



# CATALOGUE

Dynamic Braking Unit Selection Brochure

制动单元选型手册

Dynamic  
Braking Unit  
制动单元



ISO 9001  
质量体系认证

Filters  
滤波器

Transformers  
变压器

Regenerative  
drive  
回馈装置

Choke  
电抗器

Resistors  
电阻

Load bank  
负载

SHENZHEN SIKES ELECTRIC CO.,LTD.  
深圳市西凯士电气有限公司

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如何选配

## SIKES ELECTRIC(HK) CO., LTD.

西凯士电气(香港)有限公司

## SHENZHEN SIKES ELECTRIC CO., LTD.

深圳市西凯士电气有限公司

Add.:Bldg. B,Huayuan industrial park,Phoenix,  
Fuyong ST 518103, Baoan district, Shenzhen, Guangdong, China

地址：中国·广东深圳市宝安区福永街道凤凰华源工业区B栋

Tel: 0086-755-33859592/33859590

Fax: 0086-755-33859590-810

Email: sikes@sikes-elec.com

www.sikes-elec.com www.sikes-elec.cn

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# Dynamic Braking Resistor Calculation 选型公式

## Braking Resistor's Resistance Value: R

Braking Resistor's Resistance Value:  $R = \frac{U_{dc}^2}{K \times P}$

$U_{dc}$ : Voltage value of chopper wave of inverter's braking circuit  
 K: Folds of braking torque 1.2-2.0  
 P: Frequency of the selected converter

Braking Resistor's power:  $P_r = \frac{P_o}{\Delta K} = \frac{P_1 \times (1 - 0.2)}{\Delta K} \times h$

$P_o$ : the power of electric motor  
 $\Delta K$ : folds of allowable transient operating overload.  
 The exact value shall be determined by referring to the chart according to operating conditions.  
 $P_1$ : the average braking power that the system requires.  
 $\eta$ : transmission efficiency, The mechanical system of transmission provides braking damp corresponding to the efficiency when it is functioning.  
 0.2: the internal resistance consumes 20% braking energy.

## 制动电阻器的阻值: R

制动电阻的阻值:  $R = \frac{U_{dc}^2}{K \times P}$

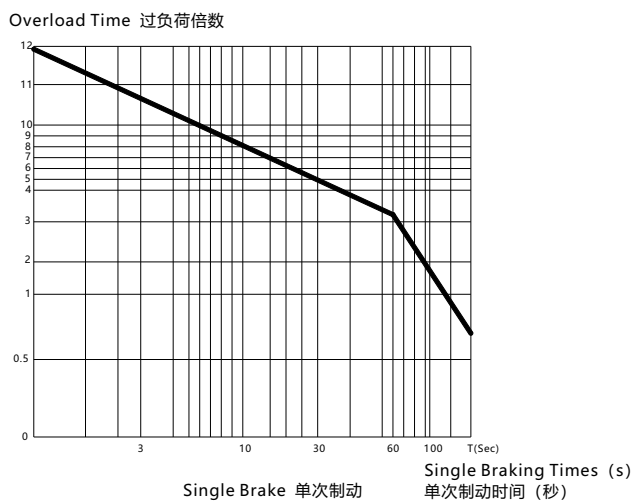
$U_{dc}$ : 所选变频器制动回路的斩波电压值  
 K: 所需的制动转矩倍数1.2-2.0  
 P: 所选变频器的功率

制动电阻器的功率:  $P_r = \frac{P_o}{\Delta K} = \frac{P_1 \times (1 - 0.2)}{\Delta K} \times h$

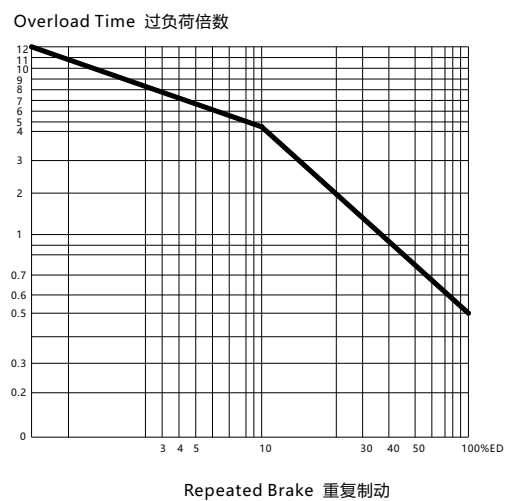
$P_o$ : 电机的功率  
 $\Delta K$ : 制动电阻器短时工作允许过负荷倍数, 具体数据根据工况查图取值  
 $P_1$ : 系统所需的平均制动功率  
 $\eta$ : 传动效率, 传动的机械系统在制动时, 提供与效率相应的制动阻尼  
 0.2: 电动机的内阻消耗了20%的制动能量

ED brake ratio is the percentage of braking time based on a 100-second operating cycle. The selection of brake unit shall be carried out in accordance with brake current  $U_{dc}/R$  and brake ratio ED.  
 ED制动率以100S运行为一个周期, 制动时间所占比率根据制动电流 $U_{dc}/R$ 与制动率ED选择制动单元

Overload Capability 电阻器允许过负荷倍数



Overload Capability 电阻器允许过负荷倍数



# Dynamic Braking Unit 制动单元

## Product Profile 产品简述

The function of the Dynamic braking unit is to divert in to a braking resistor, the regenerative energy produced in the process of decelerating the motor, converting that energy into heat. Regenerative energy flows from the motor into the inverter DC Bus ,manifested as increased bus voltage .The advantage gained using the DBU is improved braking performance and shorter deceleration time of the load.

Ln系列制动单元的作用是将马达在减速的过程中产生的再生能量，以热能的形式消耗在制动电阻上，从而改善变频器的制动性能及缩短变频器的制动时间。



## Product Parameters 产品参数

- **SAFETY:**The tripping function against IGBT short circuit breakdown can avoid the fire caused by IGBT short circuit Breakdown of resister after overload run.
- **WIDE COMPATIBILITY:** It's special design makes it compatible with general resistance rather than non-inductive resistance.It's adjustable chopper voltage DC 630V-DC 760V is applicable to various low-voltage inverters.
- **ECONOMICAL FEATURE:**It has a very high ratio of performance to price and it's quality is parallel to similar type of imported product . yet has a lower price . It is considered the most cost-effective and practical auxiliary product for braking circuits of inverter's.
- **ADAPATABLE TO CONNECTIONS IN PARALLEL:**It adopts a book-shape design and can be installed in parallel connection with zero clearance.it is recommended that up to 3 units can be connected in parallel.
- **安全性:** 具有IGBT短路击穿脱扣功能, 可能有效地防止因IGBT击穿, 电阻器长时间过负荷运行而引起的火险隐患。
- **广泛性:** 特殊设计可以使用普通电阻, 不必选择无感电阻。斩波电压 DC 630V-DC 760V可调, 适用于各种中低变频器 (特殊设计可达1200V)。
- **经济性:** 性价比高, 品质可与同类进口产品相媲美, 价格较低, 是变频器刹车、制动回路中经济、实用的配套产品。
- **可并联使用:** 采用书本型设计, 可无间隙并联安装 推荐最多3台并联使用。

## Product Size 产品尺寸图

All dimensions in mm; 1 inch = 25,4 mm

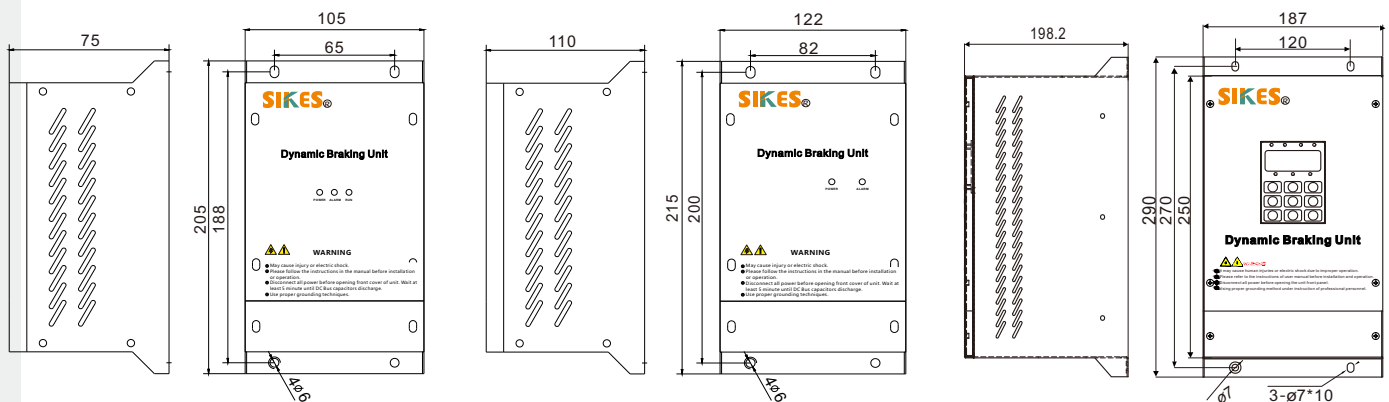


Fig. 1

Fig. 2

Fig. 3

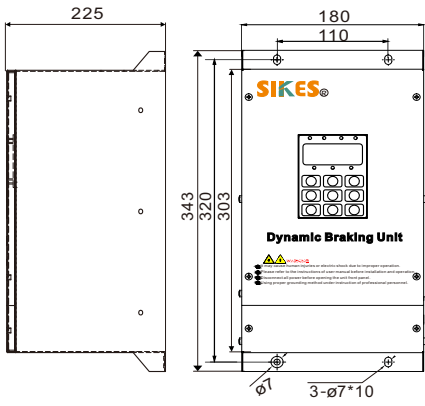


Fig. 4

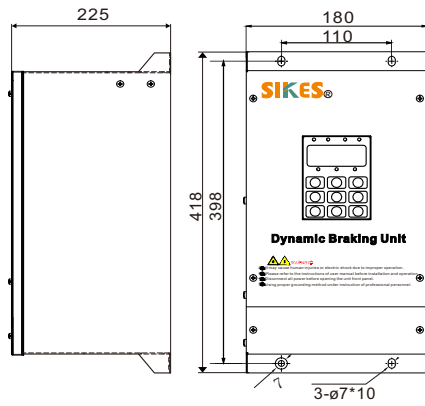


Fig. 5

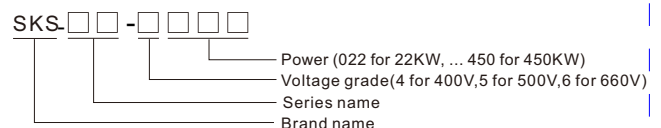
## Selection Table 选型表

型号 Type	容量 Inverter power	电压等级 Voltage Grade	峰值电流 Peak current	斩波电压 预设值 Default chopper voltage	制动力矩 Braking torque	图号 Dimension Pic.	端子 Terminal	配线 Cable (mm <sup>2</sup> )	重量 Weight (kg)
SKS-LN-2022	7.5-22kw	220V	50A	DC320V±5V (300-380V Adjustable)	100%	Fig.1	M4	6-8	1.5
SKS-LN-2037	30-37kw		75A		100%	Fig.2	M4	6-8	2.5
SKS-LN-2045	45kw		100A		100%	Fig.3	M5	10-16	5.2
SKS-LN-2075	55-75kw		150A		100%	Fig.4	M8	10-16	8.5
SKS-LN-2090	90kw		200A		100%	Fig.4	M8	25-35	8.5
SKS-LN-4022	7.5-22kw	400V	40A	DC660V±5V (600-760V Adjustable)	120%	Fig.1	M4	4-6	1.5
SKS-LN-4030	30kw		50A		120%		M4	6-8	1.5
SKS-LN-4055	45-55kw		75A		Fig.2	M4	6-8	2.5	
SKS-LN-4075	75kw		100A			M4	10-16	2.5	
SKS-LN-4110	90-110kw		150A		Fig.3	M5	10-16	5.2	
SKS-LN-4132	132kw		200A			M8	25-35	5.2	
SKS-GN-4110	55-110kw	400V	150A	DC660V±5V (600-760V Adjustable)	150%	Fig.4	M8	10-16	8.5
SKS-GN-4200	132-185kw		200A		150%			25-35	8.5
SKS-GN-4280	200-280kw		300A		150%			25-35	8.5
SKS-GN-4450	315-450kw		450A		150%			50-70	8.5
SKS-GN-5037	7.5-37kw	500V	75A	DC830V±5V (760-900V Adjustable)	150%	Fig.5	M10	6-8	11
SKS-GN-5110	45-110kw		150A		150%			10-16	11
SKS-GN-5200	132-200kw		200A		150%			10-16	11
SKS-GN-5280	220-280kw		300A		150%			25-35	11
SKS-GN-5450	315-450kw		450A		150%			50-70	11
SKS-GN-6037	11-37kw	660V	100A	DC1080V±5V (990-1155V Adjustable)	150%	Fig.5	M10	6-8	11
SKS-GN-6110	55-110kw		150A		150%			10-16	11
SKS-GN-6200	132-185kw		200A		150%			10-16	11
SKS-GN-6280	200-280kw		300A		150%			25-35	11
SKS-GN-6400	315-400kw		400A		150%			50-70	11
SKS-GN-6450	420-450kw		450A		150%			50-70	11

**NOTE:**

- Other optional nominal power or ED(% duty cycle), on demand.
- Other mains system voltage, on demand.
- Other higher IP class or enclosure design, on demand.
- For more technical details, please contact our sales representatives.

**Model Rules:**



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

## How to select braking resistor to match braking unit? 制动电阻选配表

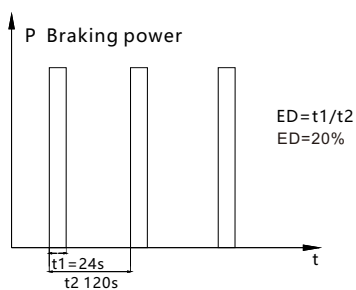
ED  
20%

Braking chopper voltage=660VDC, Apply to common machine and the elevator(less than 10 floors,), crane trolley.  
起始斩波电压VDC=660V, 适用普通机械、10层以下电梯, 起重机大小车选用。

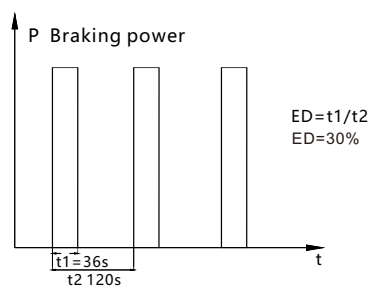
Inverter Power 变频器功率 (KW)	Type 制动单元型号	Quantity of Braking Unit 制动单元数量	Resistor 电阻配置	Quantity of Resistor 电阻数量	Braking torque 制动力矩	Usage 使用率	Resistance form 电阻形式
0.4	Built-in braking unit 内置制动单元	/	80W/1000Ω	1	150%	20%	Single resistor 单支电阻
0.75		/	150W/600Ω	1	150%	20%	Single resistor 单支电阻
1.5		/	300W/350Ω	1	120%	20%	Single resistor 单支电阻
2.2		/	450W/250Ω	1	120%	20%	Single resistor 单支电阻
3.7		/	750W/150Ω	1	120%	20%	Single resistor 单支电阻
5.5		/	1000W/100Ω	1	120%	20%	Single resistor 单支电阻
7.5	SKS-LN-4022	1	1500W/89Ω	1	100%	20%	Single resistor 单支电阻
11	SKS-LN-4022	1	2000W/60Ω	1	100%	20%	Single resistor 单支电阻
15	SKS-LN-4022	1	3000W/45Ω	1	100%	20%	Single resistor 单支电阻
18.5	SKS-LN-4022	1	3500W/36Ω	1	100%	20%	Single resistor 单支电阻
22	SKS-LN-4022	1	4500W/30Ω	1	100%	20%	Single resistor 单支电阻
30	SKS-LN-4030	1	6000W/22Ω	1	100%	20%	Braking resistor box 电阻箱
37	SKS-LN-4055	1	7500W/18Ω	1	100%	20%	Braking resistor box 电阻箱
45	SKS-LN-4055	1	9000W/15Ω	1	100%	20%	Braking resistor box 电阻箱
55	SKS-LN-4055	1	10KW/12Ω	1	100%	20%	Braking resistor box 电阻箱
75	SKS-LN-4075	1	15KW/9Ω	1	100%	20%	Braking resistor box 电阻箱
90	SKS-LN-4110	1	18KW/7.5Ω	1	100%	20%	Braking resistor box 电阻箱
110	SKS-LN-4110	1	20KW/6Ω	1	100%	20%	Braking resistor box 电阻箱
132	SKS-LN-4132	1	26KW/5Ω	1	100%	20%	Braking resistor box 电阻箱
160	SKS-GN-4200	1	30KW/4.2Ω	1	100%	20%	Braking resistor box 电阻箱
187	SKS-GN-4200	1	35KW/3.6Ω	1	100%	20%	Braking resistor box 电阻箱
200	SKS-GN-4280	1	40KW/3.35Ω	1	100%	20%	Braking resistor cabinet 电阻柜
220	SKS-GN-4280	1	45KW/3Ω	1	100%	20%	Braking resistor cabinet 电阻柜
250	SKS-GN-4280	1	50KW/2.68Ω	1	100%	20%	Braking resistor cabinet 电阻柜
280	SKS-GN-4280	1	55KW/2.4Ω	1	100%	20%	Braking resistor cabinet 电阻柜
315	SKS-GN-4450	1	60KW/2.12Ω	1	100%	20%	Braking resistor cabinet 电阻柜
350	SKS-GN-4450	1	70KW/2Ω	1	100%	20%	Braking resistor cabinet 电阻柜
400	SKS-GN-4450	1	80KW/1.68Ω	1	100%	20%	Braking resistor cabinet 电阻柜
500	SKS-GN-4280	2	100KW/1.35Ω	1	100%	20%	Braking resistor cabinet 电阻柜
630	SKS-GN-4450	2	130KW/1Ω	1	100%	20%	Braking resistor cabinet 电阻柜

## Efficiency of duty (EU)

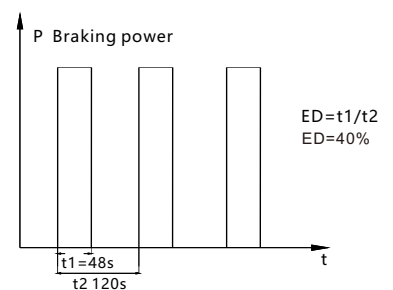
Circle time=120S



Picture A



Picture B



Picture C

## How to select braking resistor to match braking unit? 制动电阻选配表

ED  
30%

Braking activation voltage=660VDC, Apply to medium mechanical equipment and elevator(less than 20 floors)  
起始斩波电压VDC=660V, 适用中等机械设备、20层以下电梯选用。

Inverter Power 变频器功率 (KW)	Braking Unit Type 制动单元型号	Quantity of Braking Unit 制动单元数量	Resistor 电阻配置	Quantity of Resistor 电阻数量	Braking torque 制动力矩	Usage 使用率	Resistance form 电阻形式
0.4	Built-in braking unit 内置制动单元	/	120W/1000Ω	1	150%	30%	Single resistor 单支电阻
0.75		/	250W/600Ω	1	150%	30%	Single resistor 单支电阻
1.5		/	450W/300Ω	1	150%	30%	Single resistor 单支电阻
2.2		/	600W/205Ω	1	150%	30%	Single resistor 单支电阻
3.7		/	1000W/120Ω	1	150%	30%	Single resistor 单支电阻
5.5		/	1500W/80Ω	1	150%	30%	Single resistor 单支电阻
7.5	SKS-LN-4022	1	2000W/75Ω	1	120%	30%	Single resistor 单支电阻
11	SKS-LN-4022	1	3500W/50Ω	1	120%	30%	Single resistor 单支电阻
15	SKS-LN-4022	1	4500W/38Ω	1	120%	30%	Single resistor 单支电阻
18.5	SKS-LN-4030	1	5500W/30Ω	1	120%	30%	Single resistor 单支电阻
22	SKS-LN-4030	1	6.5KW/25Ω	1	120%	30%	Braking resistor box 电阻箱
30	SKS-LN-4055	1	9000Q/18Ω	1	120%	30%	Braking resistor box 电阻箱
37	SKS-LN-4055	1	11KW/15Ω	1	120%	30%	Braking resistor box 电阻箱
45	SKS-LN-4055	1	13.5KW/12Ω	1	120%	30%	Braking resistor box 电阻箱
55	SKS-LN-4055	1	16KW/10Ω	1	120%	30%	Braking resistor box 电阻箱
75	SKS-LN-4075	1	22KW/7.5Ω	1	120%	30%	Braking resistor box 电阻箱
90	SKS-GN-4110	1	27KW/6.2Ω	1	120%	30%	Braking resistor box 电阻箱
110	SKS-GN-4110	1	33KW/5Ω	1	120%	30%	Braking resistor box 电阻箱
132	SKS-GN-4200	1	40KW/4.2Ω	1	120%	30%	Braking resistor cabinet 电阻柜
160	SKS-GN-4280	1	48KW/3.5Ω	1	120%	30%	Braking resistor cabinet 电阻柜
187	SKS-GN-4280	1	55KW/3Ω	1	120%	30%	Braking resistor cabinet 电阻柜
200	SKS-GN-4280	1	60KW/2.8Ω	1	120%	30%	Braking resistor cabinet 电阻柜
220	SKS-GN-4280	1	65KW/2.5Ω	1	120%	30%	Braking resistor cabinet 电阻柜
250	SKS-GN-4450	1	75KW/2.3Ω	1	120%	30%	Braking resistor cabinet 电阻柜
280	SKS-GN-4450	1	85KW/2Ω	1	120%	30%	Braking resistor cabinet 电阻柜
315	SKS-GN-4450	1	95KW/1.8Ω	1	120%	30%	Braking resistor cabinet 电阻柜
350	SKS-GN-4450	1	105KW/1.6Ω	1	120%	30%	Braking resistor cabinet 电阻柜
400	SKS-GN-4280	2	120KW/1.4Ω	1	120%	30%	Braking resistor cabinet 电阻柜
500	SKS-GN-4450	2	150KW/1.2Ω	1	120%	30%	Braking resistor cabinet 电阻柜
630	SKS-GN-4450	2	190KW/0.9Ω	1	120%	30%	Braking resistor cabinet 电阻柜

## How to select braking resistor to match braking unit? 制动电阻选配表

ED  
40%

Braking activation voltage=660VDC, Apply to more than 30 floors elevators, main hook choice of the light crane.  
起始斩波电压VDC=660V, 适用30以上电梯, 轻型起重机主钩选用。

Inverter Power 变频器功率 (KW)	Braking Unit Type 制动单元型号	Quantity of Braking Unit 制动单元数量	Resistor 电阻配置	Quantity of Resistor 电阻数量	Braking torque 制动力矩	Usage 使用率	Resistance form 电阻形式
0.4	Built-in braking unit 内置制动单元	/	150W/100Ω	1	150%	40%	Single resistor 单支电阻
0.75		/	300W/600Ω	1	150%	40%	Single resistor 单支电阻
1.5		/	600W/300Ω	1	150%	40%	Single resistor 单支电阻
2.2		/	900W/205Ω	1	150%	40%	Single resistor 单支电阻
3.7		/	1500W/120Ω	1	150%	40%	Single resistor 单支电阻
5.5		/	2200W/80Ω	1	150%	40%	Single resistor 单支电阻
7.5	SKS-LN-4030	1	3000W/60Ω	1	150%	40%	Single resistor 单支电阻
11	SKS-LN-4030	1	4500W/40Ω	1	150%	40%	Single resistor 单支电阻
15	SKS-LN-4030	1	6000W/30Ω	1	150%	40%	Braking resistor box 电阻箱
18.5	SKS-LN-4055	1	7500W/24Ω	1	150%	40%	Braking resistor box 电阻箱
22	SKS-LN-4055	1	9000W/20Ω	1	150%	40%	Braking resistor box 电阻箱
30	SKS-LN-4075	1	12KW/15Ω	1	150%	40%	Braking resistor box 电阻箱
37	SKS-LN-4075	1	15KW/12Ω	1	150%	40%	Braking resistor box 电阻箱
45	SKS-LN-4110	1	18KW/9.9Ω	1	150%	40%	Braking resistor box 电阻箱
55	SKS-GN-4110	1	22KW/8.1Ω	1	150%	40%	Braking resistor box 电阻箱
75	SKS-GN-4110	1	30KW/6Ω	1	150%	40%	Braking resistor box 电阻箱
90	SKS-GN-4110	1	36KW/5Ω	1	150%	40%	Braking resistor box 电阻箱
110	SKS-GN-4200	1	45KW/4.1Ω	1	150%	40%	Braking resistor cabinet 电阻柜
132	SKS-GN-4280	1	55KW/3.4Ω	1	150%	40%	Braking resistor cabinet 电阻柜
160	SKS-GN-4280	1	65KW/2.8Ω	1	150%	40%	Braking resistor cabinet 电阻柜
187	SKS-GN-4280	1	75KW/2.4Ω	1	150%	40%	Braking resistor cabinet 电阻柜
200	SKS-GN-4450	1	80KW/2.3Ω	1	150%	40%	Braking resistor cabinet 电阻柜
220	SKS-GN-4450	1	90KW/2.1Ω	1	150%	40%	Braking resistor cabinet 电阻柜
250	SKS-GN-4450	1	100KW/1.8Ω	1	150%	40%	Braking resistor cabinet 电阻柜
280	SKS-GN-4450	1	110KW/1.6Ω	1	150%	40%	Braking resistor cabinet 电阻柜
315	SKS-GN-4280	2	130KW/1.4Ω	1	150%	40%	Braking resistor cabinet 电阻柜
350	SKS-GN-4280	2	140KW/1.28Ω	1	150%	40%	Braking resistor cabinet 电阻柜
400	SKS-GN-4450	2	160KW/1.15Ω	1	150%	40%	Braking resistor cabinet 电阻柜
500	SKS-GN-4450	2	200KW/0.9Ω	1	150%	40%	Braking resistor cabinet 电阻柜
630	SKS-GN-4450	3	260KW/0.72Ω	1	150%	40%	Braking resistor cabinet 电阻柜

Note: The yard lifting equipment of port and wharf is in a state of high frequency use, its configuration is matched according to ED=60%-80%, specific configuration contact to our company please.

备注: 港口、码头货场起重设备处于高频率使用状态, 其配置要按ED=60%-80%选配, 具体配置情况请与我公司联系。