

Surface-mounting thermostat ATH.-SE-.. to monitor seagoing vessel equipment

Special features

- Control and monitoring of thermal processes
- Temperature monitor TW
- Safety temperature monitor STW (STB)
- 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 on the temperature probe exceeds the limit value, the electrical circuit is opened by a microswitch. When the limit value falls below the set limit value (by the switching differential), the switch is returned to its initial position.

Restart lock at safety temperature limiter STB

If the temperature at the temperature sensor exceeds the set limit value, the electrical circuit is opened and mechanically locked. After falling below the limit value by approx. 10 % of the temperature range, the switch can be unlocked manually.

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

In this case, the circuit following the thermostat must comply with DIN EN 14597 and VDE 0116.

Self-monitoring for 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 membrane of the STB and STW (STB) drops and permanently opens the electrical circuit. Unlocking is then no longer possible. When the STB sensor cools down to the negative temperature range, the circuit opens, but must be manually unlocked by the reclosing button when the temperature rises. The STW (STB) automatically restarts.



ATHs-SE-70



ATHf-SE-..

Approvals and approval marks (see "Technical data")



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Technical data

Control ranges and temperature probes

Type	Control/limit value ranges °C	max. admissible excessive probe temperature °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 probe
ATH.-SE-2 ATH.-SE-20 ATH.-SE-70	≤ 200 °C	Copper (Cu) Ø 1.5 mm Material no. 2.0090	Copper (Cu) Material no. 2.0090 hard soldered
	> 200 °C	Copper (Cu) Ø 1.5 mm Material no. 2.0090	Stainless steel (CrNi) Material no. 1.4571 hard soldered
	all areas	Stainless steel (CrNi) Ø 1.5 mm	Stainless steel (CrNi) Material no. 1.4571 welded
Capillary length	1000 mm, max. 2000 mm as standard		
Min. bending radius of the capillary	5 mm		

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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)	-	-
Mode of operation TW: 2BL STW (STB): 2BKLN STB: 2BFHKLNPV	According to DIN EN 60730-1, DIN EN 60730-2-9 and DIN EN 14597 Automatic mode of operation with micro shutdown during operation, as no auxiliary power source is required Automatic mode of operation with micro-disconnection in operation, with breakage safety device		

Mechanical features

Housing material Surface with impact resistant textured paint	Aluminium die cast with sealable screws Lid: RAL 7032 Bottom section: RAL 7015
Connection line Diameter Conductor cross section	10 to 16.5 mm Max. 2.5 mm ²
Rated position (NL)	According to DIN 16257, NL 0 to NL 90 (other rated position upon request)
Operating medium	Water, oil, air, superheated steam
Installation position	Any (for outdoor installation upon request)
Weight ATHf-SE-.. ATHs-SE-..	Approx. 700 g Approx. 650 g, with screw-in thermowell „20“ Approx. 850 g, with screw-in thermowell and adapter „30“

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Environmental influences

Hysteresis in % of the control/limit value range (only for type 2 and 20)	Reted value	Possible process value		Designation
	3	3 to 4		S1
	6	6 to 8		S2
	1.5	1 to 2		S3
Switching point accuracy TW STB, STW (STB)	Of the control/limit value at T_U 22 °C In the upper third of the scale ± 1.5 %, at the beginning of the scale ± 6 %, in the upper third of the scale $+0/-5$ %, at the beginning of the scale $+0/-10$ %			
Setpoint value adjustment	Switching point adjustable with screwdriver after removing housing cover.			
Ambient temperature influence	Referring to the control/limit value range If the ambient temperature at the switching head and/or the capillary deviates from the calibration ambient temperature 22 °C, a switching point shift occurs.			
For devices with scale limit value	Higher ambient temperatures		= lower switching point	
	Lower ambient temperatures		= higher switching point	
	< 200 °C		≥ 200 °C	
	ATH.-SE-2	ATH.-SE-20 ATH.-SE-70	ATH.-SE-2	ATH.-SE-20 ATH.-SE-70
On switching head	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 ambient temperature Capillary, switching head	Max. 80 °C Min. -40 °C at the end of the scale < 200 °C Min. -20 °C at the end of the scale ≥ 200 °C ≤ 300 °C			
Admissible storage temperature	-50 to +50 °C			
Permissible overtemperature safety	Max. scale end value +15 % on the probe during use			
Time constant $t_{0,632}$	In water ≤ 45 s In oil ≤ 60 s In air, superheated steam ≤ 120 s			
Protection type	IP54, according to EN 60529			

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Process connection

ATHs-SE-.. with rigid shaft	Scale limit value up to 150 °C , thermowell „20“	Scale limit value exceeding 150 °C , thermowell „30“
	Screw-in sleeve with screw-in spigot G 1/2, form A according to DIN 3852/2	Screw-in sleeve with screw-in journal G 1/2, form A according to DIN 3852/2 and intermedi- ate piece, to ensure that the max. admissible ambient tem- peratur of 80 °C is not exceeded on the housing. - Over 150 °C: CrNi as standard
Material	Up to 150 °C: CuZn as standard Over 150 °C: CrNi as standard	Over 150 °C: CrNi as standard

ATHf-SE-.. with capilar	Plain cylindrical probe „10“ (standard) Screw-in thermowell „20“ (on request) Screw-in sleeve with screw-in spigot G 1/2, form A according to DIN 3852/2 and clamping piece with locking screw to lock the probe Thermowell „20“	Thermowell „30“
Material	Up to 150 °C: CuZn as standard Over 150 °C: CrNi as standard	- Over 150 °C: CrNi as standard
Fitting length S (max. 2000 mm)	Standard length: 100, 120, 150 mm (material CuZn, CrNi), with 200 mm only CuZn	
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 to 8 V%	Yes	Yes	^a	No
≥ 200 °C ≤ 300 °C	No	490 °C	-	Yes	Yes	^a	No

^a 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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Approvals and approval marks

Bureau Veritas Testing agency Certificates/certification numbers Inspection basis Valid for	Marine Division/Frankreich 04567/H0 BV BV Rules for the Classification of Steel Ships Type ATH.-SE-2, Type ATH.-SE-20, Type ATH.-SE-70
DGRL Testing agency Certificates/certification numbers Inspection basis Valid for	TÜV Süd Z-IS-TAF-MUC-17-11-2652099-021 2014/68/EU, DIN EN 14597 Type ATH.-SE-20, Type ATH.-SE-70
DIN Testing agency Certificates/certification numbers Inspection basis Valid for	DIN CERTCO/TÜV Süd TW892 DIN EN 14597 Type ATH.-SE-2
DIN Testing agency Certificates/certification numbers Inspection basis Valid for	DIN CERTCO/TÜV Süd STW(STB)894S DIN EN 14597 Type ATH.-SE-20
DIN Testing agency Certificates/certification numbers Inspection basis Valid for	DIN CERTCO/TÜV Süd STB895 DIN EN 14597 Type ATH.-SE-70
DNV GL Testing agency Certificates/certification numbers Inspection basis Valid for	DNV GL Hamburg TAA000010T Class Guideline DNVGL-CG-0339 Type ATH.-SE-2, Type ATH.-SE-20, Type ATH.-SE-70
EAC ^a Testing agency Certificates/certification numbers Inspection basis Valid for	GOST NORM AG 0198420 TR ZU 004/2011 (LVD) Type ATH.-SE-..
RMRS Testing agency Certificates/certification numbers Inspection basis Valid for	Russian Maritime Register of Shipping (RS) 19.40050.250 - Type ATH.-SE-..

^a Russian documentation upon request

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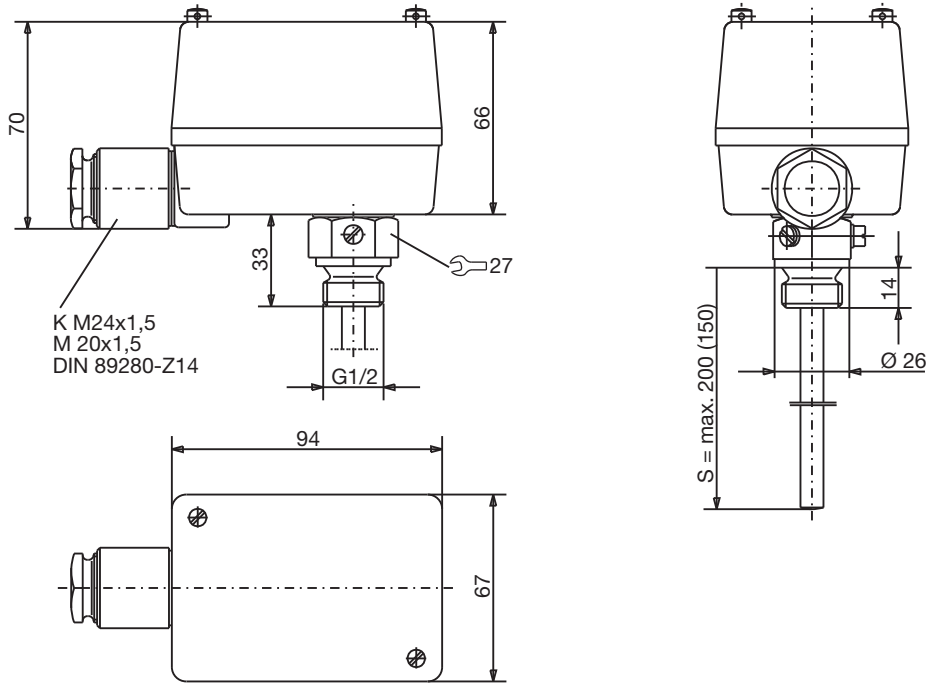
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Dimensions

ATHs-SE-2 (20)

with screw-in thermowell „20“, up to 150 °C



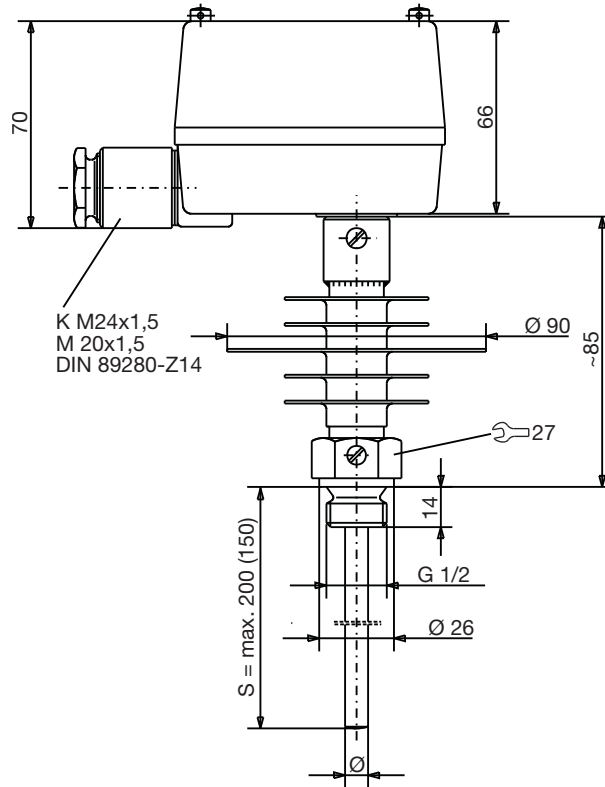
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ATHs-SE-70
with screw-in thermowell and intermediate piece „30“, 150 to 300 °C



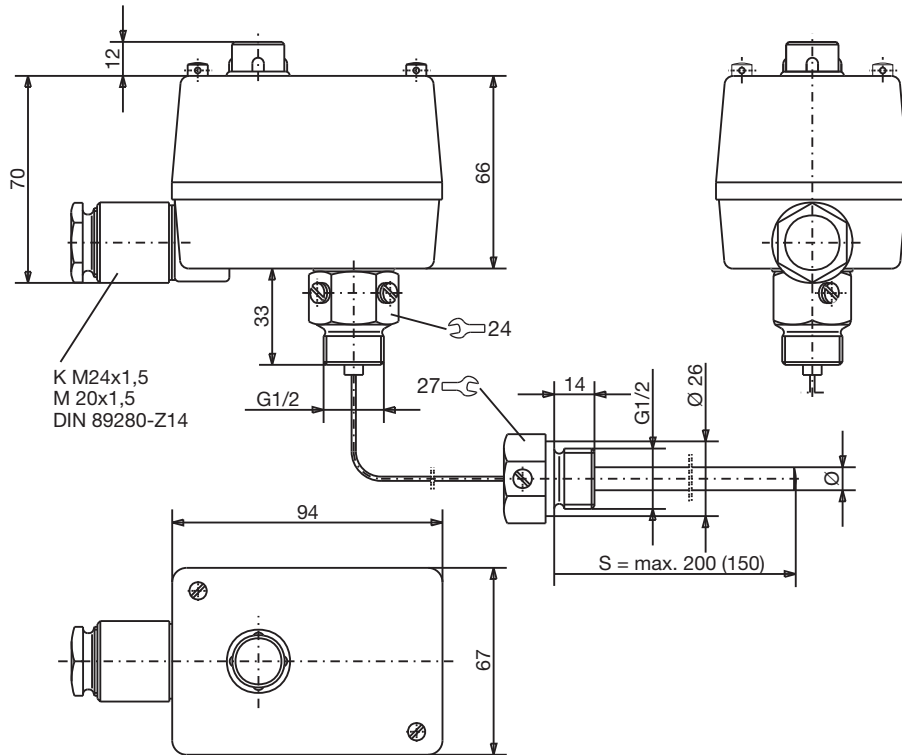
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ATHs-SE-70
 with screw-in thermowell „20“, up to 300 °C



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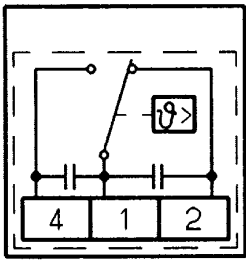
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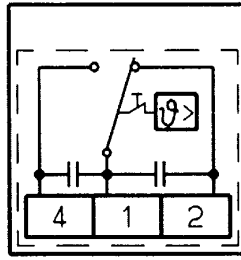
Connection diagram

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.

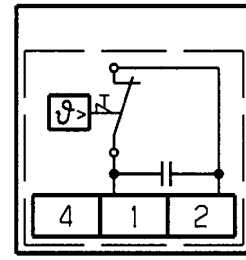
Wiring diagrams



TW/STW (STB)



STB as N/C contact with signal contact



STB with N/C contact


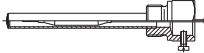
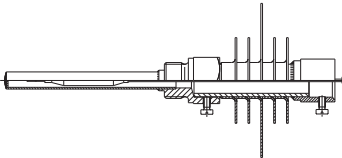
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Order details

	(1) Basic type	
603031	Surface-mounting thermostat 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-.. rigid shaft	
2	ATHf-SE-.. capillary	
	(4) Control range (TW)	
025	0 to 100 °C	
041	20 to 90 °C	
042	20 to 120 °C	
043	20 to 150 °C	
052	30 to 110 °C	
062	50 to 200 °C	
063	50 to 250 °C	
064	50 to 300 °C	
067	60 to 140 °C	
	(5) Hysteresis	
00	None	
15	1.5 %	
30	3 %	
60	6 %	
	(6) Capillary length	
0	None	
1000	1000 mm	
2000	2000 mm	
	(7) Capillary material	
00	None	
20	CrNi (stainless steel)	
40	Cu (copper)	
	(8) Process connection	
10	Plain cylindrical probe	
20	Screw-in thermowell	
30	Screw-in thermowell with intermediate piece	
	(9) Process connection thread	
00	None	
13	G 1/2	
	(10) Process connection material	
00	None	
20	CrNi (stainless steel)	
40	CuZn (copper)	

