

S5500 Gas Actuated Thermometer

FEATURES

- All-stainless steel construction
- Direct or remote mount versions
- Wide selection of temperature ranges
- Dry or liquid filled
- Protection up to IP65
- Compliant to EN 13190

TYPICAL USES

- Chemical and petrochemical plants
- Pulp and paper
- Water and wastewater
- Food and beverages
- Machine and apparatus construction
- Pharmaceutical / biotechnology



S5500 Gas Actuated Thermometer
63 mm, 80 mm, 100 mm, 160 mm dial sizes

SPECIFICATIONS

Accuracy:	Class 1, $\pm 0.5\%$ of span optional
External Zero adjustment	$\pm 6\%$, of span
Ingress Protection:	IP65
Stem/Bulb Length:	55 mm to 1800 mm; minimum length varies by bulb and temperature range
Capillary Line Length:	100 meters max on remote mount version
Dial Sizes:	63 mm, 80 mm, 100 mm or 160 mm
Dial Style:	White with black markings
Temperature Ranges:	-200 °C/50 °C to 0 °C/800 °C
Overtemperature Limits:	Max. 130% of full scale or (800 °C)
Process Connection:	Refer to ordering code
Stem diameter:	6, 8, 9, 10 mm; other sizes on request
Process Connection Location:	Lower, back, knee joint 360°
Process connection tightness:	All threaded connections are pressure tight up to 25 bar, except CS2
Mounting:	Stem, surface, flush or 2" pipe
Ring:	Bayonet
Pointer:	Black, aluminium
Window:	Glass (STD.), Acrylic or hardened safety glass
Approvals:	ATEX (OPT.)
Contact Type:	Magnetic, Inductive, microswitch

KEY BENEFITS

- Rugged construction
- Highly resistant to shock and vibration
- Ideal for extreme temperature measurement
- High repeatability/small hysteresis

WETTED COMPONENTS

WETTED COMPONENTS	MATERIAL
Process connection	1.4301 (304) 1.4401 (316)
Stem	1.4541(321)
Armored capillary line	1.4541(321)
Armored capillary line, PVC sheath	1.4301 (304) or 1.4401 (316)

NON-WETTED COMPONENTS

NON-WETTED COMPONENTS	MATERIAL
Case/Ring	1.4301 (304) 1.4401 (316)
Window sealing	NRB optional Viton
Blow out back	NRB

S5500 Gas Actuated Thermometer

TECHNICAL SPECIFICATIONS OF THE CONTACTS		
	MAGNETIC SPRINGS CONTACT	INDUCTIVE PROXIMITY CONTACT
Max. Contacts:	3	2
Switching Functions:	1 closes at increasing process pressure 2 opens at increasing process pressure 3 change over (SPDT) with max. 2 contacts	1 initiator damped at increasing process pressure (relay energized) 2 initiator free at increasing process pressure (relay de-energized)
Contact Assignment:	Contact 1 left hand setpoint Contact 2 right hand setpoint with 2 contacts and middle setpoint with 3 contacts Contact 3 right setpoint with 3 contacts	
Adjustable Range:	Full Range	
Hysteresis (Deadband):	Max 2-4% FS.	

ELECTRICAL SPECIFICATION			
	MAGNETIC SPRINGS CONTACT	INDUCTIVE PROXIMITY CONTACT	
Standard:		DIN EN 60947-5-6 (NAMUR)	
Design:		SJ3.5N or SJ2-SN ²⁾	Si2-K08-Y1
Making and breaking current:	Max. 1 A/250 VAC (see switching capacity graph)		
Nominal current:	Max. 0,6 A		
Load:	Max. 30 W/50 VA (see switching capacity graph)		
Current consumption non actuated:		≥ 3 mA	≥ 2,1 mA
actuated:		≤ 1 mA	≤ 1,2 mA
Internal inductance L _i :		≤ 100 μH	≤ 266 μH
Internal capacitance C _i :		≤ 30 nF	≤ 41 nF

Note 2) Only to be used in conjunction with an suitable and/or approved amplifier

ELECTRICAL CONNECTION	
Location:	Left sided, others on request
Material:	Polyamide 6
Number of Terminals:	6 + PE
Max. Wire Size:	2,5 mm ²
Cable Connection:	M20x1,5
Ingress Protection according EN 60529/IEC 529:	IP54 IP65 for filled or fillable version

S5500 Gas Actuated Thermometer

ORDERING CODE	EXAMPLE:	10	S55	6	60	00	CS	50	L	0/60C
Dial Size										
63	63 mm									
80	80 mm									
100	100 mm	10								
160	100 mm									
Model										
S5500			S5500							
Bulb Diameter										
6	6 mm			6						
8	8 mm									
9	9 mm									
10	10 mm									
Bulb/Stem Length										
XX	55 to 1800 mm				60					
Capillary Line Length										
00	Direct mount					00				
XX	In mm (100 meter max.)									
Process Connection										
B	Coupling nut									
BL	Coupling nut (long model)									
B01	Coupling nut (double nipple)									
A04	Turning nipple									
AL04	Turning nipple (long model)									
CS1	Adjustable union connection sliding on extension tube									
CS2	Adjustable union connection sliding on capillary line									
CS3	Adjustable union connection sliding on stem						CS3			
All other connection styles if technically possible, available on request										
Process Connection Size										
25	1/4 BSP									
25N	1/4 NPT									
50	1/2 BSP									
50N	1/2 NPT							50N		
All other connections if technically possible, available on request										
Connection Location										
D	3 o'clock, right side									
E	9 o'clock, left side									
E2	knee joint 360°									
L	Lower								L	
R	Back									
Temperature Range (see table 1 for additional ranges)										
0/60 °C										0/60C



S5500 Gas Actuated Thermometer

Options: (must include an X before the options)

A3	Standard capillary, PVC coated
A4	304 Stainless steel armored capillary line
A4S	Stainless steel interlock, material 304/ 1.4404 (316L)
A5	PVC coated, 304 Stainless steel armored capillary line
AJ	Special accuracy 0.5 %
AVS	Anti-vibration-spring for exhaust thermometer
BSP	Bulb and stem polished (mechanical)
BSS	Bulb and stem 316/1.4401 Tmax = 400 °C
C4	Calibration certificate 4 points
C43	Calibration certificate 4 points according DIN EN 10204/3.1
C4S	Special calibration certificate (specification required)
CD2	Material certificate according to EN 10204/2.2
CS	Dual scale
DA	Dial marking
EP	Maximum pointer, externally adjustable
FH	Surface mounting bracket L = 90 mm
FW	Back flange
FX	Front flange
GR	Liquid filled with glycerin [inadmissible for electrical contact option]
GT	Liquid filled with resistance oil, FDA approved
GV	Liquid filled with silicone
MP	Micrometer pointer
NH	Stainless steel wired tagging
PD	Acrylic window
RB	Blow out disc
SG	Safety glass
SS	Special range (specification required)
TM	2" Pipe mounting bracket
UC	U-clamp
YW	316 Stainless steel case
YW1	Stainless steel 316L (1.4404) case + bayonet ring + front or back flange



S5500 Gas Actuated Thermometer

Electrical contact Option

M1000	Magnetic spring contact: contact 1 closes
M2000	Magnetic spring contact: contact 1 opens
M1100	Magnetic spring contact: contact 1 closes, contact 2 closes
M2200	Magnetic spring contact: contact 1 opens, contact 2 opens
M1200	Magnetic spring contact: contact 1 closes, contact 2 opens
M1110	Magnetic spring contact: contact 1 closes, contact 2 closes, contact 3 closes
M2220	Magnetic spring contact: contact 1 opens, contact 2 opens, contact 3 opens
M2220	Magnetic spring contact: contact 1 closes, contact 2 opens, contact 3 opens
M2110	Magnetic spring contact: contact 1 opens, contact 2 closes, contact 3 closes
M1210	Magnetic spring contact: contact 1 closes, contact 2 opens, contact 3 closes
M2120	Magnetic spring contact: contact 1 opens, contact 2 closes, contact 3 opens
M1120	Magnetic spring contact: contact 1 closes, contact 2 closes, contact 3 opens
M2210	Magnetic spring contact: contact 1 opens, contact 2 opens, contact 3 closes
M1122	Magnetic spring contact: contact 1 closes, contact 2 closes, contact 3 opens, contact 4 opens
M110B	Magnetic spring contact: contact 1 closes, contact 2 closes with separate circuits for each contact
M220B	Magnetic spring contact: contact 1 opens, contact 2 opens with separate circuits for each contact
M3000	Magnetic spring contact: change over
M3300	Magnetic spring contact: contact 1 change over, contact 2 change over
M3300B	Magnetic spring contact: contact 1 change over, contact 2 change over with separate circuits for each contact
I1000	Magnetic contact: contact 1 closes
I2000	Magnetic contact: contact 1 opens
I2000SN	Inductive contact fail safe according to NAMUR: contact 1 opens
I1100	Inductive contact: contact 1 closes, contact 2 closes
I1100SN	Inductive contact fail safe according to NAMUR: contact 1 closes, contact 2 closes
I2200	Inductive contact: contact 1 opens, contact 2 opens
I2200SN	Inductive contact fail safe according to NAMUR: contact 1 opens
I1200	Inductive contact: contact 1 closes, contact 2 opens
I1200SN	Inductive contact fail safe according to NAMUR: contact 1 closes, contact 2 opens
I2100	Inductive contact: contact 1 opens, contact 2 closes
Q3	Single microswitch [inadmissible for liquid filling options GR, GT, GV or GX]
Q33	Double microswitch [inadmissible for liquid filling options GR, GT, GV or GX]



S5500 Gas Actuated Thermometer

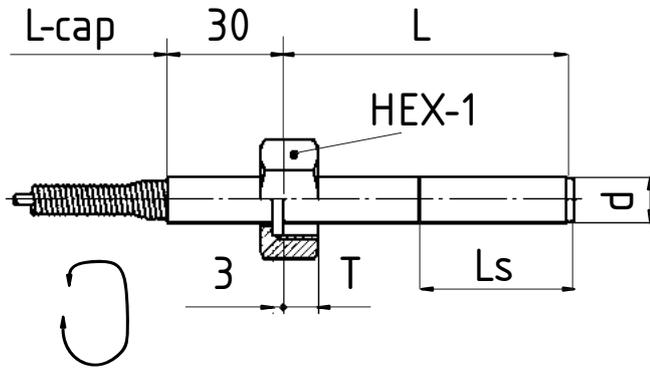
TABLE 1 TEMPERATURE RANGES

TEMPERATURE RANGES		
Degrees °C	Degrees °C	Degrees °F
-40/160	0/ 60	0/140
-40/400	0/ 80	0/200
-50/50	0/ 100	0/210
-50/70	0/ 120	0/250
-50/100	0/150	0/300
-50/120	0/ 160	0/320
-50/150	0/ 200	0/350
-50/160	0/ 250	0/400
-50/250	0/ 300	0/500
-50/600	0/ 400	0/550
-60/40	0/450	0/700
-60/60	0/ 500	0/800
-60/80	0/550	0/1000
-60/100	0/600	0/1100
-70/40	0/650	0/1450
-70/60	0/700	0/1500
-70/100	0/750	20/220
-80/40	0/800	20/240
-100/50	50/450	20/1500
-100/100	50/650	30/140
-100/150	100/550	30/220
-100/200	200/600	30/240
-110/50	200/650	30/250
-120/40	-10/50	30/300
-120/100	-10/60	30/320
-120/150	-10/100	30/360
-150/100	-10/110	30/400
-200/50	-10/120	32/320
-200/60	-10/150	32/572
-200/80	-10/700	32/752
-200/100	-15/75	50/300
-200/160	-20/40	50/400
-200/180	-20/60	50/500
-200/200	-20/80	50/550
	-20/100	50/1200
	-20/120	50/1450
	-20/180	400/1200
	-30/30	400/1400
	-30/50	-20/120
	-30/70	-40/160
	-30/100	-40/180
	-30/150	-40/300
	-30/170	-40/400
	-40/20	-100/150
	-40/40	-150/150
	-40/60	-200/150
	-40/80	-250/150
	-40/100	-300/150
	-40/120	-320/200



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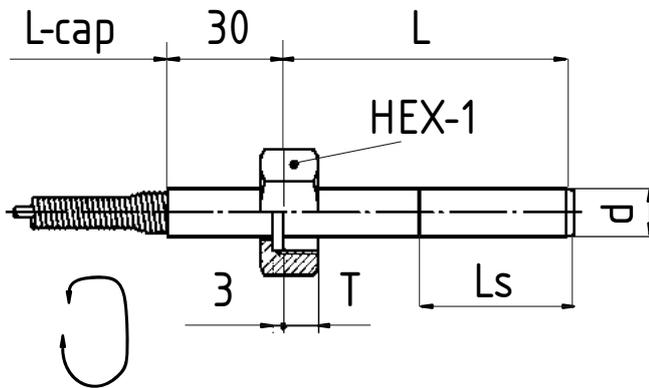
COUPLING NUT (STANDARD MODEL)
B



DIMENSIONS IN MM

Connection	HEX-1	T	D MAX
1/2"BSP	27	9	Ø 11
3/4"BSP	32	9	Ø 20
1"BSP	41	13	Ø 20
M18x1.5	27	8	Ø 12

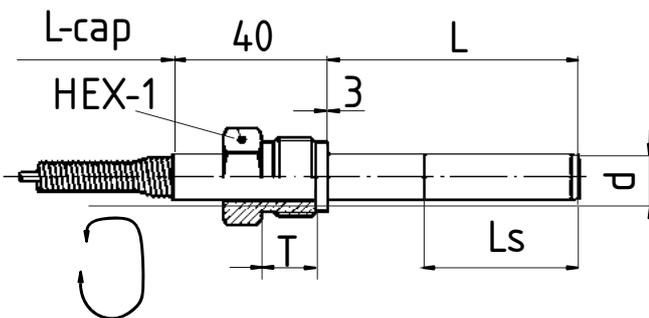
COUPLING NUT (LONG MODEL)
BL



DIMENSIONS IN MM

Connection	HEX-1	T	D MAX
1/2"BSP	27	14	Ø 15
3/4"BSP	32	16	Ø 20
1"BSP	41	18	Ø 20

TURNING NIPPLE (STANDARD MODEL)
A04



DIMENSIONS IN MM

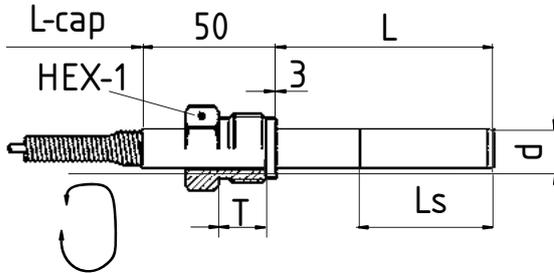
Connection	HEX-1	T	D MAX
1/2"BSP	22	14	Ø 15
3/4"BSP	30	16	Ø 20
1"BSP	36	18	Ø 20
M18x1.5	22	12	Ø 12



S5500 Gas Actuated Thermometer

**TURNING NIPPLE (LONG MODEL)
AL04**

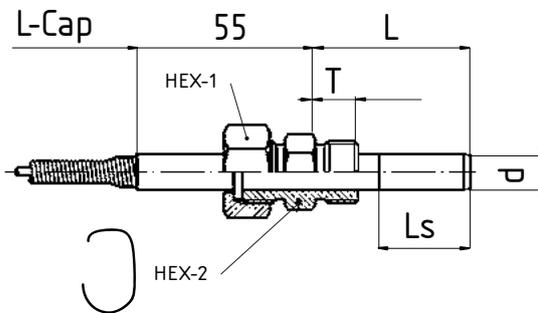
DIMENSIONS IN MM



Connection	HEX-1	T	D MAX
1/2" BSP	22	20	Ø 15
3/4" BSP	30	16	Ø 20
1" BSP	36	18	Ø 20

**COUPLING NUT + DOUBLE NIPPLE
B01**

DIMENSIONS IN MM

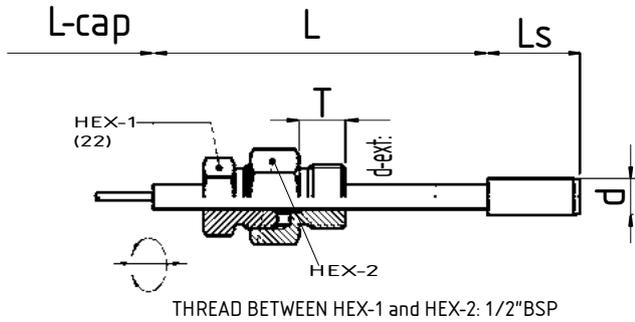


Connection	HEX-2	T	D MAX
1/2" BSP	22	14	Ø 15
3/4" BSP	27	16	Ø 20
1" BSP	36	18	Ø 20
1/2" NPT	22	20	Ø 15
3/4" NPT	32	20	Ø 20
1" NPT	36	25	Ø 30
M18x1.5	22	12	Ø 12



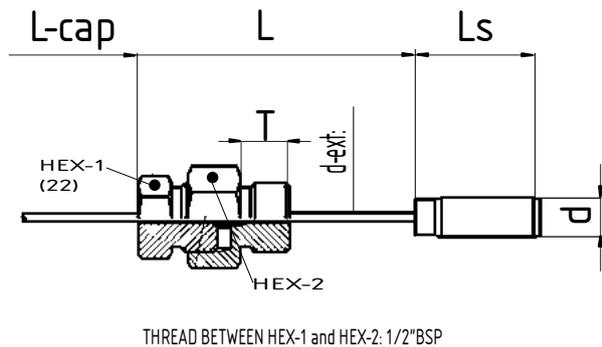
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ADJUSTABLE CONNECTION SLIDING ON EXTENSION TUBE (CS1) **DIMENSIONS IN MM**



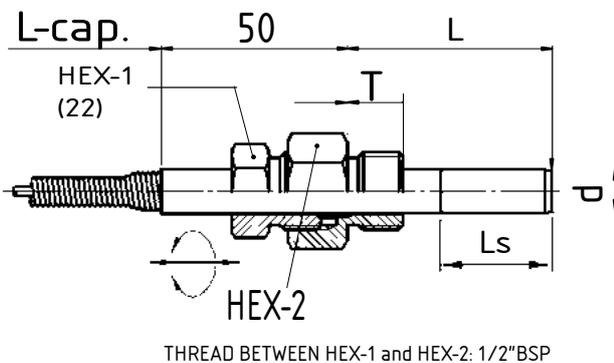
Connection	HEX-2	T	D MAX
1/2" BSP	27	12	Ø 11
3/4" BSP	32	16	Ø 23
1" BSP	36	18	Ø 30
1/2" NPT	27	20	Ø 20
3/4" NPT	32	20	Ø 25
1" NPT	36	25	Ø 32
M18x1.5	27	12	Ø 16

ADJUSTABLE CONNECTION, SLIDING ON CAPILLARY (CS2) **DIMENSIONS IN MM**



Connection	HEX-2	T	D MAX
1/2" BSP	27	14	Ø 18
3/4" BSP	32	16	Ø 23
1" BSP	36	18	Ø 30
1/2" NPT	27	25	Ø 32
3/4" NPT	27	20	Ø 25
1" NPT	36	25	Ø 32
M18x1.5	27	12	Ø 16

ADJUSTABLE CONNECTION, SLIDING ON STEM (CS3) **DIMENSIONS IN MM**



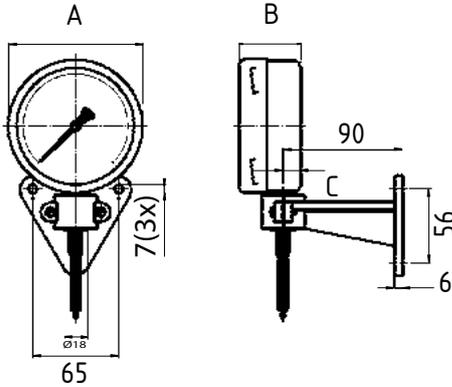
Connection	HEX-2	T	D MAX
1/2" BSP	27	14	Ø 15
3/4" BSP	32	16	Ø 20
1" BSP	36	18	Ø 20
1/2" NPT	27	25	Ø 15
3/4" NPT	32	20	Ø 25
1" NPT	36	25	Ø 20
M18x1.5	27	12	Ø 12



S5500 Gas Actuated Thermometer

SUPPORT FOR WALL MOUNTING (FH)

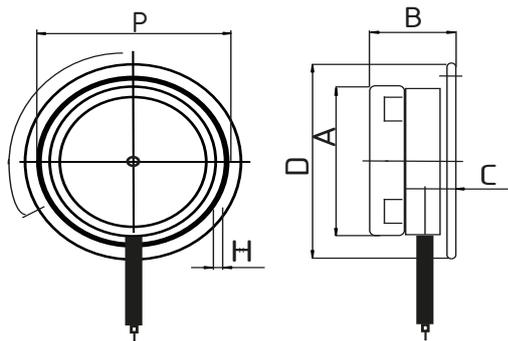
DIMENSIONS IN MM



DIM	Case diameter			
	63	80	100	160
A	65	83	101	161
B	38	37	45	45
C	13	13	13	13

WALL MOUNTING FLANGE (FW)

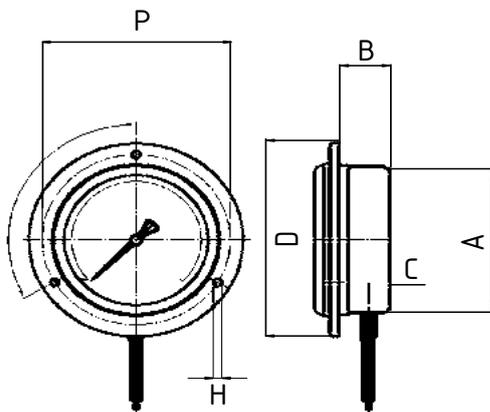
DIMENSIONS IN MM



DIM	Case diameter			
	63	80	100	160
A	65	83	101	161
B	41	40	51	51
C	13	13	13	13
D	86	110	132	196
H	3.5	4	5.5	6
P	75	95	114	178

FRONT FLANGE (FX)

DIMENSIONS IN MM



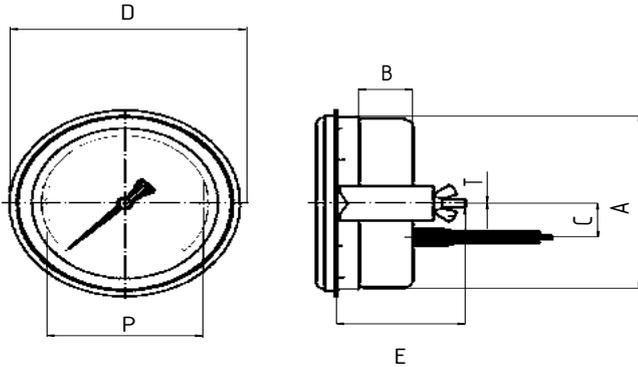
DIM	Case diameter			
	63	80	100	160
A	65	83	101	161
B	33	29	31	32
C	13	13	13	13
D	86	110	132	196
H	3.5	4	5.5	6
P	75	95	116	178



S5500 Gas Actuated Thermometer

**U-CLAMP
(UC)**

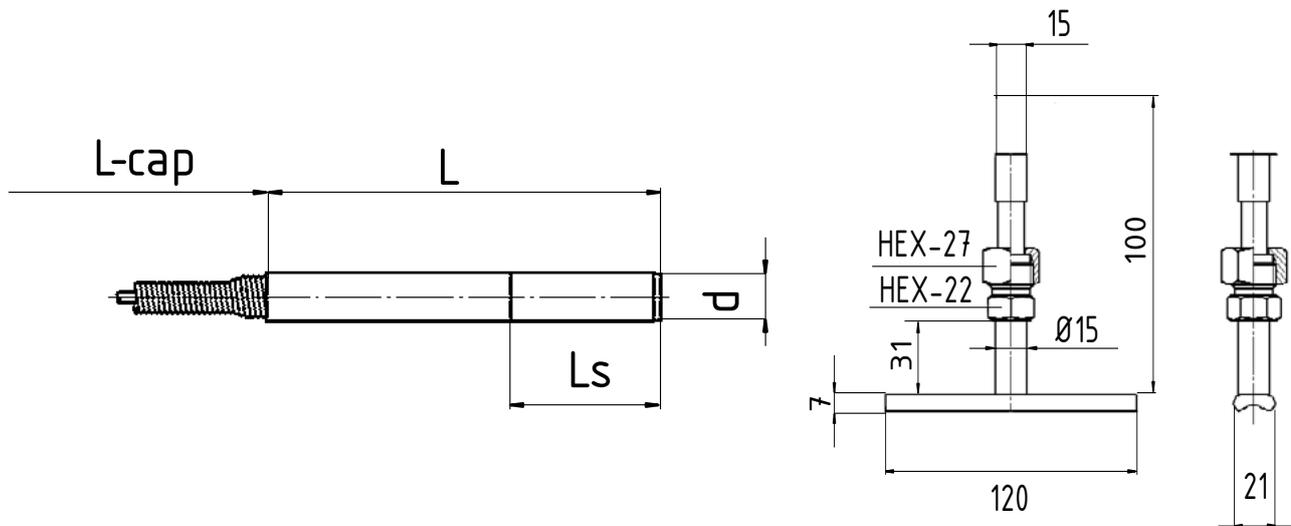
DIMENSIONS IN MM



DIM	Case diameter			
	63	80	100	160
A	65	83	101	161
B	30	35	35	25
C	20	25	20	20
D	70	85	112	180
E	50	55	60	60
P	33	95	114	178

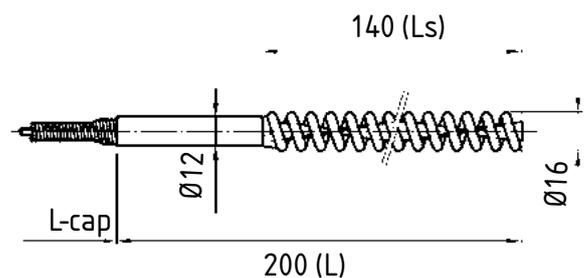
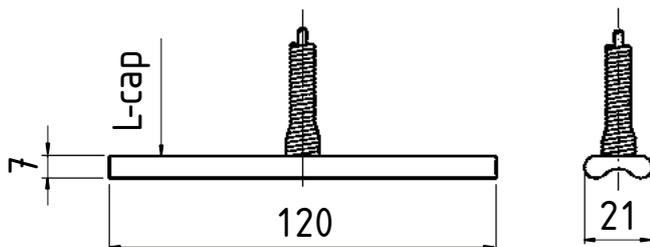
PLAIN STEM

ADJUSTABLE SURFACE BULB SA



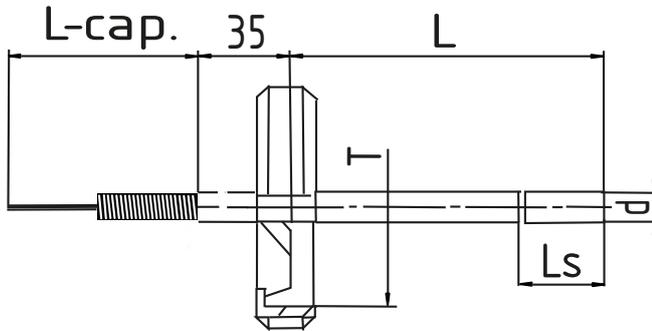
**SURFACE BULB
(S)**

**HELICAL AIR BULB
(HA)**



S5500 Gas Actuated Thermometer

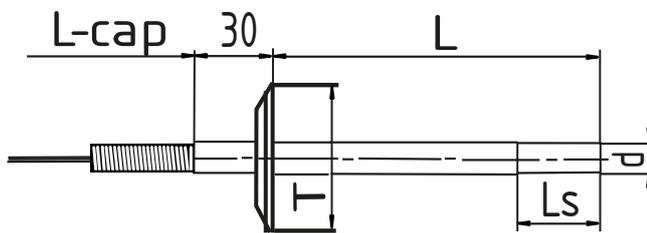
SANITARY CONNECTION (CM)



DIMENSIONS IN MM

Connection	T
1"-DN25	rd 52x1/6
1 1/2" -DN40	rd 65x1/6
2"-DN50	rd 78x1/6
3"-DN80	rd104x1/6

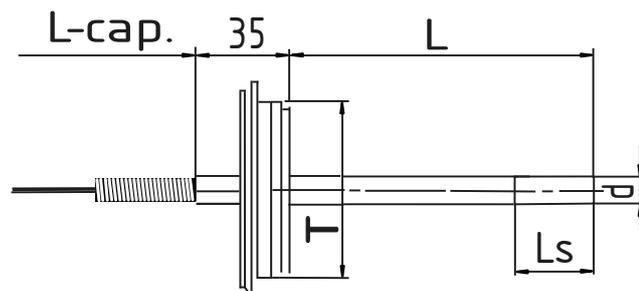
TRI - CLAMP (TC)



DIMENSIONS IN MM

Connection	T
1"	Ø 50.5
1 1/2"	Ø 50.5
2"	Ø 65
3"-DN80	rd104x1/6

VARIVENT IN-LINE (TV)



DIMENSIONS IN MM

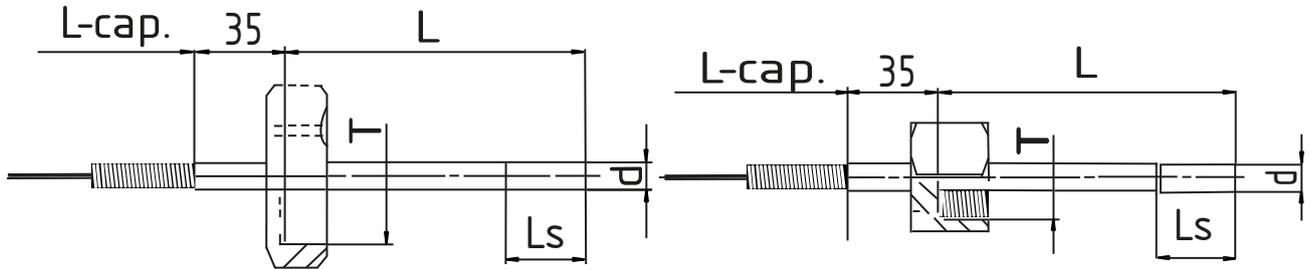
Connection	T
DN50	Ø 50.5
DN6868	Ø 68



S5500 Gas Actuated Thermometer

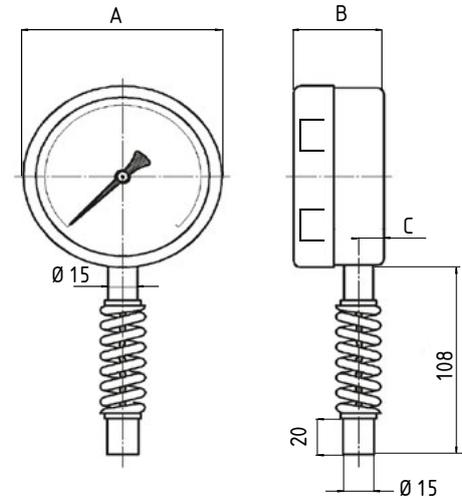
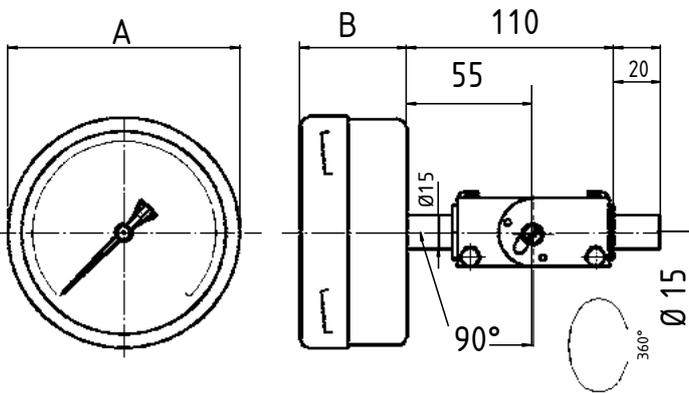
APV-RJT
(APV)

IDF ISO2853
(IDF)



KNEE JOINT 360°
(E2)

ANTI-VIBRATION SPRING
(AVS)



S5500 Gas Actuated Thermometer

MANGNETIC SPRING CONTACTS			
Contact code	Switch function at increasing process Temperature	typical diagram (at zero position)	Cable junction BOX
Single contact			
M-1000	Contact closes		
M2000	Contact opens		
Dual contact			
M1100	Contact 1 closes Contact 2 closes		
M2200	Contact 1 opens Contact 2 opens		
M1200	Contact 1 closes Contact 2 opens		
M2100	Contact 1 opens Contact 2 closes		
Triple contact On request			



S5500 Gas Actuated Thermometer

INDUCTIVE PROXIMITY CONTACTS			Cable Junction Box
Contact code	Switch function at increasing process Temperature	typical diagram (at zero position)	
Single contact			
I 1000 I 1000SN	Current flows		
I 200 I 200SN	No current flows		
Dual contact			
I1100	Contact 1 current closes Contact 2 current closes		
I2200	Contact 1 current closes Contact 2 current closes		
I1200	Contact 1 closes Contact 2 opens		
I2100	Contact 1 opens Contact 2 closes		
Q3	SPDT		
Q-33	DPDT		



S5500 Gas Actuated Thermometer

SHORTEST POSSIBLE LENGTH FOR SENSITIVE PART OF STEM

TABLE 1 THERMOMETERS WITHOUT CONTACT

		DIAMETER AND LENGTH OF SENSITIVE PART mm (Ls)													CAPILLARY LENGTH mm					
Ø	Ls	6	6.35	7	8	9	10	11	12	13	14	15	16	18	20	<2000	<50000	<10000	<20000	<30000
		70	60	50	35	30	25	20	18	17	15	14	13	13	12	80	100	120	N.a	N.a
120	96	80	60	45	35	30	25	25	20	20	17	16	15	60	80	80	100	120		
190	155	125	90	60	55	45	35	35	30	25	25	20	20	60	80	80	80	100		
-	-	190	135	100	80	65	55	50	40	35	30	30	26	60	60	80	80	100		
-	-	-	170	130	100	80	65	60	50	45	40	35	31	60	60	60	80	100		
-	-	-	-	190	150	120	95	90	70	60	55	50	43	60	60	60	60	80		

TABLE 2 THERMOMETERS WITH CONTACT

		DIAMETER AND LENGTH OF SENSITIVE PART mm (Ls)													CAPILLARY LENGTH mm					
Ø	Ls	6	6.35	7	8	9	10	11	12	13	14	15	16	18	20	<2000	<50000	<10000	<20000	<30000
		70	60	50	35	30	25	20	18	17	15	14	13	13	12	160	160	160	160	160
120	96	80	60	45	35	30	25	25	20	20	17	16	15	80	80	80	80	100		
190	155	125	90	60	55	45	35	35	30	25	25	20	20	80	80	80	80	100		
-	-	190	135	100	80	65	55	50	40	35	30	30	26	60	60	80	80	80		
-	-	-	170	130	100	80	65	60	50	45	40	35	31	60	60	60	80	80		
-	-	-	-	190	150	120	95	90	70	60	55	50	43	60	60	60	60	80		

HOW TO USE: Instrument without contact and with 5000 mm capillary
 Bulb diameter: 10 mm
 Range: -20/+40°C (= 60°C span)
 QUESTION: What is the shortest possible sensitive length of the stem?

No contact TABLE 1
 On the right side of the table, start in column <5000 mm capillary.
 Go down until you reach the 60°C span.
 Go left to the diameter and length side and stop at the column corresponding to 10mm bulb diameter.
 The minimum sensitive length is 80 mm.
 If this is too long, then choose a larger diameter, a higher temperature range, or a shorter capillary length.

TABLE 3 THERMOMETERS WITHOUT CONTACT

		DIAMETER AND LENGTH OF SENSITIVE PART mm (Ls)													CAPILLARY LENGTH mm					
Ø	Ls	6	6.35	7	8	9	10	11	12	13	14	15	16	18	20	<2000	<50000	<10000	<20000	<30000
									80									100		
																80				
																60				
																60				

