DANOTHERM™

CBH / CBV / CBR-H / CBR-V

CBH / CBV / CBR Cable cable connection IP54

Type	Pn W @ 40°C	Temp max °C	R [Ω] min-max	Pulse load kW, Temp. amb 40°C, cycle 120s			
				duty 1 second	duty 5 seconds	duty 10 seconds	duty 40 seconds
CBH / CBV 165 C	110	265	0.5 - 1000	5	1.4	0.9	0.3
CBH / CBV 215 C	155	270	0.8 - 1500	9.8	2.5	1.6	0.5
CBH / CBV 265 C	200	270	1.5 - 2000	16.6	4.0	2.4	0.6
CBH / CBV 335 C	270	280	1.8 - 2000	26.6	6.2	3.4	0.9
CBH / CBV 405 C	330	285	2.0 - 2000	34.1	8.5	4.3	1
CBR-V / H 175 C	311	265	0.8 - 1500	10.5	2.7	1.8	0.9
CBR-V / H 225 C	400	270	1.5 - 2000	18.3	4.5	2.8	1.2
CBR-V / H 295 C	525	275	1.8 - 2000	29.7	7.1	4.2	1.8
CBR-V / H 365 C	650	280	2.0 - 2000	38.4	11.3	6.7	2.4
CBR-V / H 426 C	980	285	2.4 - 2000	39.1	12.9	7.9	2.9
CBR-V / H 526 C	1220	295	3.0 - 2000	49.1	16.1	9.9	3.6
CBR-V / H 626 C	1460	305	3.5 - 2000	60.6	19.7	12	4.4
CBR-V / H 726 C	1700	310	4.0 - 2000	73.1	23.4	14.3	5.2

Construction and salient properties

- UL approved
- Compact dimensions
- Nominal power range from 110W—1700W
- Energy levels from 9kJ-150kJ per case housing (5s duty,120s cycle), depending on ohmic value
- Aluminium case housing for high IP rating
- IP50-IP65
- Internal ceramic supported wirewound spirals for lower ohmic values
- Nickel-Chrome 8020 alloy for low thermal drift
- Mica insulated for high dielectric strength
- Al_2O_3 or SiO_2 filled for high thermal capacity/high power overload capability
- Low surface temperature
- Low noise level
- High vibration withstand capability
- Thermal relief expansion mounting feet (CAR type)
- Optional thermal switch or PT100 element for thermal protection
- Cable 300mm (AWG 18—AWG10) with sleeves or box connection up to 10mm2
- Customized to your needs and application (OEM versions available)

CBR-V 225 KT

CBH / CBV / CBR Cable cable connection IP54, with thermal switch

Type	Pn W @ 40°C	Temp max °C	R [Ω] min-max	Pulse load kW*, Temp. amb 40°C, cycle 120s			
				duty 1 second	duty 5 seconds	duty 10 seconds	duty 40 seconds
CBH / CBV 190 xT	85	210	0.5 - 1000	5	1.4	0.9	0.3
CBH / CBV 240 xT	120	215	0.8 - 1500	9.8	2.5	1.5	0.4
CBH / CBV 290 xT	150	220	1.5 - 2000	16.6	3.8	1.9	0.5
CBH / CBV 360 xT	200	225	1.8 - 2000	25.6	5.2	2.6	0.7
CBH / CBV 430 xT	250	230	2.0 - 2000	32.5	6.5	3.2	0.8
CBR-V / H 160 xT	160	210	0.5 - 1000	5.4	1.5	1	0.5
CBR-V / H 210 xT	230	210	0.8 - 1500	10.6	2.8	1.8	0.9
CBR-V / H 260 xT	300	225	1.5 - 2000	18.4	4.6	2.8	1.3
CBR-V / H 330 xT	390	230	1.8 - 2000	30	7.1	4.2	1.7
CBR-V / H 400 xT	490	230	2.0 - 2000	38.8	11.4	6.8	2.1
CBR-V / H 460 xT	740	240	2.4 - 2000	39.4	12.9	8	2.4
CBR-V / H 560 xT	920	250	3.0 - 2000	49.4	16.2	10	3.1
CBR-V / H 660 xT	1110	260	3.5 - 2000	60.6	19.7	12.1	3.8
CBR-V / H 760 xT	1290	260	4.0 - 2000	73.8	23.3	14.2	4.3

CBRK 1000V, without thermal switch cable connection IP54

Type	Pn W @ 40°C	Temp max °C	R [Ω] min-max	Pulse load kW*, Temp. amb 40°C, cycle 120s			
				duty 1 second	duty 5 seconds	duty 10 seconds	duty 40 seconds
CBRK 125 C	135	210	0.5 - 1000	5.4	1.5	1	0.5
CBRK 175 C	210	210	0.8 - 1500	10.6	2.8	1.8	0.9
CBRK 225 C	280	225	1.5 - 2000	18.4	4.6	2.8	1.3
CBRK 295 C	400	230	1.8 - 2000	30	7.1	4.2	1.7
CBRK 365 C	500	230	2.0 - 2000	38.8	11.4	6.8	2.1
CBRK 426 C	650	240	2.4 - 2000	39.4	12.9	8	2.4
CBRK 526 C	800	250	3.0 - 2000	49.4	16.2	10	3.1
CBRK 626 C	1000	260	3.5 - 2000	60.6	19.7	12.1	3.8
CBRK 726 C	1200	260	4.0 - 2000	73.8	23.3	14.2	4.3

CBRK 1000V, with thermal switch cable or box connection

Type	Pn W @ 40°C	Temp max °C	R [Ω] min-max	Pulse load kW*, Temp. amb 40°C, cycle 120s			
				duty 1 second	duty 5 seconds	duty 10 seconds	duty 40 seconds
CBRK 160 xT	180	210	0.5 - 1000	5.4	1.5	1	0.5
CBRK 210 xT	250	210	0.8 - 1500	10.6	2.8	1.8	0.9
CBRK 260 xT	330	225	1.5 - 2000	18.4	4.6	2.8	1.3
CBRK 330 xT	440	230	1.8 - 2000	30	7.1	4.2	1.7
CBRK 400 xT	540	230	2.0 - 2000	38.8	11.4	6.8	2.1
CBRK 460 xT	610	240	2.4 - 2000	39.4	12.9	8	2.4
CBRK 560 xT	780	250	3.0 - 2000	49.4	16.2	10	3.1
CBRK 660 xT	950	260	3.5 - 2000	60.6	19.7	12.1	3.8
CBRK 760 xT	1100	260	4.0 - 2000	73.8	23.3	14.2	4.3

* Pulse ratings for short pulses depend on the ohm value. Resistors with lower resistance value have more wire than resistors with higher resistance values. The ratings in this table refer to resistors of about 40R.

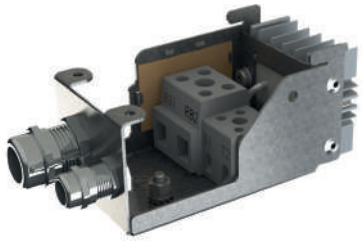
General specifications

Temperature Coefficient:		100 ppm/K
Dielectric strength		3500 VAC @ 1 minute
Isolation Resistance:		> 20MΩ / case housing
Overload: @ 1 sec pulse / hour		10 - 100 x (depending on resistor)
Overload: @ 5 sec pulse / hour		4 - 25 x (depending on resistor)
Environmental:		- 40 °C / +70 °C
De-rating cable version		Linear: 40°C = Pn to 70°C = 0.85 * Pn
De-rating TW 200°C version		Linear: 40°C = Pn to 70°C = 0.65 * Pn
De-rating vertical mounting		no de-rating
De-rating horizontal mounting		0.8 * Pn
De-rating at high altitudes	1000 m	no de-rating
	1500 m	0.94 * Pn
	3000 m	0.82 * Pn
Mounting instructions		It is recommended to keep a distance of 200mm to the nearest object to prevent heating of a neighboring component.
		If two or more brake resistors are mounted next to each other the distance between these should be 400mm. If this is less then the nominal power needs to be de-rated.
Cooling		The nominal power of the resistors refers to cooling conditions with Free Natural Air Cooling.
Vibration		Acc. To EN 60068-2-6 frequency range 1 - 100Hz Acceleration / Amplitude
	1 - 13 Hz	± 1mm
	13 - 100 Hz	@ ± 0.7G
Corrosive resistance		Acc. IEC 60721-3-3/3K3 (C2 medium) 200 hours cyclic salt mist IEC 60068-2-52
Connection recommendations		To minimize EMC interference screened cables are recommended. in particular with any PWM brake pattern.
Resistance tolerance		± 10% (optional 5%)
Working voltage	Standard	UL: 600VAC / 850VDC ; IEC: 690VAC / 975VDC
	On request	1000VAC / 1400VDC
Time constant for heating up resistor		1000s
Thermal switch (optional)	Thermal switch	130 / 160 / 180 / 200 °C. 2A. 250 VAC NC
Minimum voltage		2V
Minimum current		10mA
Rated current / voltage		2.5A @ 250VAC cos φ=1
Dielectric voltage		2000VAC (3500VAC between TS and R)
Temperature requirements on cables	IP 21	80°C
	IP 65	90°C

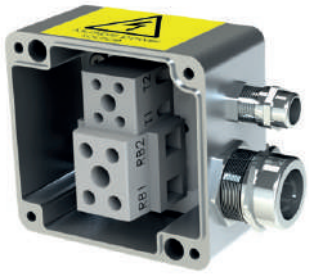
Connection box	IP rating	Cable gland	Clamping mm	Braid mm	Connection mm^2	TS gland	Clamping mm	Connection mm^2
B-box	IP65	M25	9-16.6	7.5	0.75-10	M12	3-7	0.5-4
D-box	IP21	M25	9-16.6	7.5	0.75-10	M12	3-7	0.5-4
K-box	IP00	-	-	-	0.75-10	-	-	0.5-4*

Connection boxes (optional)

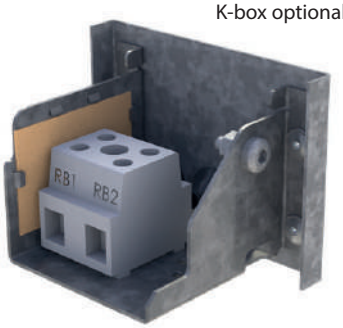
*Thermal switch with K-box optional



D-box



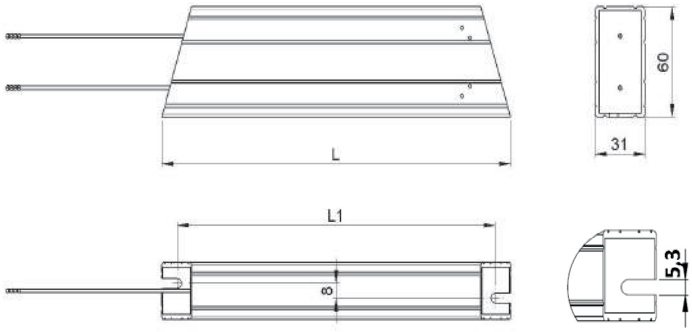
B-box



K-box

CBH / CBV with cable connection IP 54

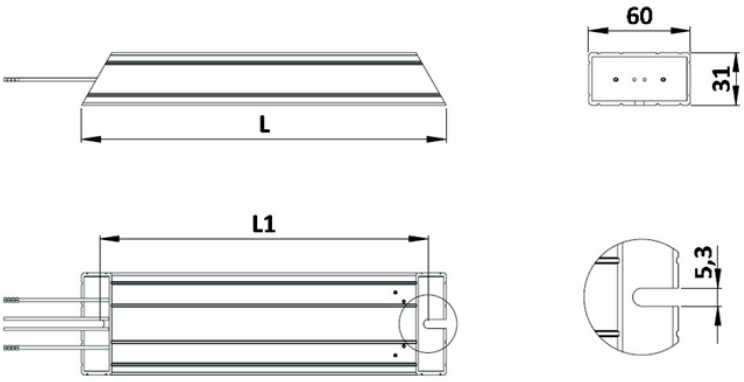
Type	L ± 2 mm	L1 ± 2 mm	Weight g
CBH / CBV 165 C	165	146	0.39
CBH / CBV 215 C	215	196	0.63
CBH / CBV 265 C	265	246	0.88
CBH / CBV 335 C	335	316	1.2
CBH / CBV 405 C	405	386	1.5



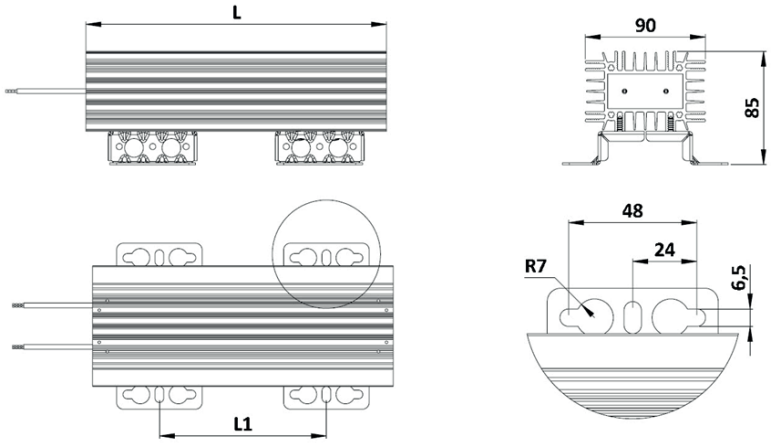
CBH / CBV with cable connection IP 54

with thermal switch

Type	L ± 2 mm	L1 ± 2 mm	Weight g
CBH/CBV 190 CT	190	171	0.5
CBH/CBV 240 CT	240	221	0.71
CBH/CBV 290 CT	290	271	0.97
CBH/CBV 360 CT	360	341	1.3
CBH/CBV 430 CT	430	411	1.6

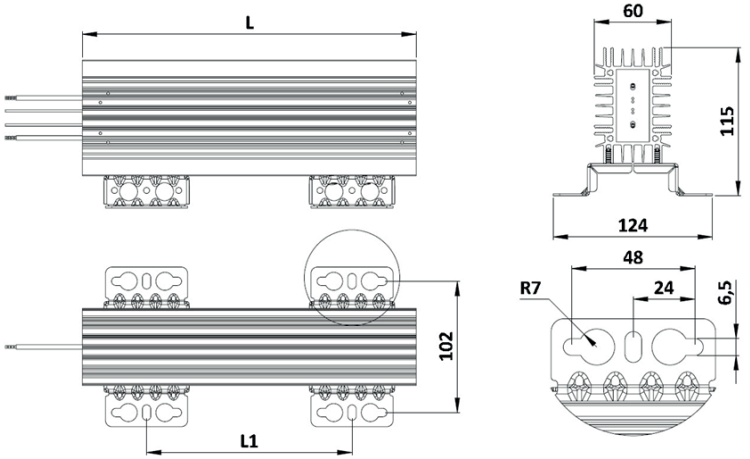


Mechanical drawings



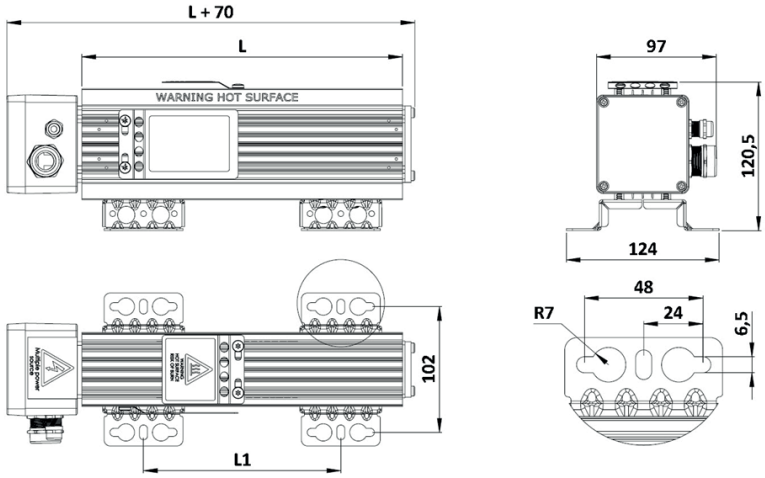
CBR-H ... C ... cable connection IP54

Type	L ± 2 mm	L1 ± 2 mm	Weight g
CBR-V/CBR-H 175 C 001	175	75	1.5
CBR-V/CBR-H 225 C 001	225	125	1.8
CBR-V/CBR-H 295 C 001	295	195	2.3
CBR-V/CBR-H 365 C 001	365	265	2.8
CBR-V/CBR-H 426 C 001	426	326	3.2
CBR-V/CBR-H 526 C 001	526	426	3.8
CBR-V/CBR-H 626 C 001	626	526	4.5
CBR-V/CBR-H 726 C 001	726	626	5.2



CBR-V ... CT ... cable connection IP 54
with thermal switch

Type	L ± 2 mm	L1 ± 2 mm	Weight g
CBR-H/CBR-V 160 CT 081	160	70	1.5
CBR-H/CBR-V 210 CT 081	210	110	1.8
CBR-H/CBR-V 260 CT 081	260	160	2.1
CBR-H/CBR-V 330 CT 081	330	230	2.6
CBR-H/CBR-V 400 CT 081	400	300	3.1
CBR-H/CBR-V 460 CT 081	460	360	3.5
CBR-H/CBR-V 560 CT 081	560	460	4.1
CBR-H/CBR-V 660 CT 081	660	560	4.8
CBR-H/CBR-V 760 CT 081	760	660	5.5

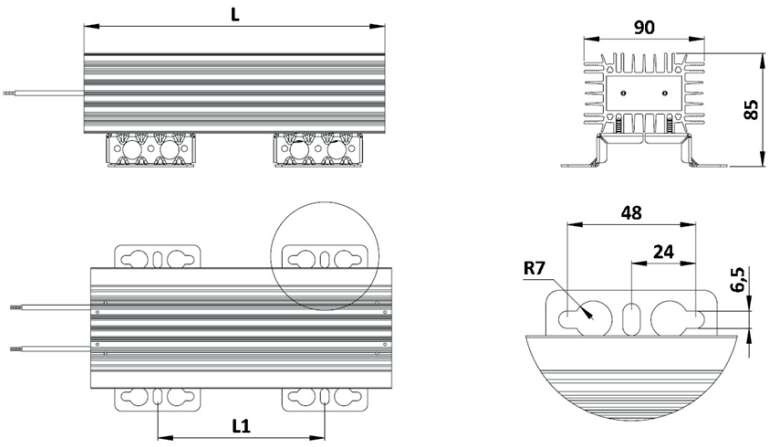


CBR-V ... BT ... box connection IP 54
with thermal switch

Type	L ± 2 mm	L1 ± 2 mm	Weight g
CBR-V 160 B T 281	160	70	1.3
CBR-V 210 B T 281	210	110	1.8
CBR-V 260 B T 281	260	160	2.4
CBR-V 330 B T 281	330	230	3.0
CBR-V 400 B T 281	400	300	3.5
CBR-V 460 B T 281	460	360	3.9
CBR-V 560 B T 281	560	460	4.6
CBR-V 660 B T 281	660	560	5.4
CBR-V 760 B T 281	760	660	6.1

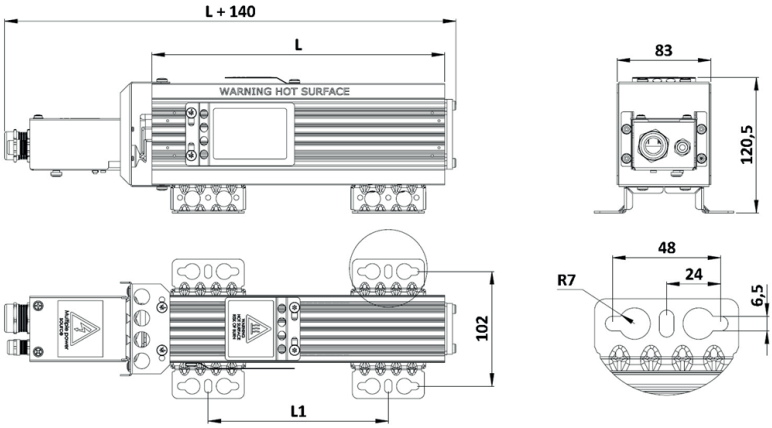
CBR-V ... W ... cable connection IP65 with or without thermal switch

Type	L ± 2 mm	L1 ± 2 mm	Weight g
CBR-H/CBR-V 160 WX 081	160	70	1.5
CBR-H/CBR-V 210 WX 081	210	110	1.8
CBR-H/CBR-V 260 WX 081	260	160	2.1
CBR-H/CBR-V 330 WX 081	330	230	2.6
CBR-H/CBR-V 400 WX 081	400	300	3.1
CBR-H/CBR-V 460 WX 081	460	360	3.5
CBR-H/CBR-V 560 WX 081	560	460	4.1
CBR-H/CBR-V 660 WX 081	660	560	4.8
CBR-H/CBR-V 760 WX 081	760	660	5.5



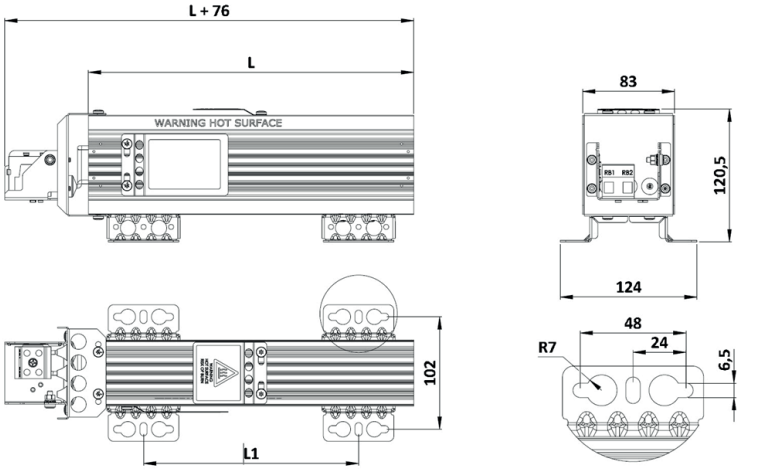
CBR-V ... DT ... box connection IP 20/IP21
with thermal switch

Type	L ± 2 mm	L1 ± 2 mm	Weight g
CBR-V 160 D T 281	160	70	1.3
CBR-V 210 D T 281	210	110	1.8
CBR-V 260 D T 281	260	160	2.4
CBR-V 330 D T 281	330	230	3.0
CBR-V 400 D T 281	400	300	3.5
CBR-V 460 D T 281	460	360	3.9
CBR-V 560 D T 281	560	460	4.6
CBR-V 660 D T 281	660	560	5.4
CBR-V 760 D T 281	760	660	6.1



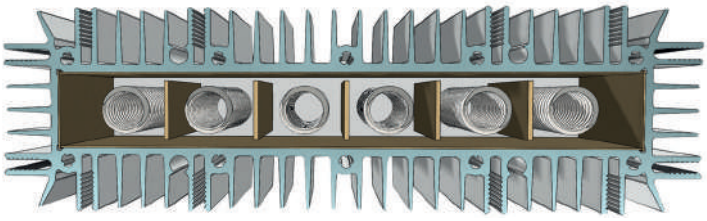
CBR-V ... KT ... box connection IP 00

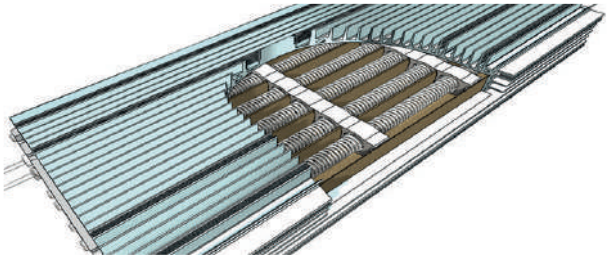
Type	L ± 2 mm	L1 ± 2 mm	Weight g
CBR-V 175 K 201	175	75	1.3
CBR-V 225 K 201	225	125	1.8
CBR-V 295 K 201	295	195	2.4
CBR-V 365 K 201	365	265	3.0
CBR-V 426 K 201	426	326	3.5
CBR-V 526 K 201	526	426	3.9
CBR-V 626 K 201	626	526	4.6
CBR-V 726 K 201	726	626	5.4

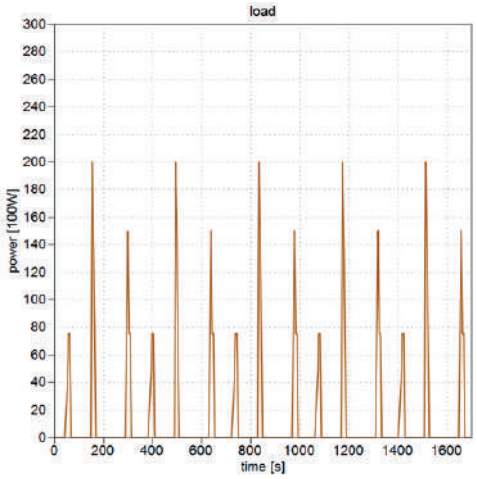


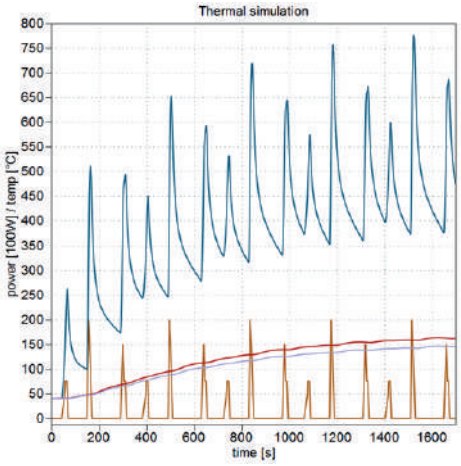
Danotherm has developed a thermal simulation method by which it is possible to optimize a resistor to a specified application. This gives following benefits:

- Short and fast engineering time, saving engineering costs
- Individual thermic model simulations can be done by Danotherm or handled by the customer. Individual thermic models are available on request.
- Simulation software for electrical circuits can be used for thermal simulations (PSpice, Matlab, Plecs or any other)
- For more complex loads a data file (like csv) can be used for input
- Optimizing the design, reducing overall size and costs
- Proof of capability is given without even building and testing samples









Measured on site: Brake Power saved in .cvs file.

Other possibilities could be a description of a typical or worst case brake pulse and a repeat cycle.

Simulation made by Danotherm

Results of temperature simulation of specified load in a suggested resistor type.