CSrental exTHERM-AT

Explosion-proof surface-mounted thermostat for zones 1, 2, 21, and 22

Special features

- Single thermostat and double thermostat with capillary or rigid thermowell
- Switching capacity up to 25 A
- Admissible ambient temperatures -55 to +70 °C (standard -40 to +70 °C)
- Thermowell for use in zone 0 available as an accessory
- Quick and safer electrical connection through Push-In® terminal technology
- Stable switching points through standard ambient temperature compensation

JUMO exTHERM-AT double thermostat

JUMO exTHERM-AT single thermostat

Brief description

The explosion-proof surface-mounted thermostats of the JUMO exTHERM series are built to monitor and control temperatures in potentially explosive areas. The use in environments with gas and steam is permitted (zones 1 and 2); use in environments with conductive dust (zones 21 and 22) is also permitted.

The JUMO exTHERM-AT is available as temperature monitor TW, safety temperature monitor (STW), and safety temperature limiter (STB). The thermostats work according to the liquid expansion or gas expansion principle. The electrical switching element is a pressure-resistant encapsulated thermostat with a snap-action switch. Stable switching points when ambient temperatures fluctuate are made possible by the standard ambient temperature compensation.

The thermostats of the JUMO exTHERM-AT series are RoHS conform and cadmium free.

Version according to DIN EN 14597:

TW	Temperature monitor
STW	Safety temperature monitor
STB	Safety temperature limiter

ATEX mark

II 2G Ex db eb IIC T4/T5/T6 Gb	For explosive gas atmosphere
II 2D Ex tb IIIC T85 °C/T100 °C/T130 °C Db	For explosive dust atmosphere

IECEx mark

Ex db eb IIC T4/T5/T6 Gb	For explosive gas atmosphere
Ex tb IIIC T85 °C/T100 °C/T130 °C Db	For explosive dust atmosphere

Test certificate ATEX	Test certificate IECEx
EPS 11 ATEX 1 354	**IECEx EPS 13.0046**

Test certificate EAC-Ex	Test certificate SIL
RU C-DE.HB07.B.00057/20	**EPS 11 ATEX 1 354** (SIL 2)

Approvals and approval marks (see "Technical data")

* ** ***

* Available with extra code (TZ 240)

** Available with extra code (TZ 372)

*** Available with extra code (TZ 073)

Technical data

Switching functions

Temperature monitor TW and safety temperature monitor STW	Restart lock for the safety temperature limiter STB	Self-monitoring for the safety temperature monitor STW and safety temperature limiter STB
If the temperature on the temperature probe exceeds the setpoint value, the microswitch is activated by the transmission mechanics and the electrical circuit is opened or closed. If the temperature falls below the selected setpoint value (by the amount of the switching differential), the microswitch is reset to its initial position	If the temperature on the temperature probe exceeds the set limit value, the electrical circuit is opened and the microswitch is mechanically locked. The microswitch can be manually unlocked once the dangerous temperature of the setpoint value drops by approx. 20 % of the scale range.	If the measuring system is destroyed (i.e. if the expansion fluid escapes) the pressure in the membrane of the STB and STW drops and permanently opens the electrical circuit. Unlocking is then no longer possible. The electrical circuit opens when cooling the probe of STW (STB) and STB down to the negative temperature range, but it then closes again if the temperature rises. The STB must be unlocked manually if the minimum probe temperature is exceeded. The STW unlocks itself automatically.

Temperature compensation

When the ambient temperature on the switching head and the capillary deviates - from the calibration ambient temperature of 22 °C - a switching point offset occurs. This switching point offset is reduced to a minimum due to the temperature compensation.

Housing

Material	Polyester case, glass fiber reinforced, black (option: stainless steel) Due to the conductive soot-doped surface with a low surface resistance, static charging is not possible.
Protection type	EN 60529 - IP65 (polyester case), pollution level 2, IP 66 with extra code 861
Setpoint value adjustment	With screwdriver (once the case lid has been removed)
Switching head fastening	Using four screws (once the case lid has been removed)
Weight	Approx. 1200 g single thermostat/approx. 2000 g double thermostat
Cable inlet	Ex cable gland M20 × 1.5, sealing area 6 to 13 mm and Ex cable gland M25 × 1.5, sealing area 7 to 17 mm

Process connection

JUMO exTHERM-AT with capillary	Plain cylindrical probe (standard), rigid thermowell, spiral probe for room thermostat version

Accessories

JUMO exTHERM-AT	Multi-section standard thermowells made out of CrNi for use in zones 1, 2, 21, 22 (see data sheet 606710) Multi-section thermowells made out of CrNi for use in zone separation 0/1, 20/21 (see new data sheet 605057)

Operating data

Medium ambient temperature influence	When the ambient temperature on the switching head and/or the capillary deviates from the calibration ambient temperature of 22 °C, a switching point offset occurs. Higher ambient temperature = lower switching point Lower ambient temperature = higher switching point

Admissible storage temperature/ admissible ambient temperature when in use	-40 °C, optionally -60 to +70 °C (referring to T4, at 25 A max. 55 °C)
Max. probe temperature	+15 % of the limit value/max. adjustment value or 25 K
Rated position (NL)	According to DIN 16257, NL 0 to NL 90

Electrical data

Max. switching capacity	Selectable on the N/C contact (contact deck 1-2):	
	AC 400 V +10 %, 16 A	
	AC 230 V +10 %, 16 (2.5) A, cos φ = 1 (0.6)[a]	
	AC 230 V +10 %, 25 (4) A, cos φ = 1 (0.6)	
	DC 230 V +10 %, 0.25 A	
	Selectable on the N/O contact (contact deck 1-4):	
	TW, STW	STB
	AC 400 V +10 %, 6.3 A	AC 400 V +10 %, 2 A
	AC 230 V +10 %, 6.3 (2.5) A, cos φ = 1 (0.6)[a]	AC 230 V +10 %, 2 (0.4) A, cos φ = 1 (0.6)[a]
	AC 230 V +10 %, 2 (0.4) A, cos φ = 1 (0.6)	AC 230 V +10 %, 2 (0.4) A, cos φ = 1 (0.6)
	DC 230 V +10 %, 0.25 A	AC 230 V +10 %, 0.25 A
	Snap-action switch, gold-plated AC/DC = 24 V, 0.1 A	
Min. switching capacity	To ensure the greatest possible switching reliability we recommend a minimum load of: AC/DC = 24 V, 100 mA for silver contacts AC/DC = 10 V, 5 mA for gold-plated contacts	

[a] standard

Capillary and temperature probe

Type	**Capillary Ø 1.5 mm**	**Temperature probe**
JUMO exTHERM-AT	Stainless steel (CrNi) 1.4571	Stainless steel (CrNi) 1.4571, welded
Capillary length	Max. 5000 mm	
Capillary bending radius	≥ 5 mm	

Control ranges and probe table

Control range	Max. capillary length	Probe length „L“				
		For „d“ = 4 mm		For „d“ = 6 mm		
		TW	STW, STB	TW	STW	STB
		Hysteresis				
in °C	in mm	Approx. 2.5 %	Approx. 7 %	Approx. 2.5 %	Approx. 7 %	-
-20 to +50	5000	-	-	138	81	81
0 to 120	5000	203	115	90	65	65
0 to 190	5000	136	79	71	52	-
60 to 300	3000	-	-	-	155	-
20 to 500	5000	-	-	278	-	-
140 to 500	5000	-	-	-	133	133
70 to 190	5000	-	99	-	59	59
20 to 400	3000	-	-	155	-	-
150 to 300	3000	-	-	-	-	155

Switching point tolerance in the middle section of the scale

Control range in °C	TW in K	STW upward adjustment in K	STW downward adjustment in K	STB in K
-20 to +50	+2/-2	-	-	-
0 to 120	+3/-3	+0/-5	+5/-0	+0/-5
0 to 190	+5/-5	+0/-10	+10/-0	+0/-10
60 to 300	+8/-8	+0/-16	+16/-0	+0/-16
20 to 500	-	+0/-36	+36/-0	+0/-36
140 to 500	+22/-22	-	-	-
70 to 190	+22/-22	+0/-44	+44/-0	+0/-44
20 to 400	-	+0/-16	+16/-0	+0/-16
150 to 300	+18/-18	-	-	-
Temperature monitors (TW) and safety temperature monitors (STW) are adjusted ascendingly in the middle section of the scale as standard procedure. Safety temperature limiters (STB) are adjusted in the upper section of the scale. Special adjustments are possible upon request.				

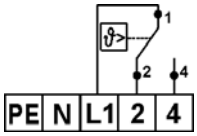
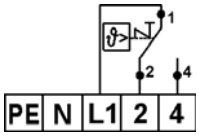
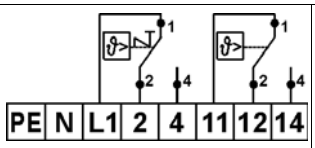
Approvals and approval marks

JUMO exTHERM-AT	**Switching function**	**Certificates/test confirmation**	**Tests**		**Standard**
	TW/STW/STB	EPS 11 ATEX 1 354	ATEX		DIN EN 60079
		IECEx EPS 13.0046	IECEx	TZ 372	IEC 60079
		RU C-DE.HB07.B00057/20	EAC-Ex[a]	TZ 240	TR RC 012/2011
	STW/STB	EPS 11 ATEX 1 354	SIL 2	TZ 073	DIN EN 50495

[a] Russian documentation upon request

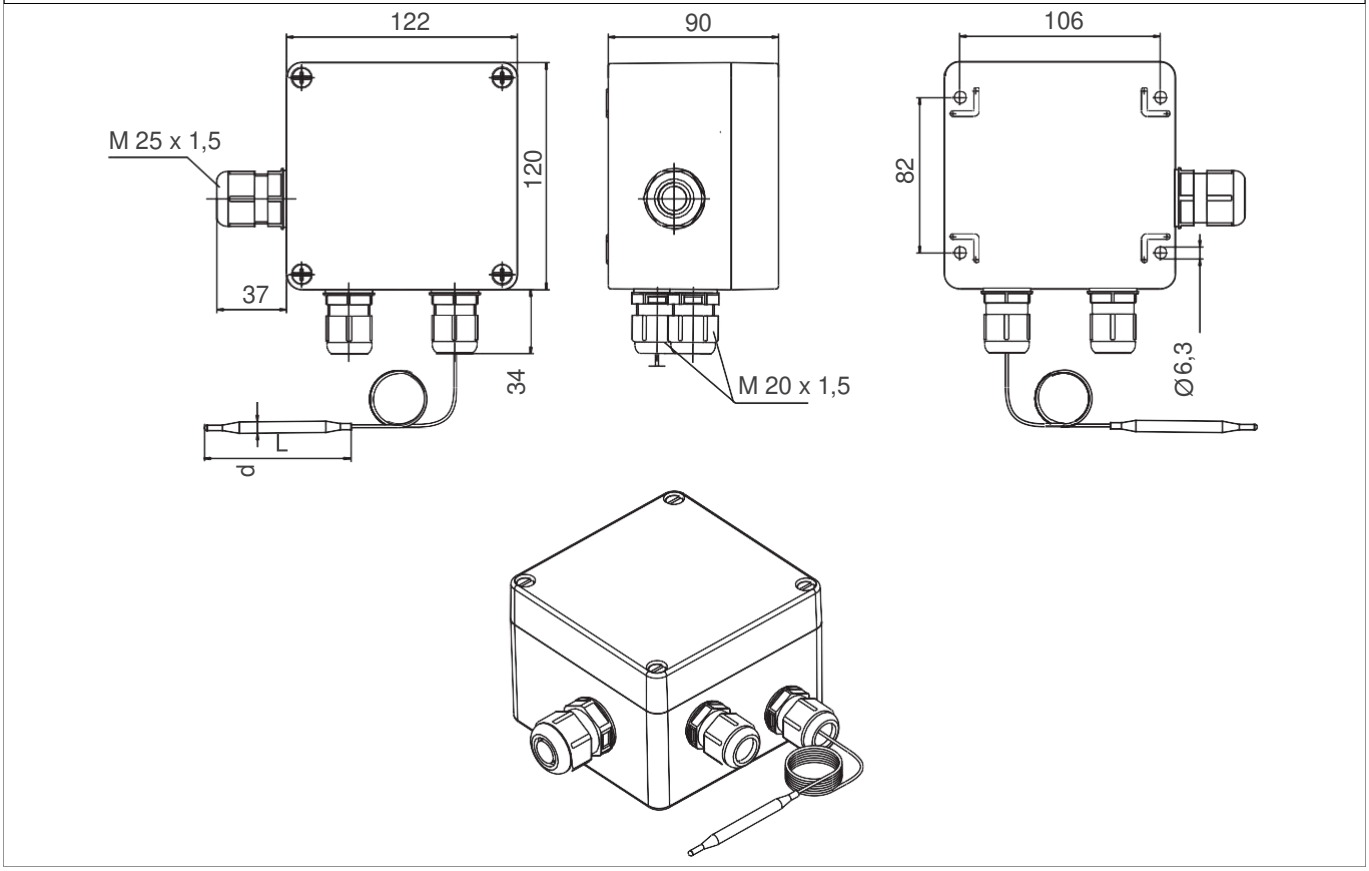
Connection diagram

The connection diagram in the data sheet provides preliminary information about the connection options. For the electrical connection, only use the installation instructions or the operating manual. The knowledge and the correct technical compliance with the safety information and warnings contained in these documents are mandatory for mounting, electrical connection, and startup as well as for safety during operation.

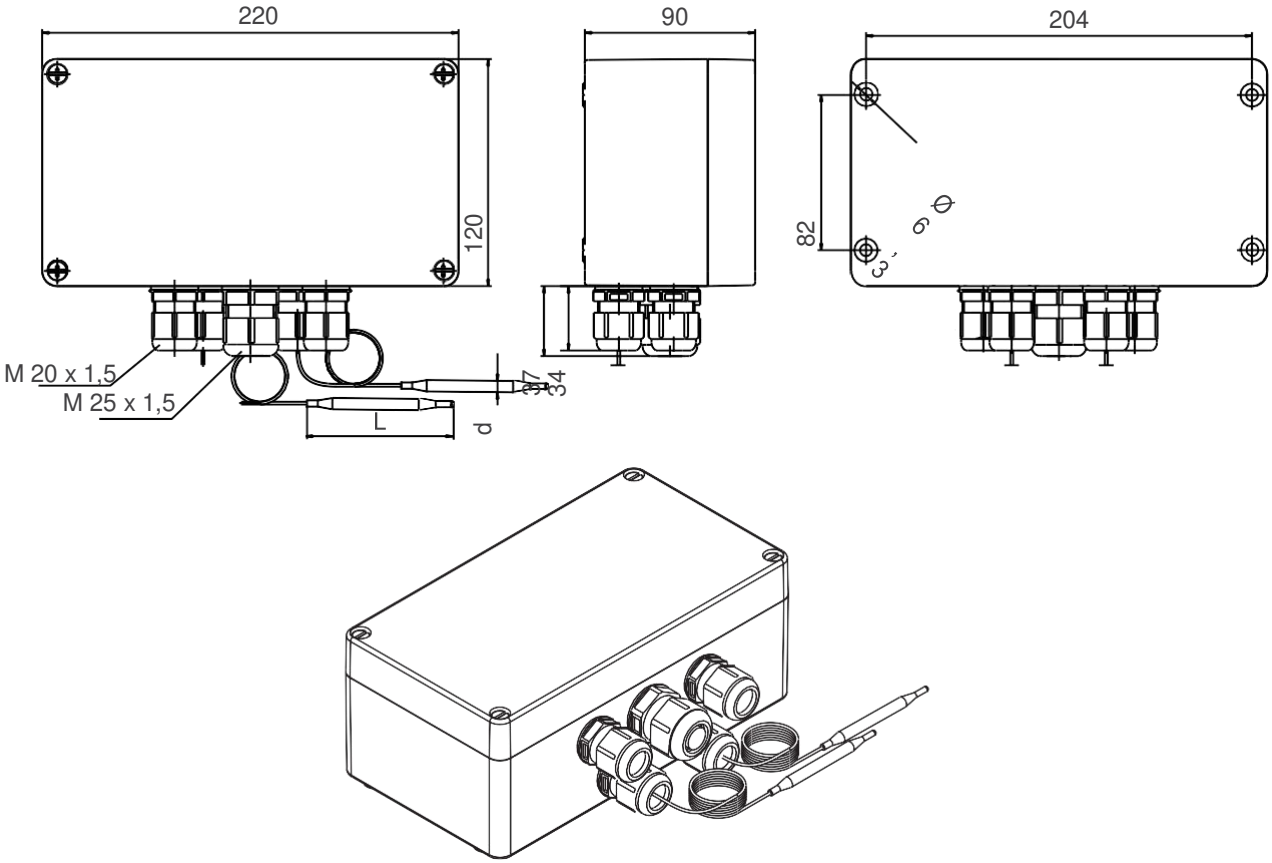
JUMO exTHERM-AT				
	 TW/STW	 STB	 STB/TW/STW	= upward adjustment = downward adjustment

Dimensions

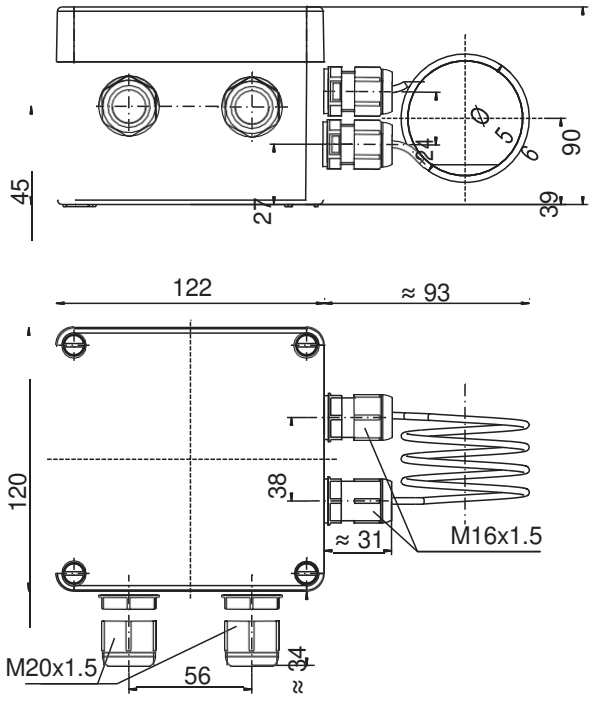
Single thermostat

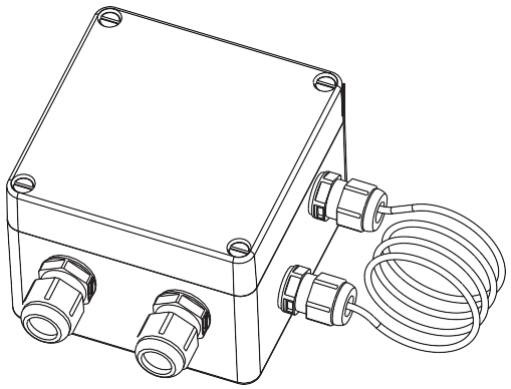


Double thermostat



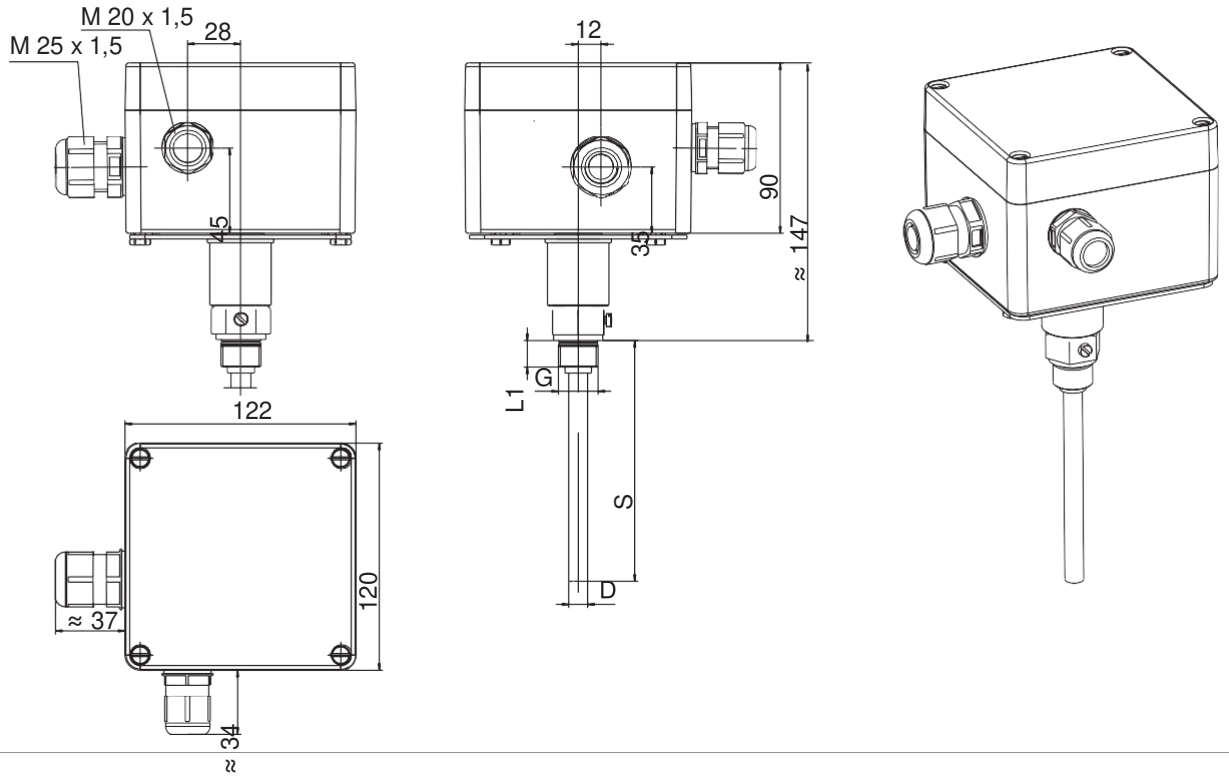
Room thermostat



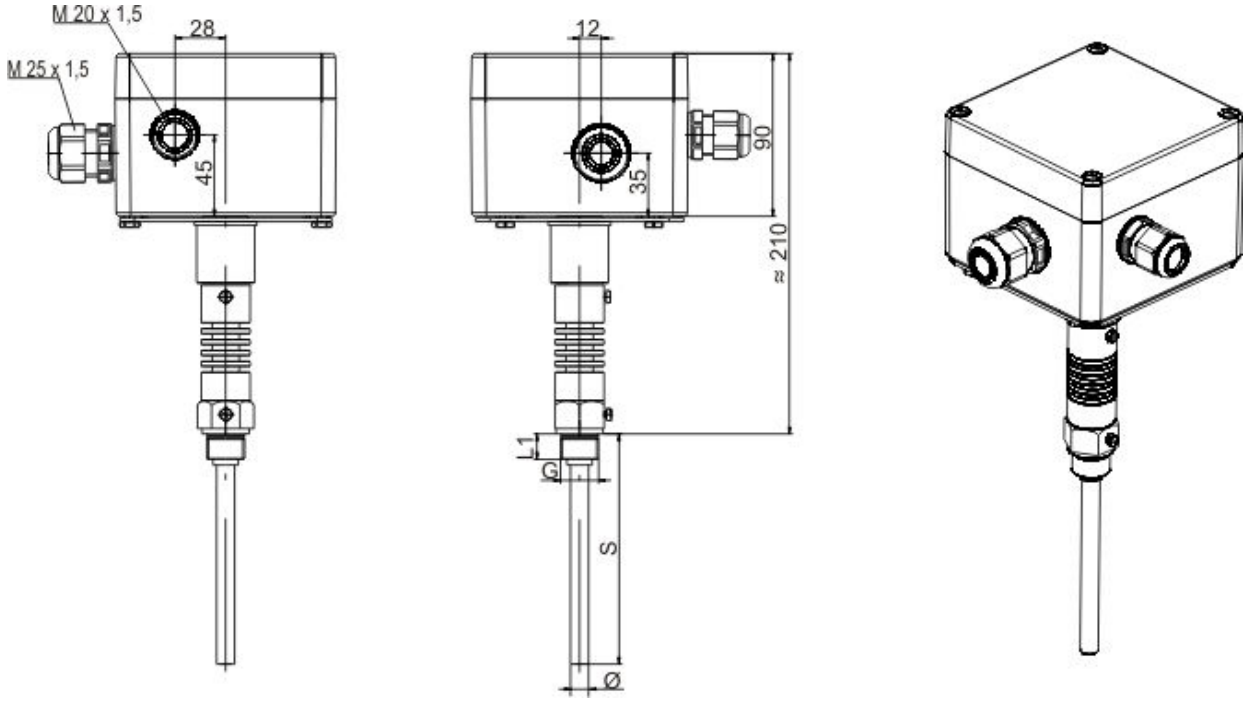


Thermostat with rigid thermowell (process connection 74)

Thermowells can be ordered separately according to data sheet 605057 (**with** ATEX approval) or data sheet 606710 (**without** ATEX approval)

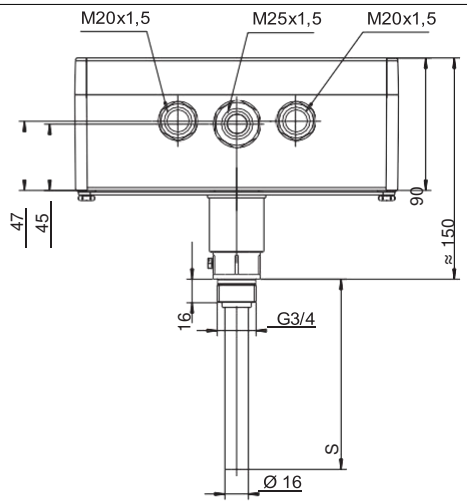


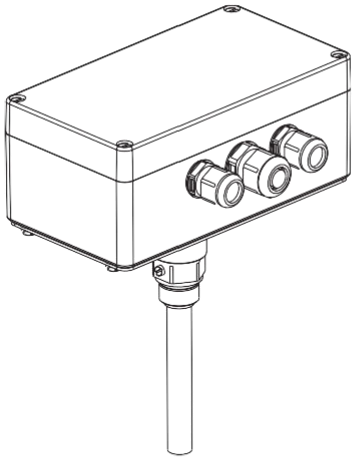
Thermostat with sleeve and heat sink, limit value > 150 to 300 °C

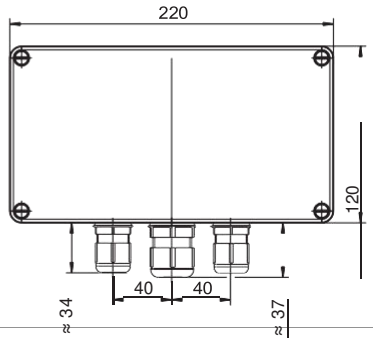


Double thermostat with sleeve (process connection 74)

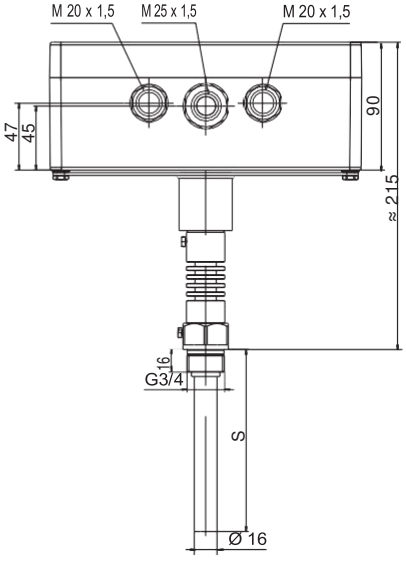
Thermowells can be ordered separately according to data sheet 605057 (**with** ATEX approval) or data sheet 606710 (**without** ATEX approval)

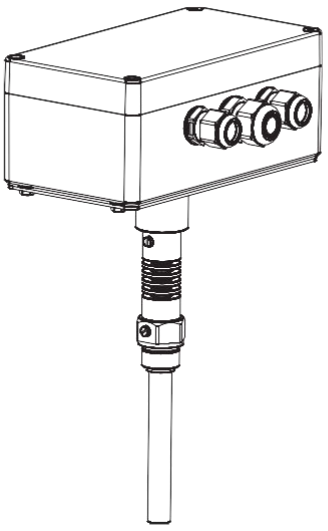






Double thermostat with sleeve and heat sink, limit value > 150 to 300 °C





Order details

	(1)	**Basic type**			
605055		JUMO exTHERM-AT - Explosion-proof surface-mounted thermostat for zones 1, 2, 21, and 22			
	(2)	**Basic type extension**			
0002		Temperature monitor (TW)			
0020		Safety temperature monitor (STW)			
0070		Safety temperature limiter (STB)			
0270		Temperature monitor/Safety temperature limiter (TW/STB)			
2070		Safety temperature monitor/Safety temperature limiter (STW/STB)			
	(3)	**Design type**			
5		Surface-mounted thermostat			
6		Room thermostat			
	(4)	**Housing**			
4		Polyester case black (standard)			
6		Stainless steel housing			
	(5)	**Control range (TW)**			
013		-20 to +40 °C			
014		-20 to +50 °C			
026		0 to 120 °C			
045		20 to 400 °C			
195		0 to 190 °C			
427		60 to 300 °C			
429		70 to 190 °C			
532		130 to 190 °C			
539		140 to 500 °C			
553		150 to 300 °C			
	(6)	**Limit value range (STB)**			
000		Only single thermostat			
014		-20 to +50 °C			
026		0 to 120 °C			
045		20 to 400 °C			
195		0 to 190 °C			
427		60 to 300 °C only STB gas filling			
129		70 to 190 °C			
532		130 to 190 °C			
539		140 to 500 °C			
553		150 to 300 °C			
	(7)	**Switching capacity**			
11		AC/DC 24 V, 0.1 A			
21		AC 230 V, 16 (2.5) A, cos φ = 1 (0.6)			
25		AC 230 V, 25 (4) A, cos φ = 1 (0.6)			
41		AC 400 V, 16 A			
	(8)	**Admissible ambient temperature at the housing**			
340		-55 to +40 °C	T6	(+70 °C T4)	(+55 °C T4 at 25 A)
467		-40 to +40 °C	T6	(+70 °C T4)	(+55 °C T4 at 25 A)
	(9)	**Switching differential**			
00		None			
25		Approx. 2.5 %			
70		Approx. 7 %			

	(10)	**Switching differential 2**
00		None
25		Approx. 2.5 %
70		Approx. 7 %
	(11)	**Capillary length**
0		0 mm
1000		1000 mm
3000		3000 mm
	(12)	**Capillary length 2**
0		0 mm
1000		1000 mm
3000		3000 mm
	(13)	**Capillary material**
20		CrNi
	(14)	**Process connection**
10		Plain cylindrical probe
15		Spiral probe
75		Mounting adaptor for thermowell
	(15)	**Probe diameter**
4		4 mm
6		6 mm
56		56 mm
	(16)	**Probe diameter 2**
0		Only single thermostat
4		4 mm
6		6 mm
	(17)	**Insertion length EL in mm**
0		Only probe
100		100 mm
150		150 mm
200		200 mm
300		300 mm
	(18)	**Extra codes**
000		None
073		SIL and IPL approval
240		EAC-Ex approval
372		IECEx-protection type according to IEC 60079..
861		Protection type IP66 according to DIN EN 60529

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)	
Order code		/		-		-		-		-		-		-		-		-		-
Order example	605055	/	0020	-	5	-	4	-	195	-	000	-	21	-	467	-	70	-	00	-

	(11)		(12)		(13)		(14)		(15)		(16)		(17)		(18)
		-		-		-		-		-		-		/	
	1000	-	0	-	20	-	10	-	6	-	0	-	0	/	000

Stock versions

Designation	Control range (TW)	Capillary length	Probe diameter	Part no.
605055/002-6-4-013-00-21-467-25-00-0-0-20-15-56-0-0/000	-20 to +40 °C	0 mm	56 mm	60003366
605055/0020-5-4-014-000-21-467-70-00-1000-0-20-10-6-0-0/000	-20 to +50 °C	1000 mm	6 mm	60003365
605055/0020-5-4-026-000-21-467-70-00-1000-0-20-10-6-0-0/000	0 to 120 °C	1000 mm	6 mm	60003367
605055/0070-5-4-026-000-21-467-00-00-1000-0-20-10-6-0-0/000	0 to 120 °C	1000 mm	6 mm	60003421
605055/0070-5-4-429-000-21-467-00-00-1000-0-20-10-6-0-0/000	70 to 190 °C	1000 mm	6 mm	60003423
605055/0020-5-4-195-000-21-467-70-00-1000-0-20-10-6-0-0/000	0 to 190 °C	1000 mm	6 mm	60003424
605055/0002-5-4-195-000-21-467-25-00-1000-0-20-10-6-0-0/000	0 to 190 °C	1000 mm	6 mm	60003425
605055/0020-5-4-427-000-21-467-70-00-1000-0-20-10-6-0-0/000	60 to 300 °C	1000 mm	6 mm	60003426