

RT(E) Explosion proof temperature switches

All industrials environments

All fluids

One or two set points

Copper/stainless steel RTN

Stainless steel version for aggressive fluids,
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



Temperature switches of the RTN series are designed to maintain a constant temperature around a chosen preset value, or actuate an alarm or safety circuit when the temperature being monitored reaches a critical level.

Technical Data (20°C)

Fluids	All fluids compatible with the measuring element from -46...350°C
Operating ambient temperature	From -30...55°C (except 407 Ta = 0...55°C)
Storage temperature	From -40...55°C
Reproducibility	±2% of F.S.
Reading accuracy	±5% of full scale
Conform to 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 scale
Measuring element	Bulb and capillary L = 1 to 20 m, codes 400 to 415 stainless steel rigid probe, codes 300 to 315
Adjustment element	External adjustment screw for the set point and the deadband Internal mechanism of bichromate-treated cadmium-plated steel
Sensing element (connection + bellow)	Cuprous steel

Important

Normal operation is between 10 % and 90 % of the selected scale. The deadband values given in the table overleaf are defined under these conditions. T°C max. values are for accidental temperature overranges of limited duration.

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

The length of the bulb (codes 400 to 415) is a function of the capillary length. Consult table overleaf.

The bulb must be totally immersed in the process fluid, or incorrect readings will result.

In the presence of mechanical vibrations, these should be reduced by means of antivibration mounts fitted to the temperature switches.

**BOURDON
HAENNI**

made to measure



Types of transmission

RTN - RTE

RTN : stainless steel / stainless steel sensing element

Scale	Code	T° maxi Accidentelle	MICROSWITCH							
			Adjustable Deadband				Fixed Deadband			
			N (tropicalized) at 10 % of scale	A (SI)	M (gold) at 90 % of scale	C (SH)	E (GS)		D (GSH)	
at 10 % of scale	at 10 % 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			
°C		°C	°C	°C	°C	°C	°C	°C	°C	
-46 + 0	400	+ 40	6 to 13	3 to 13	12 to 18	6 to 18	2.25	1.2	7.5	3.7
-20 + 20	401	+ 60	4.5 to 12	2.2 to 12	9 to 15	6 to 15	1.5	0.75	6	3
0 + 45	402	+ 80	6 to 13	3 to 13	10 to 18	6 to 18	2.25	1.05	7.5	3.7
+40 + 120	403	+ 145	7.5 to 24	4.5 to 24	15 to 30	9 to 30	3	1.8	9	6
+100 + 160	414	+ 180	7.5 to 18	4.5 to 18	13 to 22	7.5 to 22	3	1.5	9	4.5
+20 + 80	415	+ 100	7.5 to 18	4.5 to 18	13 to 22	7.5 to 22	3	1.5	9	4.5
+160 + 250	406	+ 290	9 to 24	6 to 24	16 to 22	10 to 33	3.75	1.8	12	6.7
+250 + 350	407	+ 360	12 to 30	6 to 30	22 to 37	12 to 37	4.5	2.25	15	7.5
+70 + 150	408	+ 175	7.5 to 24	6 to 24	15 to 30	9 to 30	3	1.5	9	6
-20 + 20	411	+ 60	**	**	7.5 to 12	4.5 to 10	**	**	**	**
+130 + 190	412	+ 210	7.5 to 18	4.5 to 18	13 to 22	7.5 to 22	3	1.5	9	4.5
+200 + 270	413	+ 290	7.5 to 18	4.5 to 18	13 to 22	7.5 to 22	3	1.5	9	4.5
-46 + 0	300	+ 40	6 to 13	3 to 13	12 to 18	6 to 18	2.25	1.2	7.5	3.7
-20 + 20	301	+ 60	4.5 to 12	2.2 to 12	9 to 15	6 to 15	1.5	0.75	6	3
0 + 45	302	+ 80	6 to 13	3 to 13	10 to 18	6 to 18	2.25	1.05	7.5	3.7
+40 + 120	303	+ 145	7.5 to 24	4.5 to 24	15 to 30	9 to 30	3	1.8	9	6
+20 + 80	315	+ 100	7.5 to 18	4.5 to 18	13 to 22	7.5 to 22	3	1.5	9	4.5

** No feasible

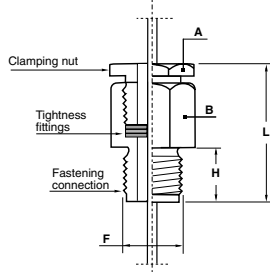
* These microswitches can be implemented with two simultaneous contacts : W (2xC), B (2xA), F (2xE), V(2xD)

Warning : in the case, deadhands are multiplied by 1.5

For microswitches G : contact us

Connections and accessories

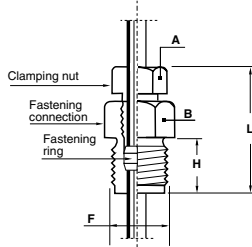
St. steel sliding male connection (TD1)



Thread and sizes		
F	G 1/2	1/2 NPT
H	18	21
L	43	46
A	27/flat	27/flat
B	27/flat	27/flat

Waterproof after tightening..

St. steel sliding male connection (TD2/3)

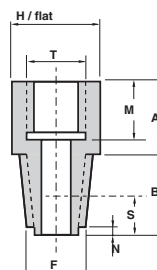


Thread and sizes		
F	G 1/2	1/2 NPT
H	18	21
L	36	40
A	17/flat	17/flat
B	23/flat	23/flat

Becomes revolving male connection after clamping.
When tightened on stem tight at 40 bar max.

St. steel or brass socket union

This term indicates female/male connections.



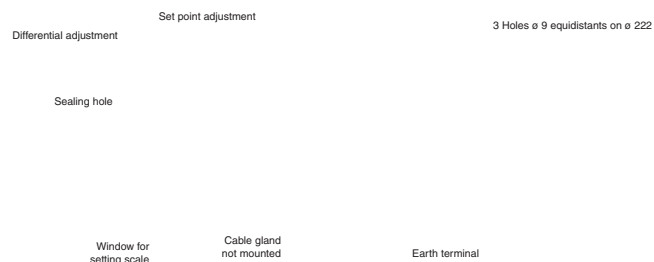
Female side is parallel tapered, tightness is ensured by means of a gasket. It corresponds to the male connection in our fastening (G 1/2).

The male part corresponds to the "customer requirement". It provides sealing according to the existing pipe connections.

Socket union dimensions				
F	1/2 BSP-Tr	1/2 NPT	3/4 BSP-Tr	3/4 NPT
T	G1/2			
B	26	26	32	32
max. dia. of the stem	14	14	16	16
H	26	26	35	35
A	20	20	20	20
M	16	16	16	16
N	5	5	5	5
S	11.4 to 15	13	12.7 to 16.3	13.5

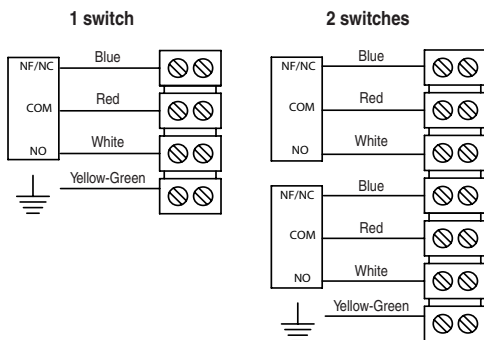
Dimensions (mm)

Standard case



Cable identification, current rating

Cable identification



M	Gold contact Adjustable deadband	10 mA min.; 50 mA max. 250 Vac max. or 220 Vdc max.
K	Gold 2 contacts Adjustable deadband	10 mA min.; 50 mA max. 250 Vac max. or 220 Vdc max.
N	Tropicalized Adjustable deadband	0,1 A min.; 10A max. 250 Vac max. or 48 Vdc max.
T	Tropicalized 2 contacts Adjustable deadband	0,1 A min.; 10A max. 250 Vac max. or 48 Vdc max.

Current rating

Microswitch type SPDT

A	1 Standard changeover switch Adjustable deadband	0,1 A min.; 10 A max. 250 Vac max. or 220 Vdc max.
B	2 Simultaneous changeover switches Adjustable deadband	0,1 A min.; 10 A max. 250 Vac max. or 220 Vdc max.
C	Hermetically changeover switches Adjustable deadband	5 mA min.; 4A max. 250 Vac max. or 220 Vdc max.
W	2 Hermetically changeover switches Adjustable deadband	5 mA min.; 4A max. 250 Vac max. or 220 Vdc max.
E	1 Ultra sensitive changeover switches Fixed deadband	0,2 A min.; 10A max. 250 Vac max. or 30 Vdc max.
F	2 ultra sensitive changeover switches Fixed deadband	0,2 A min.; 10A max. 250 Vac max. or 30 Vdc max.
G	2 movable changeover switches Fixed deadband	0,2 A min.; 10A max. 250 Vac max. or 30 Vdc max.
D	1 hermetically scaled ultra sensitive changeover switches Fixed deadband	0,4 A min.; 10A max. 30 Vdc max.
V	2 hermetically scaled ultra sensitive changeover switches Fixed deadband	0,4 A min.; 10A max. 30 Vdc max.

Regulation

Temperature of regulator type RT(E)

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II 2 G and D
EEx d IIC T6 or T5

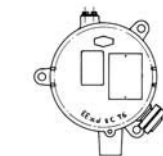
Poussière / Dust IP6X	Gaz / Gases
T° surface	Class
80°C	Ta = 60°C / T6
95°C	Ta = 70°C / T5

DO NOT OPEN - LIVE VOLTAGE

Every precaution must be taken by the user to ensure that the heat transfer by the fluid to the unit head does not raise the unit head temperature to the spontaneous ignition temperature of the gas in which it is situated.

Types of transmission

RTN - Code 300-301-302-303-315



6 pans 29/plats
3/8" Gaz Cyl

3/4 BSP Tr

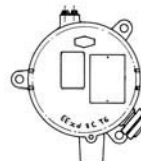
ø 18 x 16

G 27/17 (laiton) :
for RTA code 300 to 315
GN 27/17 (SS 316 L / 1.4404) :
for RTN,
code 300 to 315

Weight : 2 kg

RTN - Code 400-401-402-403-414-415-406-407-408-411-412-413

Weight : 2 kg + Transmission



TD 1: stem transmission with bare stainless steel capillary (without stem). Option : sliding male connection.
TD 2 : stem transmission with st. steel capillary and st. steel protection. Without stem = without connection. With stem = connection.
TD 3 : stem transmission with st. steel capillary and PVC coated st. steel protection.
Without stem = without connection. With stem = connection.

Nota : In all cases, the minimum immersion of the stem P will be :
- S + 18 for G 1/2 connection
- S + 21 for 1/2 NPT connection

Bulb length (S) according to the transmission length (K)

	Code	400	401	402	403	414	415	406	407	408	411	412	413
K = 0 m .. 2 m	S mm	80	80	80	80	80	80	80	80	80	80	80	80
K = 3 m .. 7 m	S mm	100	100	100	100	100	100	100	100	100	100	100	100
K = 8 m .. 16m	S mm	150	150	150	150	150	150	150	150	150	150	150	150
K = 17 m .. 20 m	S mm	180	180	180	180	180	180	180	180	180	180	180	180

All versions supplied with bulb of 100 mm length and stem P = 150, 250, 400 and 600 mm are feasible.

all versions supplied with bulb of 150 or 180 mm length and stem P = 250, 400 and 600 mm are feasible (not feasible with stem P = 150 mm length).

Operating principle

A vapour filled sensing element actuates one or two microswitches by means of levers. The set point and the deadband are set by springs mounted in opposition.

Options

Bulb Ø 9,5 mm (min. length : 120, 150, 225, 280 mm)
French electricity (EDF) version (consult SEPTEN ZT3. ZT4 leaflet)

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

Ordering Details - RT(E)

RTxxExxxxxxxx	
Model	1' digit
Temperature switches	R
Type	2'...3' digit
Inox	TN
Type of protection	4' digit
Explosion-proof	E
Microswitch **	5' digit
1 standard changeover switch	A
2 simultaneous changeover switches	B
1 hermetically changeover switch	C
1 hermetically scaled 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 switches	K
1 gold contact changeover switch	M
1 tropicalised changeover switch	N
2 tropicalised changeover switches	T
2 hermetically ultra sensitive changeover switches	V
2 hermetically changeover switches	W
** SPDT microswitches only	
Temperature range	6'...8' digit
See code in table	xxx
Type of transmission	9' digit
TD1	1
TD2	2
TD3	3
TRD code 3xx	E
Transmission length K	10' digit
without code 3xx	0
1 meter	1
2 meters	2
3 meters	3
4 meters	4
5 meters	5
6 meters	6
7 meters	7
8 meters	8
9 meters	9
10 meters	A
Non-standard (max.20 meters)	X
Stem length P	11' digit
Stem only (for TRD)	1
TD1 std.	2
150 mm	3
250 mm	4
400 mm	5
600 mm	6
Non-standard (max.1000)	X
Bulb diameter	12' digit
Ø 14 mm	E
Connection	13' digit
Without	0
G 1/2	3
1/2 NPT	6
3/8 gaz cyl. ⁽¹⁾	J
Other connection	X

code	échelle en °C	
400	- 46	+ 0
401	- 20	+ 20
402	0	+ 45
403	+ 40	+ 120
414	+ 100	+ 160
415	+ 20	+ 80
406	+ 160	+ 250
407	+ 250	+ 350
408	+ 70	+ 150
411	- 20	+ 20
412	+ 130	+ 190
413	+ 200	+ 270
300	- 46	+ 0
301	- 20	+ 20
302	0	+ 45
303	+ 40	+ 120
315	+ 20	+ 80

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⁽¹⁾ Operating range series 300 only