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## Surface-mounting thermostats Series ATH.-SE

for monitoring installations on  
seagoing ships

### Brief description

Thermostats control and monitor thermal processes. The instruments ATH.-SE series are available as temperature monitors TW, safety temperature monitors STW (STB) and safety temperature limiters STB. In the event of a fault, the STB sets the installation being monitored to a safe operational state.

Surface-mounting thermostats operate on the principle of fluid expansion, with a micro-switch serving as the electrical switching element.

### Switching function

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

When the temperature at the probe exceeds the set limit, the circuit is opened by a snap-action switch. After the temperature has fallen below the set limit (by the switching differential), the switch returns to its initial position.

#### Lock-out facility on the safety temperature limiter STB

When the temperature at the probe exceeds the set limit, the circuit is opened and locked out mechanically.

After the temperature has dropped below the set limit by about 10% of the span, the switch can be reset mechanically.

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

In this case, the circuit connected to the thermostat must comply with DIN 3440 and with Section 8.7 of DIN/VDE 0116.

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

Failure of the measuring system on an STB or STW (STB), i.e. a leakage of the expansion liquid, will cause the pressure under the diaphragm to drop, thus permanently opening the circuit. A reset is now impossible.

If the temperature of the probe cools down to below  $-20^{\circ}\text{C}$ , the circuit will also be opened. As the temperature rises to above  $-20^{\circ}\text{C}$ , the STB has to be reset manually, by pressing the reset button. On the STW (STB), the reset is performed automatically.



ATHs-SE-70



ATHf-SE-..

### Types and approvals

Type	Switching function	Switching differential	Type No.	Approval
ATHs-SE-2 ATHf-SE-2	TW	3%	68.262-F03-S1 68.262-F04-S1	Det Norske Veritas Germanische Lloyd Seeberufsgenossenschaft DIN 3440 (not for the ATH.-SE-70) Bureau Veritas
ATHs-SE-2 ATHf-SE-2		6%	68.262-F03-S2 68.262-F04-S2	
ATHs-SE-2 ATHf-SE-2		1.5%	68.262-F03-S3 68.262-F04-S3	
ATHs-SE-20 ATHf-SE-20	STW (STB)	3%	68.261-F03-S1 68.261-F04-S1	
ATHs-SE-20 ATHf-SE-20		6%	68.261-F03-S2 68.261-F04-S2	
ATHs-SE-20 ATHf-SE-20		1.5%	68.261-F03-S3 68.261-F04-S3	
ATHs-SE-70 ATHf-SE-70	STB	–	68.266-F03 68.266-F04	

## Technical data

### Control ranges and temperature probes

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

### Capillary and temperature probe

Type	End of scale	Capillary	Temperature probe	Notes
ATH.-SE-2 ATH.-SE-20 ATH.-SE-70	≤ 200°C	copper (Cu) 1.5mm dia. Mat. Ref. 2.0090	copper (Cu) Mat. Ref. 2.0090 brazed	-
	> 200°C	copper (Cu) 1.5mm dia. Mat. Ref. 2.0090	stainless steel (CrNi) Mat. Ref. 1.4571 brazed	-
	all ranges	stainless steel (CrNi) 1.5mm dia. Mat. Ref. 1.4571	stainless steel (CrNi) Mat. Ref. 1.4571 welded	at extra cost
Capillary length	normally 1000 mm, 2000 mm max.			
Min. bending radius of capillary	5 mm			

### Electrical data

Switching element	ATH.-SE-2 ATH.-SE-20	ATH.-SE-70	ATH.-SE-70/U
	microswitch with changeover contact	microswitch with break (n.c.) contact and lock-out	microswitch with break (n.c.) contact, lock-out and additional signal contact
Max. current rating	10 A, 230 V AC, p.f. = 1 2 A, 230 V AC, p.f. = 0.6 0.25A, 230 V DC		
	with switching differential 1.5%: 6 A, 230 V AC, p.f. = 1 1.2 A, 230 V AC, p.f. = 0.6 0.15 A, 230 V DC		

## Operating data

Switching differential in % of control / limit setting range	Nominal value		Possible actual value		Designation		
	3		3-4		S1		
	6		6-8		S2		
	1.5		1-2		S3		
Switching point accuracy in % of control / limit setting range	TW: in upper third of scale $\pm 1.5\%$ STB, STW (STB): in upper third of scale $+0/-5\%$						
Ambient temperature error referred to control / limit setting range	A deviation of the ambient temperature at the case from the calibration ambient temperature of $+22^\circ\text{C}$ produces a shift of the switching point. higher ambient temperature = lower switching point lower ambient temperature = higher switching point						
	for instruments with end-of-scale value						
	$< 200^\circ\text{C}$			$\geq 200^\circ\text{C}$			
	ATH.-SE-2		ATH.-SE-20 ATH.-SE-70		ATH.-SE-2		ATH.-SE-20 ATH.-SE-70
	due to the case						
	0.08%/°C		0.17%/°C		0.06%/°C		0.13%/°C
	due to the capillary per m						
0.047%/°C		0.054%/°C		0.09%/°C		0.11%/°C	
Permissible storage temperature	-50 to $50^\circ\text{C}$						
Permissible ambient temperature in use	$-20$ to $80^\circ\text{C}$ for end of scale $\geq 200$ $-40$ to $80^\circ\text{C}$ for end of scale $< 200$						
Operating position	to DIN 16 257, nom. position 0 — $90^\circ$ (other nom. positions on request)						

## Case

Case	aluminium die-casting surface in impact-resistant textured paint: cover: RAL 7032, base: RAL7015
Setpoint adjustment	against the internal scale (after removing the cover)
Protection	EN 60 529-IP 54
Weight	ATHf-SE-... approx. 0.70 kg ATHs-SE-... approx. 0.65 kg with pocket U ATHs-SE-... approx. 0.85 kg with pocket UZ

## Process connection

Series ATHs-SE-.. with rigid stem	end-of-scale value up to $150^\circ\text{C}$ <b>Pocket U</b>	end-of-scale value above $150^\circ\text{C}$ <b>Pocket UZ</b>
	screw-in pocket with screw-in spigot 1/2" pipe Form A to DIN 3852/2	screw-in pocket with screw-in spigot 1/2" pipe Form A to DIN 3852/2 with extension, in order not to exceed the max. permissible ambient temperature of $+80^\circ\text{C}$ at the case
Series ATHf-SE-.. with capillary	<b>Pocket U</b>	
	screw-in pocket with screw-in spigot 1/2" pipe Form A to DIN 3852/2 and clip with fixing screw for securing the probe	
Material	<b>Pocket U</b>	<b>Pocket UZ</b>
	up to $+150^\circ\text{C}$ brass as standard above $+150^\circ\text{C}$ steel as standard (on request CrNi)	above $+150^\circ\text{C}$ steel as standard  (on request CrNi)
Fitting length S (max. 200 mm)	standard lengths: 100, 120, 150 (material: brass, steel, CrNi) with 200 mm, only in brass or steel	
Immersion tube dia.	D = 8 mm, D = 10 mm	

## Note:

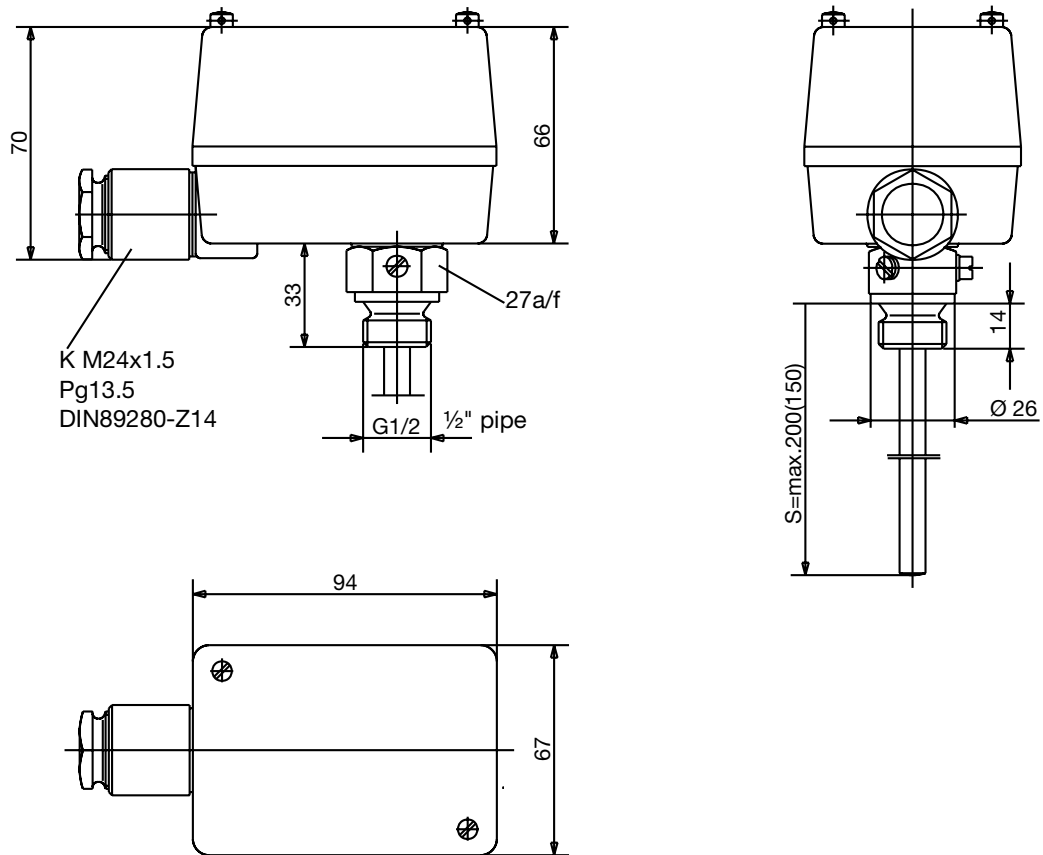
Physical and toxicological properties of the expansion media which may escape in the event of a system fracture.

Control range with end-of-scale value $^\circ\text{C}$	Dangerous reactions	Fire/explosion hazard		Water contamina- tion	Toxicological data		
		Ignition temp. $^\circ\text{C}$	Explosion limit % v/v		irritant	danger to health	toxic
$< +200^\circ\text{C}$	no	+ $280^\circ\text{C}$	1.2 - 7.5 V%	yes	yes	1)	no
$\geq 200^\circ\text{C} \leq +300^\circ\text{C}$	no	+ $490^\circ\text{C}$	1 - 3.5 V%	yes	yes	1)	no

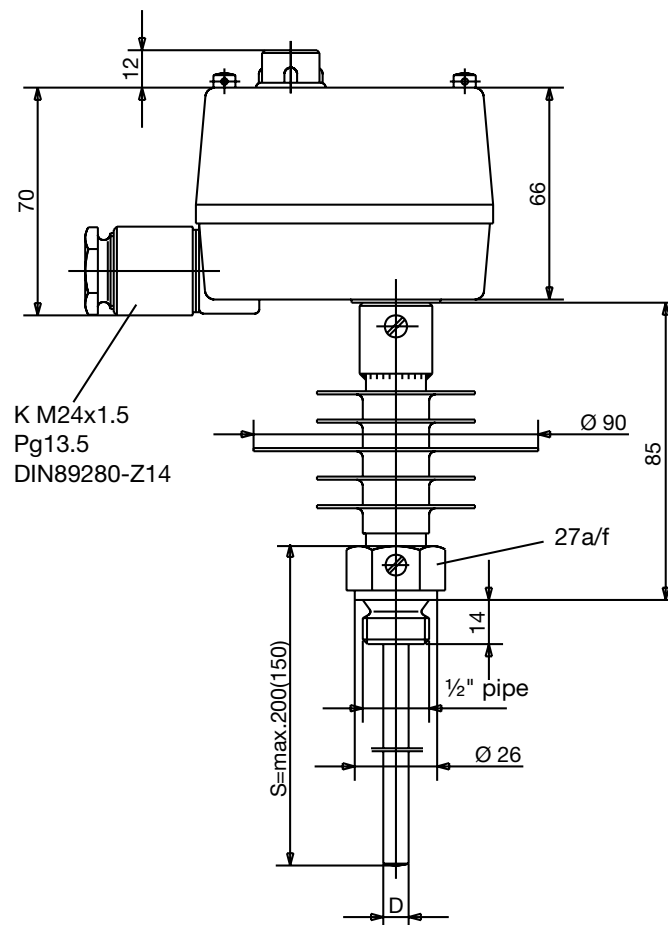
1) At present there is no restrictive statement from the health authorities concerning any danger to health over short periods and at low concentrations, for example after a fracture of the measuring system.

## Dimensions

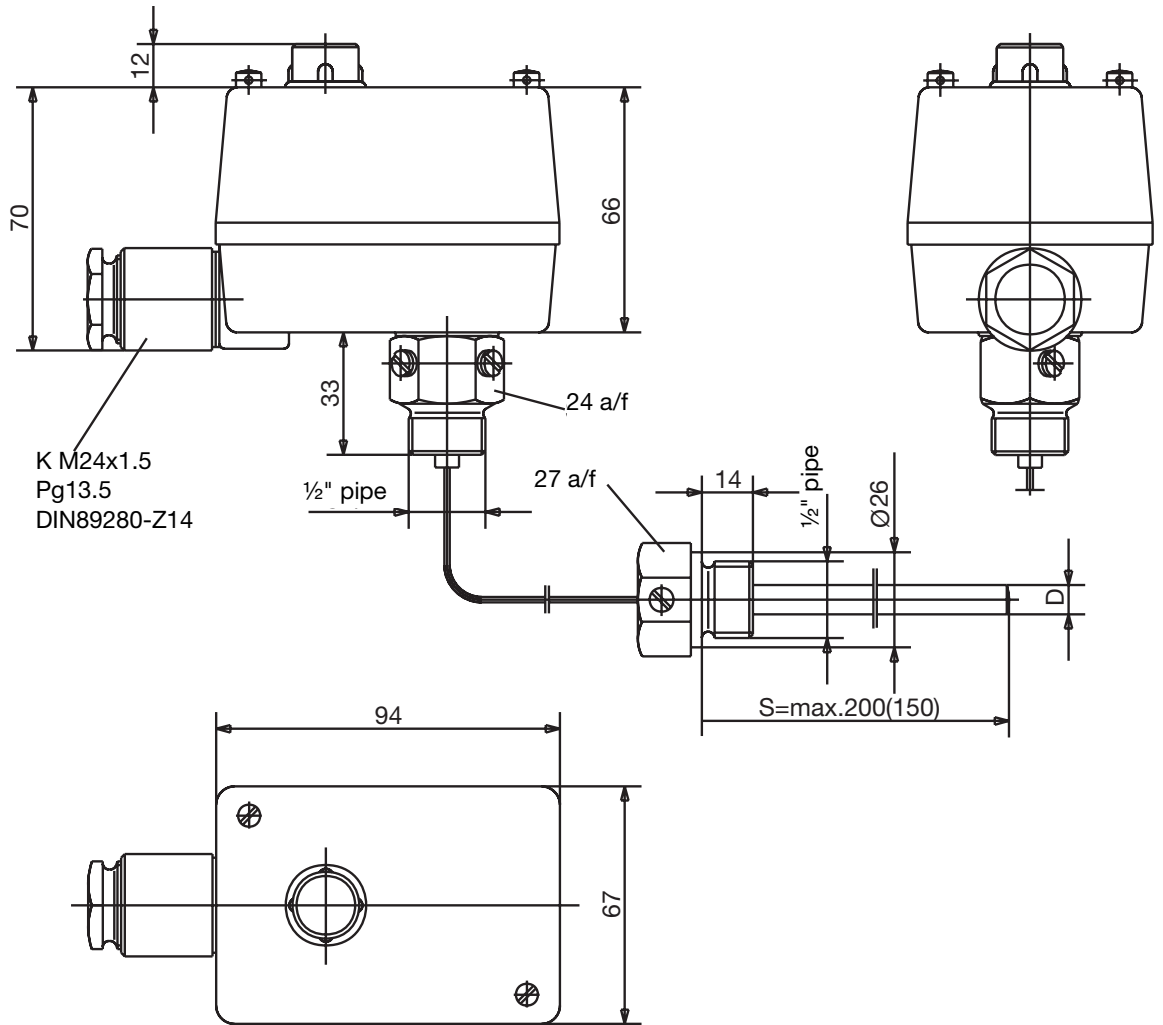
**ATHs-SE-... 2 and 20**  
with pocket U  
up to 150°C



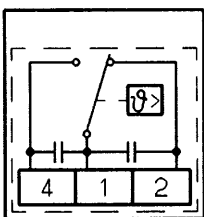
**ATHs-SE-... 70**  
with pocket UZ  
up to 300°C



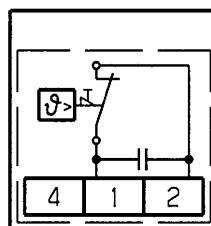
**ATHf-SE-... 70**  
with pocket U  
up to 300°C



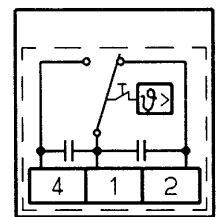
### Connection diagrams



ATH.SE-2  
ATH.SE-20






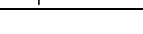


ATH.SE-70



ATH.SE-70/U

**Order details:****Series ATH.-SE for application on seagoing ships**

<b>(1) Basic type (Basic version)</b>		
ATHs-SE	surface-mounting thermostat with microswitch, with <b>rigid stem</b>	
ATHf-SE	surface-mounting thermostat with microswitch, with <b>capillary</b>	
<b>(2) Basic type extensions (function)</b>		
02	temperature monitor TW with changeover contact	
20	safety temperature monitor STW (STB), with changeover contact	
70	safety temperature limiter STB, with break (n.c.) contact	
<b>(3) Control / limit setting range</b>		
41	20 – 90°C	
25	0 – 100°C	
52	30 – 110°C	
42	20 – 120°C	
67	60 – 140°C	
43	20 – 150°C	
62	50 – 200°C	
63	50 – 250°C	
64	50 – 300°C	
<b>(4) Switching differential</b>		
00	basic type extension -70 STB only	
30	3% of scale span S1	
60	6% of scale span S2	
15	1.5% of scale span S3	
<b>(5) Capillary / temperature probe</b>		
16	capillary copper Cu, probe copper Cu, 6 mm	
18	capillary copper Cu, probe copper Cu, 8 mm	
26	capillary copper Cu, probe CrNi, 6 mm	
28	capillary copper Cu, probe CrNi, 8 mm	
36	capillary CrNi, probe CrNi, 6 mm	
38	capillary CrNi, probe CrNi, 8 mm	
<b>(6) Capillary length (in mm)</b>		
0000	ATHs-SE	
1000	ATHf-SE 1000 mm	
2000	ATHf-SE 2000 mm	
....	ATHf-SE (special length, details in plain text)	
<b>(7) Process connection (PA) *</b>		
1000	A = plain cylindrical probe (only with ATHf-SE)	
2011	screw-in pocket U, 1/2" pipe, brass CuZn	
2012	screw-in pocket U, 1/2" pipe, steel St	
2013	screw-in pocket U, 1/2" pipe, CrNi	
3012	screw-in pocket with extension UZ, 1/2" pipe, steel St (only with type ATHs-SE)	
3013	screw-in pocket with extension UZ, 1/2" pipe, CrNi (only with type ATHs-SE)	
<b>(8) Fitting length S (immersion tube length)</b>		
000	ATHf-SE without pocket	
100	100mm	
120	120mm	
150	150mm	
200	200mm (not CrNi)	
<b>(9) Diameter D (immersion tube dia.)</b>		
00	ATHf-SE without pocket	
08	8 mm	
10	10 mm	
<b>(10) Extra code U</b>		
574	STB with break (n.c.) contact + additional signal contact (only basic type extension -70 STB)	

**Order code:**

(1)      (2)      (3)      (4)      (5)      (6)      (7)      (8)      (9)      (10)  
 ATHs-SE -  -  -  -  -  -  -  -  /

**Order example:**

ATHs-SE -  -  -  -  -  -  -  -  /

\* other connection types and pockets, see Data Sheet 60.6710.