

Safety temperature monitor and limiter

Series 8146/5041-STW, 8146/5041-STB, 8146/5051-STW+STB



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- > Switching capacity up to 25 A
- > Fluid-filled measuring system
- > Safety temperature limiters: Preventing reconnection if the set temperature is exceeded
- > They prevent reconnection if the measuring system is leaking
- > Enclosure made of glass fibre reinforced polyester resin
- > Set values are visible through inspection window



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Safety temperature monitor and limiter with a fluid-filled measuring system. The change-over contact is activated due to temperature related volume changes. If the measuring system leaks, the safety temperature monitor switches off and prevents reconnection.

Safety temperature monitor:

If the temperature of the sensor exceeds the set value, the controller switches off.

If the temperature falls below the set value, the controller switches on automatically.

Safety temperature limiter:

If the temperature of the sensor exceeds the set value, the limiter switches off permanently. Once the temperature has dropped, the safety temperature limiter can be unlocked manually.

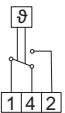
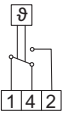
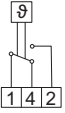
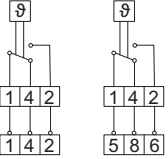
Zone	ATEX / IECEx					
	0	1	2	20	21	22
For use in		x	x		x	x

WebCode 8146K

Safety temperature monitor and limiter

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Selection Table

Version	Schematic	Adjustment range	Art. no.	Weight kg
8146/5041-STW Safety temperature monitor		-20 to +50 °C	136043	1.000
		0 to +190 °C	136081	1.000
8146/5041-STW0.1A Safety temperature monitor with gold-plated contacts		-20 to +50 °C	270794	1.000
8146/5041-STB Safety temperature limiter		0 to +120 °C	136011	1.000
8146/5051-STW+STB Safety temperature monitor and limiter		STW: 0 to +190 °C STB: 0 to +120 °C	269562	1.440

Note

The safety temperature monitor with gold-plated contacts can be used as simple electrical equipment.

Explosion Protection

Version	STW, STB Safety temperature monitor and limiter	Simple electrical equipment, STW0.1A safety temperature monitor with gold-plated contacts
Global (IECEX) Gas and dust	IECEX PTB 06.0090 Ex db eb IIC T6 ... T4 Gb Ex tb IIIC T80°C ... T135°C Db	IECEX PTB 06.0090 Ex ib IIC T6 ... T4 Gb Ex ib IIC T80°C ... T135°C Db
Europe (ATEX) Gas and dust	PTB 01 ATEX 1024 ⊕ II 2 G Ex db eb IIC T6 ... T4 Gb ⊕ II 2 D Ex tb IIIC T80°C ... T130°C Db	PTB 01 ATEX 1024 ⊕ II 2 G Ex ib IIC T6 ... T4 Gb ⊕ II 2 D Ex ib IIC T80°C ... T130°C Db
Certifications and certificates Certificates	IECEX, ATEX, Russia (TR)	

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Technical Data		
Version	STW0.1A Safety temperature monitor with gold-plated contacts	Simple electrical equipment
Adjustment range	-20 to 50 °C	-20 to 50 °C
Electrical data		
Max. voltage U_i	24 V AC / DC	24 V DC
Min. voltage	10 V	10 V
Max. current I_i	100 mA	100 mA
Min. current I_i	5 mA	5 mA
Internal capacitance C_i	–	0 nF
Internal inductance L_i	–	0 mH
Ambient conditions		
Ambient temperature	T6: -60 °C < T_a < +40 °C or T4: -60 °C < T_a < +75 °C	T6: -20 °C < T_a < +40 °C or T4: -20 °C < T_a < +75 °C
Mechanical data		
Degree of protection	IP66	
Material	Polyester resin, glass-fibre-reinforced, dark grey, similar to RAL 7024	
Enclosure	Impact resistance ≥ 7 J Surface resistance $\leq 10^9 \Omega$ Flame-resistant according to IEC/EN 60695, UL 94, ASTM D635	
Seal	Silicone, foamed	
Sensor	Stainless steel VA 1.4571 (AISI 316L)	
Cover lock	with captive M6 stainless steel combo head screws	
Mounting / Installation		
Cable entry	1 x M20 x 1.5 cable gland	
Clamping range	4 to 13 mm	
Connection type	5 x spring clamp terminals	
Connection cross-section	0.5 to 2.5 mm ²	
Capillary tube		
Length	1 m	
Diameter	1.5 mm	
Minimum bending radius	5 mm	
Sensor		
Diameter	6 mm	
Length	81 mm	
Sensor temperature	-60 to +75 °C	
Technical Data		
Version	STW25A Safety temperature monitor	STB25A Safety temperature limiter
Adjustment range	-20 to +50 °C	0 to +190 °C
Electrical data		
Type of circuitry AC1	Max. switching capacity	At the normally closed contact (contact path 1 to 2); depends on the version, see type plate
		AC: 400 V +10%, 16 A
		AC: 230 V +10%, 16 (2.5) A, $\cos \varphi = 1$ (0.6)
		AC: 230 V +10%, 25 (4) A, $\cos \varphi = 1$ (0.6)
		DC: 230 V +10%, 0.25 A
		At the normally open contact (contact path 1 to 4); depends on the version, see type plate
	STW	AC: 400 V +10%, 6.3 A
		AC: 230 V +10%, 6.3 (2.5) A, $\cos \varphi = 1$ (0.6)
		AC: 230 V +10%, 2 (0.4) A, $\cos \varphi = 1$ (0.6)
		DC: 230 V +10%, 0.25 A
	STB	AC: 400 V +10%, 2 A
		AC: 230 V +10%, 2 (0.4) A, $\cos \varphi = 1$ (0.6)
		DC: 230 V +10%, 0.25 A

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Technical Data

Version	STW25A Safety temperature monitor	STB25A Safety temperature limiter
Adjustment range	-20 to +50 °C	0 to +120 °C
Switching point accuracy	+5 / -0 K adjusted downward +0 / -5 K adjusted upward	+16 / -0 K adjusted downward +0 / -16 K adjusted upward
Note	Change-over contact, specific to safety temperature monitors and limiters in acc. with EN 14597: The power can be switched using the contact path 1 to 2. The contact path 1 to 4 is used for signaling.	

Ambient conditions

Ambient temperature	max. fuse protection	Heat resistance of conductor	max. ambient temperature	T-Class
-60 to	16 A	-	+50 °C	T5 / 95 °C
	16 A	≥ +90 °C	+75 °C	T5 / 95 °C
	25 A	-	+40 °C	T6 / 80 °C
	25 A	≥ +70 °C	+50 °C	T5 / 95 °C
	25 A	≥ +106 °C	+75 °C	T4 / 130 °C

Mechanical data

Degree of protection	IP66
Material	
Enclosure	Polyester resin, glass-fibre-reinforced, dark grey, similar to RAL 7024 Impact resistance ≥ 7 J Surface resistance ≤ 10 ⁹ Ω Flame-resistant according to IEC/EN 60695, UL 94, ASTM D635
Seal	Silicone, foamed
Sensor	Stainless steel VA 1.4571 (AISI 316L)
Cover lock	with captive M6 stainless steel combo head screws

Mounting / Installation

Cable entry	1 x M20 x 1.5 cable gland
Clamping range	4 to 13 mm
Connection type	5 x spring clamp terminals
Connection cross-section	0.5 to 2.5 mm ²

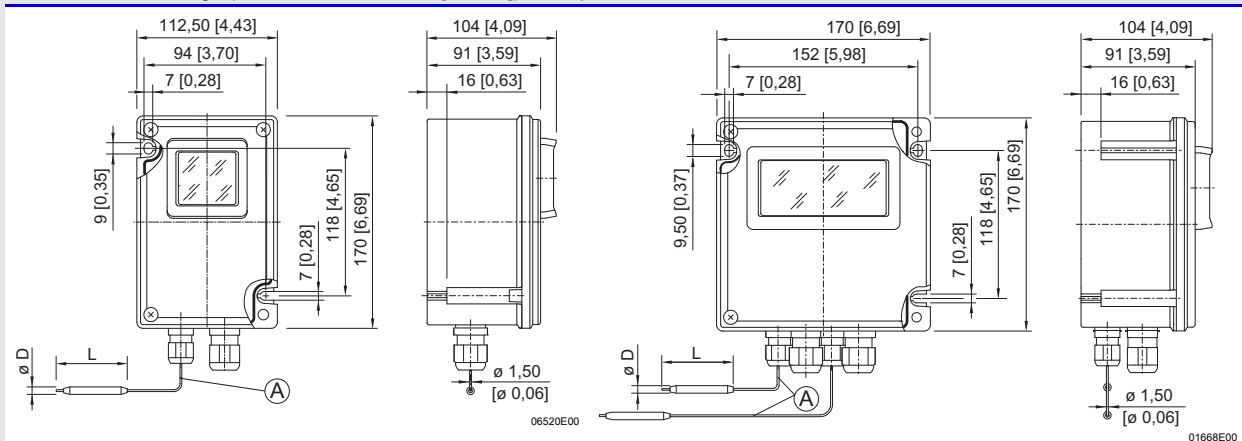
Capillary tube

Length	1 m
Diameter	1.5 mm
Minimum bending radius	5 mm

Sensor

Diameter	6 mm	6 mm	6 mm
Length	81 mm	44 mm	58 mm
Sensor temperature	-60 to +75 °C	-60 to +220 °C	-60 to +145 °C

Dimensional drawings (all dimensions in mm [inches]) – Subject to modification



8146/5041-...
Safety temperature monitor and limiter

8146/5051-STW+STB
Safety temperature monitor and limiter

Safety temperature monitor and limiter

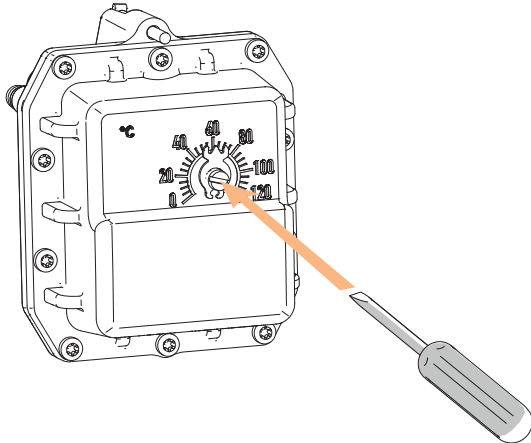
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Commissioning / Setting

Setting desired values for safety temperature monitor

The desired value must be set before commissioning. To this end, the desired value can be set above the attached scale as shown on the following diagram.



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Limit value settings for safety temperature limiters

A functional test is required, according to the relevant regulations, e.g. in acc. with 2014/34/EU.

Setting the limit value according to the scale:

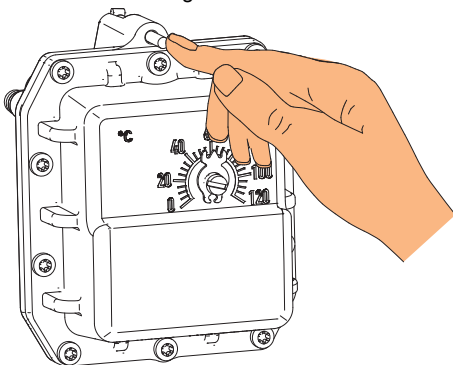
- Set the limit value on the setpoint adjuster above the scale.
- Secure the setting by sealing the setpoint adjuster (e.g. using a temperature-resistant screw locking varnish).

Setting the limit value according to the operation-specific properties of the system:

- Heat the temperature sensor – inside the system – to the desired limit temperature (allow at least 5 minutes for temperature to equalize), while measuring and monitoring the exact temperature on the temperature sensor with a calibrated comparison measuring instrument.
- Turn the setpoint adjuster from the scale value toward the initial scale value to establish the desired switching point position (open circuit 1 to 2, close circuit 1 to 4).
- Secure the setting by sealing the setpoint adjuster (e.g. using a temperature-resistant screw locking varnish).

Unlocking the safety temperature limiter:

Once the set limiting value has been exceeded by approx. 10%, the safety temperature limiter can be unlocked.



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

If the measuring system is destroyed, i.e., if the expansion liquid escapes, the pressure in the membrane will drop and permanently opens the circuit of the STW and STB. Unlocking is no longer possible for the STB.

If the sensor is cooled down into the negative temperature range (-60 °C), the circuit opens and then closes again automatically once the temperature rises.

We reserve the right to make alterations to the technical data, dimensions, weights, designs and products available without notice. The illustrations cannot be considered binding.

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