CRESSALL
data sheet



ES BRAKING RESISTORS

Continuous power: 0.6kW to 8kW

Resistance: 0.75Ω to 3600Ω

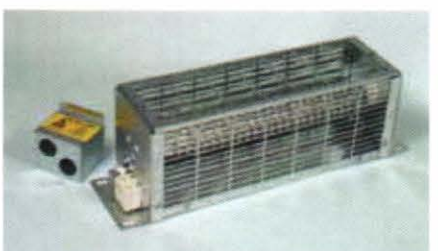
A comprehensive range of compact, IP20 dynamic braking resistors with a choice of accessories that keeps both purchase and installation costs low - all available at short notice.

Features and Benefits

- Rated for repetitive duty
- Resistance never lower than expected
- Robust construction
- Low inductance element
- High overload capacity
- Close tolerance (+5% - 0%)
- Noise free
- Temperature stable element

Applications

- Dynamic braking
- Motor control
- Variable speed drives
- Lifts & elevators
- Cranes & winches
- Conveyors
- Test loads



Resistor design

Cressall ES braking resistors are based on HP Coils, spiral wire-wound on ceramic formers.

These elements have a high overload capacity and cool rapidly. The resistance material is a high grade stainless steel with no more than 7% resistance increase over the whole temperature range. Cheaper designs using 304 stainless steel can increase in resistance during the heating cycle by as much as 50%, which results in lower current and less effective braking.

The enclosures are made of galvanized steel. Ingress protection is IP 20.

Options are a thermal switch and/or terminal cover.



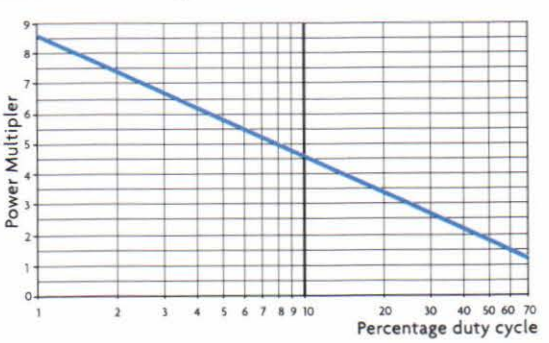
Enclosure	ESH	EST	ES1	EST2	ES2	ES3	ES4	ES8
Continuous power/kW	0.6	1.0	1.5	2.0	3.0	4.5	6.0	8.0
Min Ω	2.5	4.0	6.0	2.0	3.0	2.0	1.5	0.75
Max Ω	180	300	450	600	900	1350	1800	3600

Electrical and thermal data

Duty cycle and power

The eight standard enclosures have continuous power ratings from 0.6kW to 8kW. These ratings can be exceeded when power is applied for less than 100% of the time. The graph below gives a "power multiplier" based on a 10 second "on time". Multiply the resistor's continuous rating by the "power multiplier" number to calculate power.

Example: 10 seconds on in 100 seconds is defined as a 10% duty cycle. A 10% duty cycle gives a 4.6 times power multiplier. ES1 resistors are rated 1.5kW continuously and so can be rated 6.9kW (4.6 x 1.5kW) for 10 seconds in 100 seconds. If the resistors have a resistance of 100Ω or more, then the power rating is reduced by 20%.



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Mechanical data

Maximum operating voltage:

1000V DC or AC rms

Connections

Power: Screw terminals for up to 10mm² cable (ESH-ES3), M8 stud terminals (ES4-8)

Earth: Self tapper, near screw terminals

Thermal sensor: 6.25mm male blade (faston) connections (receptacles not supplied)

Terminal cover (optional for ESH-ES3)

Two 20mm gland holes with cover grommets provided on end face. The cover overhangs the resistor by 22mm. The open overhang area can be used for cable entry.

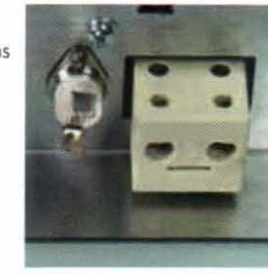


Thermal sensor (optional)

Located near screw terminals

Normally closed contact, opens at -250°C, re-closes at -210°C

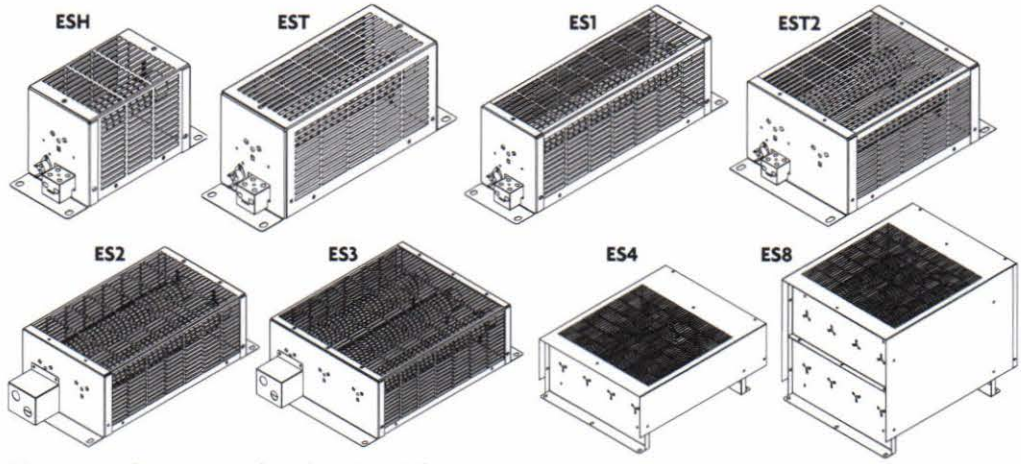
Voltage: 240V AC rms; current: 7A AC rms



Installation

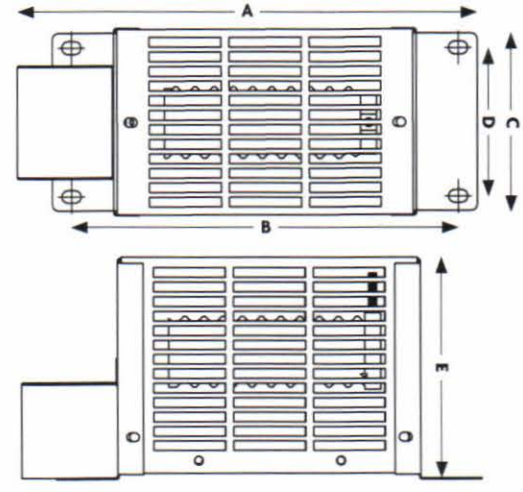
Units have slotted mounting points suitable for M6 fixings. Mount horizontally with base facing down. Other orientations may result in increased element temperatures.

Warning: *Units must never be mounted with the terminal area or base uppermost.*



Mounting dimensions (mm) and weights

	A	B	C	D	E	kg
ESH	288	236	121	92	141	1.4
EST	367	315	121	92	141	1.8
ES1	467	415	121	92	141	2.2
EST2	367	315	213	185	141	3.0
ES2	467	415	213	185	141	3.8
ES3	467	415	307	278	141	5.4
ES4	500	410	388	360	195	6.6
ES8	500	410	388	360	390	11.5



Part numbering

Part numbers have three components:

ES2–4R5–SN

Enclosure type	Resistance value	Terminal type: SB: cover + trip; SC: cover only; ST: trip only; SN: no trip or cover } ESH - ES3 only

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