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JUMO Instrument Co. Ltd.
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JUMO Process Control, Inc.
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 E-mail: info.us@jumo.net
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JUMO exTHERM-AT

Type 605055, 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 °C 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

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



JUMO exTHERM-AT double thermostat



JUMO exTHERM-AT single thermostat

ATEX identification

	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

ATEX confirmation

EPS 11 ATEX 1 354

EAC-Ex confirmation

TC RU C-DE.ME92.B.00443

IECEx identification

	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

IECEx confirmation

IECEx EPS 13.0046

SIL-confirmation

EPS 11 ATEX 1 354 (SIL 2)

Approvals/approval marks (see "Technical data")



* Available with extra code (TZ 240)
 ** Available with extra code (TZ 372)
 *** Available with extra code (TZ 073)

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Technical data

Switching function

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
<p>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.</p> <p>If the temperature falls below the selected setpoint value (by the amount of the switching differential), the microswitch is reset to its initial position.</p>	<p>If the temperature on the temperature probe exceeds the set limit value, the electrical circuit is opened and the microswitch is mechanically locked.</p> <p>The microswitch can be manually unlocked once the dangerous temperature of the setpoint value drops by approx. 20 % of the scale range.</p>	<p>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.</p> <p>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.</p> <p>The STW unlocks itself automatically.</p>

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.
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Case

Material	Polyester case, glass fiber reinforced, black (option: stainless steel)
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 x 1.5, sealing area 6 to 13 mm and Ex cable gland M25 x 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
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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)
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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 -55 °C to +70 °C (referring to T4, at 25A max. +50°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

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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)* 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 230 V +10 %, 6.3 (2.5) 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 400 V +10 %, 2 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) 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	

* standard

Capillary and temperature probe

Type	Capillary ∅ 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 In °C	Max. capillary length In mm	Probe length "L"			
		For "d" = 4 mm		For "d" = 6 mm	
		TW	STW, STB	TW	STW, STB
		Hysteresis			
		Approx. 2.5 %	Approx. 7 %	Approx. 2.5 %	Approx. 7 %
-20 to +50	5000	--	--	138	81
0 to +120		204	119	96	65
0 to +190		136	84	71	52
+60 to +300		--	--	--	155
+20 to +500		--	--	278	--
+140 to +500		--	--	--	133
+70 to +190		--	102	--	59
+20 to +400		--	--	155	--
+150 to +300		--	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 +40	+2/-2	--	--	--
-20 to +50	+3/-3	+0/-5	+5/-0	+0/-5
0 to +120	+5/-5	+0/-10	+10/-0	+0/-10
0 to +190	+8/-8	+0/-16	+16/-0	+0/-16
+60 to +300	--	+0/-36	+36/-0	+0/-36
+20 to +500	+22/-22	--	--	--
+140 to +500	+22/-22	+0/-44	+44/-0	+0/-44
+70 to +190	--	+0/-16	+16/-0	+0/-16
+20 to +400	+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.

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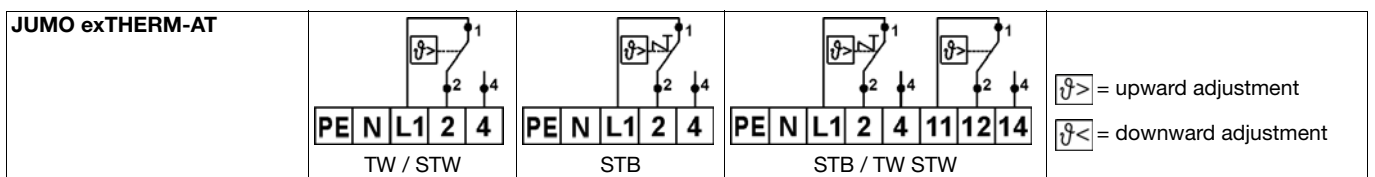


Approvals/approval marks

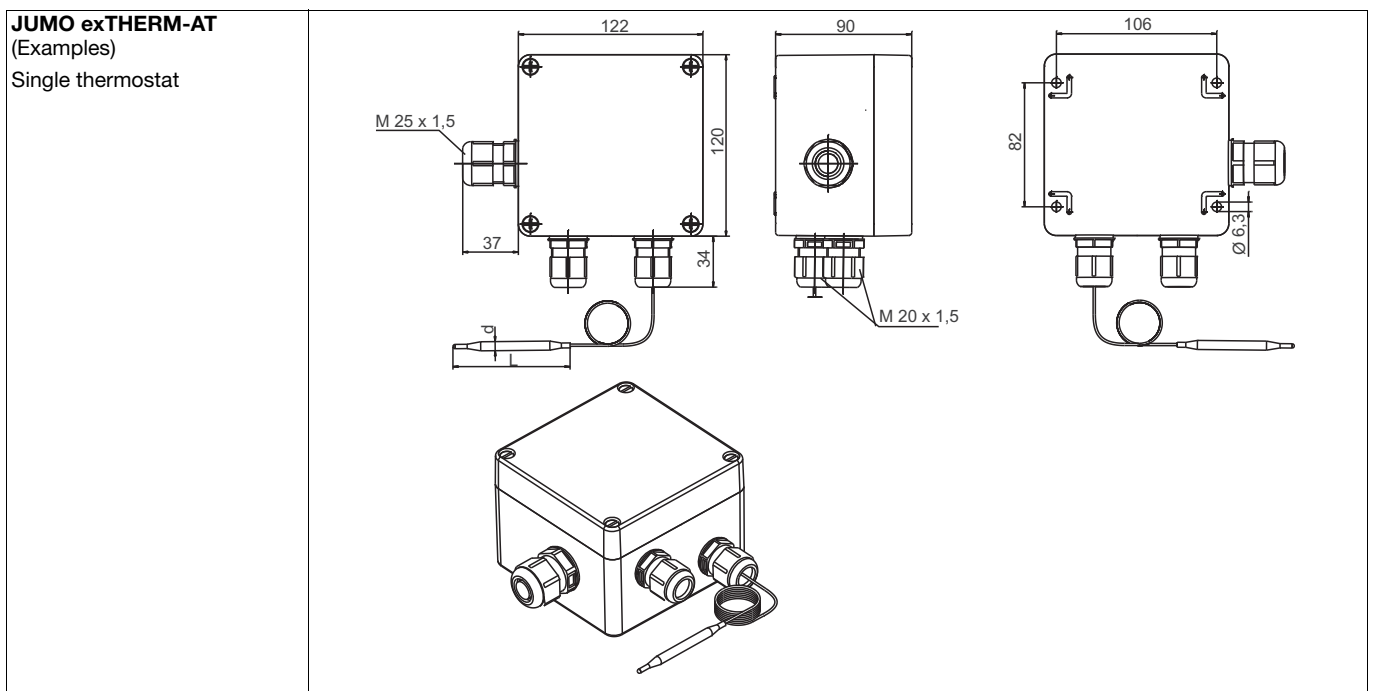
JUMO exTHERM-AT	Switching function	Certificates/test confirmations	Tests	Standard
	TW / STW / STB	EPS 11 ATEX 1 354	ATEX	DIN EN 60079
		IECEX EPS 13.0046	IECEX TZ 372	IEC 60079
		TC RU C-DE.ME92.B.00443	EAC-Ex ^a TZ 240	TR RC 012/2011
	STW / STB	EPS 11 ATEX 1 354	SIL 2 TZ 073	DIN EN 50495

^a Russian documentation upon request

Wiring diagrams



Dimensions



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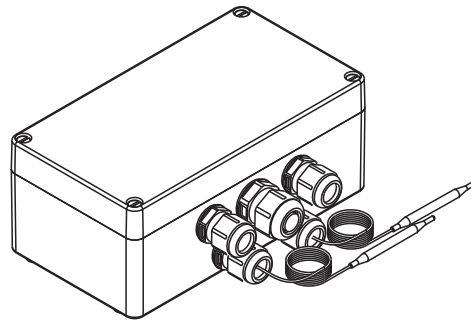
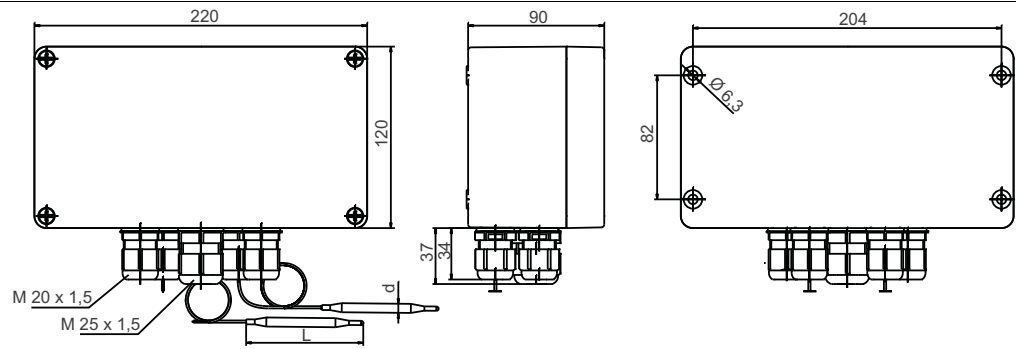
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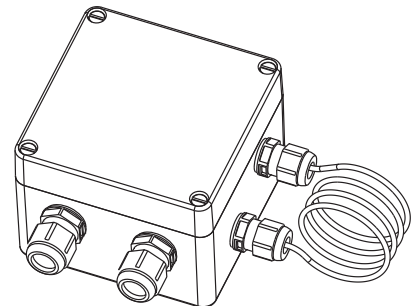
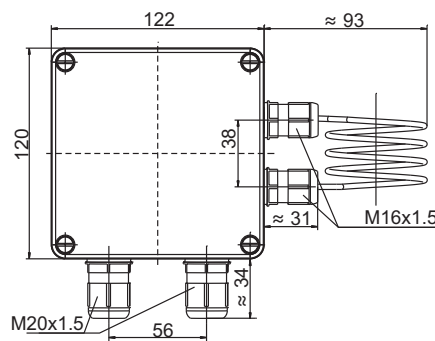
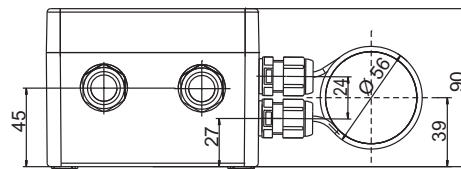


Dimensions

JUMO exTHERM-AT
 (Examples)
 Double thermostat



Room thermostat



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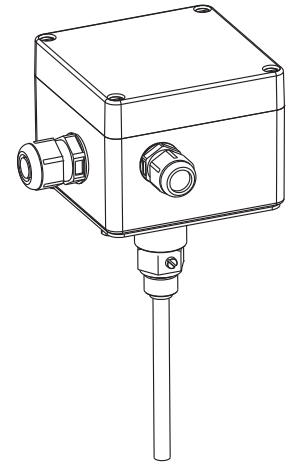
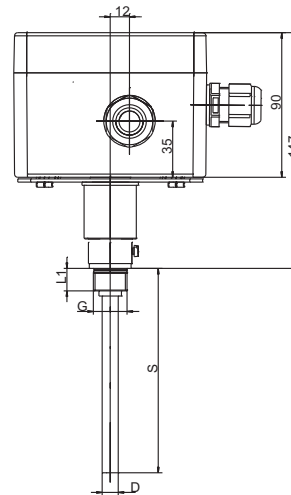
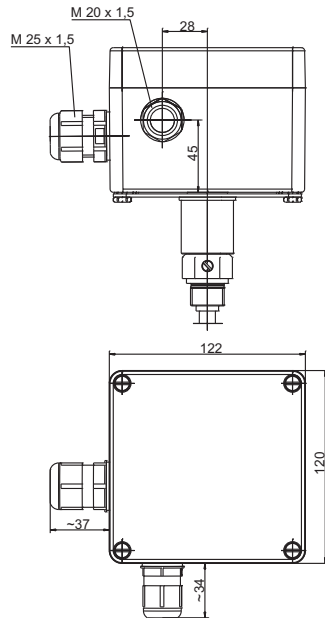


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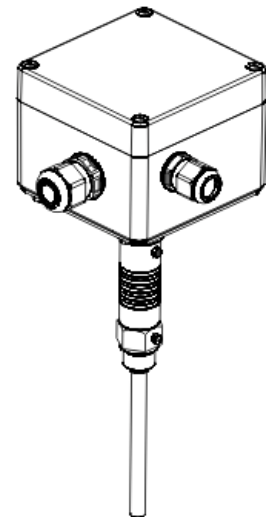
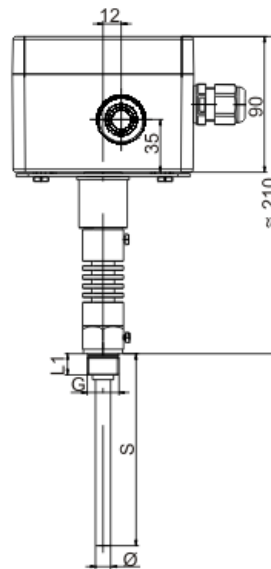
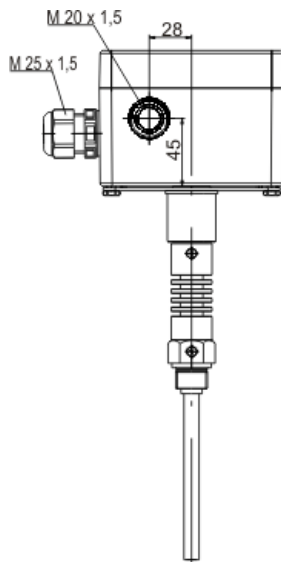
JUMO exTHERM-AT (Examples)

Thermostat with rigid thermowell (process connection 74)

Thermowells can be ordered separately according to data sheet 605057 (with Ex-approval) or data sheet 606710 (standard)



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



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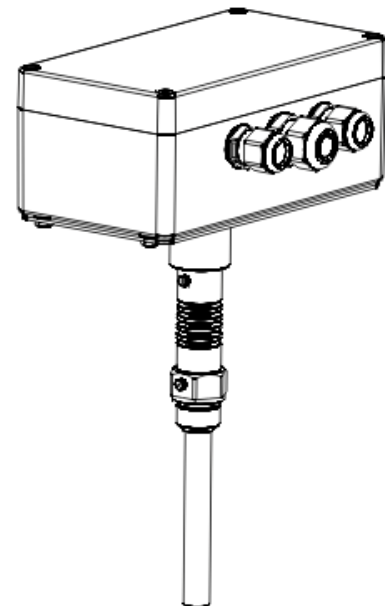
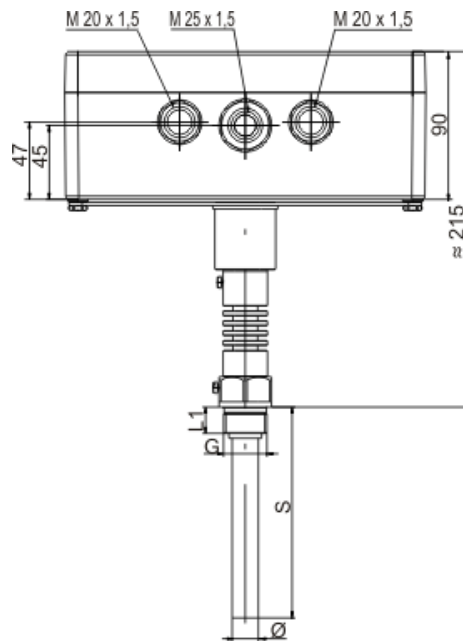
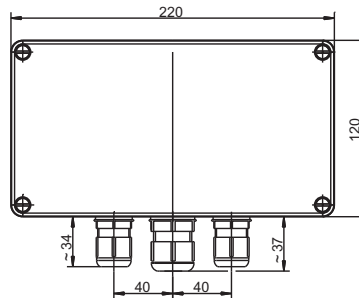
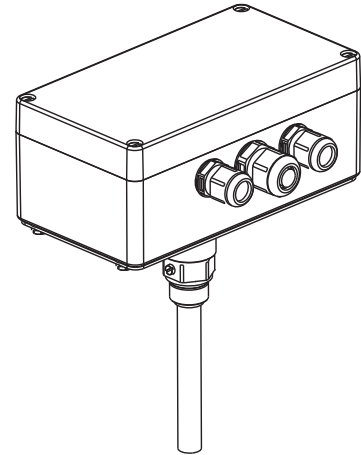
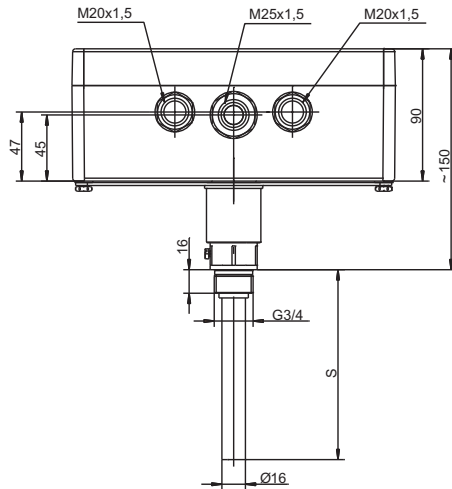
Dimensions

JUMO exTHERM-AT (Examples)

Double thermostat with sleeve
(process connection 74)

Thermowells can be ordered
separately according to data
sheet 605057 (with Ex approval)
or data sheet 606710
(standard)

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



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Order details

Explosion-proof panel-mounted thermostat JUMO exTHERM-AT

Order code	(1) Basic type
605055	Surface-mounted thermostat JUMO exTHERM-AT for potentially explosive areas
	(2) Basic type extensions
0002	Temperature monitor (TW)
0020	Safety temperature monitor (STW)
0070	Safety temperature limiter (STB)
0270	Temperature monitor (TW) and safety temperature limiter (STB)
2070	Safety temperature monitor (STW) and safety temperature limiter (STB)
	(3) Design type
5	Surface-mounted thermostat
6	Room thermostat
	(4) Case
4	Polyester case black (standard)
6	Stainless steel case
	(5) Control ranges / limit value ranges 1 in °C
000	(only single thermostat)
013	-20 to +40 (only room thermostat)
014	-20 to +50
026	0 to +120
195	0 to +190 (only TW and STW)
046	+20 to +500 (only TW)
427	+60 to +300 (only STW)
429	+70 to +190 (only STB)
045	+20 to +400 (only TW)
539	+140 to +500 (only STW and STB)
553	+150 to +300 (only STB)
	(6) Control ranges / limit value ranges 2 in °C
000	(only single thermostat)
013	-20 to +40 (only room thermostat)
014	-20 to +50
026	0 to +120
195	0 to +190 (only TW and STW)
046	+20 to +500 (only TW)
427	+60 to +300 (only STW)
429	+70 to +190 (only STB)
045	+20 to +400 (only TW)
539	+140 to +500 (only STW and STB)
553	+150 to +300 (only STB)
	(7) Switching capacity
11	AC / DC = 24 V, 100 mA (gold-plated snap-action switch)
21	AC 230 V +10 %, 16 (2.5) A, cos φ = 1 (0.6) (standard)
41	AC 400 V +10 %, 16 A
25	AC 230 V +10 %, 25 (4) A, cos φ = 1 (0.6)
	(8) Operating temperatures in °C
340	-55 to +40 T6 (+70 °C T4) (+50 °C T4 at 25 A)
467	-40 to +40 T6 (standard) (+70 °C T4) (+50 °C T4 at 25 A)
	(9) Switching differential 1
00	Without switching differential (STB)
25	Approx. 2.5 % (TW)
70	Approx. 7 % (TW, STW)

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(10) Switching differential 2	
00	Without switching differential (STB) and for single thermostat
25	Approx. 2.5 % (TW)
70	Approx. 7 % (TW, STW)
(11) Capillary length 1	
0	0 mm design type 6, rigid thermowell
1000	1000 mm
3000	3000 mm
...	(Special length, specifications in plain text, 1000 mm increments)
(12) Capillary length 2	
0	0 mm (only design type 6 and for single thermostat)
1000	1000 mm
3000	3000 mm
...	(Special length, specifications in plain text, 1000 mm increments)
(13) Capillary material	
20	Stainless steel (CrNi)
(14) Process connection (PC)	
10	Plain cylindrical probe
15	Spiral probe
74	Mounting adaptor (to 300 °C) (thermowells can be ordered separately according to data sheet 605057 (with Ex-approval) or data sheet 606710 (standard))
(15) Diameter 1 "d" (single thermostat)	
4	Ø 4 mm
6	Ø 6 mm
56	Ø 56 mm
(16) Diameter 2 "d" (double thermostat)	
0	Without
4	Ø 4 mm
6	Ø 6 mm
(17) Insertion length "S"	
0	Without thermowell
200	200 mm
300	300 mm
(18) Extra codes	
000	Without extra code
073	SIL- and IPL-Approvals (only STB and STW, Switching capacity AC 230 V +10 %, 16 (2,5) A, AC / DC = 24 V, 100 mA)
240	EAC-Ex-Approvals
372	IECEX Approvals
861	IP66

Order code:

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18)
 605055 / [....] - [.] - [.] - [....] - [....] - [..] - [..] - [..] - [..] - [....] - [....] - [..] - [..] - [..] - [..] - [....] / [..]

Order example:

605055 / [0020] - [5] - [4] - [195] - [000] - [21] - [467] - [25] - [00] - [1000] - [1000] - [20] - [10] - [6] - [0] - [200] / [000]

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JUMO Process Control, Inc.

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**Stock versions**

Order code	Control range °C	Probe CrNi / mm	Capillary CrNi / mm	Part no.
605055/0002-6-4-013-000-21-467-25-00-0-0-20-15-56-0-0/000	-20 to +40	spiral probe	- -	60003366
605055/0020-5-4-014-000-21-467-70-00-1000-0-20-10-6-0-0/000	-20 to +50	6 x 81	1000	60003365
605055/0020-5-4-026-000-21-467-70-00-1000-0-20-10-6-0-0/000	0 to +120	6 x 65		60003367
605055/0070-5-4-026-000-21-467-00-00-1000-0-20-10-6-0-0/000	0 to +120	6 x 65		60003421
605055/0070-5-4-429-000-21-467-00-00-1000-0-20-10-6-0-0/000	70 to +190	6 x 59		60003423
605055/0020-5-4-195-000-21-467-70-00-1000-0-20-10-6-0-0/000	0 to +190	6 x 52		60003424
605055/0002-5-4-195-000-21-467-25-00-1000-0-20-10-6-0-0/000	0 to +190	6 x 71		60003425
605055/0020-5-4-427-000-21-467-70-00-1000-0-20-10-6-0-0/000	60 to +300	6 x 155		60003426