



Thermal protectors
PTC-Thermistors

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

A handwritten signature in black ink, appearing to read 'M. P. Hofsaess', written in a cursive style.

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History & tradition

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 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.



Company founder
Peter Hofsaess 1941 – 1992

Thermik production facilities total more than 183,000 sqft. Today, all production plants are equipped with equivalent production lines.

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)

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.

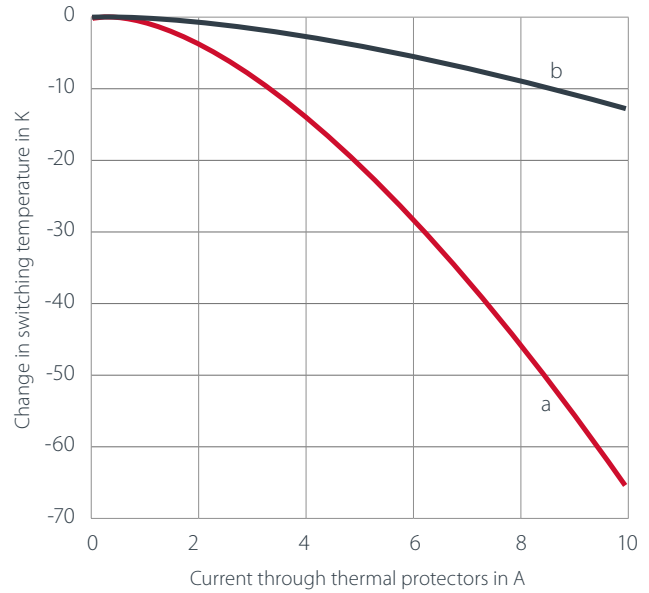


Fig. 2: Self-heating through current: typical behaviour of a current-intensive thermal protector with current-carrying bimetallic disc (a) compared to thermal protectors with no current-carrying bimetallic disc (b)

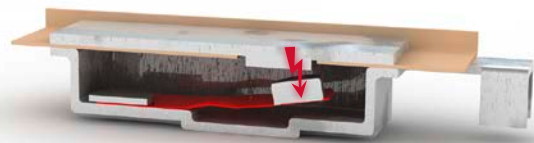


Fig. 3: Thermal protector without additional spring disc. Insidious contact and arc hazard ensue.

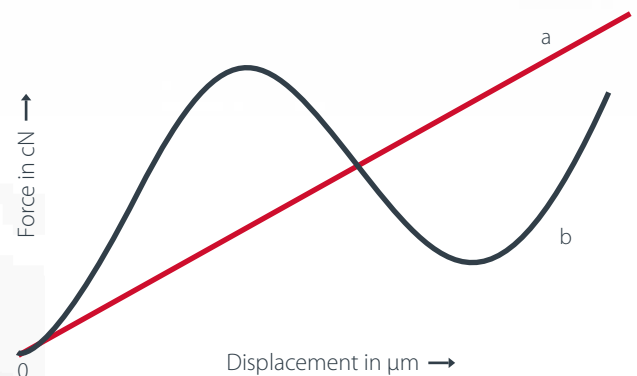


Fig. 4: Load-displacement diagram (characteristic curve): a simple spring disc (linear curve) b spring snap disc (non-linear curve)

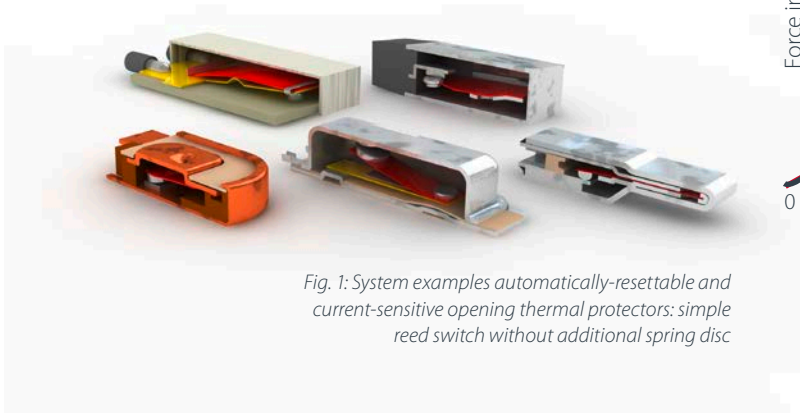


Fig. 1: System examples automatically-resettable and current-sensitive opening thermal protectors: simple reed switch without additional spring disc

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.

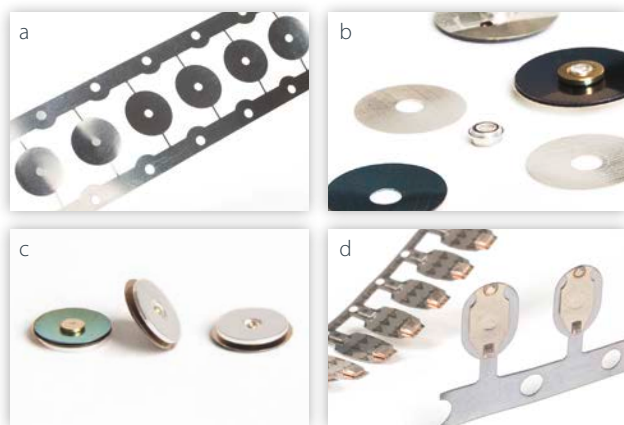


Fig. 1: Non-welded (i.e. undamaged) centric hole discs (a) operate continuously due to an additional mechanism (b, c). If welded bimetallic discs (d) become welded, however, they work intermittently.

Improved switching performance and longer service life

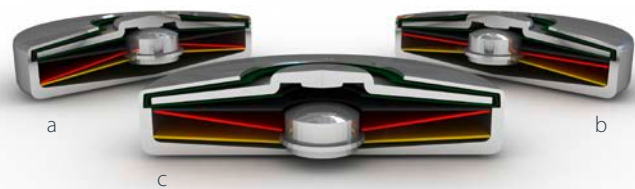


Fig. 2: Function and switching behaviour of a thermal protector with an additional spring disc (yellow) whereby the bimetallic disc (red) can operate continuously.



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

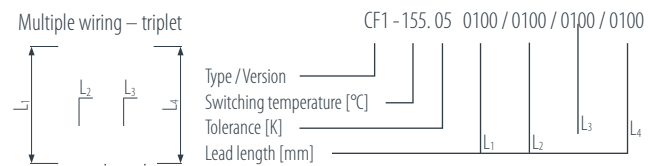
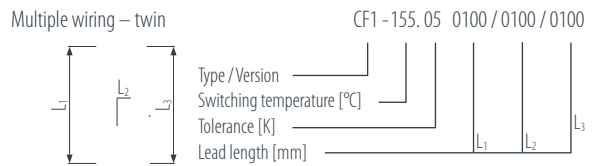
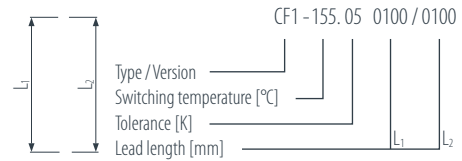
Thermik creates endless customized modifications within this Product Series, including customer-application solutions. Thermik's patented engineering in our standard configurations of this Product Series extends to all our custom solutions.

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

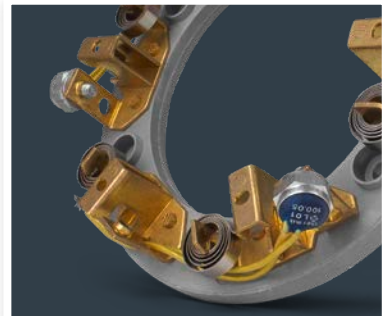
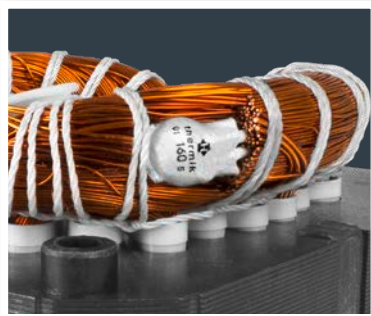
By design, Thermik's selection of materials, and their composition, requires only the highest-quality materials enter Thermik's supply chain and are used in Thermik products. We source for quality and reliability, over price. From experience, the quality of our precision engineering products depends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



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

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

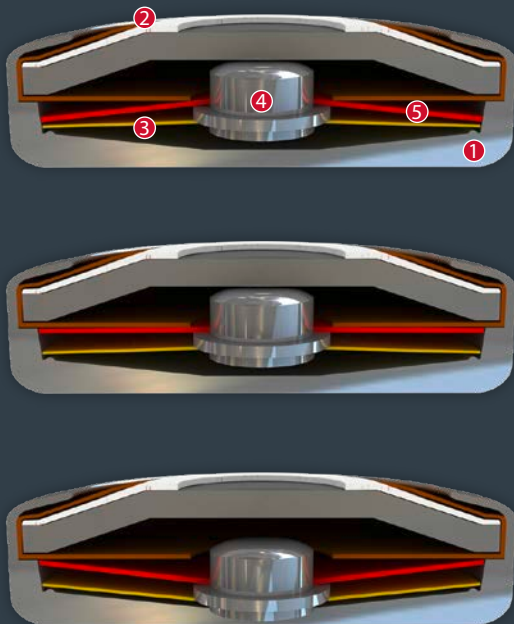
The listed products are an extract from our standard range. Other versions and customised manufacturing are available upon request.

Type series F1



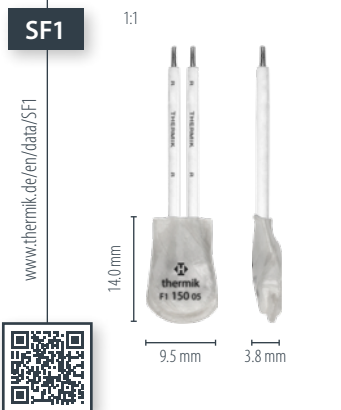
Construction and function

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.



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	Operational voltage range AC	up until 500.0 V AC
Tolerance (standard)	±2.5 K / ±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL ≥ 35 °C (≤ 80 °C NST) VDE -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST)	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Installation height	from 3.4 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Diameter	9.0 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000
Resistance to impregnation *	suitable	Total bounce time	< 1 ms
Suitable for installation in protection class	I	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Pressure resistance to the switch housing *	150 N	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Standard connection	Lead wire 0.25 mm ² / AWG22		
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC		



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	Operational voltage range AC	up until 500.0 V AC
Tolerance (standard)	±2.5 K / ±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL ≥ 35 °C (≤ 80 °C NST) VDE -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST)	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Installation height	from 3.8 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Diameter	9.5 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000
Length of the insulation cap	14.0 mm	High voltage resistance	2.0 kV
Resistance to impregnation *	suitable	Total bounce time	< 1 ms
Suitable for installation in protection class	I + II	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Pressure resistance to the switch housing *	150 N	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Standard connection	Lead wire 0.25 mm ² / AWG22		
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC		

*In accordance with the Thermik test - Specifications relating to part applications (as 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

UM1

1:1

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	Operational voltage range AC	up until 500.0 V AC
Tolerance (standard)	±2.5 K / ±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Installation height	from 3.3 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Diameter	10.2 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000
Housing length	11.5 mm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing *	150 N		
Standard connection	Crimp		
Available approvals (please state)	IEC; ENEC; VDE; UL; CQC		

PM1

1:1

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	Operational voltage range AC	up until 500.0 V AC
Tolerance (standard)	±2.5 K / ±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Installation height	from 3.3 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Diameter	10.2 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000
Housing length	11.5 mm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing *	150 N		
Standard connection	Connection pins		
Available approvals (please state)	IEC; ENEC; VDE; UL; CQC		

CM1

1:1

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



Nominal switching temperature (NST) in 5 °C increments	70 °C – 180 °C	Operational voltage range AC	up until 500.0 V AC
Tolerance (standard)	±2.5 K / ±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Installation height	from 3.3 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Diameter	10.2 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000
Housing length	11.5 mm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing *	150 N		
Standard connection	Lead wire 0.25 mm ² / AWG22		
Available approvals (please state)	IEC; ENEC; VDE; UL; CQC		

SM1

1:1

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



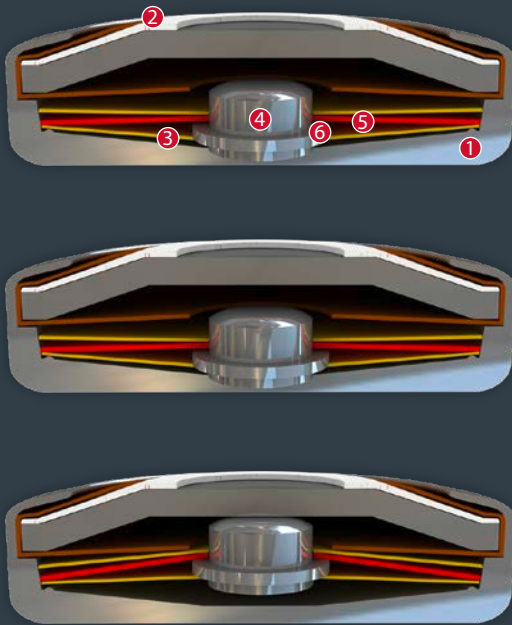
Nominal switching temperature (NST) in 5 °C increments	70 °C – 180 °C	Operational voltage range AC	up until 500.0 V AC
Tolerance (standard)	±2.5 K / ±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL ≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Installation height	from 4.0 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Diameter	10.6 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000
Length of the insulation cap	21.0 mm	High voltage resistance	2.0 kV
Resistance to impregnation *	suitable	Total bounce time	< 1 ms
Suitable for installation in protection class	I + II	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Pressure resistance to the switch housing *	150 N	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Standard connection	Lead wire 0.25 mm ² / AWG22		
Available approvals (please state)	IEC; ENEC; VDE; UL		

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.



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	Operating voltage range AC	up until 250.0 V AC
Tolerance (standard)	±2.5 K / ±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL ≥ 35 °C (≤ 80 °C NST) VDE -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST)	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Installation height	from 3.4 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Diameter	9.0 mm	Total bounce time	< 1 ms
Resistance to impregnation*	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing*	150 N		
Standard connection	Lead wire 0.25 mm ² / AWG22		
Available approvals (please state)	IEC; ENEC; VDE		

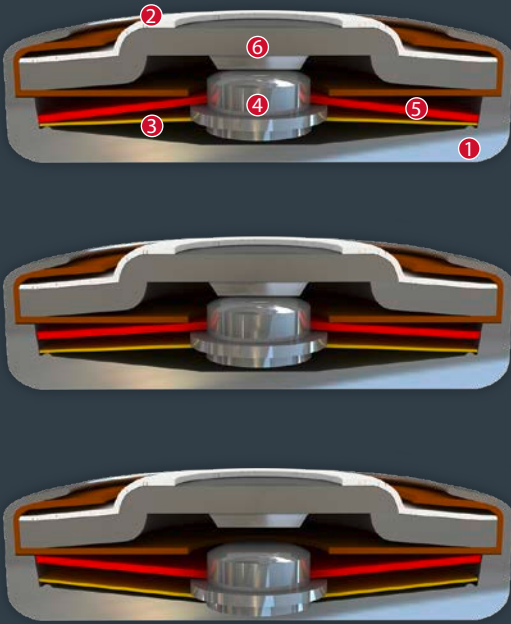


Type: Normally open; resets automatically; with connector cables; with or without epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments	70 °C – 180 °C	Operating voltage range AC	up until 250.0 V AC
Tolerance (standard)	±2.5 K / ±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL ≥ 35 °C (≤ 80 °C NST) VDE -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST)	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Installation height	from 3.8 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Diameter	9.5 mm	High voltage resistance	2.0 kV
Length of the insulation cap	14.0 mm	Total bounce time	< 1 ms
Resistance to impregnation*	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I + II	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing*	150 N		
Standard connection	Lead wire 0.25 mm ² / AWG22		
Available approvals (please state)	IEC; ENEC; VDE		

*in accordance with the Thermik test - Specifications relating to parts applications (as 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, approvals, etc. can be supplied 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 1:1

www.thermik.de/en/data/01

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	Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Tolerance (standard)	±2.5 K / ±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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)	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
	VDE ≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Installation height	from 2.9 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Diameter	9.0 mm	Rated current AC cos φ = 0.4 / cycles	1.8 A / 10,000
Resistance to impregnation *	suitable	Max. switching current AC cos φ = 0.4 / cycles	7.2 A / 1,000
Suitable for installation in protection class	I	Rated voltage DC	12.0 V
Pressure resistance to the switch housing *	450 N	Max. switching current DC / cycles	40.0 A / 5,000
Available approvals (please state)	certified as .01: IEC; ENEC; VDE; UL; CSA; CQC	Total bounce time	< 1 ms
		Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
		Vibration resistance at 10 ... 60 Hz	100 m / s ²

01-SMD 1:1

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

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

Nominal switching temperature (NST) in 5 °C increments	70 °C – 150 °C	Operational voltage range AC / DC	up until 250.0 V AC / 14.0 V DC
Tolerance (standard)	±2.5 K / ±5 K	Rated voltage AC	250.0 V (VDE)
Reverse Switch Temperature (defined RST is possible at the customer's request)	VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Installation height	from 2.5 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Diameter	9.0 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Resistance to impregnation *	on request	Rated current AC cos φ = 0.4 / cycles	1.8 A / 10,000
Suitable for installation in protection class	I	Max. switching current AC cos φ = 0.4 / cycles	7.2 A / 1,000
Pressure resistance to the switch housing *	450 N	Rated voltage DC	12.0 V
Available approvals (please state)	IEC; ENEC; VDE	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 / s ²

F01

1:1

www.thermik.de/en/data/F01


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	Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Tolerance (standard)	±2.5 K / ±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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)	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
	VDE ≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Installation height	from 5.5 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Diameter	9.4 mm	Rated current AC cos φ = 0.4 / cycles	1.8 A / 10,000
Resistance to impregnation*	suitable	Max. switching current AC cos φ = 0.4 / cycles	7.2 A / 1,000
Suitable for installation in protection class	I + II	Rated voltage DC	12.0 V
Pressure resistance to the switch housing*	450 N	Max. switching current DC / cycles	40.0 A / 5,000
Standard connection	Lead wire 0.25 mm ² / AWG22	High voltage resistance	2.0 kV
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC	Total bounce time	< 1 ms
		Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
		Vibration resistance at 10 ... 60 Hz	100 m / s ²

C01 Pin

1:1

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


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

Nominal switching temperature (NST) in 5 °C increments	60 °C – 200 °C	Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Tolerance (standard)	±2.5 K / ±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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)	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
	VDE ≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Installation height	from 3.2 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Diameter	9.0 mm	Rated current AC cos φ = 0.4 / cycles	1.8 A / 10,000
Resistance to impregnation*	suitable	Max. switching current AC cos φ = 0.4 / cycles	7.2 A / 1,000
Suitable for installation in protection class	I	Rated voltage DC	12.0 V
Pressure resistance to the switch housing*	450 N	Max. switching current DC / cycles	40.0 A / 5,000
Standard connection	Pins 2.2 mm	Total bounce time	< 1 ms
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
		Vibration resistance at 10 ... 60 Hz	100 m / s ²

C01

1:1

www.thermik.de/en/data/C01


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	Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Tolerance (standard)	±2.5 K / ±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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)	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
	VDE ≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Installation height	from 3.9 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Diameter	9.0 mm	Rated current AC cos φ = 0.4 / cycles	1.8 A / 10,000
Resistance to impregnation*	suitable	Max. switching current AC cos φ = 0.4 / cycles	7.2 A / 1,000
Suitable for installation in protection class	I	Rated voltage DC	12.0 V
Pressure resistance to the switch housing*	450 N	Max. switching current DC / cycles	40.0 A / 5,000
Standard connection	Lead wire 0.25 mm ² / AWG22	Total bounce time	< 1 ms
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC; CMU	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
		Vibration resistance at 10 ... 60 Hz	100 m / s ²

S01

1:1

www.thermik.de/en/data/S01

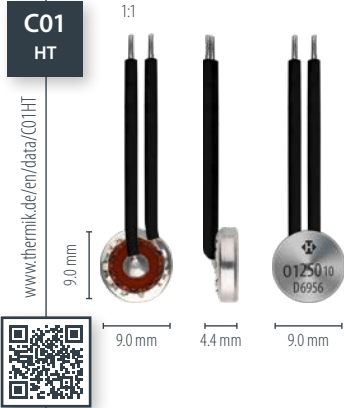

Type: Normally closed; resets automatically; with connector cables; with or without epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments	60 °C – 200 °C	Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Tolerance (standard)	±2.5 K / ±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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)	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
	VDE ≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Installation height	from 4.3 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Diameter	9.5 mm	Rated current AC cos φ = 0.4 / cycles	1.8 A / 10,000
Length of the insulation cap	15.0 mm	Max. switching current AC cos φ = 0.4 / cycles	7.2 A / 1,000
Resistance to impregnation*	suitable	Rated voltage DC	12.0 V
Suitable for installation in protection class	I + II	Max. switching current DC / cycles	40.0 A / 5,000
Pressure resistance to the switch housing*	450 N	High voltage resistance	2.0 kV
Standard connection	Lead wire 0.25 mm ² / AWG22	Total bounce time	< 1 ms
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC; CMU	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
		Vibration resistance at 10 ... 60 Hz	100 m / s ²

*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



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	Operational voltage range AC	up until 500.0 V AC
Tolerance (standard)	±10 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL 120 °C ±15 K VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 1,000
Installation height	from 4.4 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 1,000
Diameter	9.0 mm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing *	450 N		
Standard connection	Lead wire 0.25 mm ² / AWG22		
Available approvals (please state)	IEC; ENEC; VDE; UL (appr. ≤ 230 °C); CQC		

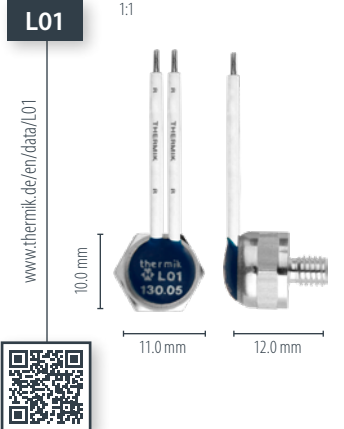
S01
HT



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	Operational voltage range AC / DC	up until 500.0 V AC
Tolerance (standard)	±10 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL 120 °C ±15 K VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 1,000
Installation height	from 5.1 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 1,000
Diameter	9.7 mm	High voltage resistance	2.0 kV
Length of the insulation cap	20.5 mm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I + II	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing *	450 N		
Standard connection	Lead wire 0.25 mm ² / AWG22		
Available approvals (please state)	IEC; ENEC; VDE; UL (appr. ≤ 230 °C); CQC		

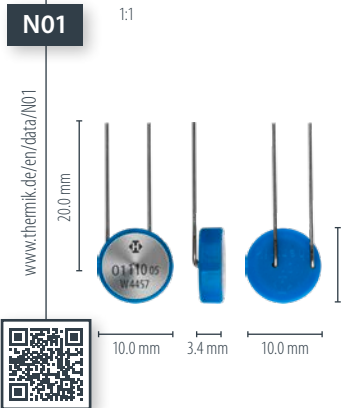
L01



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	Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC
Tolerance (standard)	±2.5 K / ±5 K	Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
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 -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST) ≥ 35 °C	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Installation height	from 7.0 mm	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Diameter	10.0 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Thread / Length	M4 x 5.0 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Width across flats / Max. torque	10.0 mm / 2 Nm	Rated current AC cos φ = 0.4 / cycles	1.8 A / 10,000
Resistance to impregnation *	suitable	Max. switching current AC cos φ = 0.4 / cycles	7.2 A / 1,000
Suitable for installation in protection class	I + II	Rated voltage DC	12.0 V
Pressure resistance to the switch housing *	450 N	Max. switching current DC / cycles	40.0 A / 5,000
Standard connection	Lead wire 0.25 mm ² / AWG22	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

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	Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC
Tolerance (standard)	±2.5 K / ±5 K	Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
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 -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST) ≥ 35 °C	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Installation height	from 3.4 mm	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Diameter	10.0 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Length of the connection pins	14.0 mm / 20.0 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Resistance to impregnation *	suitable	Rated current AC cos φ = 0.4 / cycles	1.8 A / 10,000
Suitable for installation in protection class	I	Max. switching current AC cos φ = 0.4 / cycles	7.2 A / 1,000
Pressure resistance to the switch housing *	450 N	Rated voltage DC	12.0 V
Standard connection	Connecting wire with d = 0.5 mm	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 / s ²

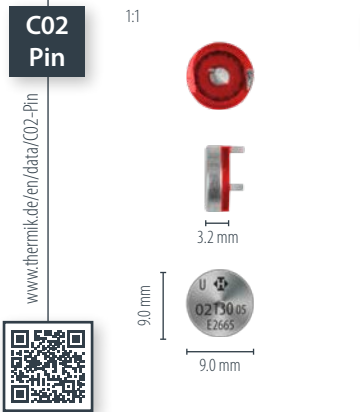
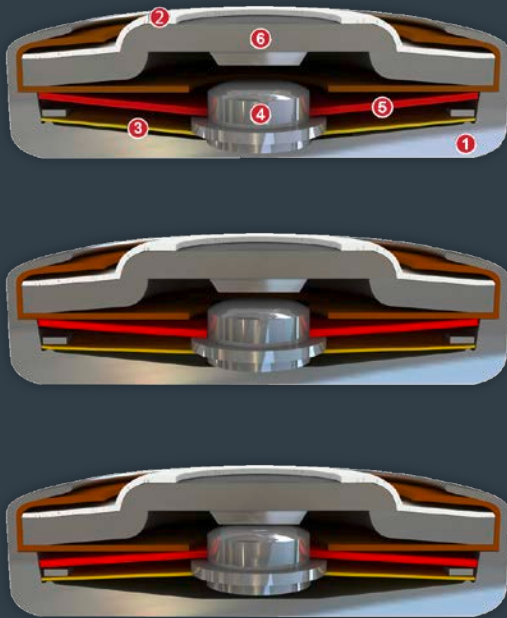
The listed products are an extract from our standard range. Other versions and customised manufacturing are available upon request.

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.



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

Nominal switching temperature (NST) in 5 °C increments	60 °C – 200 °C	Operating voltage range AC	up until 500.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Installation height	from 3.2 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Diameter	9.0 mm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing *	450 N		
Standard connection	Pins 2.2 mm		
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC		



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	Operating voltage range AC	up until 500.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Installation height	from 3.9 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Diameter	9.0 mm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing *	450 N		
Standard connection	Lead wire 0.25 mm ² / AWG22		
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC; CMJ		

*in accordance with the Thermik test - Specifications relating to part applications (as 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

S02



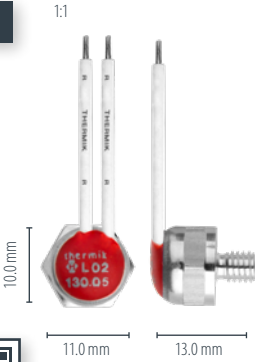
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Type: Normally open; resets automatically; with connector cables; with or without epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments	60 °C – 200 °C	Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC; CMJ
Tolerance (standard)	±5 K	Operating voltage range AC	up until 500.0 V AC
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)	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
	VDE ≥ 35 °C	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
Installation height	from 4.7 mm	High voltage resistance	2.0 kV
Diameter	9.5 mm	Total bounce time	< 1 ms
Length of the insulation cap	15.0 mm	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Resistance to impregnation *	suitable	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Suitable for installation in protection class	I + II		
Pressure resistance to the switch housing *	450 N		
Standard connection	Lead wire 0.25 mm ² / AWG22		

L02



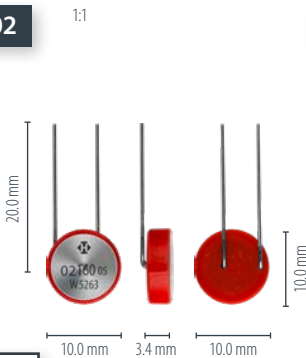
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Type: Normally open; resets automatically; with connector cables; with epoxy; fully insulated in a screw on housing

Nominal switching temperature (NST) in 5 °C increments	60 °C – 200 °C	Standard connection	Lead wire 0.25 mm ² / AWG22
Tolerance (standard)	±5 K	Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC
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)	Operating voltage range AC	up until 500.0 V AC
	VDE ≥ 35 °C	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
Housing height	from 7.0 mm	High voltage resistance	2.0 kV
Installation height	13.0 mm	Total bounce time	< 1 ms
Diameter	10.0 mm	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Thread / Length	M4 x 5.0 mm	Vibration resistance at 10 ... 60 Hz	100 m / s ²
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		

N02



www.thermik.de/en/data/N02



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

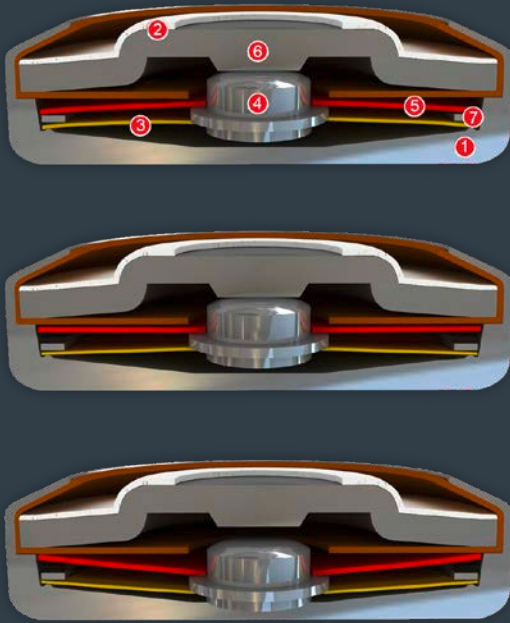
Nominal switching temperature (NST) in 5 °C increments	60 °C – 200 °C	Operating voltage range AC	up until 500.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL ≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST)	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
	VDE ≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
		Total bounce time	< 1 ms
Installation height	from 3.4 mm	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Diameter	10.0 mm	Vibration resistance at 10 ... 60 Hz	100 m / s ²
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		

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

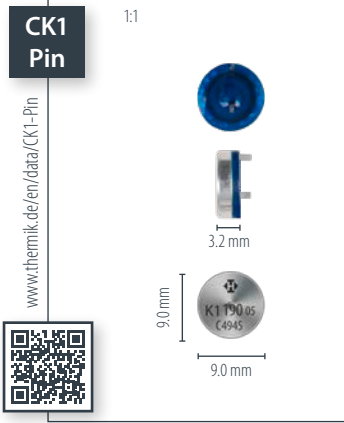
Type series K1



Construction and function

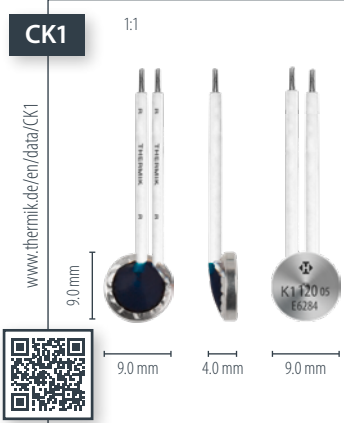


The switchgear of type series K1 is fixed in a positive lock and is self-aligning between the floor of a conductive housing (1) and a contact cap which is made of steel (2) and insulated from it, plus an integrated stationary silver contact (6) which closes the housing like a button cell. At the same 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 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.



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

Nominal switching temperature (NST) in 5 °C increments	60 °C – 200 °C	Operational voltage range AC	up until 500.0 V AC (DC on request)
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Installation height	from 3.2 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Diameter	9.0 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Resistance to impregnation *	suitable	Rated current AC cos φ = 0.4 / cycles	1.8 A / 10,000
Suitable for installation in protection class	I	Max. switching current AC cos φ = 0.4 / cycles	7.2 A / 1,000
Pressure resistance to the switch housing *	450 N	Total bounce time	< 1 ms
Standard connection	Pins 2.2 mm	Contact resistance (according to MIL-STD. RS757)	≤ 50 mΩ
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC	Vibration resistance at 10 ... 60 Hz	100 m / s ²



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

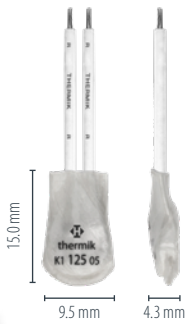
Nominal switching temperature (NST) in 5 °C increments	60 °C – 200 °C	Operational voltage range AC	up until 500.0 V AC (DC on request)
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL ≥ 35 °C (≤ 80 °C NST) -35 K ± 15 K (≥ 85 °C ≤ 180 °C NST) -65 K ± 15 K (≥ 185 °C ≤ 200 °C NST) VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Installation height	from 4.0 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Diameter	9.0 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Resistance to impregnation *	suitable	Rated current AC cos φ = 0.4 / cycles	1.8 A / 10,000
Suitable for installation in protection class	I	Max. switching current AC cos φ = 0.4 / cycles	7.2 A / 1,000
Pressure resistance to the switch housing *	450 N	Total bounce time	< 1 ms
Standard connection	Lead wire 0.25 mm ² / AWG22	Contact resistance (according to MIL-STD. RS757)	≤ 50 mΩ
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC	Vibration resistance at 10 ... 60 Hz	100 m / s ²

*in accordance with the Thermik test - Specifications relating to part applications (as 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

SK1

1:1



www.thermik.de/en/data/SK1



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	Operational voltage range AC	up until 500.0 V AC (DC on request)
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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)	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
	VDE ≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Installation height	from 4.3 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Diameter	9.5 mm	Rated current AC cos φ = 0.4 / cycles	1.8 A / 10,000
Length of the insulation cap	15.0 mm	Max. switching current AC cos φ = 0.4 / cycles	7.2 A / 1,000
Resistance to impregnation *	suitable	High voltage resistance	2.0 kV
Suitable for installation in protection class	I + II	Total bounce time	< 1 ms
Pressure resistance to the switch housing *	450 N	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Standard connection	Lead wire 0.25 mm ² / AWG22	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC		

LK1

1:1



www.thermik.de/en/data/LK1

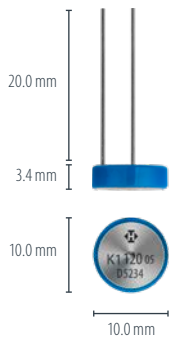


Type: Normally closed; resets automatically; fully insulated in a screw on housing; with epoxy; with connector cables

Nominal switching temperature (NST) in 5 °C increments	60 °C – 200 °C	Operational voltage range AC	up until 500.0 V AC (DC on request)
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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)	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
	VDE ≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Housing height	from 7.0 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Installation height	13.0 mm	Rated current AC cos φ = 0.4 / cycles	1.8 A / 10,000
Diameter	10.0 mm	Max. switching current AC cos φ = 0.4 / cycles	7.2 A / 1,000
Thread / Length	M4 x 5.0 mm	High voltage resistance	2.0 kV
Width across flats / Max. torque	10.0 mm / 2 Nm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I + II	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing *	450 N		
Standard connection	Lead wire 0.25 mm ² / AWG22		
Available approvals (please state)	IEC; ENEC; VDE; UL; CQC		

NK1

1:1



www.thermik.de/en/data/NK1



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	Operational voltage range AC	up until 500.0 V AC (DC on request)
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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)	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
	VDE ≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	1.6 A / 10,000
Installation height	from 3.4 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000 7.5 A / 300
Diameter	10.0 mm	Rated current AC cos φ = 0.4 / cycles	1.8 A / 10,000
Length of the connection pins	14.0 mm / 20.0 mm	Max. switching current AC cos φ = 0.4 / cycles	7.2 A / 1,000
Resistance to impregnation *	suitable	Total bounce time	< 1 ms
Suitable for installation in protection class	I	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Pressure resistance to the switch housing *	450 N	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Standard connection	Connecting wire with d = 0.5 mm		
Available approvals (please state)	IEC; ENEC; VDE; UL; CQC		

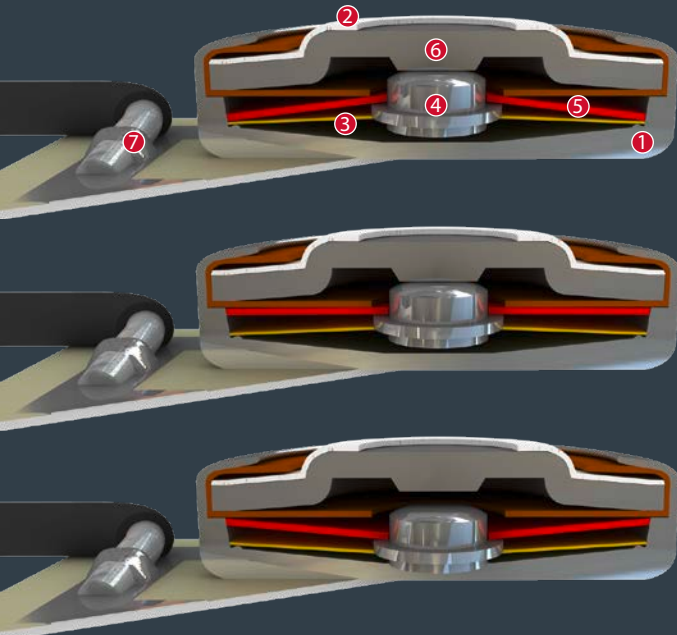
The listed products are an extract from our standard range. Other versions and customised manufacturing are available upon request.

Type series Z1



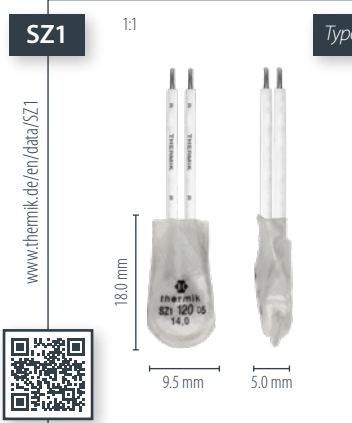
Construction and function

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 1:1
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	Operational voltage range AC	up until 500.0 V AC (DC on request)
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.0 A / 3,000
Installation height	from 4.5 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 3,000
Diameter	9.0 mm	Max. switching current AC cos φ = 1.0 / cycles	4.0 A / 3,000
Resistance to impregnation *	suitable	Total bounce time	< 1 ms
Series resistor for setting the current sensitivity	from 0.12 Ω to 70.0 Ω	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Standard connection	Lead wire 0.25 mm ² / AWG22		
Available approvals (please state)	IEC; ENEC; VDE; UL (NST 70 °C – 130 °C)		

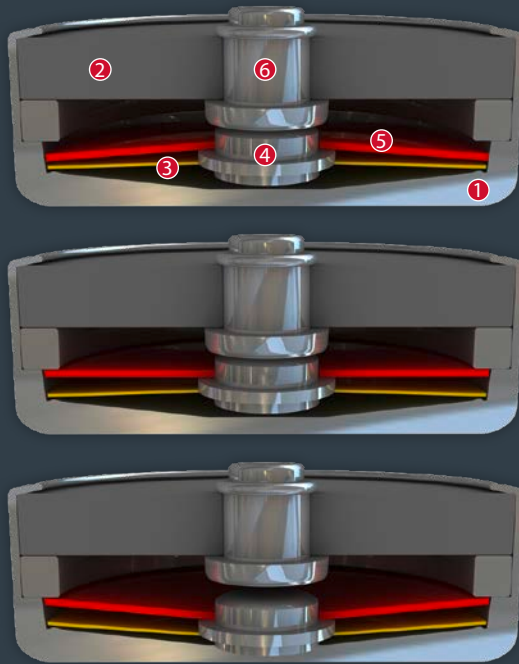


SZ1 1:1
Type: Normally closed; resets automatically; defined as current sensitive; with or without epoxy; with connector cables; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments	70 °C – 160 °C	Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.0 A / 3,000
Installation height	from 5.0 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 3,000
Diameter	9.5 mm	Max. switching current AC cos φ = 1.0 / cycles	4.0 A / 3,000
Length of the insulation cap	18.0 mm	High voltage resistance	2.0 kV
Resistance to impregnation *	suitable	Total bounce time	< 1 ms
Series resistor for setting the current sensitivity	from 0.12 Ω to 70.0 Ω	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I + II	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Standard connection	Lead wire 0.25 mm ² / AWG22		
Available approvals (please state)	IEC; ENEC; VDE; UL (NST 70 °C – 130 °C)		

*In accordance with the Thermik test - Specifications relating to part applications (as 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.

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

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	Operating voltage range AC	from 115.0 V to 250.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 1,000
Installation height	from 3.5 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 1,000
Diameter	9.0 mm	Max. switching current AC cos φ = 1.0 / cycles	10.0 A / 1,000
Suitable for installation in protection class	I	Max. switching current AC cos φ = 0.6 / cycles	6.3 A / 1,000
Standard connection	Terminal contact	Total bounce time	< 1 ms
Available approvals (please state)	IEC; VDE; UL; CSA; CQC	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
		Vibration resistance at 10 ... 60 Hz	100 m / s ²

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	Operating voltage range AC	from 115.0 V to 250.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 1,000
Installation height	from 4.1 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 1,000
Diameter	9.0 mm	Max. switching current AC cos φ = 1.0 / cycles	10.0 A / 1,000
Suitable for installation in protection class	I	Max. switching current AC cos φ = 0.6 / cycles	6.3 A / 1,000
Standard connection	Pins 2.2 mm	Total bounce time	< 1 ms
Available approvals (please state)	IEC; VDE; UL; CSA; CQC	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
		Vibration resistance at 10 ... 60 Hz	100 m / s ²

CP1

www.thermik.de/en/data/CP1

9.0 mm
9.0 mm 4.5 mm 9.0 mm

1:1

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	Operating voltage range AC	from 115.0 V to 250.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 1,000
Installation height	from 4.5 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 1,000
Diameter	9.0 mm	Max. switching current AC cos φ = 1.0 / cycles	10.0 A / 1,000
Resistance to impregnation *	suitable	Max. switching current AC cos φ = 0.6 / cycles	6.3 A / 1,000
Suitable for installation in protection class	I	Total bounce time	< 1 ms
Standard connection	Lead wire 0.25 mm ² / AWG22	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Available approvals (please state)	IEC; VDE; UL; CSA; CQC	Vibration resistance at 10 ... 60 Hz	100 m / s ²

SP1

www.thermik.de/en/data/SP1

15.0 mm
9.5 mm 5.0 mm

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	Operating voltage range AC	from 115.0 V to 250.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 1,000
Installation height	from 5.0 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 1,000
Diameter	9.5 mm	Max. switching current AC cos φ = 1.0 / cycles	10.0 A / 1,000
Length of the insulation cap	15.0 mm	Max. switching current AC cos φ = 0.6 / cycles	6.3 A / 1,000
Resistance to impregnation *	suitable	High voltage resistance	2.0 kV
Suitable for installation in protection class	I + II	Total bounce time	< 1 ms
Standard connection	Lead wire 0.25 mm ² / AWG22	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Available approvals (please state)	IEC; VDE; UL; CSA; CQC	Vibration resistance at 10 ... 60 Hz	100 m / s ²

SP1 600 N

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

16.5 mm
11.0 mm 6.6 mm

1:1

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	Operating voltage range AC	from 115.0 V to 250.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 1,000
Installation height	from 6.6 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 1,000
Diameter	11.0 mm	Max. switching current AC cos φ = 1.0 / cycles	10.0 A / 1,000
Length of the insulation cap	16.5 mm	Max. switching current AC cos φ = 0.6 / cycles	6.3 A / 1,000
Resistance to impregnation *	suitable	High voltage resistance	2.0 kV
Suitable for installation in protection class	I + II	Total bounce time	< 1 ms
Pressure resistance to the switch housing *	600 N	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Standard connection	Lead wire 0.25 mm ² / AWG22	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Available approvals (please state)	IEC; VDE; UL; CSA; CQC		

KP1

www.thermik.de/en/data/KP1

13.0 mm
9.5 mm 4.9 mm

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	Operating voltage range AC	from 115.0 V to 250.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 1,000
Installation height	from 4.9 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 1,000
Diameter	9.5 mm	Max. switching current AC cos φ = 1.0 / cycles	10.0 A / 1,000
Length of the insulation cap	13.0 mm	Max. switching current AC cos φ = 0.6 / cycles	6.3 A / 1,000
Resistance to impregnation *	suitable	High voltage resistance	2.0 kV
Suitable for installation in protection class	I + II	Total bounce time	< 1 ms
Standard connection	Lead wire 0.25 mm ² / AWG22	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Available approvals (please state)	IEC; VDE; UL; CSA; CQC	Vibration resistance at 10 ... 60 Hz	100 m / s ²

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Thermal protectors 1.6 A – 7.5 A

CPK 1:1

www.thermik.de/en/data/CPK

9.0 mm
9.0 mm 4.5 mm 9.0 mm

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	Operating voltage range AC	from 115.0 V to 250.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 1,000
Installation height	from 4.5 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 1,000
Diameter	9.0 mm	Max. switching current AC cos φ = 1.0 / cycles	10.0 A / 1,000
Resistance to impregnation *	suitable	Max. switching current AC cos φ = 0.6 / cycles	6.3 A / 1,000
Suitable for installation in protection class	I	Total bounce time	< 1 ms
Standard connection	Lead wire 0.25 mm ² / AWG22	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Available approvals (please state)	IEC; VDE; UL; CSA	Vibration resistance at 10 ... 60 Hz	100 m / s ²

SPK 1:1

www.thermik.de/en/data/SPK

15.0 mm
9.5 mm 4.9 mm

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	Operating voltage range AC	from 115.0 V to 250.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 1,000
Installation height	from 4.9 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 1,000
Diameter	9.5 mm	Max. switching current AC cos φ = 1.0 / cycles	10.0 A / 1,000
Length of the insulation cap	15.0 mm	Max. switching current AC cos φ = 0.6 / cycles	6.3 A / 1,000
Resistance to impregnation *	suitable	High voltage resistance	2.0 kV
Suitable for installation in protection class	I + II	Total bounce time	< 1 ms
Standard connection	Lead wire 0.25 mm ² / AWG22	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Available approvals (please state)	IEC; VDE; UL; CSA	Vibration resistance at 10 ... 60 Hz	100 m / s ²

VP1 1:1

www.thermik.de/en/data/VP1

19.0 mm
10.5 mm 6.0 mm

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	Operating voltage range AC	from 115.0 V to 250.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 1,000
Installation height	from 6.0 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 1,000
Diameter	10.5 mm	Max. switching current AC cos φ = 1.0 / cycles	10.0 A / 1,000
Length of the insulation cap	19.0 mm	Max. switching current AC cos φ = 0.6 / cycles	6.3 A / 1,000
Resistance to impregnation *	suitable	High voltage resistance	2.0 kV
Suitable for installation in protection class	I + II	Total bounce time	< 1 ms
Standard connection	Lead wire 0.25 mm ² / AWG22	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Available approvals (please state)	IEC; VDE	Vibration resistance at 10 ... 60 Hz	100 m / s ²

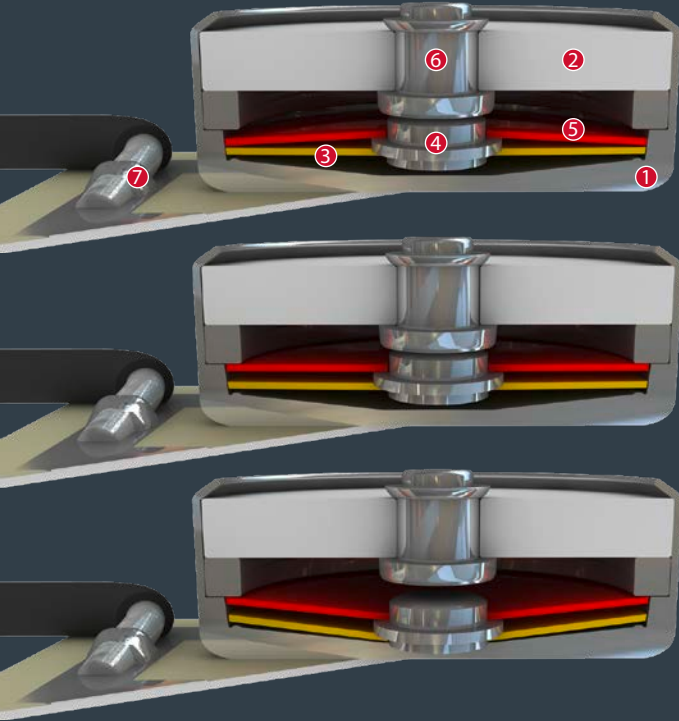
The listed products are an extract from our standard range. Other versions and customised manufacturing are available upon request.

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



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 – 180 °C	Operating voltage range AC	from 115.0 V to 250.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 1,000
Installation height	from 5.1 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 1,000
Diameter	9.0 mm	Max. switching current AC cos φ = 1.0 / cycles	9.0 A / 1,000
Resistance to impregnation *	suitable	Total bounce time	< 1 ms
Series resistor for setting the current sensitivity	from 0.12 Ω to 70.0 Ω	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Standard connection	wire with d = 0.5 mm / AWG22		
Available approvals (please state)	IEC; VDE; UL; CSA		

SW1



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 – 180 °C	Operating voltage range AC	from 115.0 V to 250.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 1,000
Installation height	from 5.5 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 1,000
Diameter	10.0 mm	Max. switching current AC cos φ = 1.0 / cycles	9.0 A / 1,000
Length of the insulation cap	19.5 mm	High voltage resistance	2.0 kV
Resistance to impregnation *	suitable	Total bounce time	< 1 ms
Series resistor for setting the current sensitivity	from 0.12 Ω to 70.0 Ω	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I + II	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Standard connection	wire with d = 0.5 mm / AWG22		
Available approvals (please state)	IEC; VDE; UL; CSA		

*In accordance with the Thermik test - Specifications relating to part applications (as 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

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 – 180 °C	Operating voltage range AC	from 115.0 V to 250.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 1,000
Installation height	from 5.1 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 1,000
Diameter	9.0 mm	Max. switching current AC cos φ = 1.0 / cycles	9.0 A / 1,000
Resistance to impregnation *	suitable	Total bounce time	< 1 ms
Series resistor for setting the current sensitivity	from 0.12 Ω to 70.0 Ω	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Standard connection	wire with d = 0.5 mm / AWG22		
Available approvals (please state)	IEC; VDE		

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 – 180 °C	Operating voltage range AC	from 115.0 V to 250.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0/cycles	2.5 A / 1,000
Installation height	from 5.8 mm	Rated current AC cos φ = 0.6/cycles	1.6 A / 1,000
Diameter	10.4 mm	Max. switching current AC cos φ = 1.0 / cycles	9.0 A / 1,000
Length of the insulation cap	18.0 mm	High voltage resistance	2.0 kV
Resistance to impregnation *	suitable	Total bounce time	< 1 ms
Series resistor for setting the current sensitivity	from 0.12 Ω to 70.0 Ω	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I + II	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Standard connection	wire with d = 0.5 mm / AWG22		
Available approvals (please state)	IEC; VDE		

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 – 180 °C	Operating voltage range AC	from 115.0 V to 250.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	2.5 A / 1,000
Installation height	from 5.8 mm	Rated current AC cos φ = 0.6 / cycles	1.6 A / 1,000
Diameter	10.4 mm	Max. switching current AC cos φ = 1.0 / cycles	9.0 A / 1,000
Length of the insulation cap	18.0 mm	High voltage resistance	2.0 kV
Resistance to impregnation *	suitable	Total bounce time	< 1 ms
Series resistor for setting the current sensitivity	from 0.12 Ω to 70.0 Ω	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I + II	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Standard connection	wire with d = 0.5 mm / AWG22		
Available approvals (please state)	IEC; VDE		

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

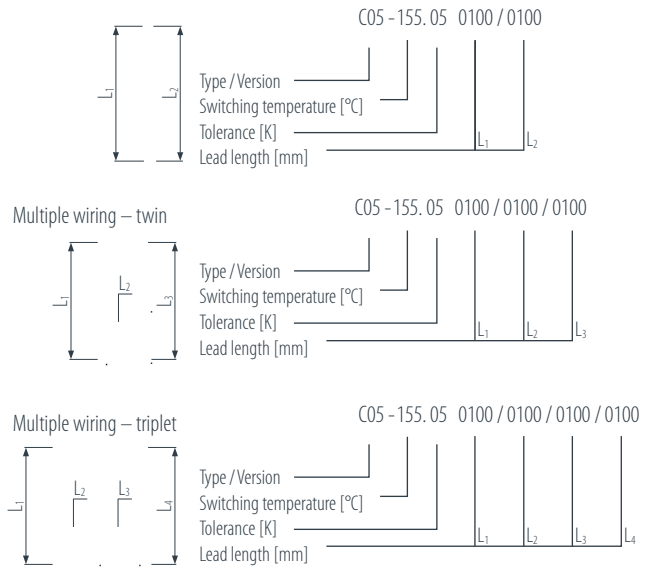
Thermik creates endless customized modifications within this Product Series, including customer-application solutions. Thermik's patented engineering in our standard configurations of this Product Series extends to all our custom solutions.

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

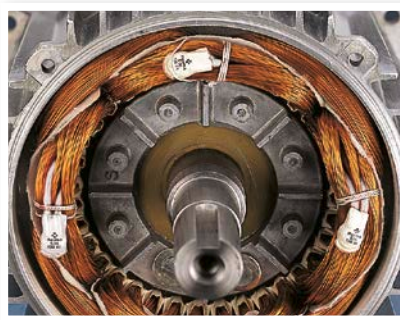
By design, Thermik's selection of materials, and their composition, requires only the highest-quality materials enter Thermik's supply chain and are used in Thermik products. We source for quality and reliability, over price. From experience, the quality of our precision engineering products depends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



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.

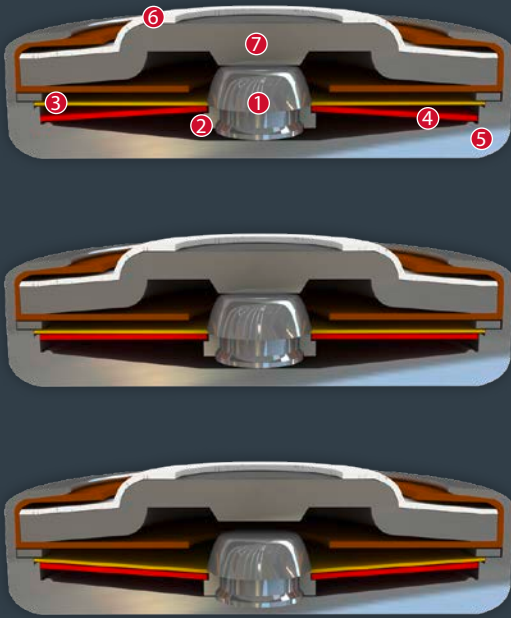
*in accordance with the Thermik test - Specifications relating to part applications (on the part of the buyer) which deviate from our standards, are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of Thermik products 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.

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

1:1

www.thermik.de/en/data/C05



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	Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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)	Rated current AC cos φ = 1.0 / cycles	6.3 A / 10,000
VDE ≥ 35 °C		Rated current AC cos φ = 0.6 / cycles	4.0 A / 10,000
Installation height	from 5.0 mm	Max. switching current AC cos φ = 1.0 / cycles	10.0 A / 3,000 20.0 A / 300
Diameter	11.0 mm	Rated current AC cos φ = 0.4 / cycles	4.6 A / 10,000
Resistance to impregnation *	suitable	Max. switching current AC cos φ = 0.4 / cycles	18.4 A / 1,000
Suitable for installation in protection class	I	Rated voltage DC	12.0 V
Pressure resistance to the switch housing *	300 N	Max. switching current DC / cycles	40.0 A / 10,000
Standard connection	Lead wire 0.5 mm ² / AWG20	Max. switching current DC / cycles	60.0 A / 3,000
Available approvals (please state)	IEC; ENEC; VDE; UL (appr. ≤ 180 °C); CSA; CQC; CMJ	Total bounce time	< 1 ms
		Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
		Vibration resistance at 10 ... 60 Hz	100 m / s ²

S05

1:1

www.thermik.de/en/data/S05



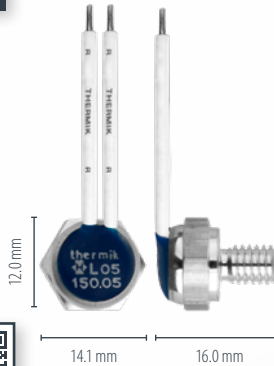
Type: Normally closed; resets automatically; with connector cables; with or without epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments	50 °C – 200 °C	Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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)	Rated current AC cos φ = 1.0 / cycles	6.3 A / 10,000
VDE ≥ 35 °C		Rated current AC cos φ = 0.6 / cycles	4.0 A / 10,000
Installation height	from 5.5 mm	Max. switching current AC cos φ = 1.0 / cycles	10.0 A / 3,000 20.0 A / 300
Diameter	11.7 mm	Rated current AC cos φ = 0.4 / cycles	4.6 A / 10,000
Length of the insulation cap	18.0 mm	Max. switching current AC cos φ = 0.4 / cycles	18.4 A / 1,000
Resistance to impregnation *	suitable	Rated voltage DC	12.0 V
Suitable for installation in protection class	I + II	Max. switching current DC / cycles	40.0 A / 10,000
Pressure resistance to the switch housing *	300 N	Max. switching current DC / cycles	60.0 A / 3,000
Standard connection	Lead wire 0.5 mm ² / AWG20	High voltage resistance	2.0 kV
Available approvals (please state)	IEC; ENEC; VDE; UL (appr. ≤ 180 °C); CSA; CQC; CMJ	Total bounce time	< 1 ms
		Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
		Vibration resistance at 10 ... 60 Hz	100 m / s ²

L05

1:1

www.thermik.de/en/data/L05


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	Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature UL	≥ 35 °C (≤ 75 °C NST)	Rated current AC cos φ = 1.0 / cycles	6.3 A / 10,000
(defined RST is possible at the customer's request)	-30 K ± 15 K (≥ 80 °C ≤ 200 °C NST)	Rated current AC cos φ = 0.6 / cycles	4.0 A / 10,000
VDE	≥ 35 °C	Max. switching current AC cos φ = 1.0 / cycles	10.0 A / 3,000 20.0 A / 300
Housing height	from 8.0 mm	Rated current AC cos φ = 0.4 / cycles	4.6 A / 10,000
Diameter	14.1 mm	Max. switching current AC cos φ = 0.4 / cycles	18.4 A / 1,000
Thread / Length	M6 x 8.0 mm	Rated voltage DC	12.0 V
Width across flats / Max. torque	13.0 mm / 8 Nm	Max. switching current DC / cycles	40.0 A / 10,000
Resistance to impregnation *	suitable	Max. switching current DC / cycles	60.0 A / 3,000
Suitable for installation in protection class	I + II	High voltage resistance	2.0 kV
Pressure resistance to the switch housing *	300 N	Total bounce time	< 1 ms
Standard connection	Lead wire 0.5 mm ² / AWG20	Contact resistance (according to MIL-STD, R5757)	≤ 50 mΩ
Available approvals (please state)	IEC; ENEC; VDE; UL (appr. ≤ 180 °C); CSA; CQC	Vibration resistance at 10 ... 60 Hz	100 m / s ²

F05

1:1

www.thermik.de/en/data/F05


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	Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature UL	≥ 35 °C (≤ 75 °C NST)	Rated current AC cos φ = 1.0 / cycles	6.3 A / 10,000
(defined RST is possible at the customer's request)	-30 K ± 15 K (≥ 80 °C ≤ 200 °C NST)	Rated current AC cos φ = 0.6 / cycles	4.0 A / 10,000
VDE	≥ 35 °C	Max. switching current AC cos φ = 1.0 / cycles	10.0 A / 3,000 20.0 A / 300
Installation height	from 6.5 mm	Rated current AC cos φ = 0.4 / cycles	4.6 A / 10,000
Diameter	10.5 mm	Max. switching current AC cos φ = 0.4 / cycles	18.4 A / 1,000
Resistance to impregnation *	suitable	Rated voltage DC	12.0 V
Suitable for installation in protection class	I + II	Max. switching current DC / cycles	40.0 A / 10,000
Pressure resistance to the switch housing *	300 N	Max. switching current DC / cycles	60.0 A / 3,000
Standard connection	Lead wire 0.5 mm ² / AWG20	High voltage resistance	2.0 kV
Available approvals (please state)	IEC; ENEC; VDE; UL (appr. ≤ 180 °C); CSA; CQC	Total bounce time	< 1 ms
		Contact resistance (according to MIL-STD, R5757)	≤ 50 mΩ
		Vibration resistance at 10 ... 60 Hz	100 m / s ²

S05 HT

1:1

www.thermik.de/en/data/S05HT

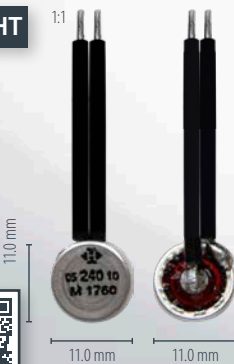

Type: Normally closed; resets automatically; with connector cables; with or without epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments	205 °C – 250 °C	Operational voltage range AC	up until 500.0 V AC
Tolerance (standard)	±10 K	Rated voltage AC	250.0 V
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	120 °C ± 15 K	Rated current AC cos φ = 1.0 / cycles	6.3 A / 10,000
VDE	≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	4.0 A / 10,000
Installation height	from 6.6 mm	Total bounce time	< 1 ms
Diameter	11.4 mm	Contact resistance (according to MIL-STD, R5757)	≤ 50 mΩ
Length of the insulation cap	22.5 mm	Vibration resistance at 10 ... 60 Hz	100 m / s ²
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		

C05 HT

1:1

www.thermik.de/en/data/C05HT


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	Operational voltage range AC	up until 500.0 V AC
Tolerance (standard)	±10 K	Rated voltage AC	250.0 V
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	120 °C ± 15 K	Rated current AC cos φ = 1.0 / cycles	6.3 A / 10,000
VDE	≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	4.0 A / 10,000
Installation height	from 6.0 mm	Total bounce time	< 1 ms
Diameter	11.0 mm	Contact resistance (according to MIL-STD, R5757)	≤ 50 mΩ
Resistance to impregnation *	suitable	Vibration resistance at 10 ... 60 Hz	100 m / s ²
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		

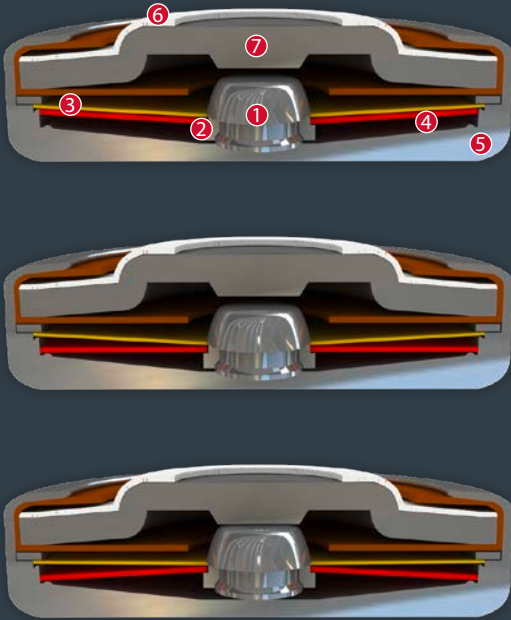
*In accordance with the Thermik test specifications relating to part applications (as the part of the buyer) which deviate from our standards are not checked for their capacity to support an application and/or conformity with standards. The responsibility for testing the suitability of Thermik products 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.

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

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	Operating voltage range AC	up until 500.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL ≥ 30 °C (≤ 75 °C NST) VDE -30 K ± 15 K (≥ 80 °C ≤ 180 °C NST)	Rated current AC cos φ = 1.0 / cycles	6.3 A / 10,000
Installation height	from 5.0 mm	Rated current AC cos φ = 0.6 / cycles	4.0 A / 10,000
Diameter	11.0 mm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD, R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing *	300 N		
Standard connection	Lead wire 0.5 mm ² / AWG20		
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC, CMJ		

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	Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC, CMJ
Tolerance (standard)	±5 K	Operating voltage range AC	up until 500.0 V AC
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL ≥ 30 °C (≤ 75 °C NST) VDE -30 K ± 15 K (≥ 80 °C ≤ 180 °C NST)	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Installation height	from 5.5 mm	Rated current AC cos φ = 1.0 / cycles	6.3 A / 10,000
Diameter	11.7 mm	Rated current AC cos φ = 0.6 / cycles	4.0 A / 10,000
Length of the insulation cap	19.0 mm	High voltage resistance	2.0 kV
Resistance to impregnation *	suitable	Total bounce time	< 1 ms
Suitable for installation in protection class	I + II	Contact resistance (according to MIL-STD, R5757)	≤ 50 mΩ
Pressure resistance to the switch housing *	300 N	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Standard connection	Lead wire 0.5 mm ² / AWG20		

L09

1:1

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

www.thermik.de/en/data/L09



Nominal switching temperature (NST) in 5 °C increments	50 °C – 180 °C	Operating voltage range AC	up until 500.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature UL	≥ 30 °C (≤ 75 °C NST)	Rated current AC cos φ = 1.0 / cycles	6.3 A / 10,000
(defined RST is possible at the customer's request)	-30 K ± 15 K (≥ 80 °C ≤ 180 °C NST)	Rated current AC cos φ = 0.6 / cycles	4.0 A / 10,000
VDE	≥ 35 °C	Rated voltage DC	12.0 V
Housing height	from 8.0 mm	High voltage resistance	2.0 kV
Diameter	12.0 mm	Total bounce time	< 1 ms
Thread/Length	M6 x 8.0 mm	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Width across flats/Max. torque	13.0 mm / 8 Nm	Vibration resistance at 10 ... 60 Hz	100 m / s ²
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 mm ² / AWG20		
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC		

F09

1:1

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

www.thermik.de/en/data/F09

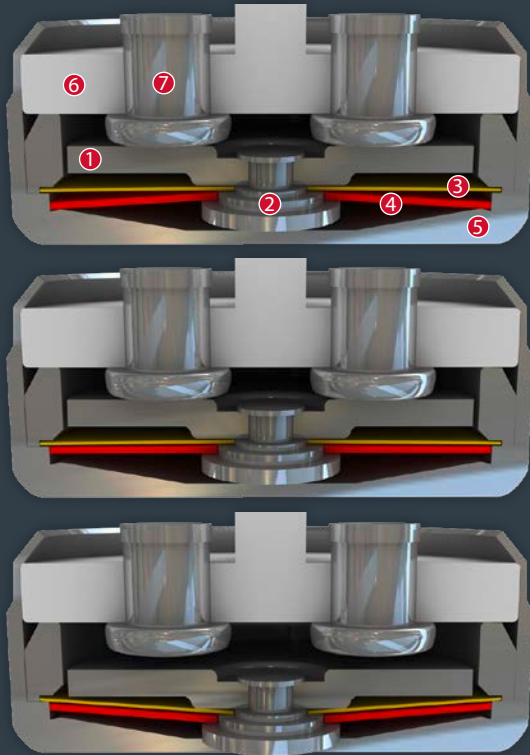


Nominal switching temperature (NST) in 5 °C increments	50 °C – 180 °C	Operating voltage range AC	up until 500.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature UL	≥ 30 °C (≤ 75 °C NST)	Rated current AC cos φ = 1.0 / cycles	6.3 A / 10,000
(defined RST is possible at the customer's request)	-30 K ± 15 K (≥ 80 °C ≤ 180 °C NST)	Rated current AC cos φ = 0.6 / cycles	4.0 A / 10,000
VDE	≥ 35 °C	High voltage resistance	2.0 kV
Installation height	from 6.5 mm	Total bounce time	< 1 ms
Diameter	11.4 mm	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Resistance to impregnation *	suitable	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Suitable for installation in protection class	I + II		
Pressure resistance to the switch housing *	300 N		
Standard connection	Lead wire 0.5 mm ² / AWG20		
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC		

*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.



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

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www.thermik.de/en/data/C06



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

Nominal switching temperature (NST) in 5 °C increments	70 °C – 200 °C	Operational voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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	Rated current AC cos φ = 1.0 / cycles	10.0 A / 10,000
Installation height	from 6.3 mm	Rated current AC cos φ = 0.6 / cycles	6.3 A / 10,000
Diameter	9.0 mm	Max. switching current AC cos φ = 1.0 / cycles	25.0 A / 100
Resistance to impregnation *	suitable	Rated voltage DC	24.0 V
Suitable for installation in protection class	I	Max. switching current DC / cycles	40.0 A / 3,000
Pressure resistance to the switch housing *	600 N	Total bounce time	< 1 ms
Standard connection	Lead wire 0.75 mm ² / AWG18	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC	Vibration resistance at 10 ... 60 Hz	100 m / s ²

S06

1:1



www.thermik.de/en/data/S06



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	Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC
Tolerance (standard)	±5 K	Operational voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
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	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Installation height	from 7.0 mm	Rated current AC cos φ = 1.0 / cycles	10.0 A / 10,000
Diameter	9.5 mm	Rated current AC cos φ = 0.6 / cycles	6.3 A / 10,000
Length of the insulation cap	17.5 mm	Max. switching current AC cos φ = 1.0 / cycles	25.0 A / 100
Resistance to impregnation *	suitable	Rated voltage DC	24.0 V
Suitable for installation in protection class	I + II	Max. switching current DC / cycles	40.0 A / 3,000
Pressure resistance to the switch housing *	600 N	High voltage resistance	2.0 kV
Standard connection	Lead wire 0.75 mm ² / AWG18	Total bounce time	< 1 ms
		Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
		Vibration resistance at 10 ... 60 Hz	100 m / s ²

F06

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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	Operational voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature (RST) below NST (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)	Rated current AC cos φ = 1.0 / cycles	10.0 A / 10,000
VDE	≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	6.3 A / 10,000
Installation height	from 7.2 mm	Max. switching current AC cos φ = 1.0 / cycles	25.0 A / 100
Diameter	9.5 mm	Rated voltage DC	24.0 V
Resistance to impregnation *	suitable	Max. switching current DC / cycles	40.0 A / 3,000
Suitable for installation in protection class	I + II	High voltage resistance	2.0 kV
Pressure resistance to the switch housing *	600 N	Total bounce time	< 1 ms
Standard connection	Lead wire 0.75 mm ² / AWG18	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC	Vibration resistance at 10 ... 60 Hz	100 m / s ²

C06

HT

1:1

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	Operating voltage range AC	up until 500.0 V AC
Tolerance (standard)	±10 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL 120 °C ± 15 K VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	10.0 A / 1,000
Installation height	from 7.1 mm	Rated current AC cos φ = 0.6 / cycles	6.3 A / 1,000
Diameter	9.0 mm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
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 (appr. ≤ 230 °C); CQC		

S06

HT

1:1

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	Operating voltage range AC	up until 500.0 V AC
Tolerance (standard)	±10 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL 120 °C ± 15 K VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	10.0 A / 1,000
Installation height	from 7.8 mm	Rated current AC cos φ = 0.6 / cycles	6.3 A / 1,000
Diameter	9.5 mm	High voltage resistance	2.0 kV
Length of the insulation cap	22.0 mm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I + II	Vibration resistance at 10 ... 60 Hz	100 m / s ²
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 (appr. ≤ 230 °C); CQC		

L06

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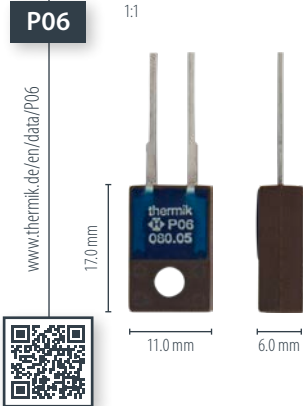
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Type: Normally closed; resets automatically; with connector cables; with epoxy; fully insulated in a screw on housing

Nominal switching temperature (NST) in 5 °C increments	70 °C – 200 °C	Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC
Tolerance (standard)	±5 K	Operational voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
Reverse Switch Temperature (RST) below NST (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)	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
VDE	≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	10.0 A / 10,000
Installation height	from 5.0 mm	Rated current AC cos φ = 0.6 / cycles	6.3 A / 10,000
Diameter	10.0 mm	Max. switching current AC cos φ = 1.0 / cycles	25.0 A / 100
Thread / Length	M6 x 8.0 mm	Rated voltage DC	24.0 V
Width across flats / Max. torque	10.0 mm / 2 Nm	Max. switching current DC / cycles	40.0 A / 3,000
Resistance to impregnation *	suitable	High voltage resistance	2.0 kV
Suitable for installation in protection class	I + II	Total bounce time	< 1 ms
Pressure resistance to the switch housing *	600 N	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Standard connection	Lead wire 0.75 mm ² / AWG18	Vibration resistance at 10 ... 60 Hz	100 m / s ²

*In accordance with the Thermik test specifications relating to part applications (in 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 4.0 A – 25.0 A



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	Operational voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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)	Rated current AC cos φ = 1.0 / cycles	10.0 A / 10,000
	VDE ≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	6.3 A / 10,000
Installation height	from 6.0 mm	Max. switching current AC cos φ = 1.0 / cycles	25.0 A / 100
Housing size (length / width)	17.0 mm / 11.0 mm	Rated voltage DC	24.0 V
Length of the connection pins	18.0 mm	Max. switching current DC / cycles	40.0 A / 3,000
Fixing/Max. torque	3.0 Nm	High voltage resistance	2.0 kV
Resistance to impregnation *	suitable	Total bounce time	< 1 ms
Suitable for installation in protection class	I + II	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Pressure resistance to the switch housing *	600 N	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC		



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	Operational voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
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)	Rated current AC cos φ = 1.0 / cycles	10.0 A / 10,000
	VDE ≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	6.3 A / 10,000
Installation height	from 7.5 mm	Max. switching current AC cos φ = 1.0 / cycles	25.0 A / 100
Housing size (length/width)	17.0 mm / 11.0 mm	Rated voltage DC	24.0 V
Fixing/Max. torque	3.0 Nm	Max. switching current DC / cycles	40.0 A / 3,000
Resistance to impregnation *	suitable	High voltage resistance	2.0 kV
Suitable for installation in protection class	I + II	Total bounce time	< 1 ms
Pressure resistance to the switch housing *	600 N	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Standard connection	Lead wire 0.75 mm ² / AWG18	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC		

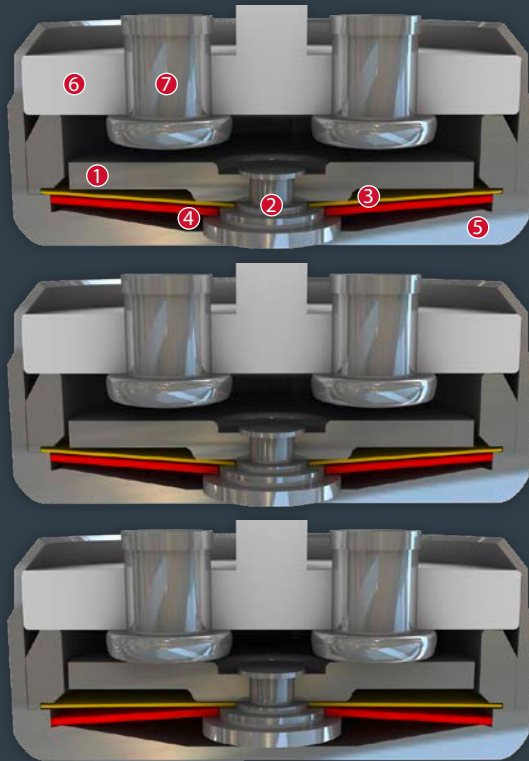


Type: Normally closed; resets automatically; with connector cables and double-insulated in the attachment housing

Nominal switching temperature (NST) in 5 °C increments	70 °C – 180 °C	Operational voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE)
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)	Rated current AC cos φ = 1.0 / cycles	10.0 A / 10,000
	VDE ≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	6.3 A / 10,000
Installation height	from 10.0 mm	Max. switching current AC cos φ = 1.0 / cycles	25.0 A / 100
Housing size (length / width)	26.0 mm / 13.5 mm	Rated voltage DC	24.0 V
Fixing/Max. torque	2.5 Nm	Max. switching current DC / cycles	40.0 A / 3,000
Resistance to impregnation *	suitable	High voltage resistance	3.75 kV
Suitable for installation in protection class	II	Total bounce time	< 1 ms
Pressure resistance to the switch housing *	600 N	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Standard connection	Lead wire 0.5 mm ² / AWG20	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Available approvals (please state)	IEC; ENEC; VDE; CQC; UL; CSA		

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

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

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

Nominal switching temperature (NST) in 5 °C increments	70 °C – 180 °C	Operating voltage range AC	up until 500.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL ≥ 35 °C (≤ 95 °C NST) VDE -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST)	Rated current AC cos φ = 1.0 / cycles	10.0 A / 10,000
Installation height	≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	6.3 A / 10,000
Diameter	9.0 mm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
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		

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	Operating voltage range AC	up until 500.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL ≥ 35 °C (≤ 95 °C NST) VDE -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST)	Rated current AC cos φ = 1.0 / cycles	10.0 A / 10,000
Installation height	≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	6.3 A / 10,000
Diameter	10.5 mm	High voltage resistance	2.0 kV
Length of the insulation cap	17.0 mm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I + II	Vibration resistance at 10 ... 60 Hz	100 m / s ²
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		

*In accordance with the Thermik test - Specifications relating to part applications (as 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, approvals, etc. can be supplied upon request.

Thermal protectors 4.0 A – 25.0 A

L08

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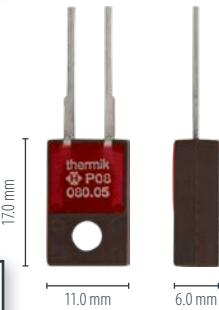


Type: Normally open; resets automatically; with connector cables; with epoxy; fully insulated in a screw on housing

Nominal switching temperature (NST) in 5 °C increments	70 °C – 180 °C	Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC
Tolerance (standard)	±5 K	Operating voltage range AC	up until 500.0 V AC
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL ≥ 35 °C (≤ 95 °C NST) VDE -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST)	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Installation height	from 5.0 mm	Rated current AC cos φ = 1.0 / cycles	10.0 A / 10,000
Diameter	10.0 mm	Rated current AC cos φ = 0.6 / cycles	6.3 A / 10,000
Thread / Length	M4 x 5.0 mm	High voltage resistance	2.0 kV
Width across flats / Max. torque	10.0 mm / 2 Nm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I + II	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing *	600 N		
Standard connection	Lead wire 0.75 mm ² / AWG18		

P08

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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	Available approvals (please state)	IEC; ENEC; VDE; UL; CSA; CQC
Tolerance (standard)	±5 K	Operating voltage range AC	up until 500.0 V AC
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL ≥ 35 °C (≤ 95 °C NST) VDE -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST)	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Installation height	from 6.0 mm	Rated current AC cos φ = 1.0 / cycles	10.0 A / 10,000
Housing size (length / width)	17.0 mm / 11.0 mm	Rated current AC cos φ = 0.6 / cycles	6.3 A / 10,000
Length of the connection pins	18.0 mm	High voltage resistance	2.0 kV
Fixing/Max. torque	3.0 Nm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I + II	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing *	600 N		
Standard connection	Lead wire 0.75 mm ² / AWG18		

H08

1:1



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	Operating voltage range AC	up until 500.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL ≥ 35 °C (≤ 95 °C NST) VDE -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST)	Rated current AC cos φ = 1.0 / cycles	10.0 A / 10,000
Installation height	from 7.5 mm	Rated current AC cos φ = 0.6 / cycles	6.3 A / 10,000
Housing size (length / width)	17.0 mm / 11.0 mm	High voltage resistance	2.0 kV
Fixing/Max. torque	3.0 Nm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I + II	Vibration resistance at 10 ... 60 Hz	100 m / s ²
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		

V08

1:1

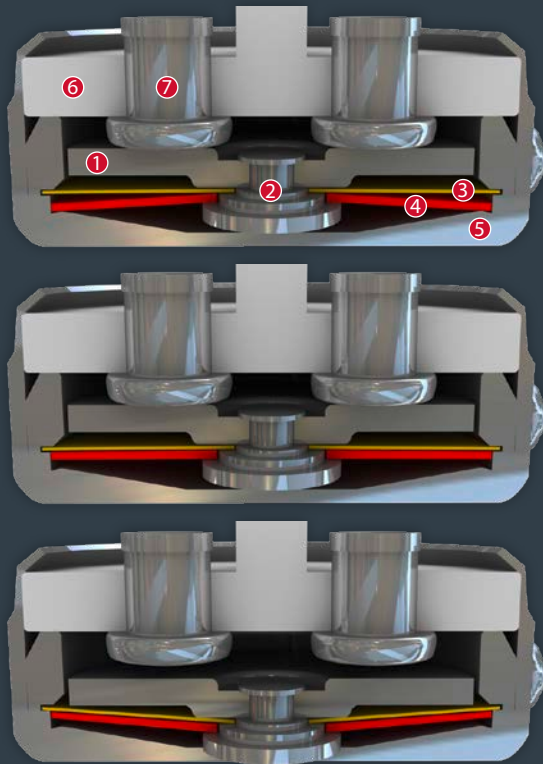


Type: Normally open; resets automatically; with connector cables and double-insulated in the attachment housing

Nominal switching temperature (NST) in 5 °C increments	70 °C – 180 °C	Operating voltage range AC	up until 500.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature (defined RST is possible at the customer's request)	UL ≥ 35 °C (≤ 95 °C NST) VDE -50 K ± 15 K (≥ 100 °C ≤ 180 °C NST)	Rated current AC cos φ = 1.0 / cycles	10.0 A / 10,000
Installation height	from 10.0 mm	Rated current AC cos φ = 0.6 / cycles	6.3 A / 10,000
Housing size (length/width)	26.0 mm / 13.5 mm	High voltage resistance	3.75 kV
Fixing/Max. torque	2.5 Nm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	II	Vibration resistance at 10 ... 60 Hz	100 m / s ²
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		

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

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 three-phase arrangement. In this case the current flow is interrupted during operation through each phase.

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	Operational voltage range AC / DC	up until 440.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	3x 440.0 V 50 / 60 Hz
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)	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Installation height	from 6.5 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000
Diameter	9.0 mm	Total bounce time	< 1 ms
Resistance to impregnation*	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing*	600 N		
Standard connection	Lead wire 0.5 mm ² / AWG20		
Available approvals (please state)	UL; CSA; CQC		

SY6

1:1



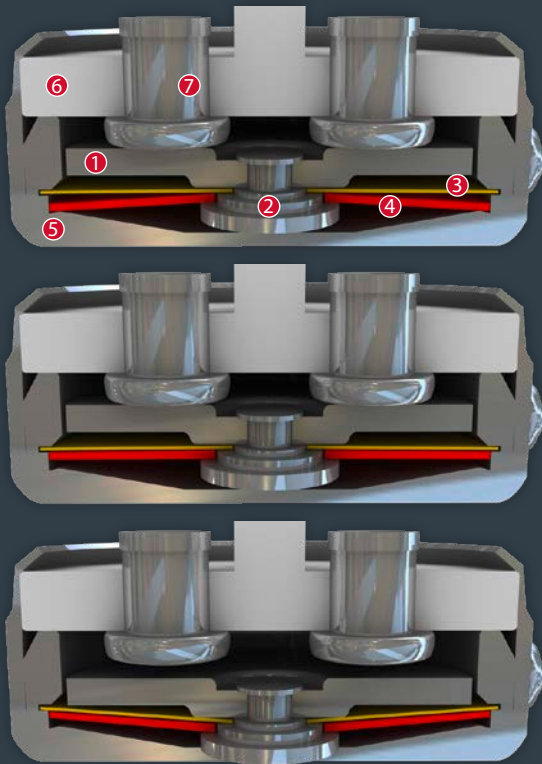
Type: Three-pole (normally closed) for three phase AC current use in the star point; resets automatically; with epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments	70 °C – 180 °C	Operational voltage range AC / DC	up until 440.0 V AC
Tolerance (standard)	±5 K	Rated voltage AC	3x 440.0 V 50 / 60 Hz
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)	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Installation height	from 7.0 mm	Max. switching current AC cos φ = 1.0 / cycles	6.3 A / 3,000
Diameter	10.5 mm	High voltage resistance	2.0 kV
Length of the insulation cap	16.0 mm	Total bounce time	< 1 ms
Resistance to impregnation*	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I + II	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing*	600 N		
Standard connection	Lead wire 0.5 mm ² / AWG20		
Available approvals (please state)	UL; CSA; CQC		

*In accordance with the Thermik test - Specifications relating to part applications (in 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.



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 three-phase arrangement. In this case the current flow is interrupted during operation through each phase.

CYH

1:1

www.thermik.de/en/data/CYH

9.0 mm

9.0 mm 6.5 mm 9.0 mm

YH180 10 E9444

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	Operating voltage range AC	up until 440.0 V AC
Tolerance (standard)	±10 K	Rated voltage AC	3x 440.0 V 50 / 60 Hz
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)	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Installation height	from 6.5 mm	Max. switching current AC cos φ = 1.0 / cycles	12.0 A / 3,000
Diameter	9.0 mm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD, R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing *	600 N		
Standard connection	Lead wire 1.0 mm ² / AWG18		

SYH

1:1

www.thermik.de/en/data/SYH

16.0 mm

10.5 mm 7.0 mm

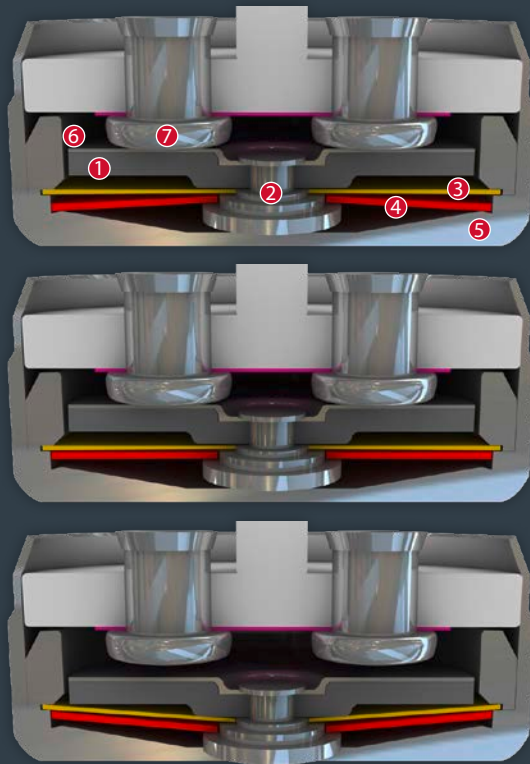
thermik SYH 180.10

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	Operating voltage range AC	up until 440.0 V AC
Tolerance (standard)	±10 K	Rated voltage AC	3x 440.0 V 50 / 60 Hz
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)	Rated current AC cos φ = 1.0 / cycles	2.5 A / 10,000
Installation height	from 7.0 mm	Max. switching current AC cos φ = 1.0 / cycles	12.0 A / 3,000
Diameter	10.5 mm	High voltage resistance	2.0 kV
Length of the insulation cap	16.0 mm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD, R5757)	≤ 50 mΩ
Suitable for installation in protection class	I + II	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing *	600 N		
Standard connection	Lead wire 1.0 mm ² / AWG18		

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

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

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	Operational voltage range AC / DC	up until 250.0 V AC
Tolerance NST ≤ 140 °C	±5 K	Rated voltage AC	230.0 V (VDE) 250.0 V (UL)
Tolerance NST > 140 °C	±10 K	Rated current AC cos φ = 1.0 / cycles	10.0 A / 1,000
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	6.3 A / 1,000
Installation height	from 6.3 mm	Max. switching current AC cos φ = 1.0 / cycles	25.0 A / 1,000
Diameter	9.0 mm	Total bounce time	< 1 ms
Resistance to impregnation*	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
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		

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	Operational voltage range AC/DC	up until 250.0 V AC
Tolerance NST ≤ 140 °C	±5 K	Rated voltage AC	230.0 V (VDE) 250.0 V (UL)
Tolerance NST > 140 °C	±10 K	Rated current AC cos φ = 1.0 / cycles	10.0 A / 1,000
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	6.3 A / 1,000
Installation height	from 7.0 mm	Max. switching current AC cos φ = 1.0 / cycles	25.0 A / 1,000
Diameter	9.5 mm	High voltage resistance	2.0 kV
Length of the insulation cap	17.5 mm	Total bounce time	< 1 ms
Resistance to impregnation*	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I + II	Vibration resistance at 10 ... 60 Hz	100 m / s ²
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		

*In accordance with the Thermik test specifications relating to parts applications (as 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**

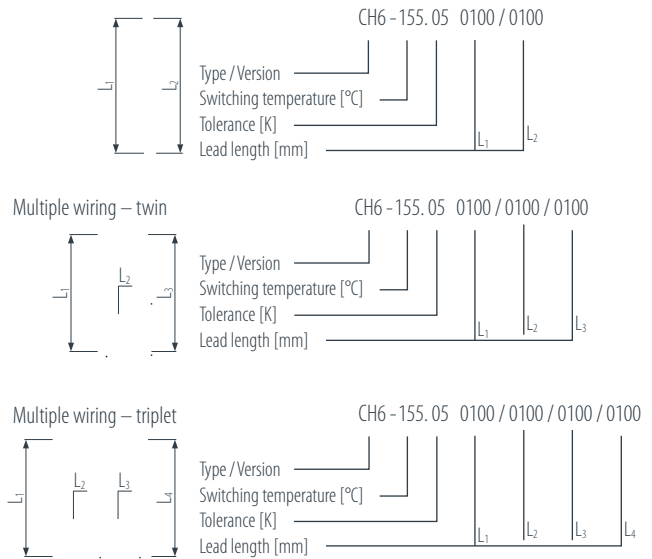
Thermik creates endless customized modifications within this Product Series, including customer-application solutions. Thermik's patented engineering in our standard configurations of this Product Series extends to all our custom solutions.

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.

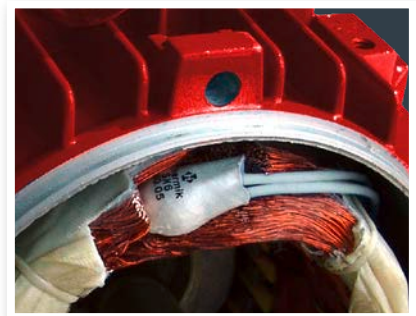
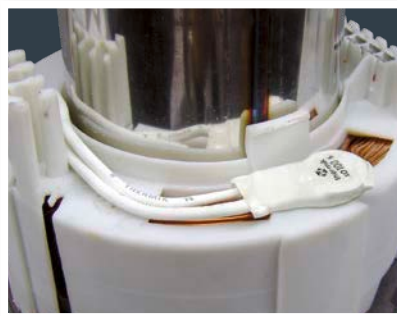
By design, Thermik's selection of materials, and their composition, requires only the highest-quality materials enter Thermik's supply chain and are used in Thermik products. We source for quality and reliability, over price. From experience, the quality of our precision engineering products depends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

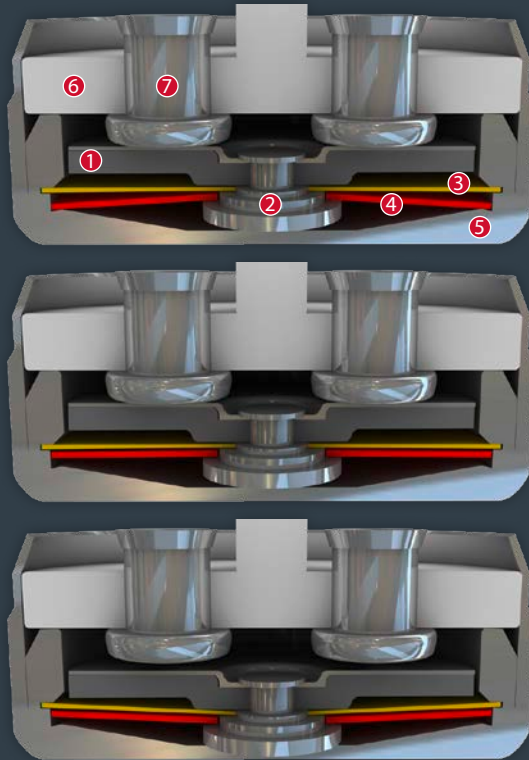
ENEC in accordance with EN 60730

CMJ in accordance with JET

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

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

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 abruptly 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 1:1

www.thermik.de/en/data/CH6

9.0 mm
9.0 mm 6.6 mm 9.0 mm

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

Nominal switching temperature (NST) in 5 °C increments	70 °C – 200 °C	Operating voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
Tolerance NST ≤ 140 °C	±5 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Tolerance NST > 140 °C	±10 K	Rated current AC cos φ = 1.0 / cycles	13.5 A / 10,000
Reverse Switch Temperature UL	≥ 35 °C (≤ 130 °C NST)	Rated current AC cos φ = 0.6 / cycles	9.0 A / 10,000
(defined RST is possible at the customer's request)	-85 K ± 15 K (≥ 135 °C ≤ 190 °C NST)	Rated current AC cos φ = 1.0 / cycles	35.0 A* / 2,000
	-90 K ± 15 K (≥ 195 °C ≤ 200 °C NST)		42.0 A / 300
VDE	≥ 35 °C	Rated voltage DC	24.0 V (VDE, UL)
Installation height	from 6.6 mm	Max. switching current DC / cycles	60.0 A / 3,000
Diameter	9.0 mm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing *	600 N		
Standard connection	Lead wire 1.0 mm ² / AWG18		
Available approvals (please state)	IEC; VDE; UL; CQC; CMJ; ENEC		

SH6 1:1

www.thermik.de/en/data/SH6

17.5 mm
10.7 mm 7.0 mm

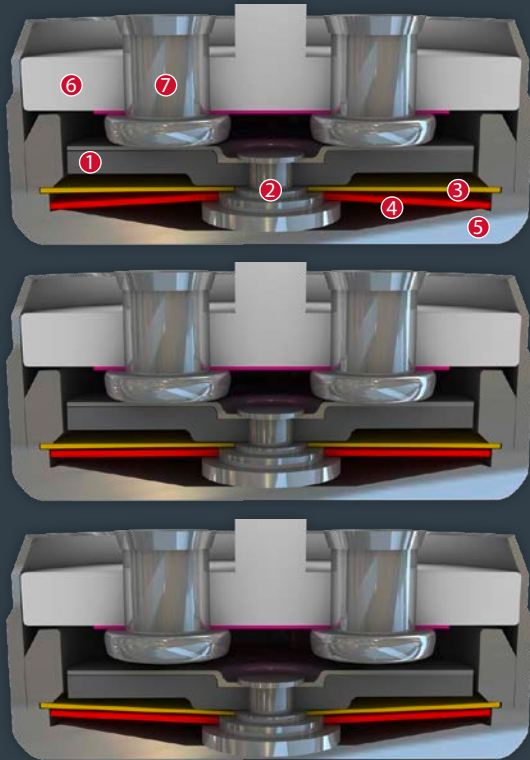
Type: Normally closed; resets automatically; with connector cables; with epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments	70 °C – 200 °C	Available approvals (please state)	IEC; VDE; UL; CQC; CMJ; ENEC
Tolerance NST ≤ 140 °C	±5 K	Operating voltage range AC / DC	up until 500.0 V AC / 28.0 V DC
Tolerance NST > 140 °C	±10 K	Rated voltage AC	250.0 V (VDE) 277.0 V (UL)
Reverse Switch Temperature UL	≥ 35 °C (≤ 130 °C NST)	Rated current AC cos φ = 1.0 / cycles	13.5 A / 10,000
(defined RST is possible at the customer's request)	-85 K ± 15 K (≥ 135 °C ≤ 190 °C NST)	Rated current AC cos φ = 0.6 / cycles	9.0 A / 10,000
	-90 K ± 15 K (≥ 195 °C ≤ 200 °C NST)	Rated current AC cos φ = 1.0 / cycles	35.0 A* / 2,000
VDE	≥ 35 °C		42.0 A / 300
Installation height	from 7.0 mm	Rated voltage DC	24.0 V (VDE, UL)
Diameter	10.7 mm	Max. switching current DC / cycles	60.0 A / 3,000
Length of the insulation cap	17.5 mm	High voltage resistance	2.0 kV
Resistance to impregnation *	suitable	Total bounce time	< 1 ms
Suitable for installation in protection class	I + II	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Pressure resistance to the switch housing *	600 N	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Standard connection	Lead wire 1.0 mm ² / AWG18		

*In accordance with the Thermik test specifications relating to particular applications (as 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.



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 1:1

www.thermik.de/en/data/CRH

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	Operating voltage range AC	up until 250.0 V AC
Tolerance NST ≤ 140 °C	±5 K	Rated voltage AC	120.0 V / 230.0 V (VDE) 250.0 V (UL)
Tolerance NST > 140 °C	±10 K	Rated current AC cos φ = 1.0 / cycles	13.5 A / 300
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	9.0 A / 300
Installation height	from 6.6 mm	Max. switching current AC cos φ = 1.0 / cycles	42.0 A / 300
Diameter	9.0 mm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing *	600 N		
Standard connection	Lead wire 1.0 mm ² / AWG18		
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA		

SRH 1:1

www.thermik.de/en/data/SRH

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

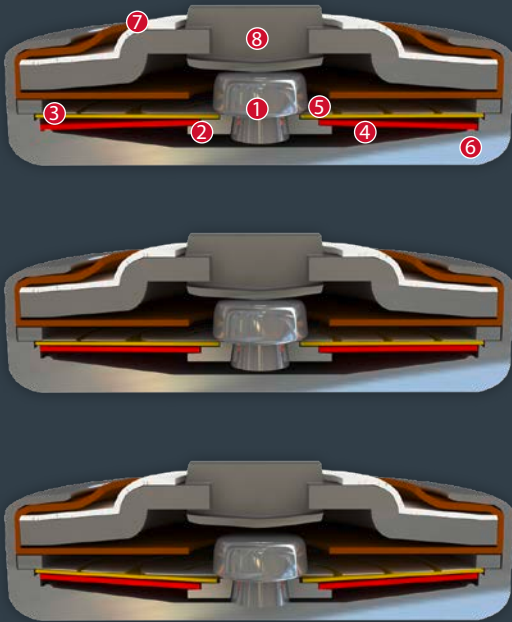
Nominal switching temperature (NST) in 5 °C increments	70 °C – 180 °C	Operating voltage range AC	up until 250.0 V AC
Tolerance NST ≤ 140 °C	±5 K	Rated voltage AC	120.0 V / 230.0 V (VDE) 250.0 V (UL)
Tolerance NST > 140 °C	±10 K	Rated current AC cos φ = 1.0 / cycles	13.5 A / 300
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 0.6 / cycles	9.0 A / 300
Installation height	from 7.0 mm	Max. switching current AC cos φ = 1.0 / cycles	42.0 A / 300
Diameter	10.7 mm	High voltage resistance	2.0 kV
Length of the insulation cap	17.5 mm	Total bounce time	< 1 ms
Resistance to impregnation *	suitable	Contact resistance (according to MIL-STD. R5757)	≤ 50 mΩ
Suitable for installation in protection class	I + II	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Pressure resistance to the switch housing *	600 N		
Standard connection	Lead wire 1.0 mm ² / AWG18		
Available approvals (please state)	IEC; ENEC; VDE; UL; CSA		

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

1:1

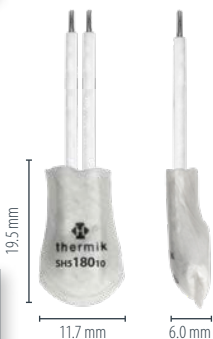


Type: Normally closed; resets automatically; with connector cables; without epoxy; without insulation

Nominal switching temperature (NST) in 5 °C increments	80 °C – 180 °C	Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Tolerance (standard)	± 10 K	Rated voltage AC	250.0 V
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	30.0 A / 10,000
Installation height	from 5.0 mm	Rated current AC cos φ = 1.0 / cycles	50.0 A / 3,000
Diameter	11.0 mm	Rated voltage DC	12.0 V
Suitable for installation in protection class	I	Max. switching current DC / cycles	60.0 A / 10,000
Pressure resistance to the switch housing *	300 N	Total bounce time	< 1 ms
Standard connection	1.0 mm ² / AWG18	Contact resistance (according to MIL-STD. R5757)	< 25 mΩ
Available approvals (please state)	IEC; VDE; UL; CQC	Vibration resistance at 10 ... 60 Hz	100 m / s ²

SH5

1:1



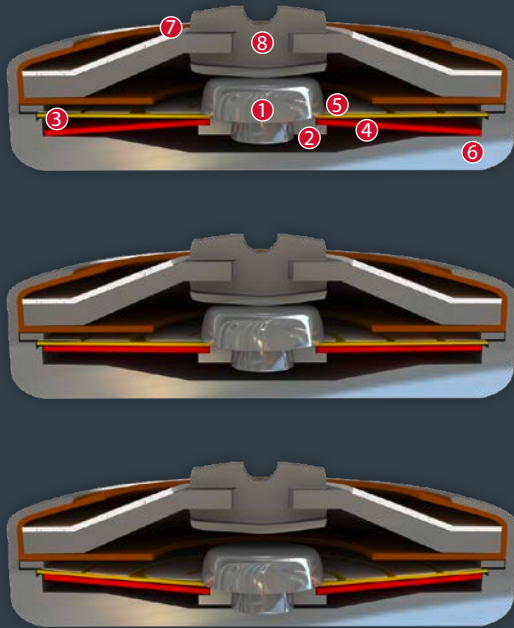
Type: Normally closed; resets automatically; with connector cables; without epoxy; insulation: Mylar®-Nomex®

Nominal switching temperature (NST) in 5 °C increments	80 °C – 180 °C	Operational voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Tolerance (standard)	± 10 K	Rated voltage AC	250.0 V
Reverse switch temperature (RST) below NST (defined RST is possible at the customer's request)	UL ≥ 35 °C VDE ≥ 35 °C	Rated current AC cos φ = 1.0 / cycles	30.0 A / 10,000
Installation height	from 6.0 mm	Rated current AC cos φ = 1.0 / cycles	50.0 A / 3,000
Diameter	from 11.7 mm	Rated voltage DC	12.0 V
Length of the insulation cap	from 19.5 mm	Max. switching current DC / cycles	60.0 A / 10,000
Suitable for installation in protection class	I + II	High voltage resistance	2.0 kV
Pressure resistance to the switch housing *	300 N	Total bounce time	< 1 ms
Standard connection	1.0 mm ² / AWG18	Contact resistance (according to MIL-STD. R5757)	< 25 mΩ
Available approvals (please state)	IEC; VDE; UL; CQC	Vibration resistance at 10 ... 60 Hz	100 m / s ²

Also available in a resistant impregnated version

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

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

1:1

www.thermik.de/en/data/CXO



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

Nominal switching temperature (NST) in 5 °C increments	70 °C – 180 °C	Operating voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Tolerance (standard)	±10 K	Rated voltage AC	250.0 V
Reverse switch temperature (RST) below NST	UL ≥ 35 °C	Rated current AC	25.0 A
(defined RST is possible at the customer's request)	VDE ≥ 35 °C	Max. switching current AC cos φ = 1.0 / cycles	50.0 A / 10,000
Installation height	from 7.0 mm	Max. switching current AC cos φ = 1.0 / cycles	63.0 A / 3,000
Diameter	17.1 mm	Rated voltage DC	12.0 V
Resistance to impregnation *	suitable	Max. switching current DC / cycles	63.0 A / 10,000
Suitable for installation in protection class	I	Total bounce time	< 1 ms
Pressure resistance to the switch housing *	600 N	Contact resistance (according to MIL-STD. R5757)	≤ 5 mΩ
Standard connection	Lead wire 1.75 mm ² / AWG14	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Available approvals (please state)	IEC; VDE; UL; CQC		

SXO

1:1

www.thermik.de/en/data/SXO



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	Operating voltage range AC / DC	up until 500.0 V AC / 14.0 V DC
Tolerance (standard)	±10 K	Rated voltage AC	250.0 V
Reverse switch temperature (RST) below NST	UL ≥ 35 °C	Rated current AC	25.0 A
(defined RST is possible at the customer's request)	VDE ≥ 35 °C	Max. switching current AC cos φ = 1.0 / cycles	50.0 A / 10,000
Installation height	from 8.0 mm	Max. switching current AC cos φ = 1.0 / cycles	63.0 A / 3,000
Diameter	18.0 mm	Rated voltage DC	12.0 V
Length of the insulation cap	35.0 mm	Max. switching current DC / cycles	63.0 A / 10,000
Resistance to impregnation *	suitable	High voltage resistance	2.0 kV
Suitable for installation in protection class	I + II	Total bounce time	< 1 ms
Pressure resistance to the switch housing *	600 N	Contact resistance (according to MIL-STD. R5757)	≤ 5 mΩ
Standard connection	Lead wire 1.75 mm ² / AWG14	Vibration resistance at 10 ... 60 Hz	100 m / s ²
Available approvals (please state)	IEC; VDE; UL; CQC		

*In accordance with the Thermik test specifications relating to part applications (in 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.

Type series PTC thermistors

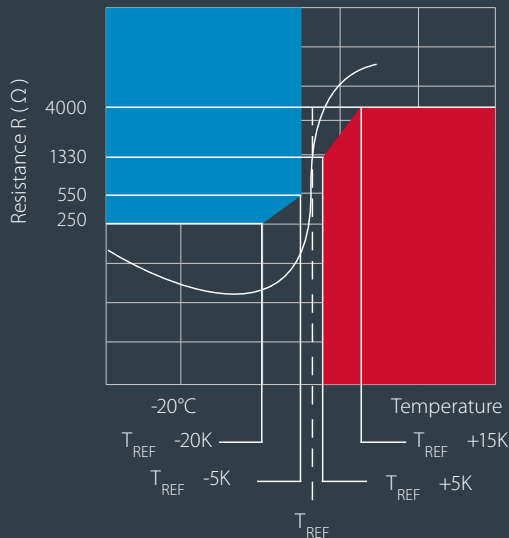


Installation and functions

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

Dielectric strength of the insulation $U_{eff} = 2.500$ 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

12.0 mm
4.0 mm

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

12.0 mm
2.0 mm

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

12.0 mm
2.5 mm

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

13.0 mm
10.0 mm

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 mm
Width across flats / Max. torque	10 / 2 Nm
Available approvals (please state)	UL; CSA

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.





Thermik in international markets

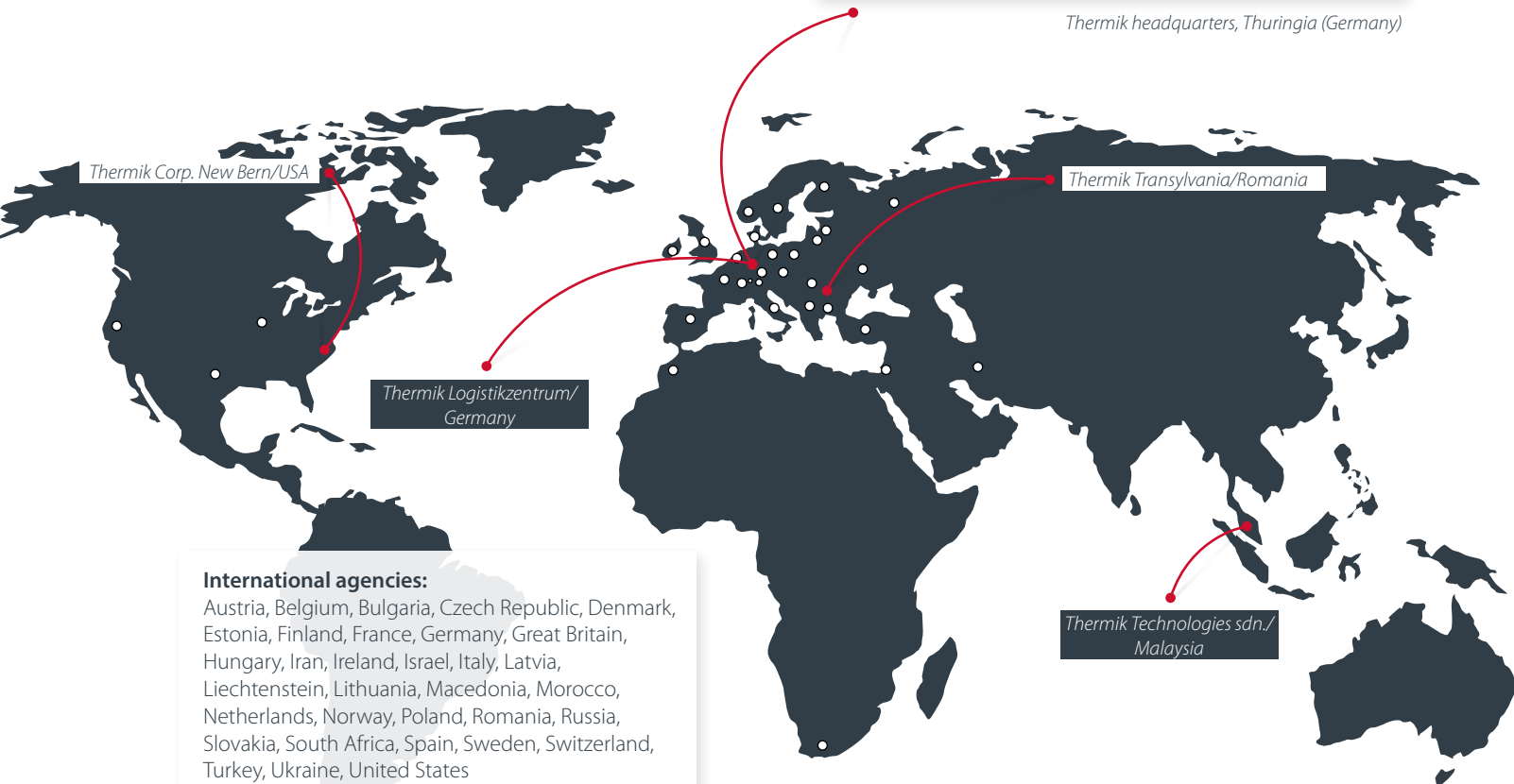
Production plants and agencies around the world

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)



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:



Ivo Russev

www.sibel.bg



Mads Hesselbæk Olesen

www.synflex.com



Philipp Fuss

www.energel.com



Gershon Zahor

www.mgr.co.il



Zeno Costa

Francesco Vivaldo

Antonio Rodeghiero

Nicola Rodeghiero

www.miottisl.com



Noel Given

Robin Lipington

www.greenway-ltd.co.uk



Jan Schuttert

www.wescap.nl



Macej Sitnik

www.dacpol.eu



Vladimir Smolyanitski

www.elsensor.ru



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Alex Orts

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Antony Colyn

www.code-tech.co.za



Pavel Hanus

www.pzk.cz



Fatih Bingöl

www.emtel.com.tr



Hr. Zoltan Ercsey

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.

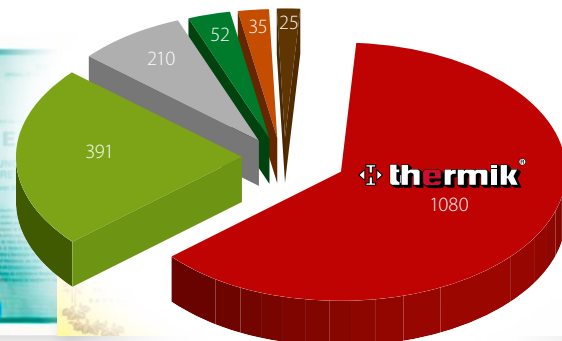
Our patented "snap-action" spring disc mechanism is only one of the engineering innovations that sets Thermik's apart from other thermal protector designs. Continuing the legacy begun by our founder, Peter Hofsaess, who first solved the fundamental issue of electrical current self-heating in bimetallic 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.



Ranking:



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.



Thermik references

“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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