

**SPEED-O-CONTROLS
PVT. LTD.**



CRANE CONTROL SOLUTIONS

DYNAMIC BRAKING RESISTOR BOX



DISCOVER OUR RANGE OF RESISTANCE BOX

INDEX

DYNAMIC BRAKING RESISTOR PS

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WIRE GRID RESISTOR

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ALUMINIUM HOUSED DYNAMIC BRAKING RESISTOR

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Dynamic Braking Resistor PS

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Introduction

Braking Resistors are used in the d. c. Link of the frequency converter. A braking chopper activates the resistor. If the output frequency converter drops-be it by a control process, a drop operating frequency of the motor, the motor takes on the function of a generator. The consequence is arise in the link voltage. If this voltage exceeds the specific value of the unit in resistor. If the voltage drops to a value just above the grid voltage of the link, the chopper will interrupt the circuit. This process will be repeated until the motor speed once again matches the applied operating frequency. The braking resistor takes on the energy and converts it into heat.

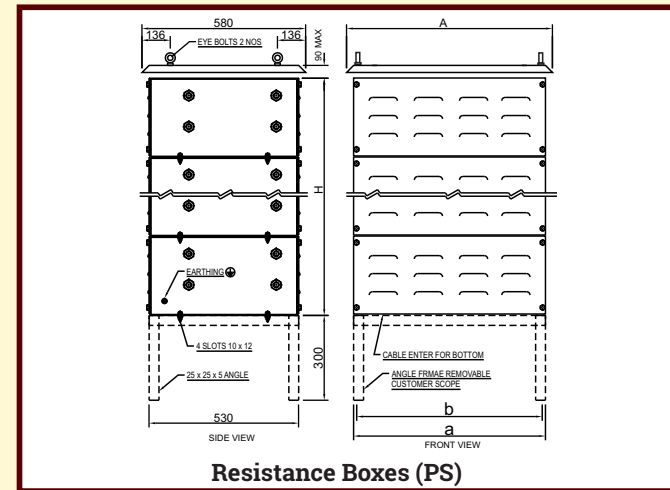
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Braking resistor operating modes

Braking resistors are usually only activated for a short time, save the braking energy and give off the short time, save the braking energy and give off the stored heat to the environment during the breaks when they are inactive. This is intermittent operation with a cyclic duration factor (c.d.f) indicated in % of the duty cycle time. The duty cycle time tsp is calculated from the total of the braking time to plus resting time. The overload capacity of the resistor is dependent on the thermal time constant and thus on the design, among others.

Resistance Boxes (PS)



The resistance value of the Braking Resistors

In general, the resistance value of a braking lowest value of the admissible value for the braking chopper and a maximum value where the required braking performance is still achieved. Assuming a standard reserved of 25% which takes into account the manufacturing tolerance and the resistance change due to heating up as well as the lower mean value of the link voltage as compared with the chopper activating voltage, the maximum value for the braking resistor is calculated as:

Resistance Boxes (PS)

Dimension Details of Punched Stainless Steel Resistance Boxes

Unit Size	A	a	b	Unit Size	A	a	b	H
A1	430	380	360	B1	580	530	510	280
A2	430	380	360	B2	580	530	510	560
C1	730	680	650	D1	880	830	805	280
C2	730	680	650	D2	880	830	805	560
C3	730	680	650	D3	880	830	805	840
C4	730	680	650	D4	880	830	805	1120
C5	730	680	650	D5	880	830	805	1400
C6	730	680	650	D6	880	830	805	1680



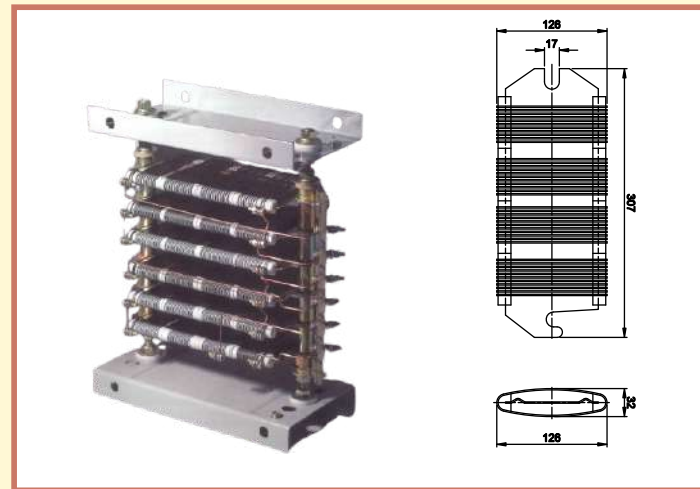
Wire Grid Resistor

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Dynamic Breaking Resistor

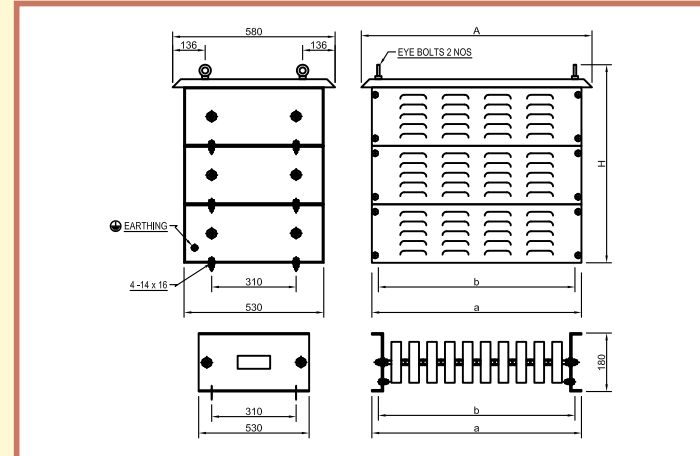
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TYPE	WIRE GRID
MODEL	ZWG
GRID MATERIAL	SS WOUND
MATERIAL GRADE	AISI-304
GRID SIZE	310 x 130
CURRENT RATING CONTINUOUS	4.4---43
VOLTAGE GRADE	660V AC
AMBIENT TEMPERATURE	-25°C +55°C
TEMPERATURE RISE	375°C over ambient
MOUNTING	FLOOR
ENCLOSURE	GALVANISED STEEL (HOT DIP)
DEGREE OF PROTECTION	IP-20/21/23/33
INSULATION TEST	50 Mega hz
HIGH VOLTAGE TEST	2000V for 1 Min
TERMINALS	5/16", 3/8", M12



Dimensional Details

Type of Grid	ohms	Amps	Amps	Amps	Amps
	Ω	100%	60%	40%	25%
ZB1-0-20	0.20	43	47	52	56
ZB1-0-25	0.25	38	42	46	49
ZB1-0-33	0.33	32	35	38	42
ZB1-0-40	0.40	29	32	35	38
ZB1-0-50	0.50	26	29	31	34
ZB1-0-66	0.66	23	25	28	30
ZB2-0-70	0.70	22.3	25	27	29
ZB2-0-90	0.90	19.9	22	24	26
ZB2-1-10	1.10	17.7	19	21	23
ZB2-1-45	1.45	15.4	17	18	20
ZB2-1-95	1.95	13.8	15	17	18
ZB2-2-80	2.80	11.2	12	13	15
ZB2-3-50	3.50	10.1	11	12	13
ZB2-4-40	4.40	8.9	10	11	12
ZB2-5-80	5.80	7.7	8	9	10
ZB2-8	8.00	6.6	7	8	9
ZB2-12	12.00	5.4	5.9	6.5	7
ZB2-18	18.00	4.4	4.8	5.2	5.7
ZB2-21.6	21.6	4.0	4.4	4.8	5.2
ZB2-27.6	27.6	3.5	3.8	4.2	4.5
ZB2-37	37	3.1	3.4	3.7	4
ZB2-48	48	2.7	2.9	3.2	3.5
ZB2-68	68	2.3	2.5	2.7	3
ZB2-96	96	1.9	2	2.2	2.5
ZB2-140	140	1.6	1.7	1.9	2.1
ZB2-188	188	1.4	1.5	1.6	1.8
ZB2-260	260	1.2	1.3	1.4	1.5



UNIT SIZE	NO OF GRIDS	A	a	b	H
A1	6	430	380	358	180
A2	12	430	380	358	360
B1	8	580	530	508	180
B2	16	580	530	508	360
C1	12	730	680	660	180
C2	24	730	680	660	360
C3	36	730	680	660	540
C4	48	730	680	660	720
C5	60	730	680	660	900
C6	72	730	680	660	1080
D1	16	880	830	805	180
D2	32	880	830	805	360
D3	48	880	830	805	540
D4	64	880	830	805	720
D5	80	880	830	805	900
D6	96	880	830	805	1080

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CRANE CONTROL GEAR

V6

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The SOC series are range of Metal encased , Dynamic braking resistors. These resistors are economical and compact. This series resistors offer excellent load life stability. Power dissipation of up to 4000W is available in this series. Assemblies of these resistors to achieve higher powers, can be done with ease.

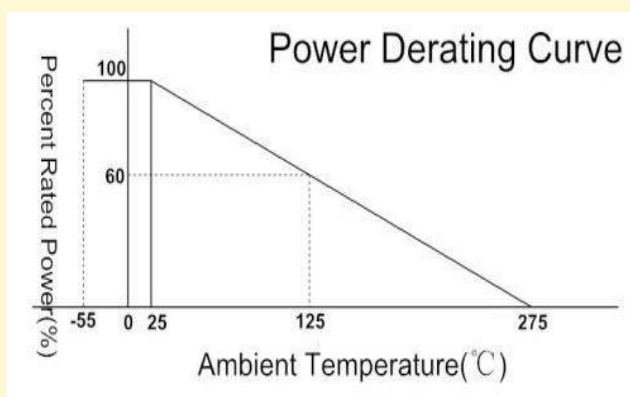
FEATURES :-

- Excellent Electrical stability, reliability and mechanically very rigid.
 - Suitable for harsh environment.
 - Termination style can be UL approved Cables or flat terminals for screw fixing.
 - Custom terminations & vertical mounting arrangements possible.
 - Excellent anti-vibration capability.
- Non Inductive types available.

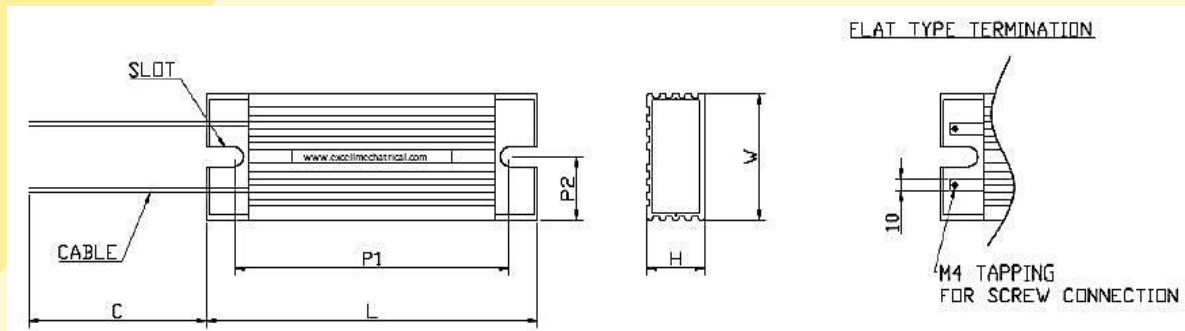
PERFORMANCE CHARACTERISTICS

CHARACTERISTICS	CONDITION	COMPLIANCE
Tolerance	For Values less than 10Ω For Values greater than 10Ω	±5% to ±10% ±1% to ±10%
Temperature Co-efficient		±200 PPM/°C max
Insulation Resistance	Dry/Normal	20MΩ min
Endurance	1.5 Hrs On, 0.5Hrs off for 500Hrs @room temperature	$\Delta R \pm(5\% + 0.05\Omega)$
Short Term Overload	≤80W- 5 x Rated Power for 5 sec 80W- 10 x Rated Power for 5 sec	$\Delta R \pm(2\% + 0.05\Omega)$
Operating Temperature	-25°C to 250°C	
Humidity	40°C, 90% Rh, 240Hrs	$\Delta R \pm(3\% + 0.05\Omega)$
Dielectric Strength	3000VAC 50Hz for 5 second	No Breakdown or Flashover

ELECTRICAL CHARACTERISTICS

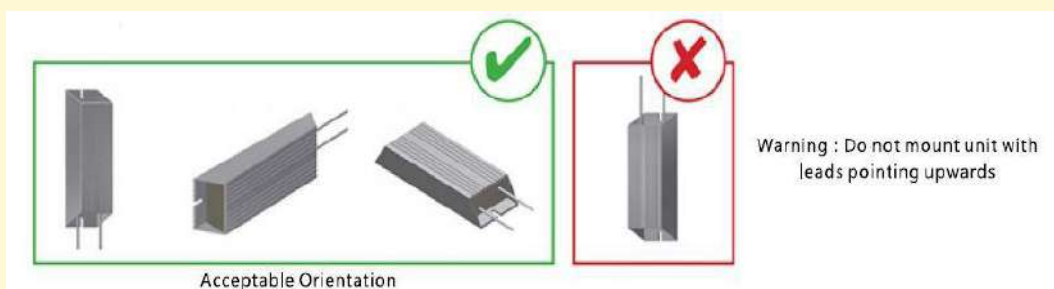


RESISTANCE RANGE AND DIMENSIONAL DETAILS



Series	Max. Continuous power (W) (on Heat sink)	Max. Continuous power (W) (on Heat sink)	Resistance Range	L	W	H	C	P1	P2
SBR80W	80	70	1Ω-10Ω	135	38	25	290	113	19
SBR100W	100	75	1Ω-10Ω	165	38	25	290	143	19
SBR120W	120	90	1Ω-10Ω	190	38	25	290	168	19
SBR150W	150	115	1Ω-10Ω	215	38	25	290	193	19
SBR200W	200	120	1Ω-10Ω	165	63	33	290	137	32
SBR300W	300	155	1Ω-10Ω	215	63	33	290	187	32
SBR400W	400	200	1Ω-10Ω	265	63	33	290	237	32
SBR500W	500	265	1Ω-10Ω	210	80	40	290	187	40
SBR800W	800	345	1Ω-10Ω	265	80	40	290	237	40
SBR1000W	1000	445	1Ω-10Ω	330	80	40	290	302	40
SBR1200W	1200	565	1Ω-10Ω	400	80	40	290	372	40
SBR1500W	1500	725	1Ω-10Ω	495	80	40	290	467	40
SBR2000W	2000	800	1Ω-10Ω	400	60	90	290	372	20
SBR25000W	2500	895	1Ω-10Ω	500	60	90	290	472	20
SBR3000W	3000	1125	1Ω-10Ω	550	60	90	290	526	20
SBR4000W	4000	1800	1Ω-10Ω	600	60	90	290	572	20

MOUNTING INSTRUCTION





ALUMINUM HOUSED BRAKING RESISTORS

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INTRODUCTION

DYNAMIC BRAKING RESISTORS are used on AC variable frequency drives (VFD's) to dissipate energy that is produced in the motor .It absorb the energy that is being regenerated back in to a drive unit by a freewheeling motor and will release the energy in the form of heat.It is used to quickly stop or slow down the mechanical system by producing a torque.

BRAKING RESISTOR OPERATING MODES

When any mechanical system decelerates, the system acts as a generator and creates a large amount of electrical energy which is transferred back into the power circuit. This large amount of energy is consumed by the resistor, which is present in the power circuit. Resistor converts the energy into the heat which is dissipated to the surroundings and at the same instant braking effect is created. Braking resistors are usually only activated for a short time. This is the intermittent operation with a cyclic duration factor (c.d.f) indicated in % of the duty cycle time.

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FEATURES

1	Designed for Dynamic Braking Applications
2	Excellent Short Term Overload Performance
3	Can be Easily Mounted in Congested Spaces
4	Non-Inductive Types Available on Request
5	RUGGED CONSTRUCTION: (i) Fully Welded Construction (ii) Resistor Components Supported on Ceramic (iii) High Temperature Resisting Anodized Aluminum Housing

TECHNICAL SPECIFICATIONS

NO.	PARTICULARS	SPECIFICATION
1	Power Rating	60 Watts to 4000 Watts
2	Duty Cycle	50%
3	Ohmic Values	1 Ω to 10 K Ω
4	Ohmic Tolerance	$\pm 5\%$
5	Temperature Co-efficient	< 150 ppm / $^{\circ}\text{C}$
6	Dielectric Strength	2.0KV a.c. for 1 min.
7	Insulation Resistance	>2 M Ω @ 500V d.c.
8	Overload Withstanding	10X Power for 5 Secs.

SL DIMENSIONS

No.	Type	Cross Section (W X H)	L ± 5	L1 ± 5	Terminal	Drawing
1	SL 60	40 X 20	115	100	M3	
2	SL 80	40 X 20	140	125	M3	
3	SL 100	40 X 20	165	150	M3	
4	SL 120	40 X 20	190	175	M3	
5	SL 150	40 X 20	215	200	M3	
6	SL 200	60 X 30	165	150	M4	
7	SL 250	60 X 30	190	175	M4	
8	SL 400	60 X 30	265	250	M4	
9	SL 500	60 X 30	330	315	M4	
10	SL 600	80 X 40	215	200	M4	
11	SL 750	80 X 40	265	250	M4	
12	SL 1000	80 X 40	330	315	M4	
13	SL 1500	80 X 40	495	480	M4	
14	SL 2000	100 X 60	450	435	M4	
15	SL 2500	100 X 60	550	535	M4	
16	SL 3000	100 X 60	600	585	M4	
17	SL 4000	100 X 60	650	635	M4	

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