MD880-60M Three-phase brake unit

user manual

VER:0.0

Suzhou Chuanglian Electric Drive Co.

Profile number:

Preface

First of all, thank you for using our MD880-60M three-phase braking unit. MD880-60M three-phase braking unit is used to consume the energy generated during the braking process of the motor, so as to improve the braking capacity of the frequency converter and make the motor brake quickly.

Before using the MD880-60M three-phase brake unit, please read this instruction manual carefully and keep it in a safe place. This manual will assist you in routine maintenance, inspection and troubleshooting of the product.

CONTENTS

Delivery inspection and safety precautions

Chapter I Delivery inspection and safety precautions

1.1 Unpacking and inspection items

This product has been strictly inspected and reliably packaged at the factory, but may be damaged during transportation due to handling, loading and unloading. Therefore, please make the following checks immediately after opening the package:

1) The machine is sealed and packaged in a plastic bag, and the machine is in perfect shape;
2) Confirm that the equipment and accessories are complete, one by one, according to the shipping list in the box;
3) Check the nameplate of the machine and verify that the machine matches your order.

1.2 Safety Precautions

Security Definition:

In this manual, safety precautions are divided into the following two categories:

Hazards caused by failure to operate as required can lead to serious injury

or even death!

Hazards caused by failure to operate as required may result in moderate or minor injuries, and equipment damage!

distress	

1. Do not remove the top cover except for regular maintenance or wiring, otherwise there is a risk of electric shock;
2. Wiring and periodic maintenance work must be performed only after the power supply has been disconnected for **15** minutes and the DC voltage has been detected with a multimeter to be lower than **DC30V**, otherwise there is a risk of electric shock;
3. Do not touch the cable when the insulation is damaged, otherwise there is a risk of electric shock;
4. Do not subject the cable to scratching, rubbing, heavy pressure, overloading to the point of destruction or risk of electric shock;
5. The grounding terminal of the brake unit must be reliably grounded, otherwise there is a risk of electric shock.

Risk.

take note of	

1. The environment around the brake unit and brake resistor must not contain flammable objects, otherwise a fire may easily occur;
2. Do not connect the braking resistor to the DC terminals (+, -, -) of the brake unit. -), otherwise the inverter may be damaged;
3. Do not touch the braking resistor immediately after the power supply is cut off, otherwise there is a danger of burns;
4. It is not permitted to supply power to a damaged brake unit, otherwise there is a risk of electric shock or fire!

Danger.

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Naming and technical specifications

Chapter II Nomenclature and Technical Specifications

2.1 naming convention

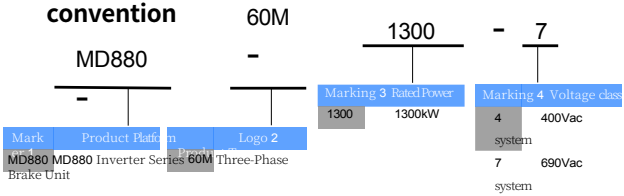

Figure 2-1 Naming Rules

2.2 nameplate

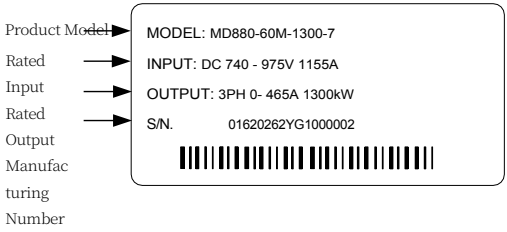

Figure 2-2 Nameplate

Note: 1. INPUT is the input voltage range allowed for rated operating conditions, not the braking voltage. .;

2. OUTPUT is the output current range and power rating.

2.3 Technical Parameters

Table 2-1 MD880-60M Technical Parameters

Brake Unit Model	Starting braking voltage (V)	Maximum continuous braking phase current (A)	Minimum braking resistance (Ω)	Maximum continuous braking power (kW)
MD880-60M-0500-4	653	310	1.7	500
MD880-60M-0750-4	653	465	1.2	750
MD880-60M-0870-7	1126	310	3	870
MD880-60M-1300-7	1126	465	2	1300

Note: Several brake units can be used in parallel for the same voltage level.

2.4 environmental conditions

Table 2-2 MDBU Environmental Conditions

environmental conditions	
Location	Indoors, out of direct sunlight, free of dust and corrosive gases, Flammable gases, oil mist, water vapor, dripping water or salt, etc.
altitude	Below 1,000 m (above 1,000 m, the rate is reduced by 1% for every 100 m.) (up to 4000m)
environmental	-10℃～+40℃ (Ambient temperature is 40℃～50℃.)

environmental conditions	
Cooling method	Forced air-cooled AF in accordance with EN 60146
protection class	IP00

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Functional Parameter List

Table of functional parameters for chapter III

3.1 protective function

Table 3-1 MD880-60M Protection Points

Brake Unit Model	overpressure protection (V)	overcurrent protection Protection (A)	overheating protection (°C)
MD880-60M-0500-4	900	1693	95
MD880-60M-0750-4	900	2386	95
MD880-60M-0870-7	1300	1088	95
MD880-60M-1300-7	1300	1590	95

Description:

1、Over-heating protection and over-voltage protection have automatic recovery function;

2. Overcurrent protection faults need to be re-powered to reset.

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Installation and Wiring

Chapter 4 Installation and Wiring

4.1 installation environment

1) Do not place it in direct sunlight and try to keep it away from violent shaking;
2) The brake unit must not be affected by moisture, dust, metal particles, corrosive gases and liquids, and should be installed in a non-flammable and smooth and stable place if possible;
3) In the case of installing multiple brake units on one panel, the air flow situation of heat dissipation should be considered and side-by-side installation should be chosen as far as possible, if it is necessary to install the upper and lower units, the distance between the upper and lower units must be more than 300mm;
4) The brake resistor must not be installed close to the air inlet of the brake unit.

4.2 Outline drawing and dimensions of the brake unit

4.2.1 external figure

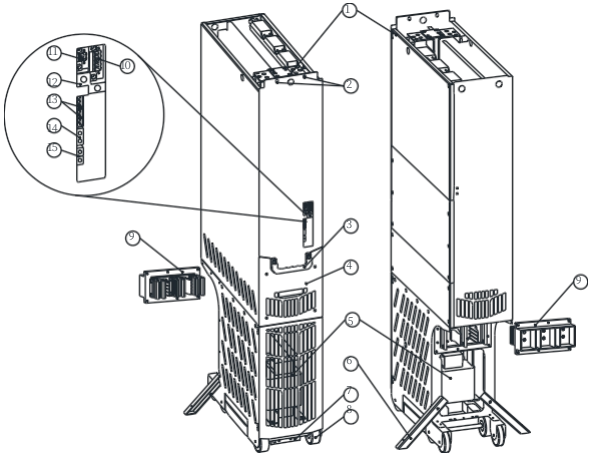

Fig. 4-1 Three-phase braking unit outline diagram

4.2.2 Mounting Dimensions

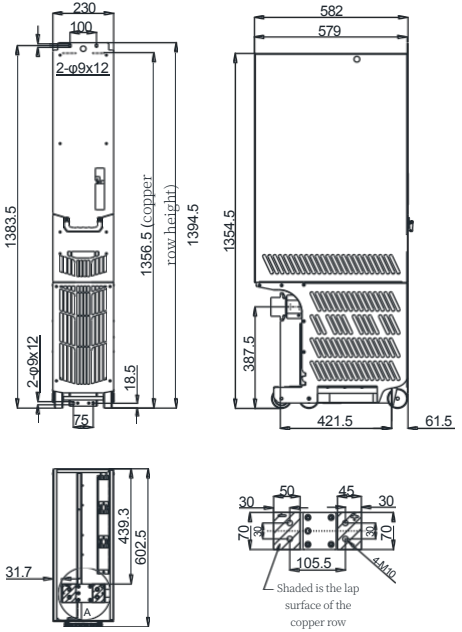

Fig. 4-2 Dimensions of three-phase braking unit

4.3 wiring

4.3.1 Typical electrical system wiring diagram

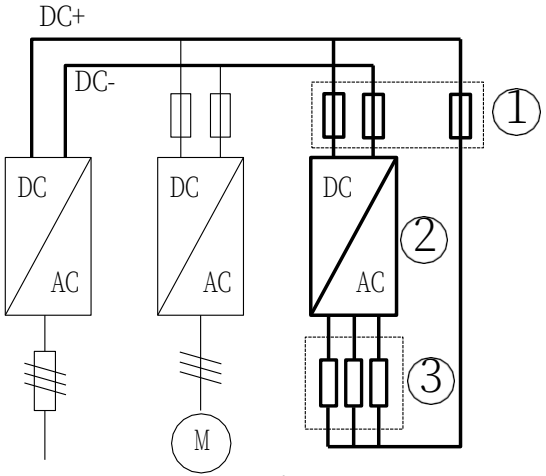

Fig. 4-3 Wiring diagram of a single brake unit

serial number	marginal notes
1	DC Fuses
2	Three-phase braking units
3	Braking Resistors

4.3.2 Parallel wiring of several brake units

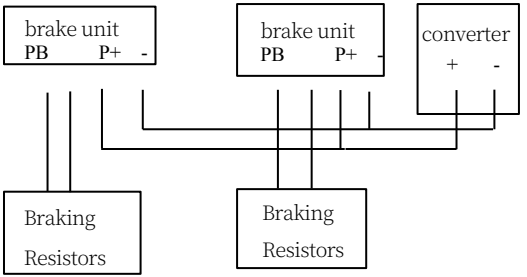

Figure 4-4 Wiring diagram for parallel connection of several brake units

Attention:

1. Braking resistors should only be connected to the respective brake unit, parallel connection at the output of the brake unit is prohibited, otherwise the brake unit may be damaged;

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Selection of braking unit and braking resistor

Chapter 5 Selection of Braking Unit and Braking Resistor

5.1 Selection of brake units

Two bases for brake unit selection:

1) Depending on the input voltage level of the inverter, select the braking unit with the corresponding voltage level.

2) Select the brake unit of the corresponding power according to the size of the braking power required for braking the inverter.

The principle of brake unit power selection is that the power of the brake unit should be greater than the braking power. In case the size of the braking power is not clear, it can be estimated in the following way:

Pb=P*Td*K

Where: Pb---Braking power

P---- Motor power

K---- Mechanical energy conversion efficiency

Td--- Ratio of braking torque to rated motor torque

The value of Td varies from system to system, generally for elevators, hoists and cranes: 100%.

Unwinding and winding equipment: 120%.

Large inertia equipment requiring quick stops: 120%;

Normal inertia load: 80%;

Pressing 100% will satisfy about 90% of the load cases.

Table 5-1 Selection of brake unit

Rated power of inverter	brake unit
500 kW	MD880-60M-0500-4
750 kW	MD880-60M-0750-4
870 kW	MD880-60M-0870-7
1300 kW	MD880-60M-1300-7

5.2 Selection of braking resistor

5.2.1 Selection of resistance value

When braking, the regenerative energy of the motor is almost entirely consumed in the braking resistor. Can be based on the formula: U * U / R = Pb / 3

Equation U Braking voltage for stabilized braking of the system (varies from system to system, too)

(Typically 653V for 380VAC systems and 1126V for 690VAC systems.) **Note:** Multiple brake units are required if the calculated R is less than the minimum resistance for each voltage level.

5.2.2 Power selection of braking resistors

Theoretically the power of the braking resistor is the same as the braking power, but considering the derating for the 70%.

Can be based on the formula: 0.7*Pr=Pb/3*D

D---- Braking frequency (regeneration process as a proportion of the whole working process)

Elevator -----20%-30% Unwinding and unwinding 20%-30

Centrifuges -------50%-60% ---------- Occasional braking

load 5%

Generally 10%

Brake Unit Load Curve

Chapter 6 Brake Unit Load Curve

6.1 MD880-60M Series

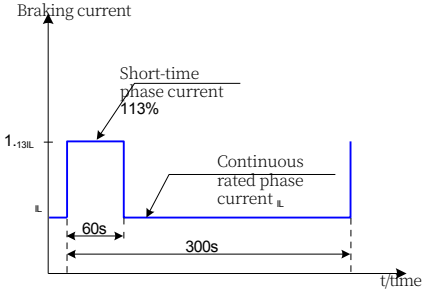

Figure 6-1 MD880-60M Series Load Curves