

# Overheating Protector

Locking/Current-sensitive

Series R1/R4/R8

## General

- **High pressure resistance** when being mounted into the winding due to a curved steel case. Damage to the contact system is thus avoided.
- **Welded leads** guarantees reliable and stable mechanical and thermal connections.
- **Magnetic and electric shielding.** The case is made of a ferromagnetic material (steel) and withstands any influence of magnetic fields. Therefor deflection of the spark will be avoided. No vibration noise is caused by magnetic alternating fields.
- **Constant contact resistance** is guaranteed by the selection of optimal contact material, high contact pressure and sliding contacts.
- **Instantaneous shut-down and short contact bounces** due to a reliably operating bimetal snap-action disc.
- **Excellent thermal response** is combined with a current sensitive bimetal snap action disk to give optimum protection in any specific situation. As both sides are equally sensitive, installation in any position is possible.
- **Constant Dimensions.** The overall size of the switch is independent from the lead diameter. The connections for the leads are placed at the face side. A damage of the lead insulation at the edges of the case is excluded.
- **Patented Design**
- **Fully automated production.** TMC thermal protectors are manufactured fully automatically from the first to the last step with integrated 100% inspection thus ensuring a permanent high quality level.
- **Custom-designed method of connection** can be realized at low cost. Please contact us.



## Description

The overheating protectors, types R1, R4 and R8 are very efficient, locking **miniature bimetal switches**, which are used for the protection of windings. They are based on our reliable protectors of C-Series and are provided for durable operation in ohmic or inductive load.

The locking until  $-20^{\circ}\text{C}$  is ensured by a heating element, which is connected parallelly to the opening contact.

The varying current-dependence curves of the types R1, R4 and R8 allows the user to adjust the response time in case of overload. Thus, the winding temperature will not overswing inadmissibly as the protector fast enough if the temperature increases very quickly as a result of a short circuit.

Due to the locking, the protector switches only once per overload.

## Technical Data

Contact function	normally closed (snap action)
Switching capacity AC $\cos \varphi = 1,0/250V$	6,3 A <sup>1)</sup> 6,3 A <sup>1)</sup> 10,0 A <sup>1)</sup>
Contact rating	1000
Recommended nom.current max.	R1 R4 R8 1,6A <sup>2)</sup> 2,5A <sup>2)</sup> 5,0A <sup>2)</sup>
Nominal temperature (NST)	50 °C... 160 °C <sup>1)</sup> (in 5 K steps)
Standard tolerance of NST	$\pm 5 K$ <sup>3)</sup> (Letter B)
Reset temperature (RST)	>35 °C and <80 °C
Ambient temperature	T 180
Contact resistance	< 90 m $\Omega$ / < 50 m $\Omega$ (R4, R8)
Dielectric strength	2 kV
Protection class	4)
Enclosure rating	IP00
Locking until	-20 °C in non-circulatg.air <sup>1)</sup>
Pressure stability	> 600N

<sup>1)</sup> approved values for 230 VAC

<sup>2)</sup> see current dependence diagramm

<sup>3)</sup> Further tolerances:  $\pm 2,5 K (= A)$ ,  $\pm 7,5 K (= C)$ ,  $\pm 10 K (= D)$

<sup>4)</sup> Protection class: For installation in units of class I or II

Mode of action: 2 C MAK

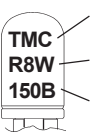
Pollution level: 2 and 3

Oversvoltage category: II

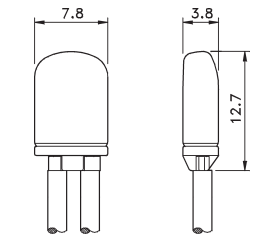
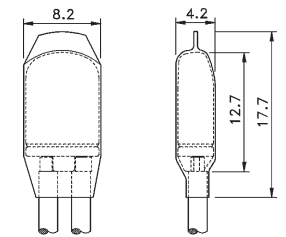
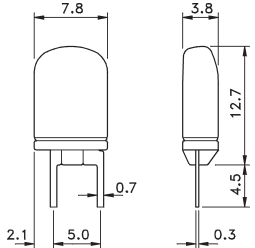
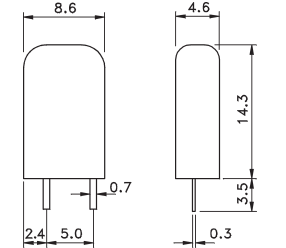
## Approvals:

Valid for	Certification Institute	DIN	Approval Number
Europa	VDE	EN60730	40024280 a.298
USA	UL	EN60730	E326354
China	CQC		09002028352 09002028341

## Marking

	Manufacturer
	Type
	Nominal temperature (150 °C) Tolerance (B = $\pm 5 K$ )

## Type (Dimensions in mm)

<p>R1W/ R4W/ R8W switch not insulated</p>  <p>Terminals lead or wire</p>	<p>R1B/ R4B/ R8B switch insulated</p>  <p>Terminals lead or wire</p>
<p>R1L/ R4L/ R8L Switch not insulated</p>  <p>Terminals: pin</p>	<p>R1L/ R4L/ R8L Switch with plastic cap</p>  <p>Terminals: pin</p>

Standard lead: R1 and R4 lead 0,25 mm<sup>2</sup>, R8 lead 0,5 mm<sup>2</sup>

Insulation class B: colour yellow

Insulation class F and H: colour white

Standard stripping: 5 mm<sup>2</sup>

Other leads (solid wire, stripping and colour) on demand.

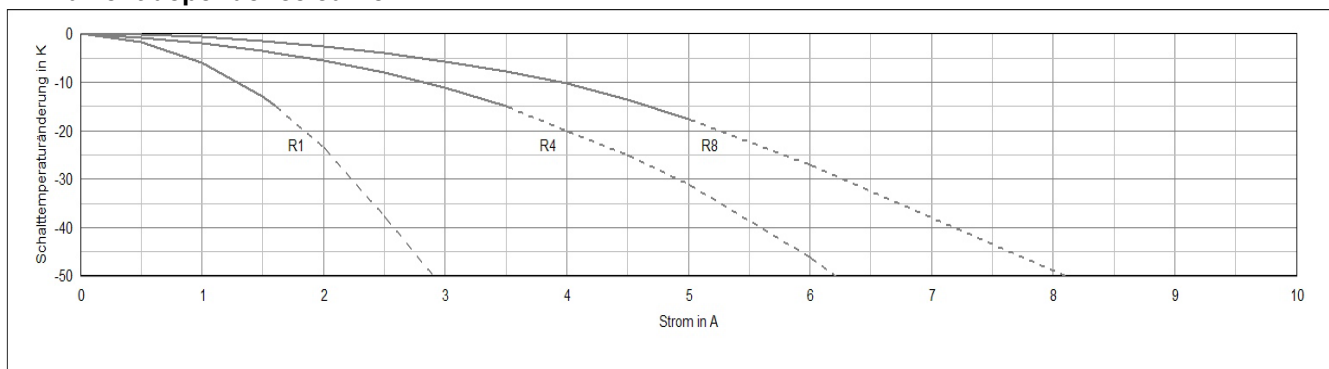
Impregnation: Vacuum-impregnated if common impregnation or cast resins are used.  
Vacuum tight on demand!

## Order example for standard versions

R8W - 150B - 100/100

Length of the cable (100 mm / 100 mm)  
Tolerance (B =  $\pm 5 K$ )  
Nominal temperature (150 °C)  
Type (switch not insulated)  
Serie

## Current dependence curve



All rights reserved. TMC will neither assume the liability for any improper utilization of the protector nor for the violation of third-party rights.

We reserve the right to modify specification and dimensions. Regarding the information of this brochure there can't lay claim of liability or to acceptance guarantee.

This new data sheet obsoletes all previous issues.

Stand 02/11