

## RT2E

Compact temperature switch explosion proof

RT2-##.##.###C#

### Overview

- Excellent repeatability
- Dead band adjustment for regulation
- Fix dead band for control
- Light weight
- Explosion proof Hazardous areas 1, 2, 21, 22



Picture similar



### Technical data

#### Housing

Protection rating (EN 60529)	IP66
Case material	Grey painted, Aluminum
Mounting	Wall mounting, 2 x M6 x 16 screws
Scale	Internal graduated scale
Bulb	Stainless steel 1.4404 / AISI 316L

#### Performance

Min. temperature range	-46°C ... +0°C
Max. temperature range	+160°C ... +250°C
Repeatability	± 1 % FS

#### Temperature

Ambient temperature	-20°C ... +70°C (T5) -20°C ... +60°C (T6)
Storage temperature	-40°C ... +40°C ,Code 40 -40°C ... +60°C ,Code 60 -40°C ... +70°C, other codes
Media temperature	-46°C ... +250°C, depends on the scale

#### Wetted parts

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

Electrical connection	Via internal terminal block with cable gland 3/4 NPT (ATEX/IECEx certified) for Ø 7 to 12 mm
Ground connection	Via internal or external terminal block
Adjustment	Internal adjustment possible for set point and deadband

#### Weight

Temperature switch	2000 g + transmission
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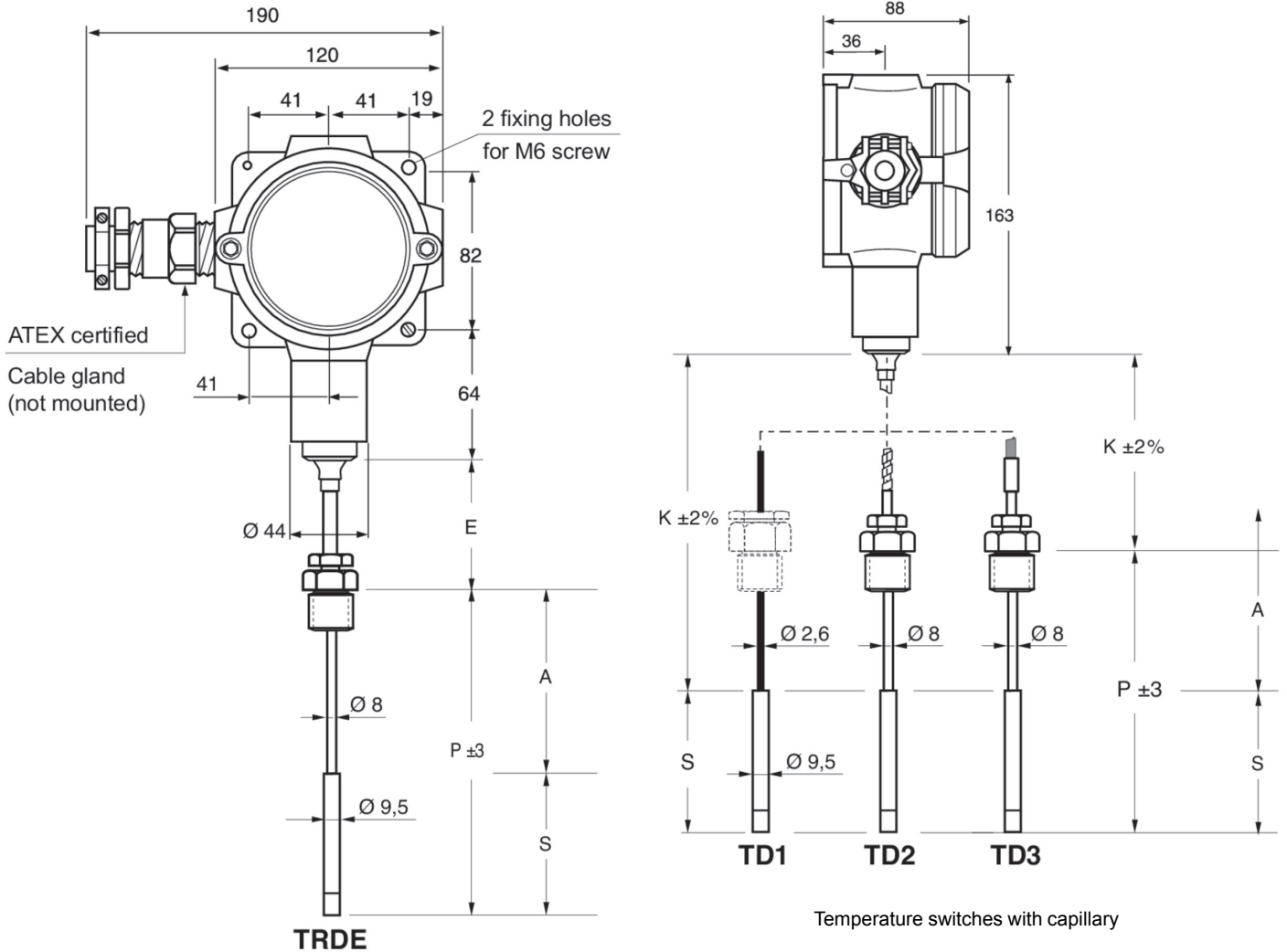
#### Approval / Conformities

ATEX/IECEx Certificate	LCIE 02 ATEX 6219X IECEx LCIE 15.0059X
ATEX/IECEx	ATEX directive 2014/34/UE Ex II 2 G Further information can be found in the ATEX approval

### Remarks

- These devices must be used as instruments that provide electrical information according to the value of the input variable. They are not intended to be used as a safety accessory. It is the responsibility of the user to check the compatibility of the device with its intended use.

**Dimensional drawings (mm)**



Direct mount temperature switches

S = Bulb length (temperature sensitive part)

A = Additional stem length (min. 25 mm)

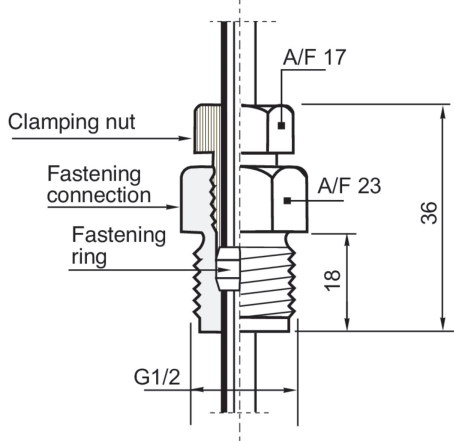
P = Immersion length ( $P = S + A$ )

K = Capillary length (only TD1, TD2, TD3)

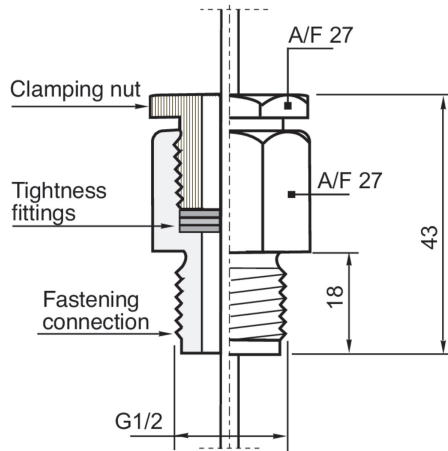
E = Extension between process connection and housing only TRDE1 and TRDE2

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

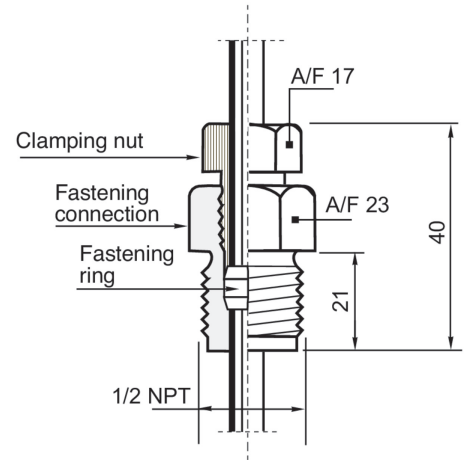
**Dimensional drawings (mm)**



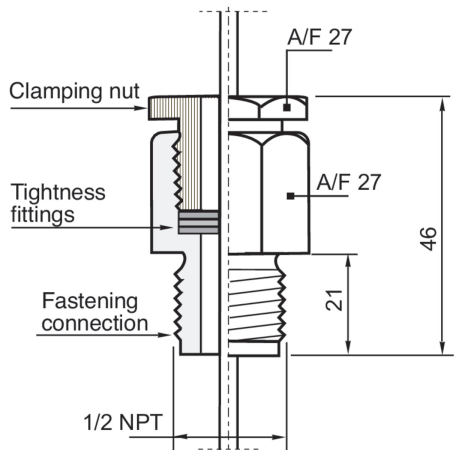
Stainless steel sliding male connection: G 1/2 (TD2/3, TRDE1/2)  
After tightening of the clamping nut, the stem is fixed in the process connection. Tight up to 40 bar.



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



Stainless steel sliding male connection: 1/2 NPT (TD2/3, TRDE1/2)  
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 (TD1)  
Waterproof after tightening mounted on the capillary.

	Capillary	Code	40	41	42	43	44	45	46	48
TRDE1	n/a	S / mm	100	100	100	100	n/a	100	n/a	n/a
TRDE2	n/a	S / mm	100	100	100	100	100	100	100	100
TD1, TD2, TD3	K = 1...4 m	S / mm	100	100	100	100	100	100	100	100
TD1, TD2, TD3	K = 5...7 m	S / mm	100	150	150	100	100	150	100	100
TD1, TD2, TD3	K = 8...10 m	S / mm	100	200	200	100	100	200	100	100

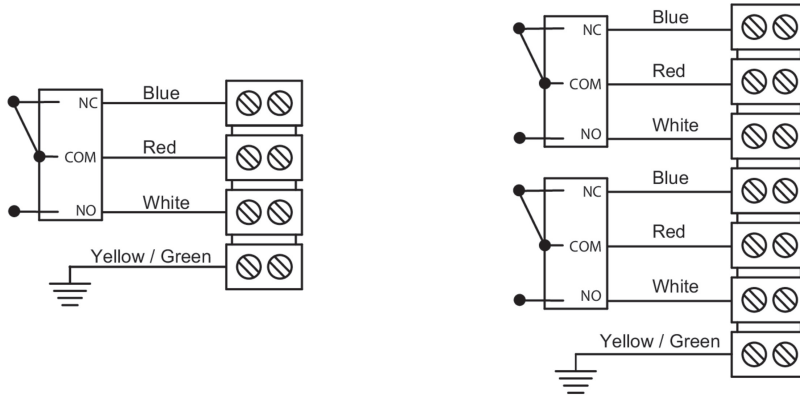
Bulb length (S) according to the capillary length (K) and the temperature range (code)  
Versions with S = 150 mm or S = 200 mm are not feasible with P = 150 mm

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## Electrical connection



1 SPDT

2 SPDT

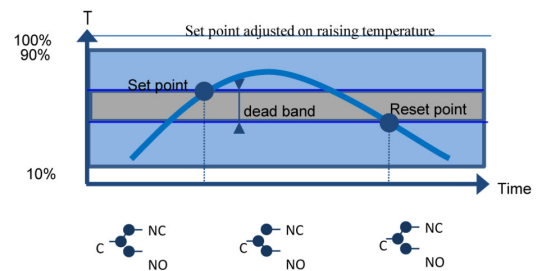
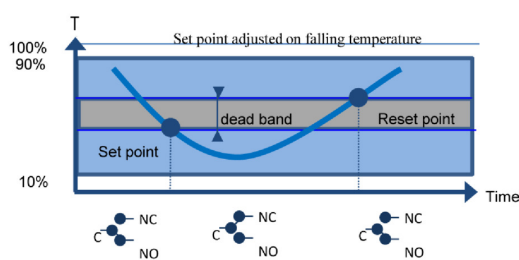
$-20^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$	Dust IP6x	Gases
	T° surface	Class
Ta = 60°C	80°C	T6
Ta = 70°C	95°C	T5

**Important : Maximum power dissipation in the case must not exceed 5 W**

Hazardous areas: zone 1, 2, 21, 22

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

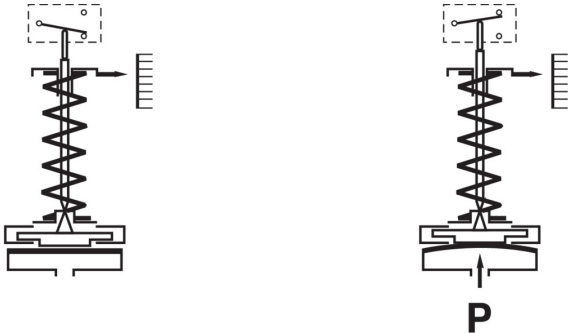


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## Principle



A vapour filled flexible sensing element actuates a microswitch by means of a piston. 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 (not for RT2Y)

## Adjustable ranges

Scale	T max	Code	Micro-switch dead band <sup>1)</sup>							
			Adjustable dead band		Fixed dead band					
			R		L		M - P		U (2 x SPDT)	
°C	°C		10%	90%	10%	90%	10%	90%	10%	90%
			°C	°C	°C	°C	°C	°C	°C	°C
-46 ... 0	40	40	4 - 7.5	2.5 - 6.5	1	1	5	4	5	5
-20 ... 20	60	41	2.5 - 5.5	2 - 6.5	1	1	5	4	5	5
0 ... 45	80	42	3 - 6	2.5 - 7	1	0.5	3.5	3	5	2.5
40 ... 120	145	43	5.5 - 10.5	3 - 8.5	1.5	1	6	6	7.5	5
100 ... 180	190	44	6 - 12	4 - 7.5	1.5	1	7	5.5	7.5	5
20 ... 90	120	45	6.5 - 12.5	4 - 8	2	1.5	11	11	10	7.5
160 ... 250	290	46	6 - 11	4 - 11	1.5	1	6.5	5	7.5	5
70 ... 150	175	48	9.5 - 18.5	5.5 - 10.5	1.5	1.5	11	8	7.5	7.5

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 correspond to the dead band spring totally released and the higher correspond 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	R	L	M	P	U
Type	Adjustable dead band	Fixed dead band			
		Standard	Gold contact	Ultra sensitive	Double
6 Vdc	0.4 ... 10 A	N/A	10 ... 50 mA	0.4 ... 4 A	0.4 ... 10 A
12 Vdc	0.4 ... 10 A	N/A	10 ... 50 mA	0.4 ... 4 A	0.4 ... 10 A
24 Vdc	0.4 ... 5 A	N/A	10 ... 50 mA	0.4 ... 4 A	0.4 ... 6 A
30 Vdc	0.4 ... 5 A	N/A	10 ... 50 mA	0.4 ... 2 A	0.4 ... 6 A
48 Vdc	0.4 ... 5 A	N/A	10 ... 50 mA	N/A	0.4 ... 6 A
110 Vdc	0.1 ... 0.5 A	N/A	10 ... 50 mA	N/A	0.4 ... 0.5 A
220 Vdc	0.1 ... 0.25 A	N/A	10 ... 50 mA	N/A	0.1 ... 0.25 A
115 Vac	0.4 ... 10 A	0.4 ... 10 A	10 ... 50 mA	N/A	0.4 ... 10 A
250 Vac	0.2 ... 10 A	0.2 ... 10 A	N/A	N/A	0.2 ... 10 A
Dielectric rigidity between contacts and ground	2000 V	2000 V	2000 V	1000 V	2000 V

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## Ordering reference

Ordering key - Configuration possibilities see website

	RT2	-	E	#	.	##	.	#	#	#	C	#
<b>Product</b>	RT2											
<b>ATEX</b>			E									
ATEX II 2 G D												
Ex d IIC T6 or T5 Gb												
Ex tb IIIC T80°C or T95°C Db												
T°amb:-20°C to +60°C (T6 or T80°C)												
or -20°C to +70°C (T5 or T95°C)												
HAZARDOUS AREA:1,2,21,22												
<b>Type of Microswitch</b>												
1xSPDT Standard change-over											L	
1 gold contact changeover switch											M	
1 hermetically ultra sensitive changeover switch											P	
1xSPDT adjust. Dead band											R	
simultaneous											U	
<b>Temperature range</b>												
-46 ... 0°C												40
-20 ... 20°C												41
0 ... 45°C												42
40 ... 120°C												43
100 ... 180°C <sup>(1)</sup>												44
20 ... 90°C												45
160 ... 250°C <sup>(1)</sup>												46
70 ... 150°C <sup>(1)</sup>												48
<b>Type of design</b>												
without protection												1
with st.steel protection												2
with st.steel protection and PVC coating												3
TRDE1 rigid stem, E = 65 mm <sup>(2)</sup>												C
TRDE2 rigid stem, E = 120 mm												D
<b>Length of capillary</b>												
without capillary												0
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
<b>Immersion length</b>												
S+ A min (see datasheet)												0
150 mm <sup>(3)</sup>												3
250 mm <sup>(3)</sup>												4
400 mm <sup>(3)</sup>												5
600 mm <sup>(3)</sup>												6
1000 mm <sup>(3)</sup>												D

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## Ordering reference

Ordering key - Configuration possibilities see website

RT2 - E # . ## . # # # C #

### Bulb diameter

9.5 mm

C

### Process connection

without connection

0

G 1/2

3

1/2 NPT

6

(1) Not for TRDE1

(2) For temperature measurement below 120 °C

(3) Not for TD1

## Ordering example

RT2 - E L . 40 . 1 1 0 C 0 / Q001

### Product

RT2

RT2

### ATEX

ATEX II 2 G D

Ex d IIC T6 or T5 Gb

Ex tb IIIC T80°C or T95°C Db

T°amb:-20°C to +60°C (T6 or T80°C)

or -20°C to +70°C (T5 or T95°C)

HAZARDOUS AREA:1,2,21,22

E

### Type of Microswitch

1xSPDT Standard change-over

L

### Temperature range

-46 ... 0°C

40

### Type of design

without protection

1

### Length of capillary

1 m

1

### Immersion length

S+ A min (see datasheet)

0

### Bulb diameter

9.5 mm

C

### Process connection

without connection

0

## Certificate

Declaration of compliance with the order 2.1 according to EN 10204

## Options

Setpoint factory adjusted	SETP	2.2 Certificate	Q002
Mounting on 2 pipe	0407	3.1 Material certificate	Q003
stainless steel label wired*	9941	3.1 Certif. setpoints adjust.	Q011
2.1 Certificate	Q001		