

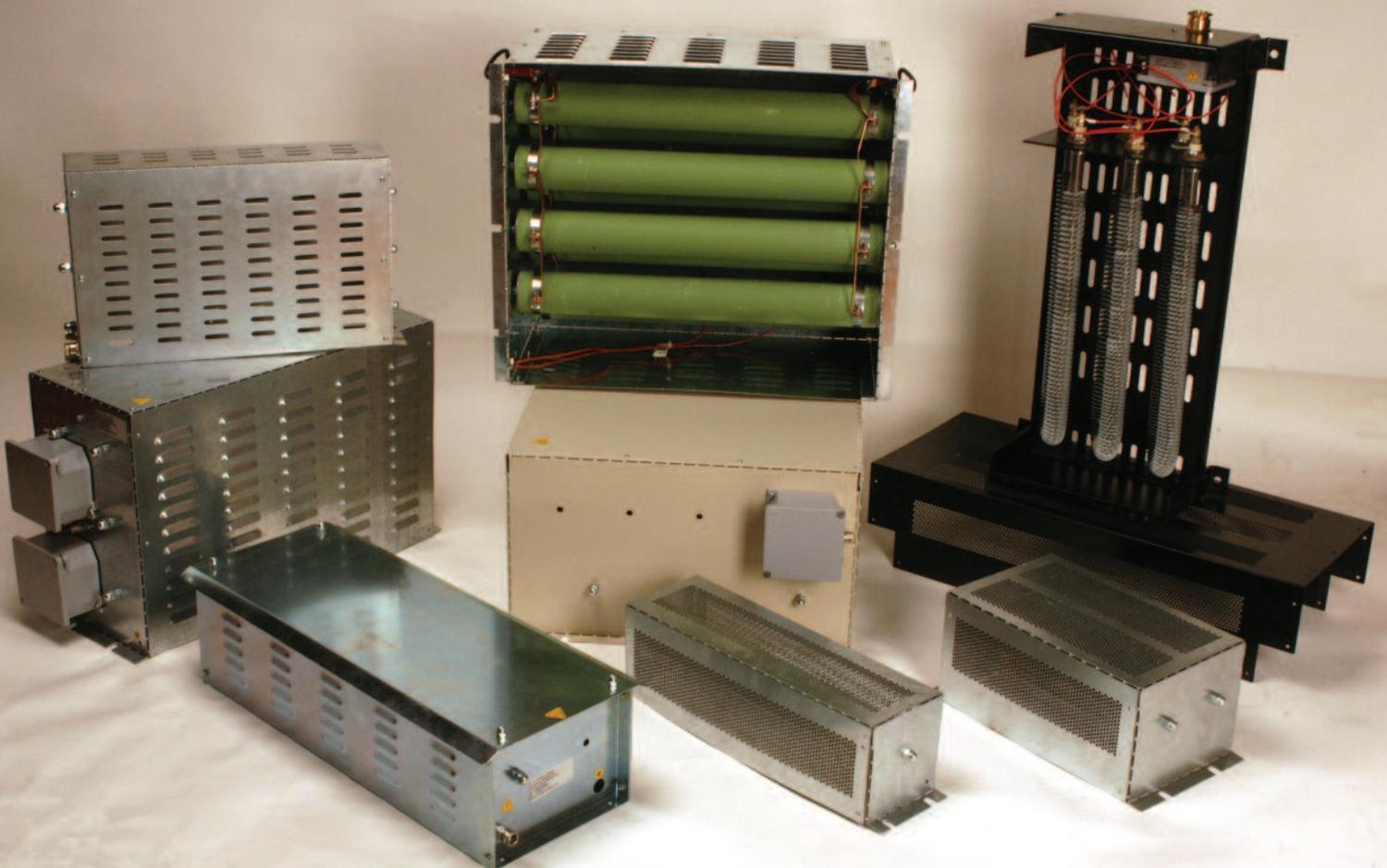


**mc RESISTORI SRL**

**ITALIAN EXCELLENCE**

**DIRECT CUSTOMER SERVICE**

**FAST DELIVERY**



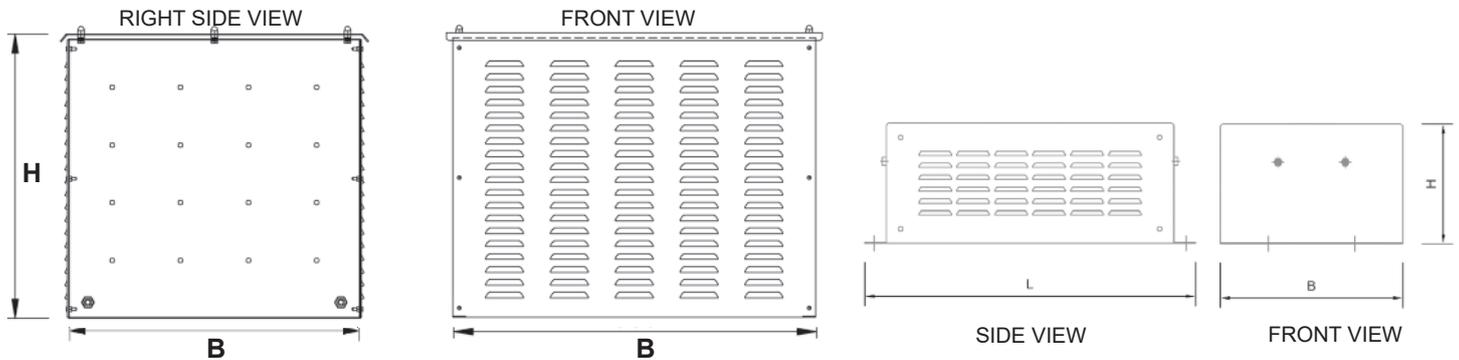
# BREAKING RESISTORS

## Mod. MCQ



Our Breaking resistors are protected by auto ventilated boxes made of zinc steel with dissipating upper and lateral holes to reach maximum heat dissipation. This range of boxes was developed to protect our resistors series T3 - T8 - T8P e RDP with an IP20 and IP23 (IP54 on request) protection level for electrical boards installations. The plug in is usually done from the lower side; straight onto terminals or copper plates. USE: start up, breaking, load, and ground resistors.

Table shows most but not all boxes available, depending on available powers. Custom adjustments are doable upon request.



	WATT														
	500	1000	2000	4000	8000	16000	24000	32000	40000	48000	56000	64000	80000	80000	50000
MCQ Type	1403200	160300	160500	260500	460500	860500IP23	1260500IP23	1660500IP23	2060500IP23	2460500IP23	2860500IP23	3260500IP23	4080500IP23	5080350IP23	2580350IP23
OHM	1-1000	1-1000	1-1000	1-1000	1-1000	1-50000	1-8000	1-10000	1-10000	1-12K	1-20K	1-25K	1-25K	1-20K	1-20K
IP	20	20	20	20	20	23	23	23	23	23	23	23	23	23	23
L in mm	102	102	102	190	200	464	464	464	464	464	464	464	464	1260	1260
H in mm	126	126	126	150	200	208	353	443	651	651	886	886	1098	320	320
B in mm	345	445	545	545	560	560	560	560	560	560	560	560	560	400	400

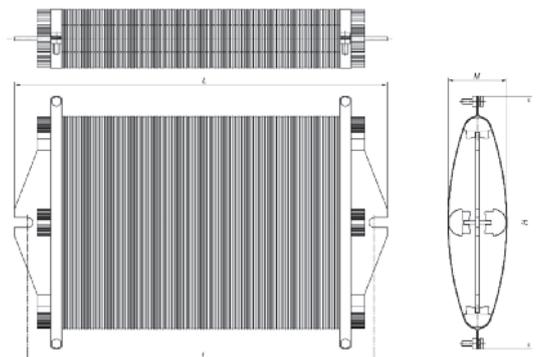
## Mod. RDP



RDP resistor are extremely efficient in small spaces and in need of large loads. These resistors are extremely performing in dissipating heat in limited time.

They are made of special alloys based on ceramic supports; with a zinc steel frame (AISI 304 on request).

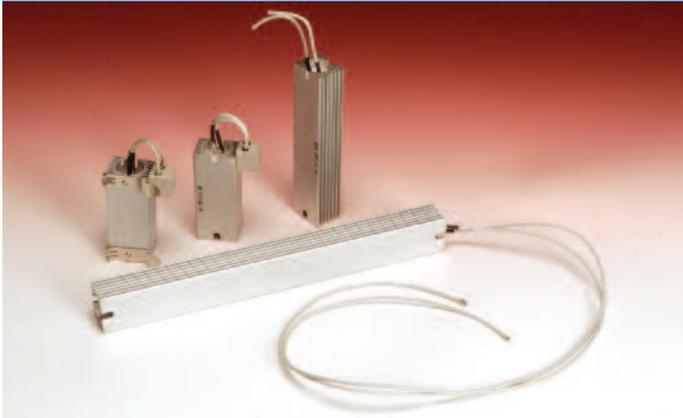
We can also supply resistors compositions in IP23 boxes.



TYPE	L	H	M	I
RDP / 3000	410	240	65	380
RDP / 4000	410	280	65	380
RDP / 5000	590	280	65	560

# ANTICONDENSATION RESISTORS

## Mod. RCAP



The anti-condensation resistors RCAP are used to avoid the condensation and moisture problems inside electrical panels. Our anti-condensation resistors are equipped with an anodized aluminum heatsink which contains a thermostatic resistor; which is powered with a variable tension, from 12Vac to 380Vac; depending on the customer's needs; still having a steady surface temperature of 70°C

TYPE	POWER		DIMENSIONS	
	W	V	EXTERNAL	INTERNAL
RCAP/50	50W	110/250V	27x38x90	85 mm
RCAP/100	100w	110/250V	27x36x155	155 mm
RCAP160	160W	110/250V	27x36x200	195 mm
RCAP/200	200W	110/250V	27x36x250	245 mm
RCAP/250	250/300W	110/250V	27x36x300	295 mm
RCAP/500	400/500W	110/250V	27x36x400	395 mm

The anti-condensation resistors RCAP offer a remarkable caloric performance versus a limited power consumption. Standard DIN 35 OMEGA (EN50022) connector.

The standard use tension is 110/250v; however, resistors using customized tensions can be made upon request. The protection degree is IP 52 as per the IEC 529 regulation.

The dielectric strength is 3000vca @ 50Hz per minute (test made during a standard work cycle on every single product made, in humid environment). The best performance is obtained by placing the resistor vertically.

All our products are made with fireproof and lead free materials

## Mod. RCAP 1



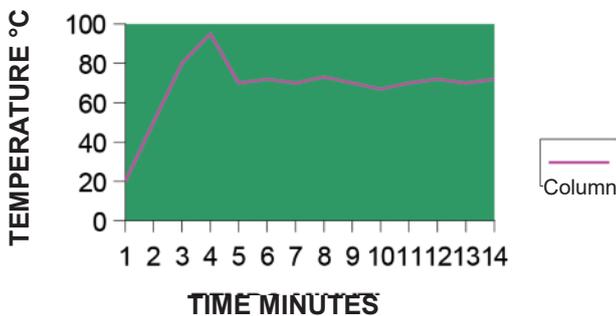
The anti-condensation resistors RCAP 1 are used to avoid the condensation and moisture problems inside electrical panels.

Our anti- condensation resistors are equipped with an anodized aluminum heatsink, which contains a thermostatic resistor; which is powered with a variable tension, from 110AC/DC to 260VAC/CC; with a steady surface temperature of 70/80°C

TYPE	POWER		DIMENSIONS
	W	V	EXTERNAL
RCAP1/30	30W	110/260V	25x65x105 mm
RCAP1/50	50W	110/260V	25x65x135 mm
RCAP1/75	75W	110/260V	25x65x135 mm
RCAP1/100	100W	110/260V	25x65x155 mm
RCAP1/150	150W	110/260V	25x65x185 mm
RCAP1/250	250W	110/260V	25x65x230 mm

The anti-condensation resistors RCAP offer a remarkable caloric performance versus a limited power consumption. The DIN 35 OMEGA (EN50022) connector is available on request. The standard use tension is 110/260v; however, resistors using customized tensions can be made upon request. The protection degree is IP 20 as per the IEC 529 regulation. The dielectric strength is 3000vca @ 50Hz per minute (test made during a standard work cycle on every single product made, in humid environment). The best performance is obtained by placing the resistor vertically. All our products are made with fireproof and lead free materials. TECHNICAL SPECIFICATIONS: nominal tension 110-260V AC/DC. Thermic element PTC cold conductor. Anodized aluminum heatsink. DIN 35 OMEGA (EN50022) connector. Protection level IP20. Operating temperature -20°C+75°C

ENERGY EFFICIENCY TEST



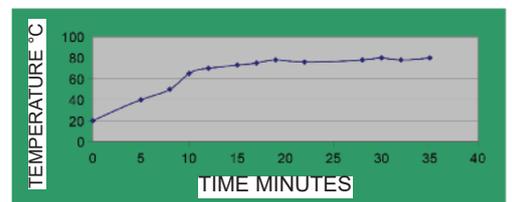
**Conditions:** the test has been made in a laboratory with initial temperature 20°C = minute 0. The tested resistor was installed in an electric panel IP44 powered @ 230v.

**Specifications:** Electrical panel dimensions 100x40x25 cm, IP44. Horizontally mounted resistor.

**Results:** Temperature was measured with high precision infrared thermometer: operating temperature was reached in 5 minutes. Maximum temperature oscillation was +/- 2°C.

The graph shows only the first moments of the stabilization

ENERGY EFFICIENCY TEST



**Conditions:** the test has been made in a laboratory with initial temperature 20°C = minute 0. The tested resistor was installed in an electric panel IP44 powered @ 230v.

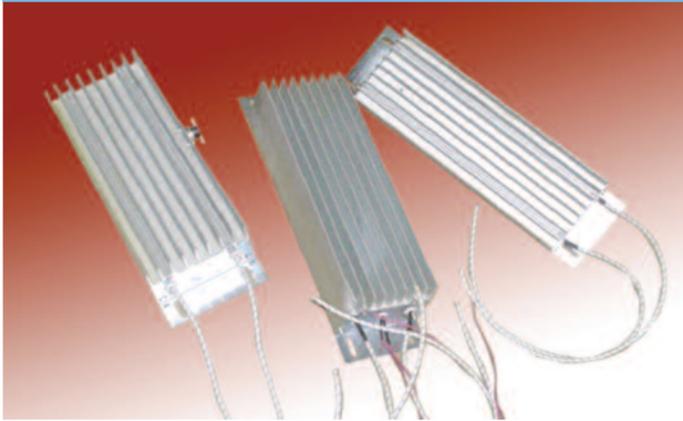
**Specifications:** Electrical panel dimensions 100x40x25 cm, IP44. Horizontally mounted resistor.

**Results:** Temperature was measured with high precision infrared thermometer: operating temperature was reached in 10 minutes. Top temperature was 80°C after 32 minutes. Maximum temperature oscillation was +/- 2°C.

The graph shows only the first moments of the stabilization.

# BREAKING RESISTORS

## Mod. T 14 G



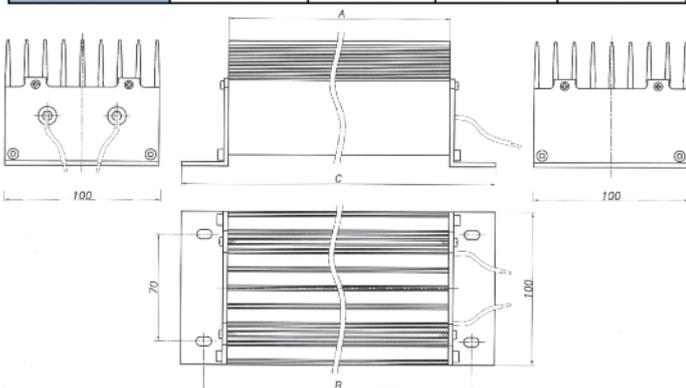
The T 14 G series power resistors are made of specific resistive elements inserted and cemented in an anodized IP54 aluminum box. These materials are fireproof and in case of failure, the aluminum box is leakage proof. The shape of the box allows reaching high powers, since the extremely high dissipation level allows the highest possible dissipation and absorption of large amounts of impulsive energy. These resistors can be used inside electrical panels, mounted on dissipaters of metallic plate. Extremely convenient dimension vs performance ratio. Extremely noise controlled, RHOS compliant, CE Marked. TYPICAL APPLICATION: power electronics for inverter controlled breaking motors; drives. SPECIAL APPLICATION: with thermostat

TYPE	DIMENSIONS			
	A	B	C	H
T14G/800	180	210	240	84
T14G/1200	245	275	305	84
T14G/2000	295	325	355	84

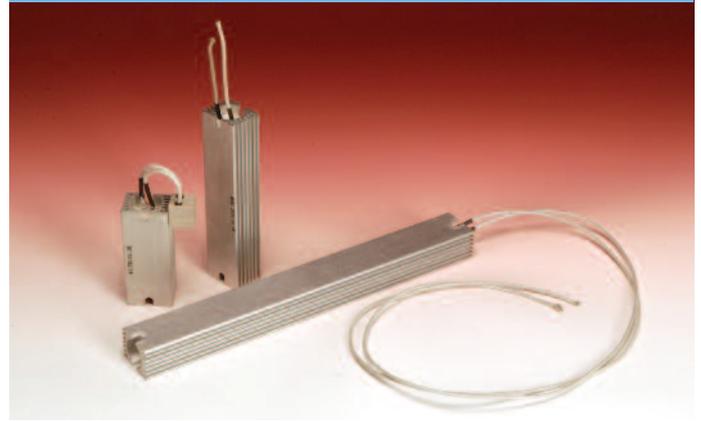
TYPE	ELECTRICAL CHARACTERISTICS			
	POWER		RESISTANCE	
	MAX	WATT	Min. OHM	MAX OHM
T14G/800	800	500	5	250
T14G/1200	1200	650	5	400
T14G/2000	2000	800	8	600

MAX POWER USE: up to 60 minutes - TOLERANCE VALUE: +/- 10%; +/- 5%; +/- 2% - TENSION LIMIT 2000V - ISOLATION RESISTANCE: > 500Mohm @ 500VDC - ELECTRICAL ISOLATION: 500Hz 60" 3500V - MAX TEMPERATURE: 300°C - CONNECTION WIRES: 350mm - vitreous silicon rubber wire TS2V CU/NI 4mm section up to 250°C@500V resistant compliant with IEC EN 60228 cl5 & CEI EN 50363

TYPE	WORK LOAD CYCLE			
	LOAD TIME PULSE CYCLE 120"			
	3"	12"	36"	60"
	W	W	W	W
T14G/800	14000	4500	1700	1000
T14G/1200	16000	4800	2000	1400
T14G/2000	20000	5700	2600	2100



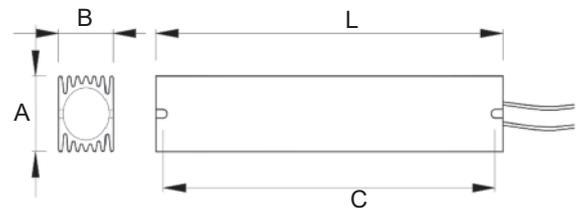
## Mod. T 15



The T 15 series power resistors are made of specific resistive elements inserted and cemented in an anodized IP54 aluminum box. These materials are fireproof and in case of failure, the aluminum box is leakage proof. The shape of the box allows reaching high powers, since the extremely high dissipation level allows the highest possible dissipation and absorption of large amounts of impulsive energy. These resistors can be used inside electrical panels, mounted on dissipaters of metallic plate. TYPICAL APPLICATION: power electronics for inverter controlled breaking motors. SPECIAL APPLICATION: with thermostat; with DIN driving connectors; IP65 - Max Power Use, Tolerance Value, Tension limit, Isolation Resistance, Electrical Isolation, Max Temperature and Connection Wires: are the same of the T 14 G

TYPE	ELECTRICAL CHARACTERISTICS						
	T 15/100	T 15/160	T 15/200	T 15/250	T 15/300	T 15/400	
Nominal Power to 20°C	W	100	160	200	250	300	400
R min - MAX	Ohm	0,3-6k	0,5-7k	4-8k	5-9k	10-10k	10-10k
Max absorbed energy	kJoule	3,5	5	8,5	10	12	15
Power pulse cycle 1-6"	W	100	160	200	250	300	400
Max tension	V	1000	1000	1000	1000	1000	1000
Dielectric rigidity	V eff.1 min	3000	3000	3000	3000	3000	3000
Insulation resistance 500Vcc	Mohm	>=500	>=500	>=500	>=500	>=500	>=500
Max temperature	°C	350	350	350	350	350	350

TYPE	MECHANICAL DIMENSIONS						
	T 15/100	T 15/160	T 15/200	T 15/250	T 15/300	T 15/400	
WIRES LENGHT	mm	250	250	250	250	250	250
Fixing slots diameter	mm	5,3	5,3	5,3	5,3	5,3	5,3
Quota A	mm	36	36	36	36	36	36
Quota B	mm	27	27	27	27	27	27
Quota C	mm	90	145	170	190	250	290
Quota L	mm	100	155	180	200	260	300
Middleweight	gr	150	180	210	290	400	500



## SPECIAL RE



# BREAKING RESISTORS

## Mod. T 14



The T 14 series power resistors are made of specific resistive elements inserted and cemented in an anodized IP54 aluminum box. These materials are fireproof and in case of failure, the aluminum box is leakage proof.

The shape of the box allows reaching high powers, since the extremely high dissipation level allows the highest possible dissipation and absorption of large amounts of impulsive energy.

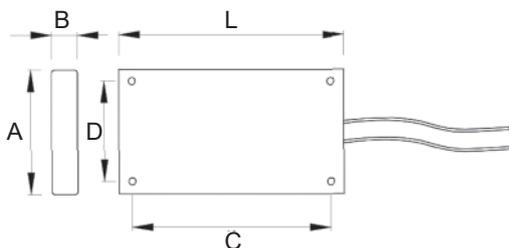
These resistors can be used inside electrical panels, mounted on dissipaters of metallic plate.

TYPICAL APPLICATION: power electronics for inverter controlled breaking motors

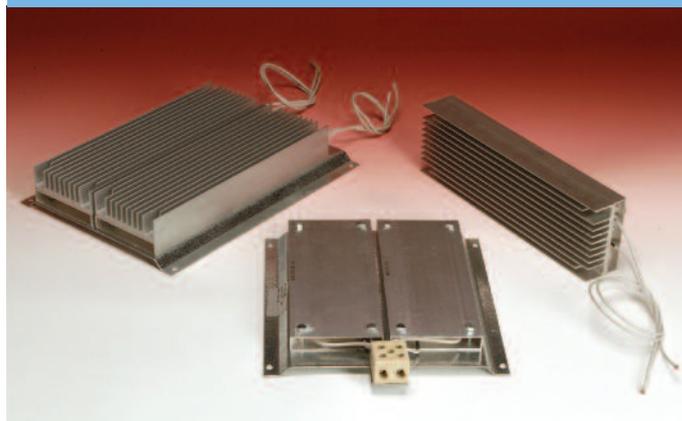
SPECIAL APPLICATION: with DIN driving connectors; with thermostat; with heatsink

ELECTRICAL CHARACTERISTICS							
TYPE		T14/200	T14/600	T14/900	T14/1300	T14/2000	T14/3000
Nominal power to 20°C	W	100	200	400	600	900	1500
min - MAX	Ohm	5-300	5-400	6-500	10-600	15-700	20-900
Max absorbed energy	kJoule	10	15	22	30	40	60
Power pulse cycle 1"-6"	W	200	600	900	1300	2000	3000
Max tension	V	1000	1000	1000	1000	1000	1000
Dielectric rigidity	V eff. 1 min	3000	3000	3000	3000	3000	3000
Insulation resistance 500Vcc	Mohm	>=500	>=500	>=500	>=500	>=500	>=500
Max temperature	C°	350	350	350	350	350	350

MECHANICAL DIMENSIONS							
Wire lenght	mm	250	250	250	250	250	250
Fixing slots diameter	mm	5,3	5,3	5,3	5,3	5,3	5,3
Quota A	mm	60	80	80	80	80	80
Quota B	mm	15	15	15	15	15	15
Quota C	mm	85	85	125	175	237	277
Quota D	mm	40	60	60	60	60	60
Quota L	mm	100	110	145	198	260	300
Middleweight	gr	120	230	290	400	520	600



## Mod. T 14 D



The T 14 D series power resistors are made of specific resistive elements inserted and cemented in an anodized IP54 aluminum box. These materials are fireproof and in case of failure, the aluminum box is leakage proof.

The shape of the box allows reaching high powers, since the extremely high dissipation level allows the highest possible dissipation and absorption of large amounts of impulsive energy.

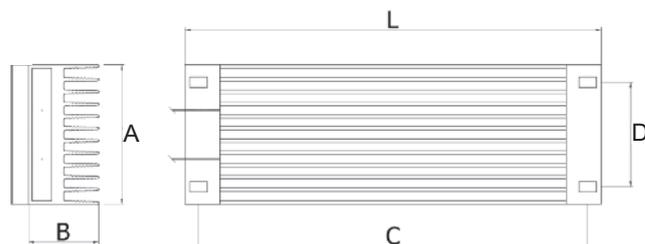
These resistors can be used inside electrical panels, mounted on dissipaters of metallic plate.

TYPICAL APPLICATION: power electronics for inverter controlled breaking motors

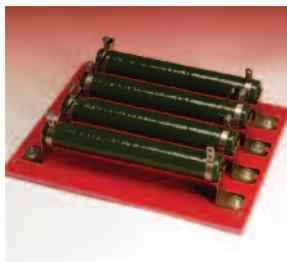
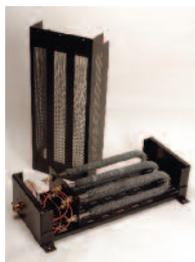
SPECIAL APPLICATION: with DIN driving connectors; with thermostat; with heatsink

ELECTRICAL CHARACTERISTICS							
TYPE		T14D/200	T14D/600	T14D/900	T14/1300	T14/2000	T14/3000
Nominal power to 20°C	W	100	200	400	600	900	1500
min - MAX	Ohm	5-300	5-400	6-500	10-600	15-700	20-900
Max absorbed energy	kJoule	10	15	22	30	40	60
Power pulse cycle 1"-6"	W	200	600	900	1300	2000	3000
Max tension	V	1000	1000	1000	1000	1000	1000
Dielectric rigidity	V eff. 1 min	3000	3000	3000	3000	3000	3000
Insulation resistance 500Vcc	Mohm	>=500	>=500	>=500	>=500	>=500	>=500

ELECTRICAL CHARACTERISTICS							
TYPE		T14D/200	T14D/600	T14D/900	T14/1300	T14/2000	T14/3000
Nominal power to 20°C	W	100	200	400	600	900	1500
min - MAX	Ohm	5-300	5-400	6-500	10-600	15-700	20-900
Max absorbed energy	kJoule	10	15	22	30	40	60
Power pulse cycle 1"-6"	W	200	600	900	1300	2000	3000
Max tension	V	1000	1000	1000	1000	1000	1000
Dielectric rigidity	V eff. 1 min	3000	3000	3000	3000	3000	3000
Insulation resistance 500Vcc	Mohm	>=500	>=500	>=500	>=500	>=500	>=500



# SISTORS



# RESISTORS

## Mod. T 1 - enamelled



## Mod. T 8 - cemented



The T 1 and T 8 series resistors are made in standard unified market shape and dimensions.

The resistive element is wrapped in a ceramic support with a resistive allow wire for a durable protection (T 1 series); or with a high thermic conductivity cement (T 8 series). MC Resistor can also custom made enameled resistors with adjustable support (mod T 2, see photo below) with wrapping system AIRTON-PERRY (values to be defined, see photo top right corner next page)

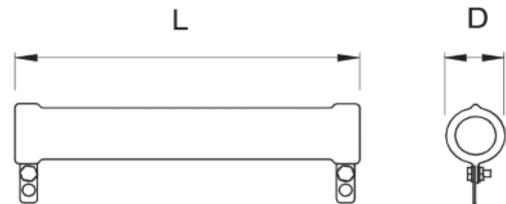
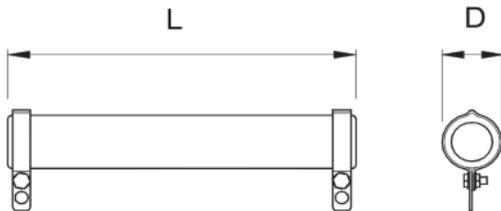
TOLERANCE:  $\pm 5\%$  (T1 series) - 1% and 5% (T8 series). TEMPERATURE COEFFICIENT:  $\pm 200$  PPM/ $^{\circ}\text{C}$  – RESISTIVE VALUES: according to series E12  $\pm 10\%$  and E24  $\pm 5\%$ . – ISOLATION RESISTANCE:  $> 100\text{m}\Omega$  (500Vcc). – OPERATING TEMPERATURE:  $-85+350^{\circ}\text{C}$  (T1)  $40+350^{\circ}\text{C}$  (T8). ISOLATION: up to 4000v. towards earth - ACCESSORIES: - support bracket Z or C (suffix Z or C) shaped, - Metallic sheet protection boxes (suffix MCQ).

ENAMELLED RESISTORS T1

TYPE	Nominal Power W	Dimensions DxL	Resistive Values	
			Min / $\Omega$	MAX / $\Omega$
T1-25	25	13x64 mm	2,2	25k
T1-50	50	16x90 mm	2,2	50k
T1-60	60	20x100 mm	2,2	50k
T1-110	110	20x165 mm	2,2	50k
T1-160	160	30x165 mm	2,2	100k
T1-220	220	30x220 mm	2,2	100k
T1-260	260	30x265 mm	2,2	100k
T1-300	300	30x300 mm	2,2	150k
T1-400	400	40x265 mm	20	150k
T1-500	500	40x300 mm	20	150k

CEMENTED RESISTORS T8

TYPE	Nominal Power W	Dimensions DxL	Resistive Value	
			Min / $\Omega$	MAX / $\Omega$
T8-50	50	16X90 mm	0,2	18k
T8-60	60	20X100 mm	0,2	25k
T8-100	100	20X165 mm	0,2	35k
T8-150	150	30X165 mm	0,2	40k
T8-200	200	30X265 mm	0,5	60k
T8-250	250	30X300 mm	0,5	80k
T8-500	500	40X300 mm	1	100k
T8-800	800	60X300 mm	10	100k
T8-900	900	50X400 mm	10	100k
T8-1000	1000	60X400 mm	10	150k
T8-1500	2000	60X500 mm	20	150k



## Mod. T 2 - adjustable



## Mod. T 11 - non inductive

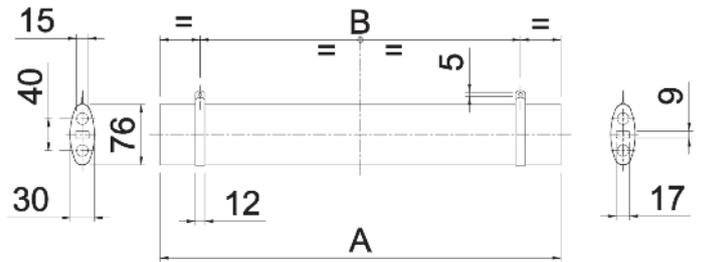


# RESISTORS

## Mod. T 8 P - cemented

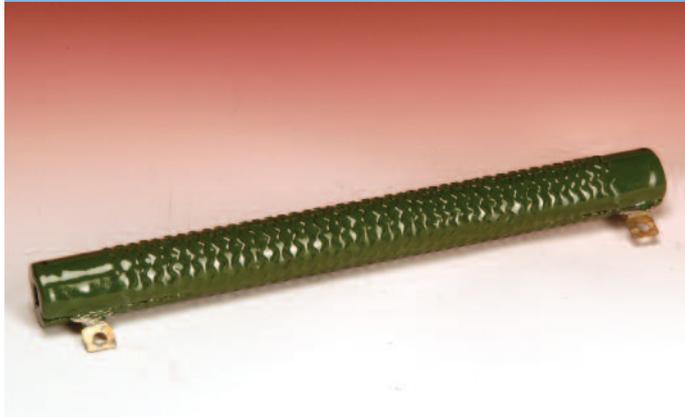


General specification of the T 8 P are the same of the T 8, as written on the previous page



TYPE	DIMENSIONS		WEIGHT
	A	B	Kg.
T 8 P/1000 WATT	400	340	1,3
T 8 P/2000 WATT	500	440	1,6

## Mod. T 3 - corrugated tape



## Mod. T 12 - thread



The T 3 and T 12 series resistors are made in two different series depending on the resistive values and power to be dissipated. The main characteristics of these series are the low resistance values and the high impulsive overcharge resistance; in fact, the large dissipating surface allows the best heat dissipation.

TOLERANCE:  $\pm 1\%$  -  $5\%$  -  $10\%$  (T 3 and T 12) - OPERATING TEMPERATURE:  $-85+350^{\circ}\text{C}$  (T 3),  $-40+600^{\circ}\text{C}$  (T 3),  $-40+600^{\circ}\text{C}$  (T 12)

ACCESSORIES: support bracket Z or C for T 3 and T 12 - TYPICAL USE: earth resistors for transformers and generators

BELT WAVY RESISTANCE T3				
TIPO	Nominal Power	Dimensions DxL	Resistive Value	
	W		Min / $\Omega$	MAX / $\Omega$
T3-80	80	20X100 mm	0,01	8
T3-100	100	20X165 mm	0,01	10
T3-160	160	30X108 mm	0,01	25
T3-250	250	30X165 mm	0,01	30
T3-300	300	30X220 mm	0,01	30
T3-370	370	30X265 mm	0,01	45
T3-400	400	30X300 mm	0,03	45
T3-500	500	50X240 mm	0,03	45
T3-500	500	40X300 mm	0,05	90
T3-700	700	50X200 mm	0,2	120
T3-1000	1000	65X400 mm	0,3	130
T3-1500	1500	65X500 mm	0,5	150

WIRE WOUND RESISTORS T 12				
TYPE	Nominal Power	Dimensions DxL	Resistive Values	
	W		Min / $\Omega$	MAX / $\Omega$
T12-400	400	30X300 mm	values on request	
T12-600	600	50X300 mm		
T12-800	800	50X400 mm		
T12-1000	1000	50X500 mm		
T12-1200	1200	50X600 mm		
T12-1500	1500	60X700 mm		

