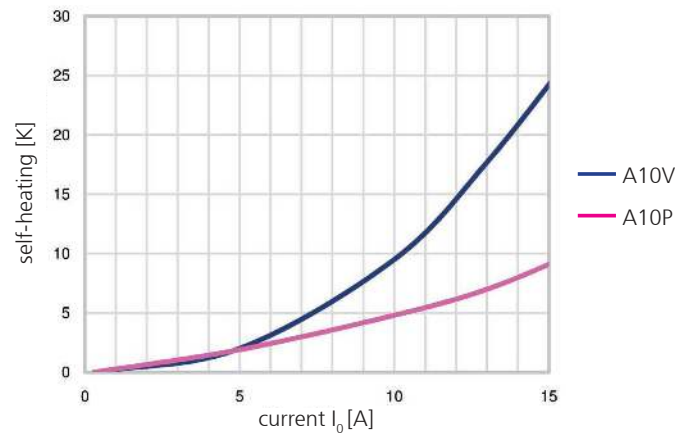
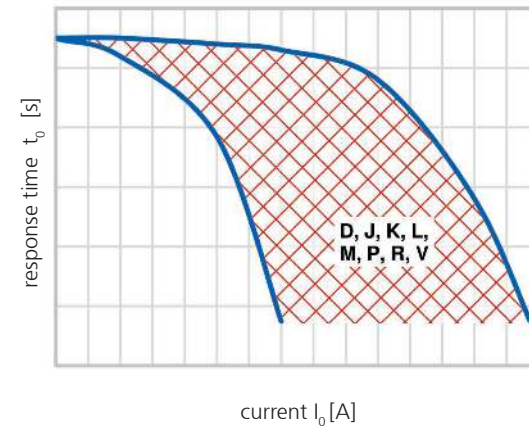


## Characteristics of current vs. self heating and current vs. time



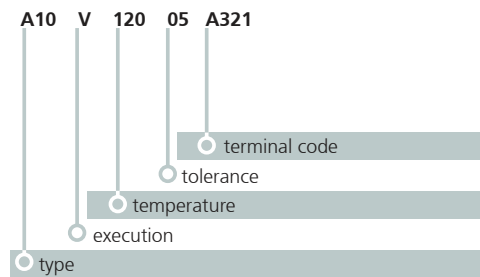
Test conditions:  
Measurement in air flow and lead wires  
of 1.5 mm<sup>2</sup>.



TCO variations for current-time based applications.

## Ordering and marking example

### Ordering example



### Marking

**A10V** type and execution  
**E** country (E=Spain)  
**12005** response temperature (120°C), tolerance ( $\pm 5$ K)  
**049** date of manufacture (April 2009)

**A12D** type and execution  
**C** country (C=Canada)  
**--123** customised type with drawing number  
**065** date of manufacture (June 2015)

Representation office:



**CANTHERM**<sup>TM</sup> Div. of Microtherm International Cooperation

Canadian Thermostats & Control Devices, Ltd.  
8415 Mountain Sights Ave.  
Montreal, Canada H4P 2B8

Tel: (514) 739-3274 Fax: (514) 739-2902  
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E-Mail: [sales@cantherm.com](mailto:sales@cantherm.com)

2015/AUG Subject to change without notice

Current and time based switch  
Temperature limiter  
Thermostat

10  
20  
30  
40

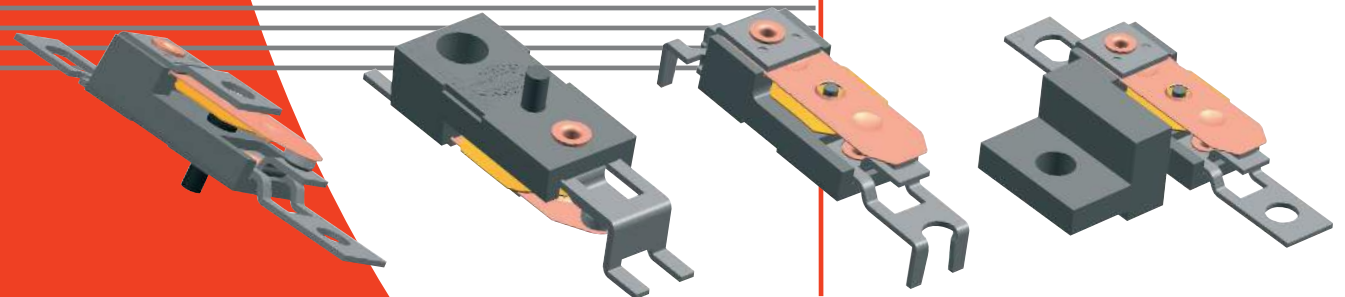


## Applications

- Household appliances
- Electronics
- Fan heaters
- Automotive industry



## Benefits

- More safety by self hold types
- PCB terminals available
- Customised ratings
- Up to 100,000 cycles




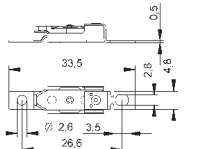

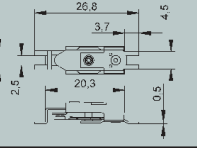

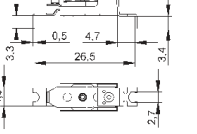
**CANTHERM**

## Technical data ( standard types )

ratings		TCO	A10V A11V	A20V A21V	A30V A31V	A40V A41V
function			automatic	manual	self hold 230 V	self hold 120 V
version			normally closed			
VDE	rated current at 50 / 60 Hz ( power factor 0.95 / 0.6 )		16 A / 2.5 A (250 V)	19.2 A / 2.5 A (250 V)	16 A / 2.5 A (230 V)	19.2 A / 2.5 A (120 V)
	switching cycles		10,000	1,000	10,000	8,000
	temperature range T <sub>a</sub> ( steps in 5 K )		70 °C ... 160 °C	70 °C ... 130°C / 140 °C	70 °C ... 160 °C	
UL	rated current at 50 / 60 Hz ( power factor 1.0 / 0.75 )		16 A / 6.3 A (250 V)			16 A / - (125 V)
	switching cycles		6,000			
	temperature range T <sub>a</sub> ( steps in 5 K )		70 °C ... 160 °C			
max. current at 250 V 50/60Hz( power factor 0.95 )			25 A			
switching cycles under max. current			200			
tolerance			standard: ± 5 K			
feature of automatic action			1.B, 2.B	2.B	2.C	
contact resistance			< 50 mΩ			
hysteresis / reset temperature <sup>1)</sup>			30 K ± 15 K / -	- / < -20 °C ; < -10°C	- / < -20 °C <sup>2)</sup>	
suitable for use in protection class			I, II			
approvals	VDE / ENEC 		EN 60730-1 / -2-9			
	UL 		UL File Number E48909			
	CSA		C22.2 No. 24 <sup>3)</sup>			
	CQC		GB14536.1-1998 / GB14536.10-1996 <sup>4)</sup>			


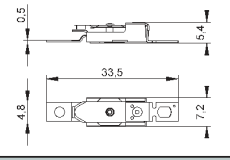
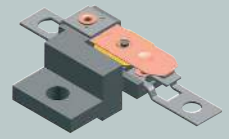
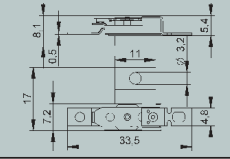

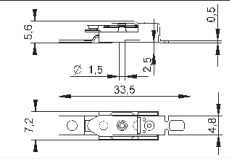

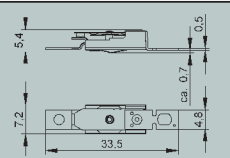
<sup>1)</sup> at the T<sub>a</sub> (upper and lower) limits the hysteresis could deviate <sup>2)</sup> without air flow <sup>3)</sup> different power rating <sup>4)</sup> details on request

## Terminals

code	used in TCO	illustration	drawing dimensions ( mm )	technical specification	approvals
standard	A10, A11, A12, A13 A20, A21, A22, A23 A30, A31, A32, A33 A40, A41, A42, A43			terminals for soldering, screwing, riveting or welding CuNi18Zn20 <sup>1)</sup>	VDE, UL, CSA
A321	A10, A12 A20, A22 A30, A32 A40, A42			SMD terminals CuNi18Zn20 <sup>1)</sup>	VDE, UL
A322	A10, A12 A20, A22 A30, A32 A40, A42			THT terminals CuNi18Zn20 <sup>1)</sup>	VDE, UL

<sup>1)</sup> P types have terminals of CuFe2P material

## Standard types

TCO		illustration	drawing dimensions ( mm )	technical specification	approvals
standard	current - time based <sup>1)</sup>				
A10V	A12V			base of thermosetting plastic	VDE, UL, CSA
A11V A21V A31V A41V	A13V A23V A33V A43V			screw-on fixing base of thermosetting plastic	VDE, UL, CSA
A20V	A22V			manual reset base of thermosetting plastic  possible screw-on fixing dimensions see above	VDE, UL, CSA
A30V A40V	A32V A42V			voltage maintained PTC 120V or 230V base of thermosetting plastic  possible screw-on fixing dimensions see above	VDE, UL, CSA

<sup>1)</sup> For current-time based types (execution D, J, K, L, M, P, R, V) the following information must be provided:

- DC or AC voltage U<sub>N</sub> in Volts.
- Continuous operating current I<sub>C</sub> in Amps at which the switch must not respond.
- Current level I<sub>0</sub> in Amps at which the switch must respond.
- Response time t<sub>0</sub> (in seconds ± tolerance) within which the switch must respond after reaching I<sub>0</sub>.
- Ambient temperatures which could be experienced both in normal operation and in switching conditions.
- Maximum current in Amps.

For special applications version P is available with a very low self heating rate.

Version A10H is VDE approved with 100,000 cycles at 1 Amp and 30,000 cycles at 10 Amps also.

Manual reset: The maximum operating force must not exceed 6 N. The control should not be reset before the starting conditions are reached, meaning there should be a satisfactory cooling down time!

Technical data on request.