

RPP(E) Low and medium range pressure switches explosion proof RA80

All industrial environments

All fluids

One or two thresholds

All stainless steel version for aggressive environments

French Electricity Generating Board (EDF)
electronuclear version

Marine version

LCIE 03 ATEX 6231X

CE 0081



II 2 G and D
EEx d IIC T6 or T5



Hazardous areas : 1, 2, 21, 22

These instruments compare a pre-established adjustable set point to the received process pressure.

Equipped with one or two snap action microswitches, they are used for controlling the process cycles, or operate an alarm when pressure reaches set point value.

Depending on options selected, adjustable differential deadband is available. Featuring possibility to adjust change on rise and change on fall limits or enabling to get rid of undesired repetitive on/off around set point.

Technical Data (20°C)

Operating temperature	See pages 2 and 3
Storage temperature	-40...+70°C
Reproducibility	±2% of F.S.
Reading accuracy	±5% of F.S.
Conformité CE	Low Voltage Directive DBT 73/23/CE Directive ATEX 94/9/CE (EN50014, EN50018, EN50281-1-1)
Degree of protection	IP 65, NF EN 60529

Manufacturing

Explosion-proof housing	Epoxy painted aluminium housing
Wall mounting	M8 x 3
Earth connection	Via internal
Electrical connection	via internal terminal-block with P.G. certified ATEX for cable 7 to 10.5 mm dia
Graduated scale	Internal calibrated
Pressure connection	G 1/2, female 1/4 NPT, G 1/4 (171, 172, 173 only)
Adjustement element	External adjustment screw for the set point and the deadband, lead seal on (option). Internal mechanism of bichromate-treated cadmium-plated steel

Important

Normal operation is between 10 % and 90 % of the selected scale. The deadband values given in the tables (see inside pages) are defined under these conditions. The maximum overpressure values correspond to accidental overpressures of limited duration.

All circuits must be equipped with a safety system protecting them against excess pressure.

Any pulsating circuit must be fitted with pulsation dampeners. Mechanical vibrations should be reduced by means of antivibration mounts fitted to the pressure switches.



Operating range

RPPA - RPPN - RPPH - RPHN low pressure

RPPA : standard sensing element with treated steel flanges and diaphragm in Viton

RPPN : standard sensing element with lower flange in stainless steel 1.4404 (316 L) and diaphragm in Viton.

Scale	Code	P maxi Accidental	MICROSWITCH								DIMENSIONS	
			Adjustable Deadband				Max Fixed Deadband					
			N (tropicalized) at 10 % of scale	A (SI) at 90 % of scale	M (gold) at 90 % of scale	C (SH) at 10 % of scale	E (GS) at 10 % of scale	D (GSH) at 10 % of scale	E (GS) at 90 % of scale	D (GSH) at 90 % of scale		
mbar		bar	mbar	mbar	mbar	mbar	mbar	mbar	mbar	mbar	mbar	See figure
-50 to 0	101	0.15	3 to 37	3.8 to 37	9.8 to 37	11.3 to 37	0.75	0.75	3.8	4.5	Fig. 3	
-2 to 10	102	0.15	2 to 8	1.8 to 8	6.8 to 8	6.8 to 8	0.45	0.45	2.3	2.3	Fig. 3	
-5 to 50	103	0.15	1.8 to 22	3 to 22	7.5 to 22	11 to 22	0.6	0.6	2.3	3.8	Fig. 3	
-8 to 100	104	0.15	2.3 to 37	3 to 37	7.5 to 37	15 to 37	0.75	0.75	3	3.8	Fig. 3	
-200 to 0	151	1	9 to 120	12 to 120	23 to 120	23 to 120	3	4.5	11.3	15	Fig. 3	
0 to 200	152	1	9 to 120	12 to 120	23 to 120	23 to 120	3	4.5	11.3	15	Fig. 3	
0 to 400	153	1	23 to 220	30 to 220	45 to 220	53 to 220	6	9	27	37	Fig. 3	

RPPH : sensing element withstanding overpressure with treated steel flanges and EPDM diaphragm.

RPHN : sensing element withstanding overpressure with lower flange in stainless steel 1.4404 (316 L) and viton diaphragm.

Scale	Code	P maxi Accidental	MICROSWITCH								DIMENSIONS	
			Adjustable Deadband				Max Fixed Deadband					
			N (tropicalized) at 10 % of scale	A (SI) at 90 % of scale	M (gold) at 90 % of scale	C (SH) at 10 % of scale	E (GS) at 10 % of scale	D (GSH) at 10 % of scale	E (GS) at 90 % of scale	D (GSH) at 90 % of scale		
mbar		bar	mbar	mbar	mbar	mbar	mbar	mbar	mbar	mbar	mbar	See figure
-50 to 0	101	10	3 to 37	3.8 to 37	9.8 to 37	11.3 to 37	0.9	0.9	3.8	4.5	Fig. 3	
-2 to 10	102	10	1,5 to 15	1.5 to 15	6.8 to 15	6.8 to 15	0.6	0.6	2.3	2.3	Fig. 3	
-5 to 50	103	10	1,5 to 30	3 to 30	6.8 to 30	7.5 to 30	0.6	0.6	2.3	3.8	Fig. 3	
-8 to 100	104	10	2,3 to 37	3.8 to 37	7.5 to 37	15 to 37	0.75	0.75	3	4.5	Fig. 3	
-200 to 0	151	50	18 to 120	30 to 120	37 to 120	60 to 120	4.5	6	21.8	37	Fig. 3	
0 to 200	152	50	23 to 120	37 to 120	45 to 120	67 to 120	5.3	6	27	45	Fig. 3	
0 to 400	153	50	26 to 220	45 to 220	53 to 220	75 to 220	6	8.3	31	53	Fig. 3	
0 to 1000	154	50	33 to 220	53 to 220	67 to 220	90 to 220	9	10.5	40	67	Fig. 3	
0 to 700	171*	100	30 to 525	60 to 525	60 to 525	105 to 525	10.5	13.5	36	75	Fig. 3	
0 to 1500	172*	100	30 to 525	90 to 525	60 to 525	150 to 525	10.5	13.5	36	112	Fig. 3	
0 to 2500	173*	100	37 to 525	135 to 525	75 to 525	240 to 525	13.5	16.5	45	165	Fig. 3	

T° fluid : -15...150° C
T° ambient : -20... 70° C

} RPPA / RPPN
RPPH / RPHN

* G 1/4 female connection

These microswitches can be implemented with two simultaneous contacts : W(2xC), B(2xA), F(2xC), V(2xD)
Warning : in the case, deadhands are multiplied by 1.5

For microswitches G : contact us

Operating range

RPPA - RPPN - RPPC - RPPX medium pressure

RPPA : standard sensing element with brass base plate, tombac bellow or nickel plated piston.

RPPN : stainless steel sensing element, stainless steel bellow or nickel plated piston

Scale	P maxi Accidental	Code	MICROSWITCH								DIMENSIONS
			Adjustable Deadband				Max Fixed Deadband				
			N (tropicalized)	A (SI)	M (gold)	C (SH)	E (GS)	D (GSH)	Sensing element		
bar	bar		at 10 % of scale	at 90 % of scale	at 10 % of scale	at 90 % of scale	at 10 % of scale	at 90 % of scale	at 10 % of scale	at 90 % of scale	See figure
			mbar	mbar	mbar	mbar	mbar	mbar	mbar	mbar	
-1 to 0	1.5	200	37 to 375	53 to 375	120 to 375	142 to 375	7,5	9	45	63	Fig 4
-1 to 2.5	7	201	120 à 1800	150 to 1800	225 to 1800	300 to 1800	33	37	144	180	Fig 4
0 to 0,2	1.5	202	22 to 150	30 to 150	90 to 150	97 to 100	6	7.5	27	36	Fig 4
0.05 to 1	1.5	203	30 to 600	37 to 600	120 à 600	142 to 600	6	7.5	36	45	Fig 4
0,5 to 10	15	204 (1)	300 to 4500	375 to 4500	975 to 4500	1275 to 4500	67	75	360	450	Fig 4
3,5 to 25	30	205	900 to 7500	1800 to 7500	1125 to 7500	1950 to 7500	90	150	1080	2160	Fig 4
			bar	bar	bar	bar	mbar	mbar	bar	bar	
5 to 50	65	206	1.5 to 15	3 to 15	3.7 to 15	4.5 to 15	225	300	2,2	3.7	Fig 4
5 to 100	220	207 (3)	3.7 to 22	4.5 to 22	8.2 to 22	9.7 to 22	1050	1350	4,5	5.2	Fig 4
20 to 150	220	208 (3)	3.7 to 22	5.2 to 22	8.2 to 22	9.7 to 22	1050	1500	4,5	6.7	Fig 4
-1 to 3.5	15	209	0.22 to 2.2	0.3 to 2.2	0.97 to 2.2	1.27 to 2.2	67	75	0,3	0.37	Fig 4
			bar	bar	bar	bar	bar	bar	bar	bar	
25 to 175	800	600 (2)	30 to 120	45 to 120	45 to 120	47 to 120	22	15	36	54	Fig 4
30 to 350	800	601 (2)	30 to 150	45 to 150	45 to 150	47 to 150	24	24	36	54	Fig 4
60 to 600	800	602 (2)	30 to 180	45 to 180	45 to 180	47 to 180	24	24	36	54	Fig 4

(1) 30 bar in stainless steel version

(2) sensing element with piston

(3) stainless steel version only

RPPC : sensing element withstanding overpressure with bichromate finish galvanized base plate and Perbunan diaphragm (code 201 only).

RPPX : sensing element withstanding overpressure with stainless steel base and diaphragm. (except code 201)

Scale	P maxi Accidental	Code	MICROSWITCH								DIMENSIONS
			Adjustable Deadband				Max Fixed Deadband				
			N (tropicalized)	A (SI)	M (gold)	C (SH)	E (GS)	D (GSH)	Sensing element		
bar	bar		at 10 % of scale	at 90 % of scale	at 10 % of scale	at 90 % of scale	at 10 % of scale	at 90 % of scale	at 10 % of scale	at 90 % of scale	See figure
			bar	bar	bar	bar	mbar	mbar	bar	bar	
-1 to 2.5	80	201	0.37 to 3	0.45 to 3	1.2 à 3	1.5 à 3.7	97	112	0.45	0.52	Fig.4
0.5 to 10	50	204	0.27 to 4.5	0.37 to 4.5	0.94 to 4.5	1.2 to 4.5	67	93	0.37	0.45	Fig.4
3.5 to 25	100	205	0.67 to 15	1.3 to 15	2.2 to 15	4.6 to 15	225	300	0.82	1.6	Fig.4
5 to 50	100	206	1.5 to 15	3 to 15	5.2 to 15	10 to 15	300	450	2.25	3.7	Fig.4
5 to 100	200	207	3 to 37	6 to 37	7.5 to 37	15 to 37	1050	135	3.75	7.5	Fig.4
20 to 150	200	208	3 to 37	9 to 37	7.5 to 37	22 to 37	2250	3000	3.75	11.2	Fig.4
0.2 to 4	50	210	0.15 to 4.5	0.27 to 4.5	0.52 to 4.5	0.94 to 4.5	60	75	0.22	0.37	Fig.4

T° fluid : -50...200° C ; -50... 80°C (RPPA only)

T° ambient : -20...55° C (all versions)

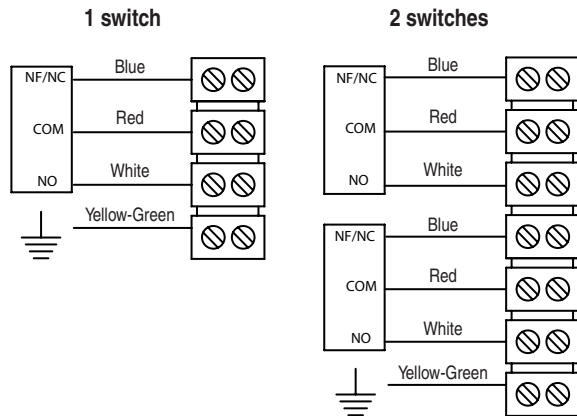
These microswitches can be implemented with too simultaneous contacts : W(2xC), B(2xA), F(2xC), V(2xD)

Warning : in the case, deadhands are multiplied by 1.5

For microswitches G : contact us

Cable identification, current rating

Cable identification



Current rating

Microswitch type SPDT


A	1 Standard changeover switch Adjustable deadband	0,1 A min.; 10 A max. 250 Vac max. or 220 Vcc max.
B	2 Simultaneous changeover switches Adjustable deadband	0,1 A min.; 10 A max. 250 Vac max. or 220 Vcc max.
C	Hermetically changeover switches Adjustable deadband	5 mA min.; 4A max. 250 Vac max. or 220 Vcc max.
W	2 Hermetically changeover switches Adjustable deadband	5 mA min.; 4A max. 250 Vac max. or 220 Vcc max.
E	1 Ultra sensitive changeover switches Fixed deadband	0,2 A min.; 10A max. 250 Vac max. or 30 Vcc max.
F	2 ultra sensitive changeover switches Fixed deadband	0,2 A min.; 10A max. 250 Vac max. or 30 Vcc max.
G	2 movable changeover switches Fixed deadband	0,2 A min.; 10A max. 250 Vac max. or 30 Vcc max.
D	1 hermetically scaled ultra sensitive changeover switches Fixed deadband	0,4 A min.; 10A max. 30 Vcc max.
V	2 hermetically scaled ultra sensitive changeover switches Fixed deadband	0,4 A min.; 10A max. 30 Vcc max.
M	Gold contact Adjustable deadband	10 mA min.; 50 mA max. 250 Vac max. or 220 Vcc max.
K	Gold 2 contacts Adjustable deadband	10 mA min.; 50 mA max. 250 Vac max. or 220 Vcc max.
N	Tropicalized Adjustable deadband	0,1 A min.; 10A max. 250 Vac max. or 48 Vcc max.
T	Tropicalized 2 contacts Adjustable deadband	0,1 A min.; 10A max. 250 Vac max. or 48 Vcc max.

Regulation

Pressure of regulator type RPP(E)

LCIE 03 ATEX 6231X

CE 0081

 II 2 G and D
EEx d IIC T6 or T5

Poussière / Dust IP6X	Gaz / Gases
T° surface	Class
80°C	Ta = 60°C / T6
95°C	Ta = 70°C / T5

DO NOT OPEN - LIVE VOLTAGE

All necessary measures must be taken by the user, to avoid the calorific transfer from the fluid to the apparatus head increasing the head's temperature to such that it reaches the self-ignition temperature of the gas in which it is used.

Operating principle

A flexing element, bellows, diaphragm or piston, actuates one or two microswitches by means of levers. The set point and the deadband are set by springs mounted in opposition.

Dimensions (mm)

Explosion-proof case



Sensing element RPPA / RPPH / RPPN / RPHN low pressure

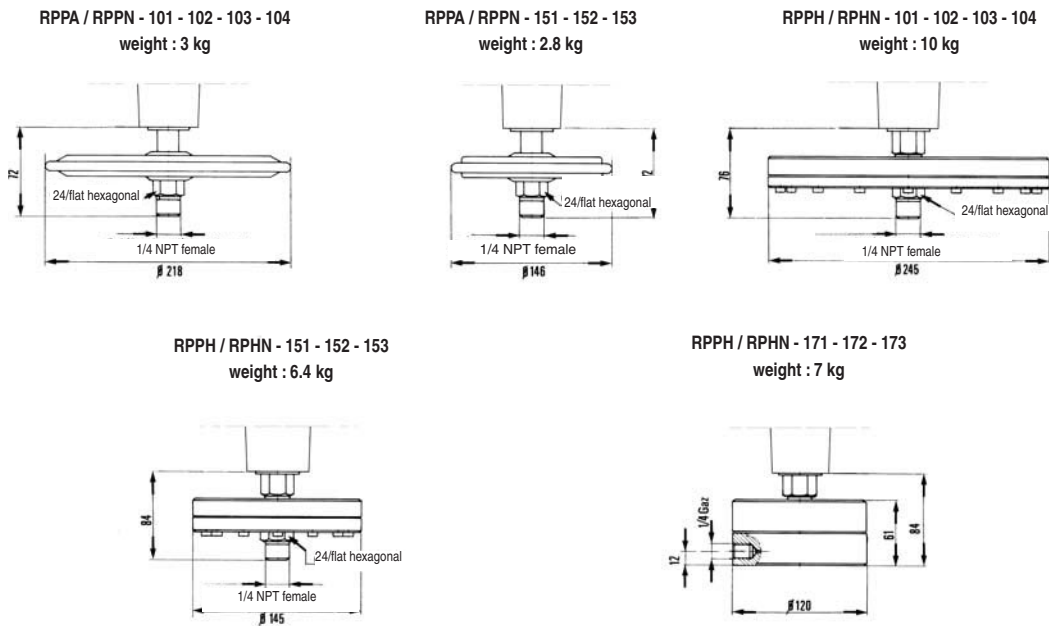


Fig. 3

Sensing element RPPA / RPPC / RPPN / RPPX medium pressure

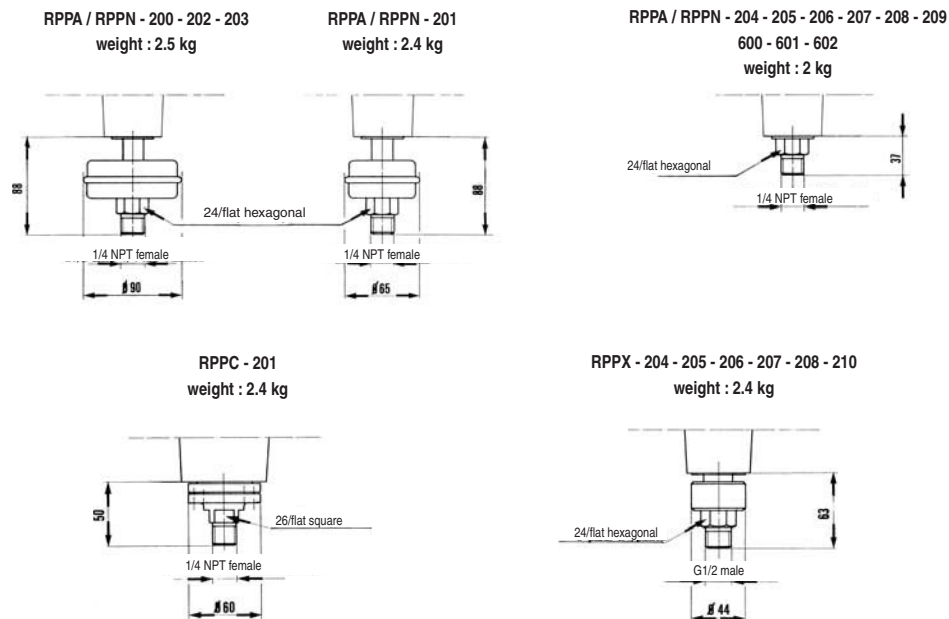


Fig. 4

Accessories

Adaptator for welded connection in steel ZRM1 or stainless steel ZRMN 1.
Ring siphon steel or 1.4401 (AISI 316) stainless steel.
Chemical seal (code 201-204 to 602)

Isolating valve.
Manifold.
Pulsation dampener.

Options

All stainless steel construction for aggressive environments (screws and sensing element).
French electricity (EDF) version (consult SEPTEN ZP, ZPH leaflet)
Specific connection.
Cleanliness for oxygen service. **code 0765**

Stainless steel tag plate and wire **code 9941**
Connection on pipe 2 " dia. **code 0407**
Adjustment of the set point **code SETP**

Ordering Details - RPP(E)

RPPExxxxxx	
Model	1'... 4' digit
Pressure switch	RPPE
Type	5' digit
Code 101 à 173	
PPA	1
PPH	2
PPN	3
PHN	4
Code 200 à 602	
PPA	5
PPC	6
PPN	7
PPX	8
Microswitch **	6' digit
1 standard changeover switch	A
2 simultaneous changeover switches	B
1 hermetically changeover switch	C
1 hermetically ultra sensitive changeover switch	D
1 ultra sensitive changeover switch	E
2 ultra sensitive changeover switches	F
2 movable changeover switches	G
2 gold contact changeover switch	K
1 gold contact changeover switch	M
1 tropicalized changeover switch	N
2 tropicalized changeover switches	T
2 hermetically ultra sensitive changeover switches	V
2 hermetically changeover switches	W
Other changeovers (option)	x
Hydraulic connection	7' digit
G 1/4 female (171, 172, 173 only)	H
G 1/2 male	3
1/2 NPT male	6
1/4 NPT female	8
Pressure range	8'...10' digit
See codes in table	x x x

Code	Range in mbar		RPPA RPPN	RPPH RPHN
101	-50	+ 0	X	X
102	-2	+ 10	X	X
103	-5	+ 50	X	X
104	-8	+ 100	X	X
151	-200	+ 0	X	X
152	0	+ 200	X	X
153	0	+ 400	X	X
154	0	+ 1000		X
171	0	+ 700		X
172	0	+ 1500		X
173	0	+ 2500		X
Code	Range in bar		RPPA RPPN	RPPC RPPX
200	-1	+ 0	X	
201	-1	+ 2.5	X	X
202	0	+ 0.2	X	
203	0.05	+ 1	X	
204	0.5	+ 10	X	X
205	3.5	+ 25	X	X
206	5	+ 50	X	X
207	5	+ 100	X	X
208	20	+ 150	X	X
209	-1	+ 3.5	X	
210	0.2	+ 4		X
600	25	+ 175	X	
601	30	+ 350	X	
602	60	+ 600	X	

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** SPDT microswitches only

Electronuclear versions: ZP-SHM or CHM, ZPH-SHM or CHM