Thermal protectors
PTC-Thermistors

thermik®

Marcel Peter Hofsaess

Managing Director at Thermik
1992 – 2001

Foundation of Mamitec GmbH
2002
Merger with Thermik in 2006

Founder and Managing Director
Ellipson Group
2003 – 2006
Merger with Thermik in 2011

Foundation of Hofsaess Holding in 2006
Thermik acquisition

Proprietor and sole Managing Director
Thermik Group
Since 2006

Over 700 patents

Dear Customers, Dear Readers,

Giving you a grasp of Thermik's technology is one of the chief intentions of this edition. For the first time a manufacturer of temperature control units is allowing a glimpse into the innermost of its products: in detail, and yet in such simple language that engineers and businessmen alike are able to understand just what goes on exactly inside a switchgear. Why are we doing this? Well, firstly it is time that the qualitative differences became more transparent with the function also for users and secondly, so that you no longer have to decide between black box systems. In this new edition, Thermik entirely lives up to its progressive role as a market leader.

But even merely with regard to products you will find innovations which are currently unmatched by any competition. In addition to the two new products **SSM** and **TPR** from the PTC thermistor area, the **SMD** variation will also be presented as a new version of the existing 01 series. The latter will make it possible to assemble printed circuit boards fully automatically and without a plug connection. This is a revolution for printed circuit board assembly. And this is rounded off by a standard program that includes the widest product range of temperature control units worldwide. You can almost always find the right solution in a product range consisting of more than 20,000 articles …

An experienced IP management and a young, forward-looking organization have created generally unsurpassed synergies to date: since inauguration of the new headquarters in 2011 we have been able to register three times as many national and international patents than in the 10 years before that! And this despite the fact that we were already leaders in this sector before. Our new, independently developed material planning system has established itself very well since 2011. A method immune from market fluctuations guaranteeing significantly shorter processes and hence more stable delivery periods in the history of the company.

Our share of customized solutions is constantly developing further too. Many renowned market leaders gain their individual market advantage over traditional products through special applications.

What we have to offer our customers and partners today is confirmed by the three most important awards we received consecutively in 2019 / 2020:

1) For the 10th time in a row, we received the **top 100 innovation prize** of the German medium-sized business sector, which is only conferred on the 100 most innovative companies in Germany.

2) A repeated listing in the **Encyclopedia of Global Market Leaders**. The prerequisite for being listed is an exclusive, uncontested market leading top position within the sector nationally and internationally. Some of our top customers can also be found here.

3) The **CrefoZert** of the German Creditreform, the biggest German credit rating agency, is a solvency ranking among all German companies. Those who receive it are among the 1.7 per cent of companies with the greatest economic stability, lowest default risk and best credit rating in Germany. It was awarded to Thermik for the seventh time in a row. Achieving this was not just down to us, but thanks to our customers' expectations of top quality, combined with the best possible value for money. Their lasting confidence gave and continues to give us the opportunity to match growing demands with our expertise and in addition develop expectations of our own capacities that transcend the current state-of-the-art. Allowing the best to arise out of the good. Just like what we always demand of ourselves.

4) According to the rating agency Plimsoll, our company is not only the most successful and consistent in the sector, but is in addition among the **avantgarde of the most successful SMEs in Europe.**

Our unceasing efforts in every area, but especially in research and development, ensure that we will also be at the innovative forefront in the future and continue to be able to guarantee maximum price stability and the lowest return rate of all providers. To ensure you remain in good hands with us.

Yours sincerely, M. P. Hofsaess

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Innovation means leading. It takes courage – the first to invest in better ideas, better solutions, better products. This makes progress possible, and Thermik leadership has defined an industry.

Thermik Gerätebau GmbH was founded in 1968 by Peter Hofsaess, in Pforzheim, Germany. An inventor (192 patents), Hofsaess was the first to solve the problem of electrical current self-heating in bimetallic switches. From that point forward his goal was to create and build the best and most reliable thermal protectors in the world.

Since 1992, the Hofsaess family successor has systematically developed this vision and established Thermik as a world leader in its industry. Through a focus on innovation, Thermik has become the most technologically advanced and financially stable manufacturer of thermal protection products and science. Already more than 3,5 billion Thermik protectors are in use worldwide today.

Continuously achieving that goal, Thermik has become an internationally operating group of companies with more than 600 employees and four production sites on three continents. Thermik production facilities total more than 183,000 sqft. Today, all production plants are equipped with equivalent production lines.

Company founder
Peter Hofsaess 1941 – 1992

This means the Thermik product produced at each production site is consistent. Each site can deliver each and every Thermik product. This represents optimum assurance for quality and logistics!

In addition to the largest and most advanced product range on the market, Thermik today holds more patents and intellectual property rights in the field of thermal protectors than all its competitors combined ! Thermik attaches enormous importance to research and development. Patent Development is a core competence for Thermik, with more than 15% of revenue re-invested. Several new national and international product developments every year continue the historic stream of inventions.

Thermik has year-over-year won numerous awards for innovation, and is currently one of Germany's 100 most innovative SMEs (manufacturers), and one of the 75 most efficient SMEs, as named by Germany's largest and most influential auditing companies* **

With good reason, many market leading manufacturers rely on Thermik exclusively for thermal protection in their products. Their designs specify Thermik, with confidence. Delivering consistently excellent product, to exacting specifications, and meeting customer's needs with the same dependability as our products, has made Thermik what it is today – the recognized market leader in innovation and quality in thermal protectors worldwide!

* Ernst & Young: Entrepreneur of the Year (see reference on p.52)
** TOP 100 (see reference on p.52)

Thermik in Sondershausen,
headquarters of the group since 2011

For us, this means constantly setting and achieving new goals, with our customer/partners, in a combined vision of success for the future. We know for each new day, an old idea is improved and a new one is created: Progress never rests. For Thermik, this is demonstrated by leading the way.

Conventional systems in thermal protectors

Traditional, simple "bimetallic" thermal protectors have engineering functionality and reliability limitations, and can increase risks for customers wanting safety assurance in their applications / products. The "bimetallic" commonly has a reed-switch design (Fig. 1), with a one-sided free-moving blade and welded-on switch contact. With this free movement, the contact pressure in the closed position changes, continuously varying, dependent upon the temperature. Under certain circumstances, the closed-position contact pressure may decrease critically before the open-position temperature is reached, and an arc may form (Fig. 3) due to critically high contact resistance. Switch functionality is compromised. A "bimetallic's" contacts may even weld together such that the thermal protector no longer opens, and the protective function is lost, permanently and unnoticed. This risk may go undetected, until it is too late. In this way, simple bimetallic switching systems are statistically less reliable than thermal protectors with non-current-carrying bimetallic discs.

For all "bimetallics" the reed-switch design can have high sensitivity to vibration in the vicinity of nominal switching temperatures, due to the variable contact pressure and the inevitable minimum contact pressure at the time of switching. This continuous and incremental contact pressure is compared in a force-displacement curve (Fig. 4), which also shows the movement of a snap-action spring disc thermal protector's switch action. Due to a "bimetallic's" unfavorable contact resistance conditions, increased self-heating near the rated switching temperature can actually change the protector's switch response, with the resulting switching temperature deviating from the expected environment-rated temperature, in a relatively undefined manner. The "bimetallic" can go to open-position at lower actual environment temperature, causing early and increased shutdowns. Additionally, simple "bimetallics" have high contact-wear and higher levels of contact erosion, due to arcing and near-arcing, and increased/premature switching.

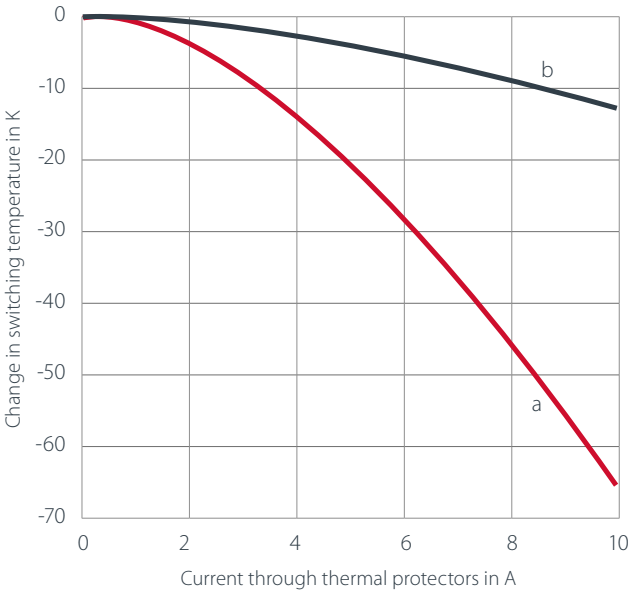


Fig. 2: Self-heating through current: typical behaviour of a current-intensive thermal protector with current-carrying bimetallic disc (a) compared to thermal protectors with no current-carrying bimetallic disc (b)

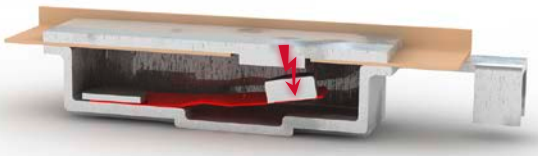


Fig. 3: Thermal protector without additional spring disc. Insidious contact and arc hazard ensue.

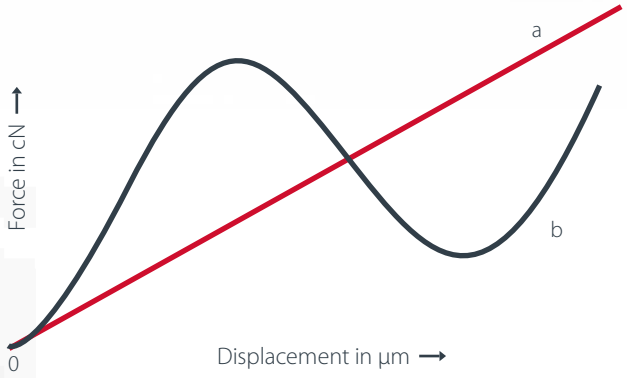


Fig. 4: Load-displacement diagram (characteristic curve): a simple spring disc (linear curve) b spring snap disc (non-linear curve)

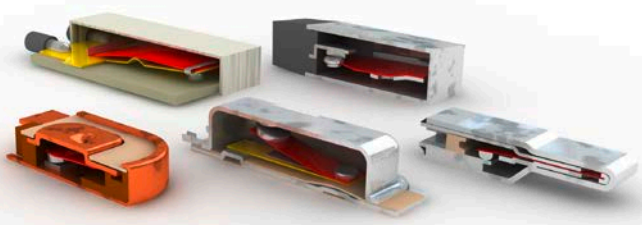


Fig. 1: System examples automatically-resettable and current-sensitive opening thermal protectors: simple reed switch without additional spring disc

The Thermik system

The functionality and reliability of "bimetallic" thermal protectors can be significantly improved by the insertion of an additional spring disc (snap-action). Thermik's twin-disc design permits temperature "calibration" to be built-in to the switch. In Thermik's design, the bimetal disc is free floating in the switch, with contact pressure non-varying. Fig. 2 shows function and switching characteristics of Thermik's patented spring disc thermal protector. Fig. a) at room temperature, the spring disc (yellow) is pressing the contact with continuous force/pressure. Fig. b) before reaching the exact switching temperature, the spring disc continues to press with the same force/pressure. Fig. c) when the bimetal disc (red) opens the contact at the rated temperature, the spring disc "snaps", too, and is held down by the bimetal, pressing against it with minimal force/pressure. As temperature varies – approaching and receding from the switch temperature – the force/pressure on the contact is constant. Thermik's spring disc design has a defined non-linear force curve (Fig.4, page 6). (In Thermik's design, the bimetallic disc's force upon snapping is greater than the opposing force of the spring disc.) Because Thermik's bimetal snap-action disc is, by design, neither electrically nor mechanically stressed, the trip temperature does not drift during the switch life. Bimetallic spring discs (Fig. 3 – different Thermik product lines) are subject to less mechanical stress than non-continuously operating reed-switch discs. With less stress and higher current-carrying capacity, there is lower contact erosion and thus a higher service life.

Additionally, the increased mechanical strength and pressure stability of Thermik's switch enclosures extend the applications of our patented designs. These switch enclosure designs also have superior seal against leakage of varnishes, and are suitable for vacuum impregnation and oil-immersed applications. Thermik's switching system, with its low mass moveable contact, also minimizes contact bounce and provides shock and vibration resistance to 10g's.

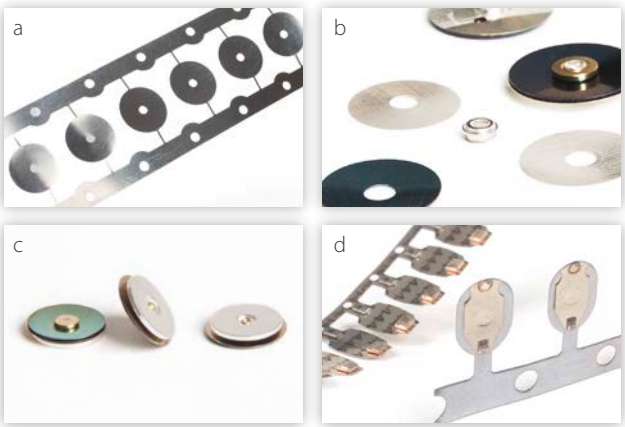


Fig. 1: Non-welded (i.e. undamaged) centric hole discs (a) operate continuously due to an additional mechanism (b, c). If welded bimetallic discs (d) become welded, however, they work intermittently.

Source: Bibliothek der Technik - Temperaturbegrenzer (Bd. 336). Munich: Süddeutscher Verlag onpact GmbH.

Improved switching performance and longer service life

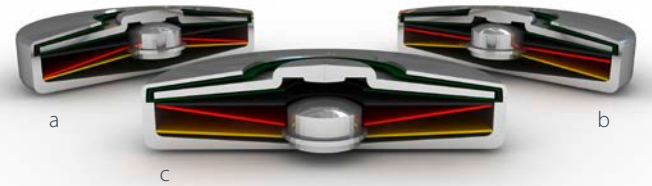


Fig. 2: Function and switching behaviour of a thermal protector with an additional spring disc (yellow) whereby the bimetallic disc (red) can operate continuously.

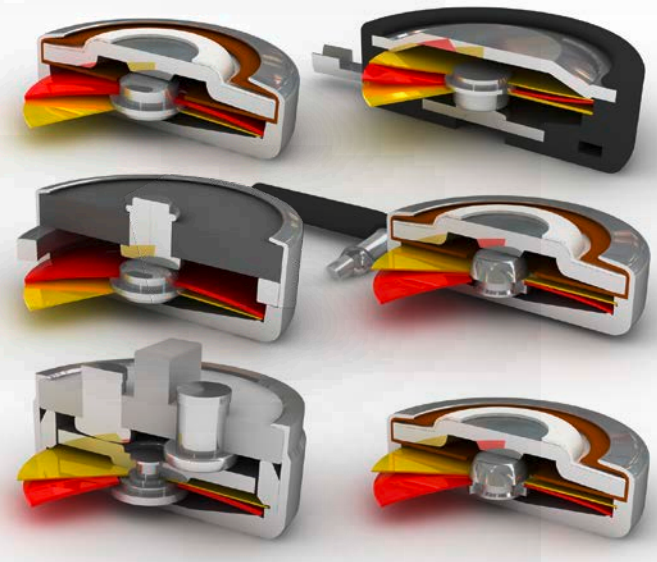


Fig. 3: Auto-resetting and temperature-sensitive opening thermal protectors with additional spring snap disc (non-linear curve)

Systems with continuously operating bimetallic discs have the following characteristic advantages:

- High elastic force with a small spring deflection
- Increased work capacity
- Greater contact stability / greater contact pressure
- Better use of space thanks to circular design (miniaturization)
- Simple geometry: more mechanical strength
- Cost-effective production (uncomplicated tools)
- Longer service life
- Better long-term stability
- Reduced contact resistances
- More precise switching-point accuracy
- No premature switching
- Punctual switching-point response only at ambient temperature

Thermal Protectors

For the following Thermik thermal protector Product Series, frequent customer-requested variations are shown to the right:

F1 F2 01 02 K1 Z1 P1 W1

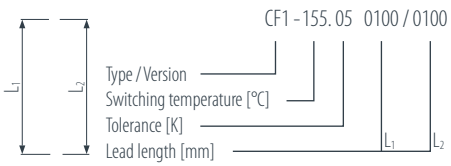
Thermik creates endless customized modifications within this Product Series, including customer-application solutions. Thermik's patented engineering in our standard configurations of this Product Series extends to all our custom solutions.

Our rigorous quality processes ensure precision-engineering consistency – in design and manufacture – plant-to-plant, worldwide – and on each order, for both standard and custom specifications.

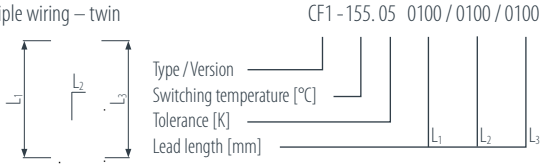
By design, Thermik's selection of materials, and their composition, requires only the highest-quality materials enter Thermik's supply chain and are used in Thermik products. We source for quality and reliability, over price. From experience, the quality of our precision engineering products depends on it!

Due to their superior electromechanical properties, the use of precious metals is necessary for Thermik products. Thermik's Engineering Center of Excellence sources locally, within Europe, to assure our quality standards, and further assure our compliance with the international "Conflict-Free Minerals Directive" for special metals! Thermik's eco-friendly products also comply fully with EU Directives on RoHS and REACH.

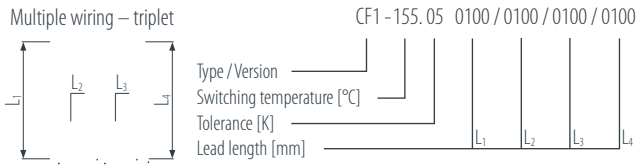
Ordering instructions:



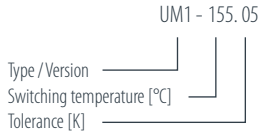
Multiple wiring – twin



Multiple wiring – triplet

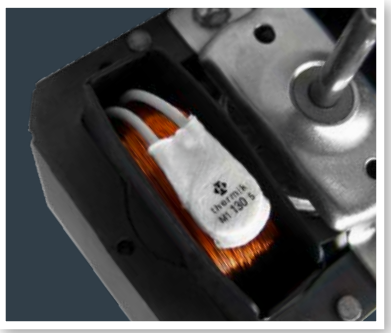


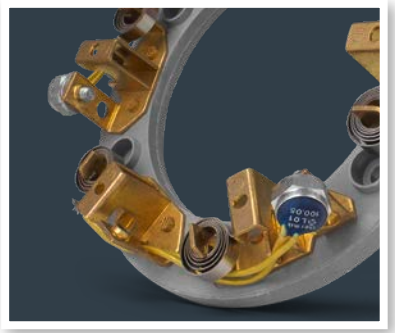
On stripe



Pill

Examples of typical applications





VDE in accordance with EN 60730

CQC in accordance with GB 14536

UL in accordance with UL 2111 / UL 873 UL 60730

CSA in accordance with C22.2

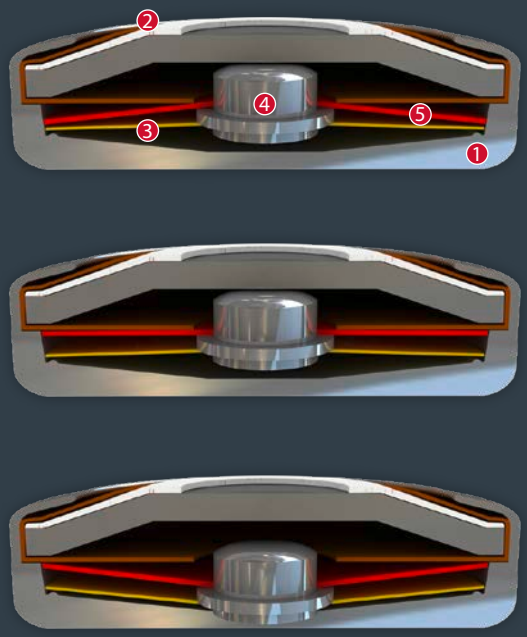
CB report in accordance with IEC 0730

ENEC in accordance with EN 60730

CMJ in accordance with JET

Thermik products are in accordance with the applicable EU directives / specifications, as amended.

Type series F1



Construction and function

The switch mechanism of Type F1 is comprised of five primary parts: 1) a conductive housing, 2) a steel contact cover with stationary contact, 3) a snap-action spring disc, 4) a movable contact, and 5) a bimetallic disc. The conductive housing and steel contact cover form the enclosure, to lock the self-aligning switch mechanism in place. The cover is insulated from the housing, and closes it to appear like a button cell. The snap-action spring disc is the current transfer element and bears the movable contact. It conducts the current flow and self-heating from the bimetallic disc by exercising consistent, steady contact pressure. The bimetallic disc floats within the thermal protector and the movable contact extends through the center of the bimetallic disc without being welded or riveted. When the rated switching temperature is reached, the bimetallic disc snaps into its inverted position and pushes the spring disc downwards. The contact is abruptly opened and the temperature rise of the device being protected is disrupted. If the ambient temperature then falls, the bimetallic disc snaps back into its original position, and the contact is once again closed. The thermal protector may be covered with insulation, mounted into another housing, or left uninsulated. See specifications and ranges described below.

CF1

www.thermik.de/en/en/data/CF1

1:1

Type: Normally closed; resets automatically; with connector cables; with or without epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±2.5 K / ±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 3.4 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		150 N
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operational voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

SF1

www.thermik.de/en/en/data/SF1

1:1

Type: Normally closed; resets automatically; with connector cables; with or without epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±2.5 K / ±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 3.8 mm
Diameter		9.5 mm
Length of the insulation cap		14.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		150 N
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operational voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

*in accordance with the Thermik test • Specifications relating to part applications (on the part of the buyer) which deviate from our standards are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of Thermik products for such applications falls upon the user. • Slight deviations are possible in terms of dimensions/values, depending on the embodiment of the product. • We reserve the right to make technical changes in the course of further development. • Details concerning certain data, measurement methods, applications, approvals, etc. can be supplied upon request.

UM1

www.thermik.de/en/en/data/UM1

Type: Normally closed; resets automatically; with crimped/soldered connections (incl. customer specific connections); without insulation

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±2.5 K / ±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 3.3 mm
Diameter		10.2 mm
Housing length		11.5 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		150 N
Standard connection		Crimp
Available approvals (please state)		IEC; ENEC; VDE; UL; CQC

Operational voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

PM1

1:1

www.thermik.de/en/en/data/PM1

Type: Normally closed; resets automatically; with plug connections (incl. customer specific connections); without insulation

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±2.5 K / ±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 3.3 mm
Diameter		10.2 mm
Housing length		11.5 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		150 N
Standard connection		Connection pins
Available approvals (please state)		IEC; ENEC; VDE; UL; CQC

Operational voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

CM1

1:1

www.thermik.de/en/en/data/CM1

Type: Normally closed; resets automatically; with connector cables; without insulation

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±2.5 K / ±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 3.3 mm
Diameter		10.2 mm
Housing length		11.5 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		150 N
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE; UL; CQC

Operational voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

SM1

1:1

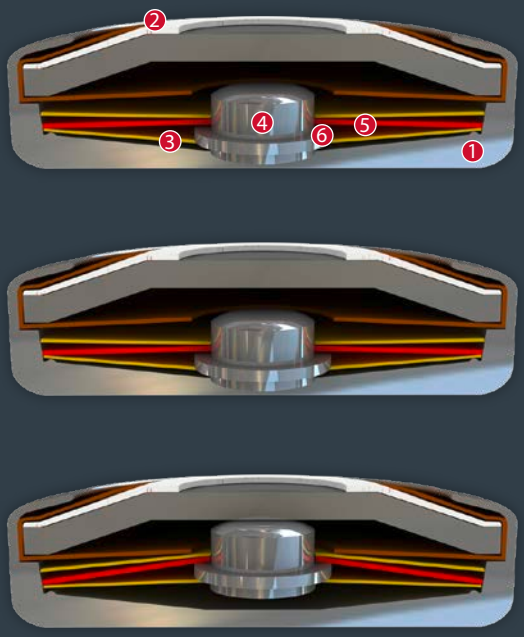
www.thermik.de/en/en/data/SM1

Type: Normally closed; resets automatically; with connector cables; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±2.5 K / ±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 4.0 mm
Diameter		10.6 mm
Length of the insulation cap		21.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		150 N
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE; UL

Operational voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

Type series F2



Construction and function

The switchgear of type series F2 is fixed in a positive lock and is self-aligning between the floor of a conductive housing (1) and a contact cap which is made of steel (2) and insulated from it, and which closes the housing like a button cell. By means of a throw force a bimetallic disc (5) pushes the movable contact (4) that sticks out in the middle of it onto its circumferential collar (6) against the spring snap-in disc (3) that is also surrounding the contact (4). Due to the higher throw force of the bimetallic disc (5) the switch contact remains open against the mechanical resistance of the spring snap-in disc (3) before reaching the rated switching temperature. As such, the contact also remains open as long as the bimetallic disc – only reacting to the ambient temperature – continually works and its shape changes. The bimetallic disc (5) only snaps into its inverted position when the rated switching temperature is reached and the contact is closed by the abruptly released pressure of the spring snap-in disc (3). The spring snap-in disc (3) is now a transfer element for electric current and as such, it enables the bimetallic disc (5) to continue to work on a continuous basis. When the reset temperature is reached, the bimetallic disc snaps back into its start position and the contact is opened again.

CF2

www.thermik.de/en/en/data/CF2

1:1

Type: Normally open; resets automatically; with connector cables; with or without epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±2.5 K / ±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 3.4 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		150 N
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE

Operating voltage range AC	up until 250.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10.000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10.000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

SF2

www.thermik.de/en/en/data/SF2

1:1

Type: Normally open; resets automatically; with connector cables; with or without epoxy; insulation: Mylar®-Nomex®

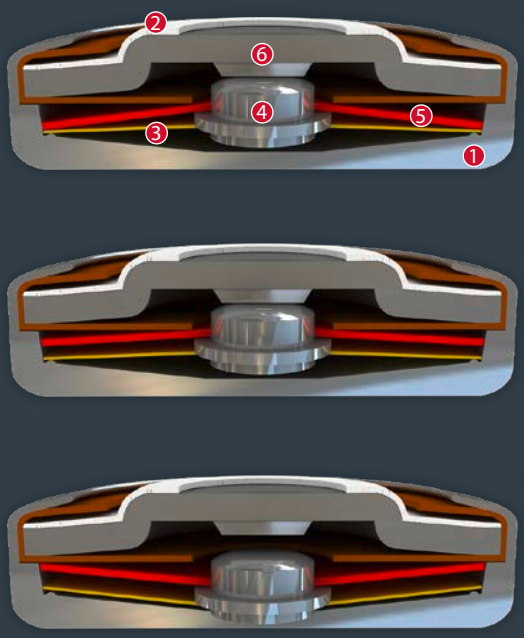
Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±2.5 K / ±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 3.8 mm
Diameter		9.5 mm
Length of the insulation cap		14.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		150 N
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE

Operating voltage range AC	up until 250.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

*in accordance with the Thermik test • Specifications relating to part applications (on the part of the buyer) which deviate from our standards are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of Thermik products for such applications falls upon the user. • Slight deviations are possible in terms of dimensions/values, depending on the embodiment of the product. • We reserve the right to make technical changes in the course of further development. • Details concerning certain data, measurement methods, applications, approvals, etc. can be supplied upon request.

The listed products are an extract from our standard range. Other versions and customised manufacturing are available upon request.

Type series 01



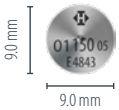
Construction and function

The switchgear of type series 01 is fixed in a positive lock and is self-aligning between the floor of a conductive housing (1) and a contact cap which is made of steel (2) and insulated from it, plus an integrated stationary silver contact (6) which closes the housing like a button cell. At the same time, the spring snap-in disc (3) which forms the current transfer element bears the movable contact (4) and discharges the flow of current and self-heating from the bimetallic disc (5) by exercising consistent, steady contact pressure. The bimetallic disc (5) is held on the one movable contact (4) which sticks out through this without having to be welded or fixed. As such, it can continually work (exposed) and only reacts to the ambient temperature in the device to be protected. When the rated switching temperature is reached, the bimetallic disc (5) snaps into its inverted position and pushes the spring snap-in disc (3) downwards. The contact is abruptly opened and the temperature rise of the device to be protected is disrupted. If the ambient temperature now falls, the bimetallic disc (5) snaps back into its start position when reaching the defined reset temperature and the contact is closed again.

01

www.thermik.de/en/en/data/01

1:1



Type: Normally closed; resets automatically; without cables; without insulation; for clip contact; minimum batch sizes

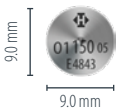
Nominal switching temperature (NST) in 5 °C increments		60 °C – 200 °C
Tolerance (standard)		±2.5 K / ±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 2.9 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		450 N
Available approvals (please state)		certified as .01: IEC; ENEC; VDE; UL; CSA; CQC

Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Rated current AC cos Φ = 0.4 / cycles	1.8 A / 10,000
Max. switching current AC cos Φ = 0.4 / cycles	7.2 A / 1,000
Rated voltage DC	12.0 V
Max. switching current DC / cycles	40.0 A / 5,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

01-SMD

www.thermik.de/en/en/data/01-SMD

1:1



Type: Normally closed; resets automatically; without cables; without insulation; minimum batch sizes

Nominal switching temperature (NST) in 5 °C increments		70 °C – 150 °C
Tolerance (standard)		±2.5 K / ±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	VDE	≥ 35 °C
Installation height		from 2.5 mm
Diameter		9.0 mm
Resistance to impregnation *		on request
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		450 N
Available approvals (please state)		IEC; ENEC; VDE

Operational voltage range AC / DC	up until 250.0 V AC / 14.0 V DC
Rated voltage AC	250.0 V (VDE)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Rated current AC cos Φ = 0.4 / cycles	1.8 A / 10,000
Max. switching current AC cos Φ = 0.4 / cycles	7.2 A / 1,000
Rated voltage DC	12.0 V
Max. switching current DC / cycles	15.0 A / 10,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

F01

www.thermik.de/en/en/data/F01

1:1

Type: Normally closed; resets automatically; with connector cables; with epoxy; fully insulated in a Nomex® cap

Nominal switching temperature (NST) in 5 °C increments		60 °C – 200 °C
Tolerance (standard)		±2.5 K / ±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 5.5 mm
Diameter		9.4 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		450 N
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Rated current AC cos Φ = 0.4 / cycles	1.8 A / 10,000
Max. switching current AC cos Φ = 0.4 / cycles	7.2 A / 1,000
Rated voltage DC	12.0 V
Max. switching current DC / cycles	40.0 A / 5,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

C01 Pin

www.thermik.de/en/en/data/C01-Pin

1:1

Type: Normally closed; resets automatically; with pins; with epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		60 °C – 200 °C
Tolerance (standard)		±2.5 K / ±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 3.2 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		450 N
Standard connection		Pins 2.2 mm
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0/cycles	6.3 A / 3,000 7.5 A / 300
Rated current AC cos Φ = 0.4 / cycles	1.8 A / 10,000
Max. switching current AC cos Φ = 0.4 / cycles	7.2 A / 1,000
Rated voltage DC	12.0 V
Max. switching current DC / cycles	40.0 A / 5,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

C01

www.thermik.de/en/en/data/C01

1:1

Type: Normally closed; resets automatically; with connector cables; with or without epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		60 °C – 200 °C
Tolerance (standard)		±2.5 K / ±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 3.9 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		450 N
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC; CMJ

Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Rated current AC cos Φ = 0.4 / cycles	1.8 A / 10,000
Max. switching current AC cos Φ = 0.4 / cycles	7.2 A / 1,000
Rated voltage DC	12.0 V
Max. switching current DC / cycles	40.0 A / 5,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

S01

www.thermik.de/en/en/data/S01

1:1

Type: Normally closed; resets automatically; with connector cables; with or without epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		60 °C – 200 °C
Tolerance (standard)		±2,5 K / ±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 4.3 mm
Diameter		9.5 mm
Length of the insulation cap		15.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		450 N
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC; CMJ

Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Rated current AC cos Φ = 0.4 / cycles	1.8 A / 10,000
Max. switching current AC cos Φ = 0.4 / cycles	7.2 A / 1,000
Rated voltage DC	12.0 V
Max. switching current DC / cycles	40.0 A / 5,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

*in accordance with the Thermik test • Specifications relating to part applications (on the part of the buyer) which deviate from our standards are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of Thermik products for such applications falls upon the user. • Slight deviations are possible in terms of dimensions/values, depending on the embodiment of the product. • We reserve the right to make technical changes in the course of further development. • Details concerning certain data, measurement methods, applications, approvals, etc. can be supplied upon request.

Thermal protectors 1.6 A – 7.5 A

C01 HT

www.thermik.de/en/en/data/C01HT

Type: Normally closed; high temperature model; resets automatically; with connector cables; without insulation

Nominal switching temperature (NST) in 5 °C increments		205 °C – 250 °C
Tolerance (standard)		±10 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	120 °C ±15 K
	VDE	≥ 35 °C
Installation height		from 4.4 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		450 N
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE; UL (appr. ≤ 230 °C); CQC

Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 1,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

S01 HT

www.thermik.de/en/en/data/S01HT

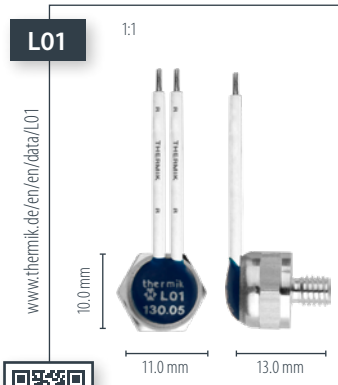
Type: Normally closed; high temperature model; resets automatically; with connector cables; insulation: PTFE

Nominal switching temperature (NST) in 5 °C increments		205 °C – 250 °C
Tolerance (standard)		±10 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	120 °C ±15 K
	VDE	≥ 35 °C
Installation height		from 5.1 mm
Diameter		9.7 mm
Length of the insulation cap		20.5 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		450N
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE; UL (appr. ≤ 230 °C); CQC

Operational voltage range AC / DC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 1,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

L01

www.thermik.de/en/en/data/L01



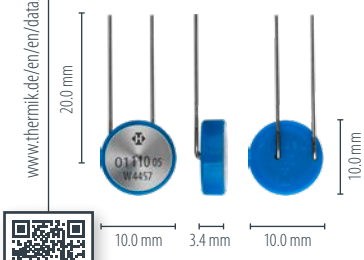
Type: Normally closed; resets automatically; with connector cables; with epoxy; fully insulated in a screw on housing

Nominal switching temperature (NST) in 5 °C increments		60 °C – 200 °C
Tolerance (standard)		±2.5 K / ±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Housing height		from 7.0 mm
Diameter		10.0 mm
Thread / Length		M4 x 5.0 mm
Width across flats / Max. torque		10.0 mm / 2 Nm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		450 N
Standard connection		Lead wire 0.25 mm² / AWG22

Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC
Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Rated current AC cos Φ = 0.4 / cycles	1.8 A / 10,000
Max. switching current AC cos Φ = 0.4 / cycles	7.2 A / 1,000
Rated voltage DC	12.0 V
Max. switching current DC / cycles	40.0 A / 5,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

N01

www.thermik.de/en/en/data/N01

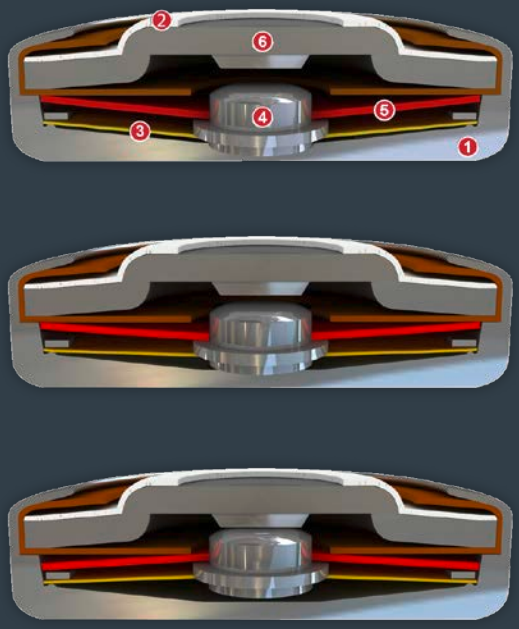


Type: Normally closed; resets automatically; with a connection wire; partially insulated in a plastic cap

Nominal switching temperature (NST) in 5 °C increments		60 °C – 200 °C
Tolerance (standard)		±2.5 K / ±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 3.4 mm
Diameter		10.0 mm
Length of the connection pins		14.0 mm / 20.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		450 N
Standard connection		Connecting wire with d = 0.5 mm

Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC
Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Rated current AC cos Φ = 0.4 / cycles	1.8 A / 10,000
Max. switching current AC cos Φ = 0.4 / cycles	7.2 A / 1,000
Rated voltage DC	12.0 V
Max. switching current DC / cycles	40.0 A / 5,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

Type series 02



Construction and function

The switchgear of type series 02 is fixed in a positive lock and is self-aligning between the floor of a conductive housing (1) and a contact cap which is made of steel (2) and insulated from it, plus an integrated stationary silver contact (6) which closes the housing like a button cell. By means of a throw force a bimetallic disc (5) pushes the movable contact (4) that sticks out in the middle of it onto its circumferential collar (6) against the spring snap-in disc (3) that is also surrounding the contact (4). Due to the higher throw force of the bimetallic disc (5) the switch contact remains open against the mechanical resistance of the spring snap-in disc (3) before reaching the rated switching temperature. As such, the contact also remains open as long as the bimetallic disc – only reacting to the ambient temperature – continually works and its shape changes. The bimetallic disc (5) only snaps into its inverted position when the rated switching temperature is reached and the contact is closed by the abruptly released pressure of the spring snap-in disc (3). The spring snap-in disc (3) is now a transfer element for electric current and as such, it enables the bimetallic disc (5) to continue to work on a continuous basis. When the reset temperature is reached, the bimetallic disc snaps back into its start position and the contact is opened again.

C02 Pin

www.thermik.de/en/en/data/C02-Pin

1:1

Type: Normally open; resets automatically; with pins; with epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		60 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 3.2 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		450 N
Standard connection		Pins 2.2 mm
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

C02

www.thermik.de/en/en/data/C02

1:1

Type: Normally open; resets automatically; with connector cables; with or without epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		60 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 3.9 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		450 N
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC; CMJ

Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

* in accordance with the Thermik test • Specifications relating to part applications (on the part of the buyer) which deviate from our standards are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of Thermik products for such applications falls upon the user. • Slight deviations are possible in terms of dimensions/values, depending on the embodiment of the product. • We reserve the right to make technical changes in the course of further development. • Details concerning certain data, measurement methods, applications, approvals, etc. can be supplied upon request.

S02

www.thermik.de/en/en/data/S02

1:1

Type: Normally open; resets automatically; with connector cables; with or without epoxy; insulation: Mylar®-Nomex®

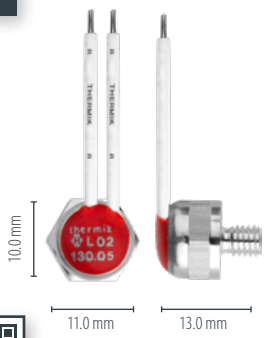
Nominal switching temperature (NST) in 5 °C increments		60 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 4.7 mm
Diameter		9.5 mm
Length of the insulation cap		15.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		450 N
Standard connection		Lead wire 0.25 mm² / AWG22

Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC; CMJ
Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

L02

www.thermik.de/en/en/data/L02

1:1



Type: Normally open; resets automatically; with connector cables; with epoxy; fully insulated in a screw on housing

Nominal switching temperature (NST) in 5 °C increments		60 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Housing height		from 7.0 mm
Height		13.0 mm
Diameter		10.0 mm
Thread / Length		M4 x 5.0 mm
Width across flats / Max. torque		10.0 mm / 2 Nm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		450 N

Standard connection	Lead wire 0.25 mm² / AWG22
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC
Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

N02

www.thermik.de/en/en/data/N02

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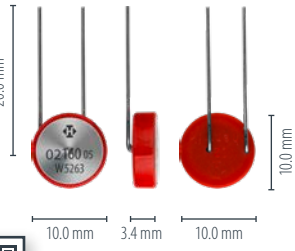
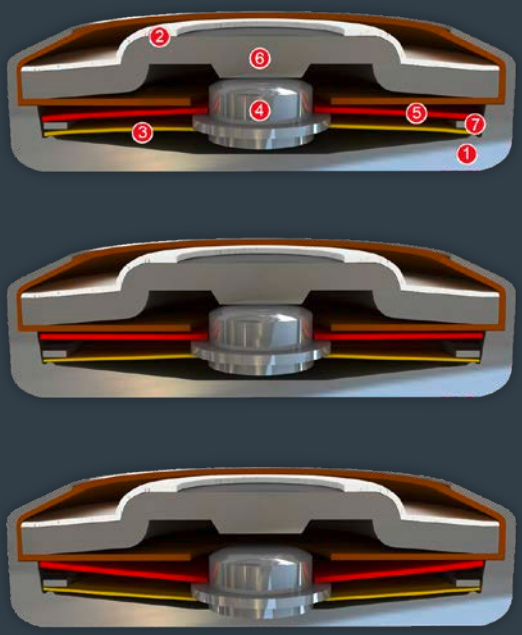


Type: Normally open; resets automatically; with a connection wire; partially insulated in a plastic cap

Nominal switching temperature (NST) in 5 °C increments		60 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 3.4 mm
Diameter		10.0 mm
Length of the connection pins		14.0 mm / 20.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		450 N
Standard connection		Connecting wire with d = 0.5 mm
Available approvals (please state)		IEC; ENEC; VDE; CSA; CQC

Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

Type series K1



Construction and function

The switchgear of type series K1 is fixed in a positive lock and is self-aligning between the floor of a conductive housing (1) and a contact cap which is made of steel (2) and insulated from it, plus an integrated stationary silver contact (6) which closes the housing like a button cell. At the same time, the spring snap-in disc (3) which forms the current transfer element bears the movable contact (4) and discharges the flow of current and self-heating from the bimetallic disc (5) by exercising consistent, steady contact pressure. The bimetallic disc (5) is held on the one movable contact (4) which sticks out through this without having to be welded or fixed. As such, it can continually work (exposed) and only reacts to the ambient temperature in the device to be protected. In addition, between the bimetallic disc (5) and and the spring snap-in disc (3) there is an intermediate ring (7) in order, for the function itself, to stop insignificant vibration noises as a result of the oscillating bimetallic disc (5) on the spring snap-in disc (3) in applications with uncontrolled, magnetic effects. When the rated switching temperature is reached, the bimetallic disc (5) snaps into its inverted position and pushes the spring snap-in disc (3) downwards. The contact is abruptly opened and the temperature rise of the device to be protected is disrupted. If the ambient temperature now falls, the bimetallic disc (5) snaps back into its start position when reaching the defined reset temperature and the contact is closed again.

CK1 Pin

www.thermik.de/en/en/data/CK1-Pin

1:1

Type: Normally closed; resets automatically; with pins; with epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		60 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 3.2 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		450 N
Standard connection		Pins 2.2 mm
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operational voltage range AC	up until 500.0 V AC (DC on request)
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Rated current AC cos Φ = 0.4 / cycles	1.8 A / 10,000
Max. switching current AC cos Φ = 0.4 / cycles	7.2 A / 1,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

CK1

www.thermik.de/en/en/data/CK1

1:1

Type: Normally closed; resets automatically; with connector cables; with or without epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		60 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 4.0 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		450 N
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operational voltage range AC	up until 500.0 V AC (DC on request)
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Rated current AC cos Φ = 0.4 / cycles	1.8 A / 10,000
Max. switching current AC cos Φ = 0.4 / cycles	7.2 A / 1,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

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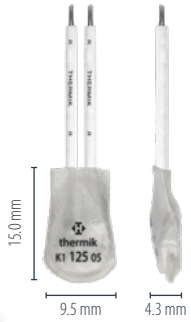
SK1

www.thermik.de/en/data/SK1

1:1



Type: Normally closed; resets automatically; with connector cables; with or without epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		60 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 4.3 mm
Diameter		9.5 mm
Length of the insulation cap		15.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		450 N
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operational voltage range AC	up until 500.0 V AC (DC on request)
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Rated current AC cos Φ = 0.4 / cycles	1.8 A / 10,000
Max. switching current AC cos Φ = 0.4 / cycles	7.2 A / 1,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

LK1

www.thermik.de/en/data/LK1

1:1

Type: Normally closed; resets automatically; fully insulated in a screw on housing; with epoxy; with connector cables

Nominal switching temperature (NST) in 5 °C increments		60 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Housing height		from 7.0 mm
Height		13.0 mm
Diameter		10.0 mm
Thread / Length		M4 x 5.0 mm
Width across flats / Max. torque		10.0 mm / 2 Nm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		450 N
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE; UL; CQC

Operational voltage range AC / DC	up until 500.0 V AC (DC on request)
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Rated current AC cos Φ = 0.4 / cycles	1.8 A / 10,000
Max. switching current AC cos Φ = 0.4 / cycles	7.2 A / 1,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

NK1

www.thermik.de/en/data/NK1

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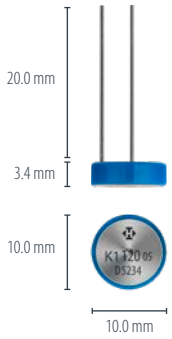
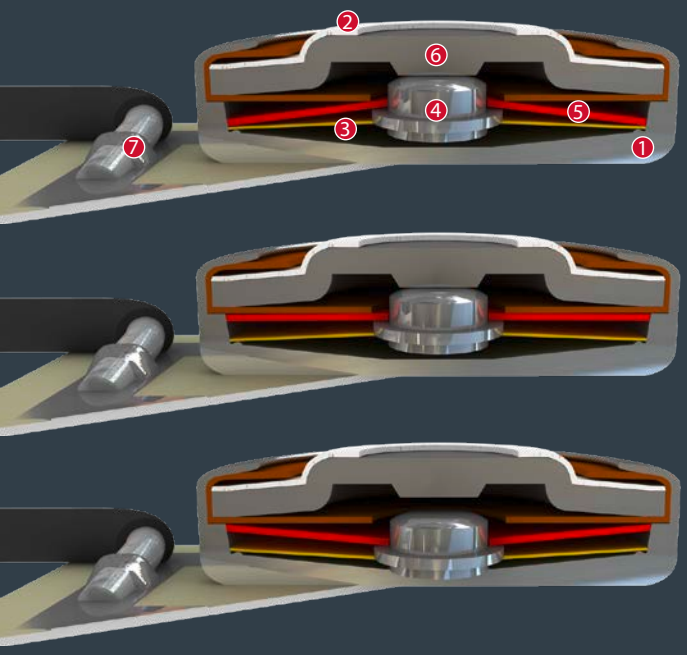


Type: Normally closed; resets automatically; with a connection wire; partially insulated in a plastic cap

Nominal switching temperature (NST) in 5 °C increments		60 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 3.4 mm
Diameter		10.0 mm
Length of the connection pins		14.0 mm / 20.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		450 N
Standard connection		Connecting wire with d = 0.5 mm
Available approvals (please state)		IEC; ENEC; VDE; UL; CQC

Operational voltage range AC	up until 500.0 V AC (DC on request)
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Rated current AC cos Φ = 0.4 / cycles	1.8 A / 10,000
Max. switching current AC cos Φ = 0.4 / cycles	7.2 A / 1,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

Type series Z1



Construction and function

The switchgear of type series Z1 is fixed in a positive lock and is self-aligning between the floor of a conductive housing (1) and a contact cap which is made of steel (2) and insulated from it, plus an integrated stationary silver contact (6) which closes the housing like a button cell. At the same time, the spring snap-in disc (3) which forms the current transfer element bears the movable contact (4) and discharges the flow of current and self-heating from the bimetallic disc (5) by exercising consistent, steady contact pressure. The bimetallic disc (5) is held on the one movable contact (4) which sticks out through this without having to be welded or fixed. As such, it can continually work (exposed). When the rated switching temperature is reached, the bimetallic disc (5) snaps into its inverted position and pushes the spring snap-in disc (3) downwards. The contact is abruptly opened and the temperature rise of the device to be protected is disrupted. If the ambient temperature now falls, the bimetallic disc (5) snaps back into its start position when reaching the defined reset temperature and the contact is closed again. As a result of the aluminium oxide-based semiconductor connected in series (7) with a defined series resistance, the switchgear is heated externally depending on the operating current and shutdown. As a result of this design, it is no longer necessary to connect the Thermal protectors to the potential heat source of the device to be protected. Such Thermal protectors are often applied equally effectively at other places in the device to be protected.

CZ1

www.thermik.de/en/data/CZ1

Type: Normally closed; resets automatically; defined as current sensitive; with or without epoxy; with connector cables; without insulation

Nominal switching temperature (NST) in 5 °C increments		70 °C – 160 °C
Tolerance (standard)		±5 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 4.5 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Series resistor for setting the current sensitivity		from 0.12 Ω to 70.0 Ω
Suitable for installation in protection class		I
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE; UL (NST 70 °C – 130 °C)

Operational voltage range AC	up until 500.0 V AC (DC on request)
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.0 A / 3,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 3,000
Max. switching current AC cos Φ = 1.0 / cycles	4.0 A / 3,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

SZ1

www.thermik.de/en/data/SZ1

Type: Normally closed; resets automatically; defined as current sensitive; with or without epoxy; with connector cables; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		70 °C – 160 °C
Tolerance (standard)		±5 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 5.0 mm
Diameter		9.5 mm
Length of the insulation cap		18.0 mm
Resistance to impregnation *		suitable
Series resistor for setting the current sensitivity		from 0.12 Ω to 70.0 Ω
Suitable for installation in protection class		I + II
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; ENEC; VDE; UL (NST 70 °C – 130 °C)

Operational voltage range AC	up until 500.0 V AC (DC on request)
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.0 A / 3,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 3,000
Max. switching current AC cos Φ = 1.0 / cycles	4.0 A / 3,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

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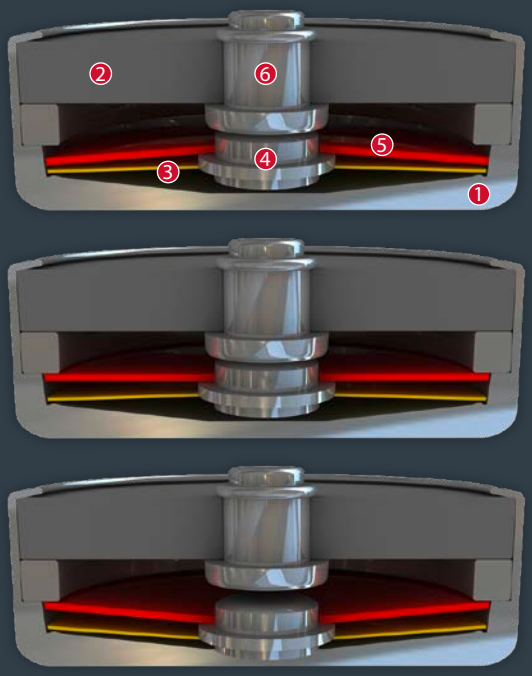
The listed products are an extract from our standard range. Other versions and customised manufacturing are available upon request.

Type series P1



Construction and function

The switchgear of type series P1 is fixed in a positive lock and is self-aligning between the floor of a conductive housing (1) and a PTC cap made from barium titanate (2) which sticks out from a stationary silver contact (6). At the same time, the spring snap-in disc (3) which forms the current transfer element bears the movable contact (4) and discharges the flow of current and self-heating from the bimetallic disc (5). The bimetallic disc (5) is held on the movable contact (4) which sticks out through this without having to be welded or fixed. When the rated switching temperature is reached, the bimetallic disc (5) snaps into its inverted position and pushes the spring snap-in disc (3) downwards. The contact is abruptly opened and the temperature rise of the device to be protected is disrupted. The PTC resistance (2) connected in parallel now sustains the operating voltage and deploys a defined electrical heating output on the bimetallic disc (5) regardless of the ambient temperature and permanently sustains it above its springback temperature so that the switch gear cannot reset. The contact remains open. The Thermal protectors can only cool down again and switch to the original closed state when the external operating voltage is no longer applied and/or disconnection from the mains.

P1

www.thermik.de/en/data/P1

1:1

Type: Normally closed; does not reset automatically; voltage applied; without insulation; for clip contact; minimum batch sizes

Nominal switching temperature (NST) in 5 °C increments		60 °C – 180 °C
Tolerance (standard)		±5 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 3.5 mm
Diameter		9.0 mm
Suitable for installation in protection class		I
Standard connection		Terminal contact
Available approvals (please state)		IEC; VDE; UL; CSA; CQC

Operating voltage range AC	from 115.0 V to 250.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 1,000
Max. switching current AC cos Φ = 1.0 / cycles	10.0 A / 1,000
Max. switching current AC cos Φ = 0.6 / cycles	6.3 A / 1,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

CP1 Pin

www.thermik.de/en/data/CP1-Pin

1:1

Type: Normally closed; does not reset automatically; voltage applied; with connection pins; without insulation

Nominal switching temperature (NST) in 5 °C increments		60 °C – 180 °C
Tolerance (standard)		±5 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 4.1 mm
Diameter		9.0 mm
Suitable for installation in protection class		I
Standard connection		Pins 2.2 mm
Available approvals (please state)		IEC; VDE; UL; CSA; CQC

Operating voltage range AC	from 115.0 V to 250.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 1,000
Max. switching current AC cos Φ = 1.0 / cycles	10.0 A / 1,000
Max. switching current AC cos Φ = 0.6 / cycles	6.3 A / 1,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

CP1

www.thermik.de/en/data/CP1

Type: Normally closed; does not reset automatically; voltage applied; with connector cables; without insulation

Nominal switching temperature (NST) in 5 °C increments		60 °C – 180 °C
Tolerance (standard)		±5 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 4.5 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; VDE; UL; CSA; CQC

Operating voltage range AC	from 115.0 V to 250.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 1,000
Max. switching current AC cos Φ = 1.0 / cycles	10.0 A / 1,000
Max. switching current AC cos Φ = 0.6 / cycles	6.3 A / 1,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

SP1

www.thermik.de/en/data/SP1

Type: Normally closed; does not reset automatically; voltage applied; with connector cables; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		60 °C – 180 °C
Tolerance (standard)		±5 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 5.0 mm
Diameter		9.5 mm
Length of the insulation cap		15.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; VDE; UL; CSA; CQC

Operating voltage range AC	from 115.0 V to 250.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 1,000
Max. switching current AC cos Φ = 1.0 / cycles	10.0 A / 1,000
Max. switching current AC cos Φ = 0.6 / cycles	6.3 A / 1,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

SP1 600 N

www.thermik.de/en/data/SP1-600

Type: Normally closed; does not reset automatically; voltage applied; pressure resistant; with connector cables; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		60 °C – 180 °C
Tolerance (standard)		±5 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 6.6 mm
Diameter		11.0 mm
Length of the insulation cap		16.5 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; VDE; UL; CSA; CQC

Operating voltage range AC	from 115.0 V to 250.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 1,000
Max. switching current AC cos Φ = 1.0 / cycles	10.0 A / 1,000
Max. switching current AC cos Φ = 0.6 / cycles	6.3 A / 1,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

KP1

www.thermik.de/en/data/KP1

Type: Normally closed; does not reset automatically; voltage applied; with connector cables; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		60 °C – 180 °C
Tolerance (standard)		±5 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 4.9 mm
Diameter		9.5 mm
Length of the insulation cap		13.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; VDE; UL; CSA; CQC

Operating voltage range AC	from 115.0 V to 250.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 1,000
Max. switching current AC cos Φ = 1.0 / cycles	10.0 A / 1,000
Max. switching current AC cos Φ = 0.6 / cycles	6.3 A / 1,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

* in accordance with the Thermik test • Specifications relating to part applications (on the part of the buyer) which deviate from our standards are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of Thermik products for such applications falls upon the user. • Slight deviations are possible in terms of dimensions/values, depending on the embodiment of the product. • We reserve the right to make technical changes in the course of further development. • Details concerning certain data, measurement methods, applications, approvals, etc. can be supplied upon request.

CPK

www.thermik.de/en/data/CPK

1:1

Type: Normally closed; does not reset automatically; voltage applied; with connector cables; with a K1 model; without insulation

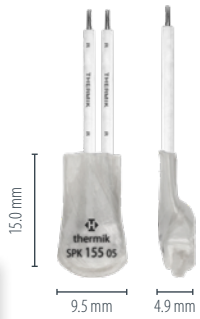
Nominal switching temperature (NST) in 5 °C increments		60 °C – 180 °C
Tolerance (standard)		±5 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 4.5 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; VDE; UL; CSA

Operating voltage range AC	from 115.0 V to 250.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 1,000
Max. switching current AC cos Φ = 1.0 / cycles	10.0 A / 1,000
Max. switching current AC cos Φ = 0.6 / cycles	6.3 A / 1,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

SPK

www.thermik.de/en/data/SPK

1:1



Type: Normally closed; does not reset automatically; voltage applied; with connector cables; with a K1 model; insulation: Mylar®-Nomex®

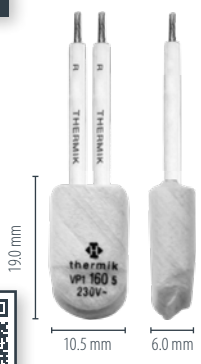
Nominal switching temperature (NST) in 5 °C increments		60 °C – 180 °C
Tolerance (standard)		±5 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 4.9 mm
Diameter		9.5 mm
Length of the insulation cap		15.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; VDE; UL; CSA

Operating voltage range AC	from 115.0 V to 250.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 1,000
Max. switching current AC cos Φ = 1.0 / cycles	10.0 A / 1,000
Max. switching current AC cos Φ = 0.6 / cycles	6.3 A / 1,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

VP1

www.thermik.de/en/data/VP1

1:1

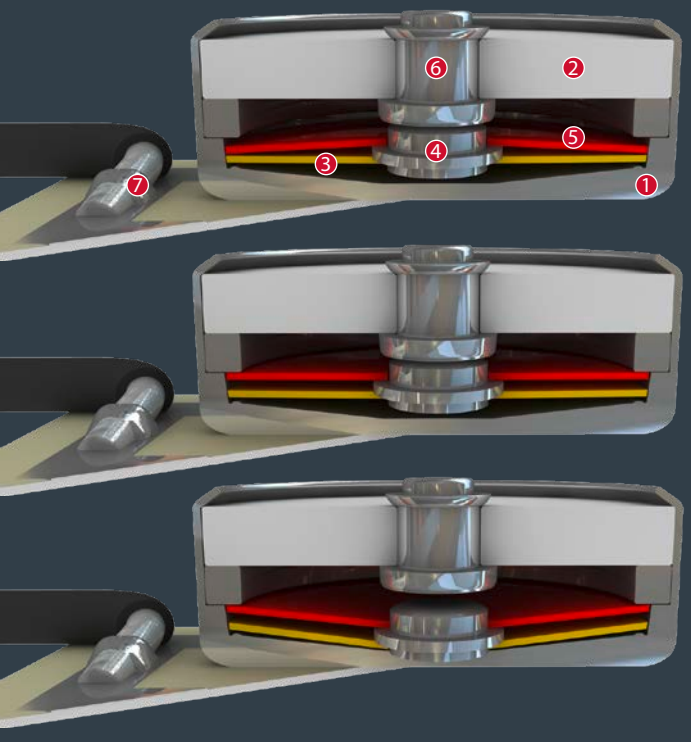


Type: Normally closed; does not reset automatically; voltage applied; with connector cables; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		60 °C – 180 °C
Tolerance (standard)		±5 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 6.0 mm
Diameter		10.5 mm
Length of the insulation cap		19.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Standard connection		Lead wire 0.25 mm² / AWG22
Available approvals (please state)		IEC; VDE

Operating voltage range AC	from 115.0 V to 250.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 1,000
Max. switching current AC cos Φ = 1.0 / cycles	10.0 A / 1,000
Max. switching current AC cos Φ = 0.6 / cycles	6.3 A / 1,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

Type series W1



Construction and function

The switchgear of type series W1 is fixed in a positive lock and is self-aligning between the floor of a conductive housing (1) and a PTC cap made from barium titanate (2) which sticks out from a stationary silver contact (6). At the same time, the spring snap-in disc (3) which forms the current transfer element bears the movable contact (4) and discharges the flow of current and self-heating from the bimetallic disc (5). The bimetallic disc (5) is held from this stuck out movable contact (4) without having to be welded or fixed. As such, it can continually work (exposed). When the rated switching temperature is reached, the bimetallic disc (5) snaps into its inverted position and pushes the spring snap-in disc (3) downwards. The contact is abruptly opened and the temperature rise of the device to be protected is disrupted. As a result of the aluminium oxide-based semiconductor connected in series (7) with a defined series resistance, the switchgear his heated externally depending on the operating current and shutdown. In addition, the PTC resistance switched in parallel now sustains the operating voltage and deploys a defined electrical heating output on the bimetallic disc (5) regardless of the ambient temperature and permanently sustains it above its springback temperature so that the switchgear cannot reset back. The contact remains open. The Thermal protectors can only cool down again and switch to the original closed state when the external operating voltage is no longer applied and/or disconnection from the mains. As a result of this design, it is no longer necessary to connect the Thermal protectors to the potential heat source of the device to be protected. Such Thermal protectors are often applied equally effectively at other places in the device to be protected.

CW1

www.thermik.de/en/data/CW1

1:1

Type: Normally closed; does not reset automatically; voltage applied; defined as current sensitive; with connector cables; without insulation

Nominal switching temperature (NST) in 5 °C increments		60 °C – 160 °C
Tolerance (standard)		±5 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 5.1 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Series resistor for setting the current sensitivity		from 0.12 Ω to 70.0 Ω
Suitable for installation in protection class		I
Standard connection		wire with d = 0.5 mm / AWG22
Available approvals (please state)		IEC; VDE; UL; CSA

Operating voltage range AC	from 115.0 V to 250.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 1,000
Max. switching current AC cos Φ = 1.0 / cycles	9.0 A / 1,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

SW1

www.thermik.de/en/data/SW1

1:1

Type: Normally closed; does not reset automatically; voltage applied; defined as current sensitive; with connector cables; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		60 °C – 160 °C
Tolerance (standard)		±5 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 5.5 mm
Diameter		10.0 mm
Length of the insulation cap		19.5 mm
Resistance to impregnation *		suitable
Series resistor for setting the current sensitivity		from 0.12 Ω to 70.0 Ω
Suitable for installation in protection class		I + II
Standard connection		wire with d = 0.5 mm / AWG22
Available approvals (please state)		IEC; VDE; UL; CSA

Operating voltage range AC	from 115.0 V to 250.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 1,000
Max. switching current AC cos Φ = 1.0 / cycles	9.0 A / 1,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

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Thermal protectors 1.6 A – 7.5 A

CWK

www.thermik.de/en/data/CWK

Type: Normally closed; does not reset automatically; voltage applied; defined as current sensitive; with connector cables; without insulation

Nominal switching temperature (NST) in 5 °C increments		60 °C – 160 °C
Tolerance (standard)		±5 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 5.1 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Series resistor for setting the current sensitivity		from 0.12 Ω to 70.0 Ω
Suitable for installation in protection class		I
Standard connection		wire with d = 0.5 mm / AWG22
Available approvals (please state)		IEC; VDE

Operating voltage range AC	from 115.0 V to 250.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 1,000
Max. switching current AC cos Φ = 1.0 / cycles	9.0 A / 1,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

VW1

www.thermik.de/en/data/VW1

Type: Normally closed; does not reset automatically; voltage applied; defined as current sensitive; with connector cables; fully cast in a Mylar®-Nomex® insulation cap

Nominal switching temperature (NST) in 5 °C increments		60 °C – 160 °C
Tolerance (standard)		±5 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 5.8 mm
Diameter		10.4 mm
Length of the insulation cap		18.0 mm
Resistance to impregnation *		suitable
Series resistor for setting the current sensitivity		from 0.12 Ω to 70.0 Ω
Suitable for installation in protection class		I + II
Standard connection		wire with d = 0.5 mm / AWG22
Available approvals (please state)		IEC; VDE

Operating voltage range AC	from 115.0 V to 250.0 V AC
Rated voltage AC	250.0 V (VDE)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 1,000
Max. switching current AC cos Φ = 1.0 / cycles	9.0 A / 1,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

VWK

www.thermik.de/en/data/VWK

Type: Normally closed; does not reset automatically; voltage applied; defined as current sensitive; with connector cables; fully cast in a Mylar®-Nomex® insulation cap

Nominal switching temperature (NST) in 5 °C increments		60 °C – 160 °C
Tolerance (standard)		±5 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 5.8 mm
Diameter		9.9 mm
Length of the insulation cap		18.0 mm
Resistance to impregnation *		suitable
Series resistor for setting the current sensitivity		from 0.12 Ω to 70.0 Ω
Suitable for installation in protection class		I + II
Standard connection		wire with d = 0.5 mm / AWG22
Available approvals (please state)		IEC; VDE

Operating voltage range AC	from 115.0 V to 250.0 V AC
Rated voltage AC	250.0 V (VDE)
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	1.6 A / 1,000
Max. switching current AC cos Φ = 1.0 / cycles	9.0 A / 1,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

Thermal Protectors

For the following Thermik thermal protector Product Series, frequent customer-requested variations are shown to the right:

05 09 Q5 06 08 Y6 YH R6

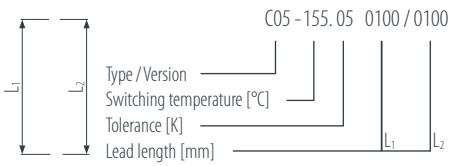
Thermik creates endless customized modifications within this Product Series, including customer-application solutions. Thermik's patented engineering in our standard configurations of this Product Series extends to all our custom solutions.

Our rigorous quality processes ensure precision-engineering consistency – in design and manufacture – plant-to-plant, worldwide – and on each order, for both standard and custom specifications.

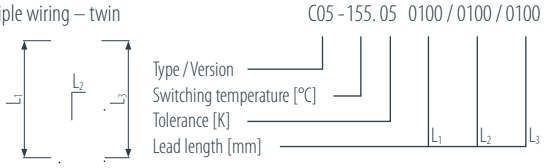
By design, Thermik's selection of materials, and their composition, requires only the highest-quality materials enter Thermik's supply chain and are used in Thermik products. We source for quality and reliability, over price. From experience, the quality of our precision engineering products depends on it!

Due to their superior electromechanical properties, the use of precious metals is necessary for Thermik products. Thermik's Engineering Center of Excellence sources locally, within Europe, to assure our quality standards, and further assure our compliance with the international "Conflict-Free Minerals Directive" for special metals! Thermik's eco-friendly products also comply fully with EU Directives on RoHS and REACH

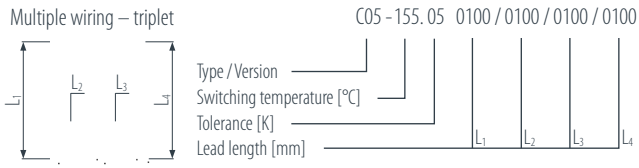
Ordering instructions:



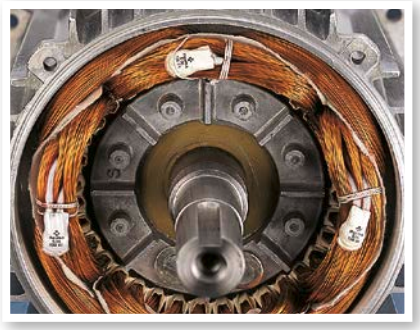
Multiple wiring – twin



Multiple wiring – triplet



Examples of typical applications



VDE in accordance with EN 60730

CQC in accordance with GB 14536

UL in accordance with UL 2111 / UL 873 UL 60730

CSA in accordance with C22.2

CB report in accordance with IEC 0730

ENEC in accordance with EN 60730

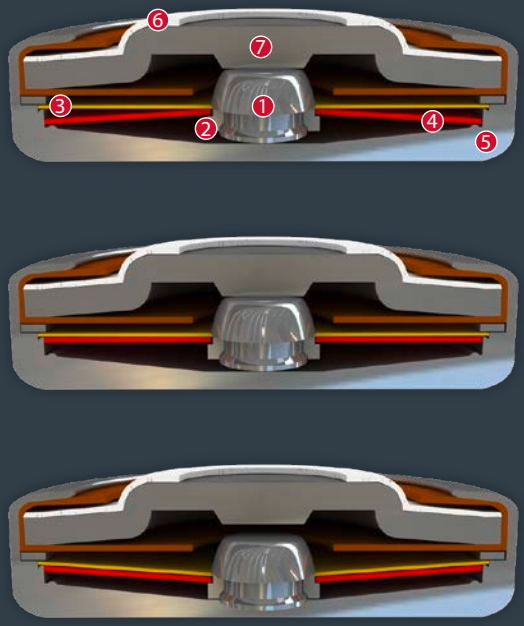
CMJ in accordance with JET

Thermik products are in accordance with the applicable EU directives / specifications, as amended.

*in accordance with the Thermik test • Specifications relating to part applications (on the part of the buyer) which deviate from our standards are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of Thermik products for such applications falls upon the user. • Slight deviations are possible in terms of dimensions/values, depending on the embodiment of the product. • We reserve the right to make technical changes in the course of further development. • Details concerning certain data, measurement methods, applications, approvals, etc. can be supplied upon request.

The listed products are an extract from our standard range. Other versions and customised manufacturing are available upon request.

Type series 05



Construction and function

Switchgear consisting of a movable silver contact (1), a contact bearer (2), a spring snap-in disc (3) and a bimetallic disc (4) which is riveted into one another, undetachable and fixed in a positive lock and self-aligning between a conductive, heat-transferring housing (5) and a contact cap made of steel (6) that is insulated from it, plus a stationary countercontact (7). At the same time, the switchgear is carried by the spring snap-in disc (3) acting as a transfer element for electric current which is held between a supporting collar and a circumferential ring. As such, the bimetallic disc (4) underlying it, that is also stuck out from the movable contact (1), can continuously work (exposed) by mechanical loads without the contact pressure defined by the spring snap-in disc (3) diminishing. As soon as the bimetallic disc (4) reaches its rated switching temperature, it effectively springs against the throw force of the spring snap-in disc (3) into its inverted position. The contact is abruptly opened. The temperature will now fall, the bimetallic disc (4) will only snap back upon reaching a defined reset temperature and the contact is closed again.

C05

www.thermik.de/en/data/C05

1:1

Type: Normally closed; resets automatically; with connector cables; with or without epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		50 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 75 °C NST) -30 K ± 15 K (≥ 80 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 5.1 mm
Diameter		11.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		300 N
Standard connection		Lead wire 0.5 mm² / AWG20
Available approvals (please state)		IEC; ENEC; VDE; UL (appr.≤ 180 °C); CSA; CQC; CMJ

Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	6.3 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	4.0 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	10.0 A / 3,000 20.0 A / 300
Rated current AC cos Φ = 0.4 / cycles	4.6 A / 10,000
Max. switching current AC cos Φ = 0.4 / cycles	18.4 A / 1,000
Rated voltage DC	12.0 V
Max. switching current DC / cycles	40.0 A / 10,000
Max. switching current DC / cycles	60.0 A / 3,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

S05

www.thermik.de/en/data/S05

1:1

Type: Normally closed; resets automatically; with connector cables; with or without epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		50 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 75 °C NST) -30 K ± 15 K (≥ 80 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 5.5 mm
Diameter		11.7 mm
Length of the insulation cap		18.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		300 N
Standard connection		Lead wire 0.5 mm² / AWG20
Available approvals (please state)		IEC; ENEC; VDE; UL (appr.≤ 180 °C); CSA; CQC; CMJ

Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	6.3 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	4.0 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	10.0 A / 3,000 20.0 A / 300
Rated current AC cos Φ = 0.4 / cycles	4.6 A / 10,000
Max. switching current AC cos Φ = 0.4 / cycles	18.4 A / 1,000
Rated voltage DC	12.0 V
Max. switching current DC / cycles	40.0 A / 10,000
Max. switching current DC / cycles	60.0 A / 3,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

L05

www.thermik.de/en/data/L05

1:1

Type: Normally closed; resets automatically; with connector cables; with epoxy; fully insulated in a screw on housing

Nominal switching temperature (NST) in 5 °C increments		50 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 75 °C NST) -30 K ± 15 K (≥ 80 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Housing height		from 8.0 mm
Diameter		14.1 mm
Thread / Length		M6 x 8.0 mm
Width across flats / Max. torque		13.0 mm / 8 Nm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		300 N
Standard connection		Lead wire 0.5 mm² / AWG20
Available approvals (please state)		IEC; ENEC; VDE; UL (appr.≤ 180 °C); CSA; CQC

Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	6.3 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	4.0 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	10.0 A / 3,000 20.0 A / 300
Rated current AC cos Φ = 0.4 / cycles	4.6 A / 10,000
Max. switching current AC cos Φ = 0.4 / cycles	18.4 A / 1,000
Rated voltage DC	12.0 V
Max. switching current DC / cycles	40.0 A / 10,000
Max. switching current DC / cycles	60.0 A / 3,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

F05

www.thermik.de/en/data/F05

1:1

Type: Normally closed; resets automatically; with connector cables; with epoxy; fully insulated in a Nomex® cap

Nominal switching temperature (NST) in 5 °C increments		50 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 75 °C NST) -30 K ± 15 K (≥ 80 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 6.5 mm
Diameter		10.5 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		300 N
Standard connection		Lead wire 0.5 mm² / AWG20
Available approvals (please state)		IEC; ENEC; VDE; UL (appr.≤ 180 °C); CSA; CQC

Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	6.3 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	4.0 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	10.0 A / 3,000 20.0 A / 300
Rated current AC cos Φ = 0.4 / cycles	4.6 A / 10,000
Max. switching current AC cos Φ = 0.4 / cycles	18.4 A / 1,000
Rated voltage DC	12.0 V
Max. switching current DC / cycles	40.0 A / 10,000
Max. switching current DC / cycles	60.0 A / 3,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

S05 HT

www.thermik.de/en/data/S05HT

1:1

Type: Normally closed; resets automatically; with connector cables; with or without epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		205 °C – 250 °C
Tolerance (standard)		±10 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	VDE	120 °C ±15 K ≥ 35 °C
Installation height		from 6.6 mm
Diameter		11.4 mm
Length of the insulation cap		22.5 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		300 N
Standard connection		Lead wire AWG20
Available approvals (please state)		VDE; ENEC

Operational voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V
Rated current AC cos Φ = 1.0 / cycles	6.3 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	4.0 A / 10,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

C05 HT

www.thermik.de/en/data/C05HT

1:1

Type: Normally closed; resets automatically; with connector cables; with or without epoxy; without insulation

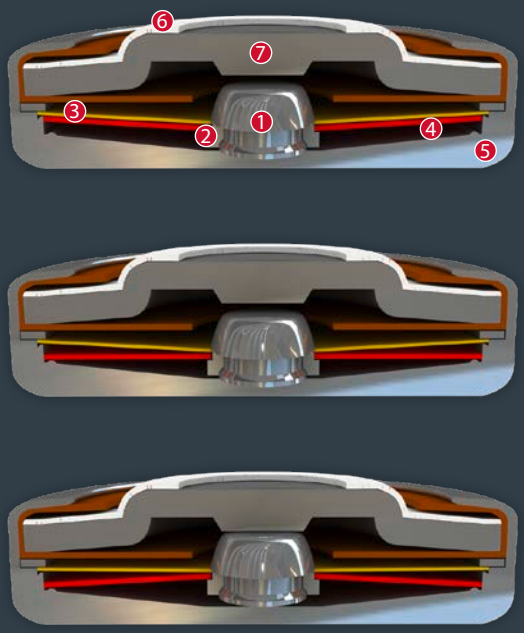
Nominal switching temperature (NST) in 5 °C increments		205 °C – 250 °C
Tolerance (standard)		±10 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	VDE	120 °C ±15 K ≥ 35 °C
Installation height		from 6.0 mm
Diameter		11.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		300 N
Standard connection		Lead wire AWG20
Available approvals (please state)		VDE; ENEC

Operational voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V
Rated current AC cos Φ = 1.0 / cycles	6.3 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	4.0 A / 10,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

*in accordance with the Thermik test • Specifications relating to part applications (on the part of the buyer) which deviate from our standards are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of Thermik products for such applications falls upon the user. • Slight deviations are possible in terms of dimensions/values, depending on the embodiment of the product. • We reserve the right to make technical changes in the course of further development. • Details concerning certain data, measurement methods, applications, approvals, etc. can be supplied upon request.

The listed products are an extract from our standard range. Other versions and customised manufacturing are available upon request.

Type series 09



Construction and function

Switchgear consisting of a movable silver contact (1), a contact bearer (2), a spring snap-in disc (3) and a bimetallic disc (4) which is riveted into one another, undetachable and fixed in a positive lock and self-aligning between a conductive, heat-transferring housing (5) and a contact cap made of steel (6) that is insulated from it, plus a stationary countercontact (7). At the same time, the switchgear is held open by the spring snap-in disc (3) used as a transfer element for electric current which is held between a supporting collar and a circumferential ring. As such, the bimetallic disc (4) underlying it, that is also stuck out from the movable contact (1), can continuously work (exposed) by mechanical loads. As soon as the bimetallic disc (4) reaches its rated switching temperature, it effectively springs against the throw force of the spring snap-in disc (3) into its inverted position. The contact is abruptly closed. The spring snap-in disc (3) is now a transfer element for electric current and as such, it enables the bimetallic disc (5) to continue to work on a continuous basis. When the spring back temperature is reached, the bimetallic disc snaps back into its start position and the contact is opened again.

C09

www.thermik.de/en/data/C09

1:1

Type: Normally open; resets automatically; with connector cables; with or without epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		50 °C – 180 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 30 °C (≤ 75 °C NST) -30 K ± 15 K (≥ 80 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 5.0 mm
Diameter		11.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		300 N
Standard connection		Lead wire 0.5 mm² / AWG20
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC, CMJ

Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	6.3 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	4.0 A / 10,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

S09

www.thermik.de/en/data/S09

1:1

Type: Normally open; resets automatically; with connector cables; with or without epoxy; insulation: Mylar®-Nomex®

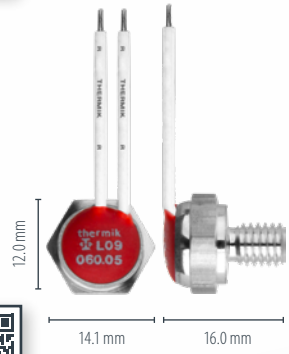
Nominal switching temperature (NST) in 5 °C increments		50 °C – 180 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 30 °C (≤ 75 °C NST) -30 K ± 15 K (≥ 80 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 5.5 mm
Diameter		11.7 mm
Length of the insulation cap		19.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		300 N
Standard connection		Lead wire 0.5 mm² / AWG20

Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC, CMJ
Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	6.3 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	4.0 A / 10,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

L09

www.thermik.de/en/data/L09

1:1



Type: Normally open; resets automatically; with connector cables; with epoxy; fully insulated in a screw on housing

Nominal switching temperature (NST) in 5 °C increments		50 °C – 180 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 30 °C (≤ 75 °C NST) -30 K ± 15 K (≥ 80 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Housing height		from 8.0 mm
Diameter		12.0 mm
Thread / Length		M6 x 8.0 mm
Width across flats / Max. torque		13.0 mm / 8 Nm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		300 N
Standard connection		Lead wire 0.5 mm² / AWG20
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	6.3 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	4.0 A / 10,000
Rated voltage DC	12.0 V
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

F09

www.thermik.de/en/data/F09

1:1

Type: Normally open; resets automatically; with connector cables; with epoxy; fully insulated in a Nomex® cap

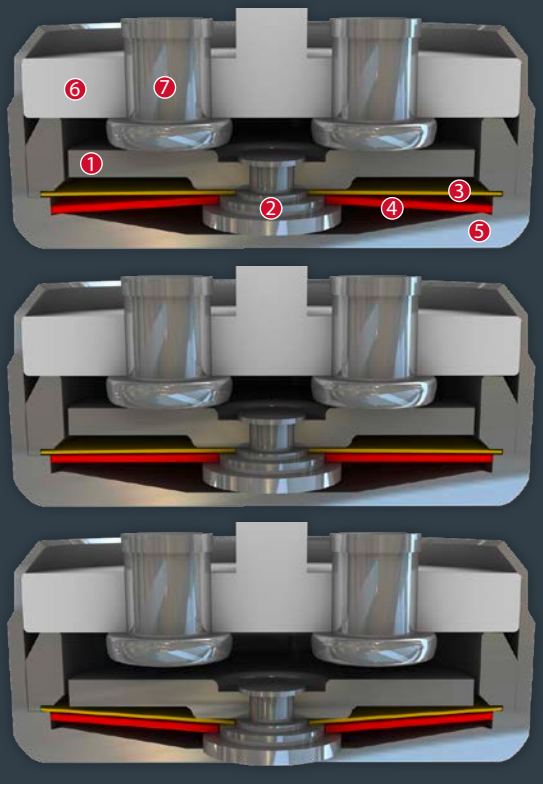
Nominal switching temperature (NST) in 5 °C increments		50 °C – 180 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 30 °C (≤ 75 °C NST) -30 K ± 15 K (≥ 80 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 6.5 mm
Diameter		11.4 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		300 N
Standard connection		Lead wire 0.5 mm² / AWG20
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	6.3 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	4.0 A / 10,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

*In accordance with the Thermik test • Specifications relating to part applications (on the part of the buyer) which deviate from our standards are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of Thermik products for such applications falls upon the user. • Slight deviations are possible in terms of dimensions/values, depending on the embodiment of the product. • We reserve the right to make technical changes in the course of further development. • Details concerning certain data, measurement methods, applications, approvals, etc. can be supplied upon request.

The listed products are an extract from our standard range. Other versions and customised manufacturing are available upon request.

Type series 06



Construction and function

Switchgear consisting of a mobile and circular contact bridge (1), a contact bearing pin (2), a spring snap-in disc (3) and a bimetallic disc (4) which is riveted into one another, undetachable and fixed in a positive lock and self-aligning between a non-conductive floor of a housing (5) and an insulating ceramic bearing (6) with two integrated stationary contacts (7) as electrodes. At the same time, the switchgear is supported by the spring snap-in disc (3) with the contact bridge (1) acting as a transfer element for electric current which is held between a supporting collar and a circumferential ring. As such, the bimetallic disc (4) underlying it, that is also stuck out from the contact bearing pin (2), can continuously work (exposed) by mechanical loads without the contact pressure defined by the spring snap-in disc (3) diminishing. As soon as the bimetallic disc (4) reaches its rated switching temperature, it effectively springs against the throw force of the spring snap-in disc (3) into its inverted position. The contacts are abruptly opened. The temperature will now fall. The bimetallic disc (4) will only snap back upon reaching a defined reset temperature and the contacts will be closed again. As the contact bearing pin (2) is appropriately dimensioned, an easy, circular rotation of the circle-shaped contact bridge (1) is enabled with every switch so that transfer resistances remain constantly below the minimum limit after many switch cycles and the long term stability is sustained even under high levels of stress.

C06

www.thermik.de/en/data/C06

1:1

Type: Normally closed; resets automatically; with connector cables; with epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		70 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 95 °C NST) -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 6.5 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 0.75 mm² / AWG18
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operational voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	10.0 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	6.3 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	25.0 A / 100
Rated voltage DC	24.0 V
Max. switching current DC / cycles	40.0 A / 3,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

S06

www.thermik.de/en/data/S06

1:1

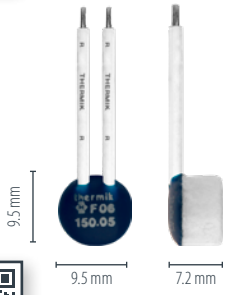
Type: Normally closed; resets automatically; with connector cables; with epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		70 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 95 °C NST) -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 7.0 mm
Diameter		10.5 mm
Length of the insulation cap		17.5 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 0.75 mm² / AWG18

Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC
Operational voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	10.0 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	6.3 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	25.0 A / 100
Rated voltage DC	24.0 V
Max. switching current DC / cycles	40.0 A / 3,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

F06

www.thermik.de/en/data/F06



Type: Normally closed; resets automatically; with connector cables; with epoxy; fully insulated in a Nomex® cap

Nominal switching temperature (NST) in 5 °C increments		70 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 95 °C NST) -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 7.2 mm
Diameter		9.5 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 0.75 mm² / AWG18
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operational voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	10.0 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	6.3 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	25.0 A / 100
Rated voltage DC	24.0 V
Max. switching current DC / cycles	40.0 A / 3,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

C06 HT

www.thermik.de/en/data/C06HT

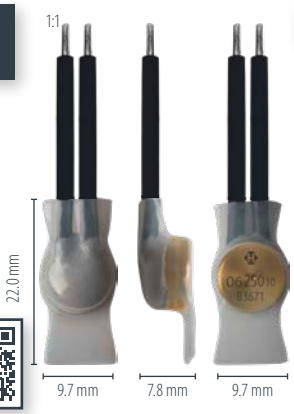
Type: Normally closed; resets automatically; with connector cables; silicone coated; without insulation

Nominal switching temperature (NST) in 5 °C increments		205 °C – 250 °C
Tolerance (standard)		±10 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	120 °C ±15 K
	VDE	≥ 35 °C
Installation height		from 7.1 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 0.75 mm² / AWG18
Available approvals (please state)		IEC; ENEC; VDE; UL (appr. ≤ 230 °C); CQC

Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	10.0 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	6.3 A / 1,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

S06 HT

www.thermik.de/en/data/S06HT



Type: Normally closed; resets automatically; with connector cables; silicone coated; insulation: PTFE

Nominal switching temperature (NST) in 5 °C increments		205 °C – 250 °C
Tolerance (standard)		±10 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	120 °C ±15 K
	VDE	≥ 35 °C
Installation height		from 7.8 mm
Diameter		9.7 mm
Length of the insulation cap		22.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 0.75 mm² / AWG18
Available approvals (please state)		IEC; ENEC; VDE; UL (appr. ≤ 230 °C); CQC

Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	10.0 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	6.3 A / 1,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

L06

www.thermik.de/en/data/L06

Type: Normally closed; resets automatically; with connector cables; with epoxy; fully insulated in a screw on housing

Nominal switching temperature (NST) in 5 °C increments		70 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35° C (≤ 95 °C NST) -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 5.0 mm
Diameter		10.0 mm
Thread/Length		M6 x 8.0 mm
Width across flats/Max. torque		10.0 mm / 2 Nm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 0.75 mm² / AWG18
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operational voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	10.0 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	6.3 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	25.0 A / 100
Rated voltage DC	24.0 V
Max. switching current DC / cycles	40.0 A / 3,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

*in accordance with the Thermik test • Specifications relating to part applications (on the part of the buyer) which deviate from our standards are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of Thermik products for such applications falls upon the user. • Slight deviations are possible in terms of dimensions/values, depending on the embodiment of the product. • We reserve the right to make technical changes in the course of further development. • Details concerning certain data, measurement methods, applications, approvals, etc. can be supplied upon request.

P06

www.thermik.de/en/data/P06

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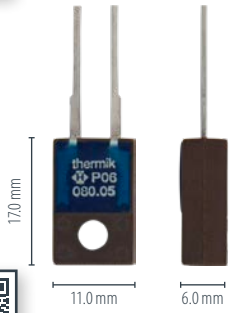

Type: Normally closed; resets automatically; with connection pins; with epoxy; fully insulated in the attachment housing

Nominal switching temperature (NST) in 5 °C increments		70 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 95 °C NST) -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 6.0 mm
Housing size (length / width)		17.0 mm / 11.0 mm
Length of the connection pins		18.0 mm
Fixing / Max. torque		3.0 Nm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		600 N
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operational voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	10.0 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	6.3 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	25.0 A / 100
Rated voltage DC	24.0 V
Max. switching current DC / cycles	40.0 A / 3,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s^2

H06

www.thermik.de/en/data/H06

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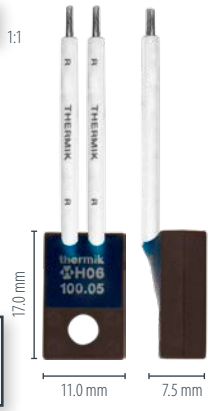

Type: Normally closed; resets automatically; with connector cables; with epoxy; fully insulated in the attachment housing

Nominal switching temperature (NST) in 5 °C increments		70 °C – 200 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 95 °C NST) -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 7.5 mm
Housing size (length / width)		17.0 mm / 11.0 mm
Fixing/Max. torque		3.0 Nm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 0.75 mm^2 / AWG18
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operational voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	10.0 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	6.3 A / 10,000
Max. switching current AC cos φ = 1.0 / cycles	25.0 A / 100
Rated voltage DC	24.0 V
Max. switching current DC / cycles	40.0 A / 3,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s^2

V06

www.thermik.de/en/data/V06

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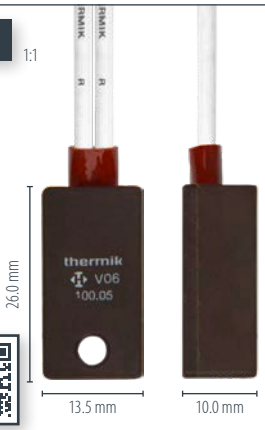
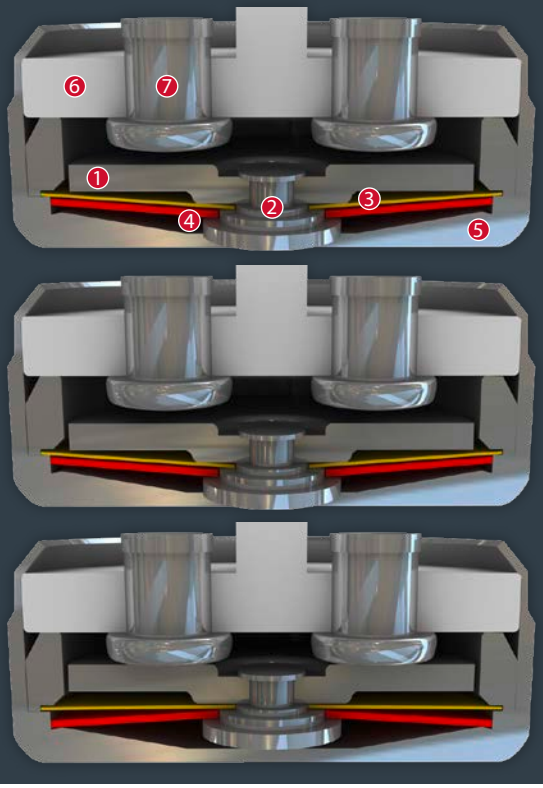


Type: Normally closed; resets automatically; with connector cables and double-insulated in the attachment housing

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 95 °C NST) -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 10.0 mm
Housing size (length / width)		26.0 mm / 13.5 mm
Fixing/Max. torque		2.5 Nm
Resistance to impregnation *		suitable
Suitable for installation in protection class		II
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 0.5 mm^2 / AWG20
Available approvals (please state)		IEC; ENEC; VDE; CQC UL; CSA

Operational voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
Rated voltage AC	250.0 V (VDE)
Rated current AC cos Φ = 1.0 / cycles	10.0 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	6.3 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	25.0 A / 100
Rated voltage DC	24.0 V
Max. switching current DC / cycles	40.0 A / 3,000
High voltage resistance	3.75 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s^2

Type series 08



Construction and function

Switchgear consisting of a mobile and circular contact bridge (1), a contact bearing pin (2), a spring snap-in disc (3) and a bimetallic disc (4) which is riveted into one another, undetachable and fixed in a positive lock and self-aligning between a non-conductive floor of a housing (5) and an insulating ceramic bearing (6) with two integrated stationary contacts (7) as electrodes. At the same time, the switchgear is initially held open by the spring snap-in disc (3) with the contact bridge (1) acting as a transfer element for electric current after the switching process) which is fastened between a supporting collar and a circumferential ring. As such, the bimetallic disc (4) underlying it, that is also stuck out from the contact bearing pin (2), can continuously work (exposed) by mechanical loads without the distance between the contact surfaces (defined by the spring snap-in disc (3)) diminishing. As soon as the bimetallic disc (4) reaches its rated switching temperature, it effectively springs against the throw force of the spring snap-in disc (3) into its inverted position. The contacts (7) are abruptly closed. The temperature will now fall. The bimetallic disc (4) will only snap back upon reaching a defined spring back temperature and the contacts will be abruptly opened again. As a result of the dimensioning of the contact bearing pin (2), an easy, circular rotation of the circle-shaped contact bridge (1) is enabled with every switch so that transfer resistances remain constantly below the minimum limit after many switch cycles and the long term stability is sustained even under high levels of stress.

C08

1:1

Type: Normally open; resets automatically; with connector cables; with epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 95 °C NST) -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 6.5 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 0.75 mm² / AWG18
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	10.0 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	6.3 A / 10,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

S08

1:1

Type: Normally open; resets automatically; with connector cables; with epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35° C (≤ 95 °C NST) -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 7.0 mm
Diameter		10.5 mm
Length of the insulation cap		17.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 0.75 mm² / AWG18
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	10.0 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	6.3 A / 10,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

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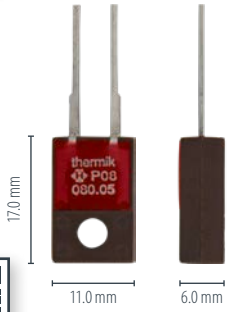
L08

Type: Normally open; resets automatically; with connector cables; with epoxy; fully insulated in a screw on housing

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 95 °C NST) -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 5.0 mm
Diameter		10.0 mm
Thread / Length		M4 x 5.0 mm
Width across flats / Max. torque		10.0 mm / 2 Nm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 0.75 mm² / AWG18

Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC
Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	10.0 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	6.3 A / 10,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

P08

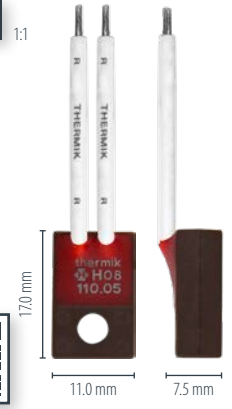


Type: Normally open; resets automatically; with connection pins; with epoxy; fully insulated in the attachment housing

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 95 °C NST) -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 6.0 mm
Housing size (length / width)		17.0 mm / 11.0 mm
Length of the connection pins		18.0 mm
Fixing/Max. torque		3.0 Nm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 0.75 mm² / AWG18

Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC
Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	10.0 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	6.3 A / 10,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

H08



Type: Normally open; resets automatically; with connector cables; with epoxy; fully insulated in the attachment housing

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 95 °C NST) -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 7.5 mm
Housing size (length / width)		17.0 mm / 11.0 mm
Fixing / Max. torque		3.0 Nm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 0.75 mm² / AWG18
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	10.0 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	6.3 A / 10,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

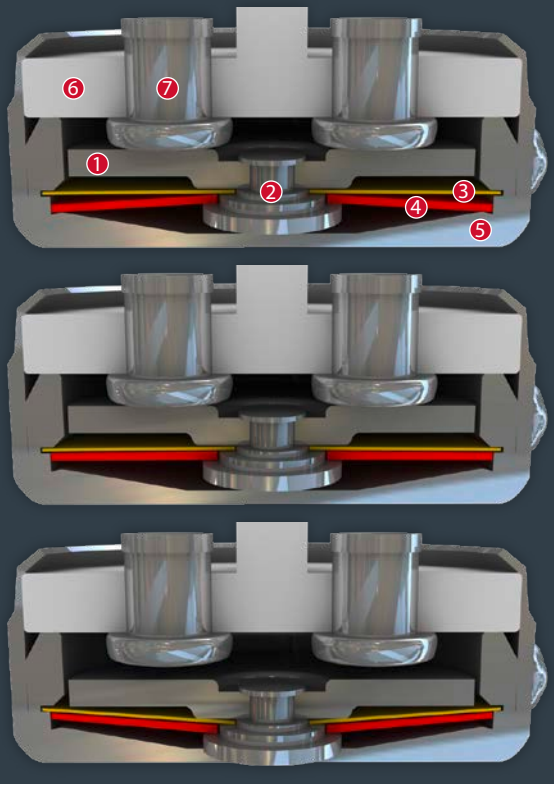
V08

Type: Normally open; resets automatically; with connector cables and double-insulated in the attachment housing

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±5 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 95 °C NST) -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST)
	VDE	≥ 35 °C
Installation height		from 10.0 mm
Housing size (length / width)		26.0 mm / 13.5 mm
Fixing / Max. torque		2.5 Nm
Resistance to impregnation *		suitable
Suitable for installation in protection class		II
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 0.5 mm² / AWG20
Available approvals (please state)		IEC; ENEC; VDE; CQC

Operating voltage range AC	up until 500.0 V AC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	10.0 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	6.3 A / 10,000
High voltage resistance	3.75 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

Type series Y6



Construction and function

Switchgear consisting of a mobile and circumferential contact bridge (1), a contact bearing pin (2), a spring snap-in disc (3) and a bimetallic disc (4) which is riveted into one another, undetachable and fixed in a positive lock and self-aligning between the floor of a conductive housing (5) and an insulating ceramic bearing (6) with two integrated stationary contacts (7) as electrodes. At the same time, the switchgear is supported by the spring snap-in disc (3) with the contact bridge (1) acting as a transfer element for electric current which is held between a supporting collar and a circumferential ring. As such, the bimetallic disc (4) underlying it, that is also stuck out from the contact bearing pin (2), can continuously work (exposed) by mechanical loads without the contact pressure defined by the spring snap-in disc (3) diminishing. As soon as the bimetallic disc (4) reaches its rated switching temperature, it effectively springs against the throw force of the spring snap-in disc (3) into its inverted position. The contacts are abruptly opened. The temperature will now fall. The bimetallic disc (4) will only snap back upon reaching a defined reset temperature and the contacts will be abruptly closed again. As the contact bearing pin (2) is appropriately dimensioned, an easy, circular rotation of the circle-shaped contact bridge (1) is enabled with every switch so that transfer resistances remain constantly below the minimum limit after many switch cycles and the long term stability is sustained even under high levels of stress. Through an additional outer connection to the switch housing, the Thermal protectors can be operated in a threephase arrangement. In this case the current flow is interrupted during operation through each phase.

CY6

www.thermik.de/en/data/CY6

1:1

Type: Three-pole (normally closed) for three phase AC current use in the star point; resets automatically; with epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments	70 °C – 180 °C
Tolerance (standard)	±5 K
Reverse Switch Temperature UL (defined RST is possible at the customer's request)	≥ 35 °C (≤ 95 °C NST) -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST)
Installation height	from 6.5 mm
Diameter	9.0 mm
Resistance to impregnation *	suitable
Suitable for installation in protection class	I
Pressure resistance to the switch housing *	600 N
Standard connection	Lead wire 0.5 mm² / AWG20
Available approvals (please state)	UL; CSA; CQC

Operational voltage range AC / DC	up until 440.0 V AC
Rated voltage AC	3x 440.0 V 50 / 60 Hz
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

SY6

www.thermik.de/en/data/SY6

1:1

Type: Three-pole (normally closed) for three phase AC current use in the star point; resets automatically; with epoxy; insulation: Mylar®-Nomex®

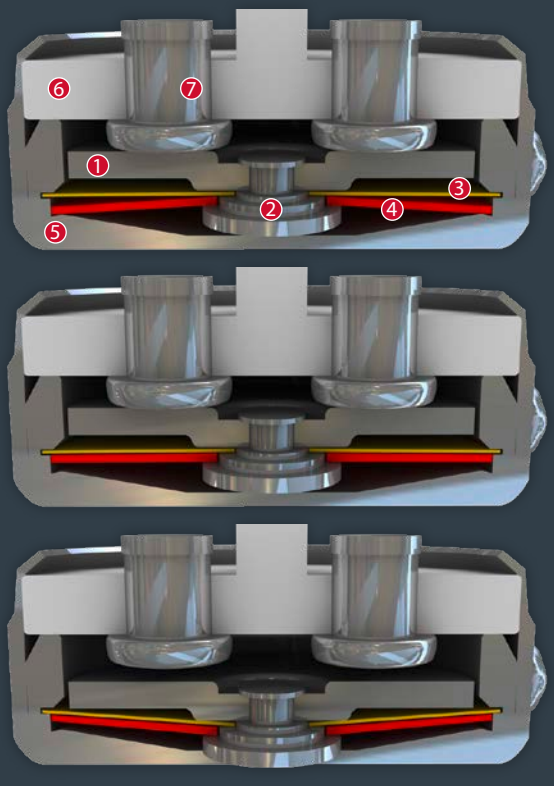
Nominal switching temperature (NST) in 5 °C increments	70 °C – 180 °C
Tolerance (standard)	±5 K
Reverse Switch Temperature UL (defined RST is possible at the customer's request)	≥ 35 °C (≤ 95 °C NST) -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST)
Installation height	from 7.0 mm
Diameter	10.5 mm
Length of the insulation cap	16.0 mm
Resistance to impregnation *	suitable
Suitable for installation in protection class	I + II
Pressure resistance to the switch housing *	600 N
Standard connection	Lead wire 0.5 mm² / AWG20
Available approvals (please state)	UL; CSA; CQC

Operational voltage range AC / DC	up until 440.0 V AC
Rated voltage AC	3x 440.0 V 50 / 60 Hz
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	6.3 A / 3,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

*in accordance with the Thermik test • Specifications relating to part applications (on the part of the buyer) which deviate from our standards are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of Thermik products for such applications falls upon the user. • Slight deviations are possible in terms of dimensions/values, depending on the embodiment of the product. • We reserve the right to make technical changes in the course of further development. • Details concerning certain data, measurement methods, applications, approvals, etc. can be supplied upon request.

The listed products are an extract from our standard range. Other versions and customised manufacturing are available upon request.

Type series YH



Construction and function

Switchgear consisting of a mobile and circumferential contact bridge (1), a contact bearing pin (2), a spring snap-in disc (3) and a bimetallic disc (4) which is riveted into one another, undetachable and fixed in a positive lock and self-aligning between the floor of a conductive housing (5) and an insulating ceramic bearing (6) with two integrated stationary contacts (7) as electrodes. At the same time, the switchgear is supported by the spring snap-in disc (3) with the contact bridge (1) acting as a transfer element for electric current which is held between a supporting collar and a circumferential ring. As such, the bimetallic disc (4) underlying it, that is also stuck out from the contact bearing pin (2), can continuously work (exposed) by mechanical loads without the contact pressure defined by the spring snap-in disc (3) diminishing. As soon as the bimetallic disc (4) reaches its rated switching temperature, it effectively springs against the throw force of the spring snap-in disc (3) into its inverted position. The contacts are abruptly opened. The temperature will now fall. The bimetallic disc (4) will only snap back upon reaching a defined reset temperature and the contacts will be abruptly closed again. As the contact bearing pin (2) is appropriately dimensioned, an easy, circular rotation of the circle-shaped contact bridge (1) is enabled with every switch so that transfer resistances remain constantly below the minimum limit after many switch cycles and the long term stability is sustained even under high levels of stress. Through an additional outer connection to the switch housing, the Thermal protectors can be operated in a threephase arrangement. In this case the current flow is interrupted during operation through each phase.

CYH

www.thermik.de/en/data/CYH

1:1

Type: Three-pole (normally closed) for three phase AC current use in the star point; resets automatically; with epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±10 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 95 °C NST) -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST)
Installation height		from 6.5 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 1.0 mm² / AWG18

Operating voltage range AC	up until 440.0 V AC
Rated voltage AC	3x 440.0 V 50 / 60 Hz
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	12.0 A / 3,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

SYH

www.thermik.de/en/data/SYH

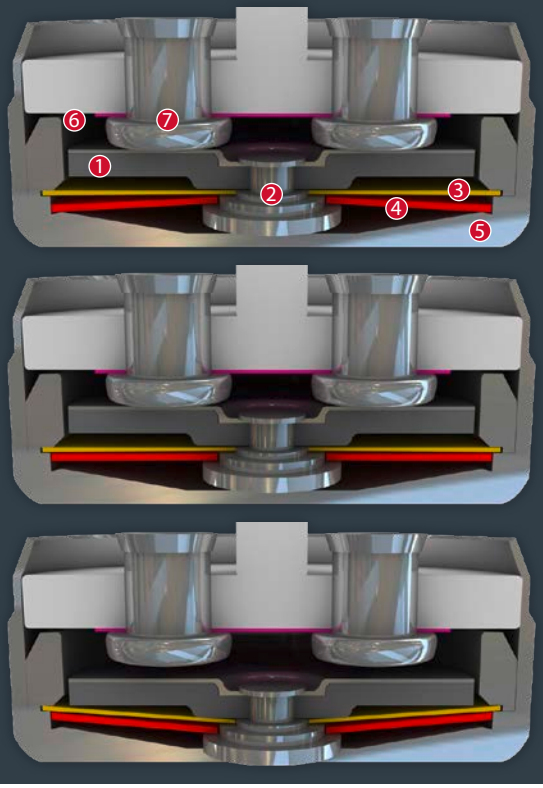
1:1

Type: Three-pole (normally closed) for three phase AC current use in the star point; resets automatically; with epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±10 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 95 °C NST) -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST)
Installation height		from 7.0 mm
Diameter		10.5 mm
Length of the insulation cap		16.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 1.0 mm² / AWG18

Operating voltage range AC	up until 440.0 V AC
Rated voltage AC	3x 440.0 V 50 / 60 Hz
Rated current AC cos Φ = 1.0 / cycles	2.5 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	12.0 A / 3,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

Type series R6



Construction and function

Switchgear consisting of a mobile and circumferential contact bridge (1), a contact bearing pin (2), a spring snap-in disc (3) and a bimetallic disc (4) which is riveted into one another, undetachable and fixed in a positive lock and self-aligning between a non-conductive floor of a housing (5) and an insulating ceramic bearing (6) with two integrated stationary contacts (7) as electrodes. At the same time, the switchgear is supported by the spring snap-in disc (3) with the contact bridge (1) acting as a transfer element for electric current which is held between a supporting collar and a circumferential ring. As such, the bimetallic disc (4) underlying it, that is also stuck out from the contact bearing pin (2), can continuously work (exposed) by mechanical loads without the contact pressure defined by the spring snap-in disc (3) diminishing. As soon as the bimetallic disc (4) reaches its rated switching temperature, it effectively springs against the throw force of the spring snap-in disc (3) into its inverted position. The contacts (7) are abruptly opened. The resistance ceramic (6) switched in parallel now sustains the operating voltage and deploys a defined electrical heating output on the switchgear regardless of the ambient temperature and permanently sustains it above its springback temperature so that the switchgear cannot reset back. The contacts remain open. The Thermal protectors can only cool down again and switch to the original closed state when the external operating voltage is no longer applied and/or disconnection from the mains.

CR6

www.thermik.de/en/data/CR6

1:1

Type: Normally closed; does not reset automatically; voltage applied; with connector cables; with epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance NST ≤ 140 °C		±5 K
Tolerance NST > 140 °C		±10 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	VDE	≥ 35 °C ≥ 35 °C
Installation height		from 6.5 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 0.75 mm² / AWG18
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operational voltage range AC / DC	up until 250.0 V AC
Rated voltage AC	230.0 V (VDE) 250.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	10.0 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	6.3 A / 1,000
Max. switching current AC cos Φ = 1.0 / cycles	25.0 A / 1,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

SR6

www.thermik.de/en/data/SR6

1:1

Type: Normally closed; does not reset automatically; voltage applied; with connector cables; with epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance NST ≤ 140 °C		±5 K
Tolerance NST > 140 °C		±10 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	VDE	≥ 35 °C ≥ 35 °C
Installation height		from 7.0 mm
Diameter		10.7 mm
Length of the insulation cap		17.5 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 0.75 mm² / AWG18
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA; CQC

Operational voltage range AC / DC	up until 250.0 V AC
Rated voltage AC	230.0 V (VDE) 250.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	10.0 A / 1,000
Rated current AC cos Φ = 0.6 / cycles	6.3 A / 1,000
Max. switching current AC cos Φ = 1.0 / cycles	25.0 A / 1,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

*in accordance with the Thermik test • Specifications relating to part applications (on the part of the buyer) which deviate from our standards are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of Thermik products for such applications falls upon the user. • Slight deviations are possible in terms of dimensions/values, depending on the embodiment of the product. • We reserve the right to make technical changes in the course of further development. • Details concerning certain data, measurement methods, applications, approvals, etc. can be supplied upon request.

Thermal Protectors

For the following Thermik thermal protector Product Series, frequent customer-requested variations are shown to the right:

H6 **RH**

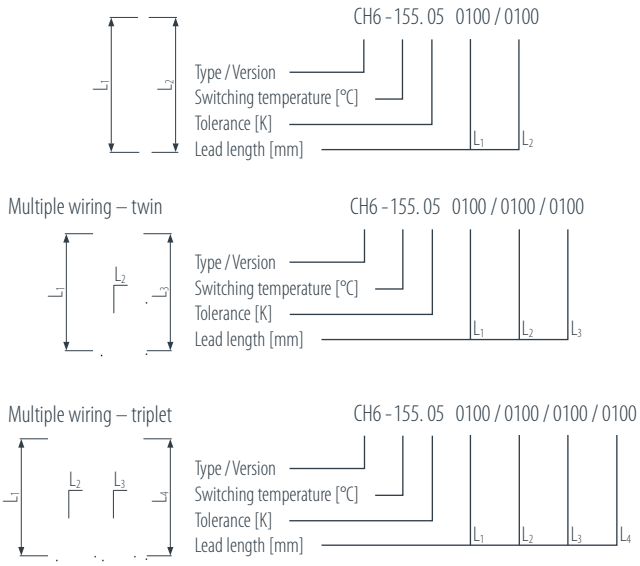
Thermik creates endless customized modifications within this Product Series, including customer-application solutions. Thermik's patented engineering in our standard configurations of this Product Series extends to all our custom solutions.

Our rigorous quality processes ensure precision-engineering consistency – in design and manufacture – plant-to-plant, worldwide – and on each order, for both standard and custom specifications.

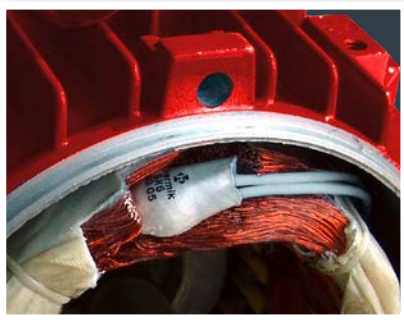
By design, Thermik's selection of materials, and their composition, requires only the highest-quality materials enter Thermik's supply chain and are used in Thermik products. We source for quality and reliability, over price. From experience, the quality of our precision engineering products depends on it!

Due to their superior electromechanical properties, the use of precious metals is necessary for Thermik products. Thermik's Engineering Center of Excellence sources locally, within Europe, to assure our quality standards, and further assure our compliance with the international "Conflict-Free Minerals Directive" for special metals! Thermik's eco-friendly products also comply fully with EU Directives on RoHS and REACH.

Ordering Introducions H6



Examples of typical applications



VDE in accordance with EN 60730

CQC in accordance with GB 14536

UL in accordance with UL 2111 / UL 873 UL 60730

CSA in accordance with C22.2

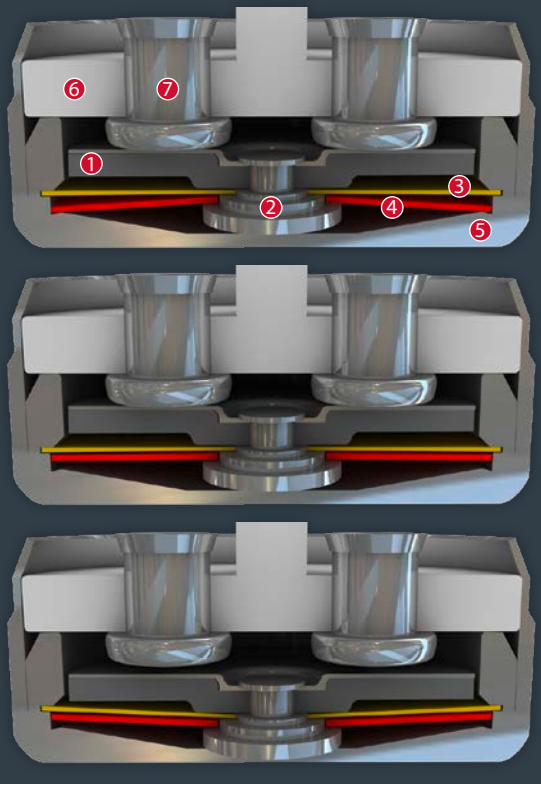
CB report in accordance with IEC 0730

ENEC in accordance with EN 60730

CMJ in accordance with JET

Thermik products are in accordance with the applicable EU directives / specifications, as amended.

Type series H6



Construction and function

Switchgear consisting of a mobile and circular contact bridge (1), a contact bearing pin (2), a spring snap-in disc (3) and a bimetallic disc (4) which is riveted into one another, undetachable and fixed in a positive lock and self-aligning between a non-conductive floor of a housing (5) and an insulating ceramic bearing (6) with two integrated stationary contacts (7). At the same time, the switchgear is supported by the spring snap-in disc (3) with the contact bridge (1) acting as a transfer element for electric current which is held between a supporting collar and a circumferential ring. As such, the bimetallic disc (4) underlying it, that is also stuck out from the contact bearing pin (2), can continuously work (exposed) by mechanical loads without the contact pressure defined by the spring snap-in disc (3) diminishing. As soon as the bimetallic disc (4) reaches its rated switching temperature, it effectively springs against the throw force of the spring snap-in disc (3) into its inverted position. The contacts are abrubtly opened. The temperature will now fall. The bimetallic disc (4) will only snap back upon reaching a defined spring back temperature and the contacts are abruptly closed again. As a result of the dimensioning of the contact bearing pin (2), an easy, circular rotation of the circle-shaped contact bridge is enabled with every switch so that transfer resistances remain constantly below the minimum limit after many switch cycles and the long term stability is sustained even under high levels of stress.

CH6

www.thermik.de/en/data/CR6

1:1

Type: Normally closed; resets automatically; with connector cables; with epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		70 °C – 200 °C
Tolerance NST ≤ 140 °C		±5 K
Tolerance NST > 140 °C		±10 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 130 °C NST -85 K ± 15 K (≥ 135 °C ≤ 190 °C NST) -90 K ± 15 K (≥ 195 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 6.6 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 1.0 mm² / AWG18
Available approvals (please state)		IEC; VDE; UL; CQC; CMJ; ENEC

Operating voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	13.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	9.0 A / 10,000
Rated current AC cos Φ = 1.0 / cycles	35.0 A* / 2,000 42.0 A / 300
Rated voltage DC	24.0 V (VDE, UL)
Max. switching current DC / cycles	60.0 A / 3,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

SH6

www.thermik.de/en/data/SR6

1:1

Type: Normally closed; resets automatically; with connector cables; with epoxy; insulation: Mylar®-Nomex®

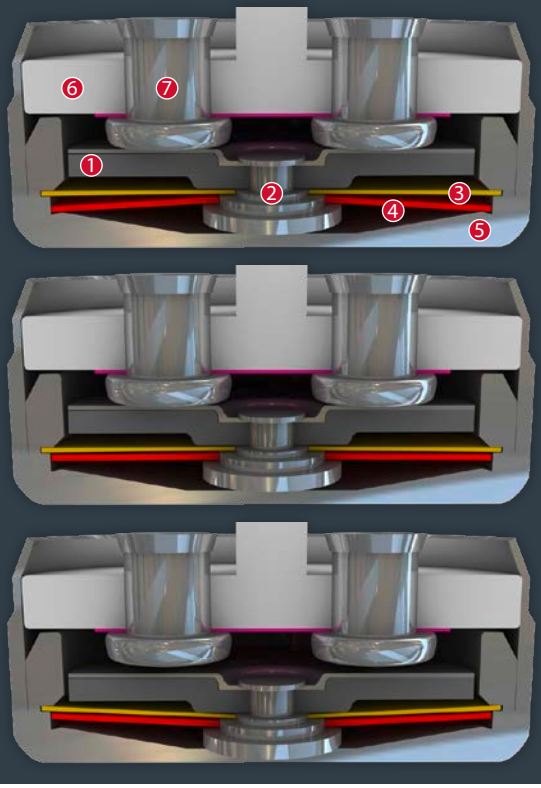
Nominal switching temperature (NST) in 5 °C increments		70 °C – 200 °C
Tolerance NST ≤ 140 °C		±5 K
Tolerance NST > 140 °C		±10 K
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL	≥ 35 °C (≤ 130 °C NST -85 K ± 15 K (≥ 135 °C ≤ 190 °C NST) -90 K ± 15 K (≥ 195 °C ≤ 200 °C NST)
	VDE	≥ 35 °C
Installation height		from 7.0 mm
Diameter		10.7 mm
Length of the insulation cap		17.5 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 1.0 mm² / AWG18
Available approvals (please state)		IEC; VDE; UL; CQC; CMJ; ENEC

Operating voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	13.5 A / 10,000
Rated current AC cos Φ = 0.6 / cycles	9.0 A / 10,000
Rated current AC cos Φ = 1.0 / cycles	35.0 A* / 2,000 42.0 A / 300
Rated voltage DC	24.0 V (VDE, UL)
Max. switching current DC / cycles	60.0 A / 3,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

*in accordance with the Thermik test • Specifications relating to part applications (on the part of the buyer) which deviate from our standards are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of Thermik products for such applications falls upon the user. • Slight deviations are possible in terms of dimensions/values, depending on the embodiment of the product. • We reserve the right to make technical changes in the course of further development. • Details concerning certain data, measurement methods, applications, approvals, etc. can be supplied upon request.

The listed products are an extract from our standard range. Other versions and customised manufacturing are available upon request.

Type series RH



Construction and function

Switchgear consisting of a mobile and circumferential contact bridge (1), a contact bearing pin (2), a spring snap-in disc (3) and a bimetallic disc (4) which is riveted into one another, undetachable and fixed in a positive lock and self-aligning between a non-conductive floor of a housing (5) and an insulating ceramic bearing (6) with two integrated stationary contacts (7). At the same time, the switchgear is supported by the spring snap-in disc (3) with the contact bridge (1) acting as a transfer element for electric current which is held between a supporting collar and a circumferential ring. As such, the bimetallic disc (4) underlying it, that is also stuck out from the contact bearing pin (2), can continuously work (exposed) by mechanical loads without the contact pressure defined by the spring snap-in disc (3) diminishing. As soon as the bimetallic disc (4) reaches its rated switching temperature, it effectively springs against the throw force of the spring snap-in disc (3) into its inverted position. The contacts (7) are abruptly opened. The resistance ceramic (6) switched in parallel now sustains the operating voltage and deploys a defined electrical heating output on the switchgear regardless of the ambient temperature and permanently sustains it above its springback temperature so that the switchgear cannot reset back. The contacts (7) remain open. The Thermal protectors can only cool down again and switch to the original closed state when the external operating voltage is no longer applied and/or disconnection from the mains.

CRH

www.thermik.de/en/data/CRH

1:1

Type: Normally closed; does not reset automatically; voltage applied; with connector cables; with epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance NST ≤ 140 °C		±5 K
Tolerance NST > 140 °C		±10 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 6.5 mm
Diameter		9.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 1.0 mm² / AWG18
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA

Operating voltage range AC	up until 250.0 V AC
Rated voltage AC	120.0 V / 230.0 V (VDE) 250.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	13.5 A / 300
Rated current AC cos Φ = 0.6 / cycles	9.0 A / 300
Max. switching current AC cos Φ = 1.0 / cycles	42.0 A / 300
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

SRH

www.thermik.de/en/data/SRH

1:1

Type: Normally closed; does not reset automatically; voltage applied; with connector cables; with epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance NST ≤ 140 °C		±5 K
Tolerance NST > 140 °C		±10 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 7.0 mm
Diameter		10.7 mm
Length of the insulation cap		17.5 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 1.0 mm² / AWG18
Available approvals (please state)		IEC; ENEC; VDE; UL; CSA

Operating voltage range AC	up until 250.0 V AC
Rated voltage AC	120.0 V / 230.0 V (VDE) 250.0 V (UL)
Rated current AC cos Φ = 1.0 / cycles	13.5 A / 300
Rated current AC cos Φ = 0.6 / cycles	9.0 A / 300
Max. switching current AC cos Φ = 1.0 / cycles	42.0 A / 300
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

Thermal Protectors

For the following Thermik thermal protector Product Series, frequent customer-requested variations are shown to the right:

H5 **XO** **XH**

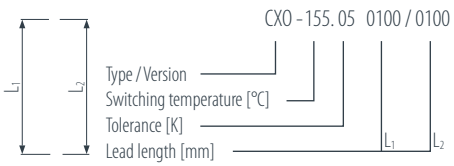
Thermik creates endless customized modifications within this Product Series, including customer-application solutions. Thermik's patented engineering in our standard configurations of this Product Series extends to all our custom solutions.

Our rigorous quality processes ensure precision-engineering consistency – in design and manufacture – plant-to-plant, worldwide – and on each order, for both standard and custom specifications.

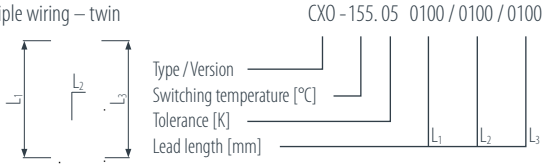
By design, Thermik's selection of materials, and their composition, requires only the highest-quality materials enter Thermik's supply chain and are used in Thermik products. We source for quality and reliability, over price. From experience, the quality of our precision engineering products depends on it!

Due to their superior electromechanical properties, the use of precious metals is necessary for Thermik products. Thermik's Engineering Center of Excellence sources locally, within Europe, to assure our quality standards, and further assure our compliance with the international "Conflict-Free Minerals Directive" for special metals! Thermik's eco-friendly products also comply fully with EU Directives on RoHS and REACH.

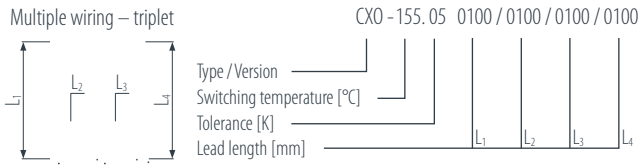
Ordering instructions:



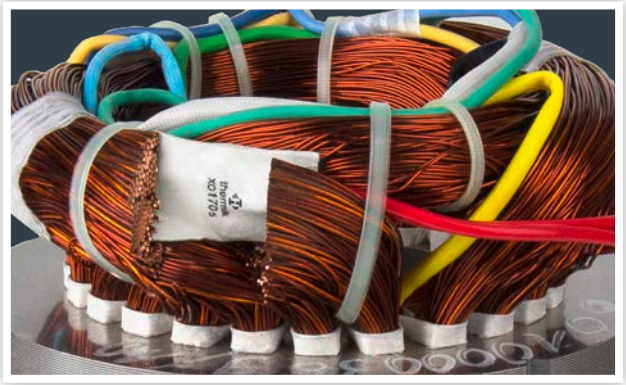
Multiple wiring – twin

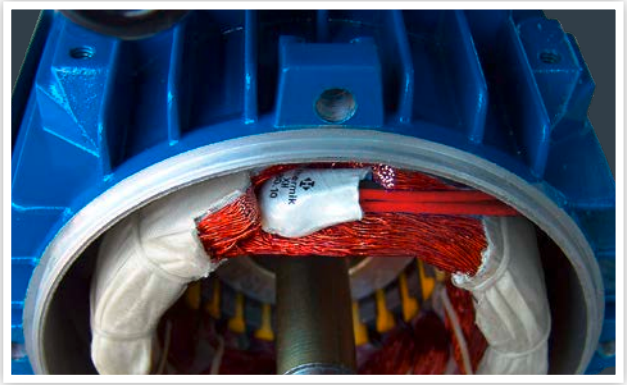


Multiple wiring – triplet



Examples of typical applications





VDE in accordance with EN 60730

CQC in accordance with GB 14536

UL in accordance with UL 2111 / UL 873 UL 60730

CSA in accordance with C22.2

CB report in accordance with IEC 0730

ENEC in accordance with EN 60730

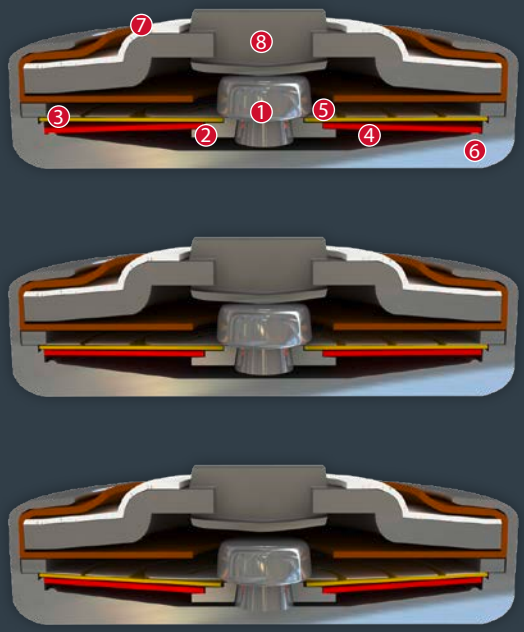
CMJ in accordance with JET

Thermik products are in accordance with the applicable EU directives / specifications, as amended.

*in accordance with the Thermik test • Specifications relating to part applications (on the part of the buyer) which deviate from our standards are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of Thermik products for such applications falls upon the user. • Slight deviations are possible in terms of dimensions/values, depending on the embodiment of the product. • We reserve the right to make technical changes in the course of further development. • Details concerning certain data, measurement methods, applications, approvals, etc. can be supplied upon request.

The listed products are an extract from our standard range. Other versions and customised manufacturing are available upon request.

Type series H5



Construction and function

Switchgear consisting of a movable silver contact (1), a contact bearing pin (2), a spring snap-in disc (3), a bimetallic disc (4) and a contact tongue (5) which is riveted into one another, undetachable and fixed in a positive lock and self-aligning between a conductive, heat transferring housing (6) and a contact cap (7) made of steel that is insulated from it, plus a stationary countercontact (8). At the same time, the switchgear is supported by the contact tongue (5) acting as a transfer element for electric current which is held between a supporting collar and a circumferential ring. As such, the switchgear underlying it, that is also stuck out from the movable contact (1), can continuously work (exposed) by mechanical loads without the contact pressure defined by the spring snap-in disc (3) diminishing. As soon as the bimetallic disc (4) reaches its rated switching temperature, it effectively springs against the throw force of the spring snap-in disc (3) into its inverted position. The contact is abruptly opened. The temperature will now fall. The bimetallic disc (4) will only snap back upon reaching a defined spring back temperature and the contact is abruptly closed again.

CH5

www.thermik.de/en/data/CH5

1:1

Type: Normally closed; resets automatically; with connector cables; without epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		80 °C – 180 °C
Tolerance (standard)		±10 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 5.0 mm
Diameter		11.0 mm
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		300 N
Standard connection		1.0 mm² / AWG18
Available approvals (please state)		IEC; VDE; UL; CQC

Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Rated voltage AC	250.0 V
Rated current AC cos Φ = 1.0 / cycles	30.0 A / 10,000
Rated current AC cos Φ = 1.0 / cycles	50.0 A / 3,000
Rated voltage DC	12.0 V
Max. switching current DC / cycles	60.0 A / 10,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	< 25 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

SH5

www.thermik.de/en/data/SH5

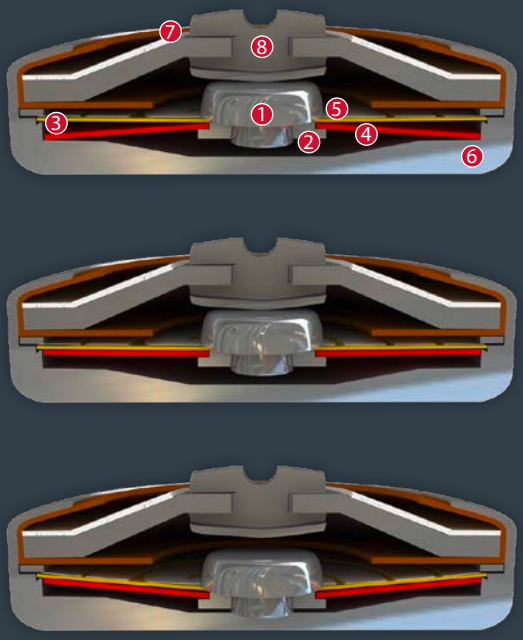
1:1

Type: Normally closed; resets automatically; with connector cables; without epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		80 °C – 180 °C
Tolerance (standard)		±10 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 6.0 mm
Diameter		from 11.7 mm
Length of the insulation cap		from 19.5 mm
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		300 N
Standard connection		1.0 mm² / AWG18
Available approvals (please state)		IEC; VDE; UL; CQC
Also available in a resistant impregnated version		

Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Rated voltage AC	250.0 V
Rated current AC cos Φ = 1.0 / cycles	30.0 A / 10,000
Rated current AC cos Φ = 1.0 / cycles	50.0 A / 3,000
Rated voltage DC	12.0 V
Max. switching current DC / cycles	60.0 A / 10,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	< 25 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

Type series XO



Construction and function

Switchgear consisting of a movable silver contact (1), a contact bearing pin (2), a spring snap-in disc (3), a bimetallic disc (4) and a contact tongue (5) which is riveted into one another, undetachable and fixed in a positive lock and self-aligning between a conductive, heat transferring housing (6) and a contact cap (7) made of steel that is insulated from it, plus a stationary countercontact (8). At the same time, the switchgear is supported by the contact tongue (5) acting as a transfer element for electric current which is held between a supporting collar and a circumferential ring. As such, the switchgear underlying it, that is also stuck out from the movable contact (1), can continuously work (exposed) by mechanical loads without the contact pressure defined by the spring snap-in disc (3) diminishing. As soon as the bimetallic disc (4) reaches its rated switching temperature, it effectively springs against the throw force of the spring snap-in disc (3) into its inverted position. The contact is abruptly opened. The temperature will now fall. The bimetallic disc (4) will only snap back upon reaching a defined spring back temperature and the contact is abruptly closed again.

CXO

www.thermik.de/en/data/CXO

1:1

Type: Normally closed; resets automatically; with connector cables; with epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±10 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 5.9 mm
Diameter		17.1 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 1.75 mm² / AWG14
Available approvals (please state)		IEC; VDE; UL; CQC

Operating voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Rated voltage AC	250.0 V
Rated current AC	25.0 A
Max. switching current AC cos Φ = 1.0 / cycles	50.0 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	63.0 A / 3,000
Rated voltage DC	12.0 V
Max. switching current DC / cycles	63.0 A / 10,000
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 5 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

SXO

www.thermik.de/en/data/SXO

1:1

Type: Normally closed; resets automatically; with connector cables; with epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments		70 °C – 180 °C
Tolerance (standard)		±10 K
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL	≥ 35 °C
	VDE	≥ 35 °C
Installation height		from 8.0 mm
Diameter		18.0 mm
Length of the insulation cap		35.0 mm
Resistance to impregnation *		suitable
Suitable for installation in protection class		I + II
Pressure resistance to the switch housing *		600 N
Standard connection		Lead wire 1.75 mm² / AWG14
Available approvals (please state)		IEC; VDE; UL; CQC

Operating voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Rated voltage AC	250.0 V
Rated current AC	25.0 A
Max. switching current AC cos Φ = 1.0 / cycles	50.0 A / 10,000
Max. switching current AC cos Φ = 1.0 / cycles	63.0 A / 3,000
Rated voltage DC	12.0 V
Max. switching current DC / cycles	63.0 A / 10,000
High voltage resistance	2.0 kV
Total bounce time	< 1 ms
Contact resistance (according to MIL-STD. R5757)	≤ 5 mΩ
Vibration resistance at 10 ... 60 Hz	100 m / s²

*in accordance with the Thermik test • Specifications relating to part applications (on the part of the buyer) which deviate from our standards are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of Thermik products for such applications falls upon the user. • Slight deviations are possible in terms of dimensions/values, depending on the embodiment of the product. • We reserve the right to make technical changes in the course of further development. • Details concerning certain data, measurement methods, applications, approvals, etc. can be supplied upon request.

The listed products are an extract from our standard range. Other versions and customised manufacturing are available upon request.

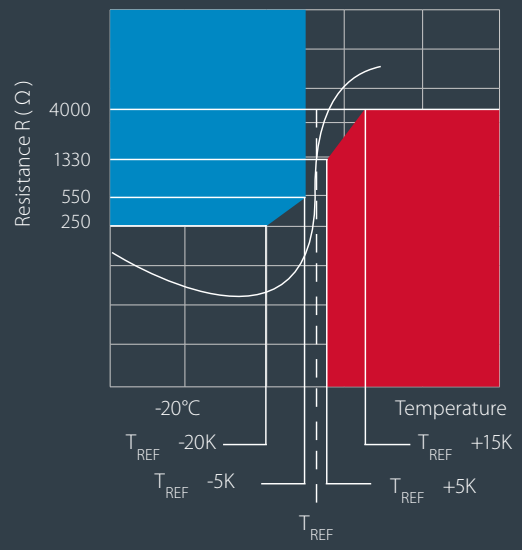
Type series PTC thermistors

Installation and functions

Where possible, the PTCs are to be inserted parallel to the coil. As a result, when shaping the coil ends, the mechanical stress of the PTCs is minimised. In so doing, the Mylar®-Nomex® shrink cap is highly suited to this purpose due to its mechanical stability (no cold flow in contrast to Teflon®). In connection with the miniature pill (Ø 1.9 mm) response times of 5 to 10 seconds (max.) are achieved depending on the version.

Thermik thermistors correspond to DIN VDE 0898-1-401:2016 and/or IEC60034-11:2004 and are characterised by high resistance to temperatures. Resistance increases greatly in the range of the rated response temperature. Via a trigger device, this change can be used to shut down the load current circuit. Electronic evaluations in are also possible in different applications.

Temperature resistance diagram and main parameters in accordance with DIN VDE 0898-1-401:2016 and IEC60034-11:2004



General characteristics

Temperature resistance diagram in accordance with IEC60034-11:2004, DIN VDE 0898-1-401:2016. Advantageous values: Rated response temperature T_{REF} 60 °C to 190 °C*, in each case in increments of 10 K.

Temperature range	Resistance	Measured voltage [V_{DC}]
-20 °C to T_{REF} -20 K	20 Ω to 250 Ω	≤ 2,5 V
Temperature range 90 °C - 160 °C		
T_{REF} -5 K	≤ 550 Ω	≤ 2,5 V
T_{REF} +5 K	≥ 1.330 Ω	≤ 2,5 V
T_{REF} +15 K	≥ 4.000 Ω	≤ 7,5 V pulsed

Dielectic strength of the insulation Ueff = 2.500 V

* These parameters relate to T_{REF} from 90 °C to 160 °C. Resistance values for T_{REF} < 90 °C and > 160 °C are available on request.

SNM

www.thermik.de/en/data/SNM

With connector cables; insulation Mylar®-Nomex®

Insulation material	Mylar®-Nomex®
Response temperature	60 °C – 190 °C
Operating voltage range	2.5 V DC – 24.0 V DC
max. permissible operating voltage	30.0 V DC
max. recommended sensor voltage	2.5 V DC – 7.5 V DC
High voltage resistance	2.5 kV
Length of the insulation cap	12.0 mm
Diameter	≤ 4.0 mm
Available approvals (please state)	UL; CSA

STM

www.thermik.de/en/data/STM

With connector cables; insulation PTFE

Insulation material	PTFE
Response temperature	60 °C – 190 °C
Operating voltage range	2.5 V DC – 24.0 V DC
max. permissible operating voltage	30.0 V DC
max. recommended sensor voltage	2.5 V DC – 7.5 V DC
High voltage resistance	2.5 kV
Length of the insulation cap	12.0 mm
Diameter	≤ 2.0 mm
Available approvals (please state)	UL; CSA

SKM

www.thermik.de/en/data/SKM

With connector cables; insulation PVDF (KYNAR®)

Insulation material	PVDF (KYNAR®)
Response temperature	60 °C – 190 °C
Operating voltage range	2.5 V DC – 24.0 V DC
max. permissible operating voltage	30.0 V DC
max. recommended sensor voltage	2.5 V DC – 7.5 V DC
High voltage resistance	2.5 kV
Length of the insulation cap	12.0 mm
Diameter	≤ 2.5 mm
Available approvals (please state)	UL; CSA

LTM

www.thermik.de/en/data/LTM

With connector cables; insulation in the screw on housing

Insulation material	Fully insulated aluminium housing
Response temperature	60 °C – 190 °C
Operating voltage range	2.5 V DC – 24.0 V DC
max. permissible operating voltage	30.0 V DC
max. recommended sensor voltage	2.5 V DC – 7.5 V DC
High voltage resistance	2.5 kV
Housing height	8.0 mm
Thread length	M 4 / 5.0 mm
Width across flats / Max. torque	10 / 2 Nm
Available approvals (please state)	UL; CSA

The listed products are an extract from our standard range. Other versions and customised manufacturing are available upon request.

SSM

www.thermik.de/en/data/SNM

With connector cables; insulation Mylar®-Nomex®

Insulation material	Mylar®-Nomex®
Response temperature	60 °C – 190 °C
Operating voltage range	2.5 V DC - 24.0 V DC
max. permissible operating voltage	30.0 V DC
max. recommended sensor voltage	2.5 V DC – 7.5 V DC
High voltage resistance	2.5 kV
Length of the insulation cap	16.0 mm
Diameter	≤ 4.0 mm
Available approvals (please state)	UL; CSA

TPR

www.thermik.de/en/data/TPR

With connector cables; insulation Epoxy

Insulation material	Epoxy
Response temperature	60 °C – 190 °C
Operating voltage range	2.5 V DC – 24.0 V DC
max. permissible operating voltage	30.0 V DC
max. recommended sensor voltage	2.5 V DC – 7.5 V DC
High voltage resistance	2.5 kV
Length of the crimp cable lug	max. 20.0 mm
Diameter	≤ 8.0 mm
Available approvals (please state)	UL; CSA

PTC thermistors

Thermik* PTC thermistors are used for temperature monitoring. They are optimally designed for direct installation into the windings of electric motors and transformers. When employed with compatible circuitry (electronic assemblies, heat sinks, etc.), Thermik PTC thermistors prevent overheating of the devices in which they are installed. We offer a selection of insulation sleeves, encasements and fastener-mountings to fit your specific application.

Thermik is one of the few suppliers of PTC thermistors who have the depth and knowledge of materials from specific experience in the manufacture of PTC ceramics, having invested extensively in this technology. Thermik PTC thermistors are engineered to be superior.

Customised designs

Design K - customised – variations/additions possible upon request:

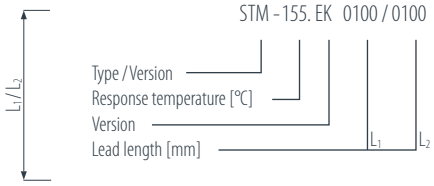
- Colour coding
- Cable insulation material or cable cross-section
- Cable-end assembly
- Connection technology
- Components used with UL-cable
- Dielectric strength of the insulation (e.g. suitable for installation in Class II applications)

Advantages

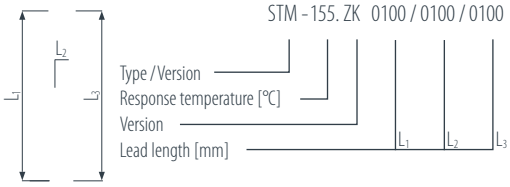
- Small dimensions + mechanical stability
- Fast response
- Temperature-resistance characteristics tailored to the application in question

Ordering instructions:

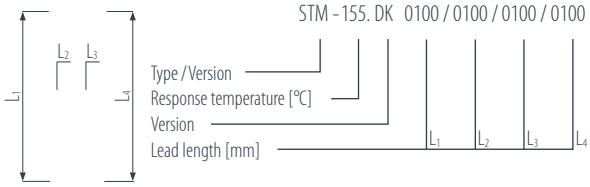
STM - 155. ES
STM - 155. EK 0100 / 0100



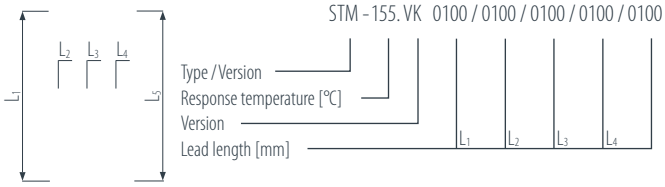
STM - 155. ZS
STM - 155. ZK 0100 / 0100 / 0100



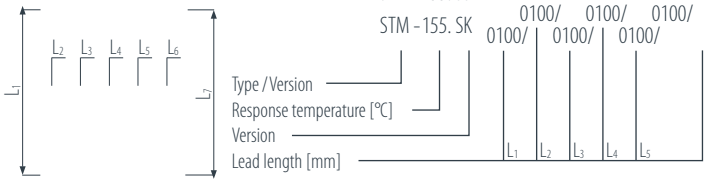
STM - 155. DS
STM - 155. DK 0100 / 0100 / 0100 / 0100



STM - 155. VS
STM - 155. VK 0100 / 0100 / 0100 / 0100 / 0100



STM - 155. SS
STM - 155. SK 0100/ 0100/ 0100/ 0100/ 0100/ 0100/



Version: ES: E-Single, S-Standard (520mm wire length)
EK: E-single, K-custom, Z-dual, D-triple, V-quad, S-sixfold

Colour-coding dependent on temperature according to DIN VDE V0898-1-401:2016 and IEC60034-11:2004

60	70	80	90	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	180	190
white	white	white	green	red	blue	brown	blue	grey	red	blue	red	white	white	black	blue	blue	blue	white	white	black
grey	brown	white	green	red	grey	brown	green	grey	green	blue	brown	blue	black	black	black	red	brown	green	red	brown

* normal trade description including motor protection sensors, PTC thermistors, PTC sensors, PTCs, temperature sensors, etc.

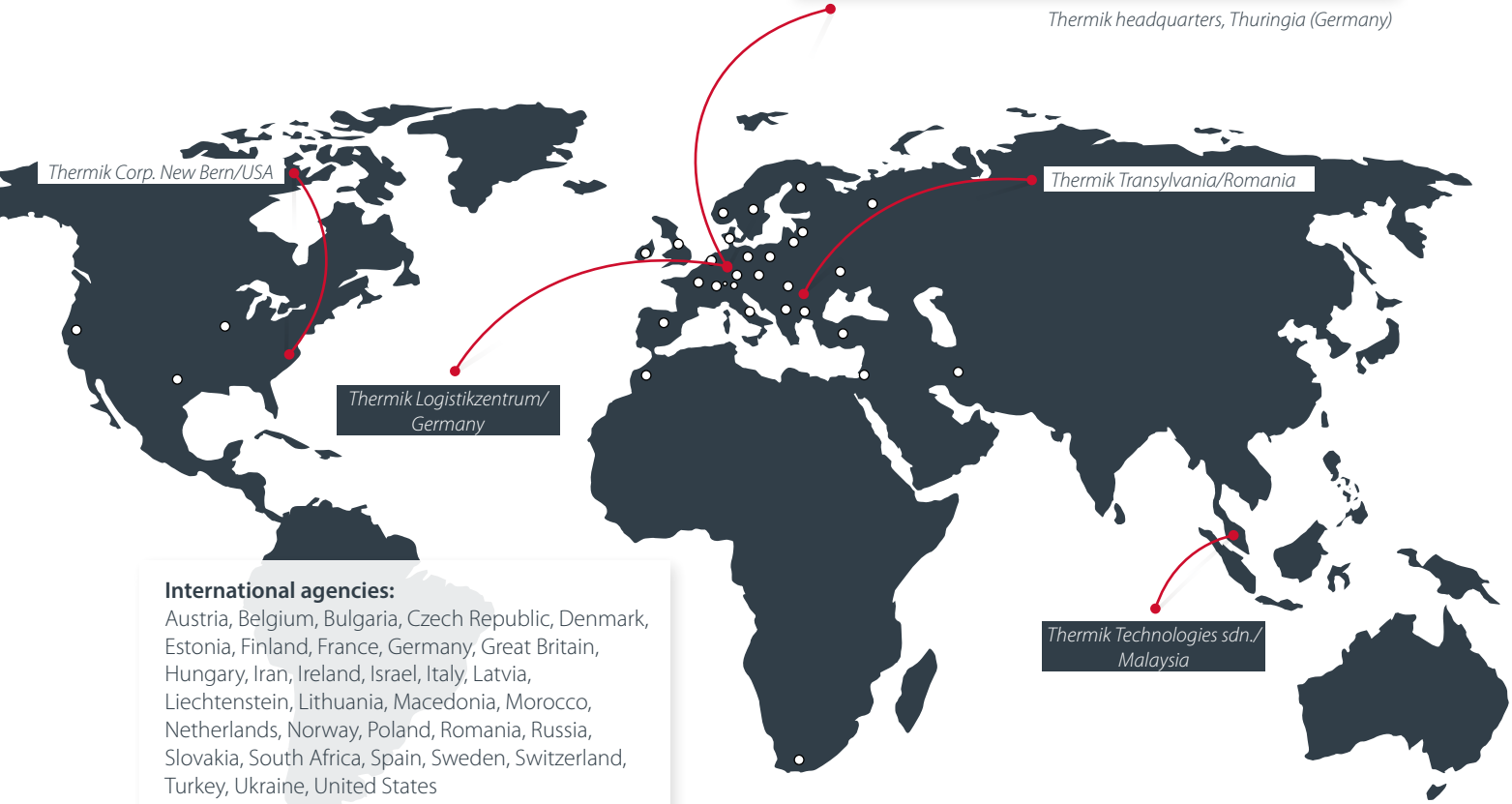
Customised solutions

Thermik has been the direct development supplier and innovation partner for numerous high-profile market leaders for decades now. It is no surprise therefore that Thermik also has the world's largest range of customer-centric solutions for thermal protector applications in structural components.

Production plants and agencies around the world

Thermik runs an internationally oriented system of production and logistics. Four plants with over 17,000 square metres of production area and over 20 contracted warehouse distributors worldwide ensure the constant availability of our branded items. **Thermik products are cheapest when purchased directly from Thermik**. Expert product advice is available if required (all customer advisers are graduate engineers) in all the main languages used in international business. In addition, however, there is also the option of purchasing our products through a network of distribution centres from our authorised agents. **Professional advice and excellent logistics – this is to which Thermik also attaches great importance!**

Thermik headquarters, Thuringia (Germany)



International agencies:
Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Hungary, Iran, Ireland, Israel, Italy, Latvia, Liechtenstein, Lithuania, Macedonia, Morocco, Netherlands, Norway, Poland, Romania, Russia, Slovakia, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine, United States

Thermik in international markets

Many of our partners purchase Thermik products directly from stock. **Whether it's via us or our international agents: it is the customer himself who decides.** Similarly, the extent to which the customer wishes to be supported by one of our local representatives, by ourselves or by both, is also his choice.

It is important for us that can experience our customer support and service at any time and at any location you want. Through our agencies – **or through us directly** – you can get your stock from on-demand warehouses locally in numerous countries:

www.sibel.bg

www.synflex.com

www.energel.com

www.mgr.co.il

www.miottisrl.com

www.greenway-ltd.co.uk

www.wescap.nl

www.dacpol.eu

www.elsensor.ru

www.bevi.se

www.schupp.ch

www.nou-elec.com

www.code-tech.co.za

www.pzk.cz

www.emtel.com.tr

www.e4.hu

Research & development

Thermik has patented more inventions in the past two decades and created more new products / developments / features than all thermal protection competitors combined. According to the latest Plimsoll Analysis*, Thermik is the only competitor displaying potential for future growth. Here's the reason why: We lead the industry with innovation. There is no supplier in the world with a quantitatively or qualitatively greater product range as standard, nor with more customer-specific solutions.

For the past 45 years, this continuous accomplishment has been achieved not as a goal, but as a result of our partnership model. Our endeavor to meet each customer's unique needs has been the primary driver for our new technology and new product developments. Opportunities and solutions previously unimaginable have been realized and commercialized by Thermik, for our customers.

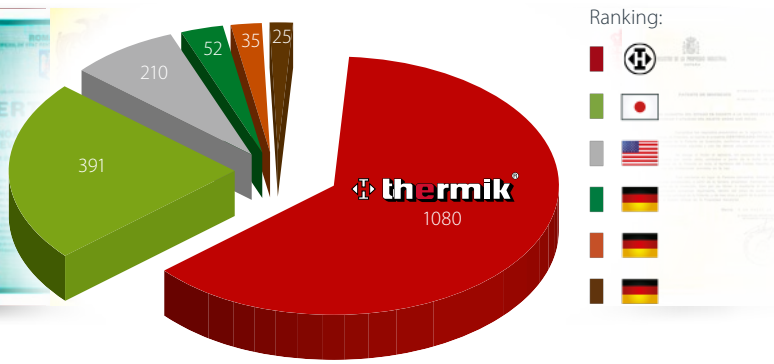
- The round thermal protector
- The flat thermal protector
- The pressure resistant thermal protector
- The airtight thermal protector
- The current-independent thermal protector
- The temperature-sensitive thermal protector
- The defined current sensitive thermal protector
- The voltage-retaining thermal protector
- The interlocking insulation shrink cap
- The thermal protector on the band
- The high-temperature thermal protector
- The high-performance thermal protector
- The hybrid thermal protector
- The arc-free thermal protector
- More and more…

Leadership in innovation also means superior IP management. We are the only one of the six leading manufacturers of thermal protectors to show position and potential in the Thermik patents granted for inventions and innovations.

Our patented "snap-action" spring disc mechanism is only one of the engineering innovations that sets Thermik's apart from other thermal protector designs. Continuing the legacy begun by our founder, Peter Hofsaess, who first solved the fundamental issue of electrical current self-heating in bimetallic switches, Thermik engineers have created solutions in applications across industries, including drive technology, refrigeration, wind technology, pumping, space travel, automotive, motion control, material handling, production machinery, heaters, transformers, and of course, motors. We anticipate many, many more yet to be added to our list of contributions to the industry.

Thanks to Thermik's long-term continuity (over 15 years of market leadership) in the technological and innovative aspects of thermal protectors, we were given the Top 100 award for being one of the „100 most innovative MSEs in Germany" for the 10th time in a row.

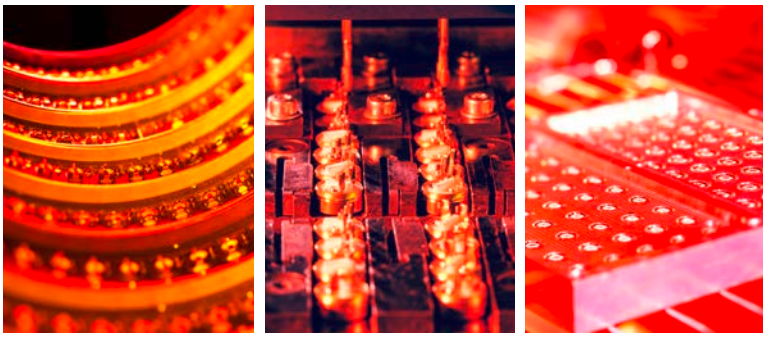
*Source: Plimsoll, 2013 Edition.
The Plimsoll study analyses the financial performance of the largest companies in the field of manufacturing of electric motors, generators and transformers.



*Source: DPMA IP-register, categories H01, date 2019-02-11,
IP-register Hofsaess-Holding date 2019-02-11*

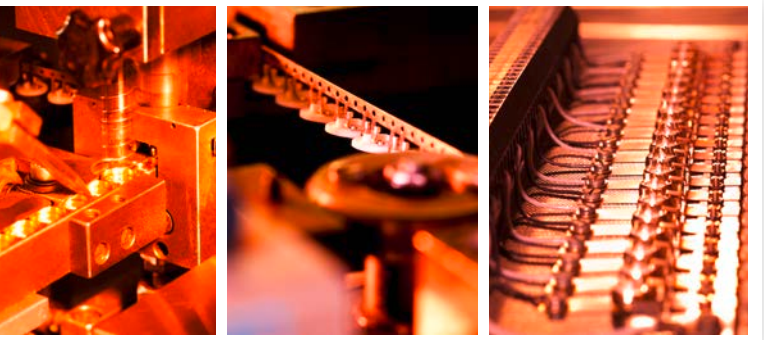
Quality management

Creativity without quality is nothing. But quality always requires creativity. Leading with innovation means tried and tested methods exist to be improved. Through constructive comparison with existing products and processes, and by embracing customer's continuous requests to create new and better thermal protectors for new applications, Thermik has become an innovation leader, pioneering ideas for modern yet sustainable solutions.



Creating new products that solve new problems inevitably encourages and supports continuous improvement in all areas of manufacturing and quality assurance. Designs improve, processes improve, products improve. Rather literally, Thermik's quality driver is continuous improvement. Quality is "built-in" to everything we do. Not surprisingly, Thermik was the first thermal protector manufacturer to be certified under ISO 9001.

Many production process, tests, and QA methods are continuously refined, including thermo-selection processes, fully automatic resistance-testing, and automated thermal selection machines. Any new processes are established and documented, and we will only begin production following 100% positive testing and quality assurance results.



Thermik's temperature "calibration" is accomplished by 100% test-and-sort (T&S) temperature selections. We don't calibrate the temperature at the end of production by mechanical adjustment. Like our quality mandate, it is "built-in" from the beginning. Two T&S selections and multiple QA audits are performed to confirm temperature. Only after the final QA audit do we certify that the required switch temperature performance is BUILT-IN. Switch sub-assemblies are then individually laser etched with the temperature rating and lot number, making identification and traceability possible even decades later. Only Thermik products have this guarantee – a competitive feature for our customers, too. Finally, after certification of each assembled switch, we make each final thermal protector to customer specification with lead wires, switch insulation, additional attachments, etc.

Last but not least, all these achievements would not be possible without the people behind them. For Thermik, quality is a culture, and our people build it in.

Not everyone needs quality, but quality needs everyone to be involved. Therefore, all Thermik employees are considered to be quality employees.

"Trust is also an investment. Fulfilling someone's trust means profit!" *Marcel Hofsaess, CEO*

Winners and partners who rely on Thermik:

Wherever innovative solutions and greater safety are sought, Thermik is the trusted partner.

The most recent awards and an explanation of them:

Once a year, Germany's hundred most innovative SMEs are determined by leading economists and entrepreneurs. This involves looking at patents and innovation management in great detail, amongst other things. The basic requirement is not only technical leadership in the sector, but also a competitive advantage spanning several years. Thermik is one of only 4 companies that have received this award 10th times in a row.

Germany's leading accounting firm regularly nominates the 75 most efficient SMEs for its ‚Entrepreneur of the Year' award. Only companies who are leaders in their sector, who display good continuity, growth and economic success and who are better positioned than their competitors receive such nominations and awards.

Prize for being the 'Best of the best' of around 4000 worldwide market segments. Only those German companies that are global leaders in their respective market segments make it into the 'Encyclopedia of World Market Leaders'.

'Querdenker' (English: 'lateral thinkers') are deemed to be those entrepreneurs who 'have achieved outstanding successes – as extraordinary rule-breakers and motivators, as pioneers or role models – through interdisciplinary thinking and action and who have been prepared to leave the trodden paths and take new ones, with passion and courage.'

This award is regularly given to companies belonging to the top 1.7% of all German companies in terms of the best long-term credit rating.

List of abbreviations

A	Ampere
°C	degrees celcius
AC	alternating current
AWG	American Wire Gauge
CEO	Chief Executive Officer
CMJ	Council for Electrical & Electronic Components and Materials of Japan
cN	Centinewton
cos φ	power factor
CQC	China Quality Certification Center
CSA	Canadian Standards Association
d	diameter
DC	direct current
DIN	German Institute for Standardization
DPMA	German Patent and Trademark Office (GPTO)
EN	European standards
ENEC	European Norms Electrical Certification
GB	Guobio, Chinese for „national standard“
H01	International patent classification, sector electrical engineering
Hz	Hertz
IEC	International Electrotechnical Commission
IECEE	International Commission on the Rules for the Approval of Electrical Equipment
JET	Japan Electrical Safety & Environment Technology Laboratories
K	Kelvin
kV	Kilovolt
m/s^2	meters per square second
M4 / M6	Class of metric ISO threads (general application of coarse threads)
mA	Milliampere
MIL-STD. R5757	Specifications for the American Defense Standard
mm	Millimeter
mm^2	square millimeters
ms	Millisecond
mΩ	Milliohm
N	Newton
Nm	Newtonmeter
NST	rated switching temperature
PTC	Positive Temperature Coefficient
PTFE	Polytetrafluorethylen (also known as Teflon)
PVDF	Polyvinylidenfluoride (KYNAR®)
REACH	EU chemical regulations
RoHS	EU directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment
RST	reset temperature
UL	Underwriters Laboratories
V	Volt
VDE	Association for Electrical Technology
µm	Micrometer
Ω	Ohm

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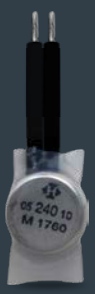

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brings temperatures under control

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