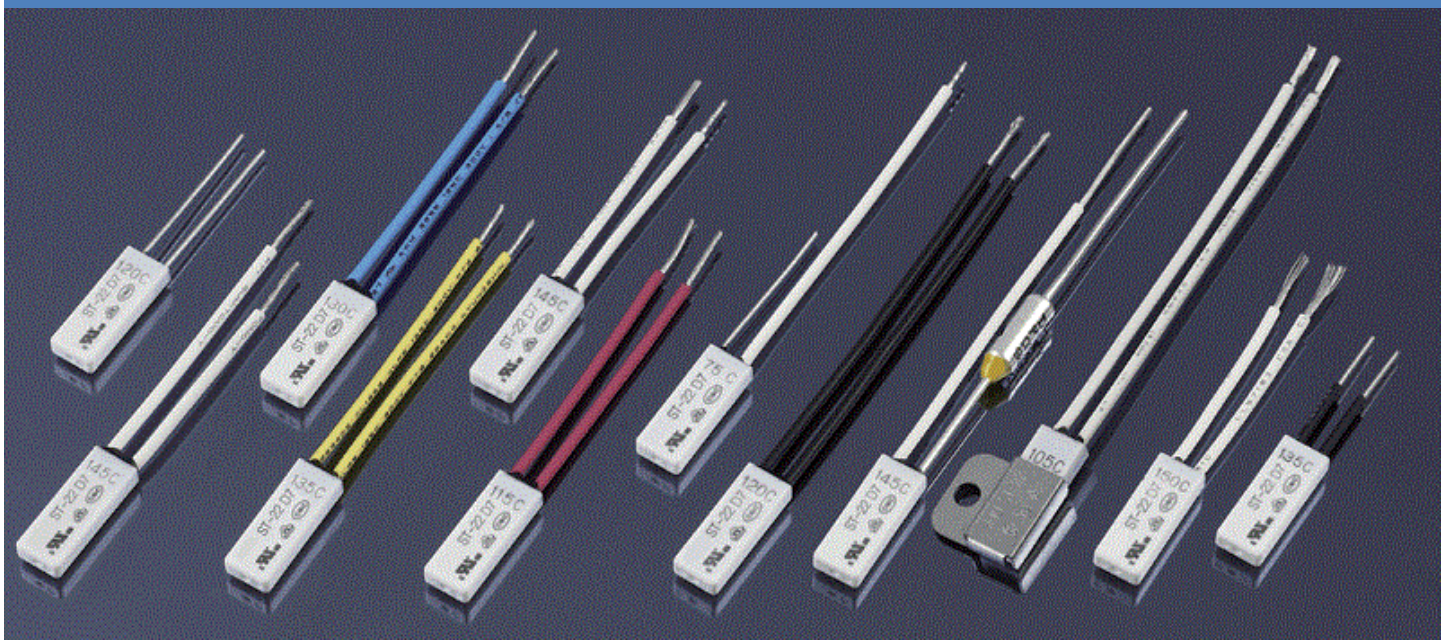
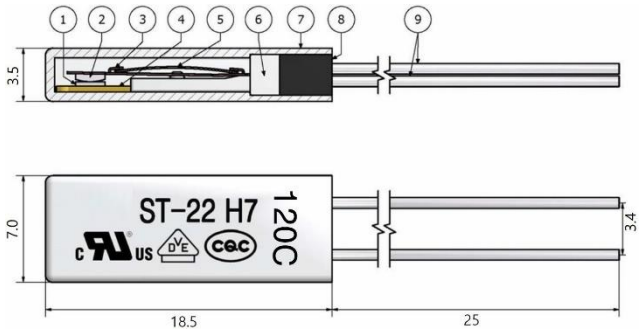
ST-22 Series Thermal Protectors





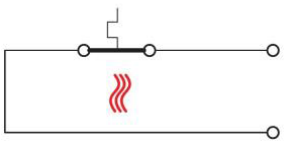
Main parts

1) Fixed Contact (AgNi/Cu)
2) Movable Contact (AgNi/Cu)
3) Action Plate (BeCu)
4) Fixed Plate (Brass)
5) Disc (Bimetal)
6) Base (PBT)
7) Case (PBT)
8) Sealed Resin (Epoxy)
9) Connection wires

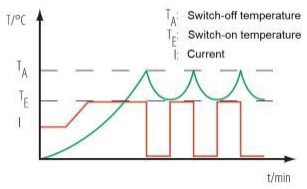
Function

The temperature limiter ST-22 series is independent of current. The temperature measured by means of a continuously operating bimetallic snap-action disk, which is previously been dimensioned according to the desired switch-off temperature. When this fixed switch-off temperature reached, the bimetal disc snaps, opens the contact system of 900 silver and thus interrupts the electrical circuit of the device to protect. After cooling and reaching the switchback temperature of the bimetal disc, the temperature switch automatically switches back to its initial position. (Automatic reset).

Circuit diagram



Functional scheme



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ST-22W

7A Series — **50°C ... 150°C**

Function	NC (Normally Closed)
Reset	automatic
Insulation	Plastic housing
Width	7.0mm
High	3.5mm
Length	18.5mm
Impregnating resistance	suitable
Pressure resistance of the switch housing	98N
Standard connection	Lead wire 0.33mm² / AWG 22
Approval	UL/cUL, VDE, CQC, KC
	IECEx(Explosion Proof)
Type of protection	IP45

Nominal switching temp. (NST) in 5K steps	50 ... 150°C
Tolerance	±5K
Hysteresis	30°C ±15K
Cycle life AC ϕ = 1.0	AC 250V 7.0A / 10,000
	AC 125V 10.0A / 10,000
	(UL) AC 277V 5.0A / 6,000
Cycle life DC	DC 60V 2.2A / 6,000
	DC 48V 3.0A / 6,000
Contact resistance	< 50mΩ
Dielectric strength	AC 1.5 kV / 1 minute
Insulation resistance	> 100MΩ
Vibration Resistance 20 ... 60 Hz	1mm amplitude

ST-22P

7A Series — **50°C ... 150°C**

Function	NC (Normally Closed)
Reset	automatic
Insulation	Plastic housing
Width	7.0mm
High	3.5mm
Length	18.5mm
Impregnating resistance	suitable
Pressure resistance of the switch housing	98N
Standard connection	Lead wire Ø0.7mm, tinned
Approval	UL/cUL, VDE, CQC, KC
	IECEx(Explosion Proof)
Type of protection	IP45

Nominal switching temp. (NST) in 5K steps	50 ... 150°C
Tolerance	±5K
Hysteresis	30°C ±15K
Cycle life AC ϕ = 1.0	AC 250V 7.0A / 10,000
	AC 125V 10.0A / 10,000
	(UL) AC 277V 5.0A / 6,000
Cycle life DC	DC 60V 2.2A / 6,000
	DC 48V 3.0A / 6,000
Contact resistance	< 50mΩ
Dielectric strength	AC 1.5 kV / 1 minute
Insulation resistance	> 100MΩ
Vibration Resistance 20 ... 60 Hz	1mm amplitude

Standard connection wires

Isolation material	Max. Temp.	Max. operating voltage	Size	UL-Style
XLPE	125°C	300V	AWG 22	3266
Other wires are available on request.				

Available switching & reset temperatures

Switching temp.	Reset temp.
50°C ±5K	≥30°C
55°C ±5K	≥30°C
60°C ±5K	40°C ±10K
65°C ±5K	43°C ±10K
70°C ±5K	46°C ±12K
75°C ±5K	48°C ±12K
80°C ±5K	50°C ±15K

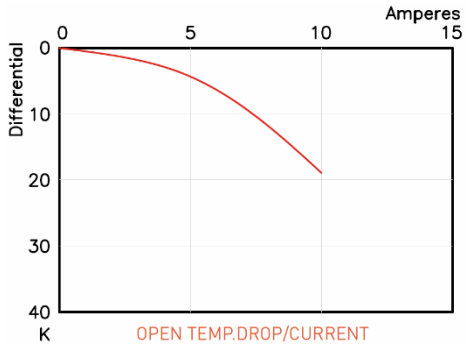
Switching temp.	Reset temp.
85°C ±5K	55°C ±15K
90°C ±5K	60°C ±15K
95°C ±5K	65°C ±15K
100°C ±5K	70°C ±15K
105°C ±5K	75°C ±15K
110°C ±5K	80°C ±15K
115°C ±5K	85°C ±15K

Switching temp.	Reset temp.
120°C ±5K	90°C ±15K
125°C ±5K	95°C ±15K
130°C ±5K	100°C ±15K
135°C ±5K	105°C ±15K
140°C ±5K	110°C ±15K
145°C ±5K	115°C ±15K
150°C ±5K	120°C ±15K

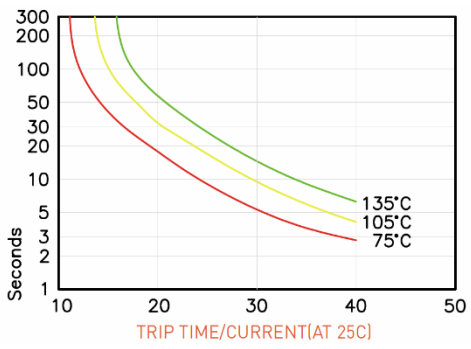
Current dependency

During normal use, the current in the circuit has a minimal influence on the set switch-off temperature. If a current above the rated current is flowing the shutdown temperature and Response time as shown in the graphic below.

Open temperature / current



Trip time / current (at 25°C)



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Order Code

ST-22 W . 120 . 05 . 100-7/100-7

Model:

ST-22

Function:

P = wire connections
W = lead wire connection

Rated operating temperature:

50°C ... 150°C
in 5K steps

Tolerance:

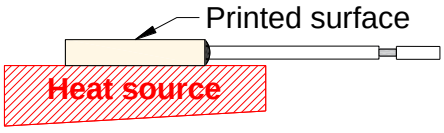
05 (± 5K)

Lead wire length / wire length:

lead wire = 70mm (Standard), 7mm stripped
wire = 25mm (Standard)
Special lengths are available upon request

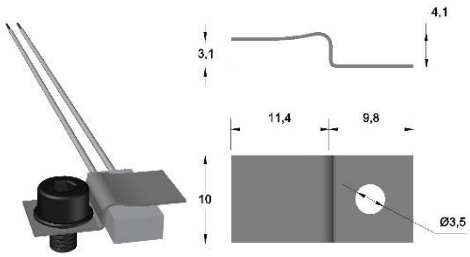
Example: ST-22W.120.05.100-7/100-7
ST-22P.120.05.25/25

Installation of temperature switches



Accessories

Mounting Braket
CB.00.35.110
LINK



Withstand Voltage

It shall withstand for one minute under AC1,500V/leakage current 10mAor withstand for one second under AC 1,800V/leakage current 10mA when applied between on-current-part and off-current-part.

Insulation Resistance

Insulation resistance between on-current-part and off-current-part (case & terminal) should be over 100MΩ when measured with DC 500V tester.

Contact resistance

Not greater than 50mΩ between two lead wires using DC6V/1A voltage drop method. (Based on standard lead wire, 70mm long with 7mm stripped).

Pull endure testing of leads with terminal

It should have no damage when applying 3kg-pulling force to one lead wire in axial direction.

High temperature test

Keep the thermal protector in an incubator which temp. is 150°C for 24 hours, and test it two hours later after taking out from the incubator, while the temperature change does not exceed the initial value of ± 5K or ± 5%, returns the maximum value. Tmax is 200°C/1min.

Low temperature resistance test

Keep the thermal protector in a -20°C incubator for 24 hours, and test it two hours later after taking out from the incubator, while the temperature change does not exceed the initial value of ± 5K or ± 5%, returns the maximum value.

Anti-Vibration test

Thermal protector should be able to withstand the amplitude 1mm, frequency 20-60Hz. The vibration direction X, Y, Z and each direction vibrates on a continuous basis for 30 minutes while the temperature change does not exceed the initial value of ±5K or ±5%, returns the maximum value.

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