

RTNY4

Industrial temperature switch with capillary and intrinsic safety

RT-###.###.E00EJ

Overview

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



Picture similar



Technical data

Housing

Protection rating (EN 60529)	IP66
Cover	Black painted, zamak
Case material	Black painted, zamak
Mounting	Direct mounting Wall mounting bracket
Scale	Internal, accuracy on reading $\pm 5\%$ FS
Bulb	Stainless steel 1.4404 / AISI 316L Stainless steel 1.4435 / AISI 316L

Performance

Min. temperature range	$-46^{\circ}\text{C} \dots +0^{\circ}\text{C}$
Max. temperature range	$-40^{\circ}\text{C} \dots +120^{\circ}\text{C}$
Repeatability	$\pm 1\%$ FS

Temperature

Ambient temperature	$-30^{\circ}\text{C} \dots +55^{\circ}\text{C}$
Storage temperature	$-40^{\circ}\text{C} \dots +55^{\circ}\text{C}$
Media temperature	$-46^{\circ}\text{C} \dots +120^{\circ}\text{C}$

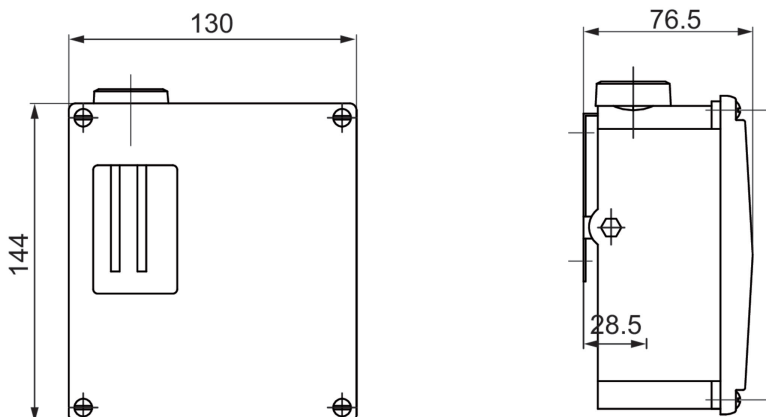
Wetted parts

Process connection material	Stainless steel 1.4404 / AISI 316L
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Electrical data

Electrical connection	Via internal terminal block with plastic cable gland for $\varnothing 7$ to 10.5 mm
CE conformity	Low Voltage Directive 2014/35/UE
Ground connection	Via internal terminal block
Adjustment	2 external adjustment screws on top of the case for set point and deadband

Dimensional drawings (mm)

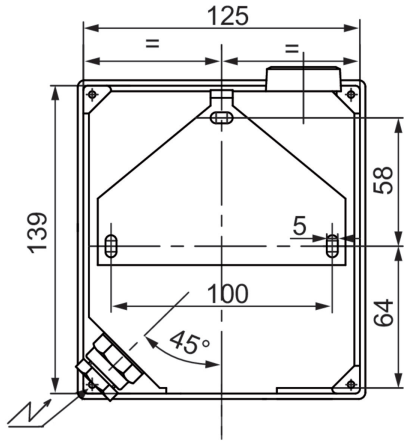


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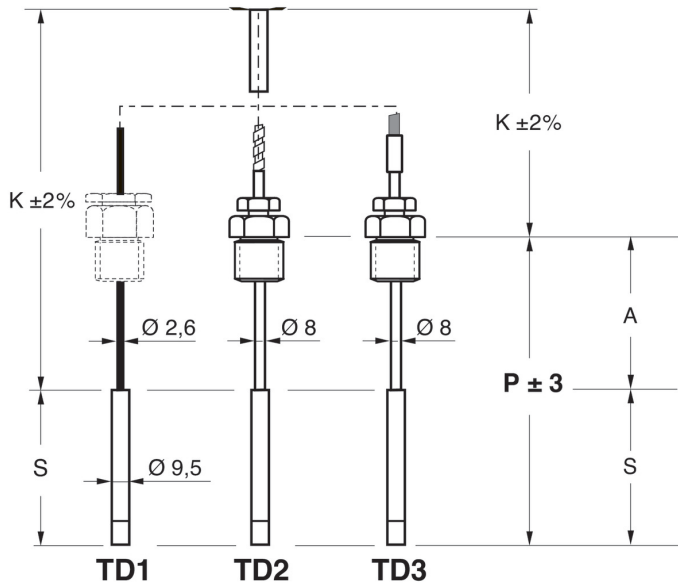
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Dimensional drawings (mm)



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

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



S = Bulb length (temperature sensitive part)

A = Additional stem length (min. 25 mm)

P = Immersion length (P = S + A)

K = Capillary length

For version TD1 there is no additional stem length (A = 0). The sliding connection is mounted on the capillary.

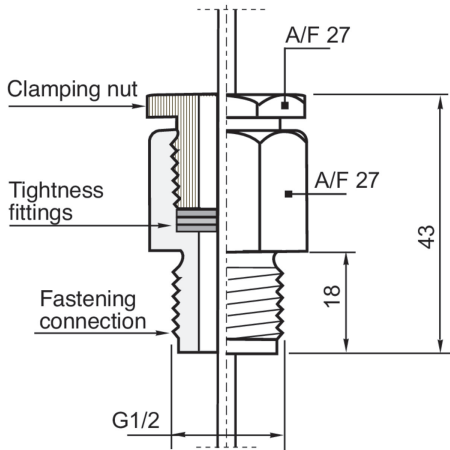
For versions TD2/3, A_{min} = 25 mm

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

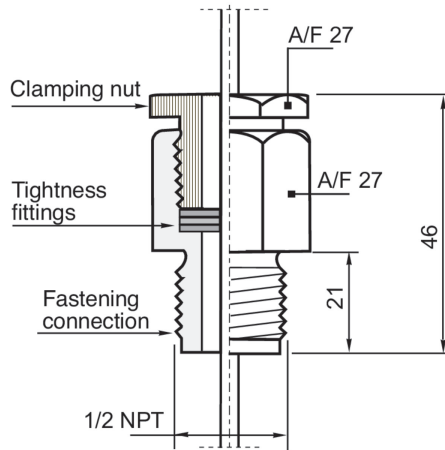
Bulb length (S) according to the capillary length (K) and the temperature range (code)

Dimensional drawings (mm)

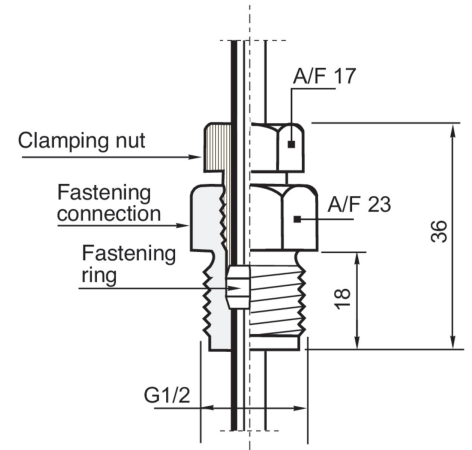
Bulb Ø 9.5 mm	Code	400	401	402	403	408	412	413	414	415
K = 0 ... 2 m	S / mm	155	155	155	155	155	155	155	155	155
K = 3 ... 7 m	S / mm	200	200	200	200	200	200	200	200	200
K = 8 ... 16 m	S / mm	300	300	300	300	300	300	300	300	300
K = 17 ... 20 m	S / mm	370	370	370	370	370	370	–	370	370



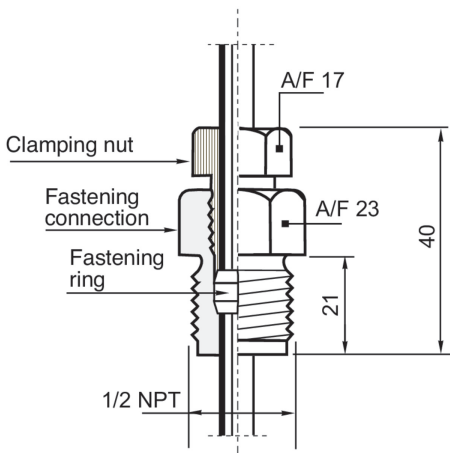
Stainless steel sliding male connection: G 1/2 (TD1)
Waterproof after tightening mounted on the capillary.



Stainless steel sliding male connection: 1/2 NPT (TD1)
Waterproof after tightening mounted on the capillary.



Stainless steel sliding male connection: G 1/2 (TD2/3)
After tightening of the clamping nut, the stem is fixed in the process connection. Tight up to 40 bar.



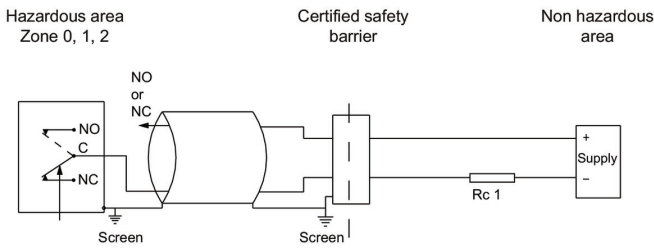
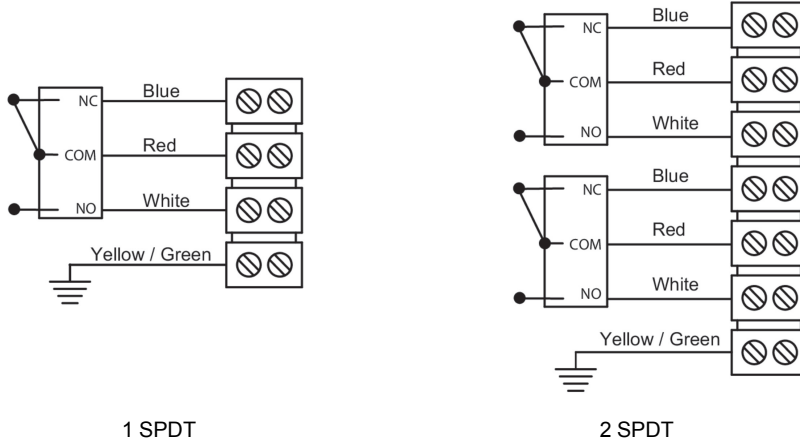
Stainless steel sliding male connection: 1/2 NPT (TD2/3)
After tightening of the clamping nut, the stem is fixed in the process connection. Tight up to 40 bar.

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Electrical connection

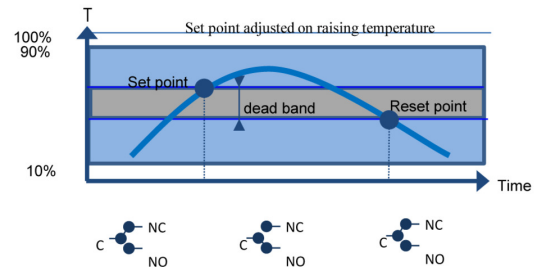
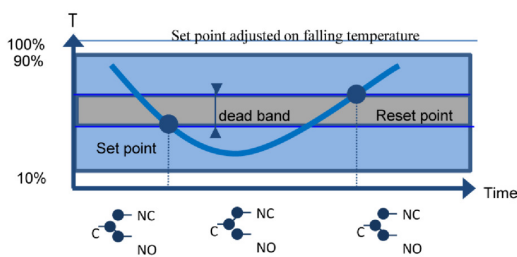


For max. ambient temperature according to temperature classes T5 and T6 refer to technical data.

The installation must be made in an intrinsically safe circuit whose certified electrical safety parameters do not exceed any of the values U_i , I_i and P_i given in the electrical data.

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.

Principle

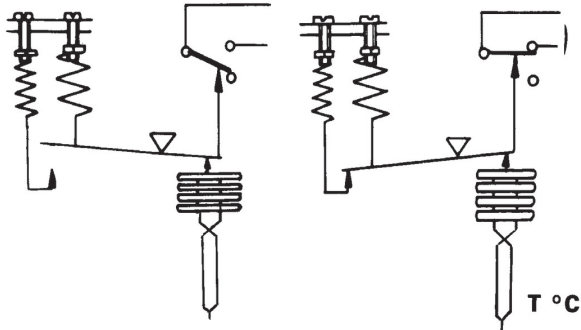


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Principle



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 (as needed) when using an adjustable dead band switch

Adjustable ranges

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

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

(1) 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%.

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Micro switch characteristics

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

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Ordering reference

Ordering key - Configuration possibilities see website

	RT	-	N	Y	#	.	###	.	#	#	#	#
Product	RT											
Type of design			N									
ATEX				Y								
ATEX I M1				Y								
Ex ia I Ma				Y								
ATEX II 1 G												
Ex ia IIC T6 or T5 Ga												
HAZARDOUS AREA: 0,1,2												
Type of Microswitch												
1xSPDT, hermetically											C	
simultaneous											W	
1 gold contact changeover switch											M	
simultaneous											K	
1xSPDT, gold, ultra sensitive											S	
Temperature range												
-46 ... 0°C												400
-20 ... 20°C												401
0 ... 45°C												402
40 ... 120°C												403
100 ... 160°C												414
20 ... 80°C												415
160 ... 250°C												406
70 ... 150°C												408
130 ... 190°C												412
200 ... 270°C												413
Type of design												
without protection												1
with st. steel protection												2
with st. steel protection and PVC coating												3

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Ordering reference

Ordering key - Configuration possibilities see website

	RT	-	N	Y	#	.	###	.	#	#	#	#	#
Length of capillary													
1 m													1
2 m													2
3 m													3
4 m													4
5 m													5
6 m													6
7 m													7
8 m													8
9 m													9
10 m													A
11 m													B
12 m													C
13 m													D
14 m													E
15 m													F
16 m													G
17 m													H
18 m													J
19 m													K
20 m													L
Immersion length													
S+ A min (see datasheet)													0
150 mm													3
160 mm													2
250 mm													4
400 mm													5
600 mm													6
1000 mm													D
Bulb diameter													
14 mm													E
9.5 mm													C
Process connection													
without connection													0
G 1/2													3
1/2 NPT													6

Ordering example

	RT	-	N	Y	C	.	400	.	1	1	0	E	0	#	9941	Q001
Product	RT															
Type of design																
industrial, stainless steel				N												
ATEX					Y											
ATEX I M1																
Ex ia I Ma																
ATEX II 1 G																
Ex ia IIC T6 or T5 Ga																
HAZARDOUS AREA: 0,1,2																

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Ordering reference

Ordering example

RT - N Y C . 400 . 1 1 0 E 0 # 9941 Q001

Type of Microswitch

1xSPDT, hermetically

C

Temperature range

-46 ... 0°C

400

Type of design

without protection

1

Length of capillary

1 m

1

Immersion length

S+ A min (see datasheet)

0

Bulb diameter

14 mm

E

Process connection

without connection

0

/

-

Identification / Packing

on the product

9941

Certificate

Declaration of compliance with the order 2.1 according to EN 10204

Q001

Options

Setpoint factory adjusted	SETP	Souriau mobile plug	2249
Mounting on 2 pipe	0407	2.1 Certificate	Q001
stainless steel label wired*	9941	2.2 Certificate	Q002
Setpoint adjust. lead sealed	8990	3.1 Material certificate	Q003
for nuclear applications	0838	3.1 Certif. setpoints adjust.	Q011
Souriau connection	2298		