



RTT Temperature switches

All industrial environments

All fluids

One or two set points

Copper/stainless steel RTTA or stainless steel/
stainless steel RTTN and RTTE

Intrinsically safe version EEx ia IIC T6, LCIE certificate N° 88 B 6081 X (valid until 30 June 2003)

Version ADF, EEx d II CT6, L.C.I.E. certificate N° 81 6057 (valid until 30 June 2003)

New ATEX/94/CE certification (in progress)

Stainless steel version for aggressive fluids,
marine version, electronuclear version

Conform to the Low Voltage Directive (73/23/CEE
and n°93/68/CEE), CE marked



Temperature switches of the RTTA, RTTN and RTTE series are designed to maintain a constant temperature around a chosen preset value, "Regulatory Function", or actuate an alarm or safety circuit when the temperature being monitored reaches a critical level, "Safety Function".

Technical Data (20°C)

Black Zamac enclosure and blue cover protected
Protection IP 65 according to NF EN 60529
Captive screws for cover attachment
Wall-mounting by removable bracket
External adjustment screws fitted with an antivibration system locking the set point and the deadband, protected by screwed and sealable caps
Internal mechanism of bichromate-treated zinc-plated steel
Electrical connections via internal terminal-block with PE N°11 cable gland for cable between 7 and 10.5 mm in diameter
Internal earth connection
Calibrated scale for set point reading
Intern
Sensing element (connection + bellow) of cuprous steel
bulb and capillary L = 1 to 20 m, codes 400 to 415
rigid probe, codes 300 to 315

Sensing element
RTTA : capillary (copper), bulb (SS 1.4404/316 L)
RTTN : capillary (SS), bulb (SS 1.4404/316 L)
RTTE : capillary (SS), bulb (SS 1.4404/316 L)

Utilisation - Performance

All fluids compatible with the measuring element from : -46...+350°C
Operating ambient temperature : -30...+55°C
except code 407 : Ta = 0...+55°C
Storage temperature : -40...+55°C
Reproducibility : ± 2 % of full scale for SI and SH and ± 1 % of full scale for GS and GSH
Reading accuracy : ± 5 % of full scale
Explosion-proof version, EEx d II CT6, LCIE certificate N° 816057
Intrinsically safe version EEx ia IIC T6, LCIE certificate N° 88 B 6081 X. This version must be used only with an intrinsically safe electrical installation

Important

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.

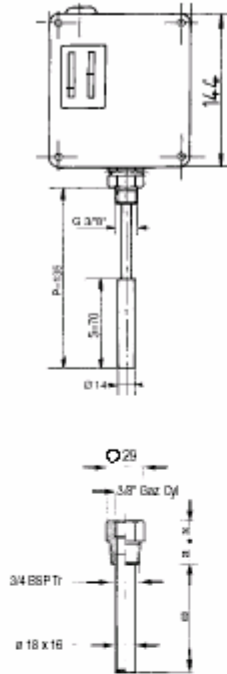
Normal operation is between 10 % and 90 % of the selected scale. The deadband values given in the table overleaf are defined under these conditions. T°C max values are for accidental temperature overranges of limited duration.

Test certification

French Electricity Generating Board (EDF) certification of test HMO63/6864 on ZT 403 SHD

Types of transmission

RTTA-RTTN or RTTE - Code 300-301-302-303-315

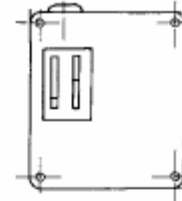


G 27/17 (laiton) :
for RTTA code 300 to 315
GN 27/17 (SS 316 L / 1.4404) :
for RTTN or RTTE,
code 300 to 315

Weight : 2 kg

RTTA-RTTN or RTTE - Code 400-401-402-403-414-415-406-407-408-411-412-413

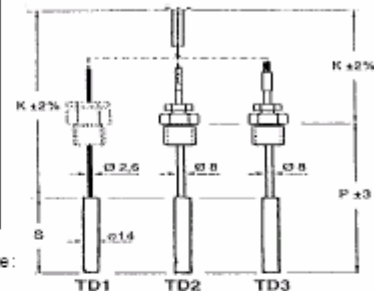
Weight : 2 kg + Transmission



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.



Note : 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 capillary length (K)

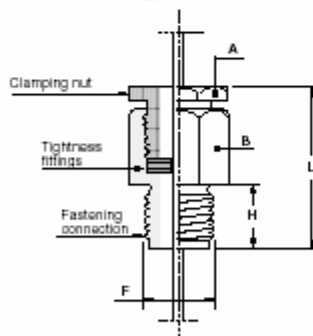
	Code	400	401	402	403	414	415	406	407	408	411	412	413
K = 0 m .. 2 m	S mm	80	80	80	80	80	80	80	80	80	80	80	80
K = 3 m .. 7 m	S mm	100	100	100	100	100	100	100	100	100	100	100	100
K = 8 m .. 16m	S mm	150	150	150	150	150	150	150	150	150	150	150	150
K = 17 m .. 20 m	S mm	180	180	180	180	180	180	180	180	180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

Connections and accessories

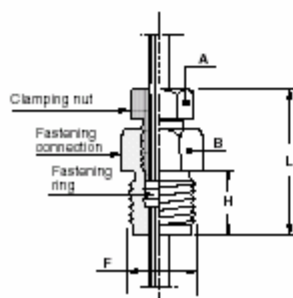
St. steel sliding male connection (TD1)



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.

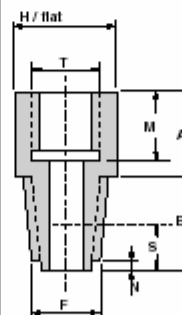
St. steel sliding male connection (TD2/3)



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	36	36
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



Adjustable ranges

RTTA - RTTN - RTTE

RTTA : standard copper / stainless steel sensing element

RTTN/RTTE : stainless steel / stainless steel sensing element

ECHELLE	T°C MAXI (accidentelle)	CODE	MICROSWITCH							
			ADJUSTABLE DEADBAND				MAX. FIXED DEADBAND		MAX. FIXED DEADBAND	
			A (SI)		C (SH)		E (GS)		D (GSH)	
At 10% of scale	At 90% 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	+ 40	400	4 to 9	2 to 9	8 to 12	4 to 12	1.5	0.8	5	2.5
- 20 + 20	+ 60	401	3 to 8	1.5 to 6	6 to 10	4 to 10	1	0.5	4	2
0 + 45	+ 80	402	4 to 9	2 to 9	7 to 12	4 to 12	1.5	0.7	5	2.5
+ 40 + 120	+ 145	403	5 to 16	3 to 16	10 to 20	6 to 20	2	1.2	6	4
+100 + 160	+ 180	414	5 to 12	3 to 12	9 to 15	5 to 15	2	1	6	3
+ 20 + 80	+ 100	415	5 to 12	3 to 12	9 to 15	5 to 15	2	1	6	3
+160 + 250	+ 290	406	6 to 18	4 to 18	11 to 22	7 to 22	2.5	1.2	8	4.5
+250 + 350	+ 360	407*	8 to 20	4 to 20	15 to 25	8 to 25	3	1.5	10	5
+ 70 + 150	+ 175	408	5 to 16	4 to 16	10 to 20	6 to 20	2	1	6	4
- 20 + 20	+ 60	411	-	-	5 to 8	3 to 7	-	-	-	-
+130 + 190	+ 210	412	5 to 12	3 to 12	9 to 15	5 to 15	2	1	6	3
+200 + 270	+ 290	413	5 to 12	3 to 12	9 to 15	5 to 15	2	1	6	3
- 46 + 0	+ 40	300	4 to 9	2 to 9	8 to 12	4 to 12	1.5	0.8	5	2.5
- 20 + 20	+ 60	301	3 to 8	1.5 to 8	6 to 12	4 to 10	1	0.5	4	2
0 + 45	+ 80	302	4 to 9	2 to 9	7 to 12	4 to 12	1.5	0.7	5	2.5
+ 40 + 120	+ 145	303	5 to 16	3 to 16	10 to 20	6 to 20	2	1.2	6	4
+ 20 + 80	+ 100	315	5 to 12	3 to 12	9 to 15	5 to 15	2	1	6	3

* Stainless steel version only (RTTN / RTTE)

Minimum deadbands : multiply by 1.5 for all versions with 2 contacts in standard version

B (SI) Deadband = Deadband A (SI) x 1.5 at 10% and 90%

F (GSS) Deadband = Deadband E (GS) x 1.5 at 10% and 90%

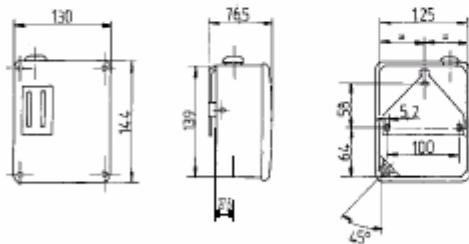
V (GSHH) Deadband = Deadband D (GSH) x 1.5 at 10% and 90%

W (SHH) Deadband = Deadband C (SH) x 1.5 at 20% and 90%

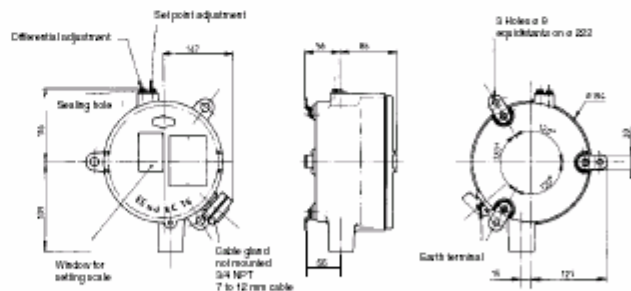
Minimum deadbands for explosion-proof versions :
multiply by 1.5 for all microswitches (including 2 microswitches versions)

Dimensions (mm)

Standard case (IP65) RTTA - RTTN



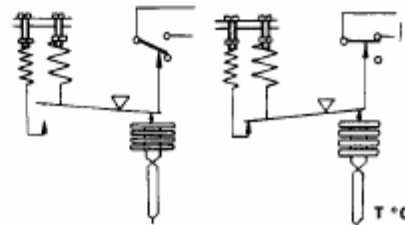
Explosion-proof RTTE



Weight of explosion-proof : 3 kg

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

Uncoded options (have to be listed after the code number)

Bulb \varnothing 9,5 mm (min. length : 120, 150, 225, 280 mm)
Tropicalisation (SI and SII microswitches only)
Breather type filter
Knurled knob for adjustment of the set point (ZB 2)
and the deadband (ZB 3)

Changeover switch with manual reset (SRC or SRF)
Pneumatic version (NO or NC)
French electricity (EDF) version (consult SEPTEN ZT3, ZT4 leaflet)
Marine version
Other glands

Ordering Details - RTT

Model		RTT x xx0 xxx	
Temperature switches	1 st digit	R	
Type	2 nd ...4 th digit	TTA	
TTA		TTN	
TTN		TTE	
TTE			
Microswitch **	5 th digit		
Current rating (resistive circuits):	AC DC		
SI 1 standard changeover switch	5A/250Vac 0.5A/110Vcc	A	
SII 2 simultaneous changeover switches	2x 5A/250Vac 2x0.5A/110Vcc	B	
SH 1 hermetically sealed changeover switch	2.5A/250Vac 1A/110Vcc	C	
GSH 1 herm. sealed ultra sensit. changeover switches	2A/30Vcc	D	
GSHH 2 herm. sealed ultra sensit. changeover switches	2x2A/30Vcc	V	
GS 1 ultra sensitive changeover switch	2 A/250Vac 1A/30Vcc	E	
GSS 2 ultra sensitive changeover switches	2x 2A/250Vac 2x1A/30Vcc	F	
SAM 2 movable changeover switches	2x 2A/250Vac 2x1A/30Vcc	G	
SHH 2 hermetically changeover switches	2x 2.5A/250Vac 2x1A/110Vcc	W	
** SPDT microswitches only			
Type of protection	6 th digit		
Standard		A	
Explosion-proof (RTTE only)		E	
Intrinsically safe		Y	
Pressure range	7 th ...9 th digit		
See codes in table		xxx	
Type of transmission	1 st digit	xxx xxxE xx	
TD1		1	
TD2		2	
TD3		3	
TRD code 3xx		D	
Capillary length	2 nd ...3 rd digit		
Without code 3xx		00	
1 meter		01	
2 meters (std)		02	
3 meters		03	
4 meters		04	
5 meters		05	
6 meters		06	
7 meters		07	
8 meters		08	
9 meters		09	
10 meters		10	
Non std. (max..20 meters)		XX	
Stem length	4 th ...6 th digit		
Stem for TRD only		135	
TD1 std.		A00	
150 mm		150	
250 mm		250	
400 mm		400	
600 mm		600	
Non std. (max.1000mm)		XXX	
Bulb diameter	7 th digit		
\varnothing 14 mm		E	
Connection	8 th ...9 th digit		
Without		00	
G 1/2		03	
1/2 NPT		06	
3/8 gaz cyl. (1)		0J	

code	Range in °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

* Stainless steel only (RTTN / RTTE)

(1) Operating range series 300 only