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# Explosion protected surface-mounting thermostat

## ATH-Ex type series

model is being phased out

### Special features

- compact case (75 x 110 x 56 mm)
- 5 A contact rating
- can be fitted directly in zone 1, 2, 21 and 22
- Temperature can be set in zone 1, 2, 21 and 22
- Control ranges from -20°C to +500°C



ATH-Ex..

### Brief description

Explosion protected surface-mounting thermostats of the ATH-Ex type series control and monitor thermal processes and can be directly used in explosive areas - Zone 1 and Zone 21.

The devices are available as temperature monitors TW and fail-safe temperature monitors STW. The thermostats operate according to the fluid or gas expansion principle. The electrical switching element is a pressure-resistant encapsulated microswitch.

#### Design as per DIN EN 14597:

<b>TW</b>	Temperature monitor
<b>STW</b>	Fail-safe temperature monitor

### Ex identification

	<b>II 2G Ex ed IIC T6</b>	for explosive gas atmosphere
	<b>II 2D Ex tD A21 IP65 T80°C</b>	for explosive dust atmosphere

### Explosion protection

	<b>II 2G</b>	Device group II, category 2, equipment for explosive gas atmosphere
	<b>II 2D</b>	Device group II, category 2, equipment for explosive dust atmosphere

### Approval/approval marks (see Technical Data)



**DGRL**

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## Technical data

### Switching function

Temperature monitor TW and fail-safe proof temperature monitor STW	Self-monitoring for the fail-safe temperature monitor STW
If the temperature exceeds the setpoint value set on the temperature probe, the microswitch will be tripped by the transmission mechanics and the current circuit opened or closed.  The microswitch is reset to its original status once the setpoint value set is gone below (by the hysteresis).	If the measuring system is destroyed, i.e. if the expansion fluid emerges, the pressure in the STW diaphragm drops and permanently opens the current circuit. Unlocking is no longer possible.  If the probe has cooled down to a temperature within the control range table, e.g. below -20°C, the current circuit is also opened. The STW is automatically restarted.

### Control ranges and probe table

Control range in °C	Switching point accuracy in the upper third of the scale range <sup>a</sup>		maximum capillary length in mm	maximum probe temperature as per DIN EN 14597 in °C	STW opens at probe temperature below °C	Probe length "L" with "d" = 6 mm	
	TW	STW				TW	STW
-20...+50	+0 K -3 K	+0 K -3.5 K	5000	+60	-30	153	132
0...+50	+0 K -2 K	+0 K -2.5 K		+60		202	172
0...+100	+0 K -4 K	+0 K -5 K		+115		117	102
+40...+120	+0 K -3 K	+0 K -4 K		+140	-10	135	117
+50...+200	+0 K -6 K	+0 K -8 K		+230		107	94
+80...+250	+0 K -7 K	+0 K -8.5 K		+300	-20	90	78
+50...+300	+0 K -10 K	+0 K -12.5 K	+345	-30	67	60	
+20...+400	+0 K -15 K	+0 K -19 K	1000	+460	-30	--	202
+20...+500	+0 K -19 K	+0 K -24 K	2000	+550	-30	237	149

<sup>a</sup> Offset of the switching point accuracy to a different scale range is possible upon customer request.

### Capillary and temperature probe

Type	End of scale	Capillary Ø 1.5 mm	Temperature probe
ATH-Ex-..	up to 200°C	Copper (Cu) Material No. 2.0090 electrically tin-plated	Copper (Cu) Material No. 2.0090 hard soldered, electrically tin-plated
	up to 300°C	Stainless steel (CrNi) Material No. 1.4571	Stainless steel (CrNi) Material No. 1.4571, welded
	up to 500°C	Stainless steel (CrNi) Material No. 1.4571	Stainless steel (CrNi) Material No. 1.4571, welded
capillary length	standard 1000 mm, maximum 5000 mm		
min. bending radius of capillary	5 mm		

### Electrical data

Switching element	pressure-resistant encapsulated microswitch with change-over contact
maximum contact rating	AC 230 V +10%, 5 A, cos φ ≥ 0.9
Electrical connection	Screw-connection in a case, suitable for a cable cross section up to 2.5 mm <sup>2</sup>

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**Operating data**

Hysteresis in % from the control / limit value range	Ranges with scale limit value ≤ 350°C			Ranges with scale limit value > 350°C		
	Switching function	Rated value	Possible process value	Switching function	Rated value	Possible process value
	TW	3	3-5	TW	5	5-9
	STW	5	5-7	STW	6	6-11
Ambient temperature influence referring to the control / limit value range	When the ambient temperature on the case deviates from the calibration ambient temperature 22°C a switching point offset occurs. Higher ambient temperatures = lower switching point Lower ambient temperature = higher switching point					
	Panel-mounting thermostats with scale limit value					
	< 200°C		≥ 200°C ≤ 350°C		> 350°C ≤ 500°C	
	TW	STW (STB)	TW	STW (STB)	TW	STW (STB)
	Influence on the switch head					
	0,08%/K	0,17%/K	0,06%/K	0,13%/K	0,14%/K	0,12%/K
	Influence on the capillary per meter					
0,047%/K	0,054%/K	0,09%/K	0,11%/K	0,04%/K	0,03%/K	
Permissible storage temperature	-50...+50°C					
admissible ambient temperature during use	Temperature class	with scale limit value		capillary line		Switch head
	T 6	max.		+50°C		+50°C
	min.	< 200°C		-40°C		-20°C
		≥ 200°C ≤ 350°C		-20°C		-20°C
> 350°C ≤ 500°C		-40°C		-20°C		
Rated position (NL)	as per DIN 16 257, NL 0 ... NL 90 (different NL on request)					

**Case**

Material	Polyester case, glass-fibre enforced, black		
Limit value setting	The limit value can be adjusted once the case lid has been removed on the set point value setter.		
Protection class	EN 60 529-IP 65		
Cable inlet	Ex cable screw connection M 20 x 1.5, sealing area 6-12 mm		
Switch head fastening	by 4 screws once the case lid is removed		
Weight	approx. 1.32 lb		

**Process connection<sup>a</sup>**

ATH-Ex.. type series with capillary	plain cylindrical probe 10 (standard)	
	Sheath 20 (on request)	
	Screw-in sleeve with screw-in spigot G 1/2 form A as per DIN 3852/2 and clamping piece with fastening screw to fix the probe	
Material of sheath 20	up to +150°C CuZn as standard, over +150°C CrNi as standard	
Fitting length S	Standard lengths: 100, 120, 150, 200 or 300 mm (different lengths on request)	
Immersion tube Ø	D = 8 mm	

<sup>a</sup>. For different process connections and sheaths, see data sheet 606710 (only 21, 22, 60 and 65).

**Note**

Physical and toxic features of the expansion means, which could emerge in the event of a measuring system break.

Control range with scale limit value	Hazardous reactions	Fire and explosion hazard		harmful to water	Information about toxicology		
		Ignition temperature	Explosion limit		irritant	hazardous to health	toxic
< 200°C	no	+355°C	0.6-8V%	Yes	Yes	a	no
≥ 200°C ≤ 350°C		+490°C	--				
> 350°C ≤ 500°C		no	no	no	no	no	

<sup>a</sup>. There is currently no statement by the health authority concerning hazards to health in the event of short-term exposure and low concentration, e.g. measuring system break.

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## Approval/approval marks

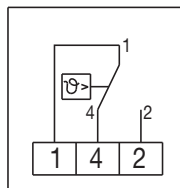
Types	Switching function	ATEX approval	DGRL approvals	DIN approvals
ATH-Ex-2	TW	PTB 03 ATEX 1167	-	TW: TW 76607
ATH-Ex-20	STW		97/23/EC	STW: STW(STB) 76707

Ignition protection type	Ex ed IIC T6			
	Ex	General regulations	European standard EN 60079-0	VDE 0170 / 0171 Part 1
	e	increased safety	European standard EN 60079-7	VDE 0170 / 0171 Part 6
	d	pressure-resistant encapsulation	European standard EN 60079-1	VDE 0170 / 0171 Part 5
	IIC	Gas group		
	T6	Temperature class		

IP 65 T 80°C	Use in combustible dust		European standard EN 61241-0 European standard EN 61241-1	VDE 0170 / 0171 Part 15-1-1
	IP 65	Protection class as per EN 60529-IP65		
	T 80°C	max. admissible surface temperature (use in combustible dust)		

## Connection diagram

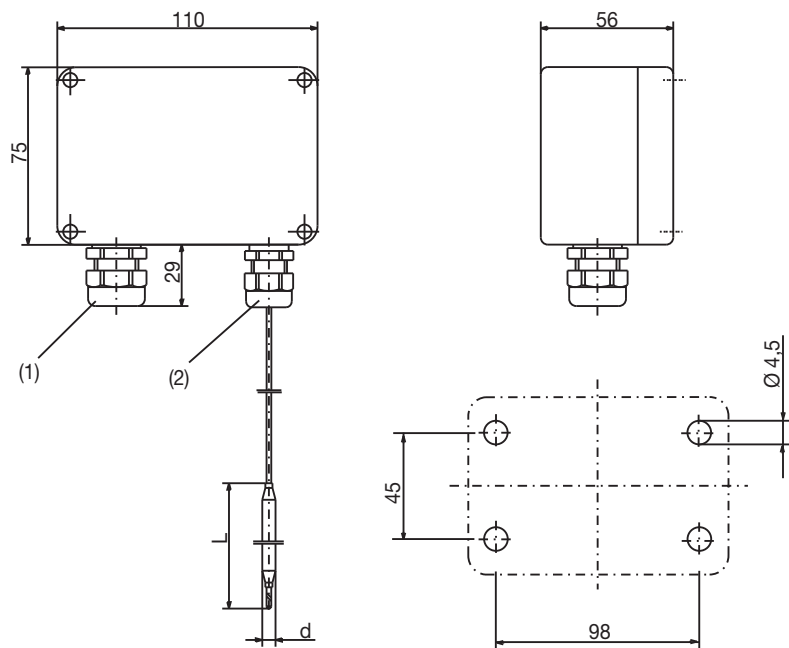
ATH-Ex-..



ATH-Ex-2, ATH-Ex-20

## Dimensions

ATH-Ex-..



(1) = Ex cable screw-connection  
 M20 x 1.5 x6-12

(2) = Ex cable screw connection

For different process connections and sheaths, refer to data sheet 606710 (only 20, 21, 22, 60 and 65)

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## Stock versions

Part no.	Type	Control range °C	Measuring system material	Capillary mm	Probe ø×length mm
60001242	ATH-Ex-2	-20...+50	CrNi	2000	6×153
60001243	ATH-Ex-2	0...+50			6×202
60001244	ATH-Ex-2	+40...+120			6×135
60001246	ATH-Ex-2	+50...+300			6×67
60001247	ATH-Ex-20	+40...+120			6×117
60001248	ATH-Ex-20	+50...+300			6×60

## Order details

### Explosion protected surface-mounting thermostat, type series ATH-Ex-..

**Order code**

605041

**(1) Basic type**

Surface-mounting thermostat for explosive areas, type series ATH-Ex

**(2) Basic type extensions**

02 ATH-Ex-2 Temperature monitor TW  
 20 ATH-Ex-20 Fail-safe temperature monitor STW

**(3) Control/limit value ranges °C**

014 -20...+50  
 021 0...+50  
 025 0...+100  
 056 +40...+120  
 062 +50...+200  
 080 +80...+250  
 064 +50...+300  
 045 +20...+400  
 046 +20...+500



**(4) Capillary length**

1000 1,000 mm  
 2000 2,000 mm  
 3000 3,000 mm  
 4000 4,000 mm  
 5000 5,000 mm  
 . . . . (special length, specifications in plain text in mm)

**(5) Capillary material**

20 CrNi Stainless steel (1.4571)  
 40 Cu Copper tin-plated (only possible up to 200°C)

**(6) Process connection (PC)**

10 plain cylindrical probe (standard)   
 20 Screw-in sleeve 

**(7) Thread of process connection**

00 without thread (process connection 10)  
 13 External thread G 1/2

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**( 8 ) Material of process connection**

00 only with process connection 10  
 46 CuZn (brass up to 150°C)  
 20 CrNi (Stainless steel 1.4571)

**( 9 ) Fitting length "S" (immersion tube length)**

000 ATH-Ex-.. without sheath  
 100 100mm  
 120 120mm  
 150 150mm  
 200 200mm  
 300 300mm  
 400 400mm

**( 10 ) Diameter "D" (immersion tube diameter)**

00 ATH-Ex-.. without sheath  
 8 8 mm

**( 11 ) Diameter "d" (probe diameter)**

6 6 mm

**( 12 ) Extra codes**

000 no extra code

**Order code**

( 1 ) ( 2 ) ( 3 ) ( 4 ) ( 5 ) ( 6 ) ( 7 ) ( 8 ) ( 9 ) ( 10 ) ( 11 ) ( 12 )  
 605041 / [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] / [ ] , ...

**Order example**

605041 / [ 20 ] - [ 062 ] - [ 2000 ] - [ 40 ] - [ 10 ] - [ 00 ] - [ 00 ] - [ 000 ] - [ 00 ] - [ 6 ] / [ 000 ] , ...