

# RPP(Y) Low and medium range pressure intrinsically safe

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 6123X

CE 0081



IM 1  
EEx ia I



II 1 G and D



II 2 D

Hazardous areas : 0, 1, 2, 20, 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.



## Specifications (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.
Conform to CE	Low Voltage Directive DBT 73/23/CE Directive ATEX 94/9/CE (EN50014, EN50020, EN50281-1-1)
Degree of protection	IP 65, NF EN 60529

### 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.

### Manufacturing

Cover	Blue, ZAMAK protected Captive screws for cover attachment
Case	Black ZAMAK protected
Wall mounting	Removable bracket
Earth connection	Internal
Electrical connection	Internal terminal block with PE 11 cable gland for cable between 7 and 10.5 mm in diameter
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 fitted with an antivibration system locking the set point and the deadband, protected by screwed, lead seal on in option. Internal mechanism of bichromate-treated cadmium-plated steel

**BOURDON  
HAENNI**

made to measure



## 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	P maxi Accidental	Code	MICROSWITCH				DIMENSIONS	Max Fixed Deadband		
			Adjustable Deadband					Sensing element	S (or)	
			N (tropicalized)	M (gold)	C (SH)				at 10 % of scale	at 90 % of scale
				at 10 % of scale	at 90 % of scale	at 10 % of scale	at 90 % of scale			
mbar	bar		mbar	mbar	mbar	mbar	See figure	mbar	mbar	
-50 to 0	0.15	101	2 to 25	2.5 to 25	6.5 to 25	7.5 to 25	Fig 3	1,2	1,4	
-2 to 10	0.15	102	1 to 5	1.2 to 5	4.5 to 5	4.5 to 5	Fig 3	0,7	0,8	
-5 to 50	0.15	103	1.2 to 15	2 to 15	5 to 15	7 to 15	Fig 3	1	1,1	
-8 to 100	0.15	104	1.5 to 25	2 to 25	5 to 25	10 to 25	Fig 3	1,2	1,4	
-200 to 0	1	151	6 to 80	8 to 80	15 to 80	15 to 80	Fig 3	4,6	8,4	
0 to 200	1	152	6 to 80	8 to 80	15 to 80	15 to 80	Fig 3	4,6	8,4	
0 to 400	1	153	15 to 150	20 to 150	30 to 150	35 to 150	Fig 3	9	17	

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

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

Scale	P maxi Accidental	Code	MICROSWITCH				DIMENSIONS	Max Fixed Deadband		
			Adjustable Deadband					Sensing element	S (or)	
			N (tropicalized)	M (gold)	C (SH)				à 10 % d'échelle	à 90 % d'échelle
				at 10 % of scale	at 90 % of scale	at 10 % of scale	at 90 % of scale			
mbar	bar		mbar	mbar	mbar	mbar	See figure	mbar	mbar	
-50 to 0	10	101	2 to 25	2.5 to 25	6.5 to 25	7.5 to 25	Fig 3	1,4	1,7	
-2 to 10	10	102	1 to 10	1 to 10	4.5 to 10	4.5 to 10	Fig 3	1	1,1	
-5 to 50	10	103	1 to 20	2 to 20	4.5 to 20	5 to 20	Fig 3	1	1,1	
-8 to 100	10	104	1.5 to 25	2.5 to 25	5 to 25	10 to 25	Fig 3	1,2	1,4	
-200 to 0	50	151	12 to 80	20 to 80	25 to 80	40 to 80	Fig 3	7	11	
0 to 200	50	152	15 to 80	25 to 80	30 to 80	45 to 80	Fig 3	8	11	
0 to 400	50	153	17 to 150	30 to 150	35 to 150	50 to 150	Fig 3	9,2	15,4	
0 to 1000	50	154	22 to 150	35 to 150	45 to 150	60 to 150	Fig 3	14	19,5	
0 to 700	100	171*	20 to 350	40 to 350	40 to 350	70 to 350	Fig 3	16	25	
0 to 1500	100	172*	20 to 350	60 to 350	40 to 350	100 to 350	Fig 3	16	25	
0 to 2500	100	173*	25 to 350	90 to 350	50 to 350	160 to 350	Fig 3	21	31	

T° fluid : -15...150° C  
T° ambient : -25...70° C

} RPPA / RPPN  
RPPH / RPHN

\* G 1/4 female connection

These microswitches can be implemented with two simultaneous : W (2xC)  
Warning : in this case, deadbands are multiplied by 1.5

## 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		Max Fixed Deadband	
			Adjustable Deadband				Sensing element	S (or)		
			N (tropicalized)	M (gold)	C (SH)			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	
bar	bar		mbar	mbar	mbar	mbar				
-1 to 0	1.5	200	25 to 250	35 to 250	80 to 250	95 to 250	Fig 4	1,2	17	
-1 to 2.5	7	201	80 to 1200	100 to 1200	150 to 1200	200 to 1200	Fig 4	50	70	
0 to 0.2	1.5	202	15 to 100	20 to 100	60 to 100	65 to 100	Fig 4	10	14	
0.05 to 1	1.5	203	20 to 400	25 to 400	80 to 400	95 to 400	Fig 4	10	14	
0.5 to 10	15	204 (1)	200 to 3000	250 to 3000	650 to 3000	850 to 3000	Fig 4	105	140	
3.5 to 25	30	205	600 to 5000	1200 to 5000	750 to 5000	1300 to 5000	Fig 4	140	280	
			bar	bar	bar	bar		bar	bar	
5 to 50	65	206	1 to 10	2 to 10	2.5 to 10	3 to 10	Fig 4	345	560	
5 to 100	220	207 (3)	2.5 to 15	3 to 15	5.5 to 15	6.5 to 15	Fig 4	1200	1600	
20 to 150	220	208 (3)	2.5 to 15	3.5 to 15	5.5 to 15	6.5 to 15	Fig 4	1200	1700	
-1 to 3.5	15	209	0.15 to 1.5	0.2 to 1.5	0.65 to 1.5	0.85 to 1.5	Fig 4	105	140	
			bar	bar	bar	bar		bar	bar	
25 to 175	800	600 (2)	20 to 80	30 to 80	30 to 80	35 to 80	Fig 4	23	40	
30 to 350	800	601 (2)	20 to 100	30 to 100	30 to 100	35 to 100	Fig 4	26	50	
60 to 600	800	602 (2)	20 to 120	30 to 120	30 to 120	35 to 120	Fig 4	26	60	

(1) 30 bar in stainless steel version (2) sensing element with piston (3) stainless steel version only

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

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

Scale	P maxi Accidental	Code	MICROSWITCH				DIMENSIONS		Max Fixed Deadband	
			Adjustable Deadband				Sensing element	S (or)		
			N (tropicalized)	M (gold)	C (SH)			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	
bar	bar		bar	bar	bar	bar				
-1 to 2.5	80	201	0.25 to 2	0.30 to 2	0.8 to 2	1 to 2.5	Fig.4	150	210	
0.5 to 10	50	204	0.18 to 3	0.25 to 3	0.63 to 3	0.8 to 3	Fig.4	105	175	
3.5 to 25	100	205	0.45 to 10	0.9 to 10	1.5 to 10	3.1 to 10	Fig.4	345	560	
5 to 50	100	206	1 to 10	2 to 10	3.5 to 10	7 to 10	Fig.4	460	840	
5 to 100	200	207	2 to 25	4 to 25	5 to 25	10 to 25	Fig.4	1200	1600	
20 to 150	200	208	2 to 25	6 to 25	5 to 25	15 to 25	Fig.4	1200	2400	
0.2 to 4	50	210	0.1 to 3	0.18 to 3	0.35 to 3	0.63 to 3	Fig.4	95	140	

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

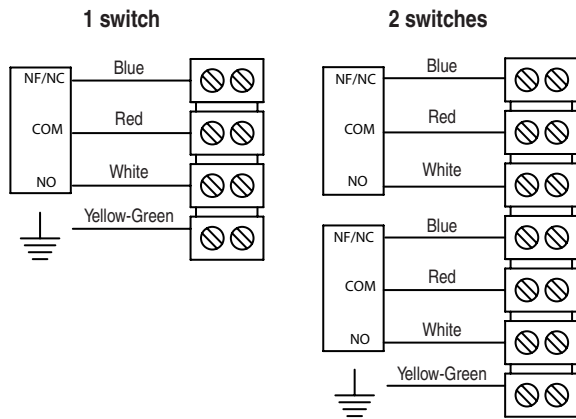
T° ambient : -25...55° C (all versions)

These microswitches can be implemented with two simultaneous : W (2xC)

Warning : in this case, deadbands are multiplied by 1.5

# Cable identification, current rating

## Cable identification



## Current rating

### Microswitch type SPDT

C	Hermetically Adjustable deadband	5 mA min.; 0.12 A max. 28 Vdc max.
M	Gold contact Adjustable deadband	10 mA min.; 50 mA max. 28 Vdc max.
K	2 gold contacts Adjustable deadband	10 mA min.; 50 mA max. 28 Vdc max.
N	Tropicalized Adjustable deadband	0.1 A min.; 0.12 A max. 28 Vdc max.
T	Tropicalized 2 contacts Adjustable deadband	0.1 A min.; 0.12 A max. 28 Vdc max.
W	2 hermetically contact Adjustable deadband	5 mA min.; 0.12 A max. 28 Vdc max.
S	Fixed Low Deadband, Gold contact Fixed deadband	10 mA min.; 50 A max. 28 Vdc max.

## Regulation

Pressure of regulator type RPP(Y)  
LCIE 03 ATEX 6123X

CE 0081



I M 1  
EEx ia I



II 1 G and D  
EEx ia IIC T6 or T5



II 2 D Use without certified safety barrier for area 21 or 22

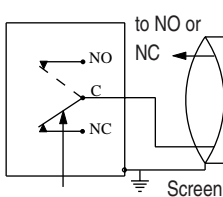
Poussière / Dust IP6X	Gaz / Gases
T° surface	Class
80°C	Ta = 55°C / T6
95°C	a = 70°C / T5

The installation must be in accordance to  $U_{max}$  and  $I_{max}$

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.

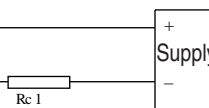
## Prescriptions d'installation

**Hazardous area**  
Area 0, 1, 2, 20, 21, 22



**Certified safety barrier**

**Area no hazardous**



$$U_{max} = 28 \text{ Vdc}$$

$$I_{max} = 120 \text{ mA}$$

$$P = 0.8 \text{ W}$$

$$C_a > C_i + C_{cable}; L_a > L_i + L_{cable}$$

$$C_i = \text{Negligible}; L_i = \text{Negligible}$$

Don't forget the barrier's resistors in the determination of  $R_c 1$ .

In area 0 or 20 the loop calculation of the association transmitter with safety barrier must be approved by notified organism.

## 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)

### Watertight case

Fig. 1

### Sensing element RPPA / RPPH / RPPN / RPHN low pressure

RPPA / RPPN - 101 - 102 - 103 - 104  
weight : 3 kg

RPPA / RPPN - 151 - 152 - 153  
weight : 2.8 kg

RPPH / RPHN - 101 - 102 - 103 - 104  
weight : 10 kg

RPPH / RPHN - 151 - 152 - 153  
weight : 6.4 kg

RPPH / RPHN - 171 - 172 - 173  
weight : 7 kg

Fig. 3

## Dimensions (mm)

### Sensing element RPPA / RPPC / RPPN / RPPX medium pressure

RPPA / RPPN - 200 - 202 - 203  
weight : 2.5 kg

RPPA / RPPN - 201  
weight : 2.4 kg

RPPA / RPPN - 204 - 205 - 206 - 207 - 208 - 209  
600 - 601 - 602  
weight : 2 kg

RPPC - 201  
weight : 2.4 kg

RPPX - 204 - 205 - 206 - 207 - 208 - 210  
weight : 2.4 kg

Fig. 4

## Accessories

Adaptator for welded connection in steel ZRM1 or stainless steel ZRMN 1. Isolating valve.  
 Ring siphon steel or 1.4401 (AISI 316) stainless steel. Manifold.  
 Chemical seal 200-201-204 to 602 Pulsation dampener.

## Options

Other cables glands  
 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(Y)

RPPYxxxxxx	
Model	1'... 4' digit
Pressure switch	RPPY
Type	5' digit
<b>Code 101 to 173</b>	
PPA	1
PPH	2
PPN	3
PHN	4
<b>Code 200 to 602</b>	
PPA	5
PPC	6
PPN	7
PPX	8
Microswitch **	6' digit
1 hermetically changeover switch	C
2 gold contacts changeover switches	K
1 gold contact changeover switch	M
1 tropicalized changeover switch	N
1 gold contact changeover switch, fixed low deadband	S
2 tropicalized changeover switches	T
2 hermetically changeover switches	W
Other changeover switches (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	xxx

Code	Range in mbar		RPPA	RPPH
101	-50	+	0	X
102	-2	+	10	X
103	-5	+	50	X
104	-8	+	100	X
151	-200	+	0	X
152	0	+	200	X
153	0	+	400	X
154	0	+	1000	X
171	0	+	700	X
172	0	+	1500	X
173	0	+	2500	X

Code	Range in bar		RPPA	RPPN	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