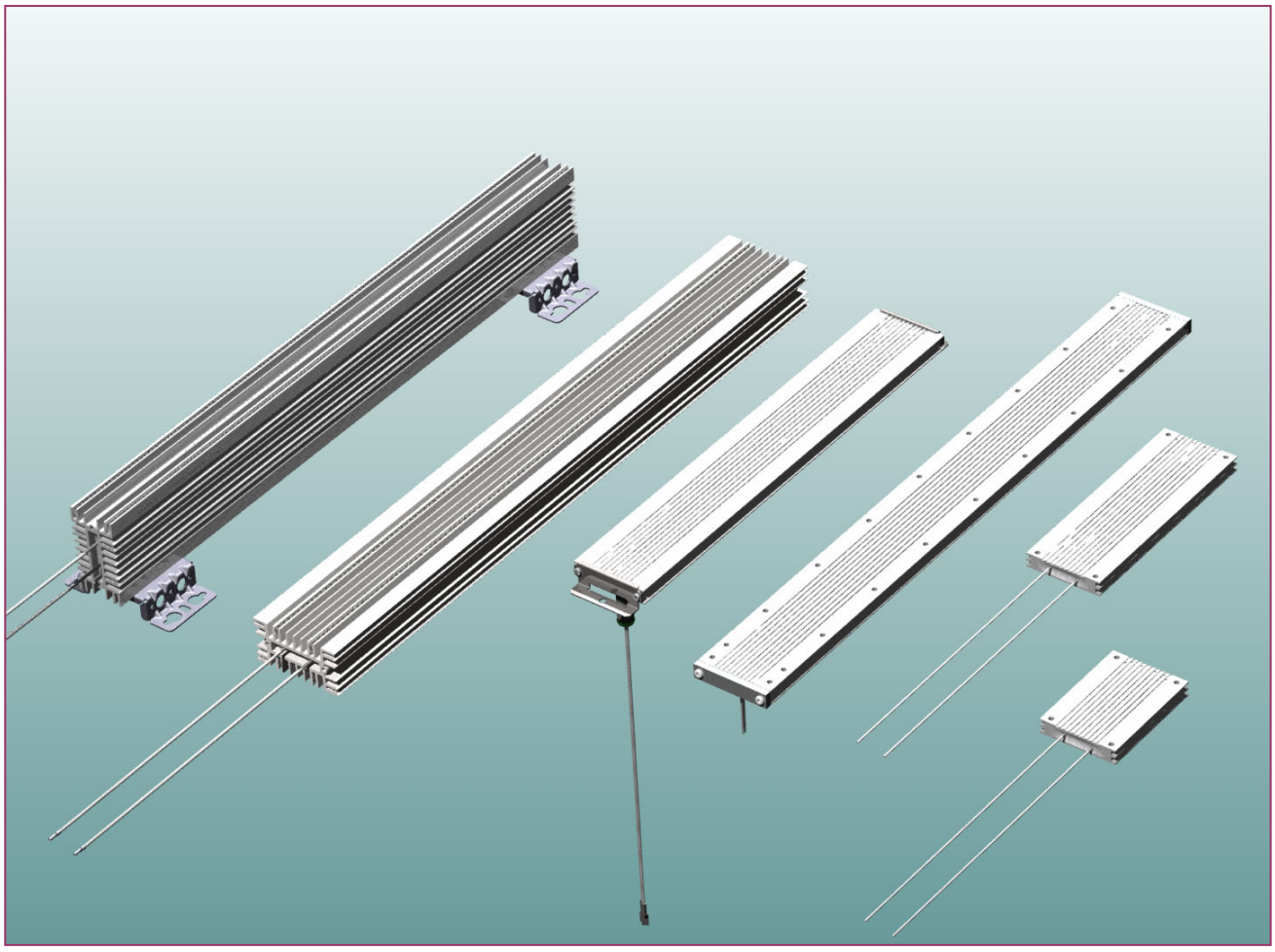
α ALPHA

CCH / CCR

ALUMINIUM HOUSED
COMPACT BRAKE RESISTORS



CCH and **CCR** belong to our medium range of **ALPHA ALUMINIUM HOUSED BRAKE RESISTORS**. These resistors are insulated and compact and can easily be integrated in compact constructions. They are constructed for high pulse loads compared to the average load.
The resistors comply with **IP50, IP52 or IP65** giving electrical and thermal protection. The resistors are Silicone free.
The power range is from **100 W to 1045 W** steady state load and pulse loads of 40 times compared to the nominal load in one second each 120s

The flat construction of CCH makes it suitable for heat sink cooling and can be used in **water cooled** equipment.
Danotherm has developed **thermal models** for all resistor types and resistor values. By using these models we are able to calculate the temperature rises in the resistor wire and on the surface for all possible load applications. We offer our assistance to our customers to find the optimum solution for any situation. All types can be offered with thermostats. This range is approved to:

c UL us

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DANOTHERM

Construction

The Alpha resistors are constructed as follows:

The resistor elements are wire wound elements wound on mica support sheets.

The housing is an aluminium profile, which is insulated with micanite sheets on all inner surfaces. The resistor elements are fixed symmetrical in the profiles by the mica construction. This ensures a symmetric expansion of the resistors and a maximum stability to high load impulses.

The resistor with the fixed resistor element is filled with quarts sand or MgO. This construction ensures a minimum change of temperature on the resistor surface even if the resistor element reaches its maximum temperature during a pulse load.

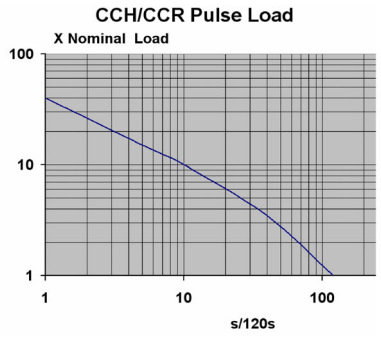
The resistors are approved to UL 508 for USA and Canada. All thermal data in this data sheet complies to UL 508 (no further reduction is required)

The standard cables are 300 mm AWG 16/14 Style 1659 PTFE, nature colour. We can supply cables in specified length, colours and mounted with cable shoes or connectors.

If screw terminals are required for the CCR types please use our **CCR-V XXX BT** or **CCR XXX DT** resistors with connection boxes.
If higher impulse/average load is required please consider the **CBR** or **CBT** types which have higher weight and heat capacity / length.

PULSE LOAD

The curves show the pulse load ability compared to the nominal load for the CCH-CCR resistors under the following conditions: The load is a periodic pulse load with a constant **period time** of **120 sec.**



For further optimization DANOTHERM offers individual thermal electric circuit models for all types and ohm values. With these models the temperature of the resistor wire and resistor surface during any pulse load conditions can be simulated with a standard soft ware like P-Spice. Alternatively Danotherm offers to make thermal simulation for our customers

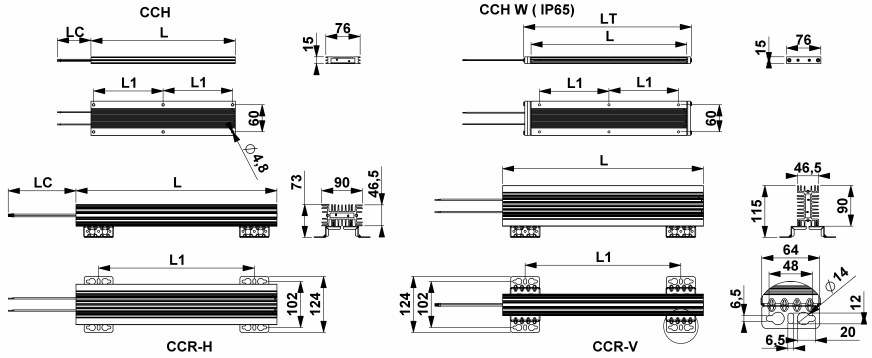
Ratings:

TYPE CCR- -V: Profile vertically -H: Profile horizontally see table below	PN W @40°C Approved UL508	Max Surface temp. °C @40°C	Pulse Load in 1 s each 120s. P1/120 kW @40°C	Pulse Load in 5 s each 120 s. P5/120 kW @40°C	Pulse Load in 10s each 120 s. P10/120 kW @40°C	Pulse Load in 40 s each 120 s P40/120 W @40°C	Time Const sec.	R Ω (±5%) ±10%
CCH 110 C	100	250	2	1.8	1.0	300	1000	2 - 1000
CCH 166 C	160	255	3.2	2.88	1.6	480	1000	4 - 1200
CCH 216 C	200	255	4	3.6	2.0	600	1000	6 - 1500
CCH 270 C	260	255	5.1	4.59	2.55	770	1000	9 - 1700
CCH 320 C	300	260	6	5.4	3.0	900	1000	10 - 2000
CCH 420 C	390	270	7.8	7.02	3.9	1170	1000	13 - 2000
CCH 520 C	480	285	9.6	8.64	4.8	1440	1000	16 - 2000
CCH 620 C	570	295	11.4	10.2	5.7	1710	1000	20 - 2000
CCR-V/CCR-H 116	185	250	4.5	2.5	1.2	550	1000	2 - 1000
CCR-V/CCR-H 172	260	250	11	3.5	2.5	1000	1000	4 - 1200
CCR-V/CCR-H 222	330	255	15.5	4.45	3.75	1300	1000	6 - 1500
CCR-V/CCR-H 276	400	260	18	5.4	4.5	1800	1000	9 - 1700
CCR-V/CCR-H 326	500	265	23	6.7	5.9	2000	1000	10 - 2000
CCR-V/CCR-H 426	635	275	28	8.57	7.0	2700	1000	13 - 2000
CCR-V/CCR-H 526	815	285	38	11	9.0	3500	1000	16 - 2000
CCR-V/CCR-H 626	1045	290	43	14.1	11	4500	1000	20 - 2000

General Specifications	
Temperature Coefficient:	<±100ppm
Dielectric strength:	2500VAC 1 minute
Working Voltage:	UL: 600VAC / CE: 690VAC; 1100VDC
Isolation Resistance:	> 20 MΩ
Overload:	10 x in10 s / 120 s; 40 x in 1 s / 120 s
Environmental:	-40 °C – 90 °C
De-rating :	Linear: 40°C = P_N to 90°C = 0.75*PN
Thermostat :	200°C (Optional 160°C/180°C), 2A, 250VAC
Approvals	UL 508

PN: NOMINAL POWER WITH NATURAL COOLING WITHOUT INTERNAL THERMOSTAT and:
CCH mounted in a horizontal position; CCR-V and CCR-H mounted in a vertical position.
For data for resistors with internal thermostats please ask for special data sheet.

Mechanical Data



IP65 require extra profile length **L**: CCH: +25; CCR: +19 mm. **LT = L + 27mm.**
For CCH and CCH W: **L1** has the same value.
CCH for heat sink cooling requires extra mounting holes to assure sufficient thermal contact. The distance (L1) should be about 100mm and can be made according to customer specification. The weight figures in the table refer to IP50 versions. The table shows standard sizes. Other sizes are possible.

Type	L ± 2	L1±0.5	IP 65 L ± 2	W Kg	Type	L ± 2	L1±0.5	IP65 L ±2	IP65: L1±0.5	W Kg
CCH 110 C	110	98	135	0.22	CCR-V/CCR-H 116	116	-	135	-	0.52
CCH 166 C	166	154	191	0.35	CCR-V/CCR-H 172	172	72	191	91	0.78
CCH 216 C	216	204	241	0.48	CCR-V/CCR-H 222	222	122	241	141	1.0
CCH 270 C	270	158	294	0.62	CCR-V/CCR-H 276	276	176	295	195	1.25
CCH 320 C	320	2x154	345	0.79	CCR-V/CCR-H 326	326	226	345	245	1.47
CCH 420 C	420	2x204	445	1.05	CCR-V/CCR-H 426	426	326	445	345	1.92
CCH 520 C	520	2x241.5	545	1.3	CCR-V/CCR-H 526	526	426	545	445	2.37
CCH 620 C	620	2x291.5	645	1.55	CCR-V/CCR-H 626	626	526	645	545	2.83

Type identification:

CCR-V 326 (M) C (T) 22R 800

- 800 = Standard, otherwise customer specified version
- Ohm Value (Examples: 2R2=2.2Ω; 22R=22 Ω; 220R=220Ω; 2K2 = 2.2 kΩ)
- **T** = Thermostat, Standard 200°C
- Terminals: **C**: Cable, **W:** Cables and IP65 (UL: Type 4X)
- **M** MgO filling, (specified by Danotherm)
- Length of resistor profile in mm.
- Type CCH, CCR-V, CCR-H
- ( ): Only if these features are present

NON UL versions: CCH*X* 335 C 22R 800