

Double temperature controller, temperature controller and limiter

Series 8146/5041-R25A, 8146/5041-B25A



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01597E00

- > Switching capacity up to 25 A
- > Liquid-filled measuring system
- > Temperature Limiter: Permanent disconnection when exceeding the set temperature
- > Permanent disconnection in case of leakage of the measuring system
- > Enclosure made of glass fibre reinforced polyester resin
- > Set values are visible through inspection window



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Temperature controller and limiter with a liquid-filled measuring system. The change-over contact is activated due to temperature related volume changes. In case of leakage of the measuring system, the temperature controller switches off permanently.

Temperature controller:

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.

Temperature limiter:

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

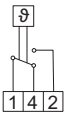
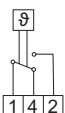
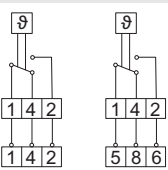
	ATEX / IECEx					
Zone	0	1	2	20	21	22
For use in		x	x		x	x

WebCode 8146K

Double temperature controller, temperature controller and limiter

Series 8146/5041-R25A, 8146/5041-B25A

Selection Table

Version	Schematic	Adjustment range	Order number	Weight kg
8146/5041-STW temperature controller		-20 ... +50 °C	8146/5041-STW25A/-20...+50°C	1.000
		0 ... +200 °C	8146/5041-STW25A/0...+200°C	1.000
		+50 ... +300 °C	8146/5041-STW25A/+50...+300°C	1.000
		09166E00		
8146/5041-STB temperature limiter		+50 ... +300 °C	8146/5041-STB25A/+50...+300°C	1.100
		0 ... +200 °C	8146/5041-STB25A/0...+200°C	1.100
		09167E00		
8146/5051-ST.+ST temperature controller and limiter		see selection table	8146/5051-ST.25A+ST.25A...	1.440
		09358E00		

Note

The temperature controllers and limiters can be combined as required.

Order Number Supplement

		8146/5051-ST.+ST	Possible adjustment ranges
Controller:	5041-STW25A/		-20 ... +50 °C 0 ... +200 °C +50 ... +300 °C
Limiter:	5041-STB25A/		0 ... +200 °C +50 ... +300 °C
Examples:	Double temperature controller:	8146/5051-STW25A/-20...+50°C	
	Temperature controller and limiter:	8146/5051-STB25A/+50...+300°C	

Explosion Protection

Global (IECEx)	
Gas and dust	IECEx PTB 06.0090 Ex de IIC T* Gb Ex tb IIIC T** Db
Europe (ATEX)	
Gas and dust	⊕ II 2 G Ex de IIC T* Gb ⊕ II 2 D Ex tb IIIC T** Db * T6, T5, T4, (T3, T2 sensor only) ** T80 °C, T95 °C, T135 °C
Certifications and certificates	
Certificates	IECEx, ATEX, Russia (GOST R)

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Technical Data

Electrical data

Version	STW25A temperature controller		STW25A temperature controller		STW25A temperature controller	
	NC terminal 1 ... 2	NO terminal 1 ... 4	NC terminal 1 ... 2	NO terminal 1 ... 4	NC terminal 1 ... 2	NO terminal 1 ... 4
Adjustment range	+50 ... +300 °C		0 ... +200 °C		-20 ... +50 °C	
Type of circuitry AC1	AC: 400 V, 16 A	AC: 400 V, 6.3 A	AC: 400 V, 16 A	AC: 400 V, 6.3 A	AC: 400 V, 16 A	AC: 400 V, 6.3 A
	AC: 230 V, 16 A	AC: 230 V, 6.3 A	AC: 230 V, 16 A	AC: 230 V, 6.3 A	AC: 230 V, 16 A	AC: 230 V, 6.3 A
	AC: 400 V, 16 A	AC: 400 V, 6.3 A	AC: 400 V, 16 A	AC: 400 V, 6.3 A	AC: 400 V, 16 A	AC: 400 V, 6.3 A
	AC: 230 V, 25 A	AC: 230 V, 2 A	AC: 230 V, 25 A	AC: 230 V, 2 A	AC: 230 V, 25 A	AC: 230 V, 2 A
further types of circuitry AC1	NC terminal 1 ... 2	NO terminal 1 ... 4	NC terminal 1 ... 2	NO terminal 1 ... 4	NC terminal 1 ... 2	NO terminal 1 ... 4
	AC: 230 V, 16 A	AC: 230 V, 6.3 A	AC: 230 V, 16 A	AC: 230 V, 6.3 A	AC: 230 V, 16 A	AC: 230 V, 6.3 A
Type of circuitry AC15	NC terminal 1 ... 2	NO terminal 1 ... 4	NC terminal 1 ... 2	NO terminal 1 ... 4	NC terminal 1 ... 2	NO terminal 1 ... 4
	AC: 230 V, 2.5 A	AC: 230 V, 2.5 A	AC: 230 V, 2.5 A	AC: 230 V, 2.5 A	AC: 230 V, 2.5 A	AC: 230 V, 2.5 A
	AC: 230 V, 4 A	AC: 230 V, 0.4 A	AC: 230 V, 4 A	AC: 230 V, 0.4 A	AC: 230 V, 4 A	AC: 230 V, 0.4 A
further types of circuitry AC15	NC terminal 1 ... 2	NO terminal 1 ... 4	NC terminal 1 ... 2	NO terminal 1 ... 4	NC terminal 1 ... 2	NO terminal 1 ... 4
	AC: 230 V, 2.5 A	AC: 230 V, 2.5 A	AC: 230 V, 2.5 A	AC: 230 V, 2.5 A	AC: 230 V, 2.5 A	AC: 230 V, 2.5 A
Switching point accuracy	+5 K / -24 K		+0 K / -16 K		+5 K / -0 K	
Note	Change-over contact specifically for temperature controller and temperature limiter as per EN 14597: The power can be switched via contact path 1-2. The contact path 1-4 is used for signalling purposes					

Ambient conditions

Ambient temperature	max. fuse protection	Heat resistance of conductor	max. ambient temperature	T-Class
-45 ...	16 A	-	+50 °C	T5 / 95 °C
	16 A	≥ +90 °C	+80 °C	T5 / 95 °C
	25 A	-	+40 °C	T6 / 80 °C
	25 A	≥ +70 °C	+50 °C	T5 / 95 °C
	25 A	≥ +106 °C	+80 °C	T4 / 135 °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 109 Ω Flame resistant according to IEC/EN 60695, UL 94, ASTM D635
Seal	Standard: foamed silicone Special: EPDM (-20 ... +80 °C)
Sensor	stainless steel VA 1.4571 (AISI 316L)
Cover lock	
Standard	with captive M6 stainless steel combo head screws

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Technical Data

Mounting / Installation

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

Capillary tube

Length	1 m
Diameter	1.5 mm
Minimum bending radius	5 mm

Sensor

Version	STW25A temperature controller	STW25A temperature controller	STW25A temperature controller
Adjustment range	+50 ... +300 °C	0 ... +200 °C	-20 ... +50 °C
Diameter	4 mm	6 mm	6 mm
Length	77 mm	49 mm	81 mm
Permissible sensor temperature			
Minimum	-45 °C	-55 °C	-55 °C
Maximum	+345 °C	+230 °C	+75 °C

Technical Data

Electrical data

Version	STB25A temperature limiter		STB25A temperature limiter	
Adjustment range	+50 ... +300 °C		0 ... +200 °C	
Type of circuitry AC1	NC terminal 1 ... 2	NO terminal 1 ... 4	NC terminal 1 ... 2	NO terminal 1 ... 4
	AC: 400 V, 16 A	AC: 400 V, 2 A	AC: 400 V, 16 A	AC: 400 V, 2 A
	AC: 230 V, 16 A	AC: 230 V, 2 A	AC: 230 V, 16 A	AC: 230 V, 2 A
	AC: 400 V, 16 A	AC: 400 V, 2 A	AC: 400 V, 16 A	AC: 400 V, 2 A
	AC: 230 V, 25 A	AC: 230 V, 2 A	AC: 230 V, 25 A	AC: 230 V, 2 A
further types of circuitry AC1	NC terminal 1 ... 2	NO terminal 1 ... 4	NC terminal 1 ... 2	NO terminal 1 ... 4
	AC: 230 V, 16 A	AC: 230 V, 2 A	AC: 230 V, 16 A	AC: 230 V, 2 A
Type of circuitry AC15	NC terminal 1 ... 2	NO terminal 1 ... 4	NC terminal 1 ... 2	NO terminal 1 ... 4
	AC: 230 V, 2.5 A	AC: 230 V, 0.4 A	AC: 230 V, 2.5 A	AC: 230 V, 0.4 A
	AC: 230 V, 4 A	AC: 230 V, 0.4 A	AC: 230 V, 4 A	AC: 230 V, 0.4 A
further types of circuitry AC15	NC terminal 1 ... 2	NO terminal 1 ... 4	NC terminal 1 ... 2	NO terminal 1 ... 4
	AC: 230 V, 2.5 A	AC: 230 V, 0.4 A	AC: 230 V, 2.5 A	AC: 230 V, 0.4 A
Switching point accuracy	+24 K / -0 K		+16 K / -0 K	
Note	Change-over contact specifically for temperature controller and temperature limiter as per EN 14597: The power can be switched via contact path 1-2. The contact path 1-4 is used for signalling purposes			

Ambient conditions

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Standard	with captive M6 stainless steel combo head screws

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Clamping range	4 ... 13 mm
Connection type	5 x spring clamp terminals
Connection cross-section	0.5 ... 2.5 mm ²

Capillary tube

Length	1 m
Diameter	1.5 mm
Minimum bending radius	5 mm

Sensor

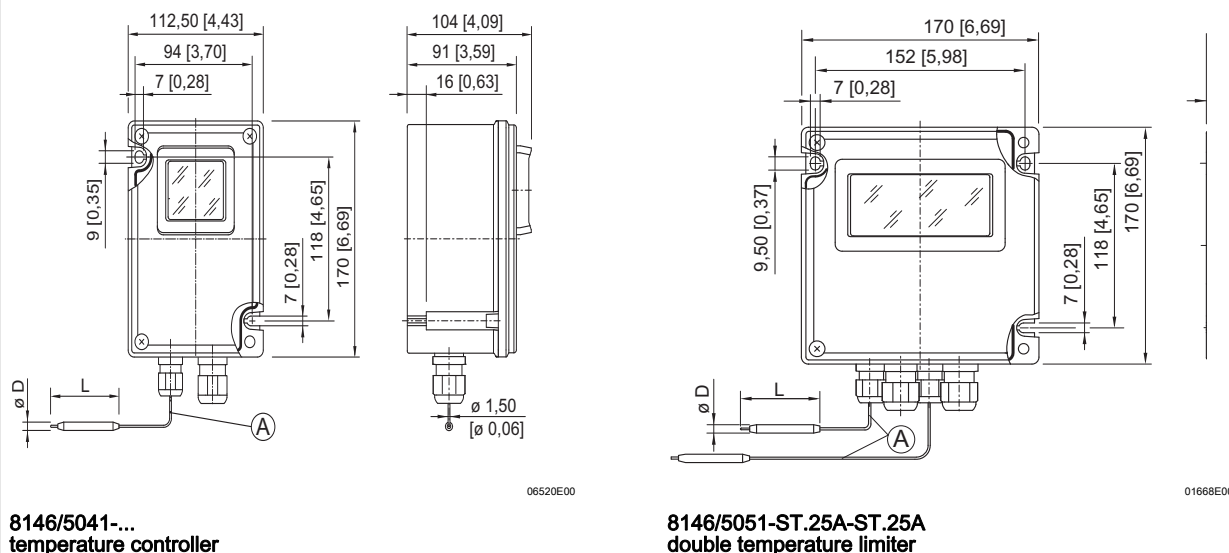
	STB25A temperature limiter	STB25A temperature limiter
Version	STB25A temperature limiter	STB25A temperature limiter
Adjustment range	+50 ... +300 °C	0 ... +200 °C
Diameter	4 mm	6 mm
Length	77 mm	49 mm
Permissible sensor temperature		
Minimum	-45 °C	-55 °C
Maximum	+345 °C	+230 °C

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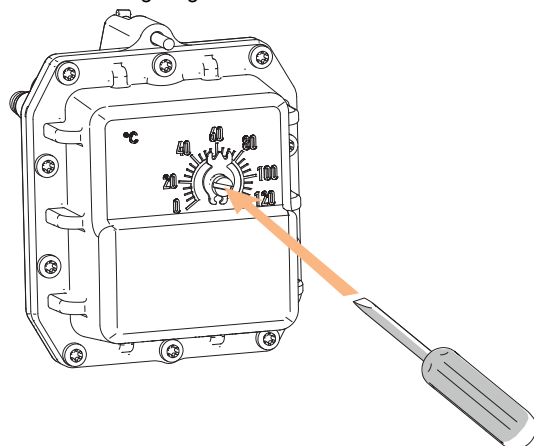
Dimensional drawings (all dimensions in mm) - subject to alterations



Commissioning / Setting

Setpoint adjustment of the temperature controller

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



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Adjustments of limiting values for temperature limiter

A functional test is required, according to the relevant regulations, e.g. 94/9 EG.

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.
- Determine the desired switching point position by rotating the setpoint adjuster from the scale value toward the initial scale value (open circuit 1-2 and close circuit 1-4).

For the temperature limiter, the setpoint adjuster must be additionally sealed (e.g. using a temperature-resistant screw locking varnish)

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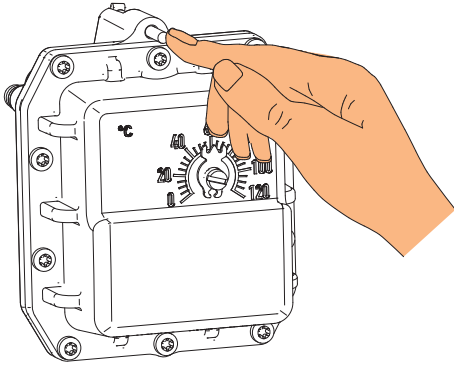
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Commissioning / Setting

Unlocking of the temperature limiter

After the value has dropped by about 10% below the set limit value, the temperature limiter can be unlocked.



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What to do if the measuring system breaks

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 temperature controller and temperature limiter. The temperature limiter can no longer be unlocked.

What to do if the temperature is below normal

If the sensor of the temperature controller or limiter has cooled down to temperatures below approx. -20 °C (-65 °C at TU = -60 °C), the electric circuit opens, however, it closes automatically again if temperature rises.

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

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