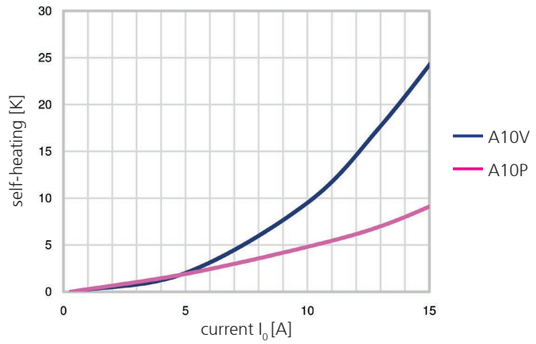
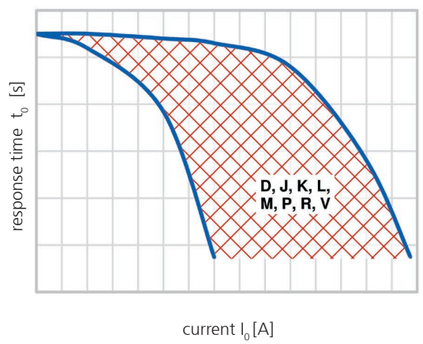
Characteristics of current vs. self heating and current vs. time



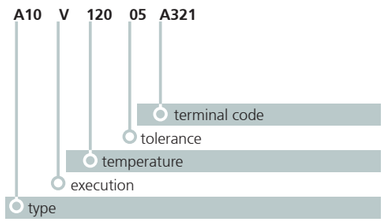
Test conditions:
Measurement in air flow and lead wires of 1.5 mm².



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 (± 5K)
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™ *Div. of Microtherm International Cooperation*

Canadian Thermostats & Control Devices, Ltd.
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Montreal, Canada H4P 2B8

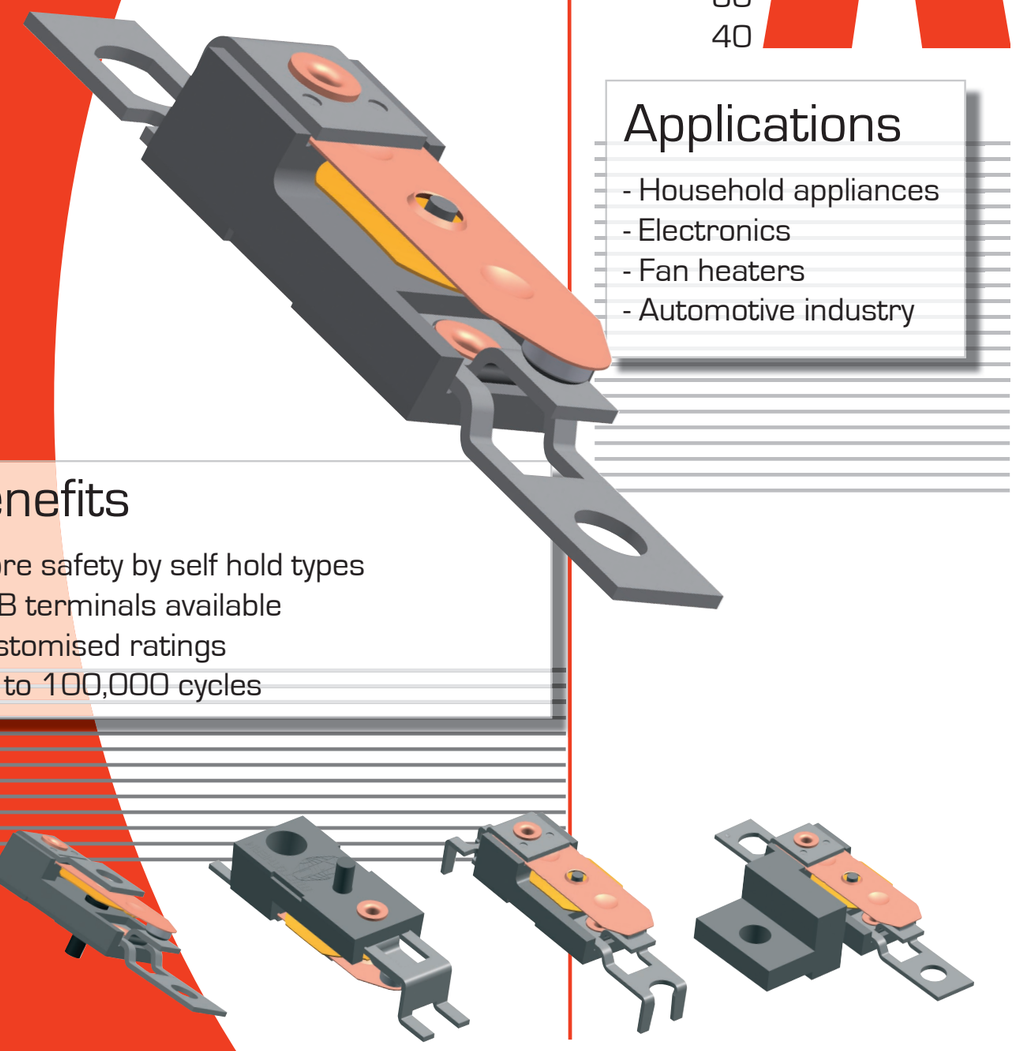
Tel: (514) 739-3274 Fax: (514) 739-2902
1 (800) 561-7207
WEBSITE: www.cantherm.com
E-Mail: sales@cantherm.com

2015/AUG Subject to change without notice

Current and time based switch
Temperature limiter
Thermostat

A

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

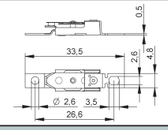
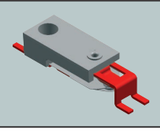
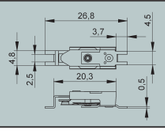
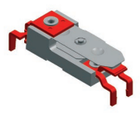
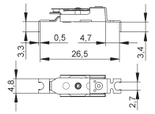
CANTHERM

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_a (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_a (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 [1]		30 K ± 15 K / -	- / < -20 °C ; < -10°C	- / < -20 °C [2]	
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 [3]			
	CQC	GB14536.1-1998 / GB14536.10-1996 [4]			

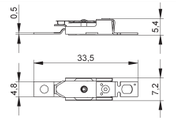
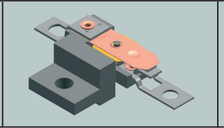
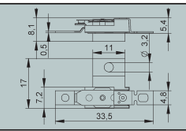
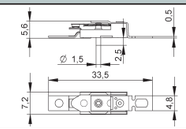
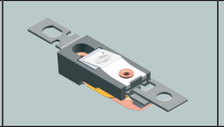
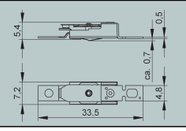
[1] at the T_a (upper and lower) limits the hysteresis could deviate [2] without air flow [3] different power rating [4] details on request

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 [1]	VDE, UL, CSA
A321	A10, A12 A20, A22 A30, A32 A40, A42			SMD terminals CuNi18Zn20 [1]	VDE, UL
A322	A10, A12 A20, A22 A30, A32 A40, A42			THT terminals CuNi18Zn20 [1]	VDE, UL

[1] P types have terminals of CuFe2P material

Standard types

TCO standard	TCO current - time based [1]	illustration	drawing dimensions (mm)	technical specification	approvals
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 srew-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

[1] 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_N in Volts.
- Continuous operating current I_C in Amps at which the switch must not respond.
- Current level I_0 in Amps at which the switch must respond.
- Response time t_0 (in seconds ± tolerance) within which the switch must respond after reaching I_0.
- 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.