

**JUMO GmbH & Co. KG**

Delivery address: Mackenrodtstraße 14  
36039 Fulda, Germany  
Postal address: 36035 Fulda, Germany  
Phone: +49 661 6003-0  
Fax: +49 661 6003-607  
E-mail: mail@jumo.net  
Internet: www.jumo.net

**JUMO Instrument Co. Ltd.**

JUMO House  
Temple Bank, Riverway  
Harlow, Essex CM20 2DY, UK  
Phone: +44 1279 635533  
Fax: +44 1279 635262  
E-mail: sales@jumo.co.uk  
Internet: www.jumo.co.uk

**JUMO Process Control, Inc.**

6733 Myers Road  
East Syracuse, NY 13057, USA  
Phone: 315-437-5866  
1-800-554-5866  
Fax: 315-437-5860  
E-mail: info.us@jumo.net  
Internet: www.jumousa.com



## Surface-mounting thermostat, type series ATH.-SE to monitor seagoing vessel equipment

### Special features

- Control and monitoring of thermal processes
- Temperature monitor TW
- Safety temperature monitor STW (STB)
- and safety temperature limiter STB

### Brief description

Thermostats are used to control and monitor thermal processes. The devices of the ATH.-SE type series are available as temperature monitors TW, safety temperature monitors STW (STB) and safety temperature limiters STB. In the event of a malfunction, the STB switches the monitored machine line to an operational safe status.

Surface-mounting thermostats operate according to the fluid expansion principle, a microswitch is used as an electrical switching element.

### Switching function

#### Temperature monitor TW and safety temperature monitor STW

If the temperature exceeds the limit value set on the temperature probe, the current circuit is opened via a snap switch. The switch is reset to its original status once the set limit value is gone below (by the hysteresis).

#### Restart lock of the safety temperature limiter STB

If the temperature exceeds the limit value set on the temperature probe, the current circuit is opened and mechanically locked.

Once the limit value is gone below by approx. ~ 10% of the temperature range, the switch can be manually unlocked.

#### Use of the safety temperature monitor STW as safety temperature limiter STB

Ensure that the switching circuit downstream of the thermostat complies to DIN EN 14597 and VDE 0116.

#### Self-monitoring for the safety temperature limiter STB and safety temperature monitor STW (STB)

If the measuring system is destroyed, i.e. if the expansion fluid escapes, the pressure in the diaphragm of the STB and STW (STB) drops and permanently opens the current circuit. Unlocking is no longer possible. If the probe has cooled down to a temperature below approx. -20 °C, the current circuit is opened, when the temperature rises above approx. -20 °C, the STB must be unlocked manually first using the re-starting button. The STW (STB) automatically restarts.



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



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## Types and approvals

The declaration of conformity can be found in the internet under: [www.jumo.net](http://www.jumo.net)

Type	Switching function	Hysteresis	Test	
ATHs-SE-2 ATHf-SE-2	TW	3%	Det Norske Veritas Germanische Lloyd DIN EN 14597 Bureau Veritas. Pressure equipment directive 2014/68/EU (only ATH.-SE-20 and ATH.-SE-70)	
ATHs-SE-2 ATHf-SE-2		6%		
ATHs-SE-2 ATHf-SE-2		1.5%		
ATHs-SE-20 ATHf-SE-20	STW (STB)	3%		
ATHs-SE-20 ATHf-SE-20		6%		
ATHs-SE-20 ATHf-SE-20		1.5%		
ATHs-SE-70 ATHf-SE-70	STB	-		
ATH.-....	all			EAC <sup>a</sup> / Gost Norm AG; TC RU C-DE.AB98.B.00000 Technical rules of the customs union Russia/Belarus/Kazakhstan

<sup>a</sup> Russian documentation upon request

## Technical data

### Control ranges and temperature probes

Type	Control / limit value ranges in °C	max. admissible excessive probe tem- perature in °C	Length of the temperature probe in mm			
			Copper (Cu)		Stainless steel (CrNi)	
			ø 6	ø 8	ø 6	ø 8
ATH.-SE-2	0 to 100	125	107	75	99	67
	20 to 90	125	138	91	130	83
	30 to 110	135	125	84	117	76
	20 to 120	140	107	75	99	67
	60 to 140	165	123	83	117	76
	20 to 150	175	88	65	80	57
	50 to 200	230	101	72	93	64
	50 to 250	290	-	-	73	54
	50 to 300	345	-	-	63	49
ATH.-SE-20	30 to 110	135	112	78	104	70
ATH.-SE-70	60 to 140	165	110	77	102	68
	20 to 150	175	80	61	72	53
	50 to 250	290	-	-	66	50
	50 to 300	345	-	-	58	-

### Capillary and temperature probe

Type	Scale limit value	Capillary	Temperature sensor	Remarks
ATH.-SE-2 ATH.-SE-20 ATH.-SE-70	≤ 200 °C	Copper (Cu) ø 1.5mm Material No. 2.0090	Copper (Cu) Material No. 2.0090 hard soldered	-
	> 200 °C	Copper (Cu) ø 1.5mm Material No. 2.0090	Stainless steel (CrNi) Material No. 1.4571 hard soldered	-
	all areas	Stainless steel (CrNi) ø 1.5mm	Stainless steel (CrNi) Material No. 1.4571 welded	against surcharge
Capillary length	1000 mm, max. 2000 mm as standard			
min. bending radius of the capillary	5 mm			

### Electrical data

Switching element	ATH.-SE-2 ATH.-SE-20	ATH.-SE-70	ATH.-SE-70/574
	Microswitch with change-over contact	Microswitch with N/C contact and restart lock	Microswitch with N/C contact, restart lock and additional signal contact
max. contact rating	AC 230 V +10%, 10(2) A, cos φ = 1(0.6) DC 230 V +10 %, 0.25 A		
	with a hysteresis of 1.5%: AC 230 V +10%, 6(1.2) A, cos φ = 1(0.6)		

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**Operating data**

Hysteresis in % of the control / limit value range	Rated value		Possible process value		Designation	
	3		3-4		S1	
	6		6-8		S2	
	1.5		1-2		S3	
Switching point accuracy in % of the control/limit value range	TW: in the upper third of the scale $\pm 1.5\%$ STB, STW (STB): in the upper third of the scale $+0/-5\%$					
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 switch point offset occurs. Higher ambient temperatures = lower switching point Lower ambient temperature = higher switching point					
	For devices with scale limit value					
	< 200 °C			+ 200 °C		
	ATH.-SE-2	ATH.-SE-20 ATH.-SE-70	ATH.-SE-2	ATH.-SE-20 ATH.-SE-70	on case	
	0.08%/K	0.17%/K	0.06%/K	0.13%/K	on capillary per m	
	0.047%/K	0.054%/K	0.09%/K	0.11%/K		
	admissible storage temperature	-50 to 50 °C				
admissible ambient temperature during use	max. +80 °C					
Rated position	as per DIN 16 257, NL 0 to NL 90 (different rated positions (NL) on request)					

**Case**

Case	Aluminum die cast case Surface with impact resistant textured paint: Lid: RAL 7032, bottom section: RAL7015
Set point adjustment	The switching point can be adjusted by means of a screwdriver once the case lid has been removed
Protection class	EN 60 529-IP 54
Weight	ATHf-SE-... approx. 0.70 kg ATHs-SE-... approx. 0.65 kg with screw-in sheath "20" ATHs-SE-... approx. 0.85 kg with screw-in sheath and intermediate piece "30"

**Process connection**

Type series ATHs-SE-... with rigid shaft	Scale limit value <u>up to</u> 150 °C	Scale limit value <u>exceeding</u> 150 °C
	<b>Sheath "20"</b> Screw-in sleeve with screw-in spigot G 1/2 form A as per DIN 3852/2	<b>Sheath "30"</b> Screw-in sleeve with screw-in journal G 1/2 form A as per DIN 3852/2 and intermediate piece to ensure that the max. admissible ambient temperature of +80 °C is not exceeded on the case
Type series ATHf-SE-... with capillary	plain cylindrical probe "10" (standard)	
	Screw-in 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 locking screw to lock the probe	
Material	<b>Sheath "20"</b>	<b>Sheath "30"</b>
	up to +150 °C CuZn as standard over +150 °C CrNi as standard	over +150 °C CrNi as standard
Fitting length S (max. 200 mm)	Standard lengths: 100, 120, 150 (material CuZn, CrNi) with 200 mm CuZn only	
Immersion tube Ø	D = 8 mm, D = 10 mm	

**Note:**

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

Control range with scale limit value	Hazardous reactions	Fire and explosion hazard		hazardous to waters	Information about toxicology		
		Ignition temperature	Explosion limit		irritant	dangerous to health	toxic
< +200 °C	no	+ 355 °C	0.6 -8 V%	Yes	Yes	†	no
≥ 200 °C ≤ +300 °C	no	+ 490 °C	--	Yes	Yes	†	no

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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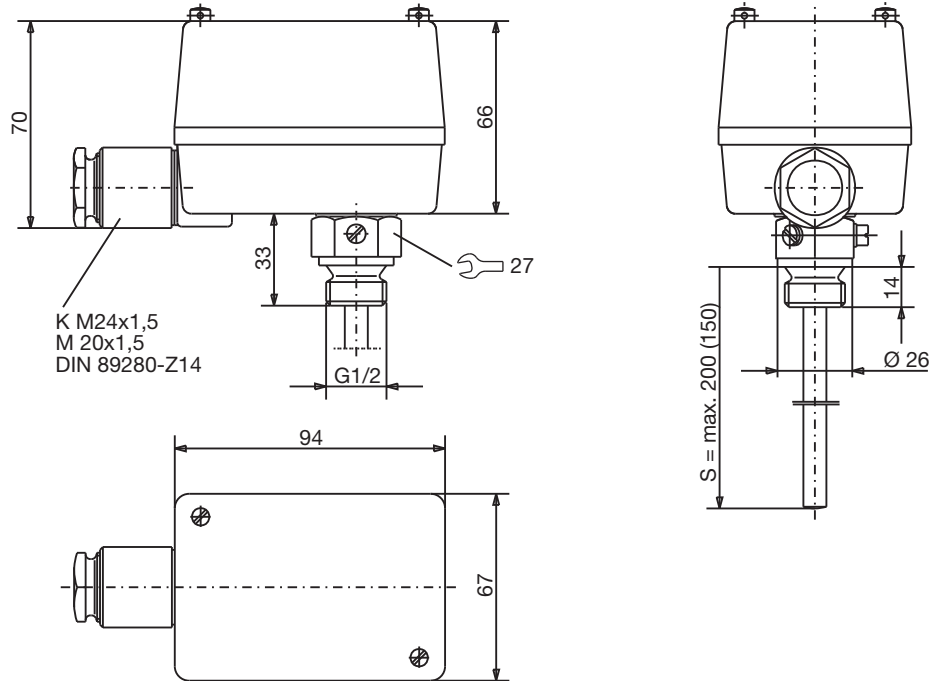
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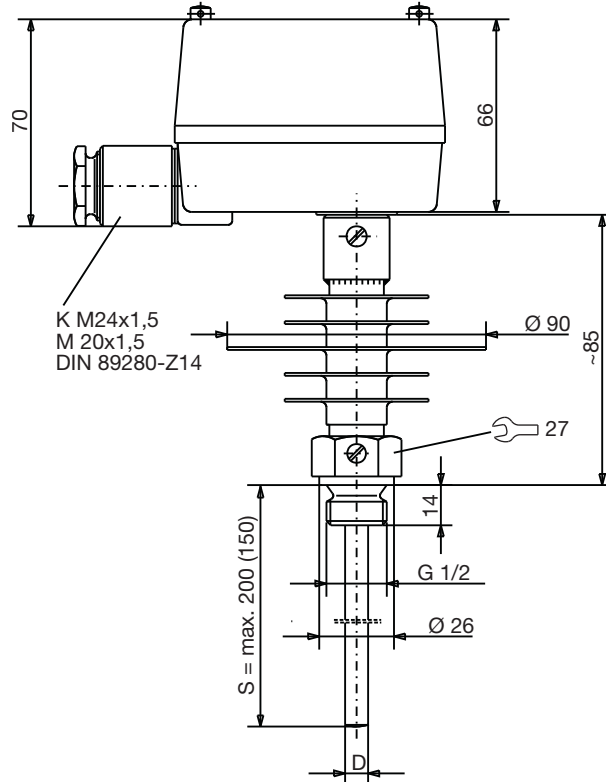


## Dimensions

**ATHs-SE-... 2 and 20**  
 with screw-in sheath "20"  
 up to 150 °C



**ATHs-SE-... 70**  
 with screw-in sheath  
 and intermediate piece  
 "30"  
 from 150 °C to 300 °C



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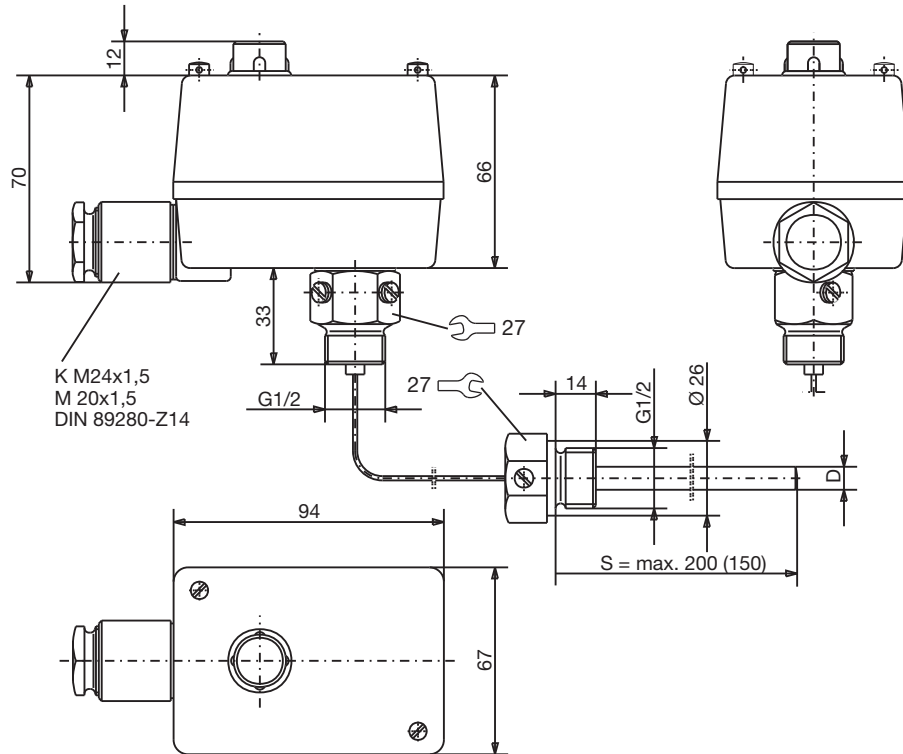
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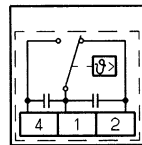


## Dimensions

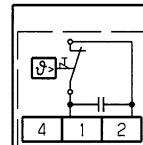
**ATHs-SE... 7**  
 with screw-in sheath "20"  
 up to 300 °C



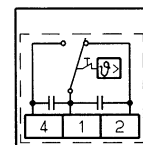
## Wiring diagrams



ATH.SE-2 / ATH.SE-20



ATH.SE-70



ATH.SE-70/574

## Order details

### Surface-mounting thermostat, type series ATH.-SE

**Order code (1) Basic type**

603031 Surface-mounting thermostat, type series ATH.-SE

**(2) Basic type extension**

02	ATH.-SE-2	Temperature monitor TW
20	ATH.-SE-20	Safety temperature monitor STW (STB)
70	ATH.-SE-70	Safety temperature limiter STB

**(3) Design**

1	ATHs-SE-..	with rigid shaft
2	ATHf-SE-..	with capillary

**(4) Control / limit value ranges**

041	20 to 90 °C
025	0 to 100 °C
052	30 to 110 °C
042	20 to 120 °C
067	60 to 140 °C
043	20 to 150 °C
062	50 ... 200 °C
063	50 to 250 °C
064	50 to 300 °C

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## Order details

### Surface-mounting thermostat, type series ATH.-SE

**Order code (5) Hysteresis**

- 00 without hysteresis (-70 STB)
- 30 3% of the scale range S1
- 60 6% of the scale range S2
- 15 1.5% of the scale range S3



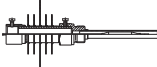
**(6) Capillary length**

- 0 ATHs-SE without capillary
- 1000 1000 mm
- 2000 2000 mm
- ... (Special length, specifications in plain text)

**(7) Capillary material**

- 00 ATHs-SE without capillary
- 40 Cu (Copper)
- 20 CrNi (Stainless steel)

**(8) Process connection**

- 10 plain cylindrical probe (only for ATHf-SE) 
- 20 Screw-in sheath 
- 30 Screw-in sheath with intermediate piece 

**(9) Process connection thread**

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

**(10) Material of process connection**

- 00 only with process connection "10"
- 46 CuZn (Brass)
- 20 CrNi (Stainless steel 1.4571)

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

- 000 ATHf-SE without sheath
- 100 100 mm
- 120 120 mm
- 150 150 mm
- 200 200 mm (not CrNi)

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

- 00 ATHf-SE without sheath
- 8 8 mm
- 10 10 mm

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

- 6 6 mm
- 8 8 mm

**(14) Extra codes**

- 000 no extra code
- 574 Microswitch with N/C contact, restart lock + additional signal contact (only STB)

**Order code**

(1) / (2) - (3) - (4) - (5) - (6) - (7) - (8) - (9) - (10) - (11) - (12) - (13) / (14)  
 603031 / .. - . - ... - .. - .... - .. - .. - .. - .. - ... - .. - . / ...

**Order example**

603031 / 20 - 1 - 025 - 15 - 0 - 00 - 20 - 13 - 46 - 150 - 8 - 6 / 000