



**BOURDON**  
The Original by Baumer



## Main Features

- Excellent repeatability
- Dead band adjustment for regulation
- Fix dead band for control and alarm
- Intrinsic safety Hazardous area 0, 1, 2

## Applications

- Power generation safety equipment

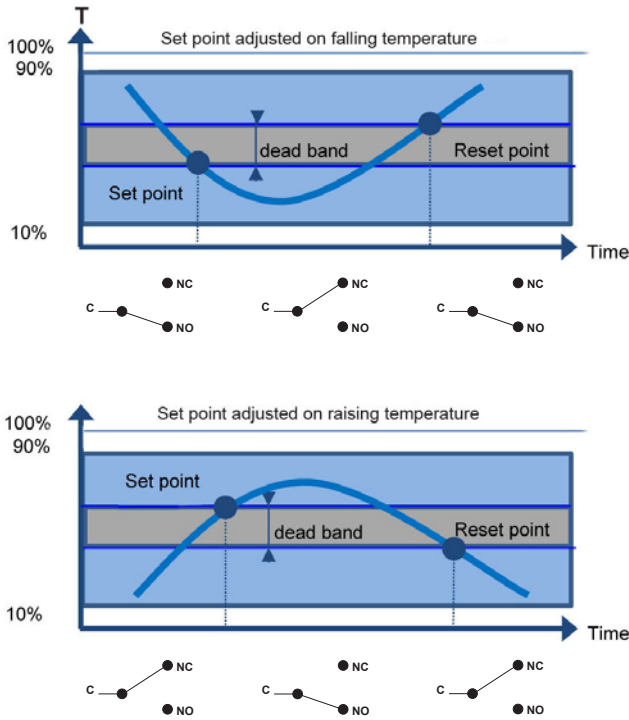
## Technical Data

Temperature range	-46 ... 0°C to 200 ... 270°C	Ground connection	Via internal terminal block
Temperature	Process : -46 ... +270°C Ambient : -30 ... +55°C Storage : -40 ... +55°C	Electrical connection	Terminal block with plastic cable gland for Ø 7 to 10.5 mm
Repeatability	± 1% F.S. @ constant temperature cycle	Electrical function	See ordering code details on page 5
CE conformity	Low Voltage Directive LVD 2006/95/EC ATEX Directive 94/9/EC	Adjustment	2 external adjustment screws on top of the case for set point and dead band
Protection rating	IP 66 (EN 60529)	ATEX	<u>Type examination certificate</u> LCIE 03 ATEX 6123X EN 60079-0 : 2009 EN 60079-11 : 2012
Process connection	RTA : Copper alloy RTN : Stainless steel 1.4404 (316L)	Marking	CE 0081 Ex I M 1 Ex ia I Ma Ex II 1 G Ex ia IIC T6 or T5 Ga
Bulb	RTA : Copper alloy RTN : Stainless steel 1.4404 (316L)	Electrical data	$U_{max} = 28 \text{ Vdc}$ $I_{max} = 120 \text{ mA}$ $P_{max} = 0.84 \text{ W}$ $C_i = \text{Negligible}$ ; $L_i = \text{Negligible}$
Capillary	RTA : Copper alloy RTN : Stainless steel 1.4404 (316L) For types of protection see ordering details on page 5		
Scale	Internal. Accuracy on reading ± 5% FS		
Cover	Zamak blue painted Captive stainless steel screws		
Case	Black Zamak		
Mounting	Direct mounting or with wall mounting bracket		

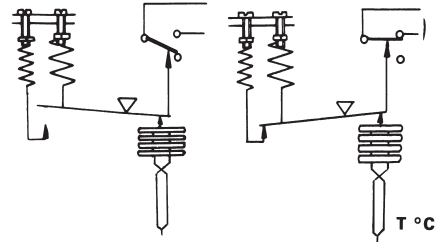
## Options

Customer specific set point adjustment	Code SETP
Mounting on 2" pipe	Code 0407
Stainless steel tag plate and wire	Code 9941
Lead seal of the adjustment screws	Code 8990
Nuclear cleanliness (RTN only)	Code 0838
Electrical connection : stainless steel connector (Souriau)	Code 2298
Mobile plug for stainless steel connector (Souriau)	Code 2249

## Principle



A vapour filled flexible sensing element actuates a microswitch by means of a lever. The set point is adjusted by means of a compressible spring installed in opposition.



Set point and reset point must be between 10% and 90% of the selected scale.

### Standard factory adjustment

Setpoint at 50% of the scale on falling temperature

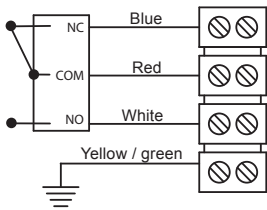
### Customer specific factory adjustment (option SETP)

The following specifications have to be given with the order:

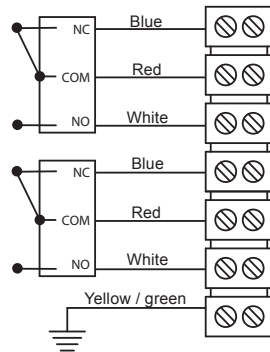
- Setpoint value
- Adjustment on falling or raising temperature
- Dead band value when using an adjustable dead band switch

## Electrical connections

### 1 SPDT



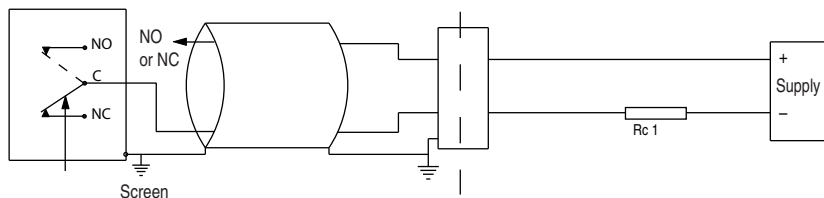
### 2 SPDT



Hazardous area  
Zone 0, 1, 2

Certified safety  
barrier

Non hazardous  
area



For max. ambient temperature refer to technical data on page 1.

The installation must be made in an intrinsically safe circuit whose certified electrical safety parameters do not exceed any of the values  $U_{max}$ ,  $I_{max}$  and  $P_{max}$  given in the electrical data on page 1.

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.

## Micro switches characteristics

Switch code	N (T)	M (K)	C (W)	S
Type	Tropicalized	Gold contact	Hermetic	Ultrasensitive Gold contact
6 Vdc	0.1 ... 0.12 A	10 ... 50 mA	5 ... 120 mA	10 ... 50 mA
12 Vdc	N/A	10 ... 50 mA	5 ... 66 mA	10 ... 50 mA
24 Vdc	N/A	10 ... 33 mA	5 ... 33 mA	10 ... 33 mA
30 Vdc	N/A	N/A	N/A	N/A
48 Vdc	N/A	N/A	N/A	N/A
110 Vdc	N/A	N/A	N/A	N/A
220 Vdc	N/A	N/A	N/A	N/A
115 Vac	N/A	N/A	N/A	N/A
250 Vac	N/A	N/A	N/A	N/A
Dielectric rigidity between contacts and ground	2000 V	2000 V	1500 V	2000 V

## Adjustable ranges

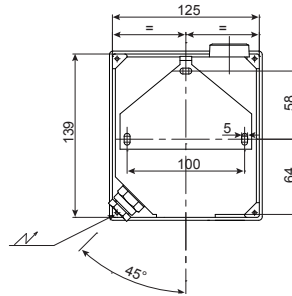
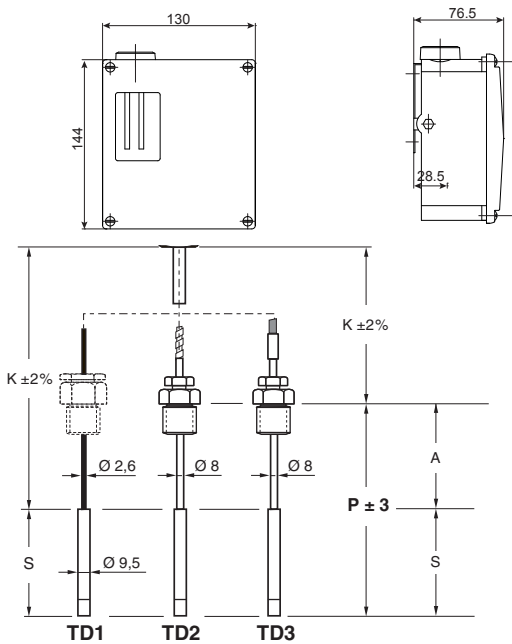
Scale	T <sub>Max</sub> accidental	Code	Micro-switch dead band <sup>1)</sup>							
			Adjustable dead band				Fixed dead band			
			N (T*)		M (K*)		C (W*)		S	
			10%	90%	10%	90%	10%	90%	10%	90%
°C			°C							
-46 ... 0	40	<b>400</b>	4 - 9	2 - 9	8 - 12	4 - 12	3	2,5		
-20 ... 20	60	<b>401</b>	3 - 8	1,5 - 6	6 - 10	4 - 10	2,5	1,5		
0 ... 45	60	<b>402</b>	4 - 9	2 - 9	7 - 12	4 - 12	3	2		
40 ... 120	145	<b>403</b>	5 - 16	3 - 16	10 - 20	6 - 20	4	3,5		
100 ... 160	180	<b>414</b>	5 - 12	3 - 12	9 - 15	5 - 15	4	3		
20 ... 80	100	<b>415</b>	5 - 12	3 - 12	9 - 15	5 - 15	4	3		
160 ... 250	290	<b>406</b>	6 - 18	4 - 18	11 - 22	7 - 22	5	3,5		
70 ... 150	175	<b>408</b>	5 - 16	4 - 16	10 - 20	6 - 20	4	3		
130 ... 190	210	<b>412</b>	5 - 12	3 - 12	9 - 15	5 - 15	4	3		
200 ... 270	290	<b>413</b>	5 - 12	3 - 12	9 - 15	9 - 15	4	3		

(\*) For version with 2 microswitches lower values of the dead band must be multiplied x 1.5

<sup>1)</sup> The value of the dead band is depending on the value of the set point.

This table contains the dead band values for set point adjustment at 10% and 90% of the selected scale. For adjustable dead band the lower value corresponds to the dead band spring totally released and the higher corresponds to the dead band spring fully tensed. For other set points the dead band value can be calculated by linear interpolation between the values at 10% and 90%.

## Dimensions (mm)



Minimum additional stem length ( $A_{min}$ /mm)

Connection	TD1	TD2	TD3
Without	0	0	0
G1/2	0	18	18
1/2 NPT	0	21	21

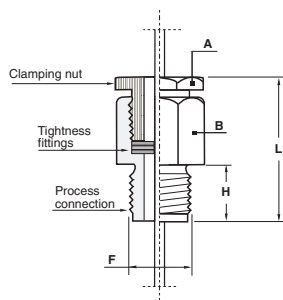
- S** = Bulb length (temperature sensitive part, see tables below)
- A** = Additional stem length  
Minimum additional length  $A_{min}$  depends on type of capillary and process connection (see table above)  
For version TD1 there is no additional stem length ( $A=0$ ).  
The sliding connection is mounted on the capillary.
- P** = Immersion length ( $P = S + A$ )
- P<sub>min</sub>** = Minimum immersion length ( $P_{min} = S + A_{min}$ )
- K** = Capillary length

### Bulb length (S) according to the capillary length (K) and the temperature range (code)

Bulb Ø 14 mm	Code	400	401	402	403	408	412	413	414	415
<b>K = 0 ... 2 m</b>	S / mm	80	80	80	80	80	80	80	80	80
<b>K = 3 ... 7 m</b>	S / mm	100	100	100	100	100	100	100	100	100
<b>K = 8 ... 16 m</b>	S / mm	150	150	150	150	150	150	150	150	150
<b>K = 17 ... 20 m</b>	S / mm	180	180	180	180	180	180	—	180	180

Bulb Ø 9.5 mm	Code	400	401	402	403	408	412	413	414	415
<b>K = 0 ... 2 m</b>	S / mm	155	155	155	155	155	155	155	155	155
<b>K = 3 ... 7 m</b>	S / mm	200	200	200	200	200	200	200	200	200
<b>K = 8 ... 16 m</b>	S / mm	300	300	300	300	300	300	300	300	300
<b>K = 17 ... 20 m</b>	S / mm	370	370	370	370	370	370	—	370	370

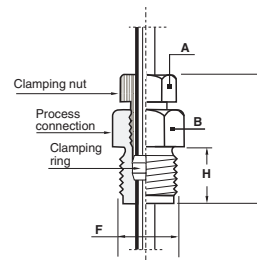
### Stainless steel sliding male connection (TD1)



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

Waterproof after tightening mounted on the capillary.

### Stainless steel sliding male connection (TD2/3)



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

After tightening of the clamping nut, the stem is fixed in the process connection. Tight up to 40 bar.

## Ordering details RTNY4 - RTAY4

	RT	-	Y	.	4xx	.				/
<b>Model</b>	RT									
Industrial temperature switch		-								
<b>Type of the bulb</b>										
Copper alloy bulb and capillary			A							
Stainless steel bulb and capillary			N							
<b>Approval</b>										
ATEX intrinsic safety			Y							
<b>Type of micro switches</b>										
<b>Deadband</b>										
1 SPDT hermetically changeover switch									C	
2 SPDT hermetically changeover switch									W	
1 SPDT gold contact changeover switch									M	
1 SPDT tropicalized changeover switch									K	
1 SPDT tropicalized changeover switch									N	
2 SPDT tropicalized changeover switch									T	
1 SPDT ultrasensitive gold contact changeover switch									S	
<b>Temperature range (°C)</b>										
-46 ... 0									400	
-20 ... 20									401	
0 ... 45									402	
40 ... 120									403	
100 ... 160									414	
20 ... 80									415	
160 ... 250									406	
70 ... 150									408	
130 ... 190									412	
200 ... 270									413	
<b>Type of capillary</b>										
TD1										1
TD2										2
TD3										3
<b>Capillary length (K)</b>										
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
11 meters										B
12 meters										C
13 meters										D
14 meters										E
15 meters										F
16 meters										G
17 meters										H
18 meters										J
19 meters										K
20 meters										L
<b>Immersion length (P)</b>										
<b>Immersion length (P) = Bulb length (S) + additional stem length (A)</b>										
P = S + A <sub>min</sub>										0
P = 150 mm (not for TD1)										3
P = 160 mm (not for TD1)										2
P = 250 mm (not for TD1)										4
P = 400 mm (not for TD1)										5
P = 600 mm (not for TD1)										6
P = 1000 mm (not for TD1)										D
<b>Bulb diameter</b>										
Ø 14 mm (standard)										E
Ø 9.5 mm										C
<b>Process connection</b>										
Without										0
G1/2										3
1/2 NPT										6
<b>Options to be added behind the / (see example below)</b>										

**Ordering example with options**

RT	-	A	Y	C	.	400	.	1	1	2	E	3	/	0407	-	9941
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