BW-E Series Thermal Protectors

Main parts

1) Shell
2) Base
3) Bimetal disc
4) Movable contact
5) Temperature calibration plate
6) Static contacts

Construction

The movable contact are welded to the bimetal sheet and then welded to the iron bracket. The stationary silver contact and base are molded into a whole, after the current passes through the temperature calibration plate and the bimetal disc, it forms a loop from the moving contact to the static contact.

Function

Under normal conditions, the moving contact is in close contact with the stationary silver contact under the pre-pressure of the bimetal disc; When the rated operating temperature is reached, the bimetal disc is deformed by heat and snap rapidly, cut off the circuit. After that, the device begins to cool down. When it reaches the defined reset temperature, the bimetal disc and the spring disc snaps back into its start position, the contacts will close again, and the device starts working again.

Alpha Therm GmbH
Gewerbering 7
68723 Plankstadt
Germany

Tel: +49 (0) 6202 / 575688 - 0
Fax: +49 (0) 6202 / 575688 – 10
E-Mail: sales@alpha-therm.de
Web: www.alpha-therm.de

BW-E_P

2A Series	Temperature & overload protection	45°C ... 160°C

Version	NC / NO	Nominal switching temp. (NST) in 5K steps	45°C ... 160°C
Reset	automatic	Tolerance	±5K
Insulation	Plastic housing	Hysteresis	See datasheet
Width	5.5mm	Rated voltage AC	250V
High	2.4mm	Rated current AC cos ϕ = 1.0 / Cycles	2A / 10.000
Length	12.0mm	Rated voltage DC	24V
Impregnating resistance	suitable	Rated current DC / Cycles	3A / 6.000
Pressure resistance of the switch housing	50N	Contact resistance	< 50mΩ
Standard connection	Lead wire 0.33mm² / AWG 22	Dielectric strength	AC 1.5 kV / 1 minute
Approval	VDE, UL, CQC	Insulation resistance	> 100MΩ
Link to product site	https://www.alpha-therm.com/en/produkt/bw-e-series/		

BW-E_M

2A Series	Temperature & overload protection	45°C ... 160°C

Version	NC / NO	Nominal switching temp. (NST) in 5K steps	45°C ... 160°C
Reset	automatic	Tolerance	±5K
Insulation	Metal housing / shrink tube isolation	Hysteresis	See datasheet
Width	5.5mm	Rated voltage AC	250V
High	3.1mm	Rated current AC cos ϕ = 1.0 / Cycles	2A / 10.000
Length	20.0mm	Rated voltage DC	24V
Impregnating resistance	suitable	Rated current DC / Cycles	3A / 6.000
Pressure resistance of the switch housing	100N	Contact resistance	< 50mΩ
Standard connection	Lead wire 0.33mm² / AWG 22	Dielectric strength	AC 1.5 kV / 1 minute
Approval	VDE, UL, CQC	Insulation resistance	> 100MΩ
Link to product site	https://www.alpha-therm.com/en/produkt/bw-e-series/		

BW-E_ME

2A Series	Temperature & overload protection	45°C ... 160°C

Version	NC / NO	Nominal switching temp. (NST) in 5K steps	45°C ... 160°C
Reset	automatic	Tolerance	±5K
Insulation	Metal housing / epoxy isolation	Hysteresis	See datasheet
Width	5.8mm	Rated voltage AC	250V
High	3.7mm	Rated current AC cos ϕ = 1.0 / Cycles	2A / 10.000
Length	21.0mm	Rated voltage DC	24V
Impregnating resistance	suitable	Rated current DC / Cycles	3A / 6.000
Pressure resistance of the switch housing	300N	Contact resistance	< 50mΩ
Standard connection	Lead wire 0.33mm² / AWG 22	Dielectric strength	AC 1.5 kV / 1 minute
Approval	VDE, UL, CQC	Insulation resistance	> 100MΩ
Link to product site	https://www.alpha-therm.com/en/produkt/bw-e-series/		

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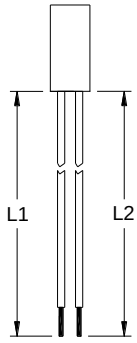
Order Code System

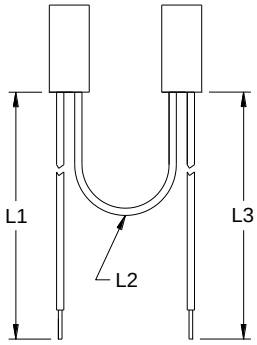
BW-E Single



BW-E C P .120.05.100-5/100-5

Type
Function
Design
Nominal switching temp. (°C)
Tolerance (K)
Wire length (mm) L1 L2

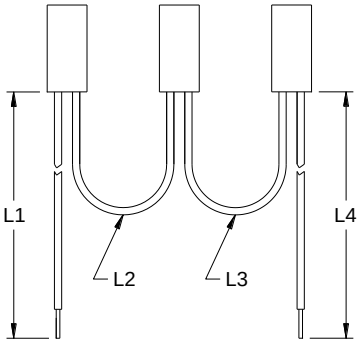
BW-E Twin



BW-E C P .120.05.300-5/90/300-5

Type
Function
Design
Nominal switching temp. (°C)
Tolerance (K)
Wire length (mm) L1 L2 L3

BW-E Triple



BW-E C P .120.05.300-5/90/90/300-5

Type
Function
Design
Nominal switching temp. (°C)
Tolerance (K)
Wire length (mm) L1 L2 L3 L4

Standard connection wires

Isolation material	Max. Temp.	Max. operating voltage	Size	UL-Style
XLPE	150°C	300V	AWG 22	3398
Other wires are available on request.				

Available switching & reset temperatures

Switching °C	Reset °C	Switching °C	Reset °C	Switching °C	Reset °C	Switching °C	Reset °C
45°C ± 5 K	≥33°C	75°C ± 5 K	53°C ± 14 K	105°C ± 5 K	75°C ± 15 K	135°C ± 5 K	95°C ± 15 K
50°C ± 5 K	≥35°C	80°C ± 5 K	55°C ± 15 K	110°C ± 5 K	75°C ± 15 K	140°C ± 5 K	100°C ± 15 K
55°C ± 5 K	42°C ± 6 K	85°C ± 5 K	60°C ± 15 K	115°C ± 5 K	80°C ± 15 K	145°C ± 5 K	100°C ± 15 K
60°C ± 5 K	45°C ± 8 K	90°C ± 5 K	65°C ± 15 K	120°C ± 5 K	85°C ± 15 K	150°C ± 5 K	105°C ± 15 K
65°C ± 5 K	48°C ± 10 K	95°C ± 5 K	70°C ± 15 K	125°C ± 5 K	85°C ± 15 K	155°C ± 5 K	110°C ± 15 K
70°C ± 5 K	50°C ± 12 K	100°C ± 5 K	70°C ± 15 K	130°C ± 5 K	90°C ± 15 K	160°C ± 5 K	115°C ± 15 K

Electric strength

When the product is in the breaking state, the contacts shall be able to withstand AC500V lasting for 1min without breakdown flashover.
It shall be able to withstand AC1500V between the lead wire (terminal) and the case, and keep 1min without breakdown flashover.

Insulation resistance

Under normal condition, the insulation resistance between leads (terminal) and case should be more than 100MΩ by ohmmeter of DC500V.

Contact resistance

The initial contact resistance of the product should be less than 50mΩ

Pull endure testing of leads with terminal

Terminal & leads should endure more than 20N axes direction pull lasting for 5s without break.

High temperature test

Keep the thermal protector in an incubator which temp. is 50K higher than its rated switching temperature for 96 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.

Low temperature resistance test

Keep the thermal protector in a -40°C incubator for 96 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 1.5mm, frequency 10-50Hz, scanning change cycles of 3-5 times/min. The vibration direction X, Y, Z and each direction vibrates on a continuous basis for 2 hours while the temperature change does not exceed the initial value of ±5K or ±5%, returns the maximum value.

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