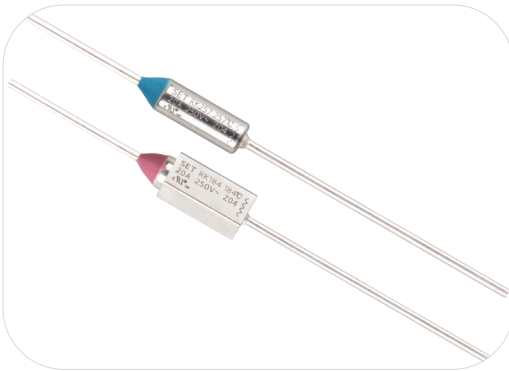


Thermal-Link (OTCO)-Organic Type

RK Series I_r : 20A



Description

Organic Thermal-Link (OTCO) RK series is defined as a non-resettable protective device, functioning one time only. It mainly consists of metal case, spring, conductive nail, sliding contact and thermal pellet. When the Thermal-Link senses abnormal heat and temp. reaches the predetermined fusing temp., thermal pellet melts and the conductive nail separates from the isolated lead with the assistance of the trip spring, thereby the circuit is disconnected.

SETsafe | SETfuse Organic Thermal-Link (OTCO) RK series Rated Functioning Temp. from 72 °C to 310 °C, Rated Current: 20 A, Rated Voltage: 250VAC, safety certification Includes UL, cUL, and complies with RoHS and REACH.

Features

- High Accuracy of Functioning Temp.
- Non-Resettable
- Organic Thermal Pellet
- Metal Case
- Low Resistance
- RoHS & REACH Compliant

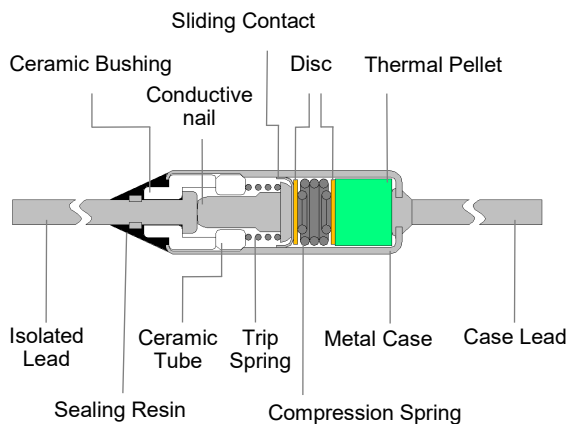
Applications

- Kitchen and Toilet Appliance
- Environment Appliances
- Cleaning Appliances
- Electric Tool
- Automotive Electronics
- Office Equipment
- Motor

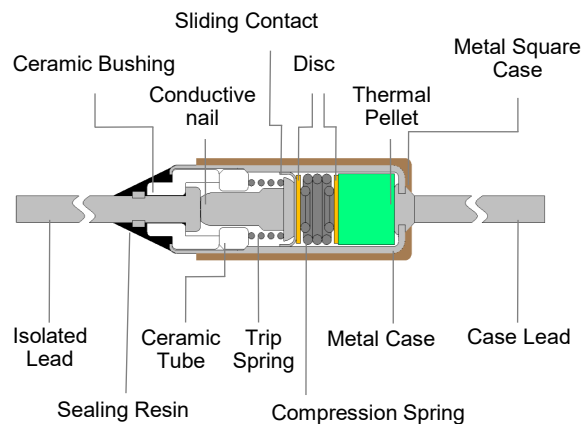
Customization

- Other Temp.
- The Length of Lead Wires
- Taping Packing Available
- Leads Forming Types

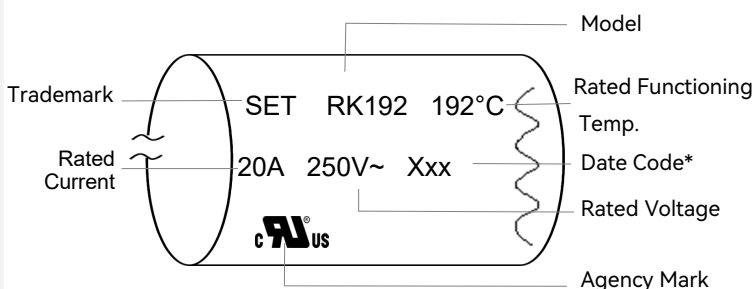
Cylindrical Structure Diagrams



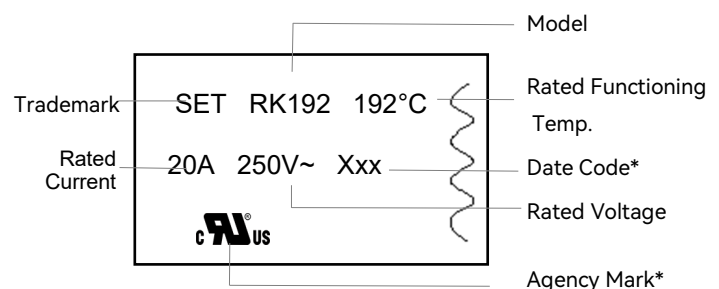
Square Structure Diagrams



Cylindrical Structure Marking



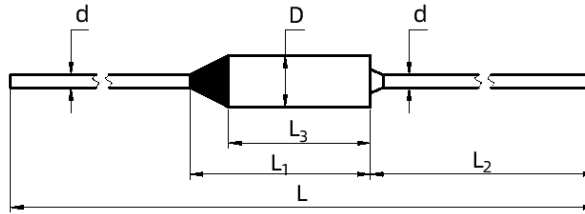
Square Structure Marking



Remark:

1: The Date Code means Year and quarter: A stands for 2000, B stands for 2001 and 01 stands for the first quarter, 02 stands for the second quarter, and so on.

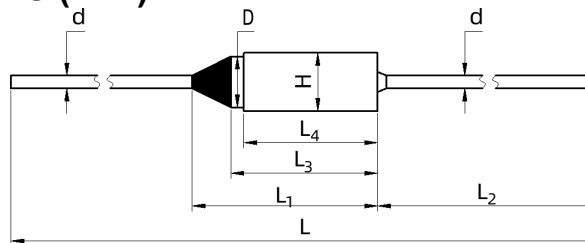
Cylindrical Structure Dimensions (mm)



Lead Length	L	L ₁	L ₂	L ₃	D	d
Standard	65 ± 3	(14)	35 ± 2	(11.5)	Φ 4 ± 0.2	Φ 1.2 ± 0.1
Long	81 ± 3	(14)	35 ± 2	(11.5)	Φ 4 ± 0.2	Φ 1.2 ± 0.1
Option	Customization	(14)	Customization	(11.5)	Φ 4 ± 0.2	Φ 1.2 ± 0.1

Remark: The dimensions in parentheses are for reference only.

Square Structure Dimensions (mm)



Lead Length	L	L ₁	L ₂	L ₃	L ₄	D	H	d
Standard	65 ± 3	(14)	35 ± 2	(11.5)	10.3 ± 0.5	Φ 4 ± 0.2	4.6 ± 0.3	Φ 1.2 ± 0.1
Long	81 ± 3	(14)	35 ± 2	(11.5)	10.3 ± 0.5	Φ 4 ± 0.2	4.6 ± 0.3	Φ 1.2 ± 0.1
Option	Customization	(14)	Customization	(11.5)	10.3 ± 0.5	Φ 4 ± 0.2	4.6 ± 0.3	Φ 1.2 ± 0.1

Remark: The dimensions in parentheses are for reference only.

Agency Information

Agency Symbol	Standards	The File No. and certification No. obtained by SETsafe SETfuse
	UL60691	E214712
	CAN-CSA-E60691	E214712

Specifications

Rated Functioning Temp. (T_f) °C

	Model	Fusing Temp. (°C)	T _h [*] (UL/cUL) (°C)	T _m (°C)	I _r (A)	U _r (VAC)	 [®] UL	 [®] cUL		 ^{PS} PSE			RoHS REACH
310	RK310	304 ± 3	280	500	20	250	○	○	○	⊙	⊙	⊙	●
275	RK275	273 +2 / -3	260	500	20	250	●	●	⊙	⊙	⊙	⊙	●
263	RK263	261 ± 2	225	500	20	250	○	○	○	⊙	⊙	⊙	RoHS ● REACH *
257	RK257	254 ± 2	237	500	20	250	●	●	⊙	⊙	⊙	⊙	●
240	RK240	238 ± 2	220	500	20	250	●	●	⊙	⊙	⊙	⊙	●
229	RK229	227 ± 2	210	500	20	250	○	○	○	⊙	⊙	⊙	●
216	RK216	213 ± 2	203	500	20	250	●	●	⊙	⊙	⊙	⊙	●
205	RK205	203 ± 2	192	500	20	250	○	○	○	⊙	⊙	⊙	●
192	RK192	190 ± 2	179	500	20	250	●	●	⊙	⊙	⊙	⊙	●
184	RK184	181 ± 2	171	500	20	250	●	●	⊙	⊙	⊙	⊙	●
172	RK172	168 ± 2	159	500	20	250	○	○	○	⊙	⊙	⊙	●
167	RK167	164 ± 2	154	500	20	250	●	●	⊙	⊙	⊙	⊙	●
157	RK157	155 ± 2	144	500	20	250	○	○	⊙	⊙	⊙	⊙	●
152	RK152	149 ± 2	139	500	20	250	●	●	⊙	⊙	⊙	⊙	●
144	RK144	141 ± 2	131	500	20	250	●	●	⊙	⊙	⊙	⊙	●
134	RK134	131 ± 2	121	500	20	250	●	●	⊙	⊙	⊙	⊙	●
128	RK128	124 ± 2	115	500	20	250	●	●	⊙	⊙	⊙	⊙	●
121	RK121	118 ± 2	108	500	20	250	●	●	⊙	⊙	⊙	⊙	●
117	RK117	114 ± 2	104	500	20	250	○	○	○	⊙	⊙	⊙	●
110	RK110	108 ± 2	97	500	20	250	●	●	⊙	⊙	⊙	⊙	●
104	RK104	102 ± 2	91	500	20	250	○	○	○	⊙	⊙	⊙	●
98	RK98	95 ± 2	85	500	20	250	●	●	⊙	⊙	⊙	⊙	●
94	RK94	91 ± 2	81	500	20	250	○	○	○	⊙	⊙	⊙	●
84	RK84	82 ± 2	71	500	20	250	○	○	○	○	○	○	●
77	RK77	74 ± 2	64	500	20	250	●	●	○	○	○	○	●
72	RK72	69 ± 2	59	500	20	250	○	○	○	○	○	○	●

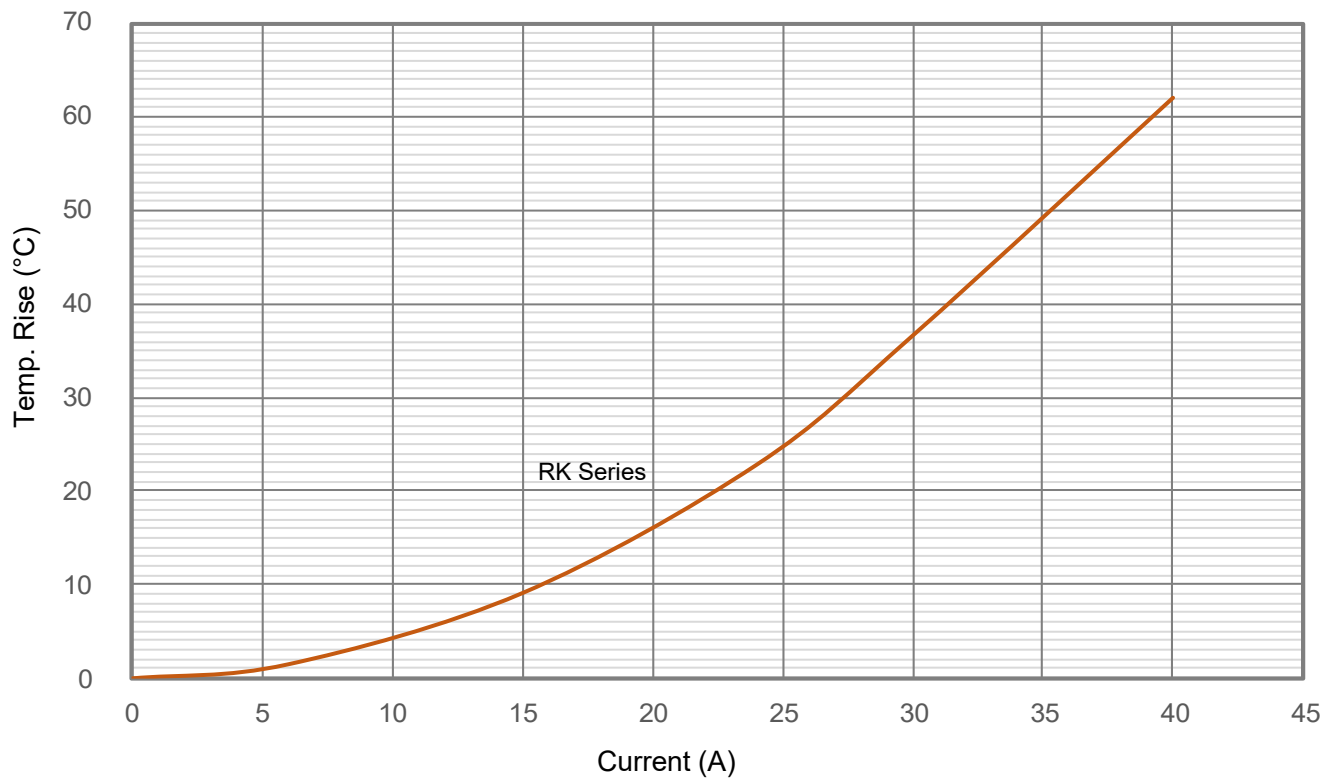
Note:

1. "●"Means certificated, "○"Means non-certificated, "⊙"Means Certification in progress, RoHS & REACH Compliant. " * " indicates that RK263 complies with REACH Directive 1907/2006/EC, SVHC Candidate List, Batch 29, Item 235 for most of the content (please consult SET for details).

2. For the T_h test, UL/cUL monitors the temperature of the product itself, while other standards monitor the ambient temperature inside the oven.

3. RK series with a T_f rating 175°C and above comply with UL conductive heat aging (CHAT) requirements.

Temp. Rise (Reference)



Note: The temperature rise test for square products is continuously updated. If you need data, please consult SET.

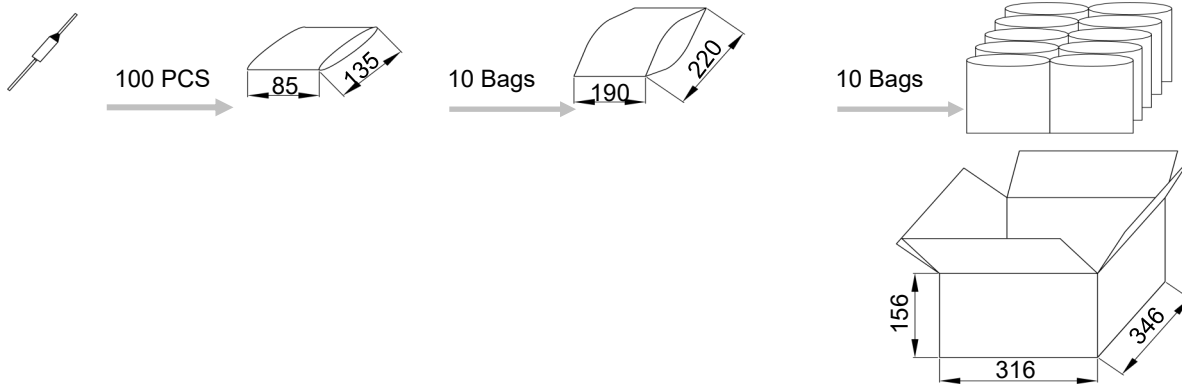
Thermal-Link (OTCO)-Organic Type

RK Series I_r : 20A

Packaging Information

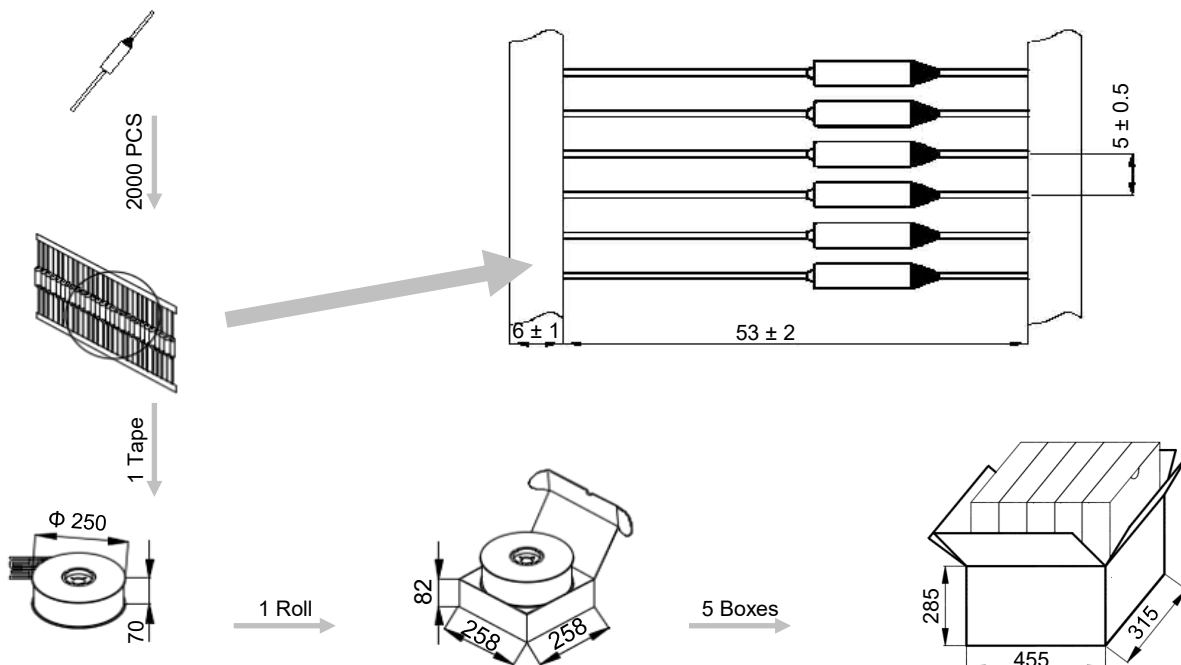
1.Bulk

Item	PE Bag	PE Bag	Carton
Dimensions (mm)	135 x 85	220 x 190	346 x 316 x 156
Quantity (PCS)	100	1000	10000
Gross Weight (kg)			Cylindrical: $13.3 \pm 10\%$ Square: $20.3 \pm 10\%$



2.Taping

Item	Scroll	Box	Carton
Dimensions (mm)	$\Phi 250 \times \Phi 85 \times 70$	258 x 258 x 82	455 x 315 x 285
Quantity (PCS)	2000	2000	10000
Gross Weight (kg)			Cylindrical: $15.0 \pm 10\%$ Square: $22.0 \pm 10\%$



Part Numbering System

OTCO - RK 72 - L S A B - 001

Other Options

Packing

B Bulk

T Taping

Leads Forming

A Straight Lead

B Single Lead Bending

C Leads Bending

Lead Length

S Standard

L Long

O Option

Process of Mark

L Laser

Rated Functioning Temp.

72 72 °C, See Specifications

Series

RK Series
See Specifications

Product Category

OTCO Organic Thermal-Link

Glossary

Item	Description
TCO	Thermal-Link A non-resettable device incorporating a THERMAL ELEMENT which will open a circuit once only when exposed for a sufficient length of time to a temperature in excess of that for which it has been designed. — (GB 9816.1)
OTCO	Organic Thermal-Link Organic type Thermal-Link, organic is the THERMAL ELEMENT.
T_f	Rated Functioning Temp. The temperature of the Alloy Thermal-Link which causes it to change the state of conductivity with a detection current up to 10 mA as the only load. — (GB 9816.1) Tolerance: T_f °C (GB 9816.1, EN 60691, K60691). Tolerance: $T_f \pm 7$ °C (J60691).
Fusing Temp.	Fusing Temp. The temperature of the Alloy Thermal-Link which causes it to change its state of conductivity is measured with silicone oil bath in which the temperature is increased at the rate of 0.5 °C to 1 °C / minute, with a detection current up to 10 mA as the only load. — (GB 9816.1)
T_h	Holding Temp. The Maximum temperature at which a Alloy Thermal-Link will not change its state of conductivity when conducting rated current for 168 hours. — (GB 9816.1)
T_m	Maximum Temp. Limit The temperature of the Alloy Thermal-Link stated by the manufacturer, up to which the mechanical and electrical properties of the Alloy Thermal-Link having changed its state of conductivity, will not be impaired for a given time. — (GB 9816.1)
I_r	Rated Current Current used to classify a Thermal-Link. — (IEC60691)
U_r	Rated Voltage Voltage used to classify a Thermal-Link. — (IEC60691)



ATTENTION

Usage

1. Please use OTCO without exceeding the rated current and voltage.
2. Do not use the OTCO in environments out of the standard specifications, such as those containing sulfur dioxide gas, nitrogen oxide gas, ammonia gas or formic acid. It is also not suitable for using in high humidity environment or immersed in liquid.

Replace

OTCO is a non-repairable product. For safety aspect, it shall be replaced by an equivalent OTCO from the same manufacturer, and mounted in the same way.

Storage

1. OTCO must be kept in a place with no sunshine or corrosive gas, the temperature shall be within 10 °C ~ 30 °C and humidity within 30 % ~ 70 %. The validity storage period of OTCO is 12 months after purchase.
2. The case and isolated lead of OTCO are silver-plated. Therefore, to avoid vulcanization, the OTCO shall not be kept around materials such as cardboard or rubber etc. which generate sulfurous acid gas.

Lead Process

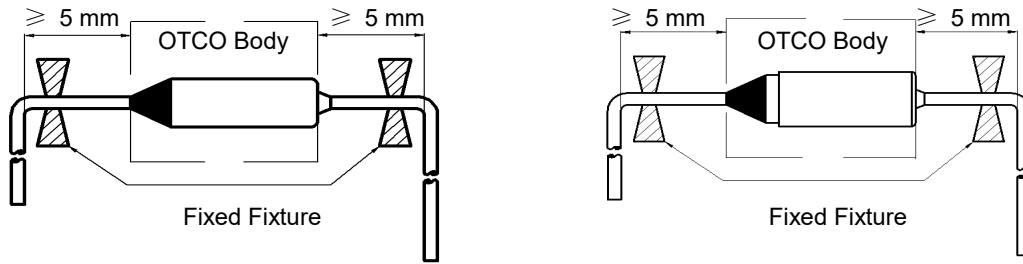


FIGURE 1

1. If lead wires has to be bent, it is important not to apply excessive pressure to the root of the lead wires. The tensile forces applied to the lead wires shall not exceed 22.7 N, and the thrust force applied to the lead wires shall not exceed 5.65 N.
2. The lead wires should be bent at a distance 5 mm or above from the body of OTCO (see Fig.1).
3. To avoid damaging the OTCO, when bending lead wires, please use pincher or similar tools to fix the OTCO.

Installation

Selection of Installation Location

1. Do not locate the OTCO in a place where severe vibration always occurs.
2. To reduce the deviations between the temperature design and the actual situation, it is recommended that the OTCO be installed in close to the thermostat or temperature sensor.

Make Sure the Temp. of Installation Location

1. The body of OTCO will generate heat as current flows through it, resulting the body temp. higher than ambient temp. The influence of temp. rise shall be considered in the design to determine the appropriate OTCO model.
2. It Considering possible temperature shock situations, it is recommended that the temperature of the body and the ambient temperature of the installation location during the operation of the temperature fuse should not exceed $(T_h - 10)^\circ\text{C}$.
3. The end product should be tested to ensure that potential abnormal conditions do not cause ambient temp. to exceed the T_m of the OTCO.

Mounting OTCO

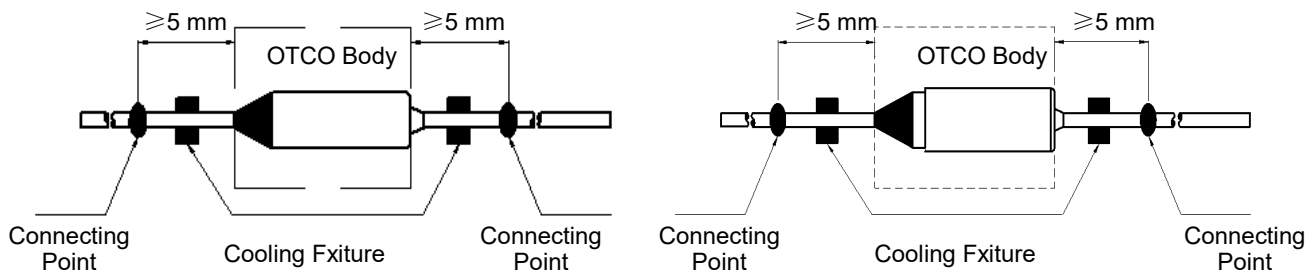


FIGURE 2

1. OTCO can be installed by soldering, welding, riveting or crimping. During and after installation, please do not pull, push or twist OTCO body or lead wires.
2. The connection point of the lead shall be no less than 5 mm away from the OTCO body (see Fig.2).
3. Try to ensure that the body of the OTCO is evenly heated. If the temp. difference is inevitable, make sure that the sealing resin side is connected close to the heat source.

Thermal-Link (OTCO)-Organic Type

RK Series I_r : 20A

Soldering

1. Soldering should be carried out according to below table. If secondary soldering is required, wait until the OTCO cools to room temp.
2. Soldering is not recommended for Thermal-Link with $T_f \leq 110^\circ\text{C}$, while non heating processes such as crimping and riveting are recommended.
3. In the process of soldering, cooling fixture should be used between soldering point and OTCO body (see Fig.2).
4. It is recommended to take X-ray after soldering, to confirm that the thermal pellet has no shrinkage after soldering.

TABLE 1: Max. Allowable Soldering Time for Different Length of Soldering Point from OTCO Body

Rated Functioning Temp. (T_f)	Length	Time	Length	Time	Length	Time	Max. Soldering Temp.
($^\circ\text{C}$)	(mm)	(s)	(mm)	(s)	(mm)	(s)	($^\circ\text{C}$)
≤ 110	5	N / A	15	N / A	25	N / A	400
111 ~ 150	5	N / A	15	1	25	2	
151 ~ 190	5	1	15	2	25	3	
≥ 191	5	1	15	3	25	5	

Welding

1. Avoid welding current flowing into the inside of the OTCO. The welding current will cause the internal parts to be welded together, resulting in the failure function of OTCO.
2. During the welding process, the lead wires of the OTCO must be supported to avoid the damage of the OTCO.
3. In the process of welding, cooling fixture should be used between welding point and OTCO body (See Fig.2).
4. It is recommended to take X-ray after welding, to confirm that the thermal pellet has no shrinkage after welding.

Riveting or Crimping

1. Select materials with low resistance (such as copper) for riveting and crimping.
2. Contact resistance shall be as small as possible. Large contact resistance will cause high temp. to make OTCO open in advance.
3. It is better to crimp OTCO leads to stranded lead wires rather than solid wires as the stranded wire may be crimped tighter and maintain better electrical contact during temp. cycling.
4. During the riveting and crimping process, ensure that the lead wires shall not be reversed, sealing resin shall not be destroyed.
5. When the working temp. exceeds 150°C , soldering reinforcement is recommended after riveting and crimping.

The isolated lead is forbidden to contact OTCO body directly to avoid short circuit (See Fig.3).

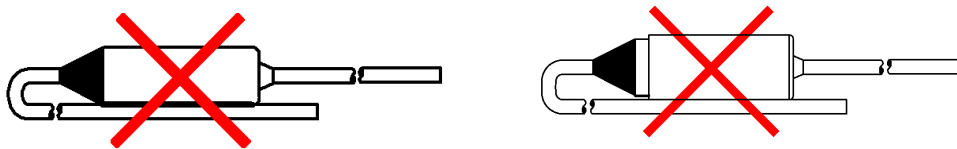


FIGURE 3

Thermal-Link (OTCO)-Organic Type

RK Series I_r : 20A

Thermal-Link (OTCO) - Organic Type Features & Model List Overview

Rated Functioning Temp. $T_r(^{\circ}C)$	Model																												I_r (A) Rated Current	U_r (VAC) Rated Voltage (VDC)	Product Structure						
	310	275	263	257	240	229	216	205	192	184	172	167	157	152	144	134	128	121	117	110	104	99	98	94	84	77	72										
	RB310	RB275	RB263	RB257	RB240	RB229	RB216	RB205	RB192	RB184	RB172	RB167	RB157	RB152	RB144	RB134	RB128	RB121	RB117	RB110	RB104	RB99	○	○	RB94	RB84	RB77	RB72	10	10 / 15	16	20	25	30	16	25	48 VDC
	RS310	RS275	RS263	RS257	RS240	RS229	RS216	RS205	RS192	RS184	RS172	RS167	RS157	RS152	RS144	RS134	RS128	RS121	RS117	RS110	RS104	RS99	○	○	RS94	RS84	RS77	RS72									
	RT310	RT275	RT263	RT257	RT240	RT229	RT216	RT205	RT192	RT184	RT172	RT167	RT157	RT152	RT144	RT134	RT128	RT121	RT117	RT110	RT104	RT99	○	○	RT94	RT84	RT77	RT72									
	RK310	RK275	RK263	RK257	RK240	RK229	RK216	RK205	RK192	RK184	RK172	RK167	RK157	RK152	RK144	RK134	RK128	RK121	RK117	RK110	RK104		○	○	RK98	RK94	RK84	RK77	RK72								
	RU310	RU275	RU263	RU257	RU240	RU229	RU216	RU205	RU192	RU184	RU172	RU167	RU157	RU152	RU144	RU134	RU128	RU121	RU117	RU110	RU104		○	○	RU98	RU94	RU84	RU77	RU72								
	RP310	RP275	RP263	RP257	RP240	RP229	RP216	RP205	RP192	RP184	RP172	RP167	RP157	RP152	RP144	RP134	RP128	RP121	RP117	RP110	RP104		○	○	RP98	RP94	RP84	RP77	RP72								
	RL310	RL275	RL263	RL257	RL240	RL229	RL216	RL205	RL192	RL184	RL172	RL167	RL157	RL152	RL144	RL134	RL128	RL121	RL117	RL110	RL104		○	○	RL98	RL94	RL84	RL77	RL72								
	RM310	RM275	RM263	RM257	RM240	RM229	RM216	RM205	RM192	RM184	RM172	RM167	RM157	RM152	RM144	RM134	RM128	RM121	RM117	RM110	RM104		○	○	RM98	RM94	RM84	RM77	RM72								

