liquid group = 2
- Max pressure = 16 bar
- Max D.N. = 200 (8")
- PED category = 3.3 SEP

reed switch IP65	
Dimensions (Lxlxh)	80mm x 75mm x 57mm
Material	Aluminium
Switch	Dual Reed switch (see below diagram)
Connection	PG9 Polyamid cable glands (cables Ø 5 to 9m)
Protection	IP65 – 4 screws cover
Coating	Polyester paint
Max. Power supply	230V
Max. Power	60W/ 60VA
Temperature	200°C Max.

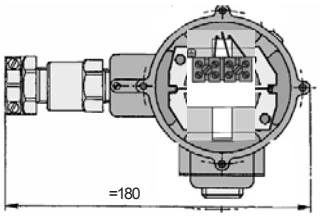


Single

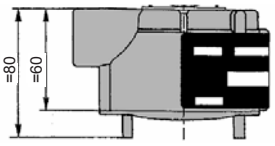


Dual

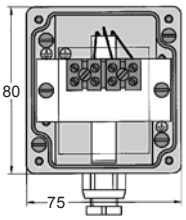
Single / dual reed switch "d" ATEX Explosion proof	
Dimensions (Lxlxh)	80mm x 75mm x 57mm
Material	Aluminium
Switch	Single Reed switch | Dual Reed switch
Connection	¾"NPT Aluminium cable gland (cables Ø 5 to 12mm) (supplied) ATEX explosion proof ("d") certified
Protection	IP65/66 – Screwed cover
Coating	No – Raw aluminium finish
Max. Power supply	230V
Max. Power	60W/ 60VA
Certificate	ATEX N° LCIE01ATEX6060X IECEx N° LCI 09.0017X
Marking* **	Ex II 2G ExdIICT6
Electrical data (EC certificate)	Max. supply : 230V Max. current: 15A Max. power : 20W
Switch max. Power	60W/ 60VA
Temperature	Ta = - 40°C to +60°C
Name plate	Aluminium / St.St. rivets



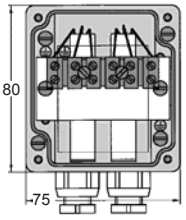
Single
or Dual



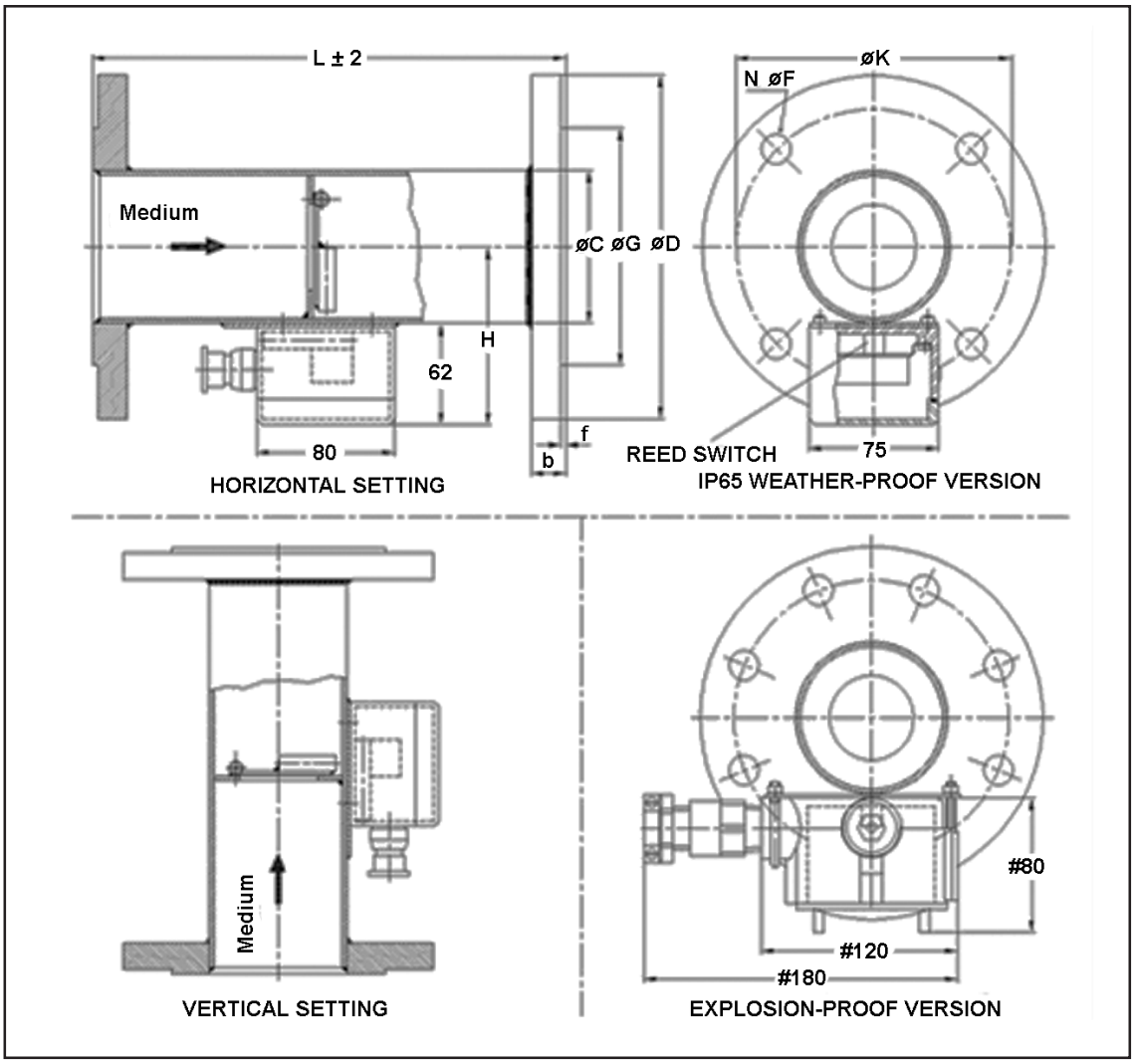
reed switch "ia" ATEX instrinsically safe	
Dimensions (Lxlxh)	80mm x 75mm x 57mm
Material	Aluminium
Switch	Single Reed switch | Dual Reed switch
Connection	PG9 Polyamid Blue cable gland (cables Ø 5 to 8mm) Exe certified
Protection	IP65 – 4 screws cover
Coating	Polyester paint
Certificate	ATEX N° LCIE05ATEX6034X IECEX N° LCI 08.0048X
Marking* **	Ex II 1 G ExiaIICT6/T5/T4
Electrical data	Ui≤30V; Ii≤101mA; Pi≤400mW Ci=0nF ; Li=0mH
Temperature	T6: Ta=50°Cmax./ T5:Ta=65°Cmax./ T4: Ta=80°Cmax.
Name plate	Aluminium / St.St. rivets



Single



Dual



Model CCB311Dimensions

Standard Dimensions with Flange PN16 to NF EN1092-1 (2007) (Code C1) (mm)

ND	ØD	ØK	ØG	N	ØF	f	b	ØC	L	H
40	150	110	88	4	18	3	18	60.3	250	95
50	165	125	102	4	18	3	20	60.3	250	95
65*	185	145	122	4	18	3	18	88.9	250	105
65*	185	145	122	8	18	3	18	88.9	250	105
80	200	160	138	8	18	3	20	88.9	275	110
100	220	180	158	8	18	3	22	114.3	275	125
125	250	210	188	8	18	3	22	141.3	300	135
150	285	240	212	8	22	3	22	159	300	150
200	340	295	268	12	22	3	24	219.1	325	175

* For ND65, the standards flanges have 8 holes but if need be they exist with 4 holes (to be specified on the order)

Standard Dimensions with Flange Class 150 According to NF EN1759-1 / ANSI B16-5 (Code C2)

ND	ØD	ØK	ØG	N	ØF	f	b	ØC	L	H
1″1/2	127	98.4	73.2	4	15.9	1.6	17.5	60.3	250	95
2″	152	120.6	91.9	4	19	1.6	21	60.3	250	95
2″1/2	178	139.7	104.6	4	19	1.6	22.2	88.9	250	105
3″	190	152.4	127.0	4	19	1.6	23.8	88.9	275	110
4″	229	190.5	157.2	8	19	1.6	27	114.3	275	125
5″	254	215.9	185.7	8	22.2	1.6	28	141.3	300	135
6″	279	241.3	215.9	8	22.2	1.6	25.4	159	300	150
8″	343	298.4	269.7	8	22.2	1.6	28.6	219.1	325	175

Flow Switch

Model Code for CCB311

TYPE						
CCB311	Flow controller					
	Code	**ND Choice**				
	40	NF EN1092-1 (2007)				
	50	NF EN1092-1 (2007)				
	65	NF EN1092-1 (2007) – standards flanges with 8 holes				
	65	NF EN1092-1 (2007) – flanges with 4 holes (to specify)				
	80	NF EN1092-1 (2007)				
	100	NF EN1092-1 (2007)				
	125	NF EN1092-1 (2007)				
	150	NF EN1092-1 (2007)				
	200	NF EN1092-1 (2007)				
	1"1/2	NF EN1759-1 / ANSI B16-5				
	2"	NF EN1759-1 / ANSI B16-5				
	2"1/2	NF EN1759-1 / ANSI B16-5				
	3"	NF EN1759-1 / ANSI B16-5				
	4"	NF EN1759-1 / ANSI B16-5				
	5"	NF EN1759-1 / ANSI B16-5				
	6"	NF EN1759-1 / ANSI B16-5				
	8"	NF EN1759-1 / ANSI B16-5				
		Code	**Construction**			
			Flange material	**Body + flap material**		
		C1	PN16 NF EN1092-1 (2007) / St. St. 316L	St. St. 316L		
		C2	Class 150 NF EN1759-1 / St. St. 316L	St. St. 316L		
			Code	**Measurement element**		
			M1	Horizontal mounting – Standard cut off flow in m3/h SG=1		
			M2	Vertical mounting – Standard cut off flow in m3/h SG=1		
			M3	Horizontal mounting – Limit cut off flow in m3/h SG=1		
			M4	Vertical mounting – Limit cut off flow in m3/h SG=1		
			MX	Mounting and setting on request		
				Code	**Alarm + housing**	
				S1	1 Reed switch in Aluminium Housing IP65 + packing gland PG9 (cable d=5to9)	
				S3	2 Reed switches in Aluminium Housing IP65 + packing gland PG9 (cable d=5to9)	
				S2	1 Reed switch in Explosion proof Housing Ex dIIC T6 + Aluminium packing gland (cable 3to12)	
				S4	2 Reed switches in Explosion proof Housing Ex dIIC T6 + Aluminium packing gland (cable 3to12)	
				S5	1 Reed switch in Housing Ex ia IIC T6 + packing gland (cable 5to8)	
				S6	2 Reed switches in Housing Ex ia IIC T6 + packing gland (cable 5to8)	
					Code	**Options / Documentation**
					Z2	Packing gland for S2/S4 ADE 4F in nickel plated brass (cable 8.5 to16)
					Z6	Epoxy paint
						Conformity certificate, test, pressure test, material
						Maintenance manual
					D0	3-1-B material certificate
					D1	Conformity to Nace MR01-75
					D2	Welding file
					D3	Calculation notes according CODAP
					D6	Dye Penetrant Test (Brooks)
					D7	Dye Penetrant Test (External laboratory)
					DX	To specify
					D11	Documentation on CD Rom

CCB311	- 50	- C1	- M1	- S1	- Z…	Ordering example

Additional Information Required for Ordering

Water	S.G. = 1	1 cPo	20°C	2 bar	Normal m^3/h	Switching flow 0,4 m^3/h	Flow increase	Vertical
Fluid	Specific gravity	Viscosity	Operating temp.	Operating press.	Nominal flowrate	Flow alarm	Sense of alarm	Direction of mounting

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