



EDSDB Series Braking Unit

Ver. 1.1

User Manual

SHENZHEN ENCOM ELECTRIC TECHNOLOGIES CO., LTD

Foreword

Thanks for choosing ENC brand EDSDB series intelligent braking unit.

In order to ensure personal safety and enjoy high performance of the unit, please read our manual completely before operating it.

EDSDB series braking unit is mostly used on 3 phase induction motor which is driven by an Inverter/AC Drive. They can absorb the renewable energy from motor when it is slowing down, then the EDSDB braking unit will consume the energy in a Thermal Way by the help of resistors. In this way, the motor can make a rapid stop in due time. Our braking units can be applied on not only ENC brand Inverters but also other companies'.

Users can select appropriate type of braking unit according to the capacity of Inverter, Voltage degree and brake capability. In this way, the braking unit can play its best performance.

Our products adopt the single chip microcomputer intelligent control technology. When they are running in parallel, there is no need for Host-slave operation, which is with more convenience. Please refer to our manual for more details.

Please keep this user manual in case that it is needed for the purpose of maintenance or other occasions.

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Section 1. Safety Precautions

Please read the manual before the installation, operation, and inspection of the product. For a safe operation, you should pay special attention to the “ATTENTION” and “WARNING” items.



ATTENTION: This symbol means that if you do not operate as required or have not paid enough attention to the items listed, it will cause personal injury or equipment damage.



WARNING: This symbol means that if you do not operate as required, it will cause death, serious injury or great property losses.



1. Please make sure that the settings of braking unit and resistor are correct.
2. Do not make high-voltage test on the braking unit, or it will cause damage to the semiconductor device.
3. Fix all screws well during wiring, because the loose connection will cause fire or electric leakage accident.
4. Please install extra fans or cooling equipment when several braking units are installed in parallel in the same cabinet.
5. There is high voltage direct current inside the braking unit when power on, so it is forbidden to touch the braking unit, internal components or printed board with your hands, or electric shock will occur.
6. Do not touch the heat sink of the braking unit and the braking resistor, otherwise it will cause scald or electric shock. There is high temperature and heated spares inside after the braking unit is connected.
7. The braking resistor itself should have overheat protection and other protection methods. The braking resistor will keep heating when the braking unit is in failure, so the resistor should be able to isolate itself. ENC will not take the responsibility of such accident caused by no automatic isolation.



1. The braking unit and resistor should be installed on the medium with flame retardancy (such as metal).
2. Users can start to wiring after the power is cut off and the braking unit is fully discharged.
3. Only professional is allowed to operate on the wiring of the braking unit.
4. Ensure the correct wiring before running.
5. Ensure the setting of voltage-degree is correct before running.
6. The braking unit can be adjusted and maintained only when the power indicator light (POW) is completely off, and ensure the charge voltage is 0 by the multimeter.
7. During its running, do not touch any part inside of the braking unit.
8. Please refer to the content of our manual when analyze and deal with the failures of the braking unit. ENC will not be responsible for your personal safety or property losses if you make any modification on the braking unit without our permission.
9. This product is a accessory of the inverter, if it is operated improperly, it will not cause damage to itself but also to the inverter. Please pay much attention to this.

Section 2. Incoming Inspect

- 1) Check if there is any damage on the package during transportation and if braking unit itself has damage or other defective.
- 2) Check if all of the parts presented on packing list are included.
- 3) Please confirm the nameplate information of the braking unit is the same as your order requirement.

Our products are guaranteed by strict quality system during manufacturing, packing, transportation etc., please contact our company or local agent rapidly if some careless omission or mistake occurs, we'll deal with it as soon as possible.

Section 3. Specification of braking unit

Voltage Degree		460V
Type		4045
Max. adapted motor power (KW)		45
Rated Output	Max. discharge current(A)	70
	Continuous discharge current (A)	18
	Brake starting voltage(DC)	660/690/720/760/800/830±6V
Power	DC Voltage	200~800VDC
Protection	Overheating of the heat sink	Thermal switch +85°C
	Failure output	RELAY Terminal 3A250Vac/28Vdc(RA.RB.RC)
	Power indicator light(POW)	When voltage of main circuit (+, -) is less than 50VDC, it turns off.
Ambient	Installation site	Indoor (Free from corrosive gas or metal dust)
	Ambient Temperature	-10°C ~+50°C
	Storage Temperature	-20°C ~+60°C
	Humidity	Less than 90%RH, without condensation
	Vibration	Below 20Hz: 9.8m/S2(1G); 20~50Hz:2m/S2(0.2G) .
Protection Level		IP20
Mounting mode		Wall hanging

Section 4. Installation

1, Conditions for Use

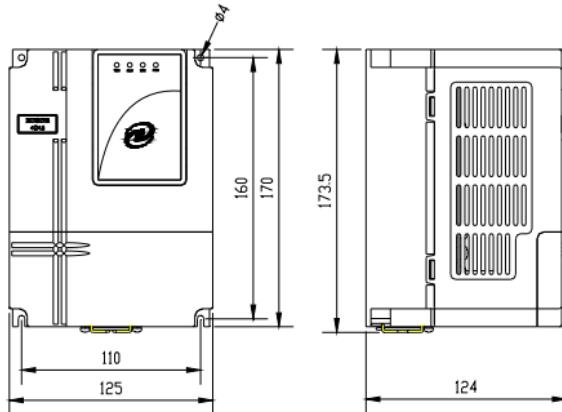
The braking unit should be installed in the way of wall-hanging indoors with good ventilation.

Ambient conditions should meet the following requirements:

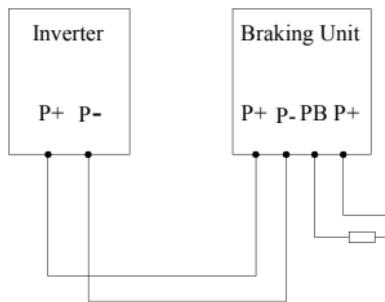
- 1) Ambient temperature -10°C ~40°C;
- 2) Prevent dust, cotton fiber or metal powder from entering it;
- 3) Free from oil, salt and corrosive gas;

- 4) Avoidance of vibration ;
- 5) Avoid high temperature and moisture and avoid being wetted due to raining ,with the humidity below 90%RH (without condensation) ;
- 6) Prohibit the use in the dangerous environment where inflammable or combustible or explosive gas, liquid or solid exists.

2, Basic Size(mm)



3,Wiring explanation for the main circuit of braking unit:



Wiring diagram between Inverter and Braking Unit



1. The cable length between Inverter and braking unit should be less than 5 m.
2. Please choose the right cables for wiring according the value of braking current.
3. The cable length between braking resistor (Rb) and braking inverter should be less than 10 m, and the cable must be heat-resisting.
4. P+ and P- are the 2 terminals("P+" "P-") of the Inverter's DC bus voltage.
5. P+ and P- must be twisted together, PB and P+ must be twisted together.



Incorrect wiring of the main circuit will cause damage to braking unit and Inverter.

Section 5. Voltage degree adjustment

Inverter input power voltage	Brake start voltage P+(P+), P-(P-) DC bus voltage
380Vac	660Vdc
400Vac	690Vdc
415Vac	720Vdc
440Vac	760Vdc
460Vac	800Vdc
480Vac	830Vdc

Input power with $\pm 10\%$ fluctuation is allowed

Section 6. Brake unit control loop terminal and setting instruction

Terminal name		Terminal instruction
CON1	TA,TC	Faulty relay output constant open touch
	TB,TC	Faulty relay output constant close touch
CN1		Brake start voltage 660V
		Brake start voltage 690V
		Brake start voltage 720V
		Brake start voltage 760V
		Brake start voltage 800V
		Brake start voltage 830V

 (1) If grid voltage is 20% higher than normal grid, please set higher voltage.

(2) Please make sure the allowed start voltage of inverter must fit this equipment.

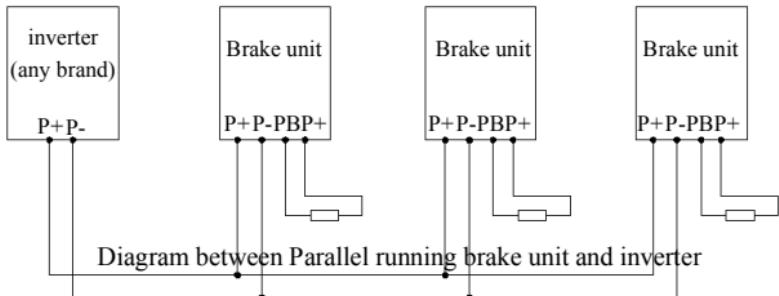


Setting is forbidden when the POW light is still on.

Section 7. Keyboard indicator light instruction

Indicator light	Function instruction
TEM	That LED is on means brake unit temperature is over 80 °C
ALM	That LED is on means brake unit is over current or voltage.
BRK	That LED is on means brake unit is on the state of brake, and brake pipe is open. That LED is off means brake unit is not on the state of brake, and brake pipe is closed.
POW	Brake unit power indicator light

Section 8. Parallel connection running



When two more brake units are parallel connected, please connect inverter and units based on the above diagram.



When brake unit is parallel connected, please make the brakes unit voltage is consistent

1,The brake unit should fit brake resistance as followings:

Ac motor drive		Brake unit		Discharge resistance			
Voltage	Max motor power KW(KVA)	Type EDSDB	Qty.	Single resistance spec.	Qty.	Type BR	Min equivalent resistance value
460V	37(49.4)	4045	1	1200W 6.8Ω	8	1K2W008	9600W 13.6Ω
	45(60)	4045	1	1200W 6.8Ω	8	1K2W6P8	9600W 13.6Ω
	55(73.7)	4030	2	1500W 5Ω	8	1K5W005	6000W 20Ω
	75(99)	4045	2	1200W 6.8Ω	16	1K2W6P8	9600W 13.6Ω
	90(116)	4045	3	2500W 13.6Ω	12	2K5W13P6	9600W 13.6Ω
	110(138)	4045	3	2500W 13.6Ω	12	2K5W13P6	9600W 13.6Ω
	132(167)	4045	4	2500W 13.6Ω	16	2K5W13P6	9600W 13.6Ω
	160(200)	4045	4	2500W 13.6Ω	16	2K5W13P6	9600W 13.6Ω
	200(250)	4045	5	2500W 13.6Ω	20	2K5W13P6	9600W 13.6Ω
	220(280)	4045	5	2500W 13.6Ω	20	2K5W13P6	9600W 13.6Ω

	250(318)	4045	6	2500W 13.6Ω	24	2K5W13P6	9600W 13.6Ω
	280(342)	4045	7	2500W 13.6Ω	28	2K5W13P6	9600W 13.6Ω

NOTE: When lower torque is needed, you can choose the resistance its equivalent value can be greater than the recommended value.

Section 9. Malfunction analysis and solution

No.	Malfunction state	Reasons	Solutions
1	Without brake, resistance heat seriously	Unit brake voltage is wrong	Adjust brake voltage
		Brake unit malfunction	Change brake unit
2	Inverter skip over voltage	Resistance brake power is not enough	Check the brake condition
		Unit voltage is not fit	Unit voltage is too high
		Unit malfunction	Change unit
3	Over heat protection	heat sink is over 85°C	Air forcing cooling



Grid voltage is too high, choose higher voltage setting.

1,brake resistance selection:

- 1) Use non-inductive resistance to decrease inductance value
- 2) Grounded malfunction is forbidden, or big trouble will be aroused
- 3) Select the resistance with reference, revise accordingly

Any questions, please contact our company.



1. Parallel connect unit can enlarge the brake ability.
2. 2 units parallel connection has double ability.

Section 10. Warranty instruction

1. Malfunction under the normal condition, manufacturer provide free warranty service, warranty period seen in the warranty card, fee is needed when exceed the period.
2. Although within warranty period, the following situation will be charged accordingly.
 - 1) Malfunction from the operation without following service manual reasonably.
 - 2) Malfunction from the abnormal function of brake unit.
 - 3) Malfunction from self-fixing without permission.
 - 4) Malfunction from external factor like bad protection.
 - 5) Malfunction from nature disaster like fir, etc.
 - 6) Destroy the mark on the machine like the nameplate, series No. On the machine is not consistent with warranty card.
3. Service fee will be charged according to the fact, contract is prior if valid.
4. Any questions , please contact distributor and my company.



Exceeding the warranty, we provide life long service with fee.

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