

Frequency inverter

8200 vector

0.25 ... 90.0 kW

Created as a system

Global Drive



Lenze



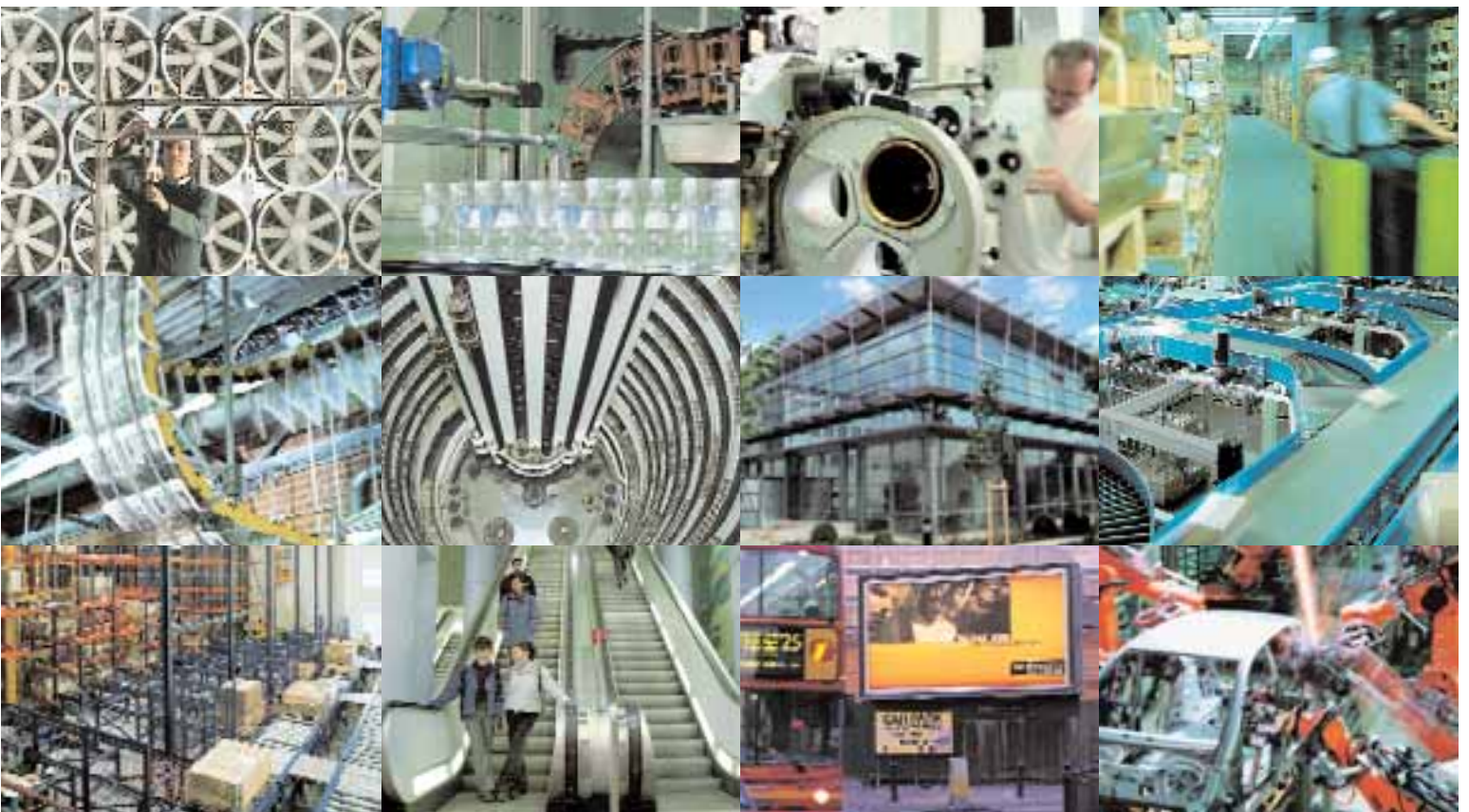
Lenze | An introduction

Whatever drive system you have in mind, we can make it a reality.

Our “one-stop shop” enables us to offer you a complete range of reliable, high-performance electronic and mechanical drive products. Our product range includes frequency inverters, power converters, servo-controllers, variable speed drives and speed-transforming gears, motors as well as brakes and clutches. This makes Lenze the ideal supplier for your applications – not only for individual components, but also for complete drive systems, from project planning to setup and commissioning.

In addition, our global service and distribution network provides local customer service as well as fast and comprehensive after sales service. Our quality assurance system for development, production, sales and service is certified to DIN ISO 9001 : 2000. Our environmental management system is also certified to DIN ISO 14001. Our customers measure the quality of our products. It is our responsibility to meet their requirements. Our company policy, which places the customer at the centre of our focus, means that quality is always our top priority.

Why not find out for yourself?



System overview/Selection guide

Base controller and accessories

Mains



Cable protection
>> Page 4-4



Mains choke
>> Page 4-10



RFI/Mains filters
>> Page 4-14



8200 vector
base controller
0.25.. 90 kW
>> Page 2-8



Brake resistor
>> Page 4-36



Motor filters
>> Page 4-24



Motor



The section “Product information – **Quick selection guide**” (page 1-8) contains a selection guide to help you find the right inverter for your application quickly and easily.

Automation components



Communication modules e.g. keypad or PROFIBUS
>> Page 3-6



Function modules e.g. standard I/O PT
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Drive PLC
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Extension boards
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Parameter setting software
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I/O terminals
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Human Machine Interface
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Partnership | Created as a system



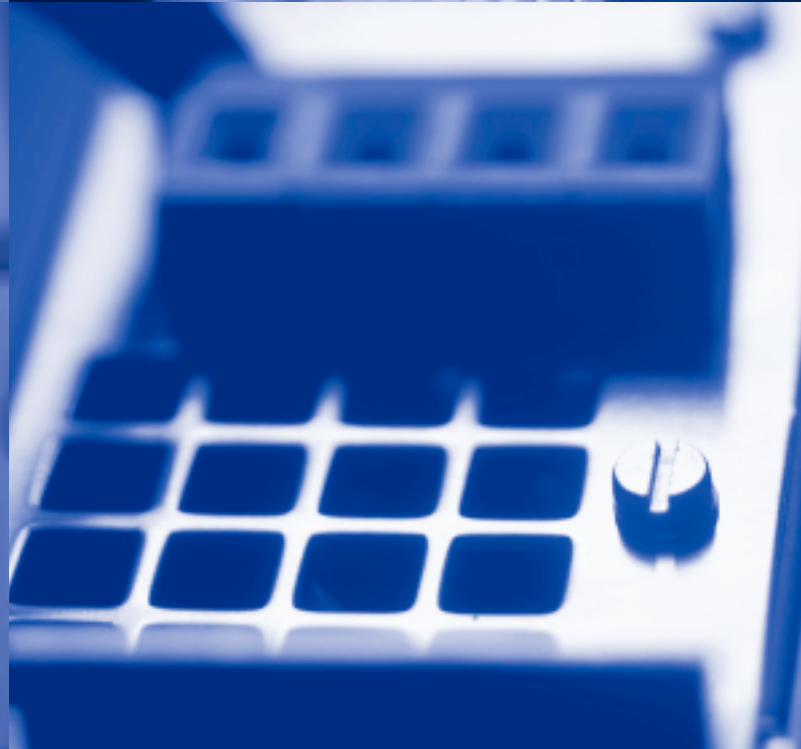
Maximum power combined with high drive performance in a single universally applicable system: the **8200 vector frequency inverter range**. The modular product range can provide a solution which, as well as meeting the requirements of your individual drive tasks, is also cost-effective.



Global Drive

We can provide a complete and universally applicable system able to meet all your operational, diagnostics and communication needs in a user-friendly way. Developed specifically for use in day-to-day operations, the 8200 vector device range is part of our field-proven system comprising expert advice, training, support service and much more - features that really pay off.





Contents | 8200 vector

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Lenze



Type: ER2EV751_4C200

STANDARD PT
010 / 3A



ATTENTION

L'appareil est sous tension
pendant 180s après la
coupure de la tension réseau

WARNING

Device is live up to 180s after
removing mains voltage.



Product information | 8200 vector

| | |
|-----------------------------------|-----|
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Abbreviations used in this catalog

| | | | | |
|--------------------------|-------|--|-------------|---|
| U_{mains} | [V] | Mains voltage | AC | Alternating current/voltage |
| U_{DC} | [V] | DC voltage supply | DC | Direct current/voltage |
| U_M | [V] | Output voltage | | |
| I_{mains} | [A] | Mains current | DIN | Deutsches Institut für Normung |
| I_r | [A] | Rated output current | | |
| I_{max} | [A] | Maximum output current | EMC | Electromagnetic compatibility |
| I_{PE} | [mA] | Leakage current | EN | European standard |
| | | | IEC | International Electrotechnical Commission |
| P_r | [kW] | Rated motor power | | |
| P_{loss} | [W] | Inverter power loss | IP | International Protection Code |
| P_{DC} | [kW] | Power in addition to that which can be drawn from the DC bus in power-adaptive operation | NEMA | National Electrical Manufacturers Association |
| S_N | [kVA] | Inverter output power | | |
| M_N | [Nm] | Rated torque | VDE | Verband deutscher Elektrotechniker |
| f_{max} | [Hz] | Maximum frequency | CE | Communauté Européene |
| L | [mH] | Inductance | | |
| R | [Ω] | Resistance | UL | Underwriters Laboratories |



Type key

E **8** **2** **x** **V** **x** **x** **x** **K** **x** **C** **x** **x** **x**

| | |
|--------------|--|
| E | Electronic product |
| 8 2 | 8200 frequency inverter |
| E | Design Built-in unit |
| C | “Cold plate” technology (type-dependent) ¹⁾ |
| D | Push-through technology (type-dependent) ¹⁾ |
| V | Version Vector-controlled inverter |
| 7 5 1 | Power e. g. 750 W |
| 7 5 2 | e. g. 7500 W |
| 1 1 3 | e. g. 11,000 W |
| 2 | Mains voltage 230 V |
| 4 | 400/500 V |
| | Device generation |
| 0 | Option Standard (0.25...11 kW) |
| 1 | IT system (15...90 kW) ¹⁾ |
| 2 | without integrated filters |
| 0 | Standard |
| 4 | Safe stop (3...90 kW) ¹⁾ |
| 0 | Not coated (0.25...11 kW) |
| 1 | Coated |
| 3 0 2 | With mains filters (15...90 kW) Operation at rated power ¹⁾ |
| 3 0 3 | Operation at increased rated power ¹⁾ |

¹⁾ Available on request

Product Information

Ordering data – 8200 vector

We want to be sure that you receive the correct products in good time. In order to help us to do this, please make sure you provide the following information:

- Your address and ordering data
- Our order numbers/designations for each catalog product
- Your delivery data, i.e. delivery date and delivery address

How to order

You will find the order numbers/designations you require in this section (Quick selection guide) or on the relevant page in the product description.

- Make a photocopy of the fax order form which you will find on the last page of this catalog.
- Enter the order numbers/designations in the appropriate columns.
- Enter your customer details.
- Send the fax order form to your Lenze sales office.

You don't know where your Lenze sales office is?

No problem!

You will find all the information you need on the Internet at www.Lenze.com.

We would be delighted to assist you.





This catalog introduces you to Lenze's extensive 8200 vector range of frequency inverters. In addition to the base controllers, a wide variety of application-specific accessories are available to meet the individual requirements of your drive system. Lenze can also provide components for automating your system, such as the Drive PLC controller with expansion options, programmable displays for process visualisation and much more – true system-based solutions. To help you to select the right components for your drive system, we have put together a basic configuration comprising an inverter and a terminal module, which you will find in the **quick selection guide on the following pages.**

This inverter configuration can be used to solve most common applications. If you require a different configuration, simply find the product you require in the relevant section and enter its designation in the fax order form.

The general table of contents will help you to find specific items.

Have fun making your selections!

The next section, "8200 vector – A model system" contains information about the essential features of and comprehensive functions offered by the 8200 vector.



8200 vector – Created as a system

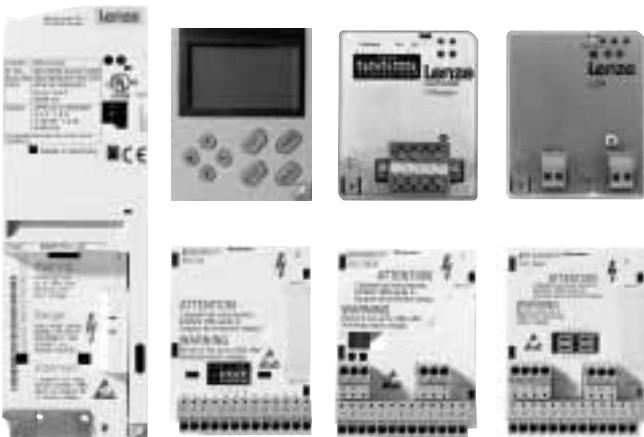
The concept of the 8200 vector frequency inverter is based on a modular system of complementary components. Combined with a Lenze geared motor or a Lenze three-phase AC motor, it can be used to implement electronic variable speed drives for a multiplicity of applications.

Compact

Side-by-side mounting saves space in the control cabinet. Integrated filters (optional) simplify installation.

Flexible

The modular structure enables the inverters to be optimised for your application. This results in cost-effective but high-performance drive solutions. Whether as a “stand-alone” inverter with set value selection via potentiometer or a networked inverter with speed feedback in master/slave mode – the inverter functions can be adapted to suit every application.



Versatile

The range is completed by special assembly techniques such as push-through technology to reduce the heat generated in the control cabinet or “cold plate” technology, which enables a customer-specific heatsink to be used.



Uncomplicated

This range of inverters is characterised by its ease of control and operation combined with an extensive range of functions. A transparent menu structure and assisted commissioning using the Global Drive Control easy (GDC easy) parameterisation software enable the inverter to be parameterised and diagnosed quickly and easily. (Download via Internet)

Transparent

The keypad XT is used to display the operating parameters. 8 keys and a text display provide quick and easy access to the inverter parameters via the transparent menu structure. The keypad XT is also used for the purposes of status display and error diagnostics. In addition, its built-in memory can be used to transfer settings to other inverters.

User-friendly

The transparent and user-friendly drive documentation can provide answers to your questions quickly. We even have DOCcert (TÜV) certification to prove this.



Operational reliability

Configurable slip compensation can be employed to compensate load-dependent fluctuations in speed without having to apply complex speed feedback. The maximum current limiting function ensures stable operation at every operating point for both static and dynamic loads. A PTC resistor can be connected for motor protection.

Global application

The broad input voltage range of up to 500 V (+10%) means that your machine’s installation location is all but irrelevant – wherever it may be in the world. As you would expect, the 8200 vector is certified to international standards.



Drive characteristics

- Power range 0.25 kW...7.5 kW 230 V/240 V (+10%)
0.55 kW...90 kW 400 V/500 V (+10%)
- Overload capacity 180% of rated torque for 60 seconds, from 15 kW 210% of rated torque for 3s
- V/f linear, V/f quadratic, vector control, sensorless torque control modes
- Chopper frequency 1, 2, 4, 8, 16 kHz
- Output frequency up to 650 Hz

Input and output terminals

- Up to 2 analog inputs, bipolar as an option (0-10 V, -10 V...+10 V, 0-20 mA, 4-20 mA; 10-bit resolution)
- Up to 2 analog outputs (0-10 V, 0-20 mA, 4-20 mA; 10-bit resolution)
- Up to 6 potential-free digital inputs with switchable logic
- Up to 2 digital outputs and one frequency output
- Up to 2 relay outputs (also for direct mains connection 240 V AC)
- Selection option for incremental encoder

Fieldbus communication

- RS232/485 serial interface; optical fibre as an option
- Bus interface to most common fieldbus systems (CAN, PROFIBUS-DP, INTERBUS, INTERBUS LOOP, LON, DeviceNet, CANopen, AS-Interface)

Protection functions

- Short-circuit-resistant, protected against earth faults during operation
- Configurable current limiting, warnings and error messages in the event of overcurrents
- Protected against overvoltages and undervoltages
- Warnings and error messages in the event of overtemperatures on the frequency inverter
- Input for PTC or thermal contact and I²t monitoring for motor protection
- Motor phase failure detection
- Integrated brake transistor (up to 11 kW)
- Integrated RFI filters to EN55011 class A or B (device-dependent)

Standard functions

- PID controller
- Flying restart with coasting motor
- Slip and mains voltage compensation
- Load loss/belt monitoring
- Smooth start/stop along S ramps
- DC braking
- Motor potentiometer
- 4 freely parameterisable parameter sets which can be switched online

Control and operation

- Keypad XT with display in plain text and menu structure
- Copy function with keypad for transferring inverter settings
- Password protection
- Global Drive Control easy control and parameterisation software (can be downloaded from the Internet)
- Spring-clamp terminals for cable cross-sections up to 1.5 mm² on all function modules with plug-in terminals
- Shield sheets for motor cable and control cables supplied with the frequency inverter

Certifications/Approvals

- UL, cUL, CE

Keypad XT

User-friendly menu structure and plain text display

Plug-in spring-clamp terminal strip

Shield sheet for control cables

Shield sheet for motor cables



Quick selection guide

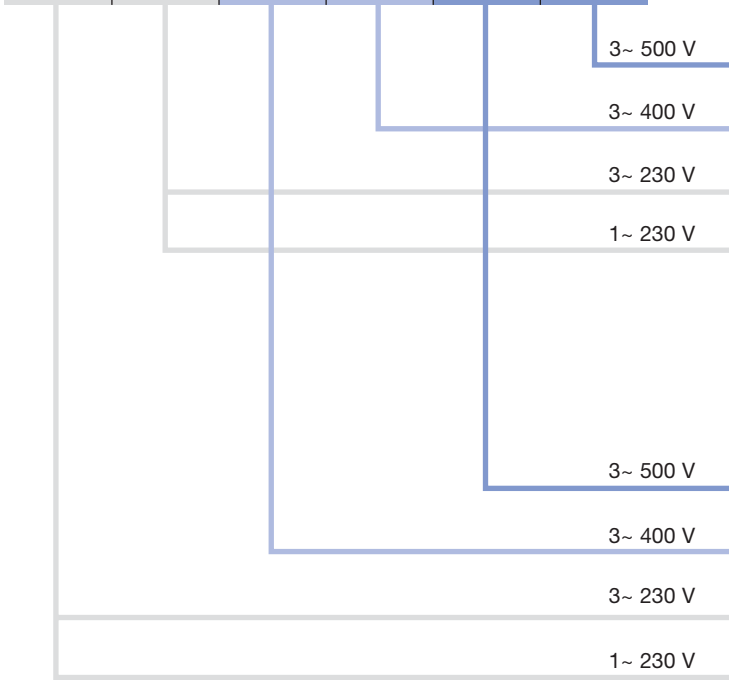
Operation at rated power (normal operation)

In normal operation, the inverter is set for the rated power of the motor.

Note: During operation at increased rated power, a larger motor may be used under certain circumstances at the same inverter power as in normal operation, e.g. in pump and fan applications. Please use the quick selection guide on page 1-9 to make your selections for "Operation at increased rated power".

| Supply voltage? | | |
|-----------------|----------|----------|
| 230 V AC | 400 V AC | 500 V AC |

| Max. 20 m motor cable, radio interference level "A"? | | | | | |
|--|----|-----|----|-----|----|
| Yes | No | Yes | No | Yes | No |



Base controllers without integrated EMC filters

- 400 V/500 V, 3-phase, without integrated EMC filters (see page 1-12)
- 400 V/500 V, 3-phase, without integrated EMC filters (see page 1-12)
- 230 V, 3-phase, without integrated EMC filters (see page 1-11)
- 230 V, single-phase, without integrated EMC filters (see page 1-10)

Base controllers with integrated EMC filters

- 500 V, 3-phase, with integrated EMC filters (see page 1-18)
- 400 V, 3-phase, with integrated EMC filters (see page 1-16)
- 230 V, 3-phase, with integrated EMC filters (see page 1-15)
- 230 V, 1-phase, with integrated EMC filters (see page 1-14)

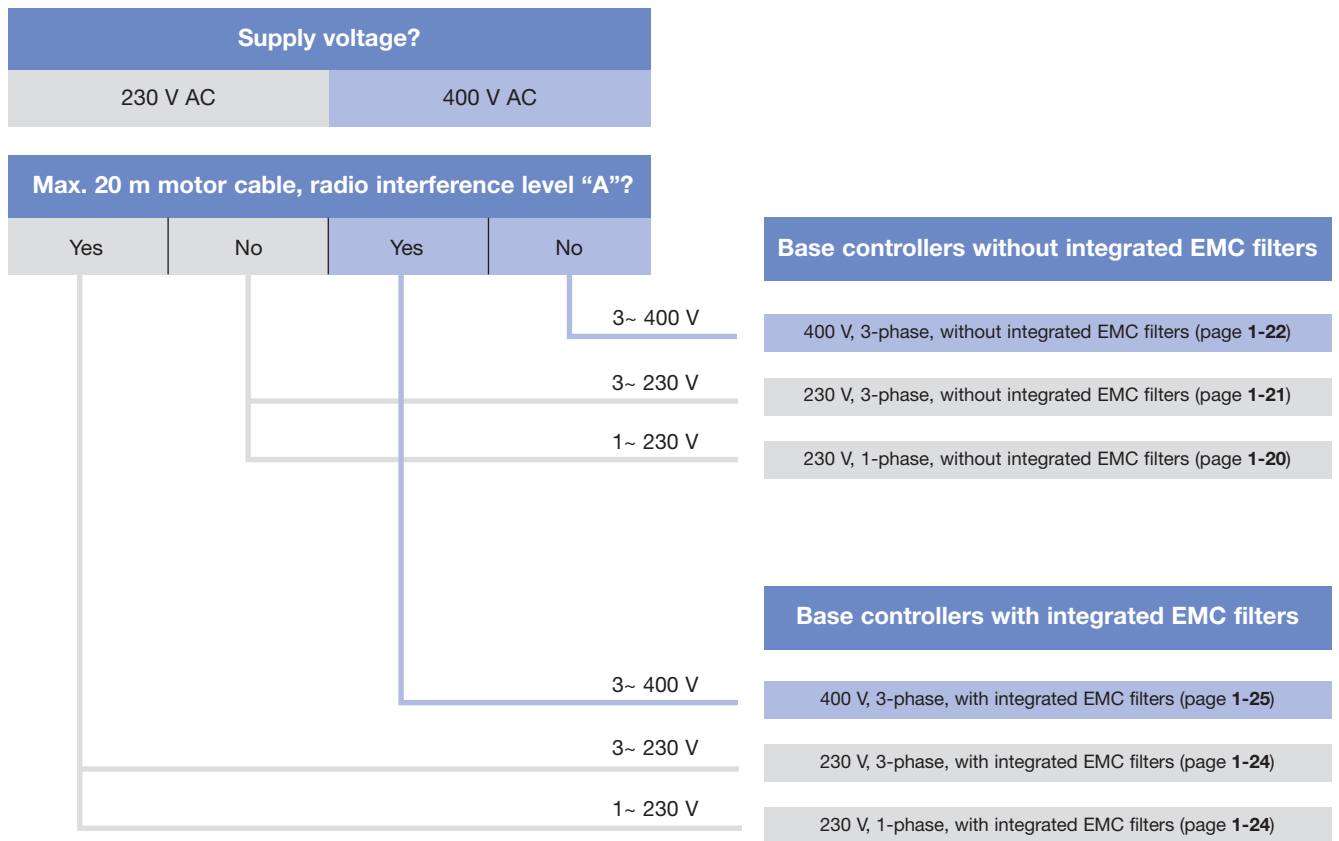


Quick selection guide Operation at increased rated power

During operation at increased rated power, a larger motor may be used under certain circumstances at the same inverter power as in normal operation. The inverter may be operated at increased rated power under the following conditions:

- In the mains voltage ranges specified
- Only 2 kHz or 4 kHz operating frequency
- Only with approved mains chokes, fuses and cable cross-sections

During operation at rated power (normal operation), the inverter is set for the rated power of the motor. Please use the quick selection guide on page 1-8 to make your selections for "Normal operation".



Product information

8200 vector quick selection guide

| 230 V, single-phase, normal operation, without integrated EMC filters | | | | | |
|---|--|--|----------------|----------------|----------------|
| | Motor power [kW] | 0.25 | 0.37 | 0.55 | Technical data |
| Essential | Frequency inverter (base controller) | E82EV251K2C200 | E82EV371K2C200 | E82EV551K2C200 | Chapter 2 |
| | Control via digital/analog I/O (Standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | Chapter 3 |
| | Mains choke | ELN1-0900H005 | | ELN1-0500H009 | Chapter 4 |
| | RFI filter | Motor cable up to 20 m, limiting value classes A and B | E82ZZ37112B200 | E82ZZ75112B200 | Chapter 4 |

| 230 V, single-phase, normal operation, without integrated EMC filters | | | | | |
|---|--|--|----------------|----------------|----------------|
| | Motor power [kW] | 0.75 | 1.5 | 2.2 | Technical data |
| Essential | Frequency inverter (base controller) | E82EV751K2C200 | E82EV152K2C200 | E82EV222K2C200 | Chapter 2 |
| | Control via digital/analog I/O (Standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| | Mains choke | - | - | ELN1-0250H018 | Chapter 4 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | Chapter 3 |
| | Mains choke | ELN1-0900H005 | ELN1-0250H018 | - | Chapter 4 |
| | RFI filter | Motor cable up to 20 m, limiting value classes A and B | E82ZZ37112B200 | E82ZZ22212B200 | Chapter 4 |

¹⁾ See chapter 3 for additional I/O function modules and modules for fieldbus networking

²⁾ See chapter 3 for additional communication modules



| 230 V, 3-phase, normal operation, without integrated EMC filters | | | | | | |
|--|--|----------------|----------------|----------------|----------------|----------------|
| | Motor power [kW] | 0.55 | 0.75 | 1.5 | 2.2 | Technical data |
| Essential | Frequency inverter (base controller) | E82EV551K2C200 | E82EV751K2C200 | E82EV152K2C200 | E82EV222K2C200 | Chapter 2 |
| | Control via digital/analog I/O (Standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | Chapter 3 |
| | Mains choke | E82ZL75132B | | E82ZL22232B | | Chapter 4 |
| | RFI filter | E82ZZ75132B200 | | E82ZZ22232B200 | | Chapter 4 |
| | Motor cable up to 20 m, Limiting value classes A and B | | | | | |

| 230 V, 3-phase, normal operation, without integrated EMC filters | | | | | | |
|--|--|----------------|----------------|----------------|----------------|----------------|
| | Motor power [kW] | 3 | 4 | 5.5 | 7.5 | Technical data |
| Essential | Base controller | E82EV302K2C200 | E82EV402K2C200 | E82EV552K2C200 | E82EV752K2C200 | Chapter 2 |
| | Control via digital/analog I/O (Standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| | Mains choke | - | - | - | ELN3-0088H035 | Chapter 4 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | Chapter 3 |
| | Mains choke | ELN3-0120H017 | | ELN3-0120H025 | - | Chapter 4 |
| | RFI filter | E82ZZ40232B200 | | E82ZZ75232B200 | | Chapter 4 |
| | Motor cable up to 20 m, limiting value classes A and B | | | | | |

¹⁾ See chapter 3 for additional I/O function modules and modules for fieldbus networking

²⁾ See chapter 3 for additional communication modules

Product information

8200 vector quick selection guide

| 400 V/500 V, 3-phase, normal operation, without integrated EMC filters | | | | | | | |
|--|---|--------------------|--------------------|--------------------|--------------------|----------------|--|
| | Motor power [kW] | 0.55 | 0.75 | 1.5 | 2.2 | Technical data | |
| Essential | Frequency inverter (base controller) | E82EV551 K4C200 | E82EV751 K4C200 | E82EV152 K4C200 | E82EV222 K4C200 | Chapter 2 | |
| | Control via digital/analog I/O (Standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 | |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | Chapter 3 | |
| | Mains choke | EZN3A1500H003 | | E82ZL22234B | | Chapter 4 | |
| | RFI filter | E82ZZ75134B200 | | E82ZZ22234B200 | | Chapter 4 | |
| | Motor cable up to 20 m, Limiting value classes A and B | | | | | | |

| 400 V/500 V, 3-phase, normal operation, without integrated EMC filters | | | | | | | |
|--|---|--------------------|--------------------|--------------------|--------------------|--------------------|----------------|
| | Motor power [kW] | 3 | 4 | 5.5 | 7.5 | 11 | Technical data |
| Essential | Frequency inverter (base controller) | E82EV302 K4C200 | E82EV402 K4C200 | E82EV552 K4C200 | E82EV752 K4C200 | E82EV112 K4C200 | Chapter 2 |
| | Control via digital/analog I/O (Standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| | Mains choke | | - | - | - | ELN3-0150H024 | Chapter 4 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | Chapter 3 | |
| | Mains choke | EZN3A0500H007 | EZN3A0300H013 | | ELN3-0120H017 | - | Chapter 4 |
| | RFI filter | E82ZZ55234B200 | | E82ZZ11334B200 | | Chapter 4 | |
| | Motor cable up to 20 m, Limiting value classes A and B | | | | | | |

¹⁾ See chapter 3 for additional I/O function modules and modules for fieldbus networking

²⁾ See chapter 3 for additional communication modules



| 400 V/500 V, 3-phase, normal operation, without integrated EMC filters | | | | | | | |
|--|---|---|--------------------|--------------------|--------------------|----------------|-----------|
| | Motor power [kW] | 15 | 22 | 30 | 45 | Technical data | |
| Essential | Frequency inverter (base controller) | E82EV153 K4B201 | E82EV223 K4B201 | E82EV303 K4B201 | E82EV453 K4B201 | Chapter 2 | |
| | Control via digital/analog I/O (Standard I/O PT function module) ²⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 | |
| | Mains choke | - | ELN3-0075H045 | ELN3-0055H055 | ELN3-0038H085 | Chapter 4 | |
| Optional | Control and diagnostics (Keypad XT operating module) ³⁾ | EMZ9371BC | | | | Chapter 3 | |
| | Mains choke | ELN3-088H035 | - | - | - | Chapter 4 | |
| | Mains filter ¹⁾ | Motor cable up to 50 m, limiting value class A (limiting value class B: 10 m); mains filter (base) | E82ZN22334B230 | | E82ZN30334B230 | E82ZN45334B230 | Chapter 4 |
| | | Motor cable up to 50 m, limiting value class B Mains filter (integrated) | EZN3B0110H030 | EZN3B0080H042 | EZN3B0055H060 | EZN3B0037H090 | Chapter 4 |

| 400 V/500 V, 3-phase, normal operation, without integrated EMC filters | | | | | | | |
|--|---|---|--------------------|--------------------|----------------|----------------|-----------|
| | Motor power [kW] | 55 | 75 | 90 | | Technical data | |
| Essential | Frequency inverter (base controller) | E82EV553 K4B201 | E82EV753 K4B201 | E82EV903 K4B201 | | Chapter 2 | |
| | Control via digital/analog I/O (Standard I/O PT function module) ²⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | | Chapter 3 | |
| | Mains choke | ELN3-0027H105 | ELN3-0022H130 | ELN3-0017H170 | | Chapter 4 | |
| Optional | Control and diagnostics (Keypad XT operating module) ³⁾ | EMZ9371BC | | | | Chapter 3 | |
| | Mains choke | - | - | - | | Chapter 4 | |
| | Mains filter ¹⁾ | Motor cable up to 50 m, limiting value class A (limiting value class B: 10 m); mains filter (base) | E82ZN55334B230 | | E82ZN75334B230 | E82ZN90334B230 | Chapter 4 |
| | | Motor cable up to 50 m, limiting value class B Mains filter (integrated) | EZN3B0033H110 | EZN3B0022H150 | EZN3B0017H200 | | Chapter 4 |

¹⁾ A mains choke is not required if a mains filter is used
(line filter: = RFI filter with integrated mains choke)

²⁾ See chapter 3 for additional I/O function modules and modules for field-bus networking

³⁾ See chapter 3 for additional communication modules

Product information

8200 vector quick selection guide

| 230 V, single-phase, normal operation, with integrated EMC filters ³⁾ | | | | | |
|--|--|---------------|-------------|---------------|----------------|
| | Motor power [kW] | 0.25 | 0.37 | 0.5 | Technical data |
| Essential | Frequency inverter (base controller) | E82EV251K2C | E82EV371K2C | E82EV551K2C | Chapter 2 |
| | Control via digital/analog I/O (Standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | Chapter 3 |
| | Mains choke | ELN1-0900H005 | | ELN1-0500H009 | Chapter 4 |

| 230 V, single-phase, normal operation, with integrated EMC filters ³⁾ | | | | | |
|--|--|---------------|---------------|---------------|----------------|
| | Motor power [kW] | 0.75 | 1.5 | 2.2 | Technical data |
| Essential | Frequency inverter (base controller) | E82EV751K2C | E82EV152K2C | E82EV222K2C | Chapter 2 |
| | Control via digital/analog I/O (Standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| | Mains choke | - | - | ELN1-0250H018 | Chapter 4 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | Chapter 3 |
| | Mains choke | ELN1-0500H009 | ELN1-0250H018 | - | Chapter 4 |

¹⁾ See chapter 3 for additional I/O function modules and modules for fieldbus networking

²⁾ See chapter 3 for additional communication modules

³⁾ Limiting value class A up to 20 m motor cable length or limiting value class B, depending on controller type and chopper frequency



| 230 V, 3-phase, normal operation, with integrated EMC filters ³⁾ | | | | | | |
|---|--|-------------|-------------|-------------|-------------|----------------|
| | Motor power [kW] | 0.55 | 0.75 | 1.5 | 2.2 | Technical data |
| Essential | Frequency inverter (base controller) | E82EV551K2C | E82EV751K2C | E82EV152K2C | E82EV222K2C | Chapter 2 |
| | Control via digital/analog I/O (standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | Chapter 3 |
| | Mains choke | E82ZL75132B | | E82ZL22232B | | Chapter 4 |

| 230 V, 3-phase, normal operation, with integrated EMC filters ³⁾ | | | | | | |
|---|--|---------------|-------------|---------------|---------------|----------------|
| | Motor power [kW] | 3 | 4 | 5.5 | 7.5 | Technical data |
| Essential | Frequency inverter (base controller) | E82EV302K2C | E82EV402K2C | E82EV552K2C | E82EV752K2C | Chapter 2 |
| | Control via digital/analog I/O (standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| | Mains choke | - | - | - | ELN3-0088H035 | Chapter 4 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | Chapter 3 |
| | Mains choke | ELN3-0120H017 | | ELN3-0120H025 | - | Chapter 4 |

¹⁾ See chapter 3 for additional I/O function modules and modules for fieldbus networking

²⁾ See chapter 3 for additional communication modules

³⁾ Limiting value class A up to 20 m motor cable length or limiting value class B, depending on controller type and chopper frequency

Product information

8200 vector quick selection guide

| 400 V, 3-phase, normal operation, with integrated EMC filters ³⁾ | | | | | | |
|---|--|---------------|-------------|-------------|-------------|----------------|
| | Motor power [kW] | 0.55 | 0.75 | 1.5 | 2.2 | Technical data |
| Essential | Frequency inverter (base controller) | E82EV551K4C | E82EV751K4C | E82EV152K4C | E82EV222K4C | Chapter 2 |
| | Control via digital/analog I/O (standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | Chapter 3 |
| | Mains choke | EZN3A1500H003 | | E82ZL22234B | | Chapter 4 |

| 400 V, 3-phase, normal operation, with integrated EMC filters ³⁾ | | | | | | | |
|---|--|---------------|---------------|-------------|---------------|--------------|----------------|
| | Motor power [kW] | 3 | 4 | 5.5 | 7.5 | 11 | Technical data |
| Essential | Frequency inverter (base controller) | E82EV302K4C | E82EV402K4C | E82EV552K4C | E82EV752K4C | E82EV112K4C | Chapter 2 |
| | Control via digital/analog I/O (standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| | Mains choke | - | - | - | - | ELN3-150H024 | Chapter 4 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | Chapter 3 | |
| | Mains choke | EZN3A0500H007 | EZN3A0300H013 | | ELN3-0120H017 | - | Chapter 4 |

¹⁾ See chapter 3 for additional I/O function modules and modules for fieldbus networking

²⁾ See chapter 3 for additional communication modules

³⁾ Limiting value class A up to 20 m motor cable length or limiting value class B, depending on controller type and chopper frequency



| 400 V, 3-phase, normal operation, with integrated mains filters ³⁾ | | | | | | |
|---|--|------------------------------|------------------------------|------------------------------|------------------------------|----------------|
| | Motor power [kW] | 15 | 22 | 30 | 45 | Technical data |
| Essential | Frequency inverters with mounted mains filter (base controller) | E82EV153K4B302 ⁴⁾ | E82EV223K4B302 ⁴⁾ | E82EV303K4B302 ⁴⁾ | E82EV453K4B302 ⁴⁾ | Chapter 2 |
| | Control via digital/analog I/O (standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | Chapter 3 |

| 400 V, 3-phase, normal operation, with integrated mains filters ³⁾ | | | | | |
|---|--|-------------------------------|------------------------------|------------------------------|----------------|
| | Motor power [kW] | 55 | 75 | 90 | Technical data |
| Essential | Frequency inverters with mounted mains filter (base controller) | EE82EV553K4B302 ⁴⁾ | E82EV753K4B302 ⁴⁾ | E82EV903K4B302 ⁴⁾ | Chapter 2 |
| | Control via digital/analog I/O (standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | Chapter 3 |

¹⁾ See chapter 3 for additional I/O function modules and modules for fieldbus networking

²⁾ See chapter 3 for additional communication modules

³⁾ Limiting value class A up to 50 m or limiting value class B up to 10 m motor cable length depending on the chopper frequency

⁴⁾ Delivery will be effected upon request (in preparation)

Product information

8200 vector quick selection guide

| 500 V, 3-phase, normal operation, with integrated EMC filters ³⁾ | | | | | | |
|---|--|----------------------------|----------------------------|----------------------------|----------------------------|----------------|
| | Motor power [kW] | 0.55 | 0.75 | 1.5 | 2.2 | Technical data |
| Essential | Frequency inverter (base controller) | E82EV551K4C | E82EV751K4C | E82EV152K4C | E82EV222K4C | Chapter 2 |
| | Control via digital/analog I/O (standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| | Brake resistor | ERBM470R100W ⁴⁾ | ERBM470R100W ⁴⁾ | ERBM370R150W ⁴⁾ | ERBM240R200W ⁴⁾ | Chapter 4 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | Chapter 3 |
| | Mains choke | EZN3A1500H003 | | E82ZL22234B | | Chapter 4 |

| 500 V, 3-phase, normal operation, with integrated EMC filters ³⁾ | | | | | | | |
|---|--|---------------|---------------|-------------|---------------|--------------|----------------|
| | Motor power [kW] | 3 | 4 | 5.5 | 7.5 | 11 | Technical data |
| Essential | Frequency inverter (base controller) | E82EV302K4C | E82EV402K4C | E82EV552K4C | E82EV752K4C | E82EV112K4C | Chapter 2 |
| | Control via digital/analog I/O (standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| | Mains choke | - | - | - | - | ELN3-150H024 | Chapter 4 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | | Chapter 3 |
| | Mains choke | EZN3A0500H007 | EZN3A0300H013 | | ELN3-0120H017 | - | Chapter 4 |

¹⁾ See chapter 3 for additional I/O function modules and modules for fieldbus networking

²⁾ See chapter 3 for additional communication modules

³⁾ Limiting value class A up to 20 m motor cable length or limiting value class B, depending on controller type and chopper frequency

⁴⁾ For mains voltages from 484 V (-0 %) ... 550 V (+0 %): Operation is only permitted with brake resistor. (As an alternative, a frequency inverter without integrated EMC filter can be used – see pages 1-12)



| 500 V, 3-phase, normal operation, with integrated mains filters ³⁾ | | | | | | |
|---|--|----------------|----------------|----------------|----------------|----------------|
| | Motor power [kW] | 15 | 22 | 30 | 45 | Technical data |
| Essential | Frequency inverters with mounted mains filter (base controller) | E82EV153K4B302 | E82EV223K4B302 | E82EV303K4B302 | E82EV453K4B302 | Chapter 2 |
| | Control via digital/analog I/O (standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | Chapter 3 |

| 500 V, 3-phase, normal operation, with integrated mains filters ³⁾ | | | | | |
|---|--|-----------------|----------------|----------------|----------------|
| | Motor power [kW] | 55 | 75 | 90 | Technical data |
| Essential | Frequency inverters with mounted mains filter (base controller) | EE82EV553K4B302 | E82EV753K4B302 | E82EV903K4B302 | Chapter 2 |
| | Control via digital/analog I/O (standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | Chapter 3 |

¹⁾ See chapter 3 for additional I/O function modules and modules for fieldbus networking

²⁾ See chapter 3 for additional communication modules

³⁾ Limiting value class A up to 50 m or limiting value class B up to 10 m motor cable length depending on the chopper frequency

Product information

8200 vector quick selection guide

| 230 V, single-phase, increased rated power, without integrated EMC filters | | | | | | |
|--|---|---|----------------|----------------|----------------|----------------|
| | Motor power [kW] | 0.37 | 0.75 | 1.1 | 2.2 | Technical data |
| Essential | Frequency inverter (base controller) | E82EV251K2C200 | E82EV551K2C200 | E82EV751K2C200 | E82EV152K2C200 | Chapter 2 |
| | Control via digital/analog I/O (Standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| | Mains choke | - | - | ELN1-0500H009 | - | Chapter 4 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | Chapter 3 |
| | Mains choke | ELN1-0900H005 | ELN1-0500H009 | - | ELN1-0250H018 | Chapter 4 |
| | RFI filter | Motor cable up to 20 m, Limiting value classes A and B | E82ZZ37112B200 | E82ZZ75112B200 | E82ZZ22212B200 | Chapter 4 |

¹⁾ See chapter 3 for additional I/O function modules and modules for fieldbus networking

²⁾ See chapter 3 for additional communication modules



| 230 V, 3-phase, increased rated power, without integrated EMC filters | | | | | | | |
|---|---|---|--------------------|--------------------|--------------------|--------------------|----------------|
| | Motor power [kW] | 0.75 | 1.1 | 2.2 | 4 | 7.5 | Technical data |
| Essential | Frequency inverter (base controller) | E82EV551 K2C200 | E82EV751 K2C200 | E82EV152 K2C200 | E82EV302 K2C200 | E82EV552 K2C200 | Chapter 2 |
| | Control via digital/analog I/O (Standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| | Mains choke | - | E82ZL75132B | - | - | ELN3-0088H035 | Chapter 4 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | | Chapter 3 |
| | Mains choke | E82ZL75132B | - | E82ZL22232B | ELN3-0120H017 | - | Chapter 4 |
| | RFI filter | Motor cable up to 20 m, Limiting value classes A and B | E82ZZ75132B200 | E82ZZ22232B200 | E82ZZ40232B200 | E82ZZ75232B200 | Chapter 4 |

¹⁾ See chapter 3 for additional I/O function modules and modules for fieldbus networking

²⁾ See chapter 3 for additional communication modules

Product information

8200 vector quick selection guide

| 400 V, 3-phase, increased rated power, without integrated EMC filters | | | | | | | |
|---|---|---|--------------------|--------------------|--------------------|--------------------|----------------|
| | Motor power [kW] | 0.75 | 1.1 | 3 | 4 | 5.5 | Technical data |
| Essential | Frequency inverter (base controller) | E82EV551 K4C200 | E82EV751 K4C200 | E82EV222 K4C200 | E82EV302 K4C200 | E82EV402 K4C200 | Chapter 2 |
| | Control via digital/analog I/O (Standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| | Mains choke | - | EZN3A1500H003 | E82ZL22234B | - | EZN3A0300H013 | Chapter 4 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | | Chapter 3 |
| | Mains choke | EZN3A1500H003 | - | - | EZN3A0300H013 | - | Chapter 4 |
| | RFI filter | Motor cable up to 20 m, Limiting value classes A and B | E82ZZ75134B200 | E82ZZ22234B200 | E82ZZ55234B200 | | Chapter 4 |

¹⁾ See chapter 3 for additional I/O function modules and modules for fieldbus networking

²⁾ See chapter 3 for additional communication modules



| 400 V, 3-phase, increased rated power, without integrated EMC filters | | | | | | | |
|---|---|---|--------------------|--------------------|--------------------|----------------|-----------|
| | Motor power [kW] | 22 | 30 | 37 | 55 | Technical data | |
| Essential | Frequency inverter (base controller) | E82EV153 K4B201 | E82EV223 K4B201 | E82EV303 K4B201 | E82EV453 K4B201 | Chapter 2 | |
| | Control via digital/analog I/O (Standard I/O PT function module) ²⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 | |
| | Mains choke | ELN3-0075H045 | ELN3-0055H055 | ELN3-0055H055 | ELN3-0027H105 | Chapter 4 | |
| Optional | Control and diagnostics (Keypad XT operating module) ³⁾ | EMZ9371BC | | | | Chapter 3 | |
| | Mains filter ¹⁾ | Motor cable up to 50 m, limiting value class A (limiting value class B: 10 m); mains filter (base) | E82ZN22334B230 | E82ZN30334B230 | - | - | Chapter 4 |
| | | Motor cable up to 50 m, limiting value class B Mains filter (integrated) | EZN3B0080H042 | EZN3B0060H054 | EZN3B0055H060 | EZN3B0030H110 | Chapter 4 |

| 400 V, 3-phase, increased rated power, without integrated EMC filters | | | | | | |
|---|---|---|----------------|----------------|---------------|----------------|
| | Motor power [kW] | 75 | 90 | 110 | | Technical data |
| Essential | Frequency inverter (base controller) | E82EV553K4B201 | E82EV753K4B201 | E82EV903K4B201 | | Chapter 2 |
| | Control via digital/analog I/O (Standard I/O PT function module) ²⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | | Chapter 3 |
| | Mains choke | ELN3-0022H130 | ELN3-0017H170 | ELN3-0014H200 | | Chapter 4 |
| Optional | Control and diagnostics (Keypad XT operating module) ³⁾ | EMZ9371BC | | | | Chapter 3 |
| | Mains filter ¹⁾ | Motor cable up to 50 m, limiting value class A (limiting value class B: 10 m); mains filter (base) | - | E82ZN90334B230 | - | Chapter 4 |
| | | Motor cable up to 50 m, limiting value class B Mains filter (integrated) | - | EZN3B0022H150 | EZN3B0017H200 | Chapter 4 |

¹⁾ A mains choke is not required if a mains filter is being used
(mains filter: = RFI filter with integrated mains choke)

²⁾ See chapter 3 for additional I/O function modules and modules for
fieldbus networking

³⁾ See chapter 3 for additional communication modules

Product information

8200 vector quick selection guide

230 V, single-phase, increased rated power, with integrated EMC filters ³⁾

| | Motor power [kW] | 0.37 | 0.75 | 1.1 | 2.2 | Technical data |
|------------------|--|---------------|---------------|---------------|---------------|----------------|
| Essential | Frequency inverter (base controller) | E82EV251K2C | E82EV551K2C | E82EV751K2C | E82EV152K2C | Chapter 2 |
| | Control via digital/analog I/O (standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| | Mains choke | - | - | ELN1-0500H009 | - | Chapter 4 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | Chapter 3 |
| | Mains choke | ELN1-0900H005 | ELN1-0500H009 | - | ELN1-0250H018 | Chapter 4 |

230 V, 3-phase, increased rated power, with integrated EMC filters ³⁾

| | Motor power [kW] | 0.75 | 1.1 | 2.2 | 4 | 7.5 | Technical data |
|------------------|--|-------------|-------------|-------------|---------------|---------------|----------------|
| Essential | Frequency inverter (base controller) | E82EV551K2C | E82EV751K2C | E82EV152K2C | E82EV302K2C | E82EV552K2C | Chapter 2 |
| | Control via digital/analog I/O (standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| | Mains choke | - | E82ZL75132B | - | - | ELN3-0088H035 | Chapter 4 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | Chapter 3 | |
| | Mains choke | E82ZL75132B | - | E82ZL22232B | ELN3-0120H017 | - | Chapter 4 |

¹⁾ See chapter 3 for additional I/O function modules and modules for fieldbus networking

²⁾ See chapter 3 for additional communication modules

³⁾ Limiting value class A up to 20 m motor cable length or limiting value class B, depending on controller type and chopper frequency



| 400 V, 3-phase, increased rated power, with integrated EMC filters ³⁾ | | | | | | | |
|--|--|---------------|---------------|-------------|---------------|---------------|----------------|
| | Motor power [kW] | 0.75 | 1.1 | 3 | 4 | 5.5 | Technical data |
| Essential | Frequency inverter (base controller) | E82EV551K4C | E82EV751K4C | E82EV222K4C | E82EV302K4C | E82EV402K4C | Chapter 2 |
| | Control via digital/analog I/O (standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| | Mains choke | - | EZN3A1500H003 | E82ZL22234B | - | EZN3A0300H013 | Chapter 4 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | | | Chapter 3 |
| | Mains choke | EZN3A1500H003 | - | - | EZN3A0300H013 | - | Chapter 4 |

| 400 V, 3-phase, increased rated power, with integrated mains filters ⁴⁾ | | | | | |
|--|--|------------------------------|------------------------------|------------------------------|----------------|
| | Motor power [kW] | 22 | 30 | 90 | Technical data |
| Essential | Frequency inverter (base controller) | E82EV153K4B303 ⁵⁾ | E82EV223K4B303 ⁵⁾ | E82EV753K4B303 ⁵⁾ | Chapter 2 |
| | Control via digital/analog I/O (Standard I/O PT function module) ¹⁾ | E82ZAFSC010 | E82ZAFSC010 | E82ZAFSC010 | Chapter 3 |
| Optional | Control and diagnostics (Keypad XT operating module) ²⁾ | EMZ9371BC | | | Chapter 3 |

¹⁾ See chapter 3 for additional I/O function modules and modules for fieldbus networking

²⁾ See chapter 3 for additional communication modules

³⁾ Limiting value class A up to 20 m motor cable length or limiting value class B, depending on controller type and chopper frequency

⁴⁾ Limiting value class A up to 50 m or limiting value class B up to 10 m motor cable length depending on the chopper frequency

⁵⁾ Delivery will be effected upon request (in preparation)



Base controllers | 8200 vector

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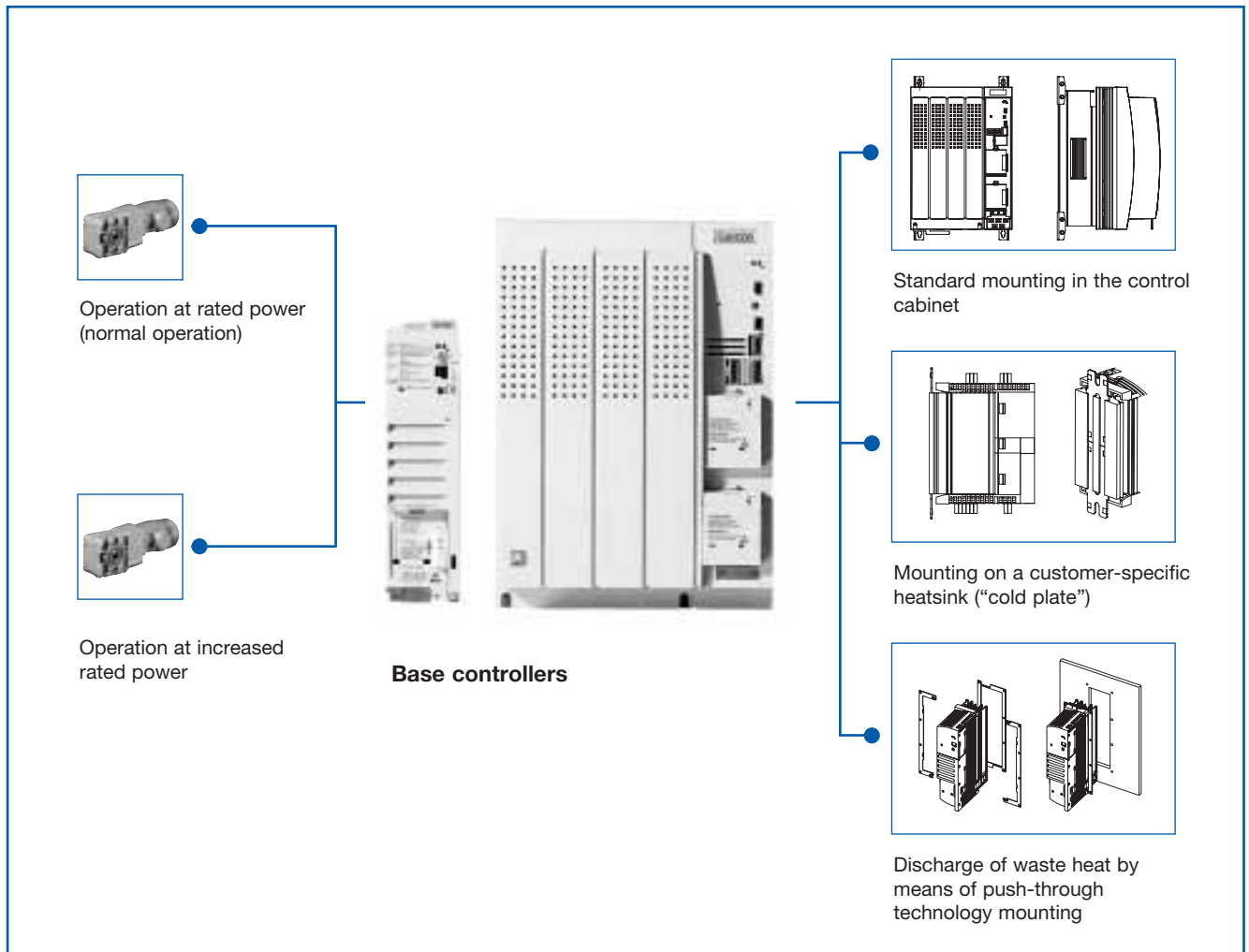
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Select the base controllers for your application on the following pages. The base controller is only supplied with one blanking plate. Two interfaces (three drives > 15 kW) enable the inverter to be fitted with control terminal modules or various bus modules as required.

Information about the modules (function and communication modules) can be found in the Automation chapter, page 3-1.



In normal operation, the inverter is set for the rated power of the motor. In this mode, the 8200 vector is suitable for a multiplicity of applications.

Under certain conditions, the 8200 vector can be operated at increased power, i.e. the inverter runs with a higher power motor. Typical applications include those involving pumps and fans with quadratic V/f characteristic.

Special designs enable the heat generated in the control cabinet to be reduced. In the "cold plate" special design (not available for all frame sizes), the base controller is supplied without a heatsink and can be mounted on a customer-specific heatsink (e.g. an oil or water cooler). In the "push-through technology" special design, the base controller is mounted in the control cabinet in such a way that the heatsink is located on the exterior of the cabinet.

The "IT system" special version permits installation in three-phase isolated supply systems. The electric strength of the base controllers is ensured even in the event of a single-phase short circuit on the supply system. In the "safe stop" special version, the base controller can be integrated into a safety system where it can replace additional safety components.

More detailed information can be found in the relevant sections.

Information about mains chokes, brake resistors and much more can be found in the "Accessories" chapter.

Base controllers

Technical data

Standards and application conditions

| | | |
|--|---|--|
| Conformity | CE | Low voltage directive (73/23/EEC) |
| Approvals | UL 508C | Underwriter Laboratories (File No. E132659) Power conversion equipment |
| Max. permissible motor cable length | At rated mains voltage and operating frequency of 8 kHz without additional output filters | |
| | Shielded | 50 m |
| | Unshielded | 100 m |
| Vibration resistance | Accelerational stability up to 0.7g (Germanischer Lloyd, general conditions) | |
| Climatic conditions | Class 3K3 to EN 50178 (without condensation, average relative humidity 85%) | |
| Pollution degree | VDE 0110 Part 2 pollution degree 2 | |
| Packaging (DIN 4180) | Dust packaging | |
| Permissible temperature ranges | | |
| | Transport | -25°C...+70°C |
| | Storage | -25°C...+60°C |
| | Operation | -10°C...+55°C |
| | | -10°C...+50°C (8200 vector 15...90 kW only) |
| | | At temperatures of +40°C, the rated output current should be derated by 2.5%/°C. |
| Permissible installation height | 0..4000 m above sea level | The rated output current should be derated by 5%/1000 m above 1000 m above sea level. |
| Mounting position | Vertical | |
| Mounting clearances | | |
| | Above/below | ≥100 mm |
| | To the side | Mounted at intervals of 3 mm |
| DC bus operation | Possible, except E82EV251K2C and E82EV371K2C | |

General electrical data

| | | | |
|---|---|---|---|
| EMC | Compliance with requirements to EN 61800-3/A11 | | |
| Noise emissions | Compliance with threshold classes A and B to EN 55011 | | |
| | 0.25...11 kW | E82xVxxxKxC0xx without additional filters E82xVxxxKxC2xx with external filters | |
| | 15...90 kW | E82EVxxxK4B3xx without additional filters E82xVxxxK4B2xx with external filters | |
| Noise immunity | Requirements to EN 61800-3 incl. A11 noise immunity | | |
| | Requirements | Standard Intensity of tests | |
| | ESD | EN 61000-4-2 | 3, i.e. 8 kV with air discharge, 6 kV with contact discharge |
| | Conducted high frequency | EN 61000-4-6 | 150 kHz ...80 MHz, 10 V/m 80% AM (1kHz) |
| | HF field (housing) | EN 61000-4-3 | 80 MHz ...1000 MHz, 10 V/m 80% AM (1kHz) |
| | Burst | EN 61000-4-4 | 3/4, i.e. 2 kV/5 kHz |
| | Surge (voltage surge on power cable) | EN 61000-4-5 | 3, i.e. 1.2/50 µs, 1 kV phase-phase, mains cable) 2 kV phase-PE |
| Insulation strength | Overvoltage category III to VDE 0110 | | |
| Leakage current to PE (to EN 50178) | > 3.5 mA, i.e. fixed installation required, PE must be reinforced | | |
| Degree of protection | IP 20 | | |
| Protective measures against | Short circuit, short to earth (protected against short to earth during operation, limited protection against short to earth on power-up), overvoltage, motor instability, motor stalling, motor overtemperature (input for PTC or thermal contact, I ² t monitoring) | | |
| Total insulation of control circuits | Mains isolation: Double/reinforced insulation to EN 50178 | | |
| Permissible mains systems | Operation on TT systems, TN systems or systems with earthed neutral without additional measures | | |
| | Operation on IT systems only possible with a variant | | |
| Operation on public mains supplies | Limits for harmonic currents to EN 61000-3-2 | | |
| | Total power on mains | Adherence to requirements ¹⁾ | |
| | <0.5 kW | With mains choke | |
| | 0.5 kW...1 kW | With active filter (currently in development) | |
| | >1 kW | Without additional measures | |

¹⁾ The additional measures listed enable the drive controller alone to meet the requirements of EN 61000-3-2. Responsibility for adherence to requirements on the part of the machine/system lies with the machine/system manufacturer.

Base controllers

Technical data

Inputs and outputs

| | | |
|---|----------------------|--|
| Analog inputs Analog outputs | With standard I/O | 1 input, bipolar as an option 1 output |
| | With application I/O | 2 inputs, bipolar as an option 2 outputs |
| Digital inputs Digital outputs | With standard I/O | 4 inputs, 1 optional single-track frequency input 0...10 kHz; 1 input for controller inhibit, 1 output |
| | With application I/O | 6 inputs, 1 optional single/double-track frequency input 0...100 kHz; 1 input for controller inhibit, 2 outputs, 1 frequency output 50 Hz...10 kHz |
| Scan times | Digital inputs | 1 ms |
| | Digital outputs | 4 ms |
| | Analog inputs | 2 ms |
| | Analog outputs | 4 ms (filter time: $\tau = 10$ ms) |
| Relay output | 0.25...11 kW | 1 relay output 250 V AC/3 A, 24 V DC/2 A ...240 V/0.16 A (changeover contact) |
| | 15...90 kW | 2 relay outputs 250 V AC/3 A, 24 V DC/2 A ...240 V/0.22 A (changeover contact) |
| Generator mode | 0.25...11 kW | Integrated brake transistor |
| | 15...90 kW | With brake chopper 8253 or 9352 |

Open and closed-loop control

| | | |
|--|--|--|
| Open-loop and closed-loop control methods | V/f characteristic control (linear/quadratic), vector control torque provision | |
| Chopper frequency | 0.25 ...11 kW | 2 kHz,4 kHz,8 kHz,16 kHz |
| | 15...90 kW | 1 kHz, 2 kHz, 4 kHz, 8 kHz, 16 kHz, either optimised for noise or power loss |
| Torque characteristics | Maximum torque 0.25 ...11 kW | 1.8 x M _r for 60 s If motor rated power = drive controller Rated power |
| | Maximum torque 15 ...90 kW | 1.8 x M _r for 60 s 2.1 x M _r for 3 s after controller enable |
| | Setting range | 1 :10 in speed range 3... 50 Hz, accuracy < 8% |
| | Torque/speed characteristic | |
| Sensorless speed control | Minimum Output frequency | 1.0 Hz (0 ...M _r) |
| | Setting range | 1 :50 Related to 50 Hz and M_r |
| | Accuracy | ±0.5% |
| | Cyclic running | ± 0.1 Hz in speed range 3... 50 Hz |
| Output frequency | Range | - 650 Hz... + 650 Hz |
| | absolute resolution | 0.02 Hz |
| | normalised resolution | Parameter data: 0.01%, process data: 0.006% (= 2 ⁻¹⁴) |
| Digital setpoint preselection | Accuracy | ± 0.005 Hz (= ± 100 ppm) |
| Analog setpoint preselection | Linearity | ±0.5% related to momentary value |
| | Temp. sensitivity | +0.3% (0...+60°C) related to momentary value |
| | Offset | ±0% |
| | A/D converter | 10-bit resolution A/D converter |
| | | Error 1 digit |

Base controllers

Operation at rated power (normal operation)

Ratings at 230 V mains voltage

| | | | |
|--|----------------------------|---|---|
| Typical motor power | P_r [kW] | 0.25 | 0.37 |
| Three-phase asynchronous motor (4-pole) | P _r [hp] | 0.34 | 0.5 |
| 8200 vector - type | EMC filter integrated | E82EV251K2C0xx | E82EV371K2C0xx |
| | without EMC filter | E82EV251K2C2xx | E82EV371K2C2xx |
| Mains voltage | U _{mains} [V] | 1/N/PE 180 V AC-0%...264 V +0%; 45 Hz -0%...65 Hz +0% | |
| Alternative DC supply | U _{DC} [V] | not possible | |
| Data for operation at 1/N/PE 230 V AC | | | |
| Rated mains current | Without mains choke | I _{mains} [A] | 5.0 |
| | With mains choke | I _{mains} [A] | 4.2 |
| Output power U, V, W (at 8 kHz) | S_N [kVA] | 0.68 | 1.0 |
| Output power +U _G , -U _G | P _{DC} [kW] | DC bus connection not possible | |
| Rated output current at a chopper frequency of | 2 kHz | I _r [A] ⁵⁾ | 2.4 |
| | 4 kHz | | |
| | 8 kHz | I_r[A] | 2.4 |
| | 16 kHz ⁴⁾ | I _r [A] | 1.6 |
| Max. permissible output current for 60 s at a chopper frequency of ³⁾ | 2 kHz | I _{max} [A] | 3.6 |
| | 4 kHz | | |
| | 8 kHz | I_{max}[A] | 3.6 |
| | 16 kHz ⁴⁾ | I _{max} [A] | 2.3 |
| Output voltage | Without mains choke | U _M [V] | 3~ 0...U _{mains} [V] 650 Hz |
| | With mains choke | U _M [V] | 3~ 0... approx. 94% U _{mains} / 0...650 Hz |
| Power loss (operation at I _r at 8 kHz) | P _{loss} [W] | 30 | 40 |
| Mains choke required | Type | - | - |
| Dimensions | HxWxD [mm] | 120 x 60 x 140 | |
| Weight | m [kg] | 0.8 | 0.8 |

Bold text = Data for operation at a chopper frequency of 8 kHz (Lenze setting)

³⁾ Currents for periodic load change cycle: 1 min overcurrent duration at I_{max} and 2 min base load duration at 75% I_r

⁴⁾ Operating frequency will be reduced to 4 kHz if θ_{max} reaches - 5°C

⁵⁾ Possible for some types under other operating conditions: Operation at increased rated output current with identical load change cycle.



Base controllers

Operation at rated power (normal operation)

Ratings at 230 V mains voltage

| Typical motor power | P_r [kW] | 0.55 | 0.75 | 1.5 | 2.2 | | | | |
|--|-----------------------|--|--|----------------------------|----------------------------|----------------|------|----------------------|------|
| Three-phase asynchronous motor (4-pole) | P_r [hp] | 0.75 | 1.0 | 2.0 | 3.0 | | | | |
| 8200 vector - type | EMC filter integrated | E82EV551 K2C0xx | E82EV751 K2C0xx | E82EV152 K2C0xx | E82EV222 K2C0xx | | | | |
| | without EMC filter | E82EV551 K2C2xx | E82EV751 K2C2xx | E82EV152 K2C2xx | E82EV222 K2C2xx | | | | |
| Mains voltage | U_{mains} [V] | 1/N/PE 180 V AC-0%...264 V+ 0%; 45 Hz - 0%...65 Hz + 0% 3/PE 100 V AC 0%...264 V + 0% ; 45 Hz - 0% ...65 Hz +0% | | | | | | | |
| Alternative DC supply | U_{DC} [V] | 140 V DC 0%... 370 V +0% | | | | | | | |
| Data for operation at 1/N/PE (3/PE) 230 V AC or 325 V DC | | 1/N/PE | 3/PE | 1/N/PE | 3/PE | 1/N/PE | 3/PE | 1/N/PE ¹⁾ | 3/PE |
| Rated mains current | | | | | | | | | |
| Without mains choke | I_{mains} [A] | 6.0 | 3.9 | 9.0 | 5.2 | 15.0 | 9.1 | - | 12.4 |
| With mains choke | I_{mains} [A] | 5.6 | 2.7 | 7.5 | 3.6 | 12.5 | 6.3 | 18.0 | 9.0 |
| Output power U, V, W (at 8 kHz) | S_N [kVA] | 1.2 | | 1.6 | | 2.8 | | 3.8 | |
| Output power $+U_G, -U_G$ ²⁾ | P_{DC} [kW] | - | 0.3 | - | 0.1 | - | 1.1 | - | 0.4 |
| Rated output current at a chopper frequency of | 2 kHz | I_r [A] ⁵⁾ | 3.0 | | 4.0 | | 7.0 | | 9.5 |
| | 4 kHz | | 3.0 | | 4.0 | | 7.0 | | 9.5 |
| | 8 kHz | I_r [A] | 2.0 | | 2.6 | | 4.6 | | 6.2 |
| | 16 kHz ⁴⁾ | I_r [A] | 2.9 | | 3.9 | | 6.9 | | 9.3 |
| Max. permissible output current for 60 s at a chopper frequency of ³⁾ | 2 kHz | I_{max} [A] | 4.5 | | 6.0 | | 10.5 | | 14.2 |
| | 4 kHz | | 4.5 | | 6.0 | | 10.5 | | 14.2 |
| | 8 kHz | I_{max} [A] | 2.9 | | 3.9 | | 6.9 | | 9.3 |
| | 16 kHz ⁴⁾ | I_{max} [A] | 2.9 | | 3.9 | | 6.9 | | 9.3 |
| Output voltage | Without mains choke | U_M [V] | 3~ 0 ...U mains/0 ...650 Hz | | | | | | |
| | With mains choke | U_M [V] | 3~ 0... approx. 94% U_{mains} /0 ...650 Hz | | | | | | |
| Power loss (operation at I_r at 8 kHz) | P_{loss} [W] | 50 | | 60 | | 100 | | 130 | |
| Mains choke required | Type | - | | - | | - | | ELN1-0250 H018 | - |
| Dimensions | HxWxD [mm] | 180 x 60 x 140 | | | | 240 x 60 x 140 | | | |
| Weight | m [kg] | 1.2 | | | | 1.6 | | | |

Bold text = Data for operation at a chopper frequency of 8 kHz (Lenze setting)

¹⁾ Operation only permitted with a mains choke

²⁾ Power in addition to that which can be drawn from the DC bus in power-adaptive operation

³⁾ Currents for periodic load change cycle: 1 min overcurrent duration at I_{max} and 2 min base load duration at 75% I_r

⁴⁾ Chopper frequency will be reduced to 4 kHz if ϑ_{max} reaches - 5°C

⁵⁾ Possible for some types under other operating conditions: Operation at increased rated output current with identical load change cycle.



Base controllers

Operation at rated power (normal operation)

Ratings at 230 V mains voltage

| Typical motor power | P_r [kW] | 3.0 | 4.0 | 5.5 | 7.5 | |
|---|-----------------------|--|---|----------------------------|--|-------------|
| Three-phase asynchronous motor (4-pole) | P_r [hp] | 4.1 | 5.4 | 7.5 | 10.2 | |
| 8200 vector - type | EMC filter integrated | E82EV302 K2C0xx | E82EV402 K2C0xx | E82EV552 K2C0xx | E82EV752 K2C0xx ¹⁾ | |
| | without EMC filter | E82EV302 K2C2xx | E82EV402 K2C2xx | E82EV552 K2C2xx | E82EV752 K2C2xx ¹⁾ | |
| Mains voltage | U_{mains} [V] | 3/PE 100 V AC -0%...264 V+0%; 45 Hz -0%...65 Hz+0% | | | | |
| Alternative DC supply | U_{DC} [V] | 140 V DC 0%... 370 V +0% | | | | |
| Data for operation at 3/PE 230 V AC or 325 V DC | | | | | | |
| Rated mains current | Without mains choke | I_{mains} [A] | 15.6 | 21.3 | 29.3 | - |
| | With mains choke | I_{mains} [A] | 12.0 | 16.0 | 21.0 | 28.0 |
| Output power U, V, W (at 8 kHz) | S_r [kVA] | 4.8 | 6.6 | 9.0 | 11.4 | |
| Output power + U_G , - U_G ²⁾ | P_{DC} [kW] | 0.9 | 0.8 | 1.1 | 0 | |
| Rated output current at a chopper frequency of | 2 kHz | I_r [A] ⁵⁾ | 12.0 | 19.8 | 22.5 | 28.6 |
| | 4 kHz | | | | | |
| | 8 kHz | I_r [A] | 12.0 | 16.5 | 22.5 | 28.6 |
| | 16 kHz ⁴⁾ | I_r [A] | 7.8 | 10.7 | 14.6 | 18.6 |
| Max. permissible output current for 60 s at a chopper frequency of of ³⁾ | 2 kHz | I_{max} [A] | 18.0 | 24.8 | 33.8 | 42.9 |
| | 4 kHz | | | | | |
| | 8 kHz | I_{max} [A] | 18.0 | 24.8 | 33.8 | 42.9 |
| | 16 kHz ⁴⁾ | I_{max} [A] | 11.7 | 16.1 | 21.9 | 27.9 |
| Output voltage | Without mains choke | U_M [V] | 3~ 0... U_{mains} [V] 650 Hz | | | |
| | With mains choke | U_M [V] | 3~ 0...approx. 94% U_{mains} / 0...650 Hz | | | |
| Power loss (operation at I_r , 8 kHz) | P_{loss} [W] | 150 | 190 | 250 | 320 | |
| Mains choke required | Type | - | - | - | ELN3-0088H035 | |
| Dimensions | HxWxD [mm] | 240 x 100 x 140 | | 240 x 125 x 140 | | |
| Weight | m [kg] | 2.9 | | 3.6 | | |

Bold text = Data for operation at a chopper frequency of 8 kHz (Lenze setting)

¹⁾ Operation only permitted with a mains choke or mains filter

²⁾ Power in addition to that which can be drawn from the DC bus in power-adaptive operation

³⁾ Currents for periodic load change cycle: 1 min overcurrent duration at I_{max} and 2 min base load duration at 75% I_r

⁴⁾ Chopper frequency will be reduced to 4 kHz if ϑ_{max} reaches -5°C

⁵⁾ Possible for some types under other operating conditions: Operation at increased rated output current with identical load change cycle.



Base controllers

Operation at rated power (normal operation)

Ratings at 400 V mains voltage

| Typical motor power | P_r [kW] | 0.55 | 0.75 | 1.5 | 2.2 | |
|--|-----------------------|--|---|--|--|------------|
| Three-phase asynchronous motor (4-pole) | P_r [hp] | 0.75 | 1.0 | 2.0 | 3.0 | |
| 8200 vector - type | EMC filter integrated | E82EV551 K4C0xx ⁶⁾ | E82EV751 K4C0xx ⁶⁾ | E82EV152 K4C0xx ⁶⁾ | E82EV222 K4C0xx ⁶⁾ | |
| | without EMC filter | E82EV551 K4C2xx | E82EV751 K4C2xx | E82EV152 K4C2xx | E82EV222 K4C2xx | |
| Mains voltage | U_{mains} [V] | 3/PE 320 V AC - 0%...550 V + 0%; 45 Hz - 0%...65 Hz + 0% | | | | |
| Alternative DC supply | U_{DC} [V] | 450 V DC 0%...775 V + 0% | | | | |
| Data for operation at 3/PE 400 V AC or 565 V DC | | | | | | |
| Rated mains current | Without mains choke | I_{mains} [A] | 2.5 | 3.3 | 5.5 | 7.3 |
| | With mains choke | I_{mains} [A] | 2.0 | 2.3 | 3.9 | 5.1 |
| Output power U, V, W (at 8 kHz) | S_r [kVA] | 1.3 | 1.7 | 2.7 | 3.9 | |
| Output power $+U_G$, $-U_G$ ²⁾ | P_{DC} [kW] | 0.3 | 0.1 | 1.1 | 0.4 | |
| Rated output current at a chopper frequency of | 2 kHz | I_r [A] ⁵⁾ | 1.8 | 2.4 | 4.7 | 5.6 |
| | 4 kHz | | | | | |
| | 8 kHz | I_r [A] | 1.8 | 2.4 | 3.9 | 5.6 |
| | 16 kHz ⁴⁾ | I_r [A] | 1.2 | 1.6 | 2.5 | 3.6 |
| Max. permissible output current for 60 s at a chopper frequency of ³⁾ | 2 kHz | I_{max} [A] | 2.7 | 3.6 | 5.9 | 8.4 |
| | 4 kHz | | | | | |
| | 8 kHz | I_{max} [A] | 2.7 | 3.6 | 5.9 | 8.4 |
| | 16 kHz ⁴⁾ | I_{max} [A] | 1.8 | 2.4 | 3.8 | 5.5 |
| Output voltage | Without mains choke | U_M [V] | 3~ 0... U_{mains} [V] 650 Hz | | | |
| | With mains choke | U_M [V] | 3~ 0...approx. 94% U_{mains} / 0...650 Hz | | | |
| Power loss (operation at I_r at 8 kHz) | P_{loss} [W] | 50 | 60 | 100 | 130 | |
| Mains choke required | Type | - | - | - | E82ZZL22234B | |
| Dimensions | HxWxD [mm] | 180 x 60 x 140 | | 240 x 60 x 140 | | |
| Weight | m [kg] | 1.2 | | 1.6 | | |

Bold text = Data for operation at a chopper frequency of 8 kHz (Lenze setting)

²⁾ Power in addition to that which can be drawn from the DC bus in power-adaptive operation

³⁾ Currents for periodic load change cycle: 1 min overcurrent duration at I_{max} and 2 min base load duration at 75% I_r

⁴⁾ Chopper frequency will be reduced to 4 kHz if ϑ_{max} reaches -5°C

⁵⁾ Possible for some types under other operating conditions: Operation at increased rated output current with identical load change cycle.

⁶⁾ For mains voltages from 484 V (-0%) ... 550 V (+0%): Operation is only permitted with brake resistor.



Base controllers

Operation at rated power (normal operation)

Ratings at 400 V mains voltage

| Typical motor power | P_r [kW] | 3.0 | 4.0 | 5.5 | 7.5 | 11 | |
|--|-----------------------|--|---|----------------------------|----------------------------|--|-------------|
| Three-phase asynchronous motor (4-pole) | P_r [hp] | 4.1 | 5.4 | 7.5 | 10.2 | 15 | |
| 8200 vector - type | EMC filter integrated | E82EV302 K4C0xx | E82EV402 K4C0xx | E82EV552 K4C0xx | E82EV752 K4C0xx | E82EV113 K4C0xx ¹⁾ | |
| | without EMC filter | E82EV302 K4C2xx | E82EV402 K4C2xx | E82EV552 K4C2xx | E82EV752 K4C2xx | E82EV113 K4C2xx ¹⁾ | |
| Mains voltage | U_{mains} [V] | 3/PE 320 V AC 0%... 550 V +0%; 45 Hz 0%... 65 Hz +0% | | | | | |
| Alternative DC supply | U_{DC} [V] | 450 V DC 0%... 775 V +0% | | | | | |
| Data for operation at 3/PE 400 V AC or 565 V DC | | | | | | | |
| Rated mains current | Without mains choke | I_{mains} [A] | 9.0 | 12.3 | 16.8 | 21.5 | - |
| | With mains choke | I_{mains} [A] | 7.0 | 8.8 | 12.0 | 15.0 | 21.0 |
| Output power U, V, W (at 8 kHz) | S_r [kVA] | 5.1 | 6.6 | 9.0 | 11.4 | 16.3 | |
| Output power +U _G , -U _G ²⁾ | P_{DC} [kW] | 1.7 | 0.8 | 1.1 | 1.5 | 0 | |
| Rated output current at a chopper frequency of | 2 kHz | I_r [A] ⁵⁾ | 7.3 | 9.5 | 13.0 | 16.5 | 23.5 |
| | 4 kHz | | 7.3 | 9.5 | 13.0 | 16.5 | 23.5 |
| | 8 kHz | I_r [A] | 7.3 | 9.5 | 13.0 | 16.5 | 23.5 |
| | 16 kHz ⁴⁾ | I_r [A] | 4.7 | 6.1 | 8.4 | 10.7 | 13.0 |
| Max. permissible output current for 60 s at a chopper frequency of ³⁾ | 2 kHz | I_{max} [A] | 11.0 | 14.2 | 19.5 | 24.8 | 35.3 |
| | 4 kHz | | 11.0 | 14.2 | 19.5 | 24.8 | 35.3 |
| | 8 kHz | I_{max} [A] | 11.0 | 14.2 | 19.5 | 24.8 | 35.3 |
| | 16 kHz ⁴⁾ | I_{max} [A] | 7.0 | 9.1 | 12.6 | 16.0 | 19.5 |
| Output voltage | Without mains choke | U_M [V] | 3~ 0... U_{mains} [V] 650 Hz | | | | |
| | With mains choke | U_M [V] | 3~ 0...approx. 94% U_{mains} / 0...650 Hz | | | | |
| Power loss (operation at I_r at 8 kHz) | P_{loss} [W] | 145 | 180 | 230 | 300 | 410 | |
| Mains choke required | Type | - | - | - | - | ELN3-150H024 | |
| Dimensions | HxWxD [mm] | 240 x 100 x 140 | | | 240 x 125 x 140 | | |
| Weight | m [kg] | 2.9 | | | 3.6 | | |

Bold text = Data for operation at a chopper frequency of 8 kHz (Lenze setting)

¹⁾ Operation only permitted with a mains choke or mains filter

²⁾ Power in addition to that which can be drawn from the DC bus in power-adaptive operation

³⁾ Currents for periodic load change cycle: 1 min overcurrent duration at I_{max} and 2 min base load duration at 75% I_r

⁴⁾ Chopper frequency will be reduced to 4 kHz if ϑ_{max} reaches -5°C

⁵⁾ Possible for some types under other operating conditions: Operation at increased rated output current with identical load change cycle.



Base controllers

Operation at rated power (normal operation)

Ratings at 400 V mains voltage

| Typical motor power | P_r [kW] | 15 | 22 | 30 | |
|--|----------------------------------|--|--|-------------------------------------|-----------|
| Three-phase asynchronous motor (4-pole) | P_r [hp] | 20 | 30 | 40 | |
| 8200 vector - type | Mains filter integrated | E82EV153K4B3xx ⁶⁾ | E82EV223K4B3xx ⁶⁾ | E82EV303K4B3xx ⁶⁾ | |
| | without EMC filter | E82EV153K4B2xx | E82EV223K4B2xx ¹⁾ | E82EV303K4B2xx ¹⁾ | |
| Mains voltage | U_{mains} [V] | 3/PE 320 V AC - 0%...550 V +0%; 45 Hz - 0%...65 Hz +0% | | | |
| Alternative DC supply | U_{DC} [V] | 450 V DC 0%...775 V +0% | | | |
| Data for operation at 3/PE 400 V AC or 565 V DC | | | | | |
| Rated mains current | Without mains choke/mains filter | I_{mains} [A] | 43.5 | - | - |
| | With mains choke/mains filter | I_{mains} [A] | 29.0 | 42.0 | 55.0 |
| Output power U, V, W (at 8 kHz) | S_r [kVA] | 22.2 | 32.6 | 41.6 | |
| Output power + U_G , - U_G ²⁾ | P_{DC} [kW] | 10.2 | 4.0 | 0 | |
| Rated output current at a chopper frequency of | 1 kHz | I_r [A] ⁵⁾ | 32 | 47 | 59 |
| | 2 kHz | | | | |
| | 4 kHz | | | | |
| | 8 kHz | I_r [A] | 32 | 47 | 59 |
| | 16 kHz ⁴⁾ | I_r [A] | 24 | 35 | 44 |
| Max. permissible output current for 60 s at a chopper frequency of ³⁾ | 1 kHz | I_{max} [A] | 48 | 70.5 | 89 |
| | 2 kHz | | | | |
| | 4 kHz | | | | |
| | 8 kHz | I_{max} [A] | 48 | 70.5 | 89 |
| | 16 kHz ⁴⁾ | I_{max} [A] | 36 | 53 | 66 |
| Output voltage | Without mains choke/mains filter | U_M [V] | 3~ 0... U_{mains} [V] 650 Hz | | |
| | With mains choke/mains filter | U_M [V] | 3~ 0...approx. 94% U_{mains} / 0 ...650 Hz | | |
| Power loss (operation at I_r at 8 kHz) | P_{loss} [W] | 430 | 640 | 810 | |
| Mains choke required | Type | - | ELN3-0075H045 | ELN3-0055H055 | |
| Dimensions | With mains filter | HxWxD [mm] | 250 x 350 x 340 | | |
| | Without mains filter | HxWxD [mm] | 250 x 350 x 250 | | |
| Weight | With mains filter | m [kg] | | 34 | |
| | Without mains filter | | | 15 | |

Bold text = Data for operation at a chopper frequency of 8 kHz (Lenze setting)

¹⁾ Operation only permitted with a mains choke or mains filter

²⁾ Power in addition to that which can be drawn from the DC bus in power-adaptive operation

³⁾ Currents for periodic load change cycle: 1 min overcurrent duration at I_{max} and 2 min base load duration at 75% I_r

⁴⁾ Chopper frequency will be reduced to 4 kHz if ϑ_{max} reaches -5°C

⁵⁾ Possible for some types under other operating conditions: Operation at increased rated output current with identical load change cycle.

⁶⁾ Delivery will be effected upon request (in preparation)





Base controllers

Operation at rated power (normal operation)

Ratings at 400 V mains voltage

| Typical motor power | P_r [kW] | 45 | 55 | 75 | 90 | |
|--|----------------------------------|--|---|--|--|------------|
| Three-phase asynchronous motor (4-pole) | P_r [hp] | 60 | 75 | 100 | 120 | |
| 8200 vector - type | Mains filter integrated | E82EV453 K4B3xx ⁶⁾ | E82EV553 K4B3xx ⁶⁾ | E82EV753 K4B3xx ⁶⁾ | E82EV903 K4B3xx ⁶⁾ | |
| | without EMC filter | E82EV453 K4B2xx ¹⁾ | E82EV553 K4B2xx ¹⁾ | E82EV753 K4B2xx ¹⁾ | E82EV903 K4B2xx ¹⁾ | |
| Mains voltage | U_{mains} [V] | 3/PE 320 V AC 0%... 550 V +0%; 45 Hz 0%... 65 Hz +0% | | | | |
| Alternative DC supply | U_{DC} [V] | 450 V DC 0%... 775 V +0% | | | | |
| Data for operation at 3/PE 400 V AC or 565 V DC | | | | | | |
| Rated mains current | Without mains choke/mains filter | I_{mains} [A] | - | - | - | - |
| | With mains choke/mains filter | I_{mains} [A] | 80.0 | 100 | 135 | 165 |
| Output power U, V, W (at 8 kHz) | S_r [kVA] | 61.7 | 76.2 | 103.9 | 124.7 | |
| Output power + U_G , - U_G ²⁾ | P_{DC} [kW] | 5.1 | 0 | 28.1 | 40.8 | |
| Rated output current at a chopper frequency of | 1 kHz | I_r [A] ⁵⁾ | 89 | 110 | 150 | 180 |
| | 2 kHz | | | | | |
| | 4 kHz | | | | | |
| | 8 kHz | I_r [A] | 89 | 110 | 150 | 171 |
| | 16 kHz ⁴⁾ | I_r [A] | 54 | 77 | 105 | 108 |
| Max. permissible output current for 60 s at a chopper frequency of ³⁾ | 1 kHz | I_{max} [A] | 134 | 165 | 225 | 270 |
| | 2 kHz | | | | | |
| | 4 kHz | | | | | |
| | 8 kHz | I_{max} [A] | 134 | 165 | 225 | 221 |
| | 16 kHz ⁴⁾ | I_{max} [A] | 81 | 100 | 136 | 140 |
| Output voltage | Without mains choke/mains filter | U_M [V] | 3~ 0... U_{mains} [V] 650 Hz | | | |
| | With mains choke/mains filter | U_M [V] | 3~ 0...approx. 94% U_{mains} / 0 ...650 Hz | | | |
| Power loss (operation at I_r at 8 kHz) | P_{loss} [W] | 1100 | 1470 | 1960 | 2400 | |
| Mains choke required | Type | ELN3-0038H085 | ELN3-0027H105 | ELN3-0022H130 | ELN3-0017H170 | |
| Dimensions | With mains filter | HxWxD [mm] | 340 x 510 x 375 | 340 x 591 x 375 | 450 x 680 x 375 | |
| | Without mains filter | HxWxD [mm] | 340 x 510 x 285 | 340 x 591 x 285 | 450 x 680 x 285 | |
| Weight | With mains filter | m [kg] | 60 | 66 | 112 | |
| | Without mains filter | | 34 | 37 | 59 | |

Bold text = Data for operation at a chopper frequency of 8 kHz (Lenze setting)

¹⁾ Operation only permitted with a mains choke or mains filter

²⁾ Power in addition to that which can be drawn from the DC bus in power-adaptive operation

³⁾ Currents for periodic load change cycle: 1 min overcurrent duration at I_{max} and 2 min base load duration at 75% I_r

⁴⁾ Chopper frequency will be reduced to 4 kHz if ϑ_{max} reaches - 5°C

⁵⁾ Possible for some types under other operating conditions: Operation at increased rated output current with identical load change cycle.

⁶⁾ Delivery will be effected upon request (in preparation)

Base controllers

Operation at rated power (normal operation)

2



Base controllers

Operation at rated power (normal operation)

Ratings at 500 V mains voltage

| Typical motor power | P_r [kW] | 0.55 | 0.75 | 1.5 | 2.2 | |
|--|-----------------------|--|--|--------------------------------------|--------------------------------------|------------|
| Three-phase asynchronous motor (4-pole) | P_r [hp] | 0.75 | 1.0 | 2.0 | 3.0 | |
| 8200 vector - type | EMC filter integrated | E82EV551 K4C0xx ¹⁾ | E82EV751 K4C0xx ¹⁾ | E82EV152 K4C0xx ¹⁾ | E82EV222 K4C0xx ¹⁾ | |
| | without EMC filter | E82EV551 K4C2xx | E82EV751 K4C2xx | E82EV152 K4C2xx | E82EV222 K4C2xx | |
| Mains voltage | U_{mains} [V] | 3/PE 320 V AC 0%...550 V +0%; 45 Hz 0%...65 Hz +0% | | | | |
| Alternative DC supply | U_{DC} [V] | 450 V DC 0%...775 V +0% | | | | |
| Data for operation at 3/PE 500 V AC or 710 V DC | | | | | | |
| Rated mains current | | | | | | |
| Without mains choke | I_{mains} [A] | 2.0 | 2.6 | 4.4 | 5.8 | |
| With mains choke | I_{mains} [A] | 1.4 | 1.8 | 3.1 | 4.1 | |
| Output power U, V, W (at 8 kHz) | S_r [kVA] | 1.3 | 1.7 | 2.7 | 3.9 | |
| Output power + U_G , - U_G ²⁾ | P_{DC} [kW] | 0.3 | 0.1 | 1.1 | 0.4 | |
| Rated output current at a chopper frequency of | 2 kHz | I_r [A] | 1.4 | 1.9 | 3.1 | 4.5 |
| | 4 kHz | | | | | |
| | 8 kHz | I_r [A] | 1.4 | 1.9 | 3.1 | 4.5 |
| | 16 kHz ⁴⁾ | I_r [A] | 0.9 ⁵⁾ | 1.2 ⁵⁾ | 2.0 | 2.9 |
| Max. permissible output current for 60 s at a chopper frequency of ³⁾ | 2 kHz | I_{max} [A] | 2.7 | 3.6 | 5.9 | 8.4 |
| | 4 kHz | | | | | |
| | 8 kHz | I_{max} [A] | 2.7 | 3.6 | 5.9 | 8.4 |
| | 16 kHz ⁴⁾ | I_{max} [A] | 1.35 ⁵⁾ | 1.85 ⁵⁾ | 3.0 | 4.4 |
| Output voltage | Without mains choke | U_M [V] | 3~ 0... U_{mains} [V] 650 Hz | | | |
| | With mains choke | U_M [V] | 3~ 0...approx. 94% U_{mains} / 0 ...650 Hz | | | |
| Power loss (operation at I_r at 8 kHz) | P_{loss} [W] | 50 | 60 | 100 | 130 | |
| Brake resistor required ¹⁾ | Type | ERBM470R100W | | ERBM370 R150W | ERBM240 R200W | |
| Dimensions | HxWxD [mm] | 180 x 60 x 140 | | 240 x 60 x 140 | | |
| Weight | m [kg] | 1.2 | | 1.6 | | |

Bold text = Data for operation at a chopper frequency of 8 kHz (Lenze setting)

1) For mains voltages 484 V (-0%)... 550 V (+0%): Operation is only permitted with brake resistor

2) Power in addition to that which can be drawn from the DC bus in power-adaptive operation

3) Currents for periodic load change cycle: 1 min overcurrent duration at I_{max} and 2 min base load duration at 75% I_r

4) Chopper frequency will be reduced to 4 kHz if ϑ_{max} reaches - 5°C

5) Max. motor cable length 10 m!



Base controllers

Operation at rated power (normal operation)

Ratings at 500 V mains voltage

| Typical motor power | P_r [kW] | 3.0 | 4.0 | 5.5 | 7.5 | 11 | |
|--|-----------------------|--|--|------------------------|------------------------|-------------------------------------|-------------|
| Three-phase asynchronous motor (4-pole) | P_r [hp] | 4.1 | 5.4 | 7.5 | 10.2 | 15 | |
| 8200 vector - type | EMC filter integrated | E82EV302 K4C0xx | E82EV402 K4C0xx | E82EV552 K4C0xx | E82EV752 K4C0xx | E82EV113 K4C0xx¹⁾ | |
| | without EMC filter | E82EV302 K4C2xx | E82EV402 K4C2xx | E82EV552 K4C2xx | E82EV752 K4C2xx | E82EV113 K4C2xx¹⁾ | |
| Mains voltage | U_{mains} [V] | 3/PE 320 V AC 0%...550 V +0%; 45 Hz - 0%...65 Hz +0% | | | | | |
| Alternative DC supply | U_{DC} [V] | 450 V DC 0%...775 V +0% | | | | | |
| Data for operation at 3/PE 500 V AC or 710 V DC | | | | | | | |
| Rated mains current | | | | | | | |
| Without mains choke | I_{mains} [A] | 7.2 | 9.8 | 13.4 | 17.2 | - | |
| With mains choke | I_{mains} [A] | 5.6 | 7.0 | 9.6 | 12.0 | 16.8 | |
| Output power U, V, W (at 8 kHz) | S_r [kVA] | 5.1 | 6.6 | 9.0 | 11.4 | 16.3 | |
| Output power + U_G , - U_G ²⁾ | P_{DC} [kW] | 1.7 | 0.8 | 1.1 | 1.5 | 0 | |
| Rated output current at a chopper frequency of | 2 kHz | I_r [A] | 5.8 | 7.6 | 10.4 | 13.2 | 18.8 |
| | 4 kHz | | | | | | |
| | 8 kHz | I_r [A] | 5.8 | 7.6 | 10.4 | 13.2 | 18.8 |
| | 16 kHz ⁴⁾ | I_r [A] | 3.8 | 4.9 | 6.8 | 8.6 | 12.2 |
| Max. permissible output current for 60 s at a chopper frequency of ³⁾ | 2 kHz | I_{max} [A] | 11.0 | 14.2 | 19.5 | 24.8 | 35.3 |
| | 4 kHz | | | | | | |
| | 8 kHz | I_{max} [A] | 11.0 | 14.2 | 19.5 | 24.8 | 35.3 |
| | 16 kHz ⁴⁾ | I_{max} [A] | 5.7 | 7.9 | 10.0 | 12.9 | 18.3 |
| Output voltage | Without mains chok/ | U_M [V] | 3~ 0... U_{mains} [V] 650 Hz | | | | |
| | With mains choke | U_M [V] | 3~ 0...approx. 94% $U_{mains}/0$...650 Hz | | | | |
| Power loss (operation at I_r at 8 kHz) | P_{loss} [W] | 145 | 180 | 230 | 300 | 410 | |
| Mains choke required | Type | - | - | - | - | ELN3-150 H024 | |
| Dimensions | HxWxD [mm] | 240 x 100 x 140 | | | 240 x 125 x 140 | | |
| Weight | m [kg] | 2.9 | | | 3.6 | | |

Bold text = Data for operation at a chopper frequency of 8 kHz (Lenze setting)

- 1) Operation only permitted with a mains choke
- 2) Power in addition to that which can be drawn from the DC bus in power-adaptive operation
- 3) Currents for periodic load change cycle: 1 min overcurrent duration at I_{max} and 2 min base load duration at 75% I_r
- 4) Chopper frequency will be reduced to 4 kHz if ϑ_{max} reaches - 5°C



Base controllers

Operation at rated power (normal operation)

Ratings at 500 V mains voltage

| Typical motor power | P_r [kW] | 18.5 | 30 | 37 | |
|--|----------------------------------|---|---|-------------------------------------|------|
| Three-phase asynchronous motor (4-pole) | P_r [hp] | 25 | 40 | 49.5 | |
| 8200 vector - type | EMC filter integrated | E82EV153K4B3xx ⁵⁾ | E82EV223K4B3xx ⁵⁾ | E82EV303K4B3xx ⁵⁾ | |
| | without EMC filter | E82EV153K4B2xx | E82EV223K4B2xx ¹⁾ | E82EV303K4B2xx ¹⁾ | |
| Mains voltage | U_{mains} [V] | 3/PE 320 V AC 0%... 550 V +0%; 45 Hz 0%...65 Hz +0% | | | |
| Alternative DC supply | U_{DC} [V] | 450 V DC 0%...775 V +0% | | | |
| Data for operation at 3/PE 500 V AC or 710 V DC | | | | | |
| Rated mains current | Without mains choke/mains filter | I_{mains} [A] | 43.5 | - | - |
| | With mains choke/mains filter | I_{mains} [A] | 29.0 | 42.0 | 55.0 |
| Output power U, V, W (at 8 kHz) | S_r [kVA] | 26.6 | 39.1 | 49.9 | |
| Output power $+U_G, -U_G$ ²⁾ | P_{DC} [kW] | 11.8 | 4.6 | 0 | |
| Rated output current at a chopper frequency of | 1 kHz | I_r [A] | 32 | 47 | 56 |
| | 2 kHz | | | | |
| | 4 kHz | I_r [A] | 22 | 33 | 41 |
| | 8 kHz | | | | |
| | 16 kHz ⁴⁾ | | | | |
| Max. permissible output current for 60 s at a chopper frequency of ³⁾ | 1 kHz | I_{max} [A] | 48 | 70.5 | 84 |
| | 2 kHz | | | | |
| | 4 kHz | I_{max} [A] | 33 | 49 | 61 |
| | 8 kHz | | | | |
| | 16 kHz ⁴⁾ | | | | |
| Output voltage | Without mains choke/mains filter | U_M [V] | 3~ 0... U_{mains} [V] 650 Hz | | |
| | With mains choke/mains filter | U_M [V] | 3~ 0...approx. 94% U_{mains} / 0 ...650 Hz | | |
| Power loss (operation at I_r at 8 kHz) | P_{loss} [W] | 430 | 640 | 810 | |
| Mains choke required | Type | - | ELN3-0075H045 | ELN3-0055H055 | |
| Dimensions | With mains filter | HxWxD [mm] | 250 x 350 x 340 | | |
| | Without mains filter | HxWxD [mm] | 250 x 350 x 250 | | |
| Weight | With mains filter | m [kg] | 34 | | |
| | Without mains filter | | 15 | | |

Bold text = Data for operation at a chopper frequency of 8 kHz (Lenze setting)

¹⁾ Operation only permitted with a mains choke or mains filter

²⁾ Power in addition to that which can be drawn from the DC bus in power-adaptive operation

³⁾ Currents for periodic load change cycle: 1 min overcurrent duration at I_{max} and 2 min base load duration at 75% I_r

⁴⁾ Chopper frequency will be reduced to 4 kHz if v_{max} reaches - 5°C

⁵⁾ Delivery will be effected upon request (in preparation)





Base controllers

Operation at rated power (normal operation)

Ratings at 500 V mains voltage

| Typical motor power | P_r [kW] | 55 | 75 | 90 | 110 | |
|--|----------------------------------|--|--|--|--|------------|
| Three-phase asynchronous motor (4-pole) | P_r [hp] | 74 | 100 | 120 | 148 | |
| 8200 vector - type | EMC filter integrated | E82EV453 K4B3xx ⁵⁾ | E82EV553 K4B3xx ⁵⁾ | E82EV753 K4B3xx ⁵⁾ | E82EV903 K4B3xx ⁵⁾ | |
| | without EMC filter | E82EV453 K4B2xx ¹⁾ | E82EV553 K4B2xx ¹⁾ | E82EV753 K4B2xx ¹⁾ | E82EV903 K4B2xx ¹⁾ | |
| Mains voltage | U_{mains} [V] | 3/PE 320 V AC - 0%...550 V +0%; 45 Hz - 0%...65 Hz +0% | | | | |
| Alternative DC supply | U_{DC} [V] | 450 V DC 0%... 775 V +0% | | | | |
| Data for operation at 3/PE 500 V AC or 710 V DC | | | | | | |
| Rated mains current | Without mains choke/mains filter | I_{mains} [A] | - | - | - | - |
| | With mains choke/mains filter | I_{mains} [A] | 80.0 | 100 | 135 | 165 |
| Output power U, V, W (at 8 kHz) | S_r [kVA] | 73.9 | 91.4 | 124 | 149 | |
| Output power + U_G , - U_G ²⁾ | P_{DC} [kW] | 5.9 | 0 | 32.4 | 47.1 | |
| Rated output current at a chopper frequency of | 1 kHz | I_r [A] ⁵⁾ | 84 | 105 | 142 | 171 |
| | 2 kHz | | | | | |
| | 4 kHz | | | | | |
| | 8 kHz | I_r [A] | 84 | 105 | 142 | 162 |
| | 16 kHz ⁴⁾ | I_r [A] | 58 | 72 | 98 | 99 |
| Max. permissible output current for 60 s at a chopper frequency of ³⁾ | 1 kHz | I_{max} [A] | 126 | 157 | 213 | 256 |
| | 2 kHz | | | | | |
| | 4 kHz | | | | | |
| | 8 kHz | I_{max} [A] | 126 | 157 | 213 | 211 |
| | 16 kHz ⁴⁾ | I_{max} [A] | 75 | 94 | 128 | 130 |
| Output voltage | Without mains choke/mains filter | U_M [V] | 3~ 0... U_{mains} [V] 650 Hz | | | |
| | With mains choke/mains filter | U_M [V] | 3~ 0...approx. 94% U_{mains} / 0 ...650 Hz | | | |
| Power loss (operation at I_r at 8 kHz) | P_{loss} [W] | 1100 | 1470 | 1960 | 2400 | |
| Mains choke required | Type | ELN3-0038H085 | ELN3-0027H105 | ELN3-0022H130 | ELN3-0017H170 | |
| Dimensions | With mains filter | HxWxD [mm] | 340 x 510 x 375 | 340 x 591 x 375 | 450 x 680 x 375 | |
| | Without mains filter | HxWxD [mm] | 340 x 510 x 285 | 340 x 591 x 285 | 450 x 680 x 285 | |
| Weight | With mains filter | m [kg] | 60 | 66 | 112 | |
| | Without mains filter | | 34 | 37 | 59 | |

Bold text = Data for operation at a chopper frequency of 8 kHz (Lenze setting)

¹⁾ Operation only permitted with a mains choke or mains filter

²⁾ Power in addition to that which can be drawn from the DC bus in power-adaptive operation

³⁾ Currents for periodic load change cycle: 1 min overcurrent duration at I_{max} and 2 min base load duration at 75% I_r

⁴⁾ Chopper frequency will be reduced to 4 kHz if ϑ_{max} reaches - 5°C

⁵⁾ Delivery will be effected upon request (in preparation)

Base controllers

Operation at rated power (normal operation)

2



Base controllers

Operation at increased rated power

Ratings at 230 V mains voltage

| Typical motor power | P_r [kW] | 0.37 | 0.75 | 1.1 | 2.2 | | | |
|--|-----------------------|---|--------------------------------------|--------------------------------------|------------------------|------|--------|------|
| Three-phase asynchronous motor (4-pole) | P_r [hp] | 0.5 | 1.0 | 1.5 | 3.0 | | | |
| 8200 vector - type | EMC filter integrated | E82EV251 K2C0xx | E82EV551 K2C0xx ¹⁾ | E82EV751 K2C0xx ¹⁾ | E82EV152 K2C0xx | | | |
| | without EMC filter | E82EV251 K2C2xx | E82EV551 K2C2xx ¹⁾ | E82EV751 K2C2xx ¹⁾ | E82EV152 K2C2xx | | | |
| Mains voltage | U_{mains} [V] | 1/N/PE 180 V AC - 0%...264 V + 0%; 45 Hz - 0%... 65 Hz + 0% 3/PE 100 V AC - 0%... 264 V + 0%; 45 Hz - 0%... 65 Hz + 0% | | | | | | |
| Alternative DC supply | U_{DC} [V] | not possible | 140 V DC - 0%... 370 V + 0% | | | | | |
| Data for operation at 1/N/PE (3PE) 230 V AC or 325 V DC | | 1/N/PE | 1/N/PE | 3/PE | 1/N/PE | 3/PE | 1/N/PE | 3/PE |
| Rated mains current | | | | | | | | |
| Without mains choke | I_{mains} [A] | 4.1 | - | - | - | - | 18.0 | 10.4 |
| With mains choke | I_{mains} [A] | 3.6 | 6.7 | 3.3 | 9.0 | 4.4 | 15.0 | 7.6 |
| Output power U, V, W (at 2/4 kHz) | S_r [kVA] | 0.8 | 1.4 | 1.9 | 3.3 | | | |
| Output power $+U_G, -U_G$ ²⁾ | P_{DC} [kW] | DC bus connection not possible | 0.1 | 0 | 0.4 | | | |
| Rated output current at a chopper frequency of | I_r [A] | 2 kHz | 2.0 | 3.6 | 4.8 | 8.4 | | |
| | | 4 kHz | | | | | | |
| Max. permissible output current for 60 s at a chopper frequency of ³⁾ | I_{max} [A] | 2 kHz | 2.5 | 4.5 | 6.0 | 10.5 | | |
| | | 4 kHz | | | | | | |
| Output voltage | | | | | | | | |
| Without mains choke | U_M [V] | 3~ 0... U_{mains} [V] 650 Hz | | | | | | |
| With mains choke | U_M [V] | 3~ 0...approx. 94% U_{mains} / 0...650 Hz | | | | | | |
| Power loss (operation at I_r , 2/4 kHz) | P_{loss} [W] | 30 | 50 | 60 | 100 | | | |
| Mains choke required | Type | - | ELN1-0500H005 | ELN1-0500H009 | E82ZL75132B | - | | |
| Dimensions | HxWxD [mm] | 120 x 60 x 140 | 180 x 60 x 140 | | 240 x 60 x 140 | | | |
| Weight | m [kg] | 0.8 | 1.2 | | 1.6 | | | |

¹⁾ Operation only permitted with a mains choke

²⁾ Power in addition to that which can be drawn from the DC bus in power-adaptive operation

³⁾ Currents for periodic load change cycle: 1 min overcurrent duration at I_{max} and 2 min base load duration at 75% I_r



Ratings at 230 V mains voltage

| | | | |
|--|---------------------------|---|--|
| Typical motor power | P_r [kW] | 4.0 | 7.5 |
| Three-phase asynchronous motor (4-pole) | P _r [hp] | 5.4 | 10.2 |
| 8200 vector - type | EMC filter integrated | E82EV302K2C0xx | E82EV552K2C0xx¹⁾ |
| | without EMC filter | E82EV302K2C2xx | E82EV552K2C2xx¹⁾ |
| Mains voltage | U _{mains} [V] | 3/PE 100 V AC 0%... 264 V +0%; 45 Hz 0%...65 Hz +0% | |
| Alternative DC supply | U _{DC} [V] | 140 V DC 0%... 370 V +0% | |
| Data for operation at 3/PE 230 V AC or 325 V DC | | | |
| Rated mains current | Without mains choke | I _{mains} [A] | 18.7 |
| | With mains choke | I _{mains} [A] | 14.4 |
| Output power U, V, W (at 2/4 kHz) | S _r [kVA] | 5.7 | 10.8 |
| Output power +U _G , -U _G ²⁾ | P _{DC} [kW] | 0 | |
| Rated output current at a chopper frequency of | 2 kHz | I _r [A] | 14.4 |
| | 4 kHz | | |
| Max. permissible output current for 60 s at a chopper frequency of ³⁾ | 2 kHz | I _{max} [A] | 18.0 |
| | 4 kHz | | |
| Output voltage | Without mains choke | U _M [V] | 3~ 0...U _{mains} [V] 650 Hz |
| | With mains choke | U _M [V] | 3~ 0...approx. 94% U _{mains} / 0...650 Hz |
| Power loss (operation at I _r , 2/4 kHz) | P _{loss} [W] | 150 | 250 |
| Mains choke required | Type | - | ELN3-088H035 |
| Dimensions | HxWxD [mm] | 240 x 100 x 140 | 240 x 125 x 140 |
| Weight | m [kg] | 2.9 | 3.6 |

¹⁾ Operation only permitted with mains choke

²⁾ Power in addition to that which can be drawn from the DC bus in power-adaptive operation

³⁾ Currents for periodic load change cycle: 1 min overcurrent duration at I_{max} and 2 min base load duration at 75% I_r



Base controllers

Operation at increased rated power

Ratings at 400 V mains voltage

| Maximum motor power | P_r [kW] | 0.75 | 1.1 | 3.0 |
|--|-----------------------|--|-------------------------------------|-------------------------------------|
| Three-phase asynchronous motor (4-pole) | P_r [hp] | 1.0 | 1.5 | 4.0 |
| 8200 vector - type | EMC filter integrated | E82EV551K4C0xx | E82EV751K4C0xx ¹⁾ | E82EV222K4C0xx ¹⁾ |
| | without EMC filter | E82EV551K4C2xx | E82EV751K4C2xx ¹⁾ | E82EV222K4C2xx ¹⁾ |
| Mains voltage | U_{mains} [V] | 3/PE 320 V AC 0%... 440 V +0%; 45 Hz 0%... 65 Hz +0% | | |
| Alternative DC supply | U_{DC} [V] | 450 V DC 0%... 625 V +0% | | |
| Data for operation at 3/PE 400 V AC or 565 V DC | | | | |
| Rated mains current | | | | |
| Without mains choke | I_{mains} [A] | 2.9 | - | - |
| With mains choke | I_{mains} [A] | 2.4 | 2.8 | 6.1 |
| Output power U, V, W (at 2/4 kHz) | S_N [kVA] | 1.5 | 2.0 | 4.6 |
| Output power + U_G , - U_G ²⁾ | P_{DC} [kW] | 0.1 | 0 | 0 |
| Rated output current at a chopper frequency of | I_r [A] | 2 kHz | 2.9 | 6.7 |
| | | 4 kHz | | |
| Max. permissible output current for 60 s at a chopper frequency of ³⁾ | I_{max} [A] | 2 kHz | 3.6 | 8.4 |
| | | 4 kHz | | |
| Output voltage | U_M [V] | 3~ 0... U_{mains} [V] 650 Hz | | |
| | | 3~ 0...approx. 94% U_{mains} / 0...650 Hz | | |
| Power loss (operation at I_r , 2/4 kHz) | P_{loss} [W] | 50 | 60 | 130 |
| Mains choke required | Type | - | EZN3A1500H003 | E82ZL22234B |
| Dimensions | HxWxD [mm] | 1180 x 60 x 140 | | 240 x 60 x 140 |
| Weight | m [kg] | 1.2 | | 1.6 |

¹⁾ Operation only permitted with a mains choke

²⁾ Power in addition to that which can be drawn from the DC bus in power-adaptive operation

³⁾ Currents for periodic load change cycle: 1 min overcurrent duration at I_{max} and 2 min base load duration at 75% I_r



Ratings at 400 V mains voltage

| Maximum motor power | | P_r [kW] | 4.0 | 5.5 | 11 |
|--|-----------------------|-----------------|--|-------------------------------------|-------------------------------------|
| Three-phase asynchronous motor (4-pole) | | P_r [hp] | 5.4 | 7.5 | 15 |
| 8200 vector - type | EMC filter integrated | | E82EV302K4C0xx | E82EV402K4C0xx ¹⁾ | E82EV752K4C0xx ¹⁾ |
| | without EMC filter | | E82EV302K4C2xx | E82EV402K4C2xx ¹⁾ | E82EV752K4C2xx ¹⁾ |
| Mains voltage | | U_{mains} [V] | 3/PE 320 V AC - 0%...440 V +0%; 45 Hz - 0%...65 Hz +0% | | |
| Alternative DC supply | | U_{DC} [V] | 450 V DC 0%...625 V +0% | | |
| Data for operation at 3/PE 400 V AC or 565 V DC | | | | | |
| Rated mains current | | | | | |
| Without mains choke | | I_{mains} [A] | 10.8 | - | - |
| With mains choke | | I_{mains} [A] | 8.4 | 10.6 | 18.0 |
| Output power U, V, W (at 2/4 kHz) | | S_N [kVA] | 6.0 | 7.9 | 13.7 |
| Output power + U_G , - U_G ²⁾ | | P_{DC} [kW] | 0 | 0 | |
| Rated output current at a chopper frequency of | 2 kHz | I_r [A] | 8.7 | 11.4 | 19.8 |
| | 4 kHz | | | | |
| Max. permissible output current for 60 s at a chopper frequency of ³⁾ | 2 kHz | I_{max} [A] | 11.0 | 14.2 | 24.8 |
| | 4 kHz | | | | |
| Output voltage | | | | | |
| Without mains choke | | U_M [V] | 3~ 0... U_{mains} [V] 650 Hz | | |
| With mains choke | | U_M [V] | 3~ 0...approx. 94% U_{mains} / 0...650 Hz | | |
| Power loss (operation at I_r , 2/4 kHz) | | P_{loss} [W] | 145 | 180 | 300 |
| Mains choke required | | Type | - | EZN3A0300H013 | ELN3-0150H024 |
| Dimensions | | HxWxD [mm] | 240 x 100 140 | | 240 x 125 x 140 |
| Weight | | m [kg] | 2.9 | | 3.6 |

¹⁾ Operation only permitted with a mains choke

²⁾ Power in addition to that which can be drawn from the DC bus in power-adaptive operation

³⁾ Currents for periodic load change cycle: 1 min overcurrent duration at I_{max} and 2 min base load duration at 75% I_r



Base controllers

Operation at increased rated power

Ratings at 400 V mains voltage

| Maximum motor power | | P_r [kW] | 22 | 30 | 37 |
|--|----------------------------------|------------------------|--|-------------------------------------|--|
| Three-phase asynchronous motor (4-pole) | | P_r [hp] | 30 | 40 | 50 |
| 8200 vector - type | with mains filter | | E82EV153K4B3xx ⁵⁾ | E82EV223K4B3xx ⁵⁾ | - |
| | without mains filter | | E82EV153K4B2xx ¹⁾ | E82EV223K4B2xx ¹⁾ | E82EV303K4B2xx ^{1) 4)} |
| Mains voltage | | U_{mains} [V] | 3/PE 320 V AC 0%...440 V +0%; 45 Hz 0%...65 Hz +0% | | |
| Alternative DC supply | | U_{DC} [V] | 450 V DC 0%...625 V +0% | | |
| Data for operation at 3/PE 400 V AC or 565 V DC | | | | | |
| Rated mains current | | | | | |
| | Without mains choke/mains filter | I_{mains} [A] | - | - | - |
| | With mains choke/mains filter | I_{mains} [A] | 39.0 | 50.0 | 60.0 |
| Output power U, V, W (at 2/4 kHz) | | S_N [kVA] | 29.8 | 39.5 | 46.4 |
| Output power $+U_G, -U_G$ ²⁾ | | P_{DC} [kW] | 10.2 | 4.0 | 0 |
| Rated output current at a chopper frequency of | 1 kHz | I_r [A] | 43 | 56 | 66 |
| | 2 kHz | | | | |
| | 4 kHz | | | | |
| Max. permissible output current for 60 s at a chopper frequency of ³⁾ | 1 kHz | I_{max} [A] | 48 | 70.5 | 89 |
| | 2 kHz | | | | |
| | 4 kHz | | | | |
| Output voltage | | | | | |
| | Without mains choke/mains filter | U_M [V] | 3~ 0... U_{mains} [V] 650 Hz | | |
| | With mains choke/mains filter | U_M [V] | 3~ 0...approx. 94% U_{mains} / 0...650 Hz | | |
| Power loss (operation at I_r , 2/4 kHz) | | P_{loss} [W] | 430 | 640 | 810 |
| Mains choke required | | Type | ELN3-0075H045 | ELN3-0055H055 | ELN3-0055H055 |
| Dimensions | With mains filter | HxWxD [mm] | 250 x 350 x 340 | | |
| | Without mains filter | HxWxD [mm] | 250 x 350 x 250 | | |
| Weight | With mains filter | m [kg] | 34 | | |
| | Without mains filter | | 15 | | |

- 1) Operation only permitted with a mains choke or mains filter
 2) Power in addition to that which can be drawn from the DC bus in power-adaptive operation
 3) Currents for periodic load change cycle: 1 min overcurrent duration at I_{max} and 2 min base load duration at 75% I_r
 4) Max. permissible ambient temperature during operation +35°C
 5) Delivery will be effected upon request (in preparation)



Ratings at 400 V mains voltage

| Maximum motor power | P_r [kW] | 55 | 75 | 90 | 110 | |
|--|----------------------------------|--|---|--|---|-----|
| Three-phase asynchronous motor (4-pole) | P_r [hp] | 75 | 100 | 120 | 148 | |
| 8200 vector - type | with mains filter | - | E82EV553 K4B3xx ^{4) 6)} | - | - | |
| | without mains filter | E82EV453 K4B2xx ¹⁾ | E82EV553 K4B2xx ^{1) 4)} | E82EV753 K4B2xx ¹⁾ | E82EV903 K4B2xx ^{1) 4)} | |
| Mains voltage | U_{mains} [V] | 3/PE 320 V AC - 0%...440 V +0%; 45 Hz 0%...65 Hz +0% | | | | |
| Alternative DC supply | U_{DC} [V] | 450 V DC 0%... 625 V +0% | | | | |
| Data for operation at 3/PE 400 V AC or 565 V DC | | | | | | |
| Rated mains current | Without mains choke/mains filter | I_{mains} [A] | - | - | - | - |
| | With mains choke/mains filter | I_{mains} [A] | 97.0 | 119 | 144 | 185 |
| Output power U, V, W (at 2/4 kHz) | S_N [kVA] | 74.8 | 91.5 | 110 | 142 | |
| Output power $+U_G$, $-U_G$ ²⁾ | P_{DC} [kW] | 5.1 | 0 | 28.1 | 40.8 | |
| Rated output current at a chopper frequency of | 1 kHz | I_r [A] ⁵⁾ | 100 | 135 | 159 | 205 |
| | 2 kHz | | | | | |
| | 4 kHz | | | | | |
| Max. permissible output current for 60 s at a chopper frequency of ³⁾ | 1 kHz | I_{max} [A] | 134 | 165 | 225 | 270 |
| | 2 kHz | | | | | |
| | 4 kHz | | | | | |
| Output voltage | Without mains choke/mains filter | U_M [V] | 3~ 0... U_{mains} [V] 650 Hz | | | |
| | With mains choke/mains filter | U_M [V] | 3~ 0...approx. 94% U_{mains} / 0...650 Hz | | | |
| Power loss (operation at I_r , 2/4 kHz) | P_{loss} [W] | 1100 | 1470 | 1960 | 2400 | |
| Mains choke required | Type | ELN3-0027 H105 | ELN3-0022 H130 | ELN3-0017 H170 | ELN3-0014 H200 | |
| Dimensions With mains filter | HxWxD [mm] | 340 x 510 x 375 | 340 x 591 x 375 | 450 x 680 x 375 | | |
| | Without mains filter | HxWxD [mm] | 340 x 510 x 285 | 340 x 591 x 285 | 450 x 680 x 285 | |
| Weight | With mains filter | m [kg] | 60 | 66 | 112 | |
| | Without mains filter | | 34 | 37 | 59 | |

1) Operation only permitted with a mains choke or mains filter

2) Power in addition to that which can be drawn from the DC bus in power-adaptive operation

3) Currents for periodic load change cycle: 1 min overcurrent duration at I_{max} and 2 min base load duration at 75% I_r

4) Max. permissible ambient temperature during operation +35°C

5) Only operate with automatic chopper frequency reduction (C144 = 1). Make sure that the specified currents are not exceeded.

6) Delivery will be effected upon request (in preparation)



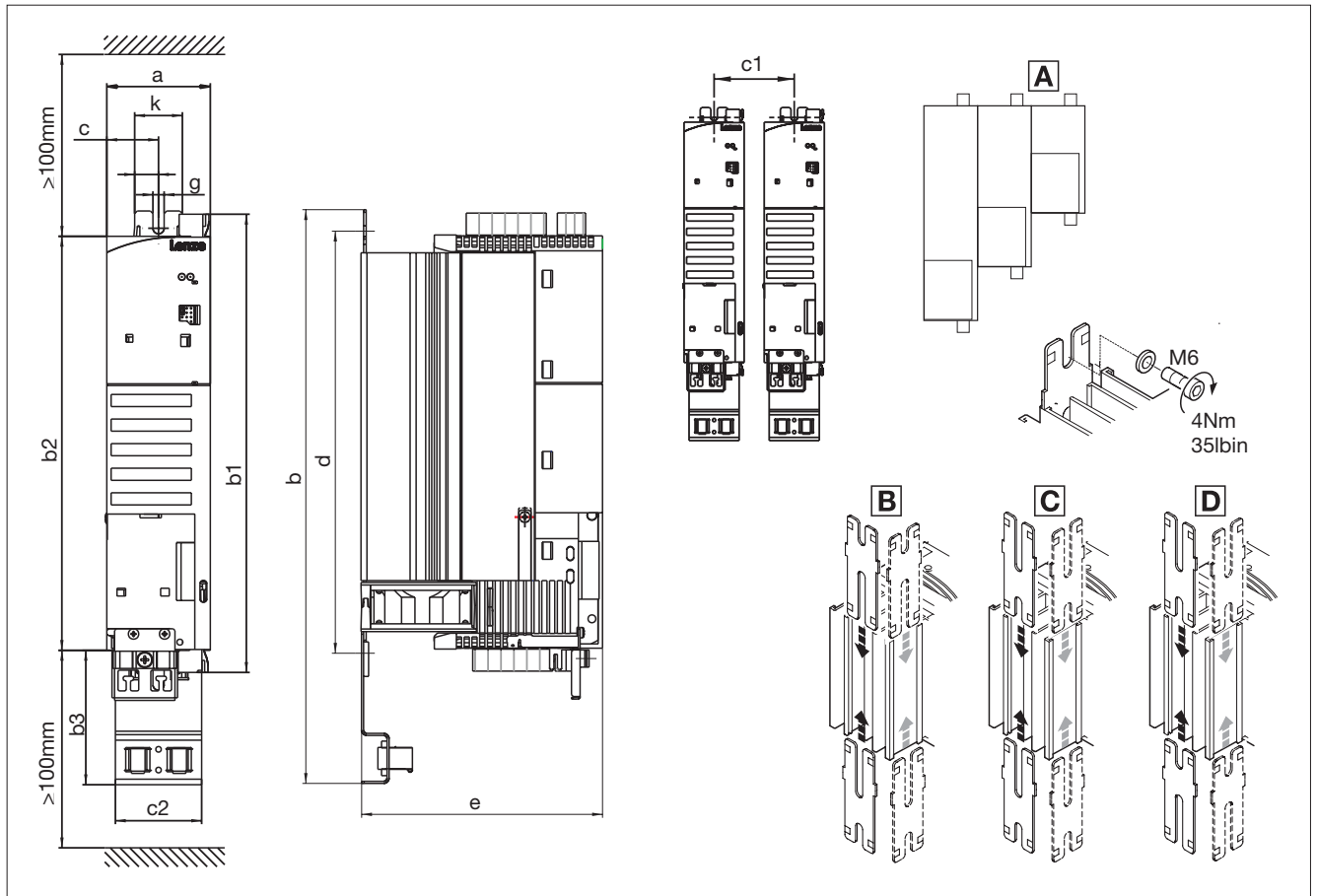
General information

- 8200 vector frequency inverters must only be used as built-in units
- If the exhaust air contains pollutants (dust, lint, grease, aggressive gases) then appropriate counter-measures must be in place (e.g. installation of filters, regular cleaning etc.).
- Ensure there is enough mounting space. (see page 2-4 bzw. 2-31)
Several devices can be mounted side by side. Ensure unhindered inlet of cooling air and discharge of exhaust air. Observe mounting clearances of 100 mm above and below.
- In the event of continuous oscillations or vibrations, check the use of vibration dampers.
- Information about installation according to EMC can be found in the 8200 vector System Manual (see page 6-3).

The frequency inverters can be fitted as follows into a control cabinet:

- With the **standard fixtures** included in the scope of (included in the scope of supply)
- With special **fixtures** (power-dependent accessories)

Standard mounting - 8200 vector 0.25 ... 2.2 kW



| 8200 vector Type | Dimensions [mm] | | | | | | | | | | | | | | | |
|--|-----------------|--------------------------|-----|-----|-----|-----|----|----|----|----|--------------------------------------|-----------|-----------|--------------------------|-----|----|
| | a | b | | | b1 | b2 | b3 | c | c1 | c2 | d | | | e | g | k |
| | | B | C | D | | | | | | | B | C | D | | | |
| E82EV251K2C E82EV371K2C | 60 | 213 | 243 | 263 | 148 | 129 | 78 | 30 | 63 | 50 | 130...140 | 120...170 | 110...200 | 140 | 6.5 | 28 |
| E82EV551KxC E82EV751KxC | | 273 | 303 | 323 | 208 | 180 | | | | | 190...200 | 180...230 | 170...260 | | | |
| E82EV152KxC ¹⁾ E82EV222KxC ¹⁾ | | 333 359 ²⁾ | 363 | - | 268 | 240 | | | | | 250...260 280...295 ²⁾ | 240...290 | - | 140 162 ²⁾ | 6.5 | 28 |

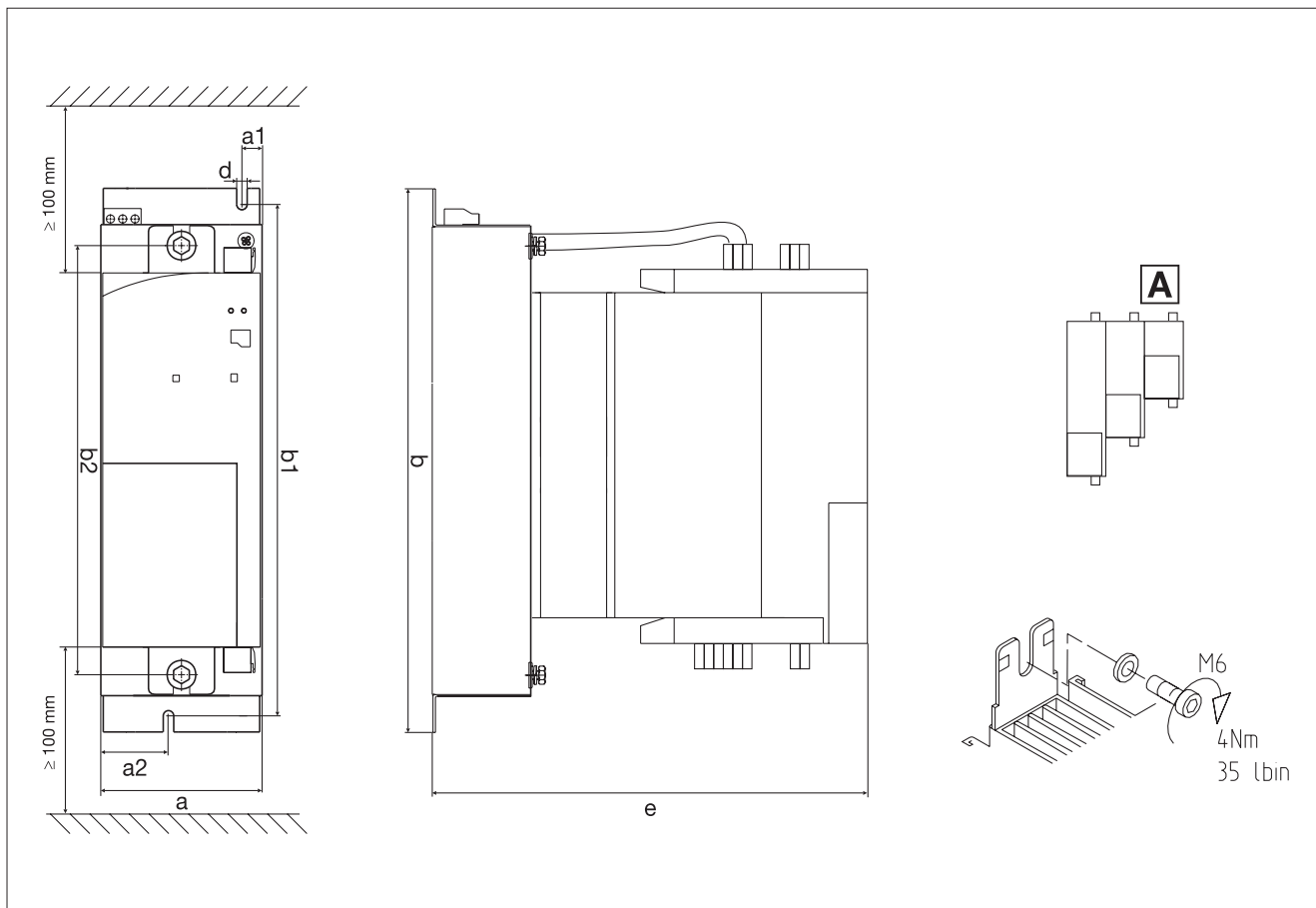
A Components of different sizes should be mounted adjacent to one another at 3 mm intervals, with the largest furthest to the left and the smallest on the far right.

- 1) Side-by-side mounting is only possible with swivel bracket E82ZJ001 (accessories)
 2) With E82ZJ001

Base controllers

Dimensions and mounting

Standard mounting - 8200 vector 0.25 ... 2.2 kW with substructure RFI filters



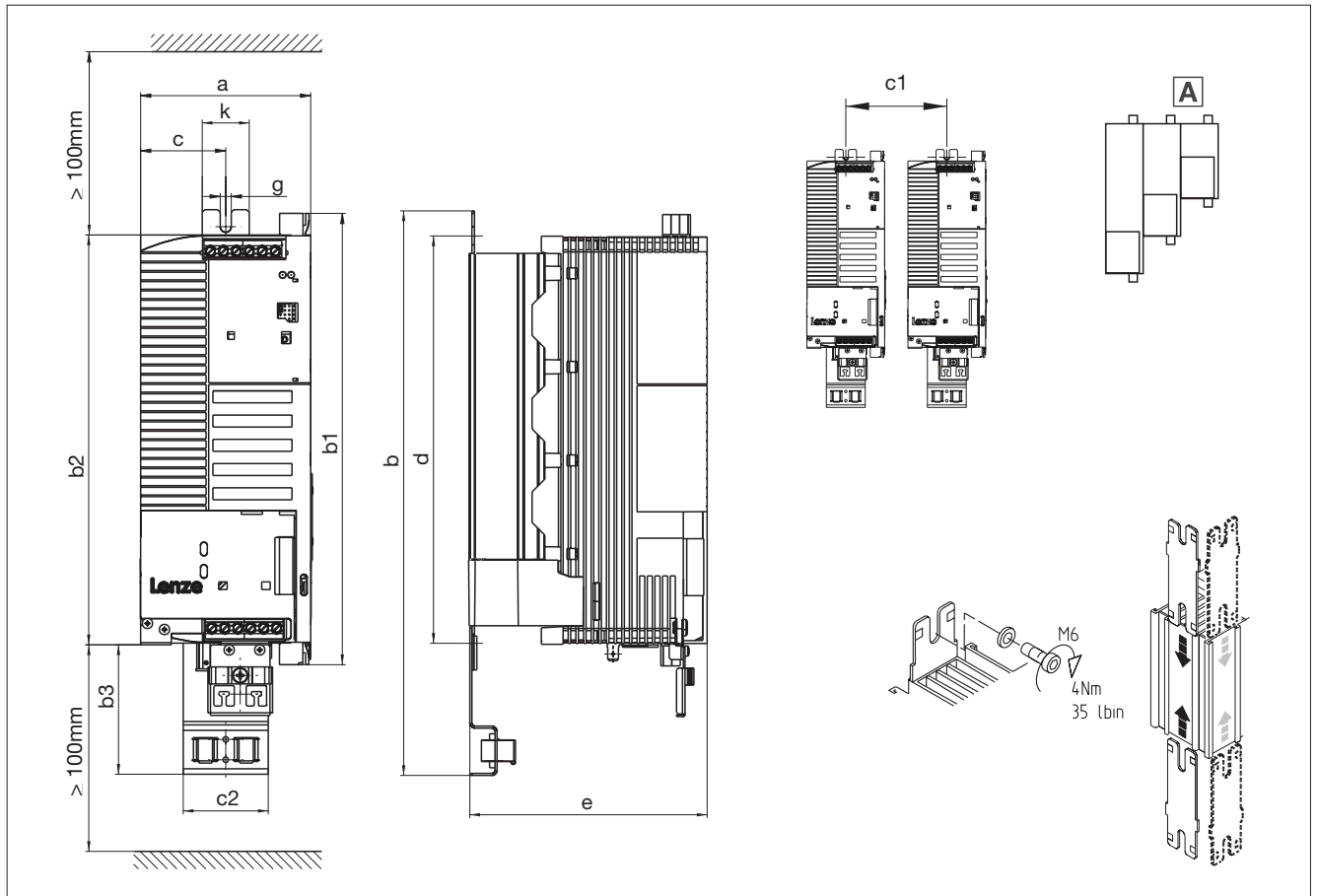
Schematic sketch: Representation without shield connection of motor and control cable.

| 8200 vector | Dimensions [mm] | | | | | | | |
|----------------------------------|-----------------|----|----|-----|-----|-----|-----|-----|
| Type | a | a1 | a2 | b | b1 | b2 | d | e |
| E82EV251K2C200 E82EV371K2C200 | 60 | 10 | 25 | 217 | 197 | 135 | 6.5 | 170 |
| E82EV551KxC200 E82EV751KxC200 | | | | 277 | 247 | 195 | | 180 |
| E82EV152KxC200 E82EV222KxC200 | | | | 337 | 317 | 255 | | 180 |

A Components of different sizes should be mounted directly adjacent to one another at 3 mm intervals, with the largest furthest to the left and the smallest on the far right.

Note:
See chapter 4 for details of the substructure filter.

Standard mounting - 8200 vector 3.0 ... 11.0 kW



| 8200 vector | Dimensions [mm] | | | | | | | | | | | |
|--|-----------------|--------------------------|-----|-----|----|------|-------------------|----|--------------------------------|--------------------------|-----|----|
| Type | a | b | b1 | b2 | b3 | c | c1 | c2 | d | e | g | k |
| E82EV302K2C E82EV402K2C | 100 | 333 | 268 | 240 | 78 | 50 | 103 | 50 | 255 | 140 | 6.5 | 28 |
| E82EV552K2C ¹⁾ E82EV752K2C ¹⁾ | 125 | 333 359 ²⁾ | | | | | 62.5 | | | | | |
| E82EV302K4C E82EV402K4C E82EV552K4C | 100 | 333 | | | | 50 | 103 103 103 | | 255 | 140 | | |
| E82EV752K4C ¹⁾ E82EV113K4C ¹⁾ | 125 | 333 359 ²⁾ | | | | 62.5 | 128 128 | | 255 280...295 ²⁾ | 140 162 ²⁾ | | |

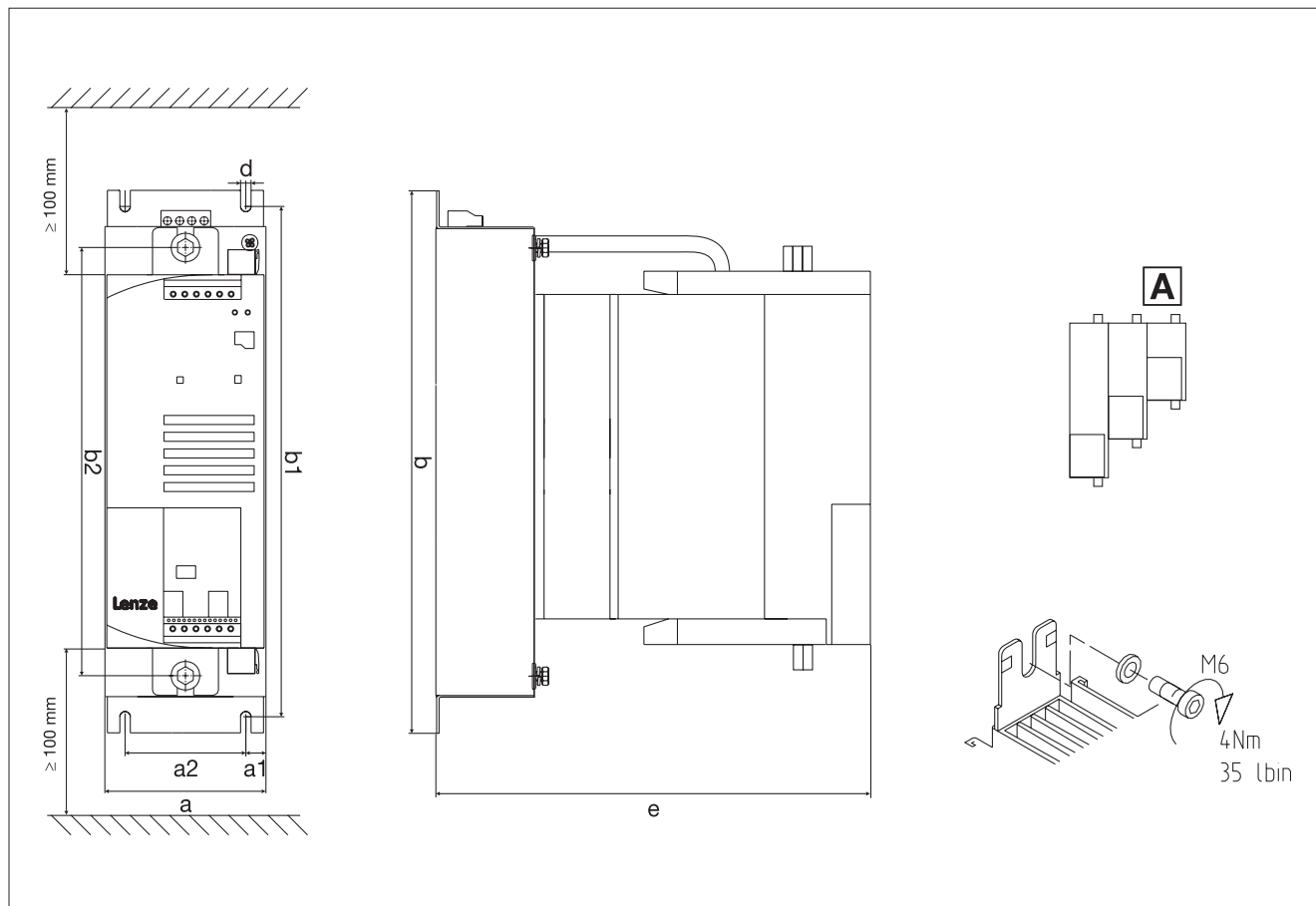
A Different sizes should only be mounted side by side with the largest furthest to the left and the smallest on the far right. A clearance of 3 mm must always be observed.

- 1) Side-by-side mounting is only possible with swivel bracket E82ZJ006 (accessories)
 2) With E82ZJ006

Base controllers

Dimensions and mounting

Standard mounting - 8200 vector 3.0 ... 11.0 kW with substructure RFI filters



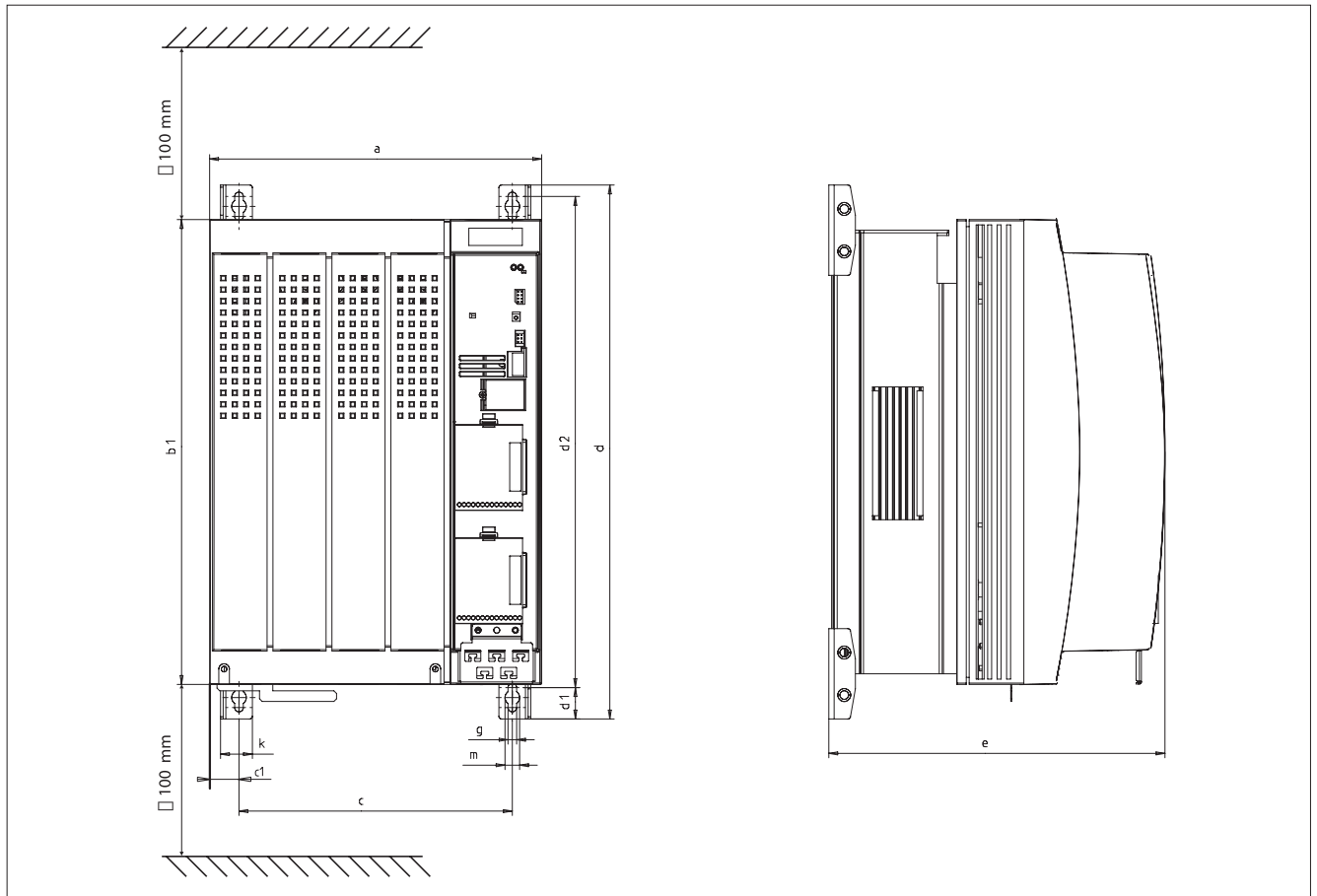
Schematic sketch: Representation without shield connection of motor and control cable.

| 8200 vector | Dimensions [mm] | | | | | | | |
|--|-----------------|------|----|-----|-----|-----|-----|-----|
| Type | a | a1 | a2 | b | b1 | b2 | d | e |
| E82EV302K2C200 E82EV402K2C200 | 100 | 12.5 | 75 | 337 | 317 | 255 | 6.5 | 200 |
| E82EV552K2C200 E82EV752K2C200 | 125 | 25 | | | | | | |
| E82EV302K4C200 E82EV402K4C200 E82EV552K4C200 | 100 | 12.5 | | | | | | |
| E82EV752K4C200 E82EV113K4C200 | 125 | 25 | | | | | | |

A Different sizes should only be mounted side by side with the largest furthest to the left and the smallest on the far right. A clearance of 3 mm must always be observed.

Note:
See chapter 4 for details of the base filter as an accessory.

Standard mounting - 8200 vector 15.0 ... 90.0 kW



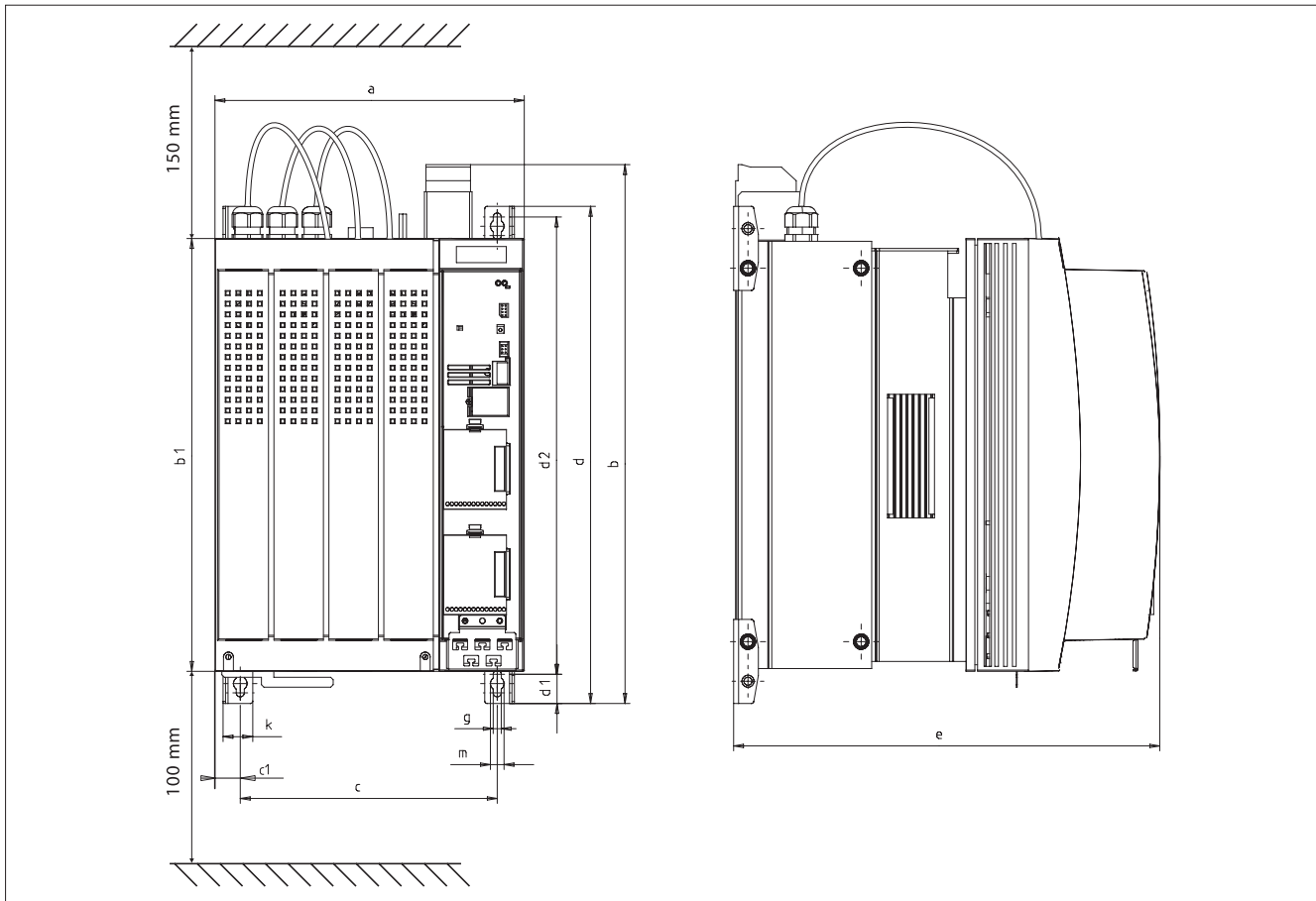
| | Dimensions [mm] | | | | | | | | | | |
|--|-----------------|-----|-----|------|-----|----|-----|-----|-----|----|----|
| | a | b1 | c | c1 | d | d1 | d2 | e | g | k | m |
| E82EV153K4B201 E82EV223K4B201 E82EV303K4B201 | 250 | 350 | 205 | 22 | 402 | 24 | 370 | 250 | 6.5 | 24 | 11 |
| E82EV453K4B201 ¹⁾ | 340 | 510 | 284 | 28 | 580 | 38 | 532 | 285 | 11 | 28 | 18 |
| E82EV553K4B201 ¹⁾ | 340 | 591 | 284 | 28 | 672 | 38 | 624 | 285 | 11 | 28 | 18 |
| E82EV753K4B201 ¹⁾ E82EV903K4B201 ¹⁾ | 450 | 680 | 395 | 30.5 | 750 | 38 | 702 | 285 | 11 | 28 | 18 |

¹⁾ Ensure clearance of 50 mm around the drive controller in order e.g. to be able to remove eye-bolts.

Base controllers

Dimensions and mounting

Standard mounting - 8200 vector 15.0 ... 90 kW with substructure RFI filters



| | Dimensions [mm] | | | | | | | | | | | |
|--|-----------------|-----|-----|-----|------|-----|----|-----|-----|-----|----|----|
| | a | b | b1 | c | c1 | d | d1 | d2 | e | g | k | m |
| E82EV153K4B3xx ¹⁾ E82EV223K4B3xx ¹⁾ E82EV303K4B3xx ¹⁾ | 250 | 456 | 350 | 205 | 22 | 402 | 24 | 370 | 340 | 6.5 | 24 | 11 |
| E82EV453K4B3xx ¹⁾ | 340 | 619 | 510 | 284 | 28 | 580 | 38 | 532 | 375 | 11 | 28 | 18 |
| E82EV553K4B3xx ¹⁾ | 340 | 729 | 591 | 284 | 28 | 672 | 38 | 624 | 375 | 11 | 28 | 18 |
| E82EV753K4B3xx ¹⁾ E82EV903K4B3xx ¹⁾ | 450 | 802 | 680 | 395 | 30.5 | 750 | 38 | 702 | 375 | 11 | 28 | 18 |

¹⁾ Ensure clearance of 50 mm around the drive controller in order e.g. to be able to remove eye-bolts.

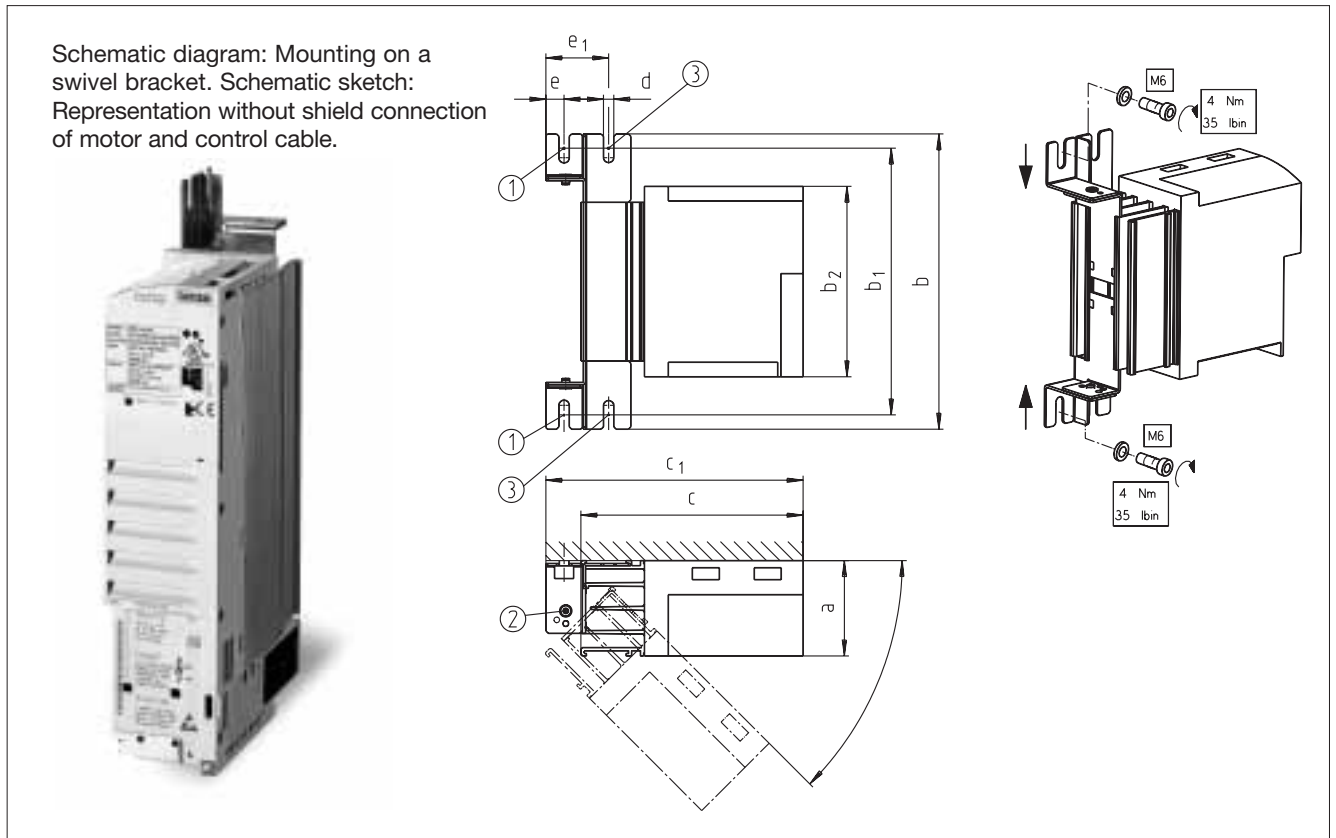
Note:

- The integrated mains filters listed in the accessories section are of different designs and have different dimensions and features to the mains filters listed here (see chapter 4).

Swivel bracket

On housings with a shallow installation depth the frequency inverter can be mounted with a swivel bracket. The frequency inverter can be swivelled out sideways, e.g.

through 90°, for installation, adjustment and diagnostic purposes (mechanism locks at 45°, 90°, 135°, 180°).



① Bolt here ② Pivot point ③ Bolt here to keep the frequency inverter fixed in the 0°-position

| 8200 vector | Dimensions [mm] | | | | | | | | | Order ref. |
|---|-----------------|-----|----------------|----------------|-----|----------------|-----|------|----------------|------------|
| Type | a | b | b ₁ | b ₂ | c | c ₁ | d | e | e ₁ | |
| E82EV251K2C E82EV371K2C | 60 | 186 | 160...175 | 120 | 140 | 162 | 6.5 | 11.5 | 39 | E82ZJ001 |
| E82EV551K2C E82EV751K2C | | 246 | 220...235 | 180 | | | | | | |
| E82EV152K2C E82EV222K2C | | 306 | 280...295 | 240 | | | | | | |
| E82EV551K4C E82EV751K4C | | 246 | 220...235 | 180 | | | | | | |
| E82EV152K4C E82EV222K4C | | 306 | 280...295 | 240 | | | | | | |
| E82EV302K2C E82EV402K2C | 100 | 306 | 280...295 | 240 | 140 | 162 | 6.5 | 11.5 | 39 | E82ZJ005 |
| E82EV552K2C E82EV752K2C | 125 | | | | | | | | | E82ZJ006 |
| E82EV302K4C E82EV402K4C E82EV552K4C | 100 | | | | | | | | | E82ZJ005 |
| E82EV752K4C E82EV113K4C | 125 | | | | | | | | | E82ZJ006 |

Note:

- The bracket must be used for secure side mounting on the following devices:
230 V: 1.5/2.2/5.5 kW, 400 V: 7.5/11.0 kW.
- For installation according to EMC standard mounting is preferable to swivel bracket mounting.

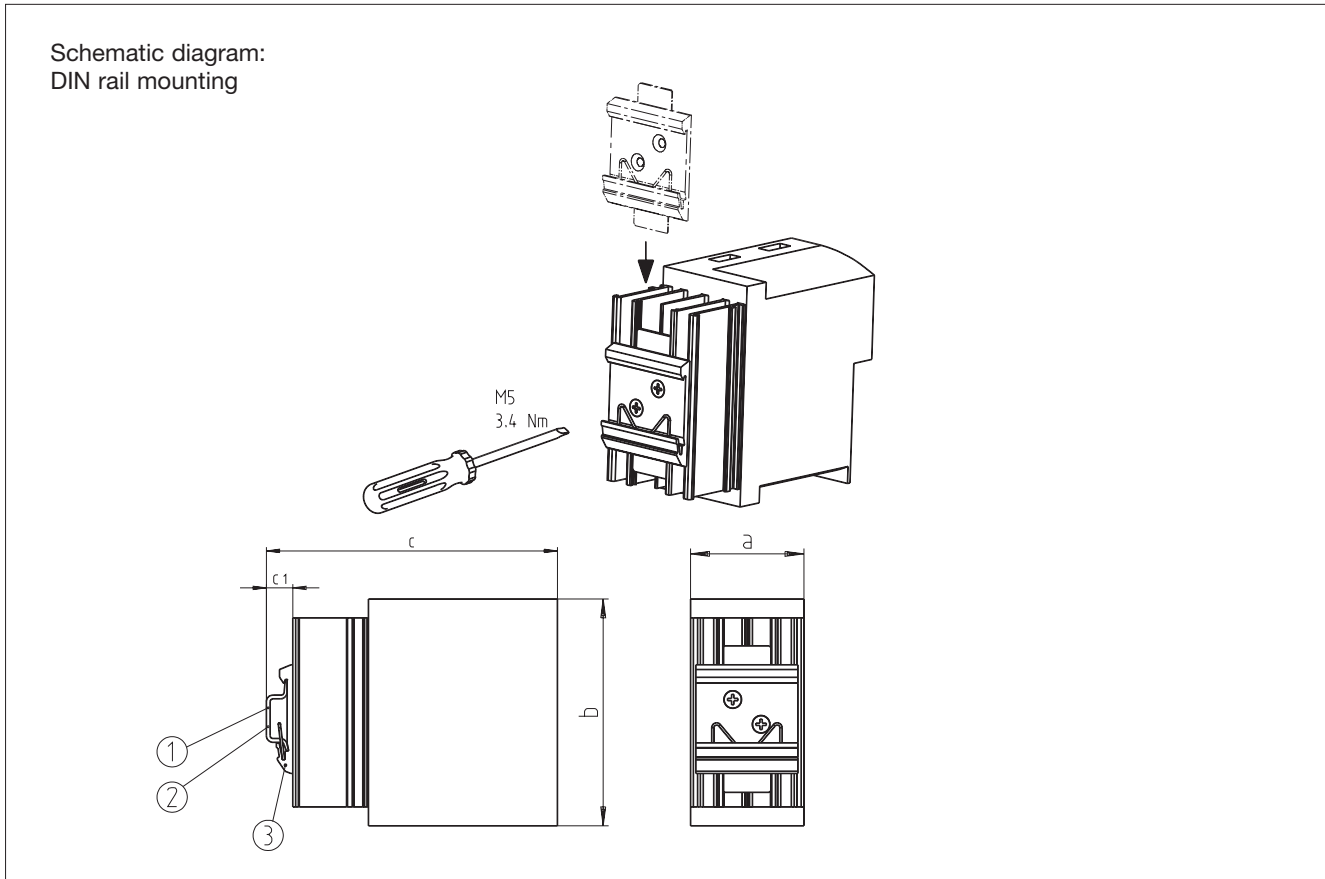
Base controllers

Dimensions and mounting

DIN rail mounting - 8200 vector 0.25 ... 2.2 kW

| | | |
|-------------------|------------|----------|
| DIN rail mounting | Order ref. | E82ZJ002 |
|-------------------|------------|----------|

8200 vector frequency inverters can be mounted on DIN rails using a special fixture (35 x 7.5 or 35 x 15) in accordance with EN 50022.



① DIN rail 35 x 15 or ② DIN rail 35 x 7.5 ③ DIN rail mounting

TIP: • The DIN rail fixture can be moved flexibly on the rear panel of the 8200 vector.

• 8200 vector 1.5/2.2 kW inverters (types E82EV152KxB/E82EV222KxB) can also be mounted on 2 DIN rails (2 x E82ZJ002 required)

| 8200 vector Type | Dimensions [mm] | | | | | | |
|----------------------------|-----------------|-----|-----|-----|----------------|----|--|
| | a | b | c | | c ₁ | | |
| | | | ① | ② | ① | ② | |
| E82EV251K2C E82EV371K2C | 60 | 120 | 158 | 151 | 18 | 11 | |
| E82EV551K2C E82EV751K2C | | 180 | | | | | |
| E82EV152K2C E82EV222K2C | | 240 | | | | | |
| E82EV551K4C E82EV751K4C | | 180 | | | | | |
| E82EV152K4C E82EV222K4C | | 240 | | | | | |

Note:

For installation according to EMC standard mounting is preferable to DIN rail mounting.

8200 vector in “cold plate” technology

8200 vector frequency inverters in “cold plate” technology (types E82CVxxxKxx) dissipate their waste heat (heat loss) via a cooler appropriate for the application (e.g. cumulative cooler). For this purpose the frequency inverters are equipped with a bare metal cooling plate in place of a heatsink. This is connected to a separate heatsink via a thermal link.

The use of “cold plate” technology is recommended if

- There are a lot of pollutants in the surrounding air preventing the use of external fans for cooling (e.g. control cabinet fans)
- The control cabinet selected must have a high IP degree of protection (e.g. IP 65)
- The waste heat is to be dissipated via a medium (e.g. water, oil)
- A cumulative cooler is to be incorporated for all of the frequency inverters
- Installation space is limited

Notes:

- The features, technical data and rating data shown on pages 2-4 apply; see mounting and dimensions on the following pages.
- The 8200 vector frequency inverter in “cold plate” technology is a special design. It is available on request.
- The 8200 vector frequency inverter in “cold plate” technology is supplied with integrated RFI filters up to 11 kW.
- All 8200 vector frequency inverters are approved in accordance with UL508C. However, devices in “cold plate” technology must be mounted by the user to ensure that the approved features are provided. Therefore these frequency inverters bear the UR mark (instead of the UL mark).



Cooler requirements

The power losses of the frequency inverters can be dissipated via coolers operating with various cooling media (air, water, oil etc.).

The following points are important to ensure safe and reliable operation of the frequency inverters:

- Good thermal connection to the cooler
 - The contact area between the cooler and the frequency inverter must be at least as large as the cooling plate of the frequency inverter.

- Level contact surface, deviations up to a maximum of 0.05 mm

- Connect the cooler and the cooling plate using all the screw connections prescribed.

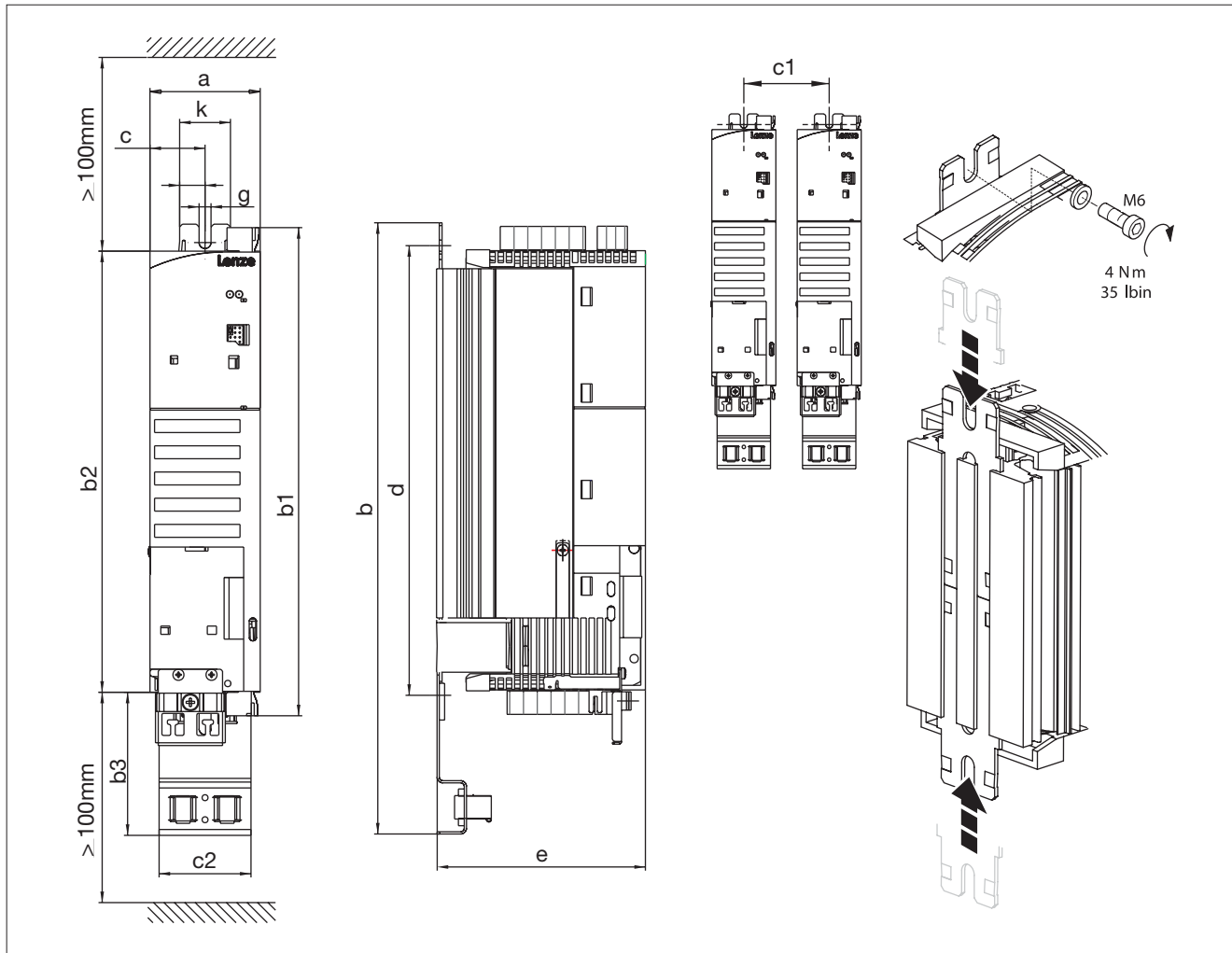
- Do not exceed the maximum temperature of the frequency inverter cooling plate (75°C) .
- Adhere to the thermal resistance R_{th} (transition between cooler and cooling medium) specified in the table. The values apply to the operation of the frequency inverters under the rated conditions.

| 8200 vector | | | Thermal resistor |
|----------------------|------------|--------------------------------------|------------------|
| Type ref./Order ref. | Power [kW] | Dissipated power loss P_{loss} [W] | R_{th} [K/W] |
| E82CV251K2C | 0.25 | 15 | ≤ 1.5 |
| E82CV371K2C | 0.37 | 20 | ≤ 1.5 |
| E82CV551K2C | 0.55 | 30 | ≤ 1.0 |
| E82CV751K2C | 0.75 | 40 | ≤ 1.0 |
| E82CV152K2C | 1.5 | 70 | ≤ 0.3 |
| E82CV222K2C | 2.2 | 100 | ≤ 0.3 |
| E82CV302K2C | 3.0 | 110 | ≤ 0.23 |
| E82CV402K2C | 4.0 | 150 | ≤ 0.23 |
| E82CV552K2C | 5.5 | 205 | ≤ 0.13 |
| E82CV752K2C | 7.5 | 270 | ≤ 0.13 |
| E82CV551K4C | 0.55 | 30 | ≤ 1.0 |
| E82CV751K4C | 0.75 | 40 | ≤ 1.0 |
| E82CV152K4C | 1.5 | 65 | ≤ 0.3 |
| E82CV222K4C | 2.2 | 100 | ≤ 0.3 |
| E82CV302K4C | 3.0 | 110 | ≤ 0.23 |
| E82CV402K4C | 4.0 | 140 | ≤ 0.23 |
| E82CV552K4C | 5.5 | 190 | ≤ 0.23 |
| E82CV752K4C | 7.5 | 255 | ≤ 0.13 |
| E82CV113K4C | 11.0 | 360 | ≤ 0.13 |
| E82CV153K4B201 | 15.0 | 410 | ≤ 0.085 |
| E82CV223K4B201 | 22.0 | 610 | ≤ 0.057 |

Technical data

The data for the corresponding E82EVxxx base controllers apply, see page 2-8.

Mounting the 8200 vector in "cold plate" technology 0.25 ... 2.2 kW

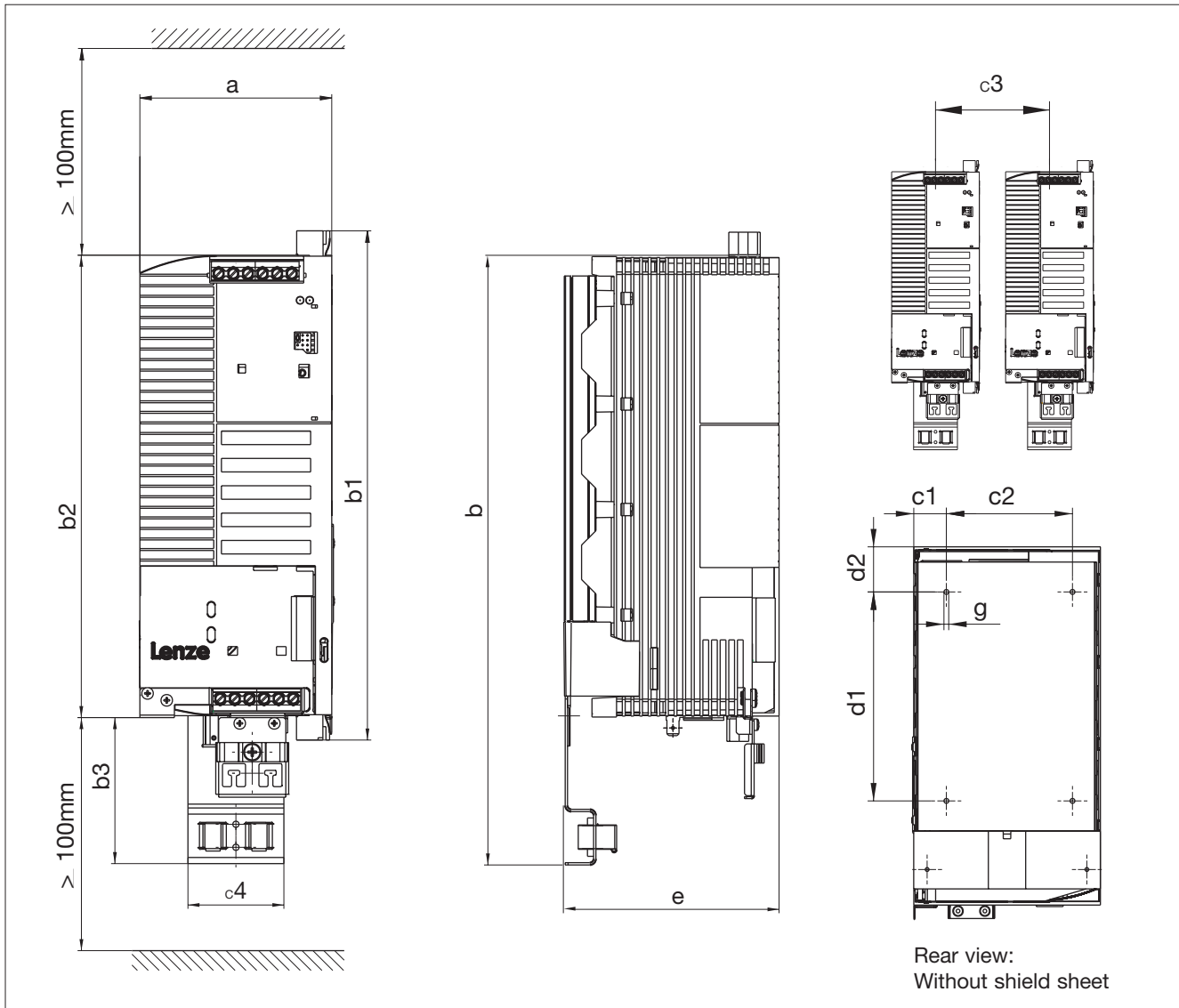


| 8200 vector | Dimensions [mm] | | | | | | | | | | | | |
|----------------------------|-----------------|-----|-----|-----|----|----|----|----|-----------|-----|-----|----|-------------|
| Type | a | b | b1 | b2 | b3 | c | c1 | c2 | d | e | g | k | Weight [kg] |
| E82CV251K2C E82CV371K2C | 60 | 213 | 148 | 129 | 78 | 30 | 63 | 50 | 130...140 | 106 | 6.5 | 28 | 0.6 |
| E82CV551KxC E82CV751KxC | | 273 | 208 | 180 | | | | | 190...200 | | | | 0.9 |
| E82CV152KxC E82CV222KxC | | 333 | 268 | 240 | | | | | 250...260 | | 6.5 | 28 | 1.1 |

Base controllers

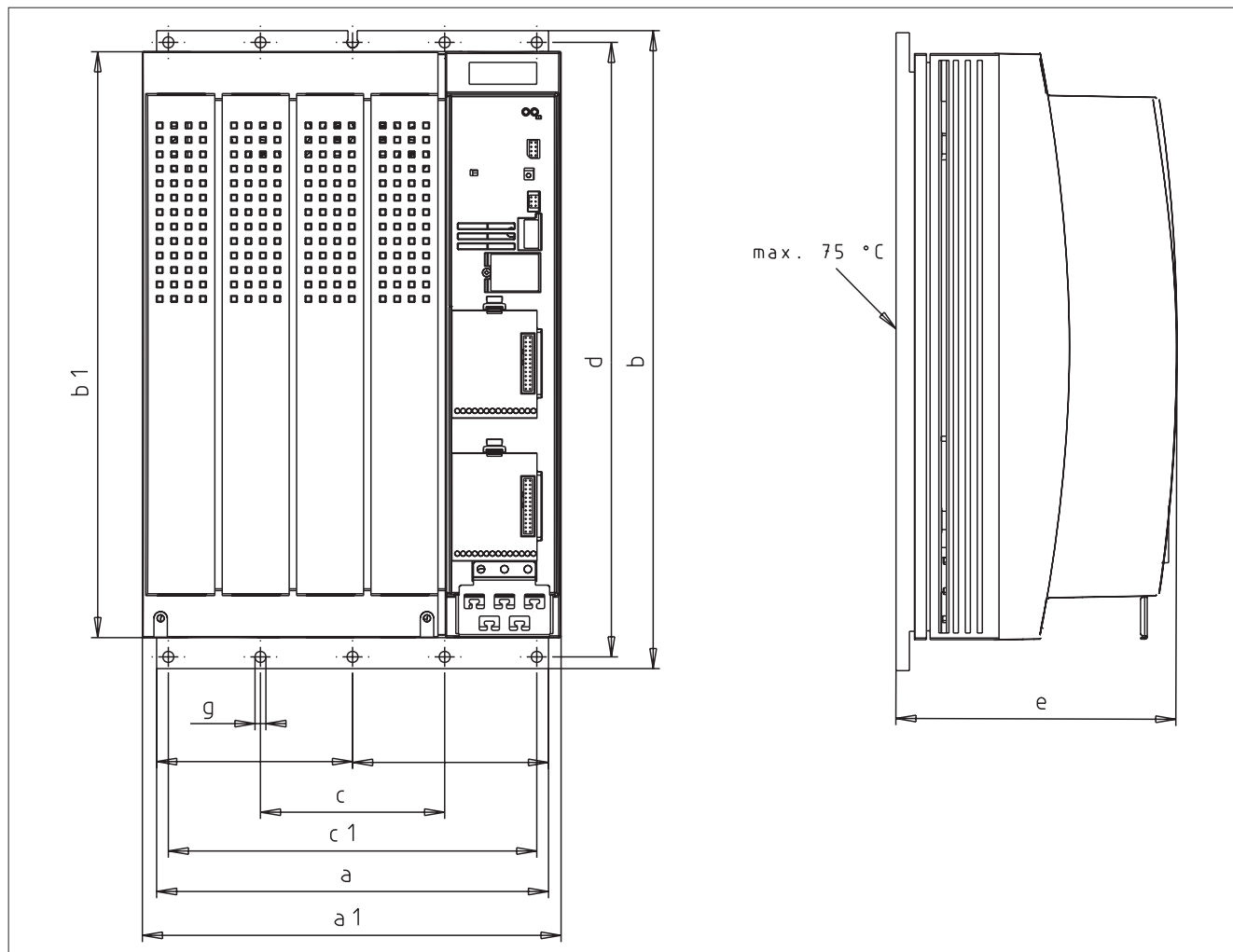
Special designs

Mounting the 8200 vector in "cold plate" technology 3 ... 11 kW



| 8200 vector | Dimensions [mm] | | | | | | | | | | | | |
|---|-----------------|-----|-----|-----|----|------|------|-----|----|-----|----|-----|---------------|
| Type | a | b | b1 | b2 | b3 | c1 | c2 | c3 | c4 | d1 | d2 | e | g |
| E82CV302K2C E82CV402K2C | 100 | 318 | 268 | 240 | 78 | 19 | 62.5 | 103 | 50 | 140 | 30 | 106 | M4 10 deep |
| E82CV552K2C E82CV752K2C | 22 | | | | | 84.5 | 128 | | | | | | |
| E82CV302K4C E82CV402K4C E82CV552K4C | 100 | | | | | 19 | 62.5 | 103 | | | | | |
| E82CV752K4C E82CV113K4C | 125 | | | | | 22 | 84.5 | 128 | | | | | |

Mounting the 8200 vector in "cold plate" technology 15 ... 22 kW



| 8200 vector | Dimensions [mm] | | | | | | | | |
|----------------------|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Type ref./Order ref. | a | a1 | b | b1 | c | c1 | d | e | g |
| E82CV153K4B | 234 | 250 | 381 | 350 | 110 | 220 | 367 | 171 | 6.5 |
| E82CV223K4B | 234 | 250 | 381 | 350 | 110 | 220 | 367 | 171 | 6.5 |

Push-through technology

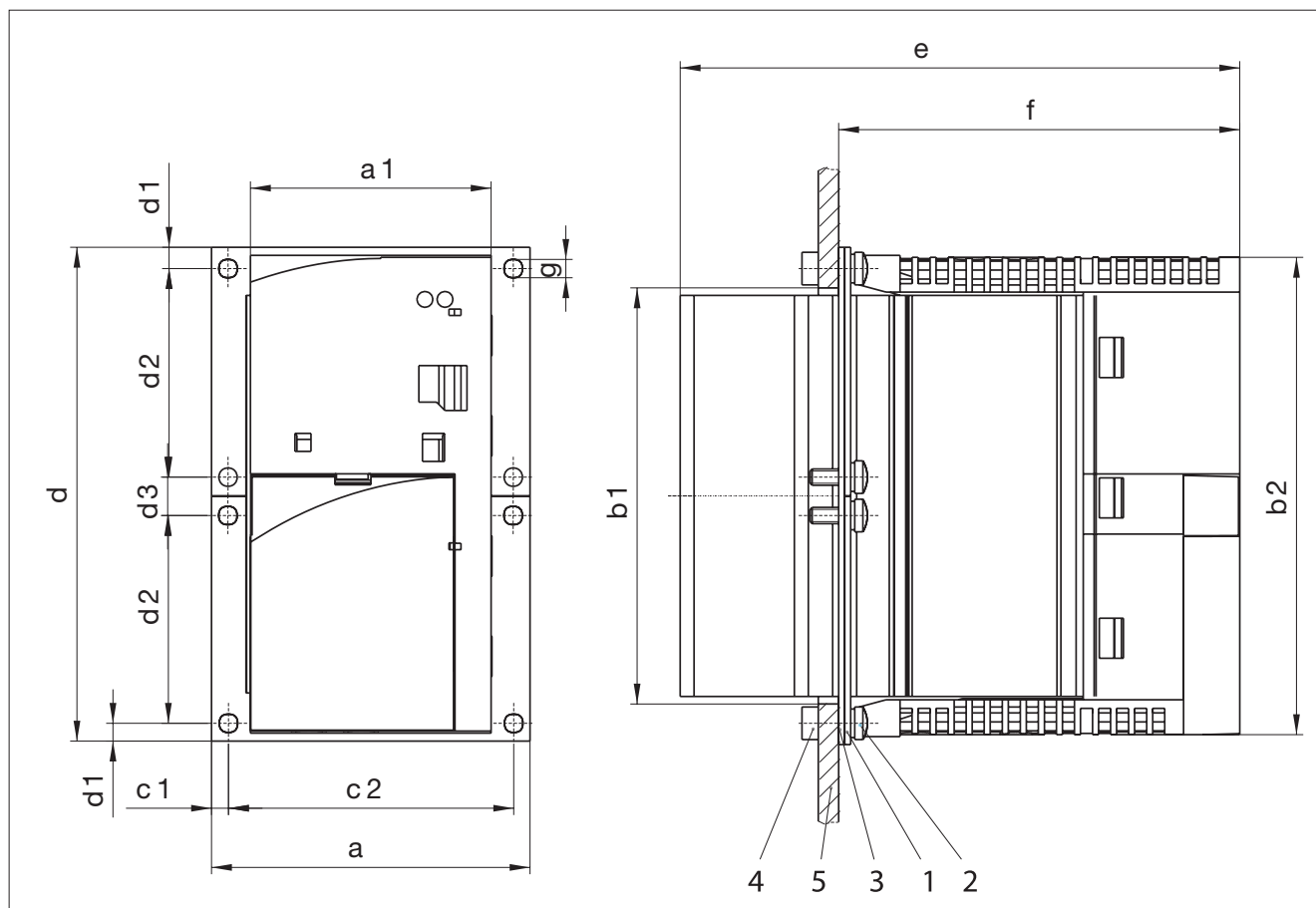
The “push-through technology” special design of the 8200 vector frequency inverter enables the waste heat in the control cabinet to be reduced. The frequency inverter is mounted in the control cabinet in such a way that the inverter heatsink is located outside the cabinet. This means that almost all the waste heat from the inverter can be dissipated outside the control cabinet by means of convection or forced cooling.

The “push-through technology” special design is particularly suitable for applications in which self-ventilation via the control cabinet surface is insufficient. The “push-through technology” special design enables air conditioners or fans with lower ratings to be used or, in some cases, to be left out altogether. Depending on the frequency inverter, degrees of protection up to IP65 can be achieved. This means that the inverters can be used in harsh industrial environments. The “push-through technology” special design is available in the power range from 0.25 to 90 kW. More detailed information can be found on the following pages.

Note: The 8200 vector frequency inverter in “push-through technology” is a special design. It is available on request.



Mounting the 8200 vector in "push-through technology" 0.25 ... 0.75 kW



- 1 Base frame
- 2 Screw M4x10
- 3 Seal
- 4 Hex nut M4
- 5 Back panel of control cabinet

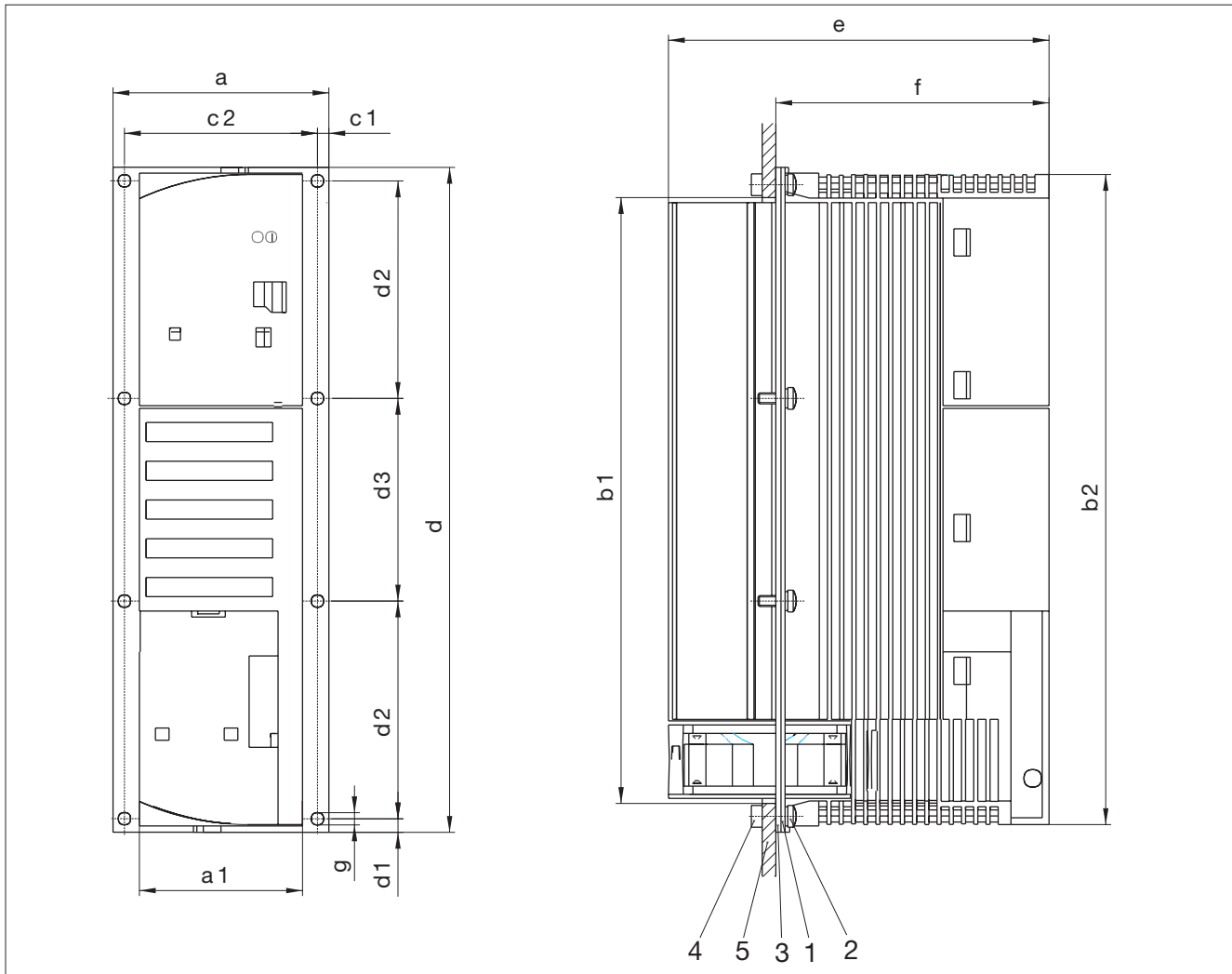
Schematic sketch: Representation without shield connection of motor and control cable.

| 8200 vector | Dimensions [mm] | | | | | | | | | | |
|----------------------|-----------------|-----|-----|-----|----|----|----|----|-----|-----|-----|
| Type ref./Order ref. | a | b | b2 | c1 | c2 | d1 | d2 | d3 | e | f | g |
| E82DV251K2C | 79.4 | 124 | 120 | 4.2 | 71 | 5 | 52 | 10 | 140 | 100 | 4.5 |
| E82DV371K2C | | 184 | 180 | | | | 82 | | | | |
| E82DV551K2C | | | | | | | | | | | |
| E82DV751K2C | | | | | | | | | | | |
| E82DV551K4C | | | | | | | | | | | |
| E82DV751K4C | | | | | | | | | | | |

Cut-out in the control cabinet

| 8200 vector | Dimensions [mm] | | |
|----------------------|-----------------|-----|--|
| Type ref./Order ref. | a1 | b1 | |
| E82DV251K2C | 61 | 101 | |
| E82DV371K2C | | 161 | |
| E82DV551K2C | | | |
| E82DV751K2C | | | |
| E82DV551K4C | | | |
| E82DV751K4C | | | |

Mounting the 8200 vector in "push-through technology" 1.5 ... 2.2 kW



- 1 Base frame
- 2 Screw M4x10
- 3 Seal
- 4 Hex nut M4
- 5 Back panel of control cabinet

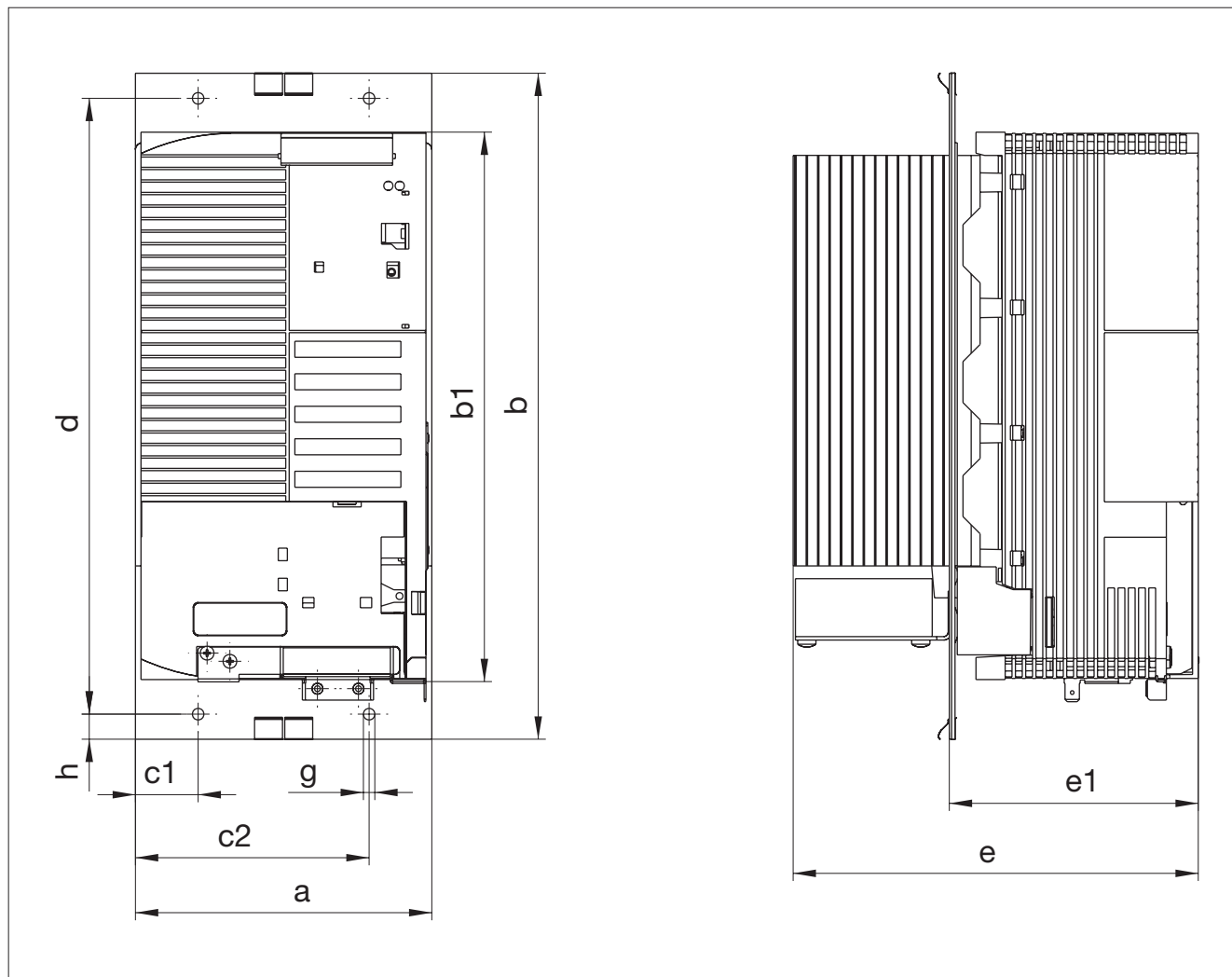
Schematic sketch: Representation without shield connection of motor and control cable.

| 8200 vector Type ref./Order ref. | Dimensions [mm] | | | | | | | | | | |
|-------------------------------------|-----------------|-------|-----|-----|----|----|----|------|-----|-----|-----|
| | a | b | b2 | c1 | c2 | d1 | d2 | d3 | e | f | g |
| E82DV152K2C | 79.4 | 244.5 | 240 | 4.2 | 71 | 5 | 80 | 74.5 | 140 | 100 | 4.5 |
| E82DV222K2C | | | | | | | | | | | |
| E82DV152K4C | | | | | | | | | | | |
| E82DV222K4C | | | | | | | | | | | |

Cut-out in the control cabinet

| 8200 vector Type ref./Order ref. | Dimensions [mm] | |
|-------------------------------------|-----------------|-----|
| | a1 | b1 |
| E82DV152K2C | 61 | 221 |
| E82DV222K2C | | |
| E82DV152K4C | | |
| E82DV222K4C | | |

Mounting the 8200 vector in "push-through technology" 3 ... 11 kW



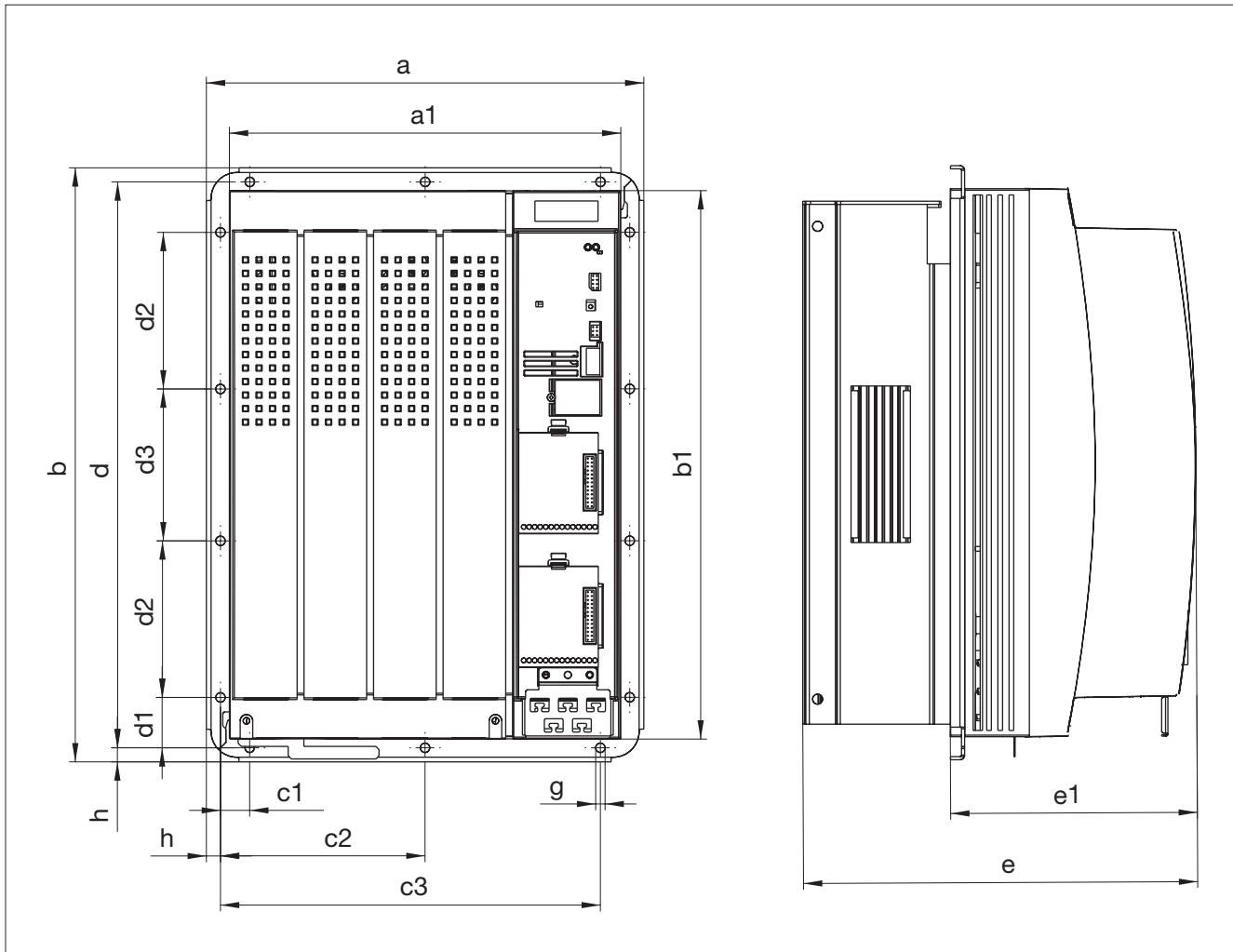
Schematic sketch: Representation without shield connection of motor and control cable.

| 8200 vector | Dimensions [mm] | | | | | | | | | |
|---|-----------------|-----|-----|------|-------|-----|-----|-------|---|----|
| Type ref./Order ref. | a | b | b1 | c1 | c2 | d | e | e1 | g | h |
| E82DV302K2C E82DV402K2C | 100 | 292 | 240 | 25 | 75 | 270 | 178 | 109,5 | 5 | 11 |
| E82DV552K2C E82DV752K2C | 130 | 292 | 240 | 27,5 | 102,5 | 270 | 178 | 109,5 | 5 | 11 |
| E82DV302K4C E82DV402K4C E82DV552K4C | 100 | 292 | 240 | 25 | 75 | 270 | 178 | 109,5 | 5 | 11 |
| E82DV752K4C E82DV113K4C | 130 | 292 | 240 | 27,5 | 102,5 | 270 | 178 | 109,5 | 5 | 11 |

Base controllers

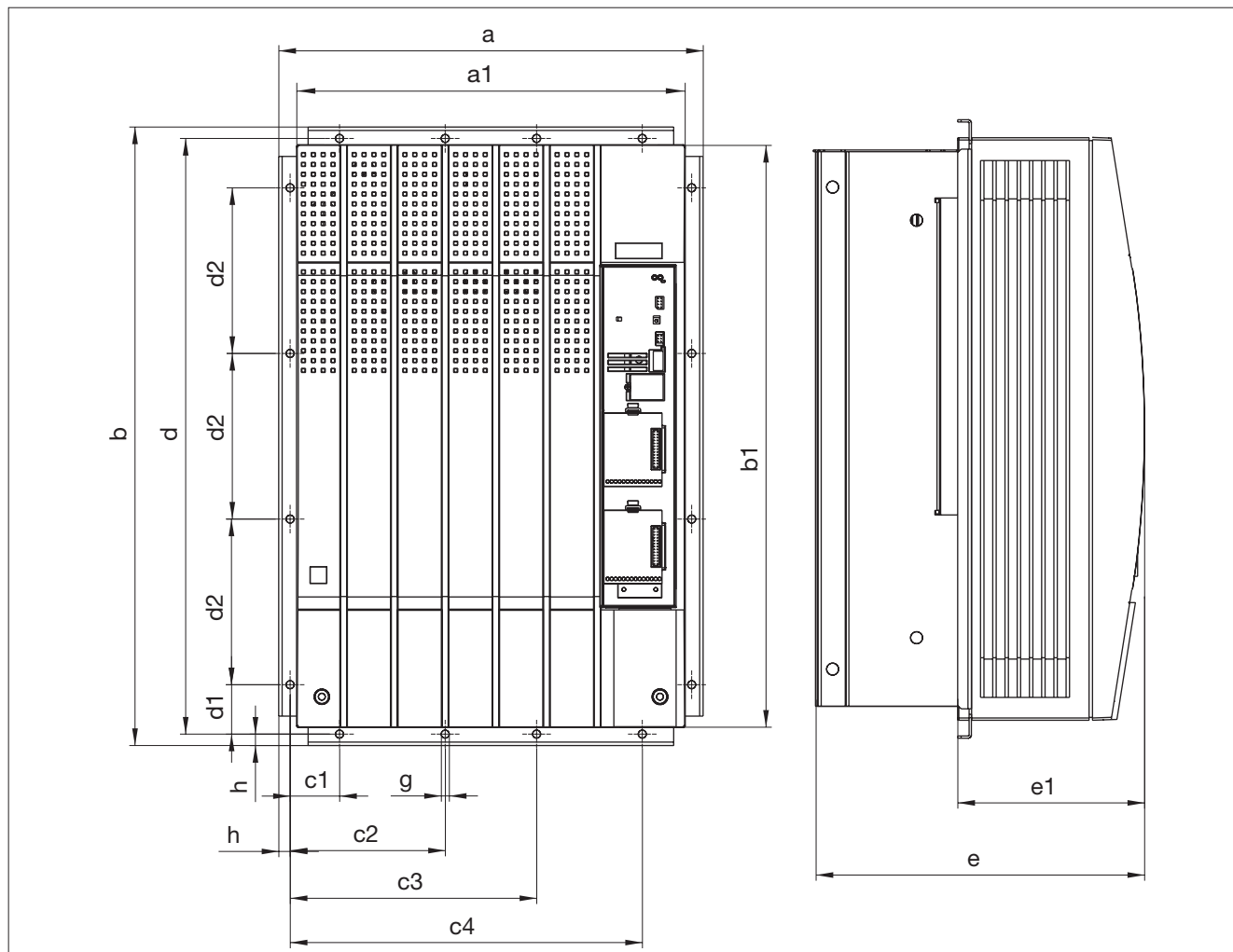
Special designs

Mounting the 8200 vector in "push-through technology" 15 ... 30 kW



| 8200 vector | Dimensions [mm] | | | | | | | | | | | | | | | |
|-------------|----------------------|-----|-------|-----|----|-----|-------|-------|----|-----|----|-----|-------|-----|---|---|
| | Type ref./Order ref. | a | a1 | b | b1 | c1 | c2 | c3 | d | d1 | d2 | d3 | e | e1 | g | h |
| E82DV153K4B | | | | | | | | | | | | | | | | |
| E82DV223K4B | | | | | | | | | | | | | | | | |
| E82DV303K4B | 279.5 | 250 | 379.5 | 350 | 19 | 131 | 261.5 | 361.5 | 32 | 100 | 97 | 250 | 159.5 | 4.2 | 9 | |

Mounting the 8200 vector in "push-through technology" 45 ... 90 kW



| 8200 vector | Dimensions [mm] | | | | | | | | | | | | | | |
|----------------------------|-----------------|-----|-----|-----|----|-------|-------|-----|-----|----|-----|-----|-------|---|----|
| Type ref./Order ref. | a | a1 | b | b1 | c1 | c2 | c3 | c4 | d | d1 | d2 | e | e1 | g | h |
| E82DV453K4B E82DV553K4B | 373 | 340 | 543 | 510 | 45 | 92.5 | 172.5 | 265 | 525 | 45 | 145 | 285 | 163.5 | 7 | 9 |
| E82DV753K4B E82DV903K4B | 488 | 450 | 718 | 680 | 49 | 172.5 | 295.5 | 419 | 698 | 49 | 200 | 285 | 163.5 | 9 | 10 |

Version for “safe stop” safety technology

The “safe stop” special version supports the “safe stop” safety function, providing protection against unexpected start-up in accordance with the requirements of EN 954-1 “Control Category 3” and EN 1037. The safety relay electrically isolates the voltage supply to the optocoupler for the purposes of pulse transmission to the IGBT. It must be activated externally with +24 V DC.

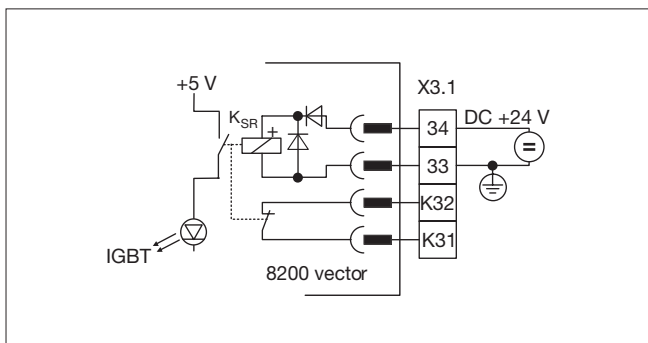
In comparison to the solution using a motor contactor, this variant offers the following advantages:

- An external motor contactor is not required
- Reduces wiring
- Space saving
- Improved EMC: The motor cable shield must not be interrupted

With the “safe stop” function, an “emergency stop” is not possible without additional measures:

- There is no electrical isolation between the motor and the drive controller and no “service switch” or “repair switch”
- Electrical isolation is required for an “emergency stop” e.g. by means of a central mains contactor

Note: The “safe standstill” 8200 vector frequency inverter is a special version. It is available on request.



| Terminal assignment | | Data | | |
|---------------------|---|------------------|------------------------------------|------------------------------------|
| 33 | Reference potential for the input Emergency stop | Safety relay | Coil voltage at +40°C | +24 V DC (+19.5...36 V) |
| 34 | Emergency stop input | | Current at 24 V DC | 30 mA |
| | | | Test voltage contact t_c coil | 1500 V AC _{rms} for 1 min |
| | | | Test voltage contact t_c contact | 1500 V AC _{rms} for 1 min |
| | | | Electr. service life at rated load | ~10 ⁷ operating cycles |
| | | | Mechanical service life | ~10 ⁷ operating cycles |
| K31 | Feedback contact | Feedback contact | Switching voltage | 24 V DC |
| K32 | | | Continuous current | 5...700 mA |

| 8200 vector | | |
|--------------------|-------------|------------|
| Type/Order ref. 1) | Voltage [V] | Power [kW] |
| E82EV302K4C040 | 3 ~ 400V | 3.0 |
| E82EV402K4C040 | | 4.0 |
| E82EV552K4C040 | | 5.5 |
| E82EV752K4C040 | | 7.5 |
| E82EV113K4C040 | | 11.0 |
| E82EV153K4B241 | | 15.0 |
| E82EV223K4B241 | | 22.0 |
| E82EV303K4B241 | | 30.0 |
| E82EV453K4B241 | | 45.0 |
| E82EV553K4B241 | | 55.0 |
| E82EV753K4B241 | | 75.0 |
| E82EV903K4B241 | | 90.0 |

¹⁾ The technical data corresponds to that for E82EVxxx inverters (see page 2-8).

Version for isolated supply systems (IT systems)

The “IT system” special version enables the 8200 vector frequency inverter to be connected to isolated supply systems. The frequency inverters are designed with electrical isolation. This prevents the activation of isolation monitoring, even if more than one frequency inverter has been installed.

The electric strength of the frequency inverters is thus increased, so that even in the event of an isolation fault or earth fault in the supply system, they will not be damaged. The operational safety of the system is not affected.

Note: The IT system version of the 8200 vector is a special version. It is available on request.

| 8200 vector | | |
|-------------------------------|-------------|------------|
| Type/Order ref. ¹⁾ | Voltage [V] | Power [kW] |
| E82EV153K4B101 | 3 ~ 400V | 15.0 |
| E82EV223K4B101 | | 22.0 |
| E82EV303K4B101 | | 30.0 |
| E82EV453K4B101 | | 45.0 |
| E82EV553K4B101 | | 55.0 |
| E82EV753K4B101 | | 75.0 |
| E82EV903K4B101 | | 90.0 |

¹⁾ The technical data corresponds to that for E82EVxxx inverters (see page 2-8).

The 9300 vector range of frequency inverters also offers frequency inverters for operation on IT systems in the power range from 0.25 ... 90 kW.



Automation | 8200 vector

| | |
|--|------|
| Overview | 3-2 |
| Diagnostics and parameterisation | 3-6 |
| Keypad XT – Operating module | 3-6 |
| Parameterisation software Global Drive Control (GDC) | 3-8 |
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| Standard I/O PT (terminal module) | 3-10 |
| Application I/O PT (terminal module with additional functions) | 3-12 |
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Function and communication modules

Lenze can provide a wide range of components for integration into the automation of the machine or system. The function modules and communication modules enable the inverter to be adapted according to the specific requirements of the application in terms of the number of digital and analog inputs and outputs and in terms of interfacing with the fieldbus. The inverter has two interfaces, one of which can be fitted with a communication module and the other with a function module. The possible combinations of function and communication modules are listed in the table below. An additional interface for another function module is available in the power range from 15.0...90 kW. In this way, for example, the frequency inverter can be operated in parallel during simultaneous bus and I/O operation. This makes start-up and diagnostics easier, particularly in complex applications (fieldbus operation and I/O mixed operation).

Communication module, e.g.

- Keypad
- LECOM-AB (RS232/485)
- LECOM-LI (optical fibres)
- PROFIBUS-DP
- LON
- CAN
- CANopen
- DeviceNet
- INTERBUS
- INTERBUS Loop

Function module, e.g.

- Standard I/O PT
- Application I/O PT
- LECOM-B PT (RS485)
- PROFIBUS-DP PT
- CAN PT (system bus)
- CAN I/O PT (system bus)
- INTERBUS PT
- AS-Interface PT



8200 vector 0,25...11 kW



8200 vector 15...90 kW

Communication module, e.g.

Slot 1:

- Keypad
- LECOM-AB (RS232/485)
- LECOM-LI (optical fibres)
- PROFIBUS-DP
- LON
- CAN
- CANopen
- DeviceNet
- INTERBUS
- INTERBUS Loop

Function module, e.g.

Slot 2:

- LECOM-B PT (RS485)
- PROFIBUS-DP PT
- CAN PT (system bus)
- CAN I/O PT (system bus)
- INTERBUS PT
- Application I/O PT

Function module, e.g.

Slot 3:

- Standard I/O PT ¹⁾
- AS-Interface PT ¹⁾

¹⁾ Can also be used in slot 2, if slot 3 is not in use.

Combination options for function modules and communication modules

| | Communi- cation modules | Keypad Keypad XT | LECOM -AB, -LI | LECOM-A | INTERBUS, INTERBUS Loop | PROFIBUS- DP | CAN | CanOpen / DeviceNet | LON |
|-----------------------------|-------------------------------|---------------------|----------------------------|--------------|-------------------------------|-----------------|--------------|------------------------|------|
| Function modules | Best.-Nr. | E82ZBC EMZ9371BC | 2102 V001, V002 V003 | 2102 V0x4 | 2111 2112 2113 | 2133 | 2171 2172 | 2175 | 2141 |
| Standard I/O | E82ZAFSCxxx | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Application I/O | E82ZAFACxxx | ✓ | ○ | ✓ | ○ | ○ | ○ | ○ | ○ |
| INTERBUS | E82ZAFICxxx | ✓ | ✓ | ✓ | ☒ | ☒ | ☒ | ☒ | ☒ |
| PROFIBUS- DP | E82ZAFPCxxx | ✓ | ✓ | ✓ | ☒ | ☒ | ☒ | ☒ | ☒ |
| LECOM-B (RS485) | E82ZAFLCxxx | ✓ | ✓ | ✓ | ☒ | ☒ | ☒ | ☒ | ☒ |
| System bus (CAN) | E82ZAFCC0xx | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| System bus I/O | E82ZAFCC2xx | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ASI | E82ZAFFCxxx | ✓ | ✓ | ✓ | ☒ | ☒ | ☒ | ☒ | ☒ |

- ✓ Combination possible
- Combination possible; AIF module must have an external supply
- ☒ Combination not possible

All communication modules can be combined with the 9300 vector range of drives and with the DrivePLC. Function modules (with screw terminal) can be used in conjunction with the 8200 motec and starttec.

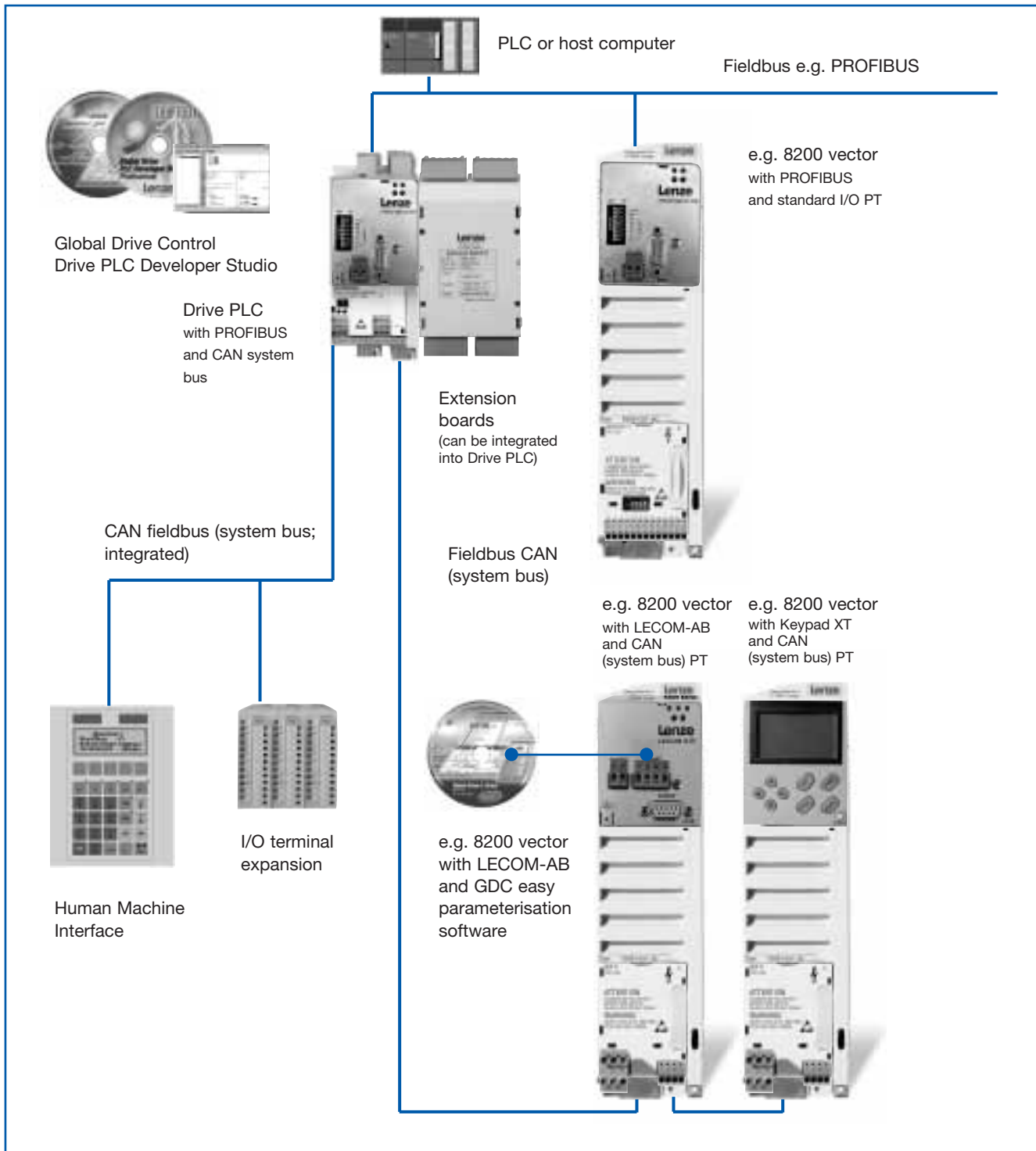
The keypad XT and Global Drive Control easy (GDC easy) PC software, which simplify and speed up the operation of the inverter by means of a simple menu structure and assisted dialogue boxes, are available for parameterisation and diagnostics.

Automation components

Bus-compatible displays (HMI) which can be integrated into the control cabinet are available in various sizes for the visualisation of inverter parameters and process data. The Drive PLC is a freely programmable PLC (EN 61131-3) which can be used in conjunction with the frequency inverter to implement distributed control tasks. Extension boards can be used to expand the Drive PLC

input and output terminals. The range is completed by bus-compatible, freely programmable I/O terminals, which are used for interfacing sensors and actuators with the bus.

The 8200 vector in networked systems



The following combinations are possible in order to be able to implement the various requirements:

Fieldbus combination

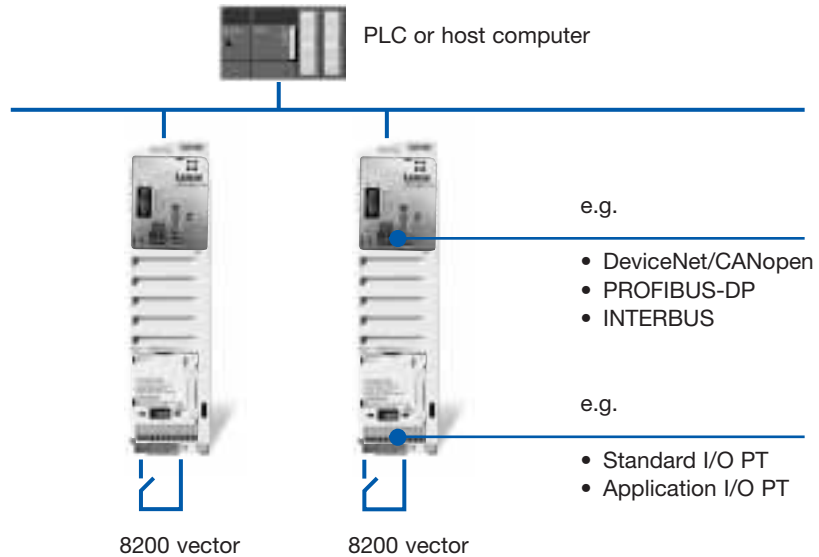
– During open-loop and closed-loop control via digital and analog I/O

– Whilst the drive controller is being parameterised/ diagnosed

– With a single drive controller whilst Another is being parameterised by the same host controller => remote parameterisation

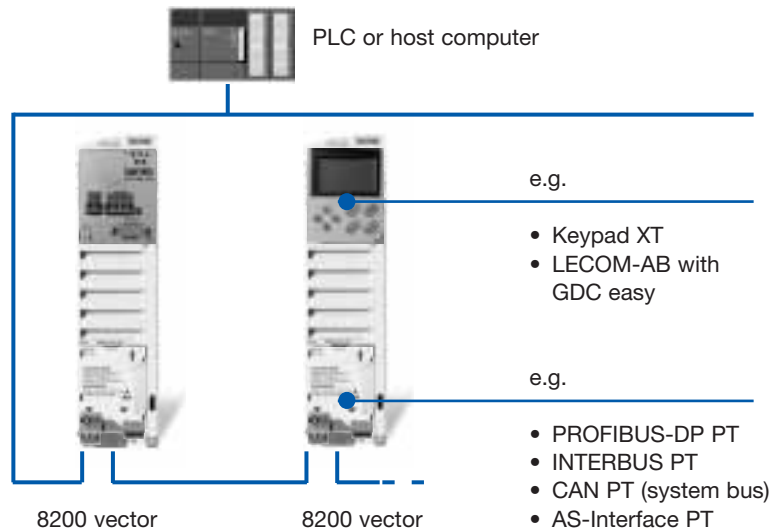
1.

Networking via fieldbus and open-loop/closed-loop control with digital and analog inputs and outputs



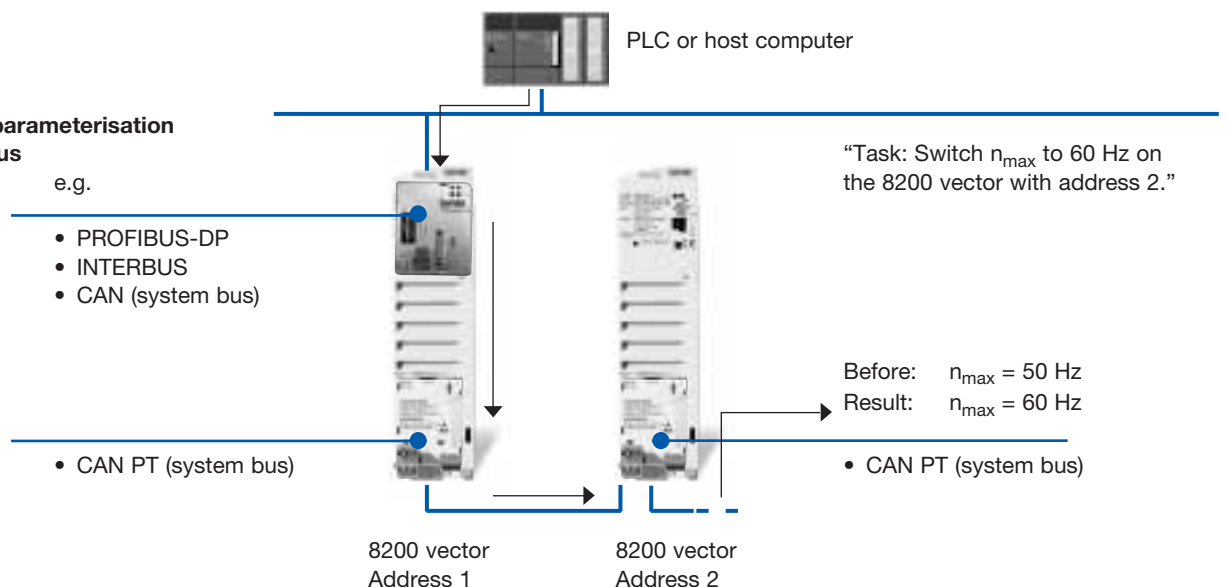
2.

Parameterisation and diagnostics during fieldbus operation



3.

Remote parameterisation via fieldbus

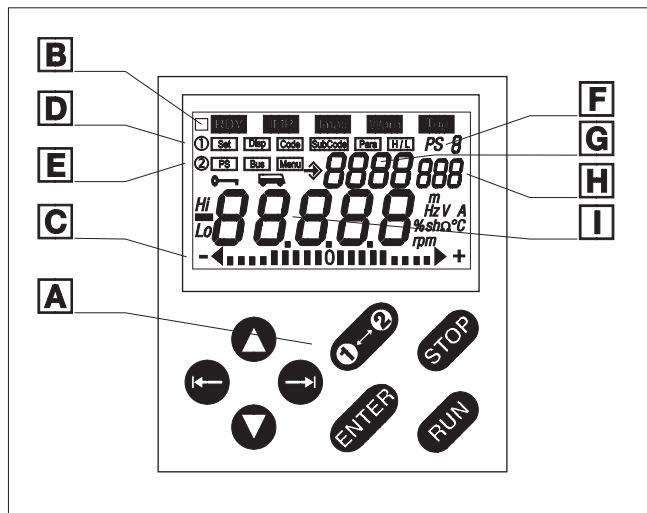
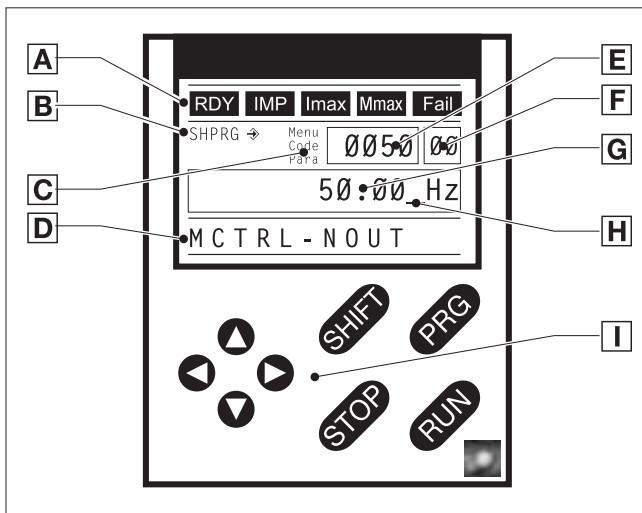


Keypad XT – Operating module

| | | |
|------------------|-------------------|------------------|
| Keypad XT | Order ref. | EMZ9371BC |
| Keypad | Order ref. | E82ZBC |

The keypad XT is available for visualising operating parameters and parameter settings for the inverter. 8 keys and a text display provide quick and easy access to the inverter parameters via the transparent menu structure. The keypad XT is also used for the purposes of status display and error diagnostics. In addition, its built-in memory can be used to transfer parameters to other inverters. The keypad XT can also be used on devices

from the 9300 vector, 9300 servo and Drive PLC ranges, as well as on 8200 motec motor inverters (via hand terminals). The keypad is suitable for installation in the control cabinet. The differences between the keypad XT and keypad are listed in the “Features” overview.



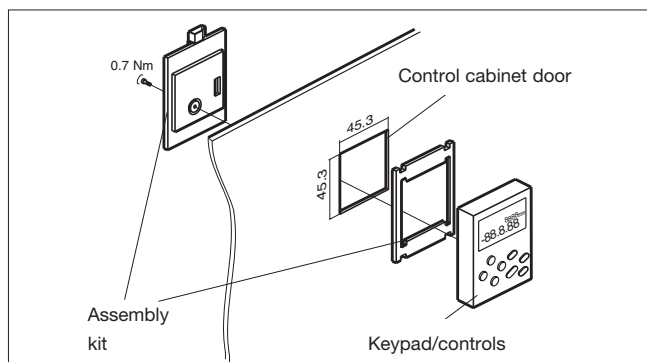
Keypad XT

- A Status displays
- B Transfer parameters
- C Active level
- D Help text
- E Menu or code number
- F Menu or subcode number
- G Parameters
- H Cursor
- I Function keys

Keypad

- A Function keys
- B Status displays
- C Bar graph display
- D Function bar 1
- E Function bar 2
- F Parameters for change
- G Code number
- H Subcode number
- I Parameter value with unit

Dimensions of control cabinet assembly kit (Keypad only)



Product features

| | Keypad XT | Keypad |
|---|---|-----------------------------------|
| Plain text display | Yes | No |
| Menu structure | Yes | No |
| Predefined basic configurations | Yes | No |
| Text display | Yes | Yes |
| Control keys | 8 | 8 |
| Non-volatile storage for parameter transfer | Yes | Yes |
| Password protection | Yes | Yes |
| Control cabinet installation | No | Yes |
| Configurable menu (user menu) | Yes | Yes |
| Application-specific menus | Yes | No |
| “Quick start-up” menu | Yes | No |
| Can be used with | 8200 vector, 8200 motec, Drive PLC, 9300 vector, 9300 servo | 8200 vector, 8200 motec, starttec |
| Hand terminal | Yes | Yes |
| Degree of protection | IP 20 | IP 55 |



To facilitate handling, a connecting cable can be used to plug the keypad into a hand-held device so that it can be used as a hand terminal.

Hand terminal
(handheld keypad and connecting cable)

| Selection | Order ref. |
|--|------------|
| Hand terminal (complete with keypad XT, IP 20) | E82ZBBXC |
| Hand terminal (complete with keypad, IP 55) | E82ZBB |
| Control cabinet installation kit ²⁾ | E82ZBHT |
| 2.5 m connecting cable ¹⁾ | E82ZWL025 |
| 5 m connecting cable ¹⁾ | E82ZWL050 |
| 10 m connecting cable ¹⁾ | E82ZWL100 |

¹⁾ The connecting cable is required to connect the hand terminal or control cabinet installation kit with the 8200 vector.

²⁾ The additional control cabinet installation kit is required if the keypad (only E82ZBC version) is to be installed in the door of the control cabinet. (keypad in IP 55 protection)

Global Drive Control – GDC easy parameterisation software

| GDC easy | Order ref. | ESP-GDC2-E |
|----------|------------|------------|
| GDC | Order ref. | ESP-GDC2 |

The Global Drive Control easy software tool is an easy to understand and convenient tool for the operation, parameter setting and diagnostics of 8200/8200 vector range frequency inverters.

Essential features include:

- Dialogue-assisted operation
- Monitor window for displaying operating parameters and diagnostics
- Extensive help functions
- Loading and saving parameter files from and to the inverter
- Saving and printing out parameter settings as code lists

Global Drive Control can for example be downloaded from the Internet at www.Lenze.com.

It offers the following advantages:

- Easy as possible, intuitive operation
- Even suitable for beginners
(no program knowledge required)

Global Drive Control – GDC easy parameterisation software



Global Drive Control incorporates all of the functions described here. You can also use the Global Drive Control **easy** software if you simply wish to set the parameters of the frequency inverter:

| Product feature | GDC easy | GDC |
|--------------------------------------|-------------------|-----------------|
| Quick start-up: | | |
| 8200 | ✓ | ✓ |
| 8200 vector/motec | ✓ | ✓ |
| 9300 vector | | ✓ |
| 9300 servo | | ✓ |
| Technology functions ¹⁾ | | ✓ |
| Code lists | ✓ | ✓ |
| Monitor windows | ✓ | ✓ |
| Function block editor | | ✓ |
| Oscilloscope functions ²⁾ | | ✓ |
| Order number: | ESP-GDC2-E | ESP-GDC2 |

¹⁾ For 9300 servo product series

²⁾ For 9300 product series

Systems requirements of GDC (easy)

Hardware:

- IBM-AT or compatible PC
- CPU
 - Pentium 90 or higher
- RAM
 - 64 MB
- At least 120 MB of free hard disk space
- Super VGA graphic card
- CD-ROM drive
- A free serial interface for RS232 or a free parallel interface for the system bus adapter (CAN)

Software:

Windows 95/98/Me/NT 4.0/2000/XP

Standard I/O PT

| | | |
|------------------------|-------------------|--------------------|
| Standard I/O PT | Order ref. | E82ZAFSC010 |
| Standard I/O | Order ref. | E82ZAFSC |

The function module provides the inverter with digital input and outputs for standard applications.

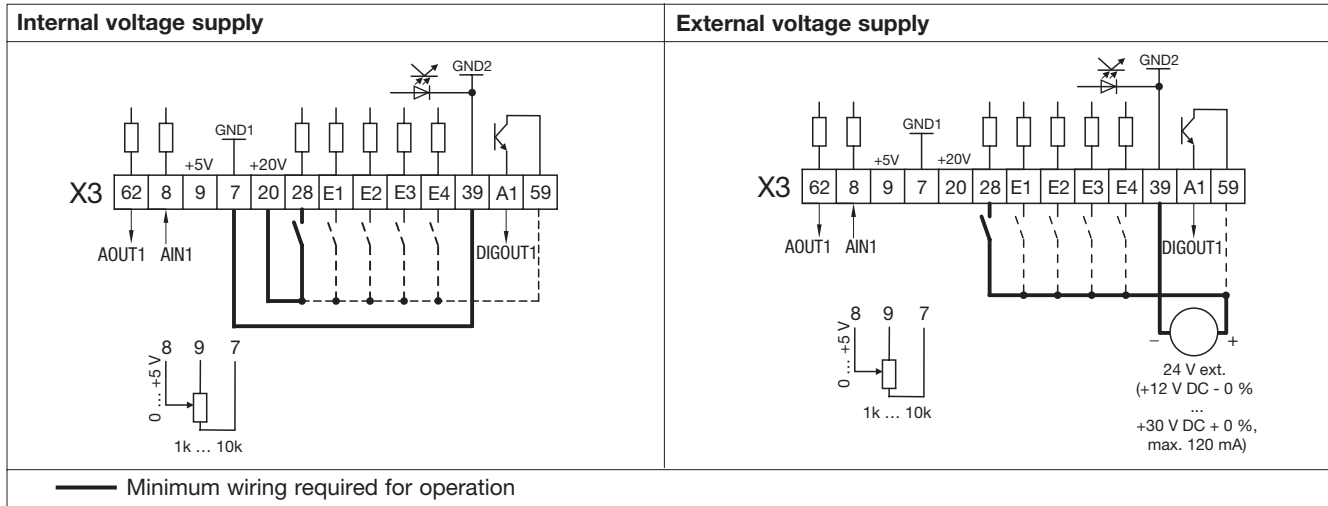
A plug-in spring-clamp terminal (PT version) provides easy and quick wiring of cable cross-sections up to 1.5 mm² without wire end ferrule. Due to the plugged-on spring-clamp terminal strip, the function module juts out approx. 13 mm of the front panel of the frequency inverter. The module is also available in a basic version without plug-in terminal.

Available input and output terminals

| Analog IN | Analog OUT | Digital IN | Digital OUT |
|-----------|------------|-----------------|-------------|
| 1 | 1 | 4 ¹⁾ | 1 |

¹⁾ Can include 1 frequency input (0...10 kHz, single-track or two-track via E1 and E2, 8200 vector 82xVxxxKxBxxxXXxx2x or later)





Terminal assignment



Standard I/O PT

| X3 | Signal type | Function (bold = Lenze setting) | Level | Technical data | | |
|-------|--|--|--|---|----|----|
| 8 | Analog input | Actual or setpoint value input | 0 ... +5 V 0 ... +10 V -10 V... +10 V 0 ... +20 mA +4 ... +20 mA +4 ... +20 mA (monitored for open circuit) | Resolution: 10-bit Linearity error: ±0.5% Temp. sensitivity: 0.3% (0 ... +60°C) Input resistance – Voltage signal: > 50 kΩ – Current signal: 250 Ω | | |
| 62 | Analog output | Output frequency | 0... +10 V | Resolution: 10-bit Linearity error: ±0.5% Temp. sensitivity: 0.3% (0 ... +60°C) Load capacity: max. 2 mA | | |
| 28 | | Controller inhibit | 1 = START | Input resistance: 3.3 kΩ 1 = HIGH (+12...+30 V) 0 = LOW (0...+3 V) (PLC level, HTL) | | |
| E1 1) | Digital inputs | Activation of fixed frequencies (JOG) | | | E1 | E2 |
| E2 1) | | JOG1 = 20 Hz | JOG1 | | 1 | 0 |
| | | JOG2 = 30 Hz | JOG2 | | 0 | 1 |
| | | JOG3 = 40 Hz | JOG3 | | 1 | 1 |
| E3 | | DC brake (DCB) | 1 = DCB active | | | |
| E4 | Reversal of direction of rotation Clock./counter-clock. rotation (CW/CCW) | | E4 | | | |
| | | CW | 0 | | | |
| | | CCW | 1 | | | |
| A1 | Digital output | Ready for operation | 0/+20 V with internal DC 0/+24 V with external DC | Load capacity: 10 mA 50 mA | | |
| 9 | – | Internal, stabilised DC supply for setpoint value potentiometer | +5.2 V (reference: X3/7) | Load capacity: max. 10 mA | | |
| 20 | – | Internal DC supply for actuation of the digital inputs and outputs | +20 V ±10% (reference: X3/7) | Max. load capacity: ∑ I = 40 mA | | |
| 59 | – | DC supply for A1 | +20 V (internal, bridge to X3/20) +24 V (external) | | | |
| 7 | – | GND1, reference potential for analog signals | – | Isolated to GND2 | | |
| 39 | – | GND2, reference potential for digital signals | – | Isolated to GND1 | | |

1) Optional 0...10 kHz single-track (via E1) or 0...1 kHz two-track frequency input (via E1 and E2) 8200 vector E82xVxxxKxxxxXxx2x or later

| | | |
|--|---|--------------------------------------|
| Electrical connection | Push-on terminal strip with spring-clamp connection | |
| Connection options |  Rigid: 1.5 mm ² (AWG 16) | |
| | Flexible: | |
| |  1.5 mm ² (AWG 16) | without ferrules |
| |  1.5 mm ² (AWG 16) | with ferrules without plastic sleeve |
|  0.5 mm ² (AWG 20) | with ferrules with plastic sleeve | |

Application I/O PT

| | | |
|---------------------------|-------------------|--------------------|
| Application I/O PT | Order ref. | E82ZAFAC010 |
| Application I/O | Order ref. | E82ZAFAC |

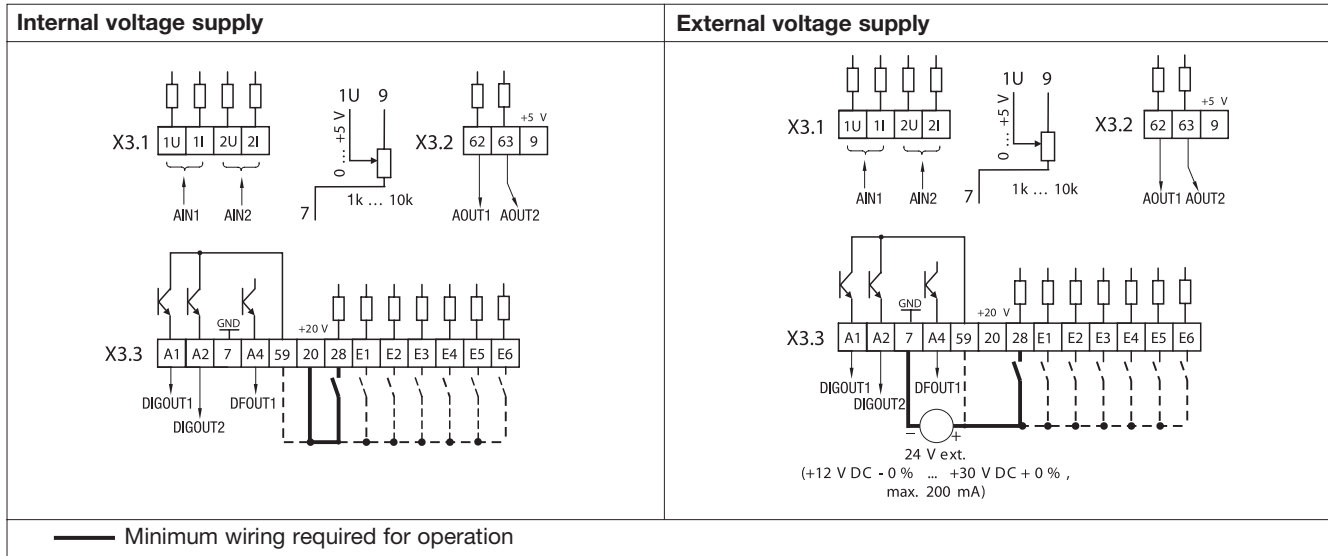
The function module provides the inverter with digital input and outputs for complex applications. A plug-in spring-clamp terminal (PT version) enables cable cross-sections of up to 1.5 mm² to be connected quickly and easily without the need for ferrules. Due to the plugged-on spring-clamp terminal strip, the function module juts out approx. 13 mm of the front panel of the frequency inverter. The module is also available in a basic version without plug-in terminal.

Available input and output terminals

| Analog IN | Analog OUT | Digital IN | Digital OUT | Frequenz OUT |
|-----------|------------|-----------------|-------------|--------------|
| 2 | 2 | 6 ¹⁾ | 2 | 1 |

¹⁾ Can include 1 frequency input (0...102.4 kHz, single-track or two-track)





Terminal assignment



Application I/O PT

| X3 | Signal type | Function (bold = Lenze setting) | Level | Technical data | | |
|------------------|------------------|--|---|--|----|---|
| 1U/ 2U | Analog inputs | Actual or setpoint value inputs (master reference voltage) | 0 ... +5 V 0 ... +10 V -10 V... +10 V | Resolution: 10-bit Linearity error: ±0.5% | | |
| 1I/2I | | Actual or setpoint value inputs (master reference current) | 0 ... +20 mA +4 ... +20 mA +4 ... +20 mA (monitored for open circuit) | Input resistance – Voltage signal: > 50 kΩ – Current signal: 250 Ω | | |
| 62 | Analog outputs | Output frequency | 0... +10 V 0 ... +20 mA +4 ... +20 mA | Resolution: 10-bit Linearity error: ±0.5% Temp. sensitivity: 0.6% (0 ... +60°C) | | |
| 63 | | Motor current | | Load capacity: (0...+10 V): max. 2 mA RL (0/4...20 mA) ≤ 500 Ω | | |
| 28 | | Controller inhibit | 1 = START | | | |
| E1 ¹⁾ | Digital inputs | Activation of fixed frequencies (JOG) | | Input resistance: 3.2 kΩ 1 = HIGH (+12...+30 V) 0 = LOW (0...+3 V) (PLC level, HTL) | | |
| E2 ¹⁾ | | JOG1 = 20 Hz | JOG1 | | 1 | 0 |
| | | JOG2 = 30 Hz | JOG2 | | 0 | 1 |
| | | JOG3 = 40 Hz | JOG3 | | 1 | 1 |
| E3 | | DC brake (DCB) | 1 = DCB active | | | |
| E4 | | Reversal of direction of rotation Clock./counter-clock. rotation (CW/CCW) | | | E4 | |
| | | CW | 0 | | | |
| | | CCW | 1 | | | |
| E5 | | Not pre-configured | – | | | |
| E6 | | Not pre-configured | – | | | |
| A1 | Digital outputs | Ready for operation | | | | |
| A2 | | Not pre-configured | 0/+20 V with internal DC 0/+24 V with external DC | | | |
| A4 | Frequency output | DC bus voltage | HIGH: +18 V... +24 V (HTL) LOW: 0 V | 0.05 kHz...10 kHz Load capacity: max. 8 mA | | |
| 9 | – | Internal, stabilised DC supply for setpoint value potentiometer | +5.2 V | Load capacity: max. 5 mA | | |
| 20 | – | Internal DC supply for actuation of the digital inputs and outputs | +20 V ±10% | Load capacity: max. 60 mA | | |
| 59 | – | DC supply for X3/A1 and X3/A2 | +20 V (internal, bridge to X3/20) +24 V (external) | | | |
| 7 | – | GND, reference potential | – | | | |

¹⁾ Optional 0...102.4 kHz frequency input, single-track or two-track

| | | |
|------------------------------|---|---|
| Electrical connection | Push-on terminal strip with spring-clamp connection | |
| Connection options |  | Rigid: 1.5 mm ² (AWG 16) |
| | | Flexible: |
| |  | 1.5 mm ² (AWG 16) without ferrules |
| |  | 1.5 mm ² (AWG 16) with ferrules without plastic sleeve |
| |  | 0.5 mm ² (AWG 20) with ferrules with plastic sleeve |

Tip:

Lenze three-phase AC motors and Lenze geared motors can be supplied with the Lenze pulse encoder ITD21 (512/2048 increments, HTL output signals). This enables two-track rotational speed feedback (tracks A and B) to be set up for the application I/O function module.

CAN PT (system bus)

| | | |
|----------------------------|-------------------|--------------------|
| CAN PT (system bus) | Order ref. | E82ZAFCC010 |
| CAN (system bus) | Order ref. | E82ZAFCC |

The CAN (system bus) function module can be used to interface the 8200 vector with the CAN (Controller Area Network) serial communication system. Plug-in spring-clamp terminals enable cable cross-sections of up to 1.5 mm² to be connected quickly and easily without the need for ferrules. Due to the plugged-on spring-clamp terminal strip, the function module juts out approx. 15 mm of the front panel of the frequency inverter. For the purposes of simple diagnostics, dual screw terminals can be used to interrupt communication with the frequency inverter without affecting the bus operation of other devices. The module is also available in a basic version without plug-in terminal.

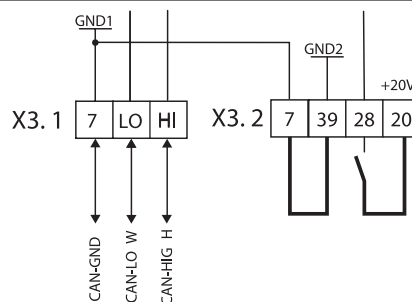
The function module enables the 8200 vector to perform additional functions, including:

- Parameter preselection/remote parameter setting
- Data transfer between inverters
- Connection to external control systems (e.g. drive PLC) and host systems
- Optional connection to
 - distributed terminal extensions (see also page 3-42)
 - keypads

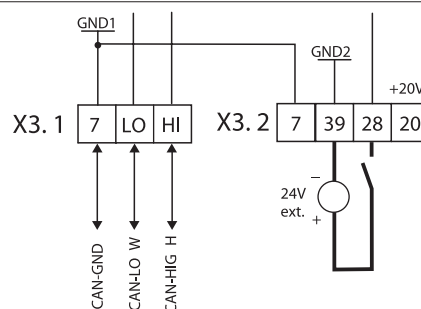
Terminal assignment

| X3.1/ | Name | Function |
|--------------|----------|--|
| 7 | GND1 | Reference potential 1 |
| LO | CAN-LOW | System bus LOW (data cable) |
| HI | CAN-HIGH | System bus HIGH (data cable) |
| X3.2/ | | |
| 7 | GND1 | Reference potential 1 |
| 39 | GND2 | Reference potential 2 for controller inhibit (CINH) at X3.2/28 |
| 28 | CINH | Controller inhibit <ul style="list-style-type: none"> • Start = HIGH (+12 V...+30 V) • Stop = LOW (0 V ... +3 V) |
| 20 | | DC voltage source for internal supply for controller inhibit (CINH) +20 V (reference: GND1) |

Supply: Controller inhibit terminal (X3/28) via internal voltage supply



Supply: Controller inhibit terminal (X3/28) via external voltage supply








— Minimum wiring required for operation



CAN PT (system bus)

General data and application conditions

| | | | | | |
|---|---|---|-----|-----|-----|
| Communication medium | DIN ISO 11898 | | | | |
| Communication profile | Similar to CANopen (CiA DS301) | | | | |
| Network topology | Line (terminated at both ends with 120 Ω) | | | | |
| System bus device | Master or slave | | | | |
| Max. number of devices | 63 | | | | |
| Baud rate [kBit/s] | 20 | 50 | 125 | 250 | 500 |
| Max. bus length [m] ³⁾ | 3910 | 1510 | 590 | 250 | 80 |
| Number of logical process data channels | 2 | | | | |
| Number of logical parameter data channels | 2 | | | | |
| Electrical connection | Push-on terminal strips with spring-clamp connection and dual screw connection | | | | |
| Connection options |  | Rigid: 1.5 mm ² (AWG 16) | | | |
| | Flexible: | | | | |
| |  | 1.5 mm ² (AWG 16) without ferrules | | | |
| |  | 1.5 mm ² (AWG 16) with ferrules without plastic sleeve | | | |
|  | 0.5 mm ² (AWG 20) with ferrules with plastic sleeve ¹⁾ | | | | |
|  | 1.5 mm ² (AWG 16) with ferrules with plastic sleeve ²⁾ | | | | |
| DC supply to the function module | Internal | | | | |
| Insulation voltage to reference earth/PE | 50 V AC | | | | |
| Ambient temperature | Operation: -20 ... +60°C Transport: -25 ... +70°C Storage: -25 ... +60°C | | | | |
| Climatic conditions | Class 3K3 to EN 50178 (without condensation, average relative humidity 85%) | | | | |

¹⁾ Spring-clamp connection

²⁾ Dual screw connection

³⁾ You should be aware of the additional effect of the number of devices and the cable cross-section used on the maximum bus cable lengths.

Note:

Two bus terminating resistors (120 Ω) are included in the scope of supply.

Wiring notes

We recommend the following signal cable:

| System bus cable specification | Total length up to 300 m | Total length up to 1000 m |
|--------------------------------|--|--|
| Cable type | LIYCY 2 x 2 x 0.5 mm ² (shielded twisted pairs) | CYPIMF 2 x 2 x 0.5 mm ² (shielded twisted pairs) |
| Cable resistance | ≤ 40 Ω/km | ≤ 40 Ω/km |
| Capacitance per unit length | ≤ 130 nF/km | ≤ 60 nF/km |
| Connection | Pair 1 (white/brown): CAN-LOW and CAN-HIGH Pair 2 (green/yellow): CAN-GND | |

CAN I/O PT (system bus)

| | | |
|--------------------------------|-------------------|--------------------|
| CAN I/O PT (system bus) | Order ref. | E82ZAFCC210 |
| CAN I/O | Order ref. | E82ZAFCC200 |

The CAN (system bus) function module can be used to interface the 8200 vector with the CAN (Controller Area Network) serial communication system. Plug-in spring-clamp terminals enable cable cross-sections of up to 1.5 mm² to be connected quickly and easily without the need for ferrules. Due to the plugged-on spring-clamp terminal strip, the function module juts out approx. 15 mm of the front panel of the frequency inverter. The module has two freely programmable digital inputs. They can be used to activate the controller inhibit and two additional freely selectable signals via a digital signal. The node address and the baud rate can also be preselected easily using DIP switches. For the purposes of simple diagnostics, dual screw terminals can be used to interrupt communication

with the frequency inverter without affecting the bus operation of other devices. The module is also available in a basic version without plug-in terminal.

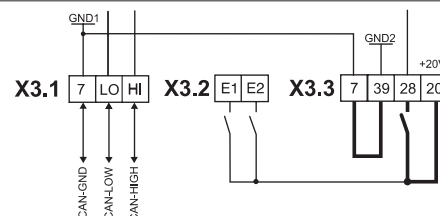
The function module enables the 8200 vector to perform additional functions, including:

- Parameter preselection/remote parameter setting
- Data transfer between inverters
- Connection to external control systems (e.g. drive PLC) and host systems
- Optional connection to – distributed terminal extensions (see also page 3-42) – keypads

| X3.1/ | Name | Function | Level |
|--------------|----------------|---|---|
| 7 | GND1 | Reference potential 1 | |
| LO | CAN-LOW | System bus LOW (data cable) | |
| HI | CAN-HIGH | System bus HIGH (data cable) | |
| X3.2/ | | | |
| E1 | Digital inputs | User-defined | 0= LOW (0 ... +3 V) |
| E2 | | | 1= HIGH (+12 ... +30 V) (reference: GND1) |
| X3.3/ | | | |
| 7 | GND1 | Reference potential 1 | |
| 39 | GND2 | Reference potential 2 for controller inhibit (CINH) at X3.3/28 | |
| 28 | CINH | Controller inhibit | <ul style="list-style-type: none"> • Start = HIGH (+12 V...+30 V) • Stop = LOW (0 V ... +3 V) |
| 20 | | DC voltage source for internal supply for controller inhibit (CINH) | +20 V (reference: GND1) |

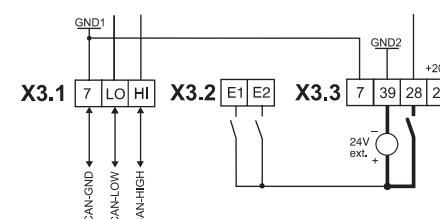
Supply via internal voltage source (X3.3/20):

- X3.3/28, controller inhibit (CINH)
- X3.2/E1 and X3.2/E2, digital inputs



Supply via external voltage supply

- X3.3/28, controller inhibit (CINH)
- X3.2/E1 and X3.2/E2, digital inputs







— Minimum wiring required for operation



CAN I/O PT (system bus)

General data and application conditions

| | | | | | |
|--|---|--|-----|-----|-----|
| Communication medium | DIN ISO 11898 | | | | |
| Communication profile | Similar to CANopen (CiA DS301) | | | | |
| Network topology | Line (terminated at both ends with 120 Ω) | | | | |
| System bus device | Master or slave | | | | |
| Max. number of devices | 63 | | | | |
| Baud rate [kBit/s] | 20 | 50 | 125 | 250 | 500 |
| Max. bus length [m] ³⁾ | 3910 | 1510 | 590 | 250 | 80 |
| Number of logical process data channels | 2 | | | | |
| Number of logical parameter data channels | 2 | | | | |
| Electrical connection | Push-on terminal strips with spring-clamp connection and dual screw connection | | | | |
| Connection options |  | Rigid: 1.5 mm ² (AWG 16) | | | |
| |  | Flexible: 1.5 mm ² (AWG 16) without ferrules | | | |
| |  | 1.5 mm ² (AWG 16) with ferrules without plastic sleeve | | | |
| |  | 0.5 mm ² (AWG 20) with ferrules with plastic sleeve ¹⁾ 1.5 mm ² (AWG 16) with ferrules with plastic sleeve ²⁾ | | | |
| DC supply to the function module | Internal | | | | |
| Insulation voltage to reference earth/PE | 50 V AC | | | | |
| Ambient temperature | Operation: -20 ... +60°C Transport: -25 ... +70°C Storage: -25 ... +60°C | | | | |
| Climatic conditions | Class 3K3 to EN 50178 (without condensation, average relative humidity 85%) | | | | |

¹⁾ Spring-clamp connection

²⁾ Dual screw connection

³⁾ You should be aware of the additional effect of the number of devices and the cable cross-section used on the maximum bus cable lengths.

Note:

Two bus terminating resistors (120 Ω) are included in the scope of supply.

Wiring notes

We recommend the following signal cable:

| System bus cable specification | Total length up to 300 m | Total length up to 1000 m |
|--------------------------------|--|--|
| Cable type | LIYCY 2 x 2 x 0.5 mm ² (shielded twisted pairs) | CYPIMF 2 x 2 x 0.5 mm ² (shielded twisted pairs) |
| Cable resistance | ≤ 40 Ω/km | ≤ 40 Ω/km |
| Capacitance per unit length | ≤ 130 nF/km | ≤ 60 nF/km |
| Connection | Pair 1 (white/brown): CAN-LOW and CAN-HIGH Pair 2 (green/yellow): CAN-GND | |

PROFIBUS-DP PT

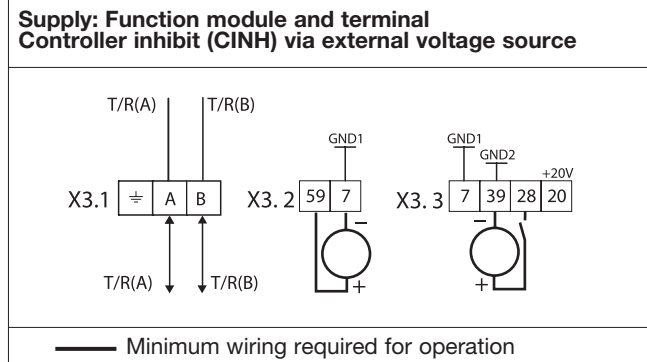
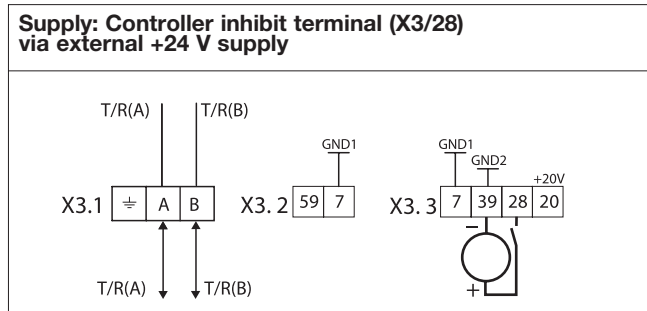
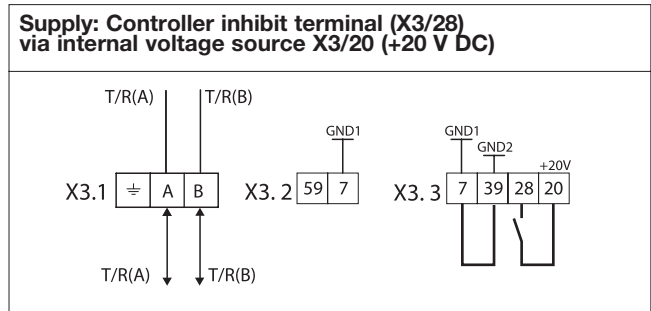
| | | |
|-----------------------|-------------------|--------------------|
| PROFIBUS-DP PT | Order ref. | E82ZAFPC010 |
| PROFIBUS-DP | Order ref. | E82ZAFPC |

The PROFIBUS-DP function module is a slave connection module with the PROFIBUS-DP communication profile. It is used for networking between the host and the frequency inverter. Plug-in spring-clamp terminals enable cable cross-sections of up to 1.5 mm² to be connected quickly and easily without the need for ferrules. Due to the plugged-on spring-clamp terminal strip, the

function module juts approx. 15 mm of the front panel of the frequency inverter. For the purposes of simple diagnostics, dual screw terminals can be used to interrupt communication with the frequency inverter without affecting the bus operation of other devices. The module is also available in a basic version without plug-in terminal.






Terminal assignment

| X3.1/ | Name | Function |
|-------------------|------------------|--|
| y | PES | Additional HF screen termination |
| A | T/R(A) | RS485 data cable A |
| B | T/R(B) | RS485 data cable B |
| X3.2/ | | |
| 7 | GND1 | Reference potential for X3.3/20 |
| 59 | | External DC supply for function module U(ext.) = +24 V DC ±10% (reference: GND1) |
| X3.3/ | | |
| 7 | GND1 | Reference potential for X3.3/20 |
| 39 | GND2 | Reference potential for controller inhibit (CINH) at X3.3/28 |
| 28 | CINH | Controller inhibit <ul style="list-style-type: none"> • Start = HIGH (+12 V ... +30 V) • Stop = LOW (0 ... +3 V) |
| 20 | | DC voltage source for internal supply for controller inhibit (CINH) +20 V (reference: GND1) |
| DIP switch | DIP switch = ON | Integrated bus terminating resistor active |
| | DIP switch = OFF | Integrated bus terminating resistor inactive |



PROFIBUS-DP PT

General data and application conditions

| | |
|---|---|
| Communication medium | RS485 |
| Communication profile | PROFIBUS-DP (DIN 19245 Part 1 and Part 3) |
| Drive profile | DRIVECOM profile "Drive Technology 20" or Lenze device control |
| Baud rate [kBit/s] | 9.6... 12000 (automatic detection) |
| PROFIBUS-DP device | Slave |
| Network topology | Without repeater: line With repeaters: line or tree |
| Process data words (PCD) (16 bits) | 1 word ... 10 words |
| DP user data length | Parameter channel (4 words) + process data words |
| Number of devices | Standard: 32 (= 1 bus segment) including host system With repeaters: 128 including host system and repeaters |
| Max. cable length per bus segment | 1000 m (depending on baud rate and cable type used) |
| Communication time | <ul style="list-style-type: none"> • Sum of scan time and processing time in the fieldbus devices. The times are independent of one another. • Processing time in the controller: <ul style="list-style-type: none"> - Parameter data and process data are independent of each other - Parameter data: approx. 30 ms +20 ms tolerance - Process data: approx. 3 ms +2 ms tolerance |
| Electrical connection | Push-on terminal strips with spring-clamp connection and dual screw connection |
| Connection options |  Rigid: 1.5 mm ² (AWG 16) Flexible:  1.5 mm ² (AWG 16) without ferrules  1.5 mm ² (AWG 16) with ferrules without plastic sleeve  0.5 mm ² (AWG 20) with ferrules with plastic sleeve ¹⁾  1.5 mm ² (AWG 16) with ferrules with plastic sleeve ²⁾ |
| DC supply for function module | <ul style="list-style-type: none"> • Internal • External, only required for <ul style="list-style-type: none"> - bus devices which are to be disconnected from the mains, but communication with the master is to be maintained - bus devices with activated bus terminating resistor, which are to be disconnected from the mains, but the bus system is to remain active - supply via separate mains supply - +24 V DC ± 10%, max. 80 mA per function module |
| Insulation voltage to reference earth/PE | 50 V AC |
| Ambient temperature | Operation: -20 ... +60°C Transport: -25 ... +70°C Storage: -25 ... +60°C |
| Climatic conditions | Class 3K3 to EN 50178 (without condensation, average relative humidity 85%) |

¹⁾ Spring-clamp connection

²⁾ Dual screw connection

Note:

- Two LEDs are located on the function module to indicate the communication status.
- A configuration diskette for PROFIBUS-DP containing the description files for the devices (EDS files) is included in the scope of supply.

Important:

The internal or external DC supply to the controller inhibit terminal (X3/28) is provided **independently** of the internal or external DC supply to the function module.

Tip:

The external DC supply to the function module is provided via terminals X3/59 and X3/7. The connection diagrams above indicate the internal DC supply to the function module as an alternative option.

INTERBUS PT

| | | |
|--------------------|-------------------|--------------------|
| INTERBUS PT | Order ref. | E82ZAFIC010 |
| INTERBUS | Order ref. | E82ZAFIC |

The INTERBUS function module is used to interface the frequency inverter directly with the remote bus. The DRIVE-COM profile 20 is supported for this connection. DIP switches are used to set the process data volume, PCP communication and the last physical bus device. Plug-in spring-clamp terminals enable cable cross-sections of up to

1.5 mm² to be connected quickly and easily without the need for ferrules.

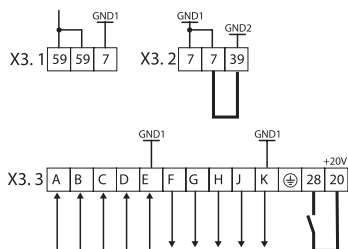
Due to the plugged-on spring-clamp terminal strip, the function module juts approx. 15 mm of the front panel of the frequency inverter. The module is also available in a basic version without plug-in terminal.

Terminal assignment

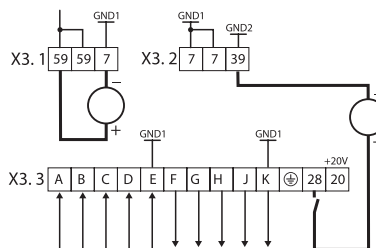
| X3.1/ | Name | Function |
|--------------|------|---|
| 59 | | External DC supply for function module (+ 24 V DC ± 10%, looping through of external supply for function module possible) |
| 7 | GND1 | Reference potential for X3.3/20 |
| X3.2/ | | |
| 7 | GND1 | Reference potential for X3.3/20 |
| 39 | GND2 | Reference potential for controller inhibit (CINH) at X3.3/28 |
| X3.3/ | | |
| A | /DO1 | RS485 data cable (incoming) |
| B | DO1 | |
| C | /DI1 | |
| D | /DI1 | |

| X3.3/ | Name | Function |
|-------|------|--|
| E | GND3 | Reference potential for incoming data cable |
| F | /DO2 | RS485 data cable (outgoing) |
| G | DO2 | |
| H | /DI2 | |
| J | DI2 | |
| K | GND1 | Reference potential for outgoing data cable |
| y | PES | Additional HF shield termination |
| 28 | CINH | Controller inhibit <ul style="list-style-type: none"> • Start = HIGH (+12 V ... +30 V) • Stop = LOW (0 ... +3 V) |
| 20 | | DC voltage source for internal +20 V (reference: GND1) |

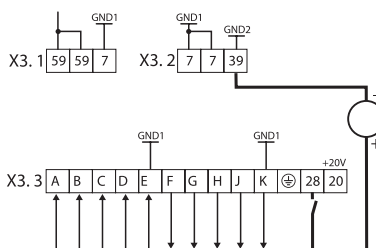
Supply: Controller inhibit terminal (X3/28) via internal voltage supply X3/20



Supply: Function module and terminal "controller inhibit" (X3/28) via external voltage



Supply for terminal controller inhibit (CINH) via external voltage source







— Minimum wiring required for operation



INTERBUS PT

General data and application conditions

| | |
|---|--|
| Communication medium | RS485 |
| Drive profile | DRIVECOM profile "Drive Technology 20" or Lenze device control |
| Baud rate [kBit/s] | 500 |
| INTERBUS device | Slave |
| Network topology | Ring (go and return lines in the same bus cable) |
| Process data words (PCD) (16 bits) | 1 Word ... 6 words |
| Parameter data words (PCP) (16 bits) | 0/1 word |
| INTERBUS code (ID code) | Decimal: 227 or 3 (without PCP); hex: E3 or 3 (without PCP) |
| Max. PDU length | 64 bytes |
| Supported PCP services | Initiate, Abort, Status, Identify, Get-OV-Long, Read, Write |
| Number of devices | Depends on the host system (I/O range), max. 63 |
| Max. distance between 2 devices | 400 m |
| Communication time | <ul style="list-style-type: none"> • Sum of scan time and processing time in the fieldbus devices. The times are independent of one another. • Processing time in the controller: <ul style="list-style-type: none"> – Parameter data and process data are independent of each other – Parameter data (PCP): approx. 30 ms +20 ms tolerance – Process data: approx. 3 ms +2 ms tolerance |
| Electrical connection | Push-on terminal strip with spring-clamp connection |
| Connection options |  Rigid: 1.5 mm ² (AWG 16) Flexible:  1.5 mm ² (AWG 16) without ferrules  1.5 mm ² (AWG 16) with ferrules without plastic sleeve  0.5 mm ² (AWG 20) with ferrules with plastic sleeve |
| DC supply for function module | <ul style="list-style-type: none"> • Internal • External, <ul style="list-style-type: none"> – only required if the communication ring must not be interrupted by a bus device being switched off or failing – supply via separate mains supply – +24 V DC ± 10%, max. 90 mA per function module – X3/59 can be loaded with a maximum of 3A when the supply voltage is looped through to other bus devices |
| Insulation voltage to reference earth/PE | 50 V AC |
| Ambient temperature | Operation: –20 ... +60°C Transport: –25 ... +70°C Storage: –25 ... +60°C |
| Climatic conditions | Class 3K3 to EN 50178 (without condensation, average relative humidity 85%) |

Note:

Two LEDs are located on the function module to indicate the communication status.

Important:

The internal or external DC supply to the controller inhibit terminal (X3/28) is provided **independently** of the internal or external DC supply to the function module.

Tip:

The external DC supply to the function module is provided via terminals X3/59 and X3/7 (see connection diagrams above).

LECOM-B PT (RS485)

| | | |
|---------------------------|-------------------|--------------------|
| LECOM-B PT (RS485) | Order ref. | E82ZAFLC010 |
| LECOM-B (RS485) | Order ref. | E82ZAFLC |

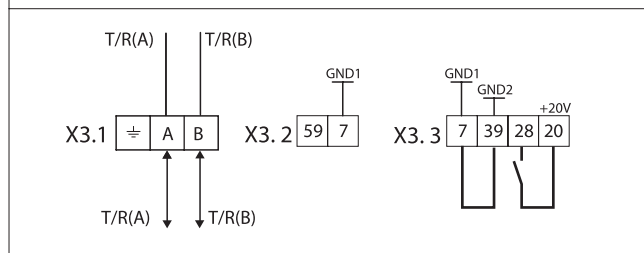
Communication via the function module LECOM-B (RS485) uses the Lenze protocol LECOM. This protocol is open to the user. Components which support this protocol area available for various systems (e.g. Simatic S5). Plug-in spring-clamp terminals enable cable cross-sections of up to 1.5 mm² to be connected quickly and easily without the need for ferrules. Due to the plugged-on spring-clamp terminal strip, the function module juts out approx. 15 mm

of the front panel of the frequency inverter. For the purposes of simple diagnostics, dual screw terminals can be used to interrupt communication with the frequency inverter without affecting the bus operation of other devices. The module is also available in a basic version without plug-in terminal.

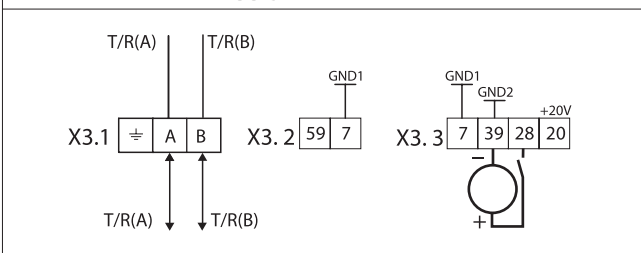
Terminal assignment

| X3.1/ | Name | Function |
|--------------|--------|--|
| y | PES | Additional HF screen termination |
| A | T/R(A) | RS485 data cable A |
| B | T/R(B) | RS485 data cable B |
| X3.2/ | | |
| 7 | GND1 | Reference potential for X3.3/20 |
| 59 | | External DC supply for function module U(ext.) = +24 V DC ±10% (reference: GND1) |
| X3.3/ | | |
| 7 | GND1 | Reference potential for X3.3/20 |
| 39 | GND2 | Reference potential for controller inhibit (CINH) at X3.3/28 |
| 28 | CINH | Controller inhibit <ul style="list-style-type: none"> • Start = HIGH (+12 V ... +30 V) • Stop = LOW (0 ... +3 V) |
| 20 | | DC voltage source for internal supply for controller inhibit (CINH) +20 V (reference: GND1) |

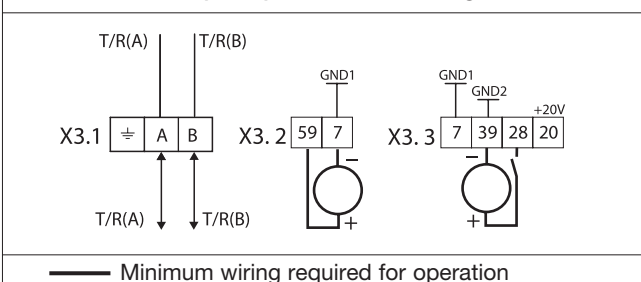
Supply: Controller inhibit terminal (X3/28) via internal voltage source X3/20 (+20 V DC)



Supply: Controller inhibit terminal (X3/28) via external +24 V supply








Supply: Function module and terminal Controller inhibit (CINH) via external voltage source



LECOM-B PT RS485)

General data and application conditions

| | |
|---|---|
| Communication medium | RS485 (LECOM-B) |
| Communication protocol | LECOM A/B V2.0 |
| Transfer character format | 7E1: 7-bit ASCII, 1 stop bit, 1 start bit, 1 parity bit (even) |
| Baud rate [bit/s] | 1200, 2400, 4800, 9600, 19200, 38400, 57600 |
| LECOM-B device | Slave |
| Network topology | Without repeater: line With repeaters: line or tree |
| Process data words (PCD) (16 bits) | 2 words |
| Max. number of devices | 32 (= 1 bus segment) including host system With repeaters: 90 slaves |
| Max. cable length per bus segment | 1000 m (depending on baud rate and cable type used) |
| Electrical connection | Screw terminals |
| Connection options |  Rigid: 1.5 mm ² (AWG 16) Flexible:  1.5 mm ² (AWG 16) without ferrules  1.5 mm ² (AWG 16) with ferrules without plastic sleeve  0.5 mm ² (AWG 20) with ferrules with plastic sleeve ¹⁾  1.5 mm ² (AWG 16) with ferrules with plastic sleeve ²⁾ |
| DC supply for function module | <ul style="list-style-type: none"> • Internal • External, only required for <ul style="list-style-type: none"> – bus devices which are to be disconnected from the mains, but communication with the master is to be maintained – bus devices with activated bus terminating resistor, which are to be disconnected from the mains, but the bus system is to remain active – supply via separate mains supply – +24 V DC ± 10%, max. 70 mA per function module |
| Insulation voltage to reference earth/PE | 50 V AC |
| Ambient temperature | Operation: –20 ... +60°C Transport: –25 ... +70°C Storage: –25 ... +60°C |
| Climatic conditions | Class 3K3 to EN 50178 (without condensation, average relative humidity 85%) |

¹⁾ Spring-clamp connection
²⁾ Dual screw connection

Note:

Two LEDs are located on the function module to indicate the communication status.

Important:

The internal or external DC supply to the controller inhibit terminal (X3/28) is provided **independently** of the internal or external DC supply to the function module.

Tip:

The external DC supply to the function module is provided via terminals X3/59 and X3/7. The connection diagrams above indicate the internal DC supply to the function module as an alternative option.

AS-Interface PT

| | | |
|------------------------|-------------------|--------------------|
| AS-Interface PT | Order ref. | E82ZAFFC010 |
| AS-Interface | Order ref. | E82ZAFFC |

The function module enables the 8200 vector to be controlled with digital control signals via the “AS-Interface” bus system. Plug-in spring-clamp terminals enable cable cross-sections of up to 1.5 mm² to be connected quickly and easily without the need for ferrules. Due to the plugged-on spring-clamp terminal strip, the function module juts out approx. 15 mm of the front panel of the frequency inverter. For the purposes of simple diagnostics, dual screw terminals can be used to interrupt communication with the frequency inverter without affecting the bus operation of other devices. The module is also available in a basic version without plug-in terminal. The “AS-Interface” (AS-i) bus system has established itself for use at the lowest field level, particularly for digital signal transfer.

It is designed for applications that do not necessarily require powerful fieldbus systems, but do nonetheless need to exploit the advantages of serial communication.

The advantages of this system are:

- Easy to use and to set up
- Less wiring required
- Easy to integrate into existing systems
- Cost reductions

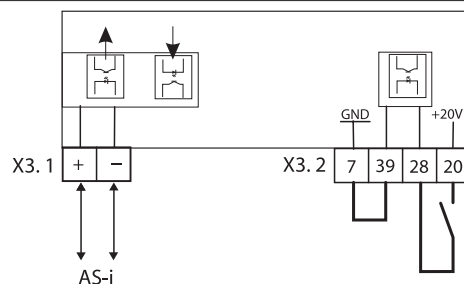
3 Terminal assignment

| X3.1/ | Wire colour (IEC757) | Explanation |
|-------|----------------------|--|
| + | BN | Please refer to the information included in the description of the AS-i system about the electrical connection of peripheral devices |
| - | BU | |

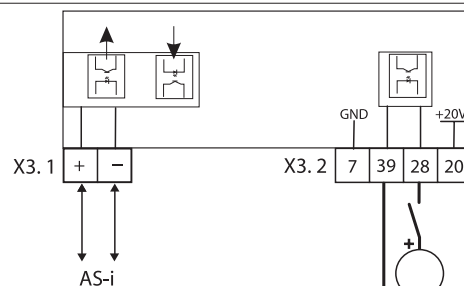
| X3.2/ | | Explanation |
|-------|------|---|
| 7 | GND1 | Reference potential 1 |
| 20 | | + 20 V internal for controller inhibit, reference: X3/7 |
| 28 | | Controller inhibit <ul style="list-style-type: none"> • Start = HIGH (+12 V...+ 30 V) • Stop = LOW (0...+3 V) |
| 39 | GND2 | Reference potential for X3/28 |



Supply: Controller inhibit terminal (X3/28) via internal voltage supply








Supply: Controller inhibit terminal (X3/28) via external +24 V supply



— Minimum wiring required for operation

AS-Interface PT

General data and application conditions

| | |
|--|--|
| Protocol/communication medium | AS-i |
| Network topology | Tree |
| Bus device | Slave |
| Max. number of nodes | 31 |
| Baud rate [kBit/s] | 167 |
| Scan time [ms] | 5 ms (with 31 nodes) |
| Max. bus length [m] | 100 |
| Electrical connection (X3 terminal strip) | Screw terminals |
| Connection options (X3 terminal strip) |  Rigid: 1.5 mm ² (AWG 16) |
| | Flexible: <ul style="list-style-type: none">  1.5 mm² (AWG 16) without ferrules  1.5 mm² (AWG 16) with ferrules without plastic sleeve  0.5 mm² (AWG 20) with ferrules with plastic sleeve ¹⁾  1.5 mm² (AWG 16) with ferrules with plastic sleeve ²⁾ |
| DC supply to the function module | via the bus |
| Isolation voltage to reference earth/PE | 50 V AC |
| Ambient temperature | Operation: -20 ... +60°C Transport: -25 ... +70°C Storage: -25 ... +60°C |
| Climatic conditions | Class 3K3 to EN 50178 (without condensation, average relative humidity 85%) |

¹⁾ Spring-clamp connection

²⁾ Dual screw connection

Note:

Two LEDs are located on the function module to indicate the communication status.

The following are available:

- 4 data bits to the 8200 vector (actuation)

The bits can be freely assigned in the 8200 vector.

Example:

- Bit 1 is assigned the function "Fixed setpoint value 1"
- Bit 2 is assigned the function "Fixed setpoint value 2"
- Bit 3 is assigned the function "DC brake"
- Bit 4 is assigned the function "Reversal of direction of rotation"

- 1 data bit from the 8200 vector (feedback)
This bit can be freely assigned in the 8200 vector, e.g. with a trip error message.
- 1 AS-i monitoring bit from the AS-i module

CAN/CANopen

| | | |
|--|-------------------|------------------|
| CAN | Order ref. | EMF2171IB |
| CAN (addressing via DIP switches) | Order ref. | EMF2172IB |
| CANopen | Order ref. | EMF2175IB |

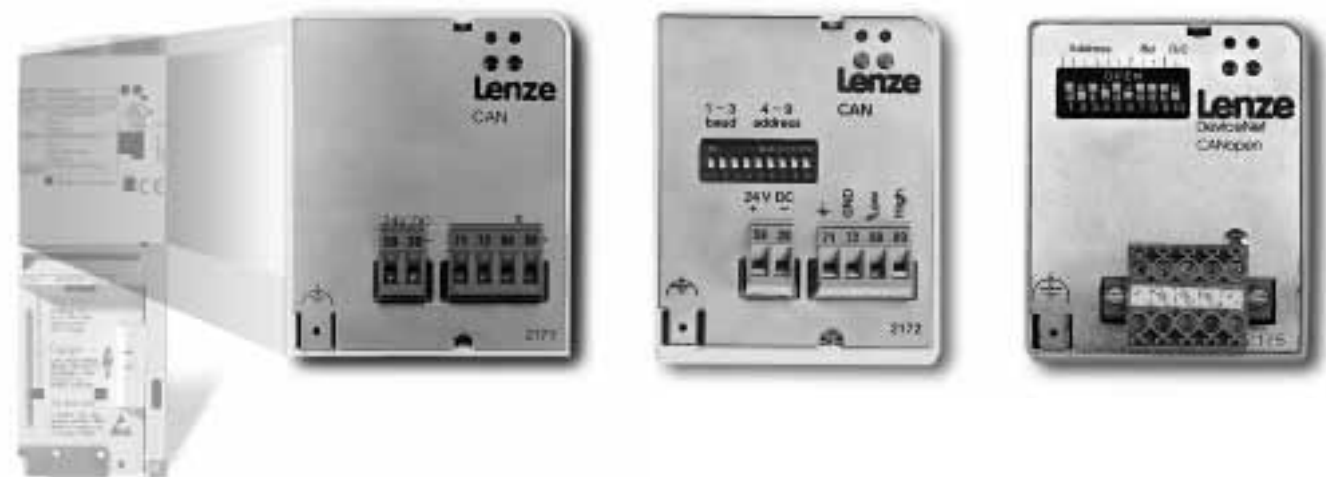
The communication modules enable the inverter to support the CAN (2171/2172)/CANopen profile (2175). Modules 2171/2172 support parts of the CANopen communication profile and module 2175 supports the entire profile. Unlike module 2172, module 2171 has an additional DIP switch for presetting the network address and baud rate.

- The module EMF 2175IB can be switched over to DeviceNet via a DIP switch (see next page).
- Two LEDs are located on the communication modules to indicate the communication status.
- A configuration diskette for CANopen containing the description file for the devices (EDS file) is included in the scope of supply.

General data and application conditions

| | | | | | | | | |
|--|--|------|------|-----|-----|-----|------|--|
| Communication medium | DIN ISO 11898 | | | | | | | |
| Communication profile | CANopen | | | | | | | |
| DeviceNet device | Slave | | | | | | | |
| Network topology | Line (terminated at both ends with 120 Ω) | | | | | | | |
| Max. number of devices | 63 | | | | | | | |
| Baud rate [kBit/s] | 10 | 20 | 50 | 125 | 250 | 500 | 1000 | |
| 2171/2172: Max. bus length (m)¹⁾ | – | – | 1550 | 630 | 290 | 120 | 25 | |
| 2175: Max. bus length (m)¹⁾ | 7450 | 3950 | 1550 | 630 | 290 | 120 | 25 | |
| Electrical connection | Screw-type terminals | | | | | | | |
| DC supply | <ul style="list-style-type: none"> • Internal • External <ul style="list-style-type: none"> – only required if a bus device is switched off or fails but communication with it is to be maintained – supply via separate mains supply – +24 V DC ± 10%, max. 100 mA per module | | | | | | | |
| Insulation voltage to reference earth/PE | 50 V AC | | | | | | | |
| Ambient temperature | Operation: 0 ... +55°C Transport: –25 ... +70°C Storage: –25 ... +60°C | | | | | | | |
| Climatic conditions | Class 3K3 to EN 50178 (without condensation, average relative humidity 85%) | | | | | | | |

¹⁾ You should be aware of the additional effect of the number of devices and the cable cross-section used on the maximum bus cable lengths.



DeviceNet

| | | |
|------------------|-------------------|------------------|
| DeviceNet | Order ref. | EMF2175IB |
|------------------|-------------------|------------------|

The communication module enables the inverter to support the DeviceNet profile.

- The module can be switched over to CANopen via a DIP switch.
- The address and the baud rate can be adjusted via the DIP switch.
- Two LEDs are located on the communication module to indicate the communication status.
- A configuration diskette for DeviceNet containing description files for the devices (EDS files) is included in the scope of supply. The files can be downloaded from the Internet at www.Lenze.com.

General data and application conditions

| | | | |
|---|--|-----|-----|
| Communication medium | DIN ISO 11898 | | |
| Communication profile | DeviceNet | | |
| DeviceNet device | Slave | | |
| Network topology | Line (terminated at both ends with 120 Ω) | | |
| Max. number of devices | 63 | | |
| Baud rate [kBit/s] | 125 | 250 | 500 |
| Max. bus length (thin cable) [m] | 100 | 100 | 100 |
| Max. bus length (thick cable) [m] | 500 | 250 | 100 |
| Electrical connection | Screw-type terminals | | |
| DC supply | <ul style="list-style-type: none"> • Internal • External <ul style="list-style-type: none"> – only required if a bus device is switched off or fails but communication with it is to be maintained – supply via separate mains supply – +24 V DC ± 10%, max. 100 mA per module | | |
| Insulation voltage to reference earth/PE | 50 V AC | | |
| Ambient temperature | Operation: 0 ... +55°C Transport: -25 ... +70°C Storage: -25 ... +60°C | | |
| Climatic conditions | Class 3K3 to EN 50178 (without condensation, average relative humidity 85%) | | |



PROFIBUS

| | | |
|-----------------|-------------------|------------------|
| PROFIBUS | Order ref. | EMF2133IB |
|-----------------|-------------------|------------------|

The communication module enables the inverter to support the PROFIBUS-DP profile.

- Two LEDs are located on the communication module to indicate the communication status.
- A configuration diskette for PROFIBUS-DP containing the description file for the devices (EDS file) is included in the scope of supply.
- The address can be adjusted via the DIP switch.
- Can be switched to the functionality of the 2131IB predecessor communication module via a DIP switch.

General data and application conditions

| | |
|---|---|
| Communication medium | RS485 |
| Communication profile | PROFIBUS-DP (DIN 19245 Part 1 and Part 3) |
| Selectable drive profile | <ul style="list-style-type: none"> • DRIVECOM profile "Drive technology 20" • PROFIDRIVE • Lenze device control |
| Baud rate [kBit/s] | 9.6...12000 (automatic detection) |
| PROFIBUS-DP device | Slave |
| Network topology | Without repeater: line With repeaters: line or tree |
| Process data words (PCD) (16 bits) | 1...12 words (2133IB with 8200 vector: max. 3 words; only with Servo PLC/Drive PLC: max. 12 words) |
| DP user data length | Parameter channel (4 words) + process data words |
| Max. number of devices | Standard: 32 (= 1 bus segment) including host system With repeaters: 128 including host system and repeaters |
| Max. cable length per bus segment | 1200 m (depending on baud rate and cable type used) |
| Electrical connection | Screw-type terminal and SUB-D socket (9-pin) |
| DC supply | <ul style="list-style-type: none"> • Internal • External <ul style="list-style-type: none"> - only required for bus devices which are to be disconnected from the mains, but communication with the master is to be maintained - supply via separate mains supply - +24 V DC \pm 10%, max. 120 mA per module |
| Insulation voltage to reference earth/PE | 50 V AC |
| Ambient temperature | Operation: 0 ... +55°C Transport: -25 ... +70°C Storage: -25 ... +60°C |
| Climatic conditions | Class 3K3 to EN 50178 (without condensation, average relative humidity 85%) |



INTERBUS

| | | |
|-----------------|-------------------|------------------|
| INTERBUS | Order ref. | EMF2111IB |
| INTERBUS | Order ref. | EMF2113IB |

The communication module enables the inverter to support the DRIVECOM drive profile “Drive technology 21” or Lenze device control (optional). INTERBUS interfacing takes place directly on the remote bus.

- Two LEDs are located on the communication module to indicate the communication status.
- EMF2113IB: The baud rate and process data words/parameter data words can be adjusted via the DIP switch.

| | |
|---|---|
| Communication medium | RS485 |
| Selectable drive profile | <ul style="list-style-type: none"> • Lenze device control • DRIVECOM profile “Drive technology 21” |
| Baud rate | 500 kBit/s (2113IB: 500 kBit/s or 2 MBit/s) |
| INTERBUS device | Slave |
| Network topology | Ring (go and return lines in the same bus cable) |
| Process data words (PCD) (16 bits) | 2... 3 words (2113IB with Drive PLC/Servo PLC: max. 10 words) |
| Parameter data words (PCP) (16 bits) | 1 word (2113IB: max. 4 words) |
| INTERBUS code (ID code) | Decimal: 227; hex: E3 |
| Max. PDU length | 64 bytes |
| Supported PCP services | Initiate, Abort, Status, Identify, Get-OV-Long, Read, Write |
| Number of devices | Depends on the host system (I/O range), max. 63 |
| Max. distance between 2 devices | 400 m |
| Electrical connection | Screw-type terminal and SUB-D socket/connector (9-pin) |
| DC supply | <ul style="list-style-type: none"> • Internal • External <ul style="list-style-type: none"> – required if the communication ring must not be interrupted if a bus device is switched off or fails – supply via separate mains supply – +24 V DC ± 10%, max. 100 mA per module |
| Insulation voltage to reference earth/PE | 50 V AC |
| Ambient temperature | Operation: 0 ... +55°C Transport: -25 ... +70°C Storage: -25 ... +60°C |
| Climatic conditions | Class 3K3 to EN 50178 (without condensation, average relative humidity 85%) |



INTERBUS Loop

| | | |
|----------------------|-------------------|------------------|
| INTERBUS Loop | Order ref. | EMF2112IB |
|----------------------|-------------------|------------------|

The communication module enables the inverter to support the DRIVECOM drive profile "Drive technology 20" or Lenze device control (optional). INTERBUS Loops can be integrated within the INTERBUS network.

Here, the DC supply to the communication modules is provided via the bus line of the INTERBUS Loop. Two LEDs are located on the communication module to indicate the communication status.

General data and application conditions

| | |
|---|--|
| Selectable drive profile | <ul style="list-style-type: none"> • Lenze device control • DRIVECOM profile "Drive technology 20" |
| Baud rate [kBit/s] | 500 |
| INTERBUS device | Slave |
| Network topology | Ring |
| Process data words (PCD) (16 bits) | 2 words |
| Parameter data words (PCP) (16 bits) | Not supported |
| INTERBUS code (ID code) | Decimal: 179; hex: B3 |
| Max. PDU length | 4 bytes |
| Supported PCP services | None |
| Max. number of devices | 36 Lenze inverters |
| Max. loop length | 200 m |
| Max. distance between 2 devices | 20 m |
| Electrical connection | Screw-type terminals |
| DC supply | Via the bus |
| Insulation voltage to reference earth/PE | 50 V AC |
| Ambient temperature | Operation: 0 ... +55°C Transport: -25 ... +70°C Storage: -25 ... +60°C |
| Climatic conditions | Class 3K3 to EN 50178 (without condensation, average relative humidity 85%) |



LON

| | | |
|------------|-------------------|-----------------|
| LON | Order ref. | EMF2141B |
|------------|-------------------|-----------------|

The communication module enables the inverter to support the LONMARK “Variable Speed Motor Drive” functional (communication) profile.

- Two LEDs are located on the communication module to indicate the communication status.

- A configuration diskette for CANopen containing the description file for the devices and the plug-in for the LonMaker software is included in the scope of supply.

General data and application conditions

| | |
|---|---|
| Communication medium | FTT - 10 A (Free Topology Transceiver) |
| Communication profile | LONMARK® Functional profile “Variable Speed Motor Drive” |
| Network topology | Free topology (line, tree/line, star, ring) |
| Possible number of nodes | 64 |
| Max. cable length | 2700 m with bus topology (line) 500 m with mixed topology |
| Baud rate [kBit/s] | 78 |
| Electrical connection | Screw-type terminals |
| DC supply | <ul style="list-style-type: none"> • Internal • External <ul style="list-style-type: none"> - required if a bus device is switched off or fails but communication with it is to be maintained - supply via separate mains supply - +24 V DC ± 10%, max. 120 mA per module |
| Insulation voltage to reference earth/PE | 50 V AC |
| Ambient temperature | Operation: 0 ... +55°C Transport: -25 ... +70°C Storage: -25 ... +60°C |
| Climatic conditions | Class 3K3 to EN 50178 (without condensation, average relative humidity 85%) |



LECOM-AB (RS232/485)

| | | |
|-----------------------------|-------------------|-------------------------------------|
| LECOM-AB (RS232/485) | Order ref. | EMF2102IB-V001 ¹⁾ |
| LECOM-B (RS485) | Order ref. | EMF2102IB-V002 ¹⁾ |

The communication modules enable the inverter to support the LECOM-AB V2.0 communication profile. The Lenze LECOM profile is completely open. Components which support this protocol are available for various systems (e.g. Simatic S5) in order to facilitate integration into a control system.

The LECOM-B communication module has an RS485 interface. In addition to the RS485 interface (see LECOM-B for data and operating conditions), the LECOM-AB communication module has an RS232 interface with a 9-pin SUB-D socket. Three LEDs are located on the communication modules to indicate the communication status.

General data and application conditions

| Communication medium | RS485 (LECOM-B) | RS232 (LECOM-A) |
|--|---|----------------------|
| Communication protocol | LECOM A/B V2.0 | |
| Transfer character format | 7E1: 7-bit ASCII, 1 stop bit, 1 start bit, 1 parity bit (even) | |
| Baud rate [Bit/s] | 1200, 2400, 4800, 9600, 19200 | |
| LECOM-B device | Slave | - |
| Network topology | Without repeater: line With repeaters: line or tree | Point-topoint |
| Max. number of devices | 32 (= 1 bus segment) including host system With repeaters: 90 slaves | 1 |
| Max. cable length | 1000 m per bus segment (depending on baud rate and cable type used) | 15 m |
| Electrical connection | Screw-type terminals | SUB-D socket (9-pin) |
| DC supply | <ul style="list-style-type: none"> • Internal • External - required if bus devices are to be disconnected from the mains but communication with the master must be maintained - supply via separate mains supply - +24 V DC \pm 10%, max. 60 mA per module (LECOM-AB: max. 80 mA) | |
| Insulation voltage to reference earth/PE | 50 V AC | |
| Ambient temperature | Operation: 0 ... +55°C Transport: -25 ... +70°C Storage: -25 ... +60°C | |
| Climatic conditions | Class 3K3 to EN 50178 (without condensation, average relative humidity 85%) | |

¹⁾ Descendant product EMF2102IBC001, EMF2102IBC002 currently being developed



LECOM-LI (optical fibres)

| | | |
|---|-------------------|------------------------------------|
| LECOM-LI | Order ref. | EMF2102IB-V003¹⁾ |
| RS232/optical fibre converter Normal output power (0...40 m) | Order ref. | EMF2125IB |
| RS232/optical fibre converter High output power (10...66 m) | Order ref. | EMF2126IB |

The communication module enables the inverter to support the LECOM-AB V2.0 communication module and interfaces the inverter with the host computer via an optical fibre converter.

Three LEDs are located on the communication module to indicate the communication status.

General data and application conditions

| | |
|---|--|
| Communication medium | Optical fibres |
| Communication protocol | LECOM A/B V2.0 |
| Transfer character format | 7E1: 7-bit ASCII, 1 stop bit, 1 start bit, 1 parity bit (even) |
| Baud rate [Bit/s] | 1200, 2400, 4800, 9600, 19200 |
| LECOM-LI device | Slave |
| Network topology | Ring |
| Max. number of devices | 52 |
| Max. cable length per bus segment | 0...40 m (normal output power)/10...66 m (high output power) |
| Electrical connection | Screw-type terminal and screw-type crimp connections |
| DC supply | <ul style="list-style-type: none"> • Internal • External <ul style="list-style-type: none"> – required if bus devices are to be disconnected from the mains, but communication with the master must be maintained – supply via separate mains supply – +24 V DC ± 10%, max. 70 mA per module |
| Insulation voltage to reference earth/PE | 50 V AC |
| Ambient temperature | Operation: 0 ... +55°C Transport: -25 ... +70°C Storage: -25 ... +60°C |
| Climatic conditions | Class 3K3 to EN 50178 (without condensation, average relative humidity 85%) |

¹⁾ Descendant product EMF2102IBC003 currently being developed



Drive PLC – Description

The Drive PLC adds a freely programmable drive PLC to the 8200 vector frequency inverter. This combination will not only control movement in your machine, but can also manage the distributed control functions. The system is programmed using the PLC languages of the international standard IEC 61131-3.

Lenze can offer a full automation system for your application, ranging from the operating and display units (keypads) to the geared motors. As an additional bonus, Lenze can now save you time by providing the software that brings your machines to life from the basic configurations and technology functions, using the IEC 61131-3 languages you are already familiar with.

Why do you need a Drive PLC?

What benefits does the Drive PLC offer over a standard PLC?

- Reduction of parallel wiring and unnecessary terminals through an integrated system bus interface (CAN) to the 8200 vector frequency inverter
- Straightforward engineering through a special software library for simple integration of the 8200 vector into the PLC program
- Straightforward integration of most fieldbuses through plug-on modules
- A cost-effective system with extensive basic functions
- No additional costs for gateway functions to higher-level bus systems such as INTERBUS or PROFIBUS.
The gateway function is automatically implemented in the system bus (CAN) by the operating system of the Drive PLC.

Drive PLC – Description

Would you like to . . .

- Rationalise the electrical part of your machine?
- Have more transparent PLC programs?
- Take the load off your bus system?
- Not have to keep learning new programming languages?
- Be able to implement drive-orientated control functions in the drive?
- Be able to use tried and tested systems for more complex drive solutions?

. . . then you should take a closer look at the Drive PLC.

This is because the Drive PLC can offer:

- Programming in the five IEC 61131-3 programming languages as well as high-performance CFC editor for simple graphic programming
- Continued complex drive technology solutions implemented via pre-configured technology functions
- The option of integrating the technology functions into the PLC program

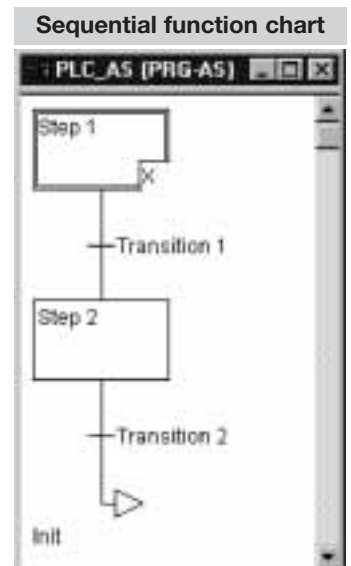
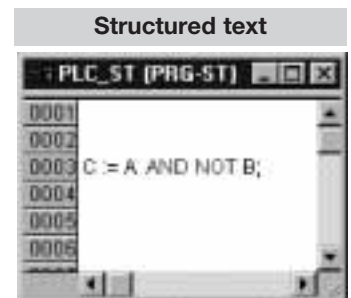
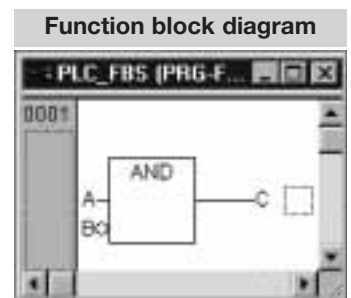
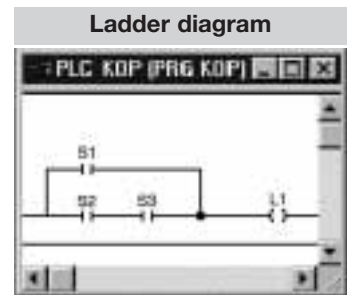
. . . and this is what you get:

- Distributed control of your machine
- The electrical part of the machine becomes more cost-effective whilst maintaining the same level of performance
- Faster set-up times through the high-performance “Drive PLC Developer Studio” software development environment
- Increased availability due to the reduction in number of individual control components
- Less requirement for programming training: IEC 61131-3 is the international standard

Lenze will provide you with a freely programmable Drive PLC for the 8200 vector frequency inverter:

- Drive PLC as an expansion of the 8200 vector

The Drive PLC is programmed using a PC and the user-friendly Drive PLC Developer Studio software development environment. Please refer to the Lenze “Automation” catalog for further details.



Drive PLC – Technical data

| | |
|-------------------------------------|---|
| Program memory | 191 kB |
| Data memory | 9.5 kB (1.3 kB marker +8.2 kB variables) |
| EEProm buffered memory | 800 bytes |
| Residual memory | 200 bytes |
| Task types | 1 cyclical task 8 tasks (time or event-controlled) |
| Processing time for a bit operation | 1.0 µs |
| Number of counters/timers | Freely selectable in accordance with IEC 1131 |
| Digital inputs | 8 (3 of which have interrupt capability) |
| Expandable | Via extension board and distributed terminals |
| Digital outputs | 4 (1 A each) |
| Extendable | Via extension board and distributed terminals |
| Analog inputs | 3 (± 10 V, 11-bit) |
| Analog outputs | 1 (± 10 V or ± 20 mA, 11-bit) |
| Communication interfaces | Integrated system bus (similar to CANopen) Plug-on communications modules (e.g. INTERBUS, PROFIBUS-DP) |
| Dimensions (H x W x D) / [mm] | 120 x 60 x 140 |
| Operational reserve | In accordance with IEC 1131 |
| Programming software | Drive PLC Developer Studio with IL, LD, SFC, ST programming languages, ST, IL, CFC, debugging and monitoring, visualisation |
| Voltage supply | +18...30 V DC |
| Current (at 24 V DC) | 200 mA (without output loads) |

| Name | Order ref. |
|-----------|------------|
| Drive PLC | EPL-10200 |

Required components for programming:

| Name | Order ref. |
|--|----------------|
| Drive PLC Developer Studio BASIC | ESP-DDS1-B |
| Drive PLC Developer Studio PROFESSIONAL | ESP-DDS1-P |
| PC system bus converter (voltage supply via keyboard with DIN connection) | EMF2173IB |
| PC system bus converter (voltage supply via keyboard with PS2 connection) | EMF2173IB-V002 |
| System cable R232 (0.5 m) | EWL0048 |
| System cable R232 (5.0 m) | EWL0020 |
| System cable R232 (10 m) | EWL0021 |

Note:

The Drive PLC is programmed on the PC via the system bus.

Drive PLC – Mechanical installation

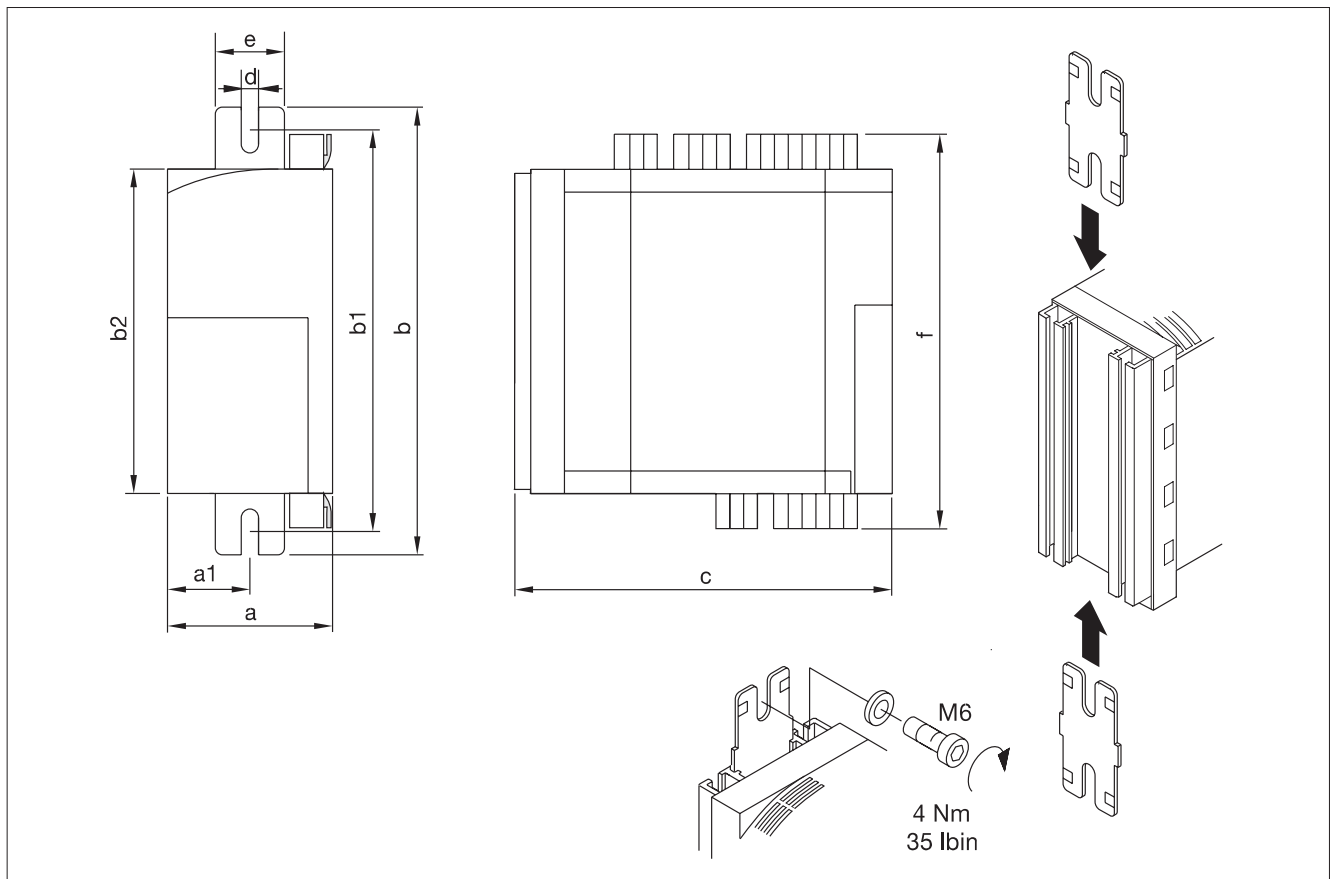
- Designed to be installed in a cabinet.
- If the exhaust air contains pollutants (dust, lint, grease, aggressive gases) then appropriate counter-measures must be in place (e.g. installation of filters, regular cleaning etc.).
- Ensure there is enough mounting space.
 - Several units can be mounted directly adjacent to one another without clearance.
 - Make sure that there is free access for cooling air and that the outlet for used air is not blocked.
 - Ensure a clearance of 100 mm above and below.
- In the event of continuous oscillations or vibrations, check the use of vibration dampers.

The Drive PLC can be fitted as follows into a control cabinet:

- With the enclosed **standard fixtures** (included in the scope of supply)
- With a **swivel bracket** (accessories)
- With **DIN rail fixtures** (accessories)

Tip:
E82ZWEK (with bracket) or E82ZWES (with clamp) fixings can be used (accessories) for quick and easy installation.

Standard fixtures



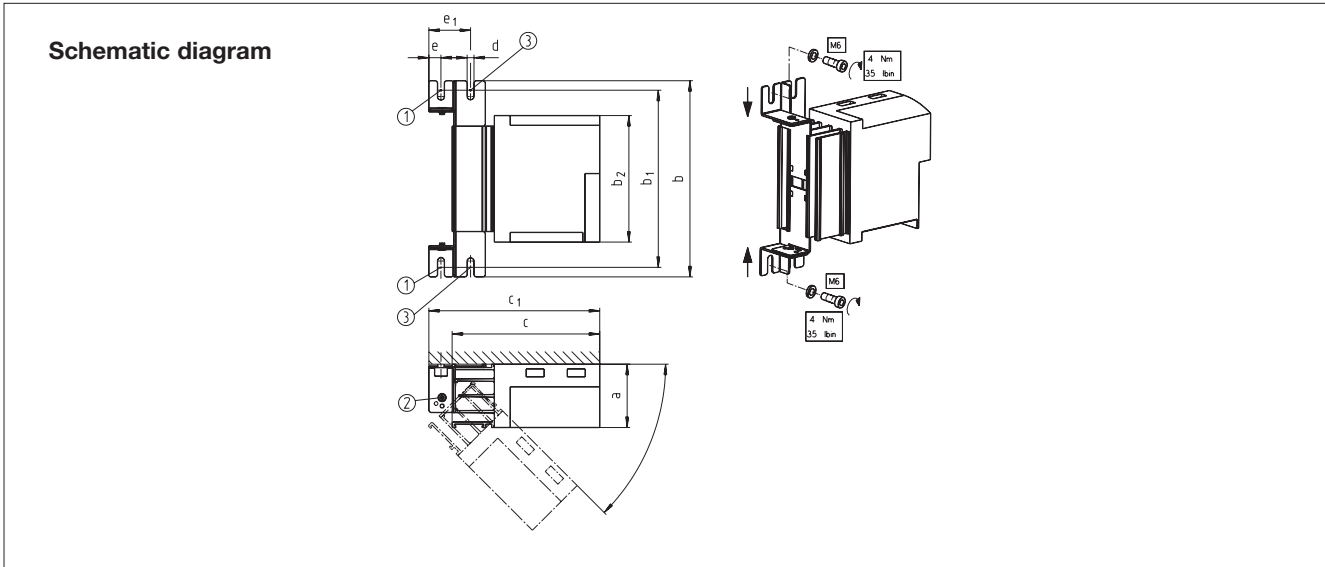
| Dimensions [mm] | | | | | | | | |
|-----------------|----|-----|-----------|-----|-----|-----|------|-----|
| a | a1 | b | b1 | b2 | c | d | e | f |
| 60 | 30 | 167 | 147...157 | 120 | 140 | 6,5 | 27,5 | 148 |

Drive PLC – Mechanical Installation

Mounting with a swivel bracket/side mounting

On housings with a shallow installation depth the Drive PLC can be mounted with a swivel bracket. The Drive PLC can be swivelled out sideways, e.g. through 90°, for

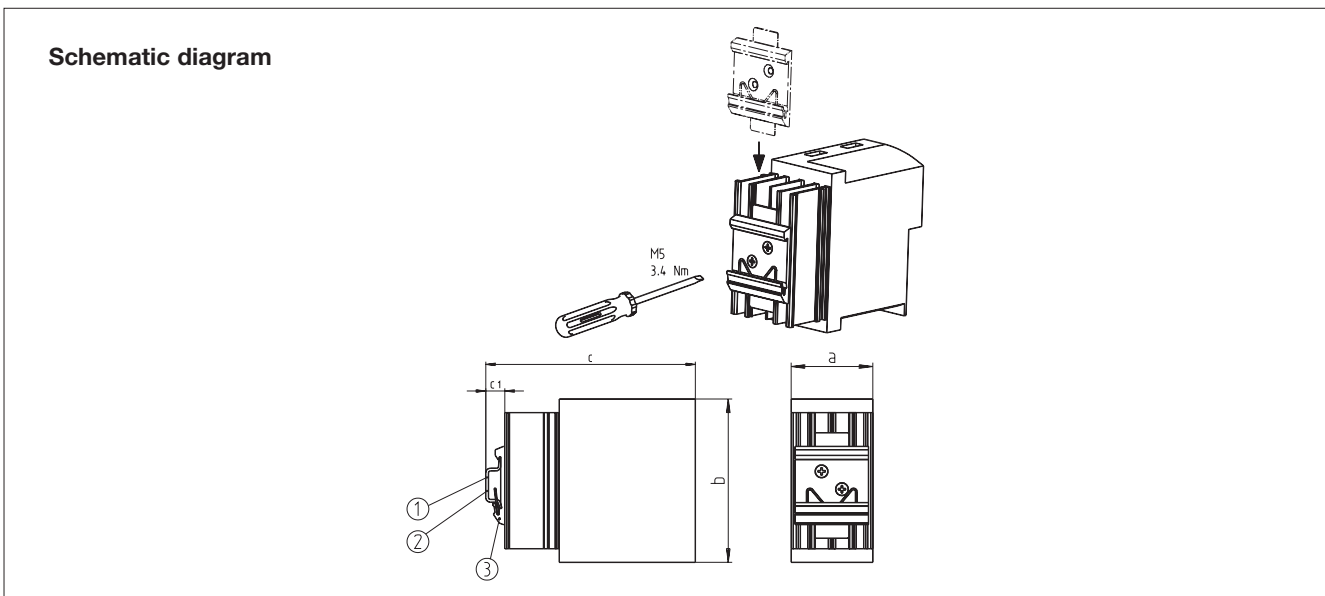
installation, adjustment and diagnostic purposes (locking mechanisms at 45°, 90°, 135°, 180°). The swivel bracket can also be used for fixed sideways mounting.



① Bolt here ② Pivot point ③ Bolt here to keep the Drive PLC fixed in the 0° position

| Order ref. | a [mm] | b [mm] | b ₁ [mm] | b ₂ [mm] | c [mm] | c ₁ [mm] | d [mm] | e [mm] | e ₁ [mm] |
|------------|--------|--------|---------------------|---------------------|--------|---------------------|--------|--------|---------------------|
| E82ZJ001 | 60 | 203 | 177...192 | 120 | 140 | 162 | 6.5 | 11.5 | 39 |

DIN rail mounting



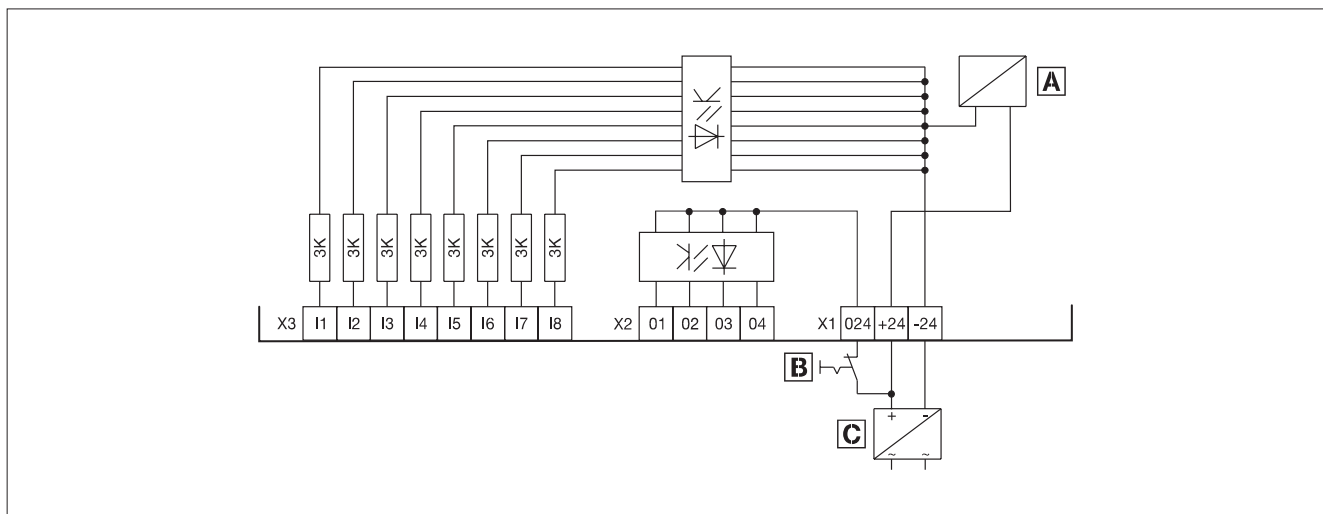
| | a [mm] | b [mm] | c [mm] | | c ₁ [mm] | |
|------------|--------|--------|--------|-----|---------------------|----|
| Order ref. | | | ① | ② | ① | ② |
| E82ZJ002 | 60 | 120 | 158 | 151 | 18 | 11 |

① DIN rail 35 x 15 or ② DIN rail 35 x 7.5 ③ DIN rail mounting

Tip: The DIN rail fixture can be positioned freely on the rear panel of the Drive PLC.

Drive PLC – Electrical installation

Terminals on the upper side of the device



A Control electronics supply

B Emergency stop

C External DC supply

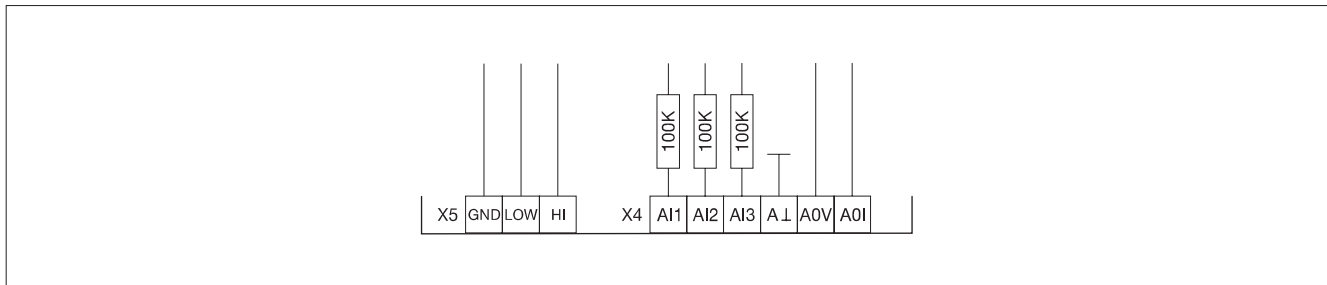
| X1 | Voltage supply | Level |
|------|------------------------------------|---------------------|
| κ 24 | GND voltage supply | Reference potential |
| +24 | Supply voltage | +18 ... +30 V DC |
| +024 | Supply voltage for digital outputs | +18 ... +30 V DC |

| X2 | Digital outputs | Level |
|----|-----------------|------------------|
| 01 | Output 1 | +18 ... +30 V DC |
| : | : | |
| 04 | Output 4 | |

| X3 | Digital inputs | Level |
|----|----------------|-------------------------------|
| I1 | Input 1 | LOW level 0 ... +4 V DC |
| : | : | HIGH level +13 ... +30 V DC |
| I8 | Input 8 | Input current 8 mA at 24 V DC |

Drive PLC - Electrical installation

Terminals on the underside of the device



| X4 | Analog I/O | Level |
|----------------|-----------------------|-------------------------|
| AI1 | Analog input 1 | ± 10 V (10-bit + sign) |
| AI2 | Analog input 2 | |
| AI3 | Analog input 3 | |
| A _k | Analog GND | Reference potential |
| AOV | Analog output voltage | ± 10 V (10-bit + sign) |
| AOi | Analog output current | ± 20 mA (10-bit + sign) |

| X5 | System bus (CAN) | Level |
|-----|------------------|------------------------------|
| GND | | Reference potential |
| LOW | CAN-LOW | System bus LOW (data cable) |
| HI | CAN-HIGH | System bus HIGH (data cable) |

Extension board

The extension board can be fitted sideways into the Drive PLC. This simple solution allows the type and number of input/output terminals to be expanded quickly and easily.



| | |
|---|---|
| Extension Board 1 | Connections |
| for the connection of three-wire sensors and outputs for 24 V brake actuation | 6 digital inputs, 24 V DC, potential-free Low level: 0...+4 V DC High level: +13...+30 V DC |
| | 4 digital outputs, +18...+30 V DC ¹⁾ potential-free, max. 1A |
| | 2 digital outputs, +18...30 V DC ¹⁾ potential-free, max. 2A 5 terminals each for +24 V DC and GND (for three-wire sensors) |
| Extension Board 2 | Connections |
| for the most cost-effective connection of digital sensors and actuators | 14 digital inputs, 24 V DC, potential-free Low level: 0...+4 V DC High level: +13...+30 V DC |
| | 8 digital outputs, +18...+30 V DC ¹⁾ potential-free, max. 1A |
| Extension Board 3 | Connections |
| for rapid counting, length measurements and control technology applications | 1 encoder input, TTL, HTL, 500 kHz, two-track with inverted signals and zero track |
| | 8 digital inputs, 24 V potential-free Low level: 0...+4 V DC High level: +13...+30 V DC |
| | 4 digital outputs, +18...30 V DC ¹⁾ potential-free max. 1A |
| | 2 analog inputs $\pm 10V$ (10-bit + sign) |

¹⁾ = depending on the supply voltage (18...30 V DC)

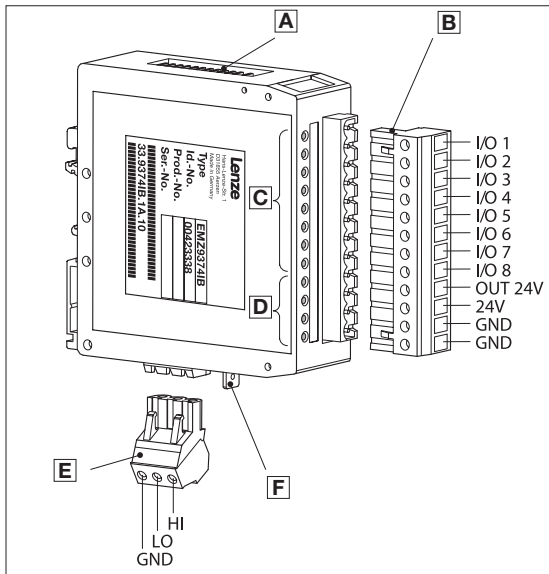
| Name | Order ref. |
|-------------------|------------|
| Extension Board 1 | EPZ-10201 |
| Extension Board 2 | EPZ-10202 |
| Extension Board 3 | EPZ-10203 |

Terminal extension for system bus (CAN)

| | |
|-------------------------|------------------|
| Order reference: | EMZ9374IB |
|-------------------------|------------------|

The terminal extension serves to add extra digital input and output terminals to the system bus network. All 8 terminals are freely programmable as inputs or outputs. The reaction time of the terminals is 1-2 ms.

Overview



The diagram shows the EMZ9374IB terminal extension module with various components labeled A through F. Component A is a DIP switch on top. Component B is a 12-pin terminal strip on the right side, with pins labeled IO 1 through IO 8, OUT 24V, 24V, GND, and GND. Component C is a yellow status LED. Component D is a diagnostic LED. Component E is a 3-pin terminal strip at the bottom, labeled HI, LO, and GND. Component F is a PE connector at the bottom.

| | |
|----------|---|
| A | DIP switch for configuring the terminal extension |
| B | 12-pin terminal strip for connecting inputs/outputs and the supply voltage I/O1...I/O8 connection for digital inputs and digital outputs OUT 24 V +18...+30 V DC output voltage for digital outputs (always operate the terminal via emergency stop) 24 V +18...+30 V DC supply voltage GND Minus voltage supply, reference potential |
| C | Yellow status LED for inputs/outputs I/O1...I/O8 • LED ON: Input/output is set • LED OFF: Input/output is not set |
| D | Diagnostic LED |
| E | 3-pin terminal strip for connecting the system bus (CAN) HI System bus HIGH LO System bus LOW GND Reference potential |
| F | PE connector for the PE connection |

Technical data

| | | | | | | |
|------------------------------|---|--|-----|-----|-----|------|
| Electrical connection | Supply voltage | +18...+30 V DC | | | | |
| | Current requirement | 80 mA at +24 V DC | | | | |
| Digital outputs | Features | <ul style="list-style-type: none"> No electrical isolation Short-circuit-proof | | | | |
| | Current per output | max. 1 A | | | | |
| | Total current of all outputs | max. 4 A | | | | |
| | HIGH level | +13...+30 V DC | | | | |
| | LOW level | 0...+5 V DC | | | | |
| Digital inputs | Features | No electrical isolation | | | | |
| | Input resistance | 3 kΩ...4 kΩ | | | | |
| | HIGH level | +13...+30 V DC | | | | |
| | LOW level | 0...+5 V DC | | | | |
| System bus (CAN) | Communication profile | Similar to CANopen (CIA DS301) (compatible with Lenze automation components) | | | | |
| | Communication medium | DIN ISO 11898 | | | | |
| | Network topology | Line (terminated at both ends with 120 Ω) | | | | |
| | System bus device | Slave | | | | |
| | Max. number of devices | 63 | | | | |
| | Baud rate [kBit/s] | 50 | 125 | 250 | 500 | 1000 |
| | Max. bus length [m] | 1000 | 500 | 250 | 80 | 25 |
| Mounting | on DIN rail | | | | | |
| Dimensions | H x B x D [mm] 101 x 25 x 98 (incl. terminal strip) | | | | | |

Process visualisation

Lenze's graduated range of displays can provide you with high-quality powerful products suitable for universal use. They offer high levels of user-friendliness and functionality which is reflected in their design. They provide a variety of functions:

- Display of text, images, bar graphs, bitmap images and animated graphics¹⁾
- Recipe management¹⁾
- Saving of data with access protection with password allocation
- Display of system messages
- Display of alarm messages¹⁾
- Communication via system bus
- Transparent bilingual parameterisation software
- Mathematical functions¹⁾
- Automatic operations¹⁾
- Real-time clock
- Windows fonts

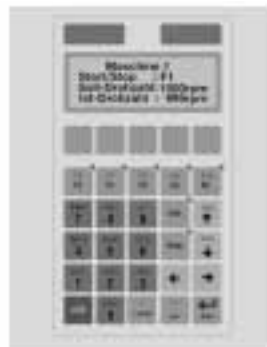
| | Order ref.: |
|-------------|-----------------|
| H310 | EPM-H310 |
| H315 | EPM-H315 |
| H410 | EPM-H410 |
| H510 | EPM-H510 |
| H520 | EPM-H520 |

¹⁾ Not available for all types

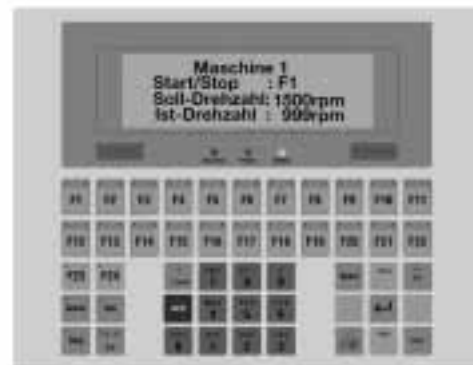
Displays



H310

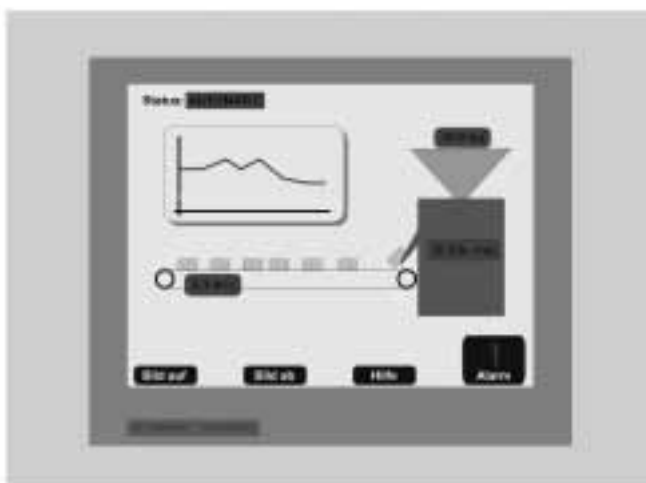


H315

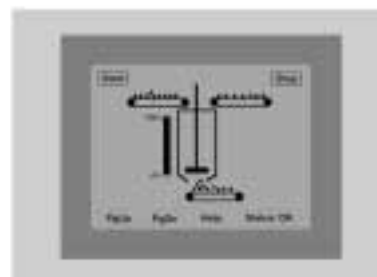


H410

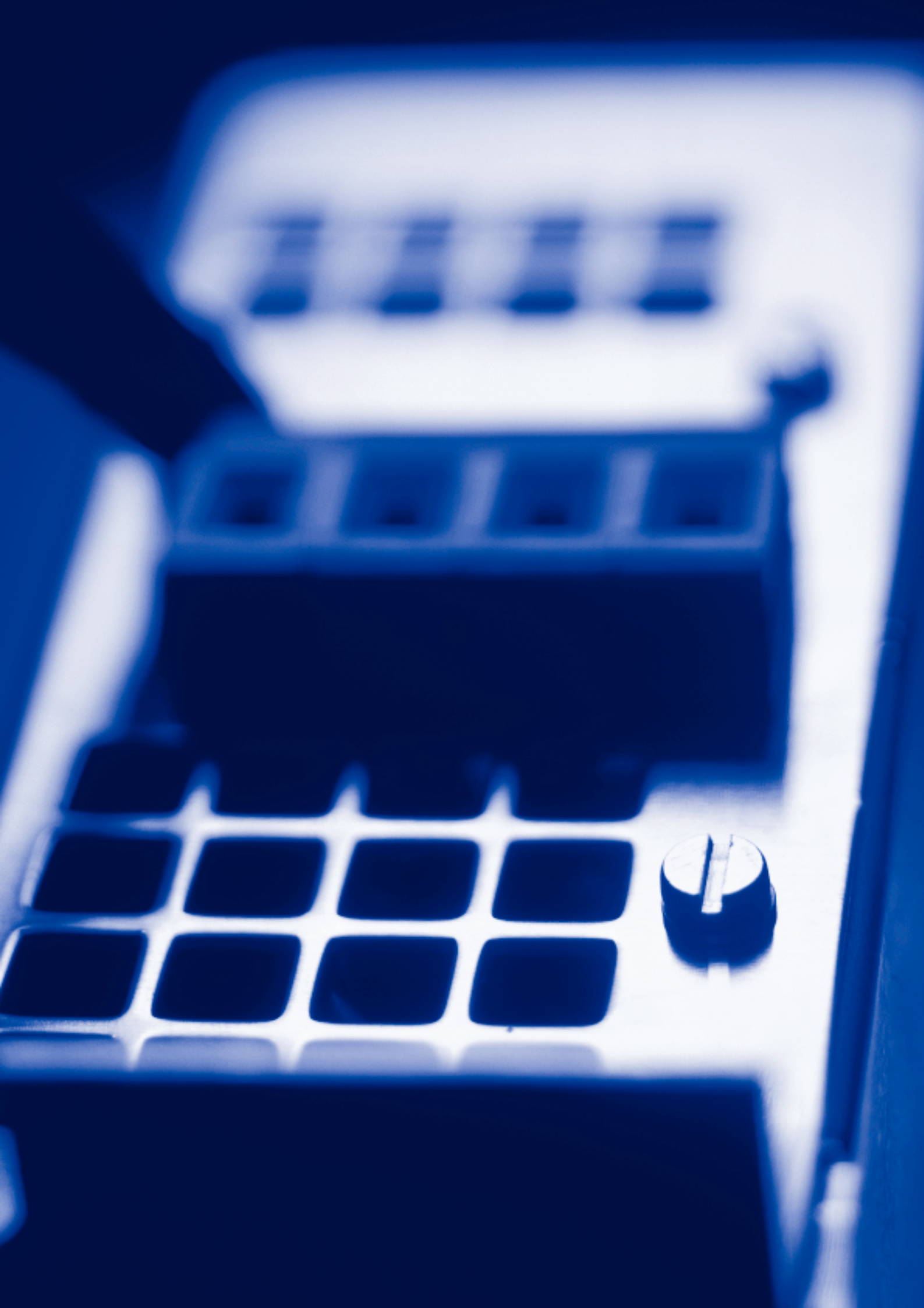
Touchscreens



H520



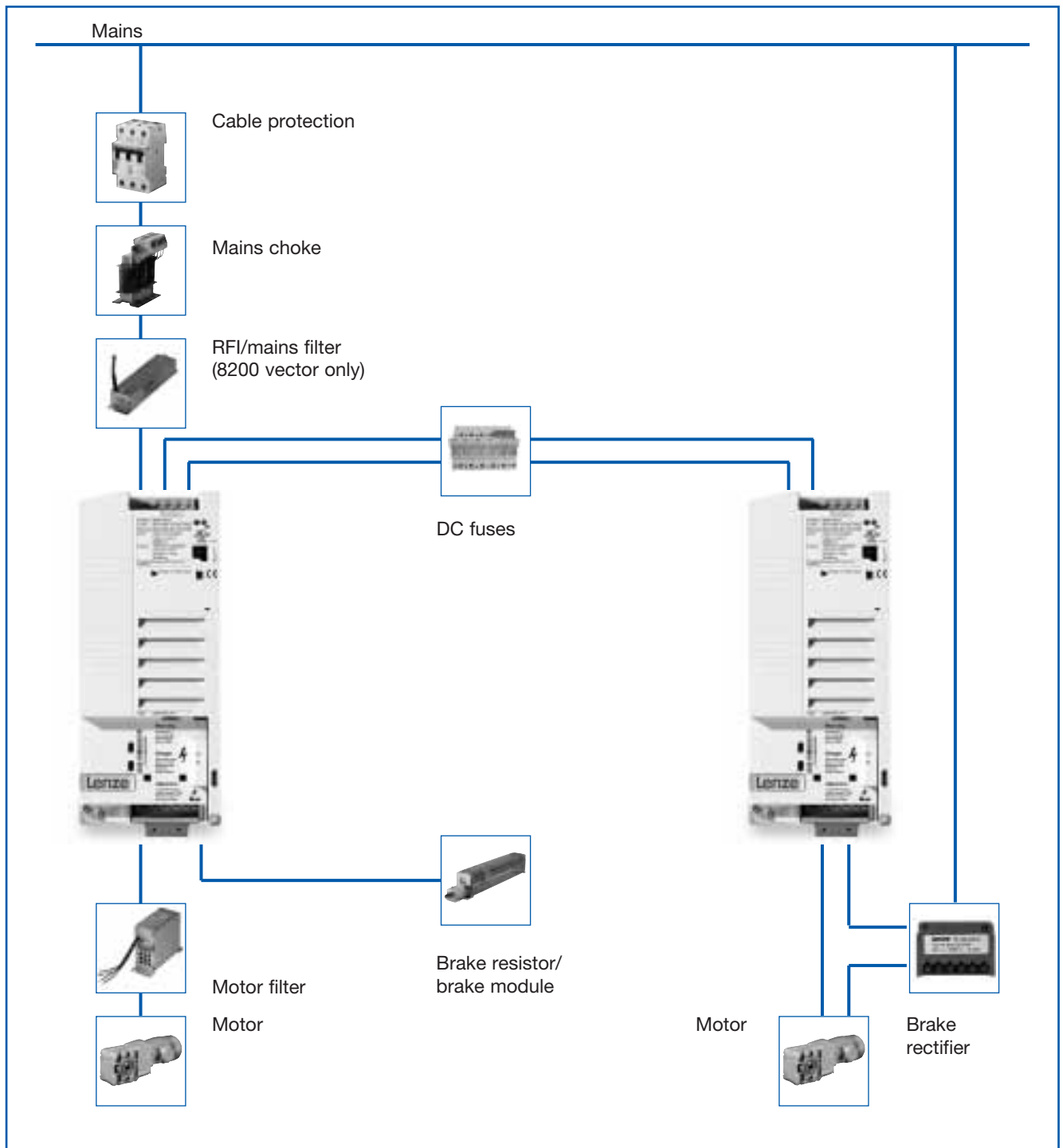
H510



Accessories | 8200 vector

| | | | |
|---|------|---|------|
| Overview _____ | 4-3 | Braking _____ | 4-29 |
| Cable protection _____ | 4-4 | General _____ | 4-29 |
| Fuses for operation with mains choke _____ | 4-4 | Integrated brake transistors (0.25 kW...7.5 kW/230 V) _____ | 4-30 |
| Fuse holders for operation with mains choke _____ | 4-5 | Integrated brake transistors (0.55 kW...11 kW/400 V) _____ | 4-31 |
| Circuit-breakers for operation with mains choke _____ | 4-6 | Brake chopper and brake module (15.0 kW...90.0 kW/400 V) _____ | 4-32 |
| Fuses for operation without mains choke _____ | 4-7 | Brake resistors _____ | 4-36 |
| Fuse holders for operation without mains choke _____ | 4-8 | Brake rectifiers _____ | 4-38 |
| Circuit-breakers for operation without mains choke _____ | 4-9 | Group operation _____ | 4-42 |
| Mains chokes _____ | 4-10 | DC fuses _____ | 4-42 |
| General _____ | 4-10 | Miscellaneous _____ | 4-44 |
| Mains chokes (0.25 kW...90 kW) _____ | 4-10 | Setpoint potentiometer _____ | 4-44 |
| Dimensions _____ | 4-11 | Digital display _____ | 4-44 |
| Radio interference suppression _____ | 4-14 | EMC kit _____ | 4-45 |
| General _____ | 4-14 | PTC kit _____ | 4-45 |
| Footprint RFI filters threshold class A and B (0.25 kW ... 2.2 kW) _____ | 4-15 | Plug connector _____ | 4-45 |
| Footprint RFI filters threshold class A and B (3 kW ... 11 kW) _____ | 4-16 | “General accessories” overview tables _____ | 4-47 |
| Footprint RFI filters threshold class A and B (15 kW ... 11 kW) _____ | 4-17 | “Type-specific accessories” overview tables _____ | 4-49 |
| Integrated RFI filters threshold class A (15 kW ... 90 kW) _____ | 4-18 | | |
| Integrated RFI filters threshold class B (15 kW ... 90 kW) _____ | 4-19 | | |
| Dimensions _____ | 4-20 | | |
| Motor filters _____ | 4-24 | | |
| General _____ | 4-24 | | |
| Motor filters (0.25 kW...2.2 kW/230 V) _____ | 4-25 | | |
| Motor filters (0.55 kW...2.2 kW/400 V) _____ | 4-26 | | |
| Motor filters (3.0 kW...11 kW/400 V) _____ | 4-27 | | |
| Motor filters (15.0 kW...90 kW/400 V) _____ | 4-28 | | |





Select the accessories for your application on the following pages. The drive can be integrated into any type of application using the numerous accessories. RFI filters, mains chokes and mains filters are available to ensure adherence to EMC limiting values. Motor filters provide protection for motors whose isolation systems are not suitable for inverter operation. The combination of motor filters and RFI filters enables the inverters to be used in applications with long motor cables. Brake choppers, brake modules and brake resistors for converting braking energy into heat are available for braking large loads and

for dynamic applications. Lenze can provide a system of DC fuses and DC busbar systems to provide cable protection even in DC bus operation. The DC fuses have been designed for use with the 8200 vector.

Fuses for operation with mains choke

Fuses or circuit-breakers can be used to protect cables. Depending on the mains current supply of each frequency

inverter, the following current ratings are required for the protection devices:

| 8200 vector | | Normal operation (150% overload) | | | | | Operation with increased power rating (120% overload) | | | | |
|-----------------------|----------------|----------------------------------|-------|------------------------|---------------------|--------|---|-------|------------------------|---------------------|--------|
| Type ¹⁾ | Voltage [V] | Fuse | | Circuit-breaker VDE | Cable cross-section | | Fuse | | Circuit-breaker VDE | Cable cross-section | |
| | | VDE | UL | | mm ² | AWG | VDE | UL | | mm ² | AWG |
| E82EV251K2C | 1~ 230 | M10 A | 10 A | C10 A | 1.5 | 16 | M10 A | 10 A | C10 A | 1.5 | 16 |
| E82EV371K2C | | M10 A | 10 A | C10 A | 1.5 | 16 | - | - | - | - | - |
| E82EV551K2C | | M10 A | 10 A | B10 A | 1.5 | 16 | M10 A | 10 A | B10 A | 1.5 | 16 |
| E82EV751K2C | | M10 A | 10 A | B10 A | 1.5 | 16 | M16 A | 15 A | B16 A | 2.5 | 14 |
| E82EV152K2C | | M16 A | 15 A | B16 A | 2 x 1.5 | 2 x 16 | M20 A | 20 A | B20 A | 2 x 1.5 | 2 x 16 |
| E82EV222K2C | | M20 A | 20 A | B20 A | 2 x 1.5 | 2 x 16 | - | - | - | - | - |
| E82EV551K2C | 3~ 230 | M6 A | 5 A | B6 A | 1 | 18 | M6 A | 5 A | B6 A | 1 | 18 |
| E82EV751K2C | | M6 A | 5 A | B6 A | 1 | 18 | M10 A | 10 A | B10 A | 1.5 | 16 |
| E82EV152K2C | | M10 A | 10 A | B10 A | 1.5 | 16 | M10 A | 10 A | B10 A | 1.5 | 16 |
| E82EV222K2C | | M10 A | 10 A | B10 A | 1.5 | 16 | - | - | - | - | - |
| E82EV302K2C | | M16 A | 15 A | B16 A | 2.5 | 14 | M20 A | 20 A | B20 A | 4 | 12 |
| E82EV402K2C | | M20 A | 20 A | B20 A | 4 | 12 | - | - | - | - | - |
| E82EV552K2C | | M25 A | 25 A | B25 A | 4 | 10 | M32 A | 35 A | B32 A | 6 | 8 |
| E82EV752K2C | | M35 A | 35 A | - | 6 | 8 | - | - | - | - | - |
| E82EV551K4C | 3~ 400 | M6 A | 5 A | B6 A | 1 | 18 | M6 A | 5 A | B6 A | 1 | 18 |
| E82EV751K4C | | M6 A | 5 A | B6 A | 1 | 18 | M6 A | 5 A | B6 A | 1 | 18 |
| E82EV152K4C | | M10 A | 10 A | B10 A | 1.5 | 16 | - | - | - | - | - |
| E82EV222K4C | | M10 A | 10 A | B10 A | 1.5 | 16 | M10 A | 10 A | B10 A | 1.5 | 16 |
| E82EV302K4C | | M10 A | 10 A | B10 A | 1.5 | 16 | M10 A | 10 A | B10 A | 1.5 | 16 |
| E82EV402K4C | | M16 A | 15 A | B16 A | 2.5 | 14 | M16 A | 15 A | B16 A | 2.5 | 14 |
| E82EV552K4C | | M20 A | 20 A | B20 A | 4 | 12 | - | - | - | - | - |
| E82EV752K4C | | M20 A | 20 A | B20 A | 4 | 12 | - | - | - | - | - |
| E82EV113K4C | | M32 A | 25 A | B32 A | 6 | 10 | - | - | - | - | - |
| E82EV153K4C201 | 3~ 400 | M35 A | 35 A | - | 10 | 8 | M50 A | 50 A | - | 16 | 6 |
| E82EV223K4C201 | | M50 A | 50 A | - | 16 | 6 | M63 A | 63 A | - | 25 | 4 |
| E82EV303K4C201 | | M80 A | 80 A | - | 25 | 3 | M80 A | 80 A | - | 25 | 3 |
| E82EV453K4C201 | | M100 A | 100 A | - | 50 | 1 | M125 A | 125 A | - | 50 | 0 |
| E82EV553K4C201 | | M125 A | 125 A | - | 50 | 0 | M160 A | 175 A | - | 70 | 2/0 |
| E82EV753K4C201 | | M160 A | 175 A | - | 70 | 2/0 | M160 A | 175 A | - | 70 | 2/0 |
| E82EV903K4C201 | | M200 A | 200 A | - | 95 | 3/0 | M200 A | 200 A | - | 95 | 3/0 |

Please observe national and regional regulations

¹⁾ Also valid for E82CVxxxKx and E82DVxxxKx devices

For operation in UL approved installations, use only standard UL approved cables, fuses and fuse holders. UL fuse: Voltage 240 V or 500 V...600 V, tripping characteristic "H" or "K5".



Fuse holders for operation with mains choke

| 8200 vector | | Fuse | | | | Fuse holder | |
|--------------------|---------------|----------------------------|----------------------------------|--|----------------------|------------------------------------|----------------------|
| Type ²⁾ | Voltage [V] | Current rating | Size | Order ref. | Required number | Order ref. | Required number |
| E82EV251K2C | 1~ 230 | M10A | 10 x 38 | EFSM-0100AWE | 1 | EFH10001 | 1 |
| E82EV371K2C | | M10A | 10 x 38 | EFSM-0100AWE | 1 | EFH10001 | 1 |
| E82EV551K2C | | M10A | 10 x 38 | EFSM-0100AWE | 1 | EFH10001 | 1 |
| E82EV751K2C | | M10A M16A ¹⁾ | 10 x 38 10 x 38 ¹⁾ | EFSM-0100AWE EFSM-0160AWE ¹⁾ | 1 1 ¹⁾ | EFH10001 EFH10001 ¹⁾ | 1 1 ¹⁾ |
| E82EV152K2C | | M16A M20A ¹⁾ | 10 x 38 10 x 38 ¹⁾ | EFSM-0160AWE EFSM-0200AWE ¹⁾ | 1 1 ¹⁾ | EFH10001 EFH10001 ¹⁾ | 1 1 ¹⁾ |
| E82EV222K2C | | M20A | 10 x 38 | EFSM-0200AWE | 1 | EFH10001 | 1 |
| E82EV551K2C | 3~ 230 | M6A | 10 x 38 | EFSM-0060AWE | 3 | EFH10001 | 3 |
| E82EV751K2C | | M6A M10A ¹⁾ | 10 x 38 10 x 38 ¹⁾ | EFSM-0060AWE EFSM-0100AWE ¹⁾ | 3 3 ¹⁾ | EFH10001 EFH10001 ¹⁾ | 3 3 ¹⁾ |
| E82EV152K2C | | M10A | 10 x 38 | EFSM-0100AWE | 3 | EFH10001 | 3 |
| E82EV222K2C | | M10A | 10 x 38 | EFSM-0100AWE | 3 | EFH10001 | 3 |
| E82EV302K2C | | M16A M20A ¹⁾ | 10 x 38 10 x 38 ¹⁾ | EFSM-0160AWE EFSM-0200AWE ¹⁾ | 3 3 ¹⁾ | EFH10001 EFH10001 ¹⁾ | 3 3 ¹⁾ |
| E82EV402K2C | | M20A | 10 x 38 | EFSM-0200AWE | 3 | EFH10001 | 3 |
| E82EV552K2C | | M25A M32A ¹⁾ | 14 x 51 14 x 51 ¹⁾ | EFSM-0250AXH EFSM-0320AWH ¹⁾ | 3 3 ¹⁾ | EFH10002 EFH10002 ¹⁾ | 3 3 ¹⁾ |
| E82EV752K2C | | M32A | 14 x 51 | EFSM-0320AWH | 3 | EFH10002 | 3 |
| E82EV551K4C | | 3~ 400 | M6A | 10 x 38 | EFSM-0060AWE | 3 | EFH10001 |
| E82EV751K4C | M6A | | 10 x 38 | EFSM-0060AWE | 3 | EFH10001 | 3 |
| E82EV152K4C | M10A | | 10 x 38 | EFSM-0100AWE | 3 | EFH10001 | 3 |
| E82EV222K4C | M10A | | 10 x 38 | EFSM-0100AWE | 3 | EFH10001 | 3 |
| E82EV302K4C | M10A | | 10 x 38 | EFSM-0100AWE | 3 | EFH10001 | 3 |
| E82EV402K4C | M16A | | 10 x 38 | EFSM-0160AWE | 3 | EFH10001 | 3 |
| E82EV552K4C | M20A | | 10 x 38 | EFSM-0200AWE | 3 | EFH10001 | 3 |
| E82EV752K4C | M20A | | 10 x 38 | EFSM-0200AWE | 3 | EFH10001 | 3 |
| E82EV113K4C | M32A | | 14 x 51 | EFSM-0320AWH | 3 | EFH10002 | 3 |

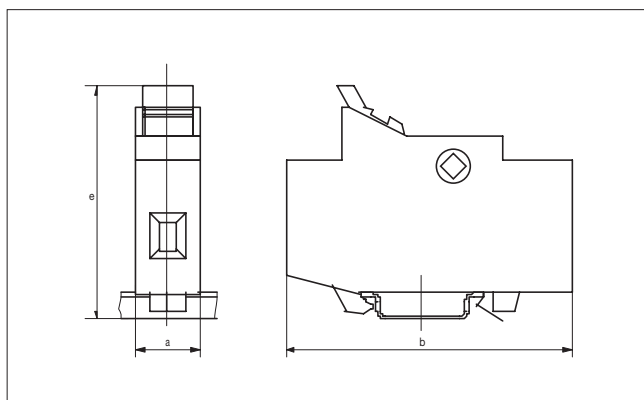
¹⁾ For operation with increased power rating (120% overload)

²⁾ Also valid for E82CVxxxKx and E82DVxxxKx devices

Note:

We recommend using standard fuses (not in the scope of supply) for types E82EV153K4C...E82EV903K4C.

Fuse holder dimensions



| Type | a [mm] | b [mm] | e [mm] | Fuse dimensions |
|----------|--------|--------|--------|-----------------|
| EFH10001 | 17.5 | 81 | 68 | 10 x 38 |
| EFH10002 | 26 | 95 | 85 | 14 x 51 |

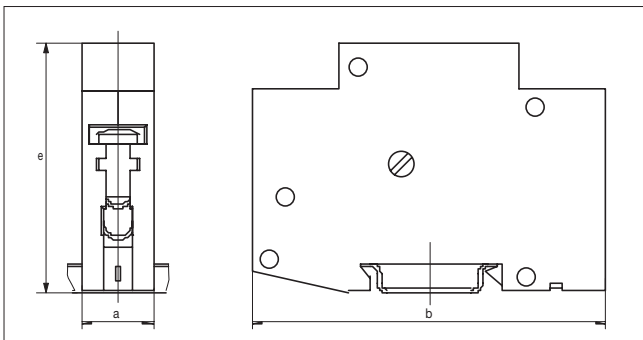
Circuit-breakers for operation with mains choke

| 8200 vector | | Circuit-breakers | | | |
|--------------------|----------------|----------------------------|------------------------------------|----------------------|---|
| Type ²⁾ | Voltage [V] | Current rating | Order ref. | Required number | |
| E82EV251K2C | 1~ 230 | C10A | EFA1C10A | 1 | |
| E82EV371K2C | | C10A | EFA1C10A | 1 | |
| E82EV551K2C | | B10A | EFA1B10A | 1 | |
| E82EV751K2C | | B10A B16A ¹⁾ | EFA1B10A EFA1B16A ¹⁾ | 1 1 ¹⁾ | |
| E82EV152K2C | | B16A B20A ¹⁾ | EFA1B16A EFA1B20A ¹⁾ | 1 1 ¹⁾ | |
| E82EV222K2C | | B20A | EFA1B20A | 1 | |
| E82EV551K2C | 3~ 230 | B6A | EFA3B06A | 1 | |
| E82EV751K2C | | B6A B10A ¹⁾ | EFA3B06A EFA3B10A ¹⁾ | 1 1 ¹⁾ | |
| E82EV152K2C | | B10A | EFA3B10A | 1 | |
| E82EV222K2C | | B10A | EFA3B10A | 1 | |
| E82EV302K2C | | B16A B20A ¹⁾ | EFA3B16A EFA3B20A ¹⁾ | 1 1 ¹⁾ | |
| E82EV402K2C | | B20A | EFA3B20A | 1 | |
| E82EV552K2C | | B25A B32A ¹⁾ | EFA3B25A EFA3B32A ¹⁾ | 1 1 ¹⁾ | |
| E82EV752K2C | | - | - | - | - |
| E82EV551K4C | | 3~ 400 | B6A | EFA3B06A | 1 |
| E82EV751K4C | B6A | | EFA3B06A | 1 | |
| E82EV152K4C | B10A | | EFA3B10A | 1 | |
| E82EV222K4C | B10A | | EFA3B10A | 1 | |
| E82EV302K4C | B10A | | EFA3B10A | 1 | |
| E82EV402K4C | B16A | | EFA3B16A | 1 | |
| E82EV552K4C | B20A | | EFA3B20A | 1 | |
| E82EV752K4C | B20A | | EFA3B20A | 1 | |
| E82EV113K4C | B32A | | EFA3B32A | 1 | |

¹⁾ For operation with increased power rating (120% overload)

²⁾ Also valid for E82CVxxxKx and E82DVxxxKx devices

Miniature circuit-breaker dimensions



EFA1xxxxA



EFA3BxxxA

| Type | a [mm] | b [mm] | e [mm] |
|-----------|--------|--------|--------|
| EFA1xxxxA | 17.5 | 90 | 63 |
| EFA3BxxxA | 53 | 90 | 63 |



Fuses for operation without mains choke

Fuses or circuit-breakers can be used to protect cables. Depending on the mains current supply of each frequency

inverter, the following current ratings are required for the protection devices:

| 8200 vector | | Normal operation (150% overload) | | | | | Operation with increased power rating (120% overload) | | | | |
|-----------------------|------------------|---|------|------------------------|---------------------|--------|---|-------|------------------------|---------------------|--------|
| Type ¹⁾ | Voltage [V] | Fuse | | Circuit-breaker VDE | Cable cross-section | | Fuse | | Circuit-breaker VDE | Cable cross-section | |
| | | VDE | UL | | mm ² | AWG | VDE | UL | | mm ² | AWG |
| E82EV251K2C | 1~ 230 | M10 A | 10 A | C10 A | 1.5 | 16 | M10 A | 10 A | C10 A | 1.5 | 16 |
| E82EV371K2C | | M10 A | 10 A | C10 A | 1.5 | 16 | - | - | - | - | - |
| E82EV551K2C | | M10 A | 10 A | B10 A | 1.5 | 16 | M10 A | 10 A | B10 A | 1.5 | 16 |
| E82EV751K2C | | M16 A | 15 A | B16 A | 2.5 | 14 | Operation only with mains choke | | | | |
| E82EV152K2C | | M20 A | 20 A | B20 A | 2 x 1.5 | 2 x 16 | M20 A | 20 A | B20 A | 2 x 1.5 | 2 x 16 |
| E82EV222K2C | | Operation only with mains choke | | | | | - | - | - | - | - |
| E82EV551K2C | 3~ 230 | M6 A | 5 A | B6 A | 1 | 18 | M6 A | 5 A | B6 A | 1 | 18 |
| E82EV751K2C | | M10 A | 10 A | B10 A | 1.5 | 16 | Operation only with mains choke | | | | |
| E82EV152K2C | | M16 A | 15 A | B16 A | 2.5 | 14 | M16 A | 15 A | B16 A | 2.5 | 14 |
| E82EV222K2C | | M16 A | 15 A | B16 A | 2.5 | 14 | - | - | - | - | - |
| E82EV302K2C | | M20 A | 20 A | B20 A | 4 | 12 | M25 A | 25 A | B25 A | 4 | 10 |
| E82EV402K2C | | M25 A | 25 A | B25 A | 4 | 10 | - | - | - | - | - |
| E82EV552K2C | | M35 A | 35 A | - | 6 | 8 | Operation only with mains choke | | | | |
| E82EV752K2C | | Operation only with mains choke | | | | | - | - | - | - | - |
| E82EV551K4C | 3~ 400 | M6 A | 5 A | B6 A | 1 | 18 | M6 A | 5 A | B6 A | 1 | 18 |
| E82EV751K4C | | M6 A | 5 A | B6 A | 1 | 18 | Operation only with mains choke | | | | |
| E82EV152K4C | | M10 A | 10 A | B10 A | 1.5 | 16 | - | - | - | - | - |
| E82EV222K4C | | M10 A | 10 A | B10 A | 1.5 | 16 | Operation only with mains choke | | | | |
| E82EV302K4C | | M16 A | 15 A | B16 A | 2.5 | 14 | M16 A | B15 A | B 16 | 2.5 | 14 |
| E82EV402K4C | | M16 A | 15 A | B16 A | 2.5 | 14 | Operation only with mains choke | | | | |
| E82EV552K4C | | M25 A | 20 A | B25 A | 4 | 12 | - | - | - | - | - |
| E82EV752K4C | | M32 A | 25 A | B32 A | 6 | 10 | - | - | - | - | - |
| E82EV113K4C | | Operation only with mains choke | | | | | - | - | - | - | - |
| E82EV153K4C201 | 3~ 400 | M63A | 63A | - | 25 | 4 | Operation only with a mains choke or mains filter | | | | |
| E82EV223K4C201 | | Operation only with a mains choke or mains filter | | | | | | | | | |
| E82EV303K4C201 | | Operation only with a mains choke or mains filter | | | | | | | | | |
| E82EV453K4C201 | | Operation only with a mains choke or mains filter | | | | | | | | | |
| E82EV553K4C201 | | Operation only with a mains choke or mains filter | | | | | | | | | |
| E82EV753K4C201 | | Operation only with a mains choke or mains filter | | | | | | | | | |

Please observe national and regional regulations

¹⁾ Also valid for E82CVxxxKx and E82DVxxxKx devices

For operation in UL approved installations, use only UL approved cables, fuses and fuse holders.

UL fuse: Voltage 240 V or 500 V...600 V, tripping characteristic "H" or "K5".

Fuse holders for operation without mains choke

| 8200 vector | | Fuse | | | | Fuse holder | | |
|--------------------|-----------------------------------|-----------------------------------|----------------------------------|--|----------------------|------------------------------------|----------------------|---|
| Type ²⁾ | Voltage [V] | Current rating | Size | Order ref. | Required number | Order ref. | Required number | |
| E82EV251K2C | 1~ 230 | M10A | 10 x 38 | EFSM-0100AWE | 1 | EFH10001 | 1 | |
| E82EV371K2C | | M10A | 10 x 38 | EFSM-0100AWE | 1 | EFH10001 | 1 | |
| E82EV551K2C | | M10A | 10 x 38 | EFSM-0100AWE | 1 | EFH10001 | 1 | |
| E82EV751K2C | | M16A | 10 x 38 | EFSM-0160AWE | 1 | EFH10001 | 1 | |
| E82EV152K2C | | M20A | 10 x 38 | EFSM-0200AWE | 1 | EFH10001 | 1 | |
| E82EV222K2C | | Operation only with a mains choke | | | | | | |
| E82EV551K2C | 3~ 230 | M6A | 10 x 38 | EFSM-0060AWE | 3 | EFH10001 | 3 | |
| E82EV751K2C | | M10A | 10 x 38 | EFSM-0100AWE | 3 | EFH10001 | 3 | |
| E82EV152K2C | | M16A | 10 x 38 | EFSM-0160AWE | 3 | EFH10001 | 3 | |
| E82EV222K2C | | M16A | 10 x 38 | EFSM-0160AWE | 3 | EFH10001 | 3 | |
| E82EV302K2C | | M20A M25A ¹⁾ | 10 x 38 14 x 51 ¹⁾ | EFSM-0200AWE EFSM-0250AXH ¹⁾ | 3 3 ¹⁾ | EFH10001 EFH10002 ¹⁾ | 3 3 ¹⁾ | |
| E82EV402K2C | | M25A | 14 x 51 | EFSM-0250AXH | 3 | EFH10002 | 3 | |
| E82EV552K2C | | M32A | 14 x 51 | EFSM-0320AWH | 3 | EFH10002 | 3 | |
| E82EV752K2C | | Operation only with a mains choke | | | | | | |
| E82EV551K4C | | 3~ 400 | M6A | 10 x 38 | EFSM-0060AWE | 3 | EFH10001 | 3 |
| E82EV751K4C | M6A | | 10 x 38 | EFSM-0060AWE | 3 | EFH10001 | 3 | |
| E82EV152K4C | M10A | | 10 x 38 | EFSM-0100AWE | 3 | EFH10001 | 3 | |
| E82EV222K4C | M10A | | 10 x 38 | EFSM-0100AWE | 3 | EFH10001 | 3 | |
| E82EV302K4C | M16A | | 10 x 38 | EFSM-0160AWE | 3 | EFH10001 | 3 | |
| E82EV402K4C | M16A | | 10 x 38 | EFSM-0160AWE | 3 | EFH10001 | 3 | |
| E82EV552K4C | M25A | | 14 x 51 | EFSM-0250AXH | 3 | EFH10002 | 3 | |
| E82EV752K4C | M32A | | 14 x 51 | EFSM-0320AWH | 3 | EFH10002 | 3 | |
| E82EV113K4C | Operation only with a mains choke | | | | | | | |

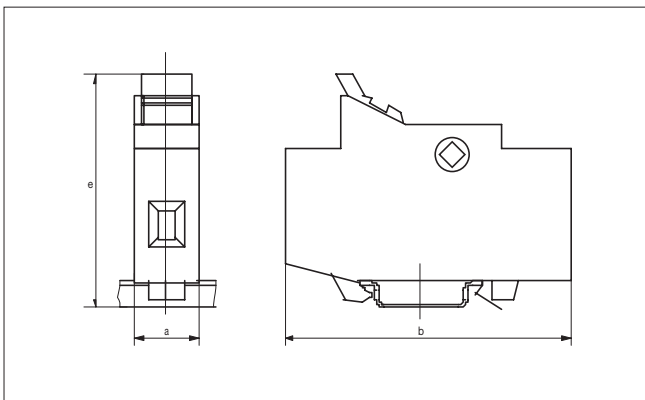
¹⁾ For operation with increased power rating (120% overload)

²⁾ Also valid for E82CVxxxKx and E82DVxxxKx devices

Note:

We recommend using standard fuses (not in the scope of supply) for types E82EV153K4C...E82EV903K4C.

Fuse holder dimensions



| Type | a [mm] | b [mm] | e [mm] | Fuse dimensions |
|----------|--------|--------|--------|-----------------|
| EFH10001 | 17.5 | 81 | 68 | 10 x 38 |
| EFH10002 | 26 | 81 | 68 | 14 x 51 |



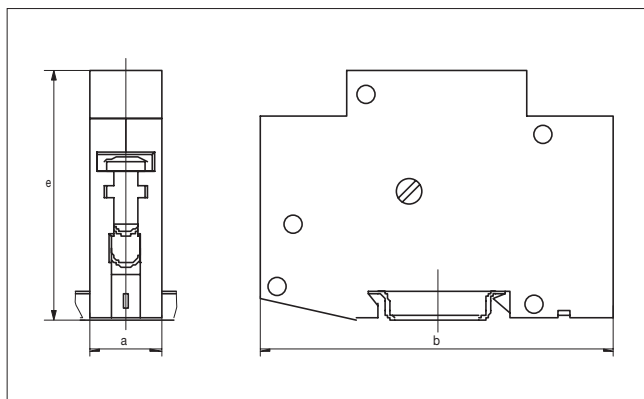
Circuit-breakers for operation without mains choke

| 8200 vector | | Circuit-breakers | | |
|--------------------|----------------|---------------------------------|------------------------------------|----------------------|
| Type ²⁾ | Voltage [V] | Current rating | Order ref. | Required number |
| E82EV251K2C | 1~ 230 | C10A | EFA1C10A | 1 |
| E82EV371K2C | | C10A | EFA1C10A | 1 |
| E82EV551K2C | | B10A | EFA1B10A | 1 |
| E82EV751K2C | | B16A | EFA1B16A | 1 |
| E82EV152K2C | | B20A | EFA1B20A | 1 |
| E82EV222K2C | | Operation only with mains choke | | |
| E82EV551K2C | 3~ 230 | B6A | EFA3B06A | 1 |
| E82EV751K2C | | B10A | EFA3B10A | 1 |
| E82EV152K2C | | B16A | EFA3B16A | 1 |
| E82EV222K2C | | B16A | EFA3B16A | 1 |
| E82EV302K2C | | B20A B25A ¹⁾ | EFA3B20A EFA3B25A ¹⁾ | 1 1 ¹⁾ |
| E82EV402K2C | | B25A | EFA3B25A | 1 |
| E82EV552K2C | | - | - | - |
| E82EV752K2C | | Operation only with mains choke | | |
| E82EV551K4C | 3~ 400 | B6A | EFA3B06A | 1 |
| E82EV751K4C | | B6A | EFA3B06A | 1 |
| E82EV152K4C | | B10A | EFA3B10A | 1 |
| E82EV222K4C | | B10A | EFA3B10A | 1 |
| E82EV302K4C | | B16A | EFA3B16A | 1 |
| E82EV402K4C | | B16A | EFA3B16A | 1 |
| E82EV552K4C | | B25A | EFA3B25A | 1 |
| E82EV752K4C | | B32A | EFA3B32A | 1 |
| E82EV113K4C | | Operation only with mains choke | | |

¹⁾ For operation with increased power rating (120% overload)

²⁾ Also valid for E82CVxxxKx and E82DVxxxKx devices

Miniature circuit-breaker dimensions



EFA1xxxxA



EFA3BxxxA

| Type | a [mm] | b [mm] | e [mm] |
|-----------|--------|--------|--------|
| EFA1xxxxA | 17.5 | 80 | 63 |
| EFA3BxxxA | 53 | 90 | 63 |

General

A mains choke is an inductive resistor which can be connected between the mains supply and the frequency inverter.

Function:

- Less effects on the mains – the wave form of the mains supply is a closer approximation of a sine wave.
- Reduced mains current – reduction of the r.m.s. current (i.e. reduction of mains, cable and fuse load).
- Increased service life of the 8200 vector – The service life of electrolytic capacitors in the DC bus can be increased considerably by reducing the AC load.

Note:

- Mains chokes can be used without restrictions in conjunction with RFI filters and/or motor filters.
- A mains filter (combination of inductance and RFI filters in one housing) replaces the function of a mains choke (mains filters available for the 8200 vector, 15.0...90.0 KW).

Please note:

- Some 8200 vector frequency inverter models must always be equipped with a mains choke (see ¹⁾ and ²⁾ in the selection table)
- When using a mains choke, the maximum possible output voltage does not reach the value of the mains voltage – the typical mains voltage drop at the rated value is around 6%.

Mains chokes (0.25 kW...90 kW)

| Type | 8200 vector | | Mains choke | | | | | |
|-------------|---------------------|---|-----------------------------|--|-----------------|--------------------|------------|------|
| | Voltage [V] | Mains current [A] with mains choke for operation at | | Order ref. | Inductance [mH] | I _r [A] | m [kg] | |
| | | 150% overload ³⁾ | 120% overload ⁴⁾ | | | | | |
| E82EV251K2C | 1~ 230 | 3.0 | 3.5 | ELN1-0900H005 | 9 | 5 | 2.3 | |
| E82EV371K2C | | 4.2 | - | | | | | |
| E82EV551K2C | | 5.2 | 6.2 | ELN1-0500H009 | 5 | 9 | 1 | |
| E82EV751K2C | | 7.5 | 9.0 ²⁾ | | | | | |
| E82EV152K2C | | 12.5 | 15.0 | ELN1-0250H018 | 2.5 | 18 | 2.3 | |
| E82EV222K2C | | 18.0 ¹⁾ | - | | | | | |
| E82EV551K2C | 3~ 230 | 2.7 | 3.3 | E82ZL75132B | 5.8 | 4.5 | 0.9 | |
| E82EV751K2C | | 3.6 | 4.4 ²⁾ | | | | | |
| E82EV152K2C | | 6.3 | 7.6 | E82ZL22232B | 2.8 | 9.5 | 1.5 | |
| E82EV222K2C | | 9.0 | - | | | | | |
| E82EV302K2C | | 12.0 | 14.4 | ELN3-0120H017 | 1.2 | 17 | 3 | |
| E82EV402K2C | | 16.0 | - | | | | | |
| E82EV552K2C | | 21.0 | 25.2 ²⁾ | ELN3-0120H025 ELN3-0088H035 ⁴⁾ | 1.2 0.88 | 25 35 | 6 10 | |
| E82EV752K2C | | 28.0 ¹⁾ | - | | | | | 0.88 |
| E82EV551K4C | | 3~ 400 | 2.0 | 2.1 | EZN3A1500H003 | 15 | 3 | 1.1 |
| E82EV751K4C | | | 2.3 | 2.8 ²⁾ | | | | |
| E82EV152K4C | 3.9 | | - | E82ZL22234B | 6.8 | 6.1 | 2 | |
| E82EV222K4C | 5.1 | | 6.1 ²⁾ | | | | | |
| E82EV302K4C | 7.0 | | 8.4 | EZN3A0500H007 EZN3A0300H013 ⁴⁾ | 5 3 | 7 13 | 2.5 5.2 | |
| E82EV402K4C | 8.8 | | 10.6 ²⁾ | | | | | 3 |
| E82EV552K4C | 12.0 | | - | ELN3-0120H017 ELN3-0150H024 ⁴⁾ | 1.2 1.5 | 17 24 | 3 8.2 | |
| E82EV752K4C | 15.0 | | 18.0 ²⁾ | | | | | 1.5 |
| E82EV113K4C | 21.0 ¹⁾ | | - | ELN3-0150H024 | 1.5 | 24 | 8.2 | |
| E82EV153K4C | 29.0 | | 39.0 ²⁾ | ELN3-0088H035 ELN3-0075H045 ⁴⁾ | 0.88 0.75 | 35 45 | 10 10 | |
| E82EV223K4C | 42.0 ¹⁾ | | 50.0 ²⁾ | | | | | 0.75 |
| E82EV303K4C | 55.0 ¹⁾ | | 60.0 ²⁾ | ELN3-0075H045 ELN3-0055H055 ⁴⁾ | 0.55 0.55 | 55 55 | 19 19 | |
| E82EV453K4C | 80.0 ¹⁾ | | 97.0 ²⁾ | | | | | 0.55 |
| E82EV553K4C | 100.0 ¹⁾ | | 119.0 ²⁾ | ELN3-0038H085 ELN3-0027H105 ⁴⁾ | 0.38 0.27 | 85 105 | 19.5 20 | |
| E82EV753K4C | 135.0 ¹⁾ | | 144.0 ²⁾ | | | | | 0.27 |
| E82EV903K4C | 165.0 ¹⁾ | | 185.0 ²⁾ | ELN3-0027H130 ELN3-0017H170 ⁴⁾ | 0.22 0.17 | 130 170 | 20 32 | |
| | | | | | | | | 0.17 |
| | | | | ELN3-0014H200 | 0.14 | 200 | 32 | |

¹⁾ Always use a mains choke

²⁾ Always use a mains choke when operating the system with increased power rating

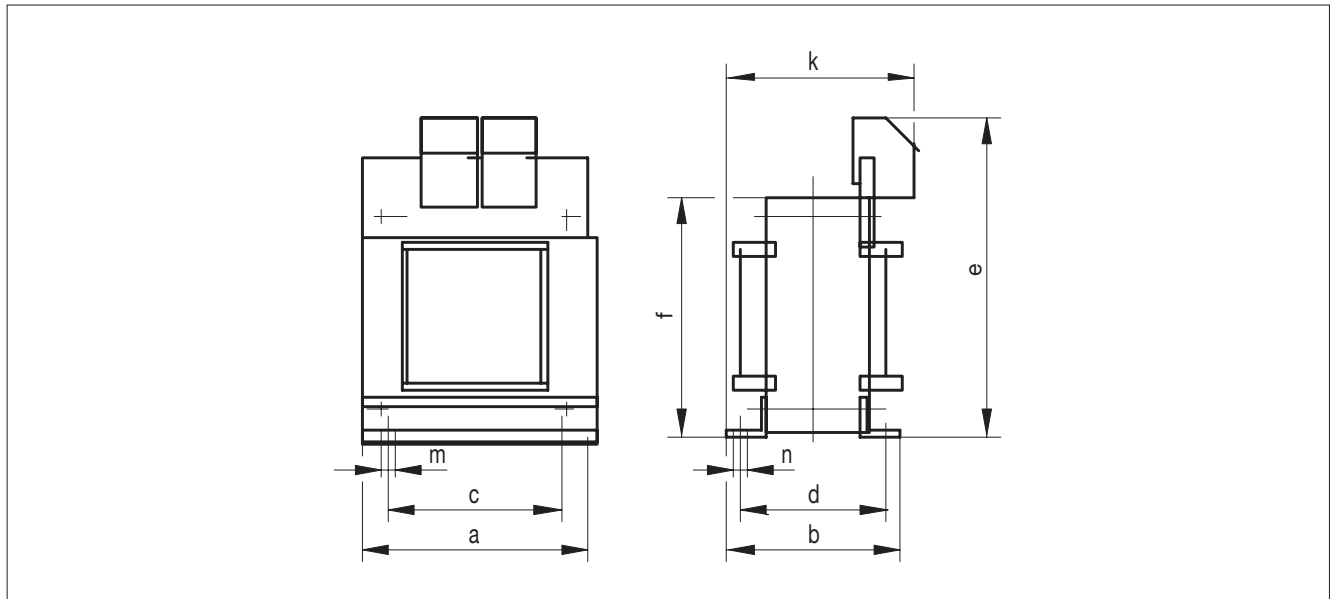
³⁾ Standard operation (150% overload) with a mains rating of 230 V or 400 V

⁴⁾ Operation with increased power rating (120% overload)



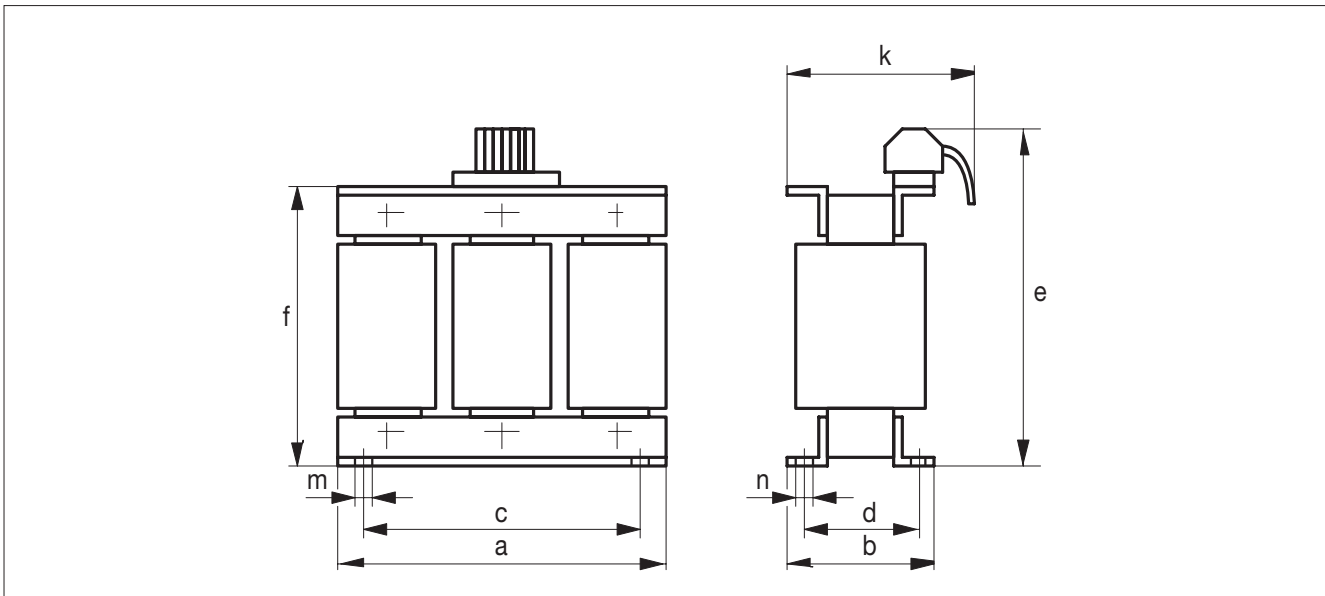
Dimensions

| Order ref. | Dimensions [mm] | | | | | | | | |
|---------------|-----------------|----|----|------|----|----|----|-----|---|
| | a | b | c | d | e | f | k | m | n |
| ELN1-0900H005 | 66 | 67 | 50 | 53 | 80 | 62 | 80 | 4.8 | 9 |
| ELN1-0500H009 | 66 | 67 | 50 | 53 | 80 | 62 | 80 | 4.8 | 9 |
| ELN1-0250H018 | 97 | - | 84 | 61.3 | 98 | - | 90 | 5.8 | 9 |



Dimensions

| Order ref. | Dimensions [mm] | | | | | | | | |
|---------------|-----------------|-----|-----|-----|-----|-----|-----|-----|----|
| | a | b | c | d | e | f | k | m | n |
| ELN3-0120H017 | 120 | 65 | 109 | 51 | 162 | 110 | 80 | 5 | 10 |
| ELN3-0120H025 | 150 | 76 | 140 | 61 | 180 | 140 | 95 | 5 | 10 |
| ELN3-0088H035 | 180 | 91 | 161 | 74 | 225 | 165 | 120 | 6.3 | 11 |
| ELN3-0075H045 | 180 | 91 | 161 | 74 | 225 | 165 | 120 | 6.3 | 11 |
| ELN3-0055H055 | 228 | 88 | 206 | 69 | 263 | 205 | 120 | 6.3 | 11 |
| ELN3-0038H085 | 228 | 111 | 206 | 94 | 263 | 205 | 140 | 6.3 | 11 |
| ELN3-0027H105 | 228 | 111 | 206 | 94 | 273 | 205 | 150 | 6.3 | 11 |
| ELN3-0022H130 | 264 | 102 | 240 | 81 | 265 | 237 | 135 | 6.3 | 11 |
| ELN3-0017H170 | 264 | 128 | 240 | 107 | 257 | 237 | 166 | 8.3 | 16 |
| ELN3-0014H200 | 300 | 114 | 274 | 88 | 290 | 265 | 135 | 8.3 | 16 |



Terminal assignment

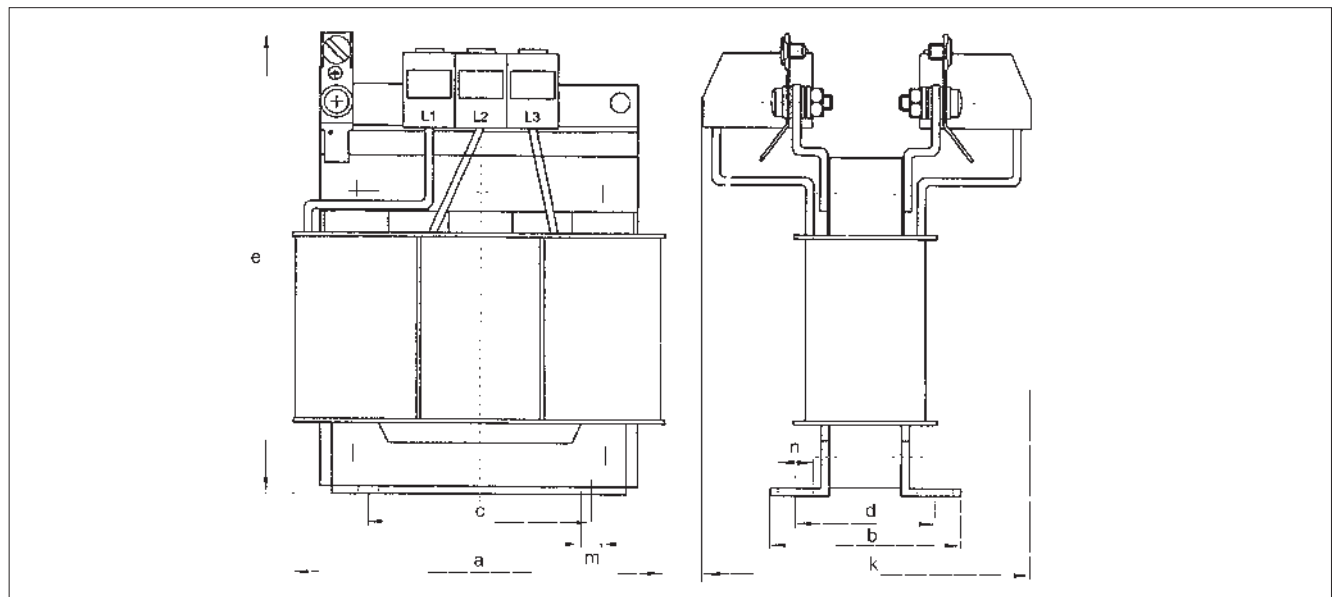
| L1 | L1.1 | L2 | L2.1 | L3 | L3.1 |
|----|------|----|------|----|------|
| | | | | | |



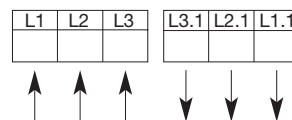


Dimensions

| Order ref. | Dimensions [mm] | | | | | | | | |
|---------------|-----------------|----|-----|----|-----|---|-----|-----|----|
| | a | b | c | d | e | f | k | m | n |
| E82ZL75132B | 95 | 49 | 56 | 36 | 113 | – | – | 4.8 | 9 |
| E82ZL22232B | 120 | 63 | 84 | 47 | 120 | – | – | 5.8 | 11 |
| E82ZL22234B | 120 | 61 | 84 | 45 | 126 | – | 70 | 5.8 | 11 |
| EZN3A1500H003 | 95 | 48 | 56 | 35 | 115 | – | 82 | 5 | 9 |
| EZN3A0500H007 | 119 | 63 | 90 | 49 | 138 | – | 95 | 5 | 9 |
| EZN3A0300H013 | 150 | 81 | 113 | 64 | 162 | – | 106 | 6 | 11 |
| ELN3-0150H024 | 180 | 86 | 136 | 67 | 192 | – | 120 | 7 | 12 |



Terminal assignment



General

Every frequency inverter produces noise emission as a result of internal switching processes, which can impair the function of other equipment.

Limits for this type of interference are specified in European Standard EN 55011 depending on the operating location of the frequency inverter:

Threshold class A

Threshold class A is often required for industrial networks operating separately from mains supplies in domestic areas.

Threshold class B

If the frequency inverter is operated in a domestic environment, this may cause interference to other devices (e. g. radio and television sets). RFI filters in accordance with EN 55011, threshold B, often have to be used to counter this risk. Threshold class B is considerably more stringent than threshold class A. Threshold class B incorporates threshold class A.

Appropriate measures for reducing noise emission must be put in place to ensure that the device conforms to threshold class A or B. The selection of the frequency inverter and (if required) the corresponding filters always depends on the particular application, and is determined by various factors, including the operating frequency of the 8200 vector and the length of the motor cable or the protective circuit (e.g. residual current circuit-breaker).

| Power | Type 8200 vector | Type of filter | Max. permissible motor cable length ¹⁾ for conformance with | |
|------------------|--|---|--|-----------------------|
| | | | Threshold class A | Threshold class B |
| 0.25 ... 11.0 kW | E82EV251KxC to E82EV113KxC | integrated | 20 m | 1) |
| 0.25 ... 0.75 kW | E82EV251K2C to E82EV751K2C | Footprint/built-on RFI filter LL ⁵⁾ (accessory) | 5 m | |
| 0.25 ... 11.0 kW | E82EV251KxC200 to E82EV113KxC200 | Footprint/built-on RFI filter SD ³⁾ (accessory) | 20 m | |
| | | Footprint/built-on RFI filter LD (accessory) | 50 m | |
| | | Footprint/built-on RFI filter LD (accessory) + Motor filter ⁴⁾ (accessory) | 200 m | 100 m |
| 15.0 ... 90.0 kW | E82EV153K4B3xx to E82EV903K4B3xx | Footprint/built-on mains filter ²⁾ (accessory) | 50 m | 10 m |
| | E82xV153K4B201 to E82xV553K4B201 | Built-on mains filter ²⁾ (accessory) | 25 m (mains filter A) | 50 m (mains filter B) |
| | E82xV753K4B201 to E82EV903K4B201 | Footprint/built-on mains filter ²⁾ (accessory) | 25 m (mains filter A) | 50 m (mains filter B) |

¹⁾ Motor cable depends on the type of 8200 vector used and its operating frequency.

²⁾ Operation with increased rated power depends on the type of controller used

³⁾ SD (Short Distance) RFI filters are designed for operation at 30 mA RCCB (low leakage current) (guide value: Motor cable length = 10 m)

The residual current circuit-breaker may be triggered erroneously due to

- capacitive compensating currents in the cable shield during operation
- simultaneous switching on of several inverters on the network

⁴⁾ Please note the general data and application conditions of the motor filter (see page 4-24)

⁵⁾ For non-fixed systems: Discharge current < 3.5 mA



Footprint RFI filters threshold class A and B (0.25 kW ... 2.2 kW)

The RFI filter reduces mains-bound noise emission into the mains network, thus ensuring that threshold class A or B is satisfied. The filter does not replace the function of the mains choke. In order to reduce the r.m.s. current it is also necessary to install an additional mains choke. The structure of the RFI filters enables them to be mounted below or next to the 8200 vector.

Three different types of filter are available:

- **RFI filters LL (Low Leakage)** with leakage current < 3.5 mA for 5 m motor cable for 230 V/1 ph are used for installation in non-fixed systems
- **SD RFI filter** (Short Distance) with low leakage current, e.g. for use on a 30 mA fault current protection switch
- **LD RFI filter** (Long Distance) for use with long motor cables

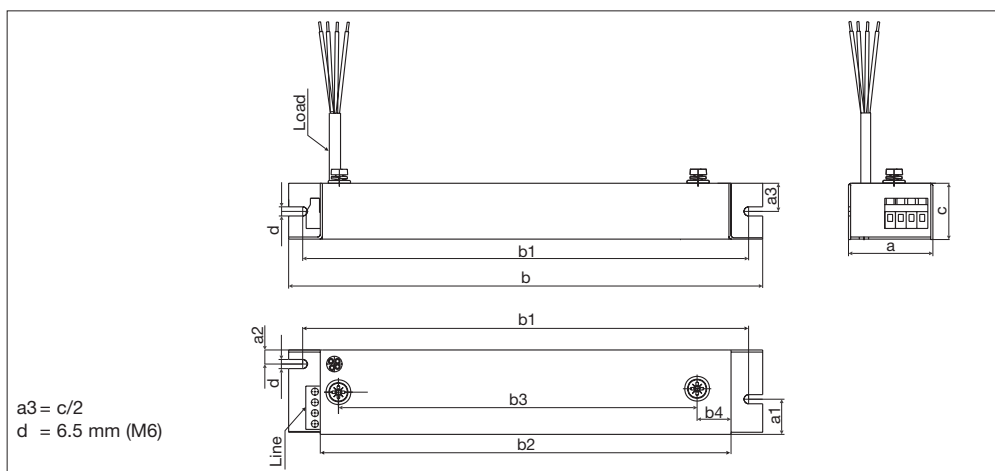
Important: Only use the RFI filters in conjunction with the 8200 vector, types E82EVxxxKxC200.

| 8200 vector | | | RFI filter A/B, dimensions [mm] | | | | | | | | | |
|----------------|---------------|------------|--|----|----------------|----------------|-----|----------------|----------------|----------------|----|-------------|
| Type | Voltage [V] | Power [kW] | Order ref. | a | a ₁ | a ₂ | b | b ₁ | b ₂ | b ₃ | c | Weight [kg] |
| E82xV251K2C200 | 1~ 230 | 0.25 | LL: E82ZZ37112B220 | 60 | 25 | 10 | 217 | 197 | 172 | 135 | 30 | 0.5 |
| E82xV371K2C200 | | 0.37 | SD: E82ZZ37112B200 LD: E82ZZ37112B210 | | | | | | | | | |
| E82xV551K2C200 | | 0.55 | LL: E82ZZ75112B220 | | | | | | | | | |
| E82xV751K2C200 | | 0.75 | SD: E82ZZ75112B200 LD: E82ZZ75112B210 | | | | | | | | | |
| E82xV152K2C200 | | 1.5 | SD: E82ZZ22212B200 | | | | | | | | | |
| E82xV222K2C200 | | 2.2 | LD: E82ZZ22212B210 | | | | | | | | | |
| E82xV551K2C200 | 3~ 230 | 0.55 | SD: E82ZZ75132B200 | 60 | 25 | 10 | 277 | 247 | 232 | 195 | 40 | 0.8 |
| E82xV751K2C200 | | 0.75 | LD: E82ZZ75132B210 | | | | | | | | | |
| E82xV152K2C200 | | 1.5 | SD: E82ZZ22232B200 | | | | | | | | | |
| E82xV222K2C200 | | 2.2 | LD: E82ZZ22232B210 | | | | | | | | | |
| E82xV551K4C200 | 3~ 400/500 | 0.55 | SD: E82ZZ75134B200 | 60 | 25 | 10 | 277 | 247 | 232 | 195 | 40 | 0.8 |
| E82xV751K4C200 | | 0.75 | LD: E82ZZ75134B210 | | | | | | | | | |
| E82xV152K4C200 | | 1.5 | SD: E82ZZ22234B200 | | | | | | | | | |
| E82xV222K4C200 | | 2.2 | LD: E82ZZ22234B210 | | | | | | | | | |

Note:

- The maximum permissible motor cable lengths for conformance with threshold class A or B can be found on page 4-14.
- The 8200 vector is installed on the footprint RFI filter using the standard fixtures included in the scope of supply of the frequency inverter.
- The RFI filters comply with the UL/cUL requirements (in preparation).

Schematic diagram (example: 1~ 230 V)



Terminal assignment

Input (mains):

| | | | | |
|----|---|----|--|----------|
| PE | N | L1 | | 1~ 230 V |
| | | | | |

| | | | | |
|----|----|----|----|-------------------------|
| PE | L1 | L2 | L3 | 3~ 230 V or 3~ 400 V |
| | | | | |

Output (load):

PE, N, L1 (1~ 230 V)
PE, L1, L2, L3 (3~ 230 V or
3~ 400 V)

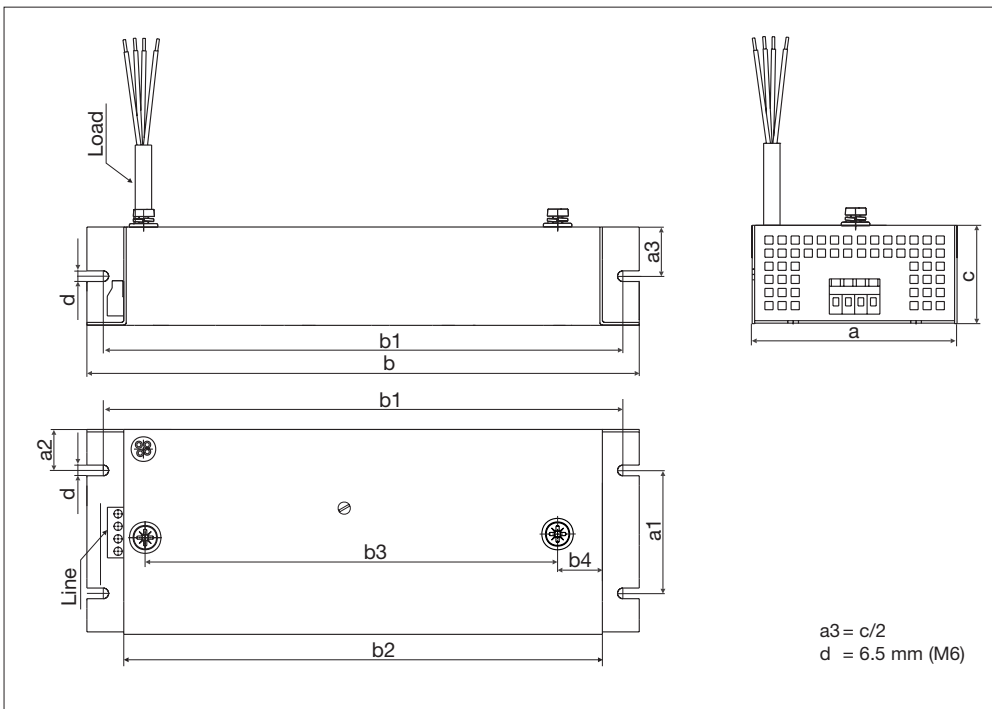
Footprint RFI filters threshold class A and B (3.0 kW ... 11 kW)

| 8200 vector | | | RFI filter A/B, dimensions [mm] | | | | | | | | | |
|----------------|---------------|------------|---------------------------------|-----|----------------|----------------|-----|----------------|----------------|----------------|----|-------------|
| Type | Voltage [V] | Power [kW] | Order ref. | a | a ₁ | a ₂ | b | b ₁ | b ₂ | b ₃ | c | Weight [kg] |
| E82xV302K2C200 | 3~ 230 | 3.0 | SD: E82ZZ40232B200 | 100 | 12.5 | 75 | 337 | 317 | 292 | 255 | 60 | 1.7 |
| E82xV402K2C200 | | 4.0 | LD: E82ZZ40232B210 | | | | | | | | | |
| E82xV552K2C200 | | 5.5 | SD: E82ZZ75232B200 | 125 | 25 | 75 | 337 | 317 | 292 | 255 | 60 | |
| E82xV752K2C200 | | 7.5 | LD: E82ZZ75232B210 | | | | | | | | | |
| E82xV302K4C200 | 3~ 400/500 | 3.0 | SD: E82ZZ55234B200 | 100 | 12.5 | 75 | 337 | 317 | 292 | 255 | 60 | 1.7 |
| E82xV402K4C200 | | 4.0 | LD: E82ZZ55234B210 | | | | | | | | | |
| E82xV552K4C200 | | 5.5 | SD: E82ZZ11334B200 | 125 | 25 | 75 | 337 | 317 | 292 | 255 | 60 | |
| E82xV752K4C200 | | 7.5 | LD: E82ZZ11334B210 | | | | | | | | | |
| E82xV113K4C200 | | 11.0 | LD: E82ZZ11334B210 | | | | | | | | | |

Note:

- The maximum permissible motor cable lengths for conformance with threshold class A or B can be found on page 4-14.
- The 8200 vector is installed on the footprint RFI filter using the standard fixtures included in the scope of supply of the frequency inverter.
- The RFI filter comply with the UL/cUL requirements (in preparation).

Schematic diagram





Footprint mains filters threshold class A and B (15 kW ... 90 kW)

Mains filter A

A mains filter is a combination of mains choke and RFI filter in one housing. It reduces line-bound noise emission into the mains network, thus ensuring that threshold class A/B is satisfied. In addition, a mains filter replaces the function of a mains choke. The r.m.s. current is also reduced.

Important:

- Only use the mains filters in conjunction with the 8200 vector, types E82EVxxxKxB201.
- When mounting the 8200 vector according to the “push-through technique” or “cold plate” technology, only integrated mains filters can be used for interference suppression.

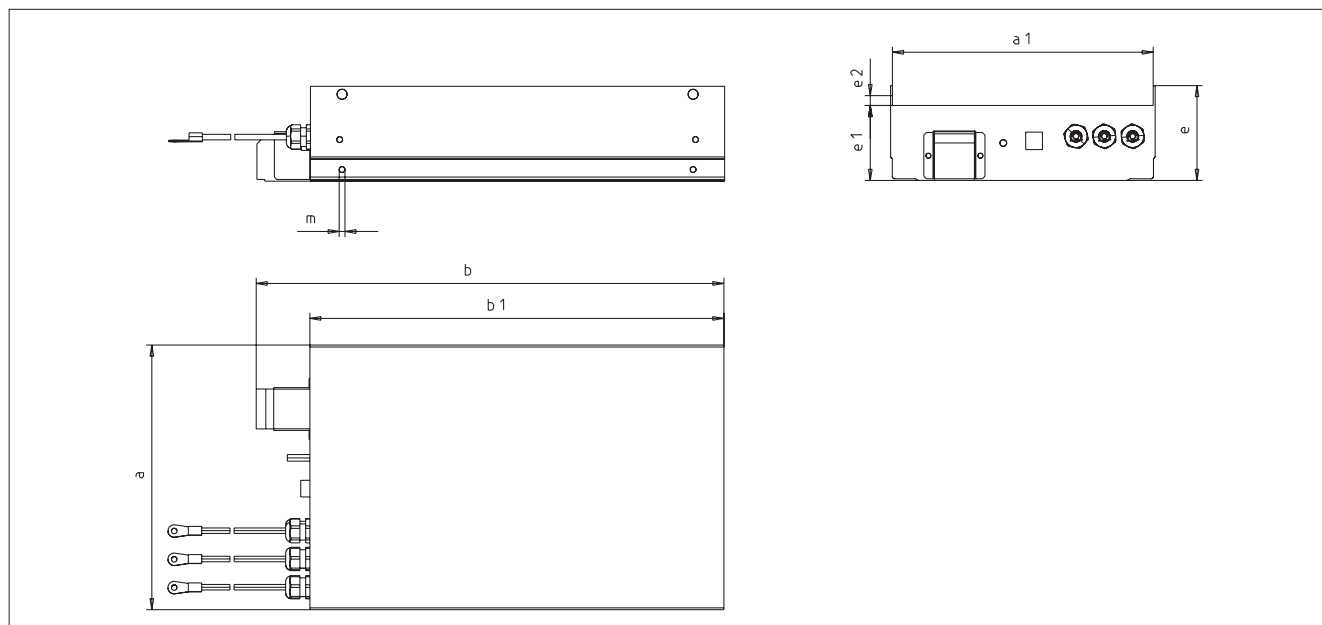
Selection for operation at rated power (normal operation)

| 8200 vector | | | Mains filter A/B, dimensions [mm] | | | | | | | | | |
|----------------|-----------------|------------|-----------------------------------|-------|-------|-----|-----|-----|----|------|----|-------------|
| Type | Voltage [V] | Power [kW] | Order ref. | a | a1 | b | b1 | e | e1 | e2 | m | Weight [kg] |
| E82EV153K4B201 | 3~ 400/500 V | 15.0 | E82ZN22334B230 | 235.5 | 231 | 410 | 350 | 110 | 90 | 11.5 | M5 | 13 |
| E82EV223K4B201 | | 22.0 | E82ZN22334B230 | | | 430 | | | | | | |
| E82EV303K4B201 | | 30.0 | E82ZN30334B230 | 318 | 313.5 | 580 | 500 | 114 | 90 | 14.5 | M8 | 19 |
| E82EV453K4B201 | | 45.0 | E82ZN45334B230 | | | 685 | 590 | | | | | 26 |
| E82EV553K4B201 | | 55.0 | E82ZN55334B230 | 428 | 423.5 | 760 | 670 | 114 | 90 | 14.5 | M8 | 29 |
| E82EV753K4B201 | | 75.0 | E82ZN75334B230 | | | 765 | 670 | | | | | 53 |
| E82EV903K4B201 | | 90.0 | E82ZN90334B230 | | | | | | | | | 53 |

Note:

- The maximum permissible motor cable lengths for conformance with threshold class A or B can be found on page 4-14.
- The 8200 vector is installed on the footprint mains filter using the standard fixtures included in the scope of supply of the frequency inverter. (see page 2-36)
- The assignment of footprint mains filters for operation with increased rated power can be found on page 4-56.
- The mains filter comply with the UL/cUL requirements (in preparation).

Schematic diagram



Built-on mains filters threshold class A (15 kW ... 90 kW)

Mains filter A

A mains filter is a combination of mains choke and RFI filter in one housing. It reduces line-bound noise emission into the mains network, thus ensuring that threshold class A is satisfied. In addition, a mains filter replaces the function of a mains choke. The r.m.s. current is also reduced.

Important:

- Only use the mains filters in conjunction with the 8200 vector, types E82EVxxxKxB201.
- When mounting the 8200 vector according to the “push-through technique” or “cold plate” technology only integrated mains filters can be used for interference suppression.

Selection for operation at rated power (normal operation)

| 8200 vector | Mains filter A | | | | |
|----------------|----------------|------------|-----------|-----------------|------------------------|
| | Type | Order ref. | I_r [A] | Inductance [mH] | U_{mains} [V] |
| E82xV153K4B201 | EZN3A0110H030 | 30.0 | 1.1 | 400...480 | 16.0 |
| E82xV223K4B201 | EZN3A0080H042 | 42.0 | 0.8 | 400...480 | 17.0 |
| E82xV303K4B201 | EZN3A0055H060 | 60.0 | 0.55 | 400...480 | 30.0 |
| E82xV453K4B201 | EZN3A0037H090 | 90.0 | 0.37 | 400...480 | 40.0 |
| E82xV553K4B201 | EZN3A0030H110 | 110.0 | 0.30 | 400...480 | 46.0 |
| E82xV753K4B201 | EZN3A0022H150 | 150.0 | 0.22 | 400...480 | 60.0 |
| E82xV903K4B201 | EZN3A0017H200 | 200.0 | 0.17 | 400...480 | 90.0 |

Selection for operation at increased rated power

| 8200 vector | Mains filter A | | | | |
|----------------|----------------|------------|-----------|-----------------|------------------------|
| | Type | Order ref. | I_r [A] | Inductance [mH] | U_{mains} [V] |
| E82xV153K4B201 | EZN3A0080H042 | 42.0 | 0.8 | 400...480 | 17 |
| E82xV223K4B201 | EZN3A0055H060 | 60.0 | 0.55 | 400...480 | 30 |
| E82xV303K4B201 | EZN3A0055H060 | 60.0 | 0.55 | 400...480 | 30 |
| E82xV453K4B201 | EZN3A0030H110 | 110.0 | 0.30 | 400...480 | 46 |
| E82xV553K4B201 | - | - | - | - | - |
| E82xV753K4B201 | EZN3A0022H150 | 150.0 | 0.22 | 400...480 | 60 |
| E82xV903K4B201 | EZN3A0017H200 | 200.0 | 0.17 | 400...480 | 90 |



Built-on mains filters threshold class B (15 kW ... 90 kW)

Mains filter B

A mains filter is a combination of mains choke and RFI filter in one housing. It reduces line-bound noise emission into the mains network, thus ensuring that threshold class B is satisfied. In addition, a mains filter replaces the function of a mains choke. The r.m.s. current is also reduced.

Important:

- Only use the mains filters in conjunction with the 8200 vector, types E82EVxxxKxB201.
- When mounting the 8200 vector according to the “push-through technique” or “cold plate” technology, only integrated mains filters can be used for interference suppression.

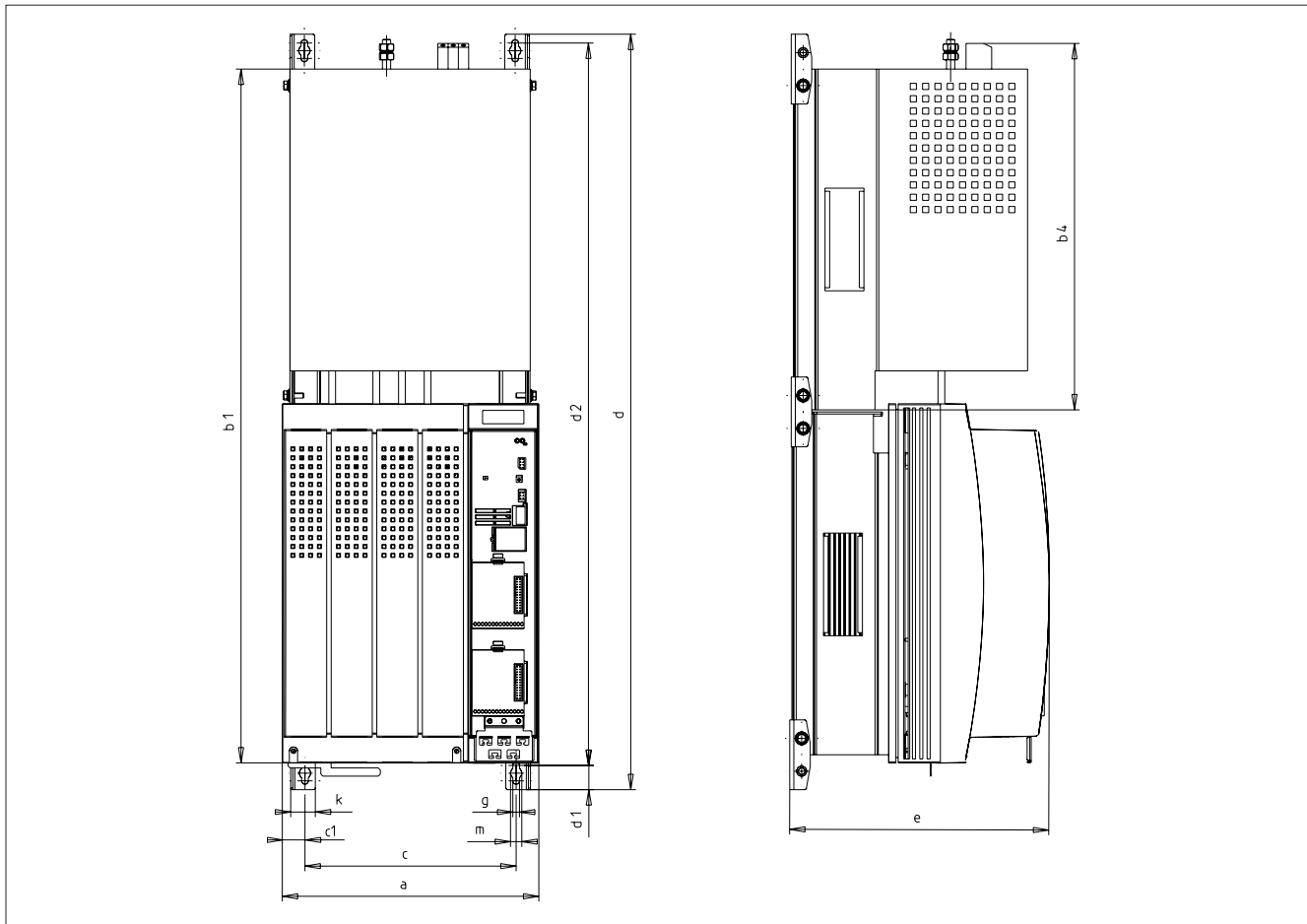
Selection for operation at rated power (normal operation)

| 8200 vector | Mains filter B | | | | |
|----------------|----------------|-----------|-----------------|------------------------|-------------|
| Type | Order ref. | I_r [A] | Inductance [mH] | U_{mains} [V] | Weight [kg] |
| E82xV153K4B201 | EZN3B0110H030 | 30.0 | 1.10 | 400...480 | 20 |
| E82xV223K4B201 | EZN3B0080H042 | 42.0 | 0.80 | 400...480 | 20 |
| E82xV303K4B201 | EZN3B0055H060 | 60.0 | 0.55 | 400...480 | 32 |
| E82xV453K4B201 | EZN3B0037H090 | 90.0 | 0.37 | 400...480 | 42 |
| E82xV553K4B201 | EZN3B0030H110 | 110.0 | 0.33 | 400...480 | 50 |
| E82xV753K4B201 | EZN3B0022H150 | 150.0 | 0.22 | 400...480 | 65 |
| E82xV903K4B201 | EZN3B0017H200 | 200.0 | 0.17 | 400...480 | 95 |

Selection for operation at increased rated power

| 8200 vector | Mains filter B | | | | |
|----------------|----------------|-----------|-----------------|------------------------|-------------|
| Type | Order ref. | I_r [A] | Inductance [mH] | U_{mains} [V] | Weight [kg] |
| E82xV153K4B201 | EZN3B0080H042 | 42.0 | 0.8 | 400...480 | 20 |
| E82xV223K4B201 | EZN3B0055H060 | 60.0 | 0.55 | 400...480 | 32 |
| E82xV303K4B201 | EZN3B0055H060 | 60.0 | 0.55 | 400...480 | 32 |
| E82xV453K4B201 | EZN3B0030H110 | 110.0 | 0.30 | 400...480 | 50 |
| E82xV553K4B201 | – | – | – | – | – |
| E82xV753K4B201 | EZN3B0022H150 | 150.0 | 0.22 | 400...480 | 65 |
| E82xV903K4B201 | EZN3B0017H200 | 200.0 | 0.17 | 400...480 | 95 |

Dimensions for standard mounting

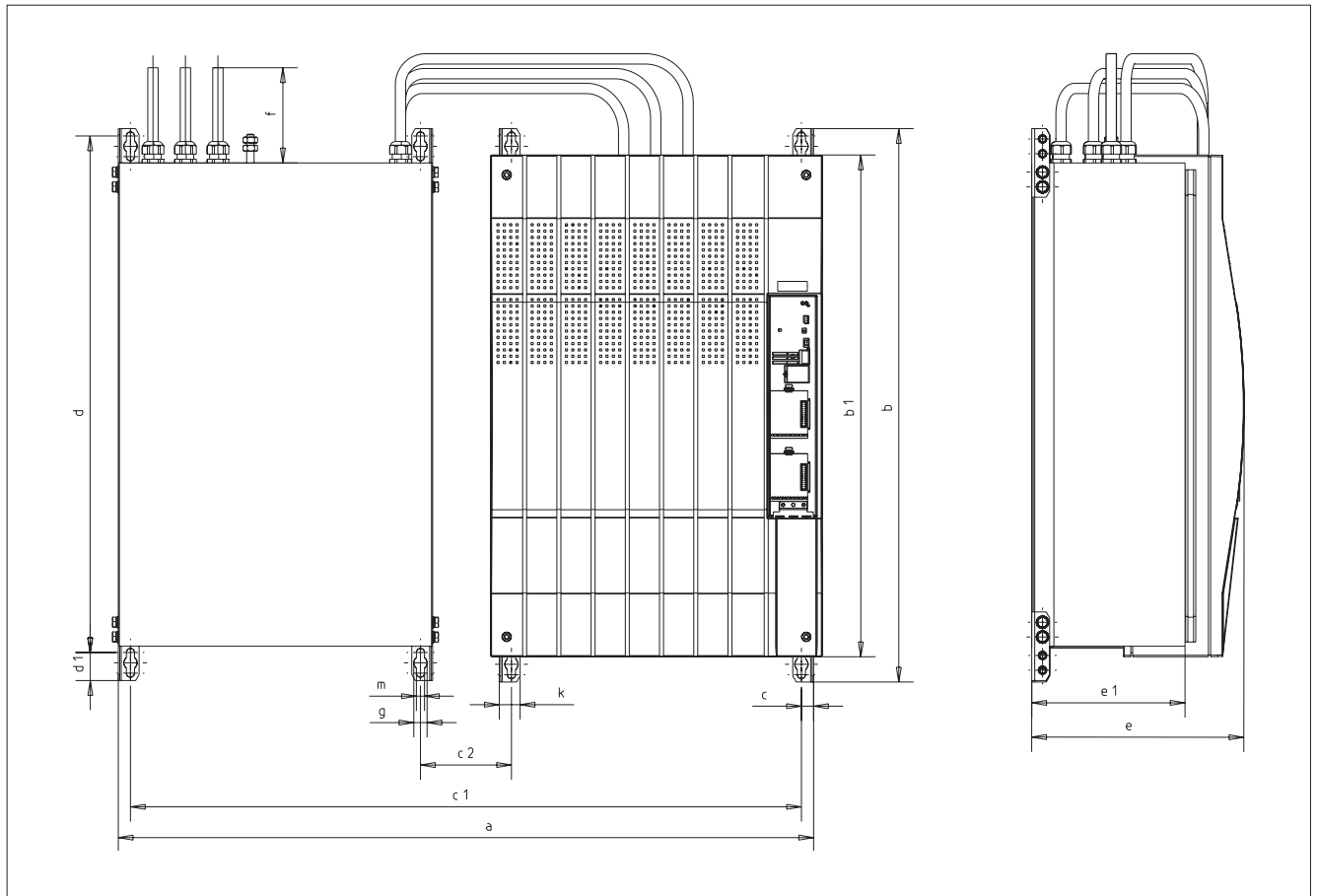


Clearance of 100 mm above/50 mm to the side.

| Mains filter A or B | Dimensions [mm] | | | | | | | | | | | |
|---------------------|-----------------|-----|-----|-----|----|------|----|------|-----|-----|----|----|
| Order ref. | a | b1 | b4 | c | c1 | d | d1 | d2 | e | g | k | m |
| EZN3x0110H030 | 250 | 680 | 365 | 205 | 22 | 740 | 24 | 705 | 250 | 6.5 | 24 | 11 |
| EZN3x0080H042 | | | | | | | | | 285 | | | |
| EZN3x0055H060 | | | | | | | | | 285 | | | |
| EZN3x0037H090 | 340 | 973 | 508 | 284 | 28 | 1050 | 38 | 1000 | 285 | 11 | 28 | 18 |
| EZN3x0030H110 | | | | | | | | | | | | |

Note:
The mains filter has an adapted connecting cable.

Dimensions for mounting next to the frequency inverter



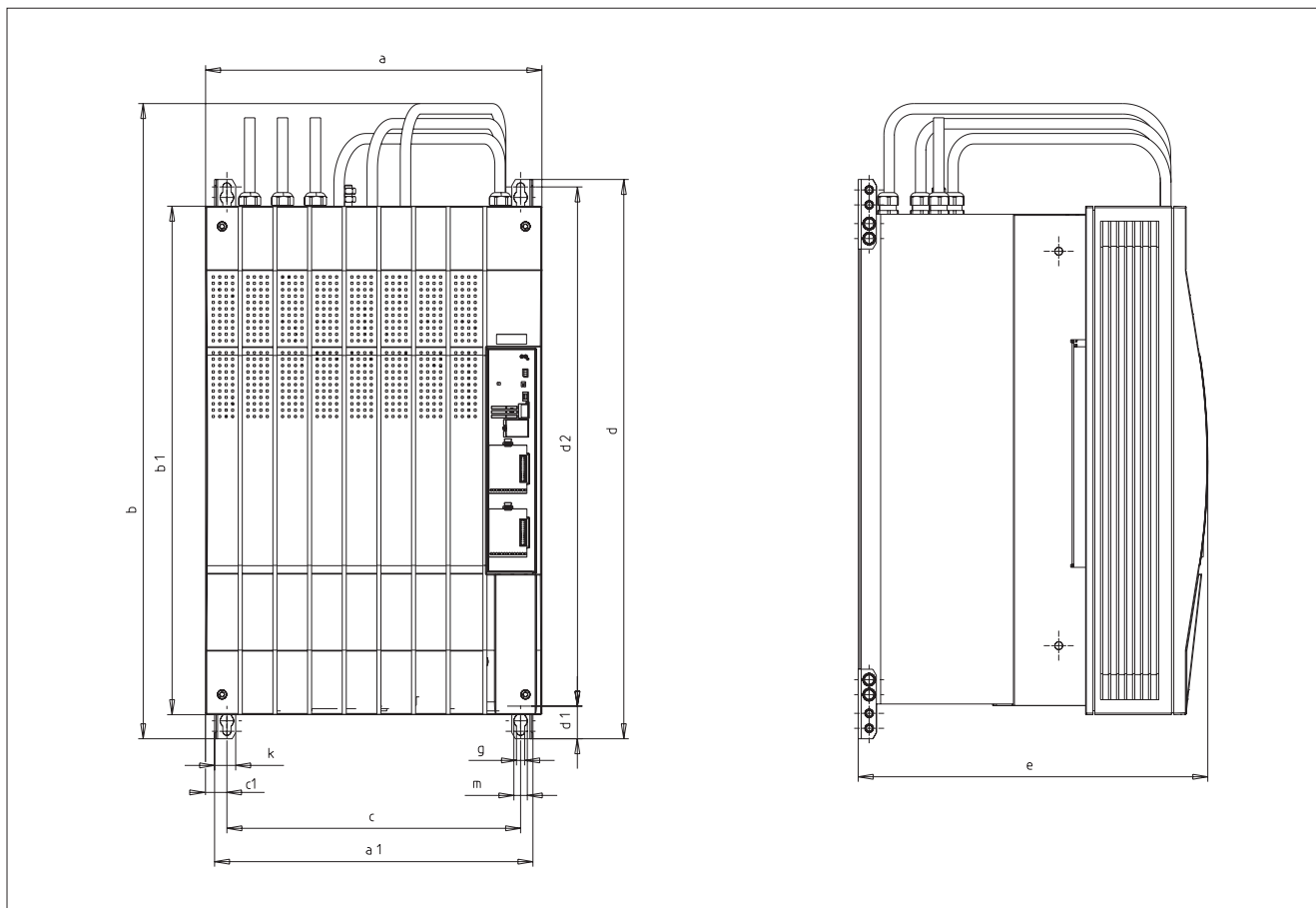
Clearance of 150 mm above and below/100 mm to the side.

| Mains filter A or B | Dimensions [mm] | | | | | | | | | | | | | |
|---------------------|-----------------|-----|-----|----|-----|-----|-----|----|-----|-------|------|----|----|----|
| Order ref. | a | b | b1 | c | c1 | c2 | d | d1 | e | e1 | f | g | k | m |
| EZN3x0022H150 | 1000 | 750 | 680 | 16 | 970 | 180 | 702 | 38 | 285 | 207.5 | 1000 | 18 | 28 | 11 |
| EZN3x0017H200 | | | | | | | | | | | | | | |

Note:

The mains filter has an adapted connecting cable.

Dimensions for mounting using footprint technology



Clearance of 150 mm above and below/100 mm to the side.

| Mains filter A or B | Dimensions [mm] | | | | | | | | | | | | | |
|---------------------|-----------------|-----|-----|-----|-----|------|-----|----|-----|-----|------|----|----|----|
| Order ref. | a | a1 | b | b1 | c | c1 | d | d1 | d2 | e | f | g | k | m |
| EZN3x0022H150 | 450 | 428 | 800 | 680 | 395 | 30,5 | 750 | 38 | 702 | 470 | 1000 | 11 | 28 | 18 |
| EZN3x0017H200 | | | | | | | | | | | | | | |

Note:
The mains filter has an adapted connecting cable.



General information

Motor filters should be used to reduce the load on the motor windings, as well as to reduce the capacitive leakage currents to PE that may be caused by the use of long motor cables.

A motor filter is required:

- if very long motor cables are used (in addition to conforming with EMC limit values).
- in conjunction with LD RFI filters (0.25...11.0 kW) for the reduction of line-bound noise emission, if very long motor cables are used in order to conform with EMC threshold class A or B (see page 4-14).
- if motors are used with an insulation system not suited for inverter operation. Lenze motors feature insulation with a high thermal reserve.

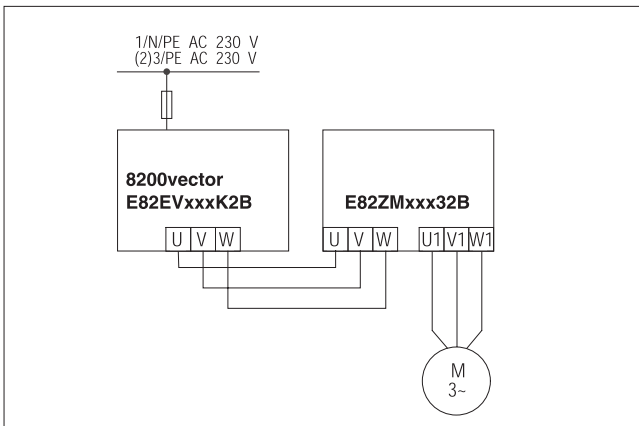
Motor filters ensure the reliable operation of the 8200 vector with motor cable lengths of up to 200 m.

Please note:

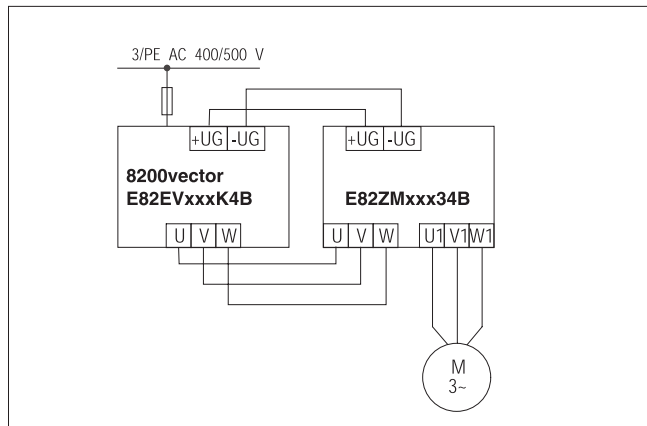
- The voltage drop at the motor filter at the rated current of the motor filter and a frequency inverter of 50 Hz is typically around 2-3% of the max. output voltage of the 8200 vector.
- If present, terminals +UG and -UG must be connected with the same cable cross-section as the motor cable.

Motor filter connection

Schematic diagram for the 8200 vector, 230 V



Schematic diagram for the 8200 vector, 400/500V¹⁾



¹⁾ Motor filters with 400/500 V mains voltage: In order to maintain the specified characteristics (e.g. limitation of the overvoltage), the voltage increases on the motor cable are routed via the motor filter to the DC bus of the 8200 vector (+UG, -UG). In this case, it is permissible for the motor filter to be used in DC bus operation.

General data and application conditions for motor filters used with the 8200 vector (0.25 ... 11.0 kW)

| | |
|--|--|
| Motor filter always required a motor cable length of | <ul style="list-style-type: none"> • 50 m shielded (low-capacitance) • 100 m unshielded¹⁾ |
| Max. motor cable length | <ul style="list-style-type: none"> • 100 m shielded (low-capacitance) • 200 m unshielded¹⁾ |
| Protection of the motor coil | $du/dt \leq 500 \text{ V}/\mu\text{s}$ |
| Limitation of motor overvoltage | $< 1 \text{ kV}$ |
| Max. mains voltage | 264 V +0% or 550 V +0% |
| Temperature range | 0...40°C |
| Connection type | Contact-proof screw terminals |
| Degree of protection | IP 20 |
| Operating conditions for the 8200 vector in conjunction with a motor filter | <ul style="list-style-type: none"> • Maximum output frequency: 480 Hz • Maximum operating frequency: 8 kHz • Operating mode: V/f characteristic control (linear or quadratic) |

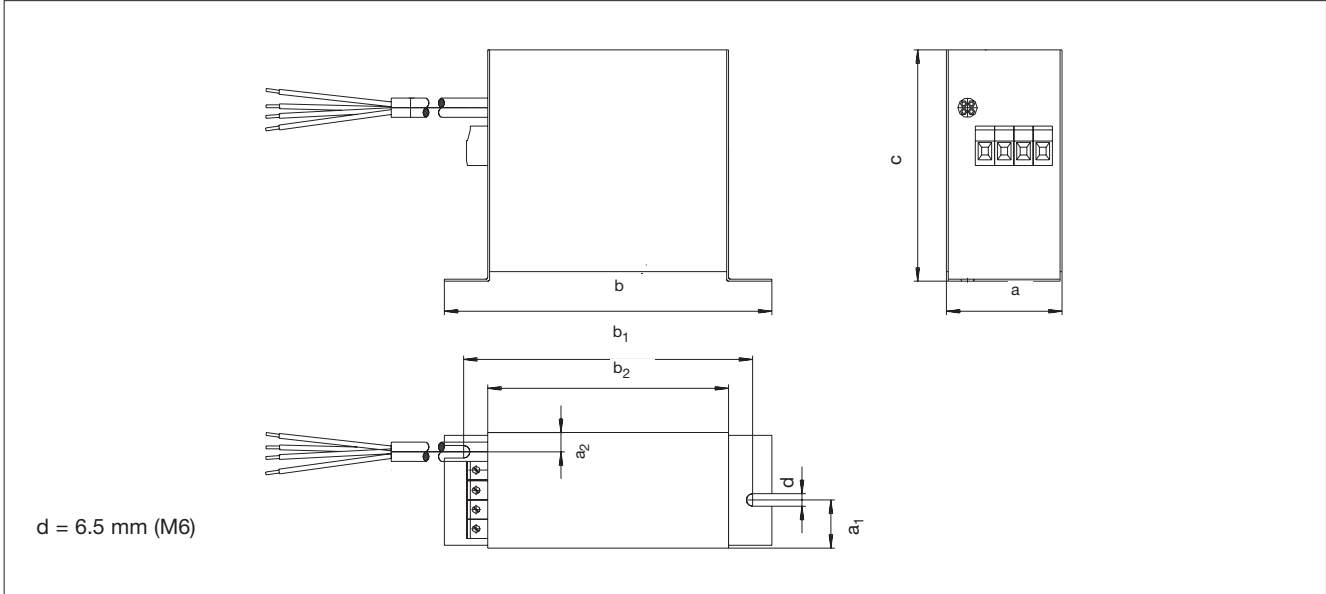
¹⁾ When using unshielded motor cables, only line-bound noise emission EMC requirements have to be met



Motor filter (0.25 ... 2.2 kW/230 V)

| 8200 vector | | | Motor filter, dimensions [mm] | | | | | | | | Weight [kg] |
|-------------|-------------|------------|-------------------------------|----|----------------|----------------|-----|----------------|----------------|-----|-------------|
| Type | Voltage [V] | Power [kW] | Order ref. | a | a ₁ | a ₂ | b | b ₁ | b ₂ | c | |
| E82EV251K2C | 1~ 230 | 0.25 | E82ZM22232B | 60 | 25 | 10 | 220 | 200 | 180 | 140 | 3.6 |
| E82EV371K2C | | 0.37 | | | | | | | | | |
| E82EV551K2C | | 0.55 | | | | | | | | | |
| E82EV751K2C | | 0.75 | | | | | | | | | |
| E82EV152K2C | | 1.5 | | | | | | | | | |
| E82EV222K2C | | 2.2 | | | | | | | | | |
| E82EV551K2C | 3~ 230 | 0.55 | | | | | | | | | |
| E82EV751K2C | | 0.75 | | | | | | | | | |
| E82EV152K2C | | 1.5 | | | | | | | | | |
| E82EV222K2C | | 2.2 | | | | | | | | | |

Schematic diagram



Note:

On shielded motor cables the shielding should be applied to a large area of the mounting plate.

Terminal assignment

Input (pre-assembled cable):

PE, U, V, W

Output:

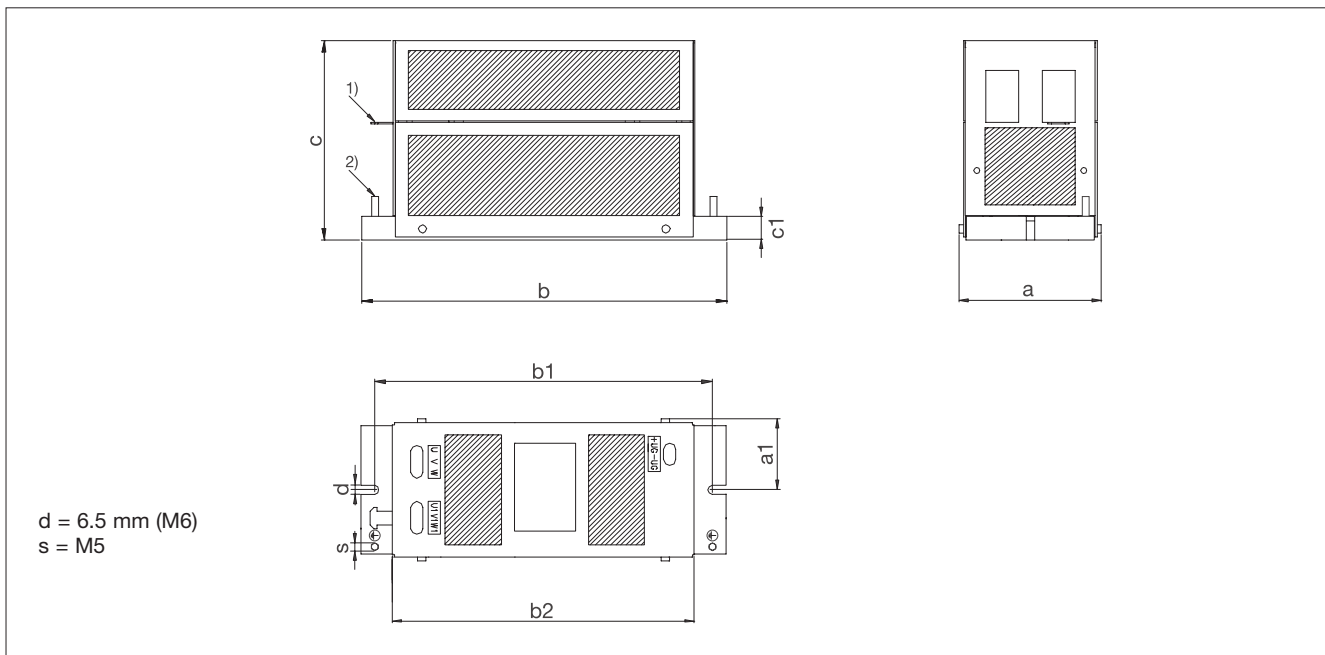
| | | | |
|----|----|----|----|
| PE | U1 | V1 | W1 |
| | | | |



Motor filter (0.55 ... 2.2 kW/400 V)

| 8200 vector | | | Motor filter, dimensions [mm] | | | | | | | | |
|-------------|-------------|------------|-------------------------------|----|----------------|-----|----------------|----------------|-----|----------------|-------------|
| Type | Voltage [V] | Power [kW] | Order ref. | a | a ₁ | b | b ₁ | b ₂ | c | c ₁ | Weight [kg] |
| E82EV551K4C | 3~ 400 | 0.55 | E82ZM75134B | 67 | 33.5 | 200 | 175 | 160 | 130 | 17 | 2.2 |
| E82EV751K4C | | 0.75 | | | | | | | | | |
| E82EV152K4C | | 1.5 | E82ZM22234B020 | | | | | | | | 2.3 |
| E82EV222K4C | | 2.2 | | | | | | | | | |

Schematic diagram



1) Shield for motor cable (tip: use cable ties to support the shielding)

2) Earthing stud (M5) for PE connection

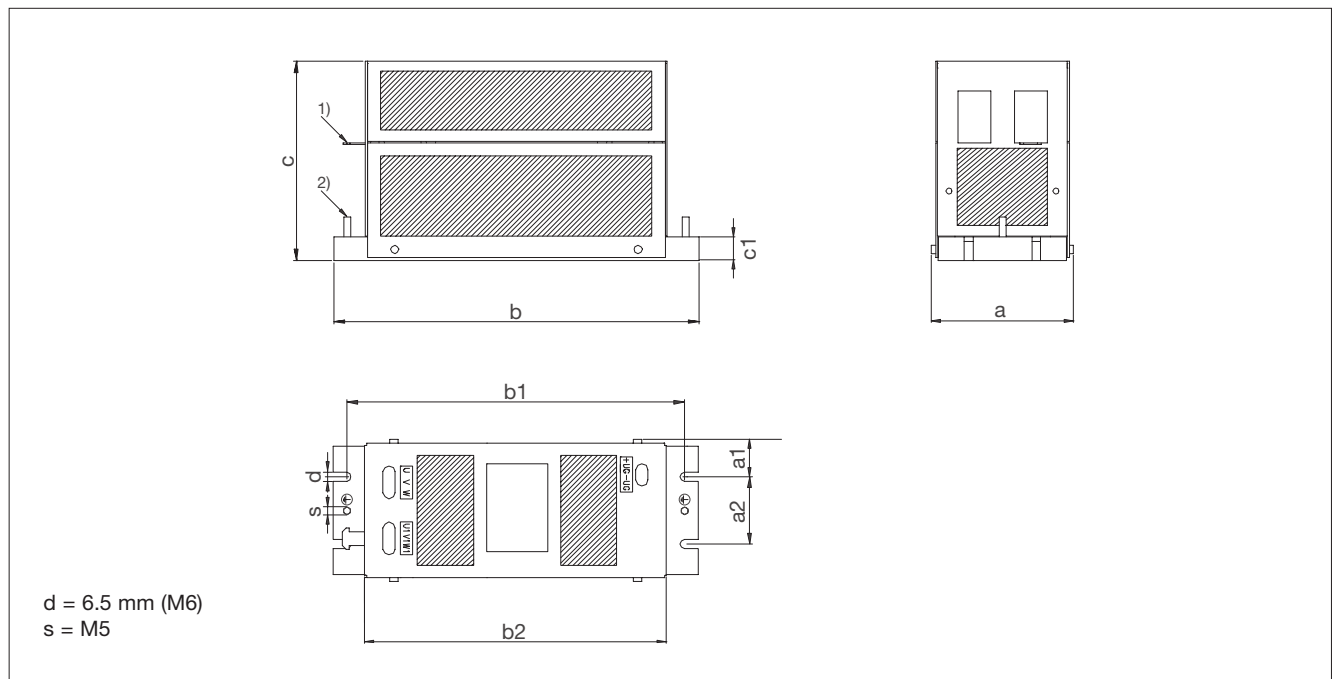
Note:

If the cables between the frequency inverter and the motor filter (U, V, W/+UG, -UG) < 20 cm, they can be routed without shielding.

Motor filter (3.0 ... 11.0 kW/400 V)

| 8200 vector | | | Motor filter, dimensions [mm] | | | | | | | | | |
|-------------|-------------|------------|-------------------------------|-----|----------------|----------------|-----|----------------|----------------|-----|----------------|-------------|
| Type | Voltage [V] | Power [kW] | Order ref. | a | a ₁ | a ₂ | b | b ₁ | b ₂ | c | c ₁ | Weight [kg] |
| E82EV302K2C | 3~ 230 | 3.0 | E82ZM75234B | 127 | 26 | 75 | 300 | 275 | 257 | 150 | 17 | 5.4 |
| E82EV402K2C | | 4.0 | | | | | | | | | | |
| E82EV552K2C | | 5.5 | E82ZM11334B | | | | | | | | | |
| E82EV752K2C | | 7.5 | | | | | | | | | | |
| E82EV302K4C | 3~ 400 | 3.0 | E82ZM40234B | 106 | 28 | 50 | 270 | 250 | 223 | 150 | 17 | 3.6 |
| E82EV402K4C | | 4.0 | | | | | | | | | | |
| E82EV552K4C | | 5.5 | E82ZM75234B | | | | | | | | | |
| E82EV752K4C | | 7.5 | | | | | | | | | | |
| E82EV113K4C | | 11.0 | E82ZM11334B | | | | | | | | | |

Schematic diagram



- 1) Shield for motor cable (tip: use cable ties to support the shielding)
- 2) Earthing stud (M5) for PE connection

Note:

If the cables between the frequency inverter and the motor filter (U, V, W/+UG, -UG) < 20 cm, they can be routed without shielding.

Motor filters (15.0 kW ... 22.0 kW/400 V)

| | |
|---|---|
| A motor filter is always required from a motor cable length of | <ul style="list-style-type: none"> • 50 m shielded • 100 m unshielded |
| Max. motor cable length | <ul style="list-style-type: none"> • 100 m shielded • 200 m unshielded |
| Protection of motor winding | $du/dt \leq 500 \text{ V}/\mu\text{s}$ |
| Limitation of motor overvoltage | < 1 kV |
| Max. mains voltage | 500 V +0% |
| Temperature range | 0...40 °C |
| Connection type | Protected screw terminals |
| Degree of protection | IP20 |
| Operating conditions for 8200 vector in combination with motor filter | <ul style="list-style-type: none"> • Maximum output frequency: 300 Hz • Maximum chopper frequency: 4 kHz • Operating mode: V/f characteristic control (linear or square) |

Note:

The frequency inverter is also loaded with approx. 12% of the motor filter rated current.

Selection and dimensions for operation at rated power (normal operation)

| 8200 vector | | Motor filter, dimensions [mm] | | | | | | |
|----------------|-------------|-------------------------------|-----|----------------|-----|----------------|-----|-------------|
| Type | Voltage [V] | Order ref. | a | a ₁ | b | b ₁ | c | Weight [kg] |
| E82EV153K4B201 | 3~ 400 | ELM3-004H055 ¹⁾ | 235 | 220 | 500 | 400 | 185 | 40 |
| E82EV223K4B201 | | | | | | | | |

¹⁾ Current rating: 55 A

Selection and dimensions for operation with increased power rating

| 8200 vector | | Motor filter, dimensions [mm] | | | | | | |
|----------------|-------------|-------------------------------|-----|----------------|-----|----------------|-----|-------------|
| Type | Voltage [V] | Order ref. | a | a ₁ | b | b ₁ | c | Weight [kg] |
| E82EV153K4B201 | 3~ 400 | ELM3-004H055 ¹⁾ | 235 | 220 | 500 | 400 | 185 | 40 |

Schematic diagram

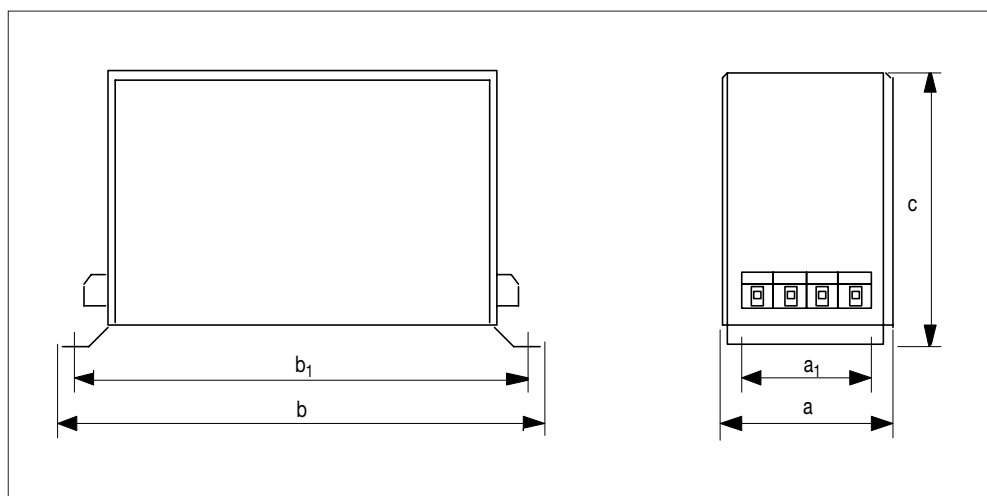
Terminal assignment

Input:

| | | | | | |
|-----|-----|---|---|---|----|
| -UG | +UG | W | V | U | PE |
| | | | | | |

Output:

| | | | |
|----|----|----|----|
| W1 | V1 | U1 | PE |
| | | | |





General information

External brake resistors are required to brake high moments of inertia or for extended generator mode operation. The brake resistor converts mechanical braking energy into heat.

The brake transistor (0.25 ... 11.0 kW) integrated in the 8200 vector frequency inverter or the corresponding brake

chopper connects the external brake resistor when the DC bus voltage exceeds a certain switching threshold. This prevents the frequency inverter from setting a pulse inhibit because of an overvoltage, which would cause the drive to coast to standstill. Braking is always controlled when using an external brake resistor.

Selection of brake resistors

The Lenze brake resistors recommended in the tables are appropriate for each frequency inverter (related to approx. 150% generative power). They are suitable for most applications.

For special applications, e.g. centrifuges, materials handling systems etc., the suitable brake resistor must meet the following requirements:

| Brake resistor requirement | Application | |
|----------------------------|---|---|
| | with active load | with passive load |
| Continuous power [W] | $\geq P_{\max} \cdot \eta_e \cdot \eta_m \cdot \frac{t_1}{t_{\text{cycl}}}$ | $\geq \frac{P_{\max} \cdot \eta_e \cdot \eta_m}{2} \cdot \frac{t_1}{t_{\text{cycl}}}$ |
| Thermal capacity [Ws] | $\geq P_{\max} \cdot \eta_e \cdot \eta_m \cdot t_1$ | $\geq \frac{P_{\max} \cdot \eta_e \cdot \eta_m}{2} \cdot t_1$ |
| Resistance [Ω] | $R_{\min} \leq R \leq \frac{U_{\text{DC}}^2}{P_{\max} \cdot \eta_e \cdot \eta_m}$ | |

Active load Can move by itself without any influence from the drive (e.g. materials handling systems, unwinders)

Passive load Stops by itself without any influence from the drive (e.g. horizontal traversing drives, centrifuges, fans)

U_{DC} [V] Threshold for brake transistor or brake chopper

P_{\max} [W] Maximum braking power defined by the application

η_e Electrical efficiency (frequency inverter + motor)
Guide values: 0.54 (0.25 kW) ... 0.95 (90 kW)

η_m Mechanical efficiency (gearbox, machine)

t_1 [s] Braking time

t_{scan} [s] Cycle time = time between two subsequent braking cycles (= t_1 + break time)

R_{\min} Smallest permissible brake resistance (see rating for the integrated brake transistor)

Integrated brake transistors (0.25 kW ... 7.5 kW/230 V)

| Brake transistor | | 8200 vector, 230 V | | | | | |
|--|--------------|--|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | E82EV 251K2C | E82EV 371K2C | E82EV 551K2C | E82EV 751K2C | E82EV 152K2C | E82EV 222K2C |
| Threshold U_{DC} | [V DC] | 380 | | | | | |
| Peak braking power | [A DC] | 0.85 | | 4.0 | | 8.6 | |
| Max. continuous current | [A DC] | 0.85 | | 2.0 | | 5.8 | |
| Smallest permissible brake resistance | [Ω] | 470 | | 90 | | 47 | |
| Current derating | | <ul style="list-style-type: none"> over 40°C, derate the peak braking power by 2.5%/°C over 1000 m above sea level, derate the peak braking power by 5%/1000 m | | | | | |
| Switch-on cycle | | Max. 60 s peak brake current, then at least 60 s recovery time | | | | | |
| Recommended Lenze brake resistor ¹⁾ | Order ref. | ERBM470R020W | | ERBM200R100W | | ERBM082R150W | ERBM052R200W |

| Brake transistor | | 8200 vector, 230 V | | | |
|--|--------------|--|--------------|--------------|--------------|
| | | E82EV302K2C | E82EV402K2C | E82EV552K2C | E82EV752K2C |
| Threshold U_{DC} | [V DC] | 380 | | | |
| Peak braking power | [A DC] | 13.0 | 13.0 | 20.0 | 20.0 |
| Max. continuous current | [A DC] | 8.0 | 10.7 | 14.7 | 20.0 |
| Smallest permissible brake resistance | [Ω] | 29 | 29 | 19 | 19 |
| Current derating | | <ul style="list-style-type: none"> over 40°C, derate the peak braking power by 2.5%/°C over 1000 m above sea level, derate the peak braking power by 5%/1000 m | | | |
| Switch-on cycle | | Max. 60 s peak brake current, then at least 60 s recovery time | | | |
| Recommended Lenze brake resistor ¹⁾ | Order ref. | ERBD047R01K2 | ERBD047R01K2 | ERBD047R01K2 | ERBD047R01K2 |

¹⁾ The brake resistors are based on a switch-on cycle of 1:10
(max. 15 s braking, then at least 150 s recovery time)



Integrated brake transistors (0.55 kW ... 11.0 kW/400 V)

| Brake transistor | | 8200 vector, 400 V | | | |
|---|--------------|--|-------------|--------------|--------------|
| | | E82EV551K4C | E82EV751K4C | E82EV152K4C | E82EV222K4C |
| Threshold U_{DC} | [V DC] | 790 (adjustable) | | | |
| Peak braking power | [A DC] | 1.9 | | 3.8 | 5.6 |
| Max. continuous current | [A DC] | 0.96 | | 1.92 | 2.8 |
| Smallest permissible brake resistance ($U_{DC} = 790$ V) | [Ω] | 455 | | 230 | 155 |
| Current derating | | <ul style="list-style-type: none"> over 40°C, derate the peak braking power by 2.5%/°C over 1000 m above sea level, derate the peak braking power by 5%/1000 m | | | |
| Switch-on cycle | | Max. 60 s peak brake current, then at least 60 s recovery time | | | |
| Recommended Lenze brake resistor ¹⁾ | Order ref. | ERBM470R100W | | ERBM370R150W | ERBM240R200W |

| Brake transistor | | 8200 vector, 400 V | | | | |
|---|--------------|--|--------------|--------------|--------------|--------------|
| | | E82EV302K4C | E82EV402K4C | E82EV552K4C | E82EV752K4C | E82EV113K4C |
| Threshold U_{DC} | [V DC] | 790 (adjustable) | | | | |
| Peak braking power | [A DC] | 7.8 | 7.8 | 11.4 | 16.5 | 23.5 |
| Max. continuous current | [A DC] | 3.9 | 5.1 | 7.0 | 9.6 | 14.1 |
| Smallest permissible brake resistance ($U_{DC} = 790$ V) | [Ω] | 100 | 100 | 68 | 47 | 33 |
| Current derating | | <ul style="list-style-type: none"> over 40°C, derate the peak braking power by 2.5%/°C over 1000 m above sea level, derate the peak braking power by 5%/1000 m | | | | |
| Switch-on cycle | | Max. 60 s peak brake current, then at least 60 s recovery time | | | | |
| Recommended Lenze brake resistor ¹⁾ | Order ref. | ERBD180R300W | ERBD100R600W | ERBD082R600W | ERBD068R800W | ERBD047R01K2 |

¹⁾ The brake resistors are based on a switch-on cycle of 1:10 (max. 15 s braking, then at least 150 s recovery time)

Brake chopper and brake module (15.0 kW ... 90.0 kW/400 V)

A brake resistor is connected to the 8200 vector frequency inverter, 15.0...90.0 kW via the brake chopper EMB9352-E (available as accessory), which is then coupled to the frequency inverter DC bus voltage (+UG, -UG terminals).

The brake module EMB9351-E (available as an accessory) with integrated brake resistor can be used for low braking power. The brake choppers and brake modules can be connected in parallel in combination.

General data and application conditions (EMB9351-E and EMB9352-E)

| | | |
|--|--|--|
| Conformity | CE | Low voltage directive (73/23/EEC) |
| Approvals | UL 508C | Underwriter Laboratories (File No E132659) Power conversion equipment |
| Vibrational stability | Accelerational stability up to 0.7g (Germanischer Lloyd, general conditions) | |
| Climatic conditions | Class 3K3 to EN 50178 (without condensation, average relative humidity 85%) | |
| Pollution degree | VDE 0110 Part 2 pollution degree 2 | |
| Packaging (DIN 4180) | Dust packaging | |
| Permissible temperature ranges | Transport | -25 °C...+70 °C |
| | Storage | -25 °C...+70 °C |
| | Operation | 0°C...+55 °C over +40°C derate the rated output current by 2.5%/°C |
| Permissible installation height | 0... 4000 m above sea level over 1000 m above sea level, derate the peak brake current by 5%/1000 m | |
| Mounting position | Vertical | |
| Mounting clearances | Above and below | ≤ 100 mm |

Ratings for the brake chopper (type/order ref. EMB9352-E)

| Brake chopper | | 8200 vector, 400 V | | | | | | |
|-------------------------------------|------------|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | | E82EV 153K4B201 | E82EV 223K4B201 | E82EV 303K4B201 | E82EV 453K4B201 | E82EV 553K4B201 | E82EV 753K4B201 | E82EV 903K4B201 |
| Threshold U_{DC} | [V DC] | 765 (adjustable) | | | | | | |
| Peak braking power | [A DC] | 42 | | | | | | |
| Max. continuous current | [A DC] | 25 | | | | | | |
| Smallest permissible brake resistor | [Ω] | 18 | | | | | | |
| Current derating | | <ul style="list-style-type: none"> • over 40°C, derate the peak braking power by 2.0%/°C • over 1000 m above sea level, derate the peak braking power by 5%/1000 m | | | | | | |
| Switch-on cycle | | Max. 60 s peak brake current, then at least 60 s recovery time | | | | | | |
| Recommended Lenze brake resistor | Order ref. | ERBD 033R02K0 | ERBD 022R03K0 | ERBD 018R03K0 | ERBD 022R03K0 | ERBD 018R03K0 | ERBD 022R03K0 | ERBD 018R03K0 |
| Number of brake choppers | | 1 | 1 | 1 | 2 ¹⁾ | 2 ¹⁾ | 3 ¹⁾ | 3 ¹⁾ |

¹⁾ Connected in parallel

Ratings for the brake module (type/order ref. EMB9351-E)

| | | |
|---|--------|--|
| Threshold U_{DC} | [V DC] | 765 (adjustable) |
| Peak braking power | [A DC] | 16 |
| Peak braking power ($U_{DC} = 765 V$) | [kW] | 12 |
| Continuous power | [kW] | 0.1 |
| Thermal capacity | [kWs] | 50 |
| Switch-on cycle | | Max. 4 s peak brake current, then at least 400 s recovery time |
| Recommended Lenze brake resistor | | Integrated (47 Ω) |

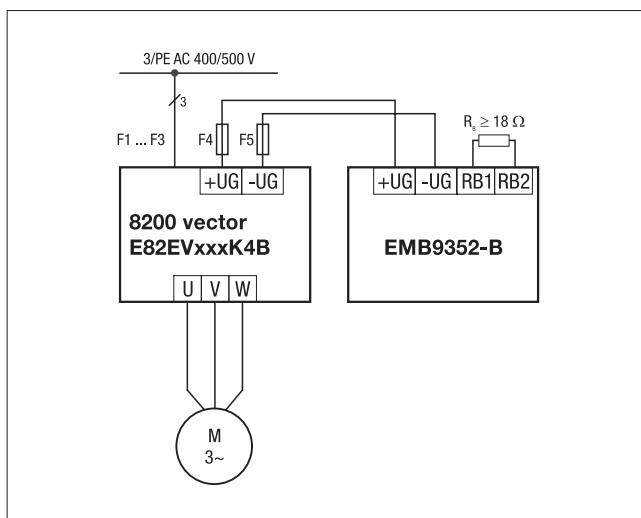
Fuses and cable cross-sections (EMB9351-E and EMB9352-E)

| Type | DC fuse (F4, F5) ¹⁾ | | Cross-section mm ² | AWG |
|--------------------------------------|--------------------------------|---------|----------------------------------|-----|
| | VDE | UL | | |
| EMB9351-E EMB9352-E | 50 A | 40 A K5 | 6 | 10 |

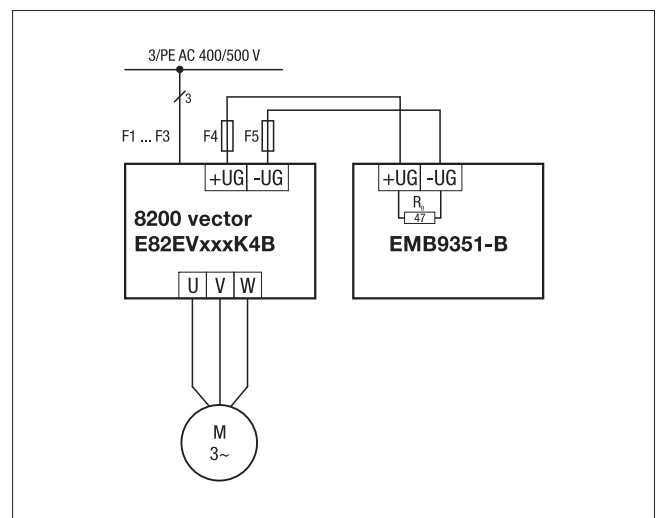
¹⁾ For combinations, where more than two devices (frequency inverters or brake choppers/modules) are coupled to +UG, -UG (parallel connection of brake choppers/modules or bus operation), we recommend providing protection with DC fuses (F4, F5). Please observe national and regional regulations.

Connection

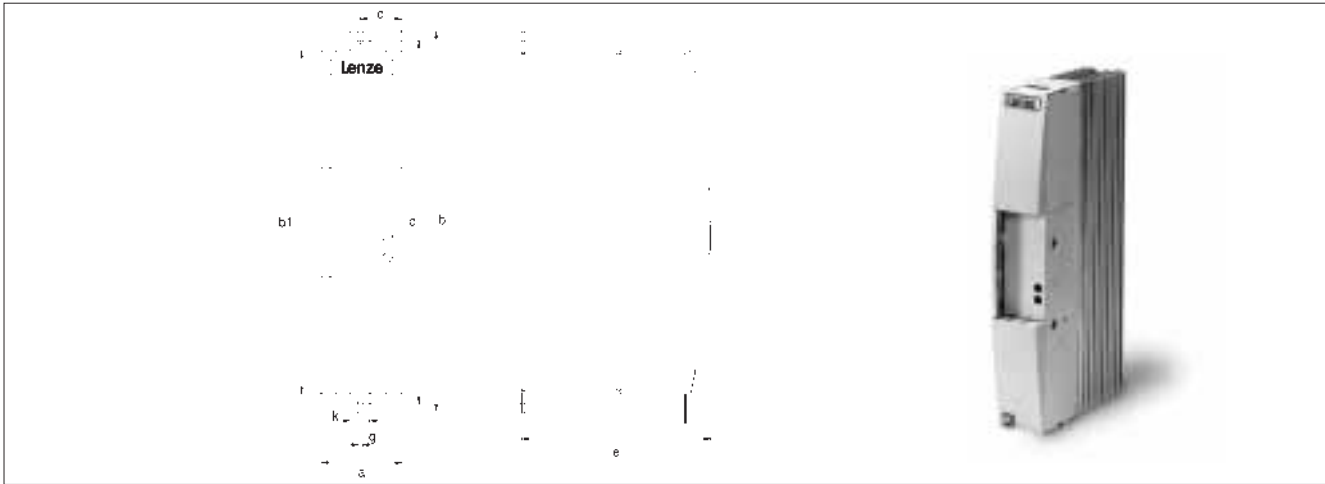
Circuit diagram of a brake chopper



Circuit diagram of a brake module



Mounting/dimensions for standard mounting

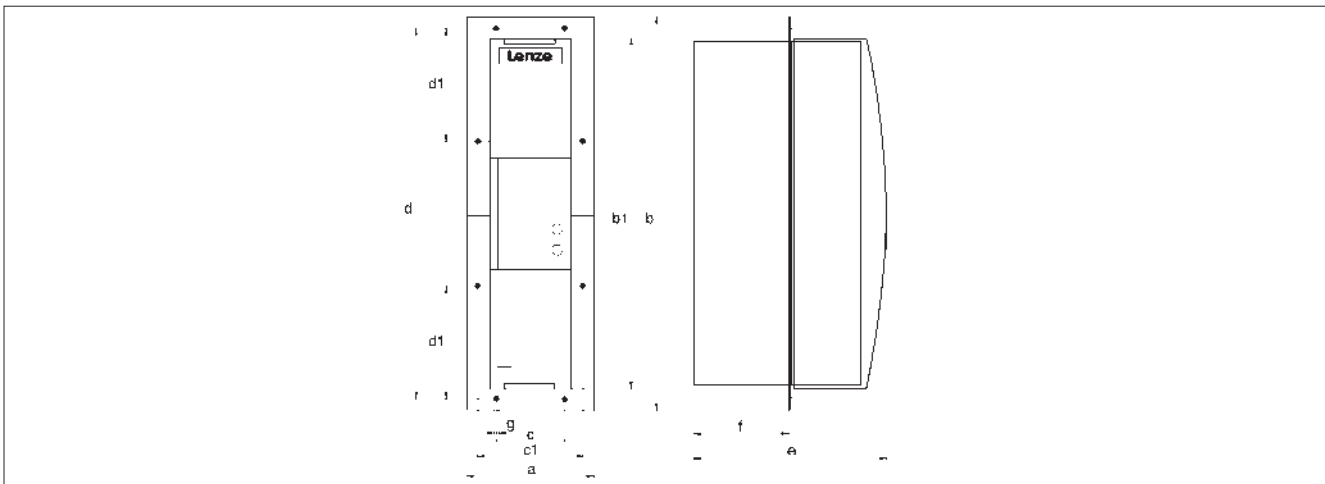


| Type | Dimensions [mm] | | | | | | | | Weight [kg] |
|-----------|-----------------|-----|-----|----|-----|-----|-----|----|-------------|
| | a | b | b1 | c | d | e | g | k | |
| EMB9351-E | 52 | 384 | 350 | 26 | 365 | 186 | 6.5 | 30 | 2.6 |
| EMB9352-E | | | | | | | | | 2.2 |

Mounting/dimensions for “push-through technology”

4 Mounting/Dimensions for “push-through technology” (thermal separation) The brake chopper/module is mounted according to the “push-through technique” using

a mounting frame and a seal. Both of these can be ordered as an accessory set under the order ref. EJ0040.



| Type | Dimensions [mm] | | | | | | | | | | Weight [kg] |
|-----------|-----------------|-----|-----|----|------|-----|-------|-----|----|-----|-------------|
| | a | b | b1 | c | c1 | d | d1 | e | f | g | |
| EMB9351-E | 86.5 | 386 | 350 | 34 | 69.5 | 367 | 162.5 | 186 | 92 | 6.5 | 2.6 |
| EMB9352-E | | | | | | | | | | | 2.2 |

Installation section

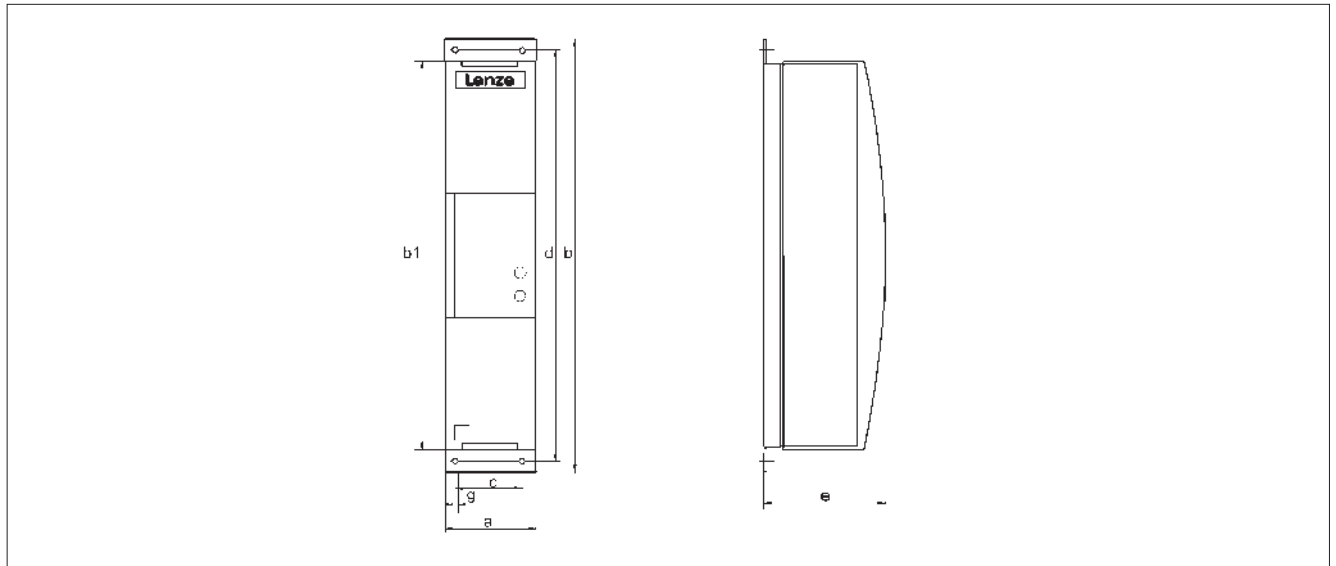
| Type | Dimensions [mm] | |
|-----------|-----------------|-------|
| | Height | Width |
| EMB9351-E | 350 ±3 | 56 ±3 |
| EMB9352-E | | |



Mounting/dimensions for “cold plate” technology

A brake chopper or brake module in “cold plate” technology.
The order can also be mounted designations are as follows:

- Brake module: EMB9351-C-V003
- Brake chopper: EMB9352-C-V003



| Type | Dimensions [mm] | | | | | | | Weight [kg] |
|----------------|-----------------|-----|-----|----|-----|-----|-----|-------------|
| | a | b | b1 | c | d | e | g | |
| EMB9351-C-V003 | 52 | 381 | 350 | 34 | 367 | 104 | 6.5 | 2.6 |
| EMB9352-C-V003 | | | | | | | | 2.2 |

Thermal resistance R_{th} (transition between cooler and cooling medium)

| Brake chopper/module | Cooling stretch | |
|----------------------|--------------------------------------|----------------|
| Type | Dissipated power loss P_{loss} [W] | R_{th} [K/W] |
| EMB9351-C-V003 | 100 | ≤ 0.3 |
| EMB9352-C-V003 | 63 | ≤ 0.3 |

Additional information about “cold plate” technology can be found on page 2-39.

Brake resistors

| Lenze brake resistors (IP 20) | | | | | | | |
|-------------------------------|-----|--------------------------------|-------------------|--|---------------------|-----|--------|
| Order ref. | R | Continuous power ²⁾ | Thermal capacity | Switch-on cycle | Cable cross-section | | Weight |
| | [Ω] | [kW] | [kWs] | | [mm ²] | AWG | |
| ERBM470R020W ¹⁾ | 470 | 0,02 | 3,0 ³⁾ | 1:10 Max. 15 s braking then at least 150 s recovery time | 1 | 18 | 0,22 |
| ERBM470R050W ¹⁾ | 470 | 0,05 | 7,5 | | 1 | 18 | 0,56 |
| ERBM470R100W | 470 | 0,1 | 15 | | 1 | 18 | 0,76 |
| ERBM200R100W ¹⁾ | 200 | 0,1 | 15 | | 1 | 18 | 0,6 |
| ERBM370R150W | 370 | 0,15 | 22,5 | | 1 | 18 | 0,93 |
| ERBM100R150W ¹⁾ | 100 | 0,15 | 22,5 | | 1 | 18 | 0,93 |
| ERBM082R150W ¹⁾ | 82 | 0,15 | 22,5 | | 1 | 18 | 0,93 |
| ERBM240R200W | 240 | 0,2 | 30 | | 1 | 18 | 1,25 |
| ERBM082R200W ¹⁾ | 82 | 0,2 | 30 | | 1 | 18 | 1,25 |
| ERBM052R200W ¹⁾ | 52 | 0,2 | 30 | | 1 | 18 | 1,25 |
| ERBD180R300W | 180 | 0,3 | 45 | | 1 | 18 | 2,0 |
| ERBD100R600W | 100 | 0,6 | 90 | | 1 | 18 | 3,1 |
| ERBD082R600W | 82 | 0,6 | 90 | | 1,5 | 16 | 3,1 |
| ERBD068R800W | 68 | 0,8 | 120 | | 1,5 | 16 | 4,3 |
| ERBD047R01K2 | 47 | 1,2 | 180 | | 2,5 | 14 | 4,9 |
| ERBD033R02K0 ⁴⁾ | 33 | 2,0 | 300 | | 6 | 10 | 7,1 |
| ERBD022R03K0 ⁴⁾ | 22 | 3,0 | 450 | | 6 | 10 | 10,6 |
| ERBD018R03K0 ⁴⁾ | 18 | 3,0 | 450 | | 6 | 10 | 10,6 |

¹⁾ Only for inverters with mains rated voltage 230 V

²⁾ The continuous power is a reference variable for selecting the brake resistor.
Peak braking power is applied (U_{DC}^2/R).

³⁾ Max. 10 s braking

⁴⁾ In connection with brake module EMB9352-E

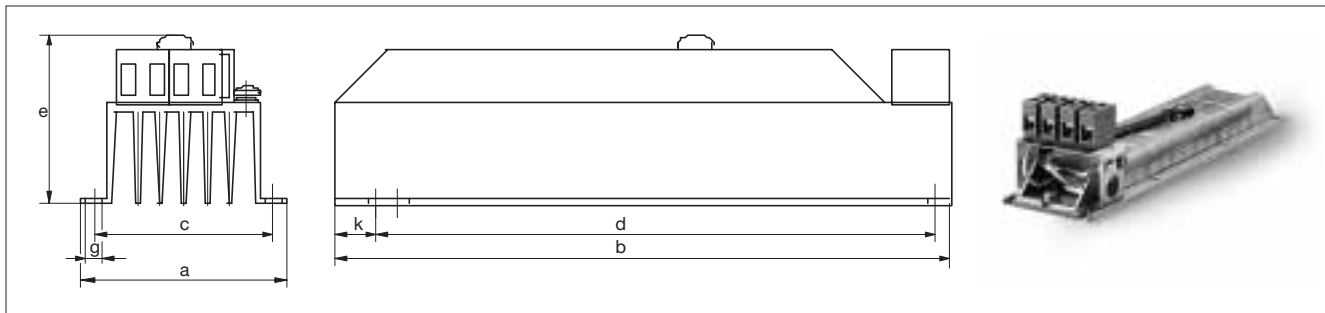
Note:

– The brake resistors are fitted with a thermostat (potential-free NC contact) as standard (except ERBM470R020W).

– If required, several brake resistors can be connected in series or in parallel.

(Attention: Do not go below the minimum permissible value!)

Dimensions of module brake resistors ERBM...

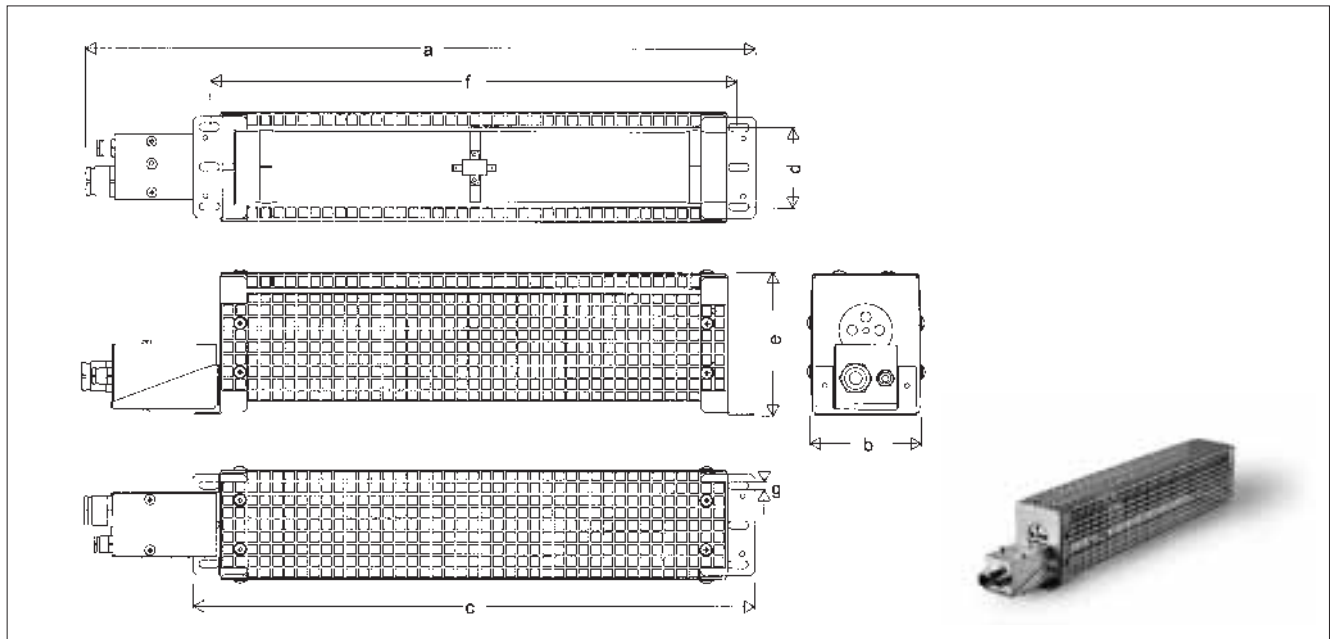


| Brake resistor | a [mm] | b [mm] | c [mm] | d [mm] | e [mm] | g [mm] | k [mm] |
|----------------|--------|--------|--------|--------|--------|--------|--------|
| ERBM470R020W | 45 | 160 | – | 145 | 33 | 6 | 7.5 |
| ERBM470R050W | 60 | 240 | 50 | 225 | 60 | 5 | 7.5 |
| ERBM470R100W | 70 | 240 | 50 | 225 | 60 | 5 | 7.5 |
| ERBM200R100W | 80 | 160 | 70 | 145 | 95 | 5 | 7.5 |
| ERBM370R150W | 80 | 240 | 70 | 225 | 95 | 5 | 7.5 |
| ERBM100R150W | 80 | 240 | 70 | 225 | 95 | 5 | 7.5 |
| ERBM082R150W | 80 | 240 | 70 | 225 | 95 | 5 | 7.5 |
| ERBM240R200W | 80 | 340 | 70 | 325 | 70 | 5 | 7.5 |
| ERBM082R200W | 80 | 340 | 70 | 325 | 70 | 5 | 7.5 |
| ERBM052R200W | 80 | 340 | 70 | 325 | 70 | 5 | 7.5 |



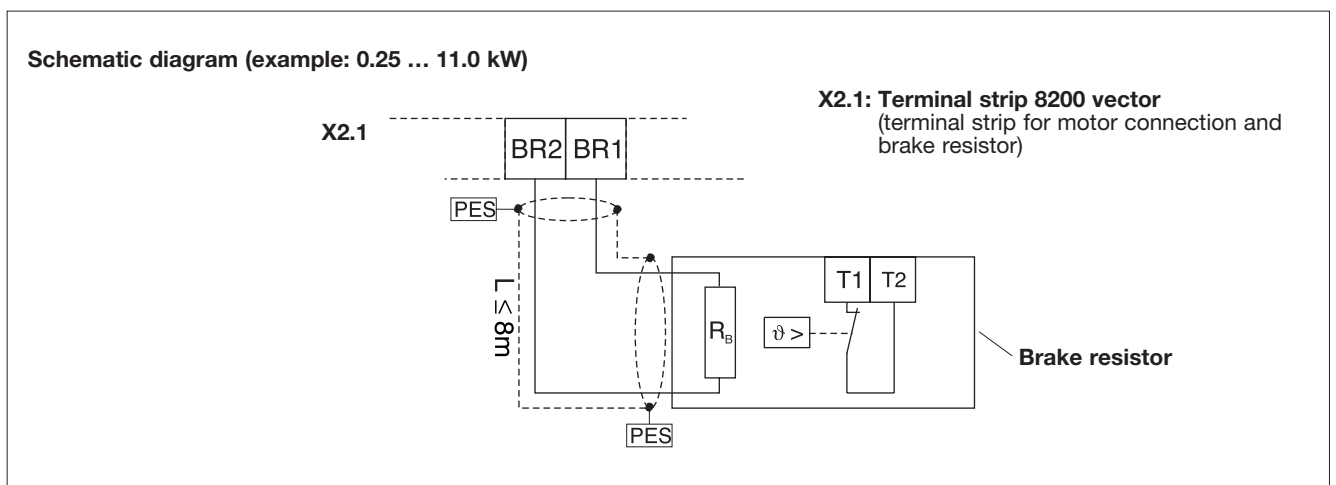
Brake resistors

Dimensions – grid enclosed brake resistors ERBD...



| Brake resistor | a [mm] | b [mm] | c [mm] | d [mm] | e [mm] | f [mm] | g [mm] | h [mm] |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| ERBD180R300W | 440 | 89 | 354 | 64 | 115 | 326 | 6.5 | 13 |
| ERBD100R600W | 640 | 89 | 554 | 64 | 115 | 526 | 6.5 | 13 |
| ERBD082R600W | 640 | 89 | 554 | 64 | 115 | 526 | 6.5 | 13 |
| ERBD068R800W | 540 | 177 | 454 | 150 | 115 | 426 | 6.5 | 13 |
| ERBD047R01K2 | 640 | 177 | 554 | 150 | 115 | 526 | 6.5 | 13 |
| ERBD033R02K0 | 640 | 265 | 554 | 240 | 115 | 526 | 6.5 | 13 |
| ERBD022R03K0 | 740 | 177 | 654 | 150 | 229 | 626 | 6.5 | 13 |
| ERBD018R03K0 | 740 | 177 | 654 | 150 | 229 | 626 | 6.5 | 13 |

Connecting a brake resistor



1, 2: Resistor

3, 4: Temperature monitoring (temperature switch/opener) to be integrated for example into the locking of the relevant mains supply protection

Brake rectifiers

Lenze three-phase motors and G-motion geared motors can be fitted with spring applied brakes.

A brake rectifier is required for the DC supply of the electromechanical motor brake (180 V DC, 205 V DC).

The brake rectifier has an integrated spark suppressor for protecting the switch contacts.

The selection of the brake rectifier is made depending on the input voltage U_{AC} and the rated brake coil voltage (U_{coil}):

| Braking rectifier | Type ref./order ref. | Max. input voltage U_{AC} | Rated voltage U_{DC} (V) | Max. output voltage | Selection example |
|---------------------------|----------------------|-----------------------------|-------------------------------|---------------------|---|
| Bridge one-way rectifier | E82ZWBR1 | 270 V +0% | $U_{DC} = 0.9 \times U_{AC}$ | 0.75 A | $U_{coil} = 205 \text{ V}_{DC} = U_{DC}$ at $U_{AC} = 230 \text{ V}$ |
| 6-pin half wave rectifier | E82ZWBR3 | 460 V +0% | $U_{DC} = 0.45 \times U_{AC}$ | 0.75 A | $U_{coil} = 180 \text{ V}_{DC} = U_{DC}$ at $U_{AC} = 400 \text{ V}$ |

Note:

Lenze gearboxes and three-phase brake motors are supplied as standard with a **4-pin** brake rectifier. These brake rectifiers are designed for **AC-controlled** switching of the brake.

E82ZWBR3 = half wave rectifier
Type 14.630.33.016

E82ZWBR1 = bridge rectifier
Type 14.630.32.016





Activation of the brake

The brake is either DC or AC-controlled. The delay times are significantly reduced if the brake is DC-controlled. This makes it possible, for example, to brake the motor with a reproducible stopping distance. DC-controlled switching requires a spark suppressor to protect the switch contacts and the coil. The spark suppressor is integrated into the 6-pin brake rectifiers.

We recommend that the relay output¹⁾ of the 8200 vector frequency inverter is used to switch the brake. Alternatively, the brake can also be controlled via an external control contact (e.g. PLC). The following table lists the available options for Lenze brakes. The information relates to a mains rating of 230/400 V +/-10 %.

| Brake coil voltage rating | Type of rectifier | Brake size (braking torque [Nm]) | | |
|---------------------------|-------------------|--|----------|-----------|
| | | 06 (4.0) | 08 (8.0) | 10 (16.0) |
| | | Corresponding motor frame size | | |
| | | 063/071 | 080/090 | 090/100 |
| 180 V | Half wave | <ul style="list-style-type: none"> AC-controlled switching via the relay output of the 8200 vector only permitted with additional auxiliary relay DC-controlled switching or direct switching of a DC voltage via the relay output of the 8200 vector only permitted with additional auxiliary relay | | |
| 205 V ⁴⁾ | Bridge | <ul style="list-style-type: none"> AC-controlled switching permitted via the relay output of the 8200 vector DC-controlled switching or direct switching of a DC voltage permitted via the relay output of the 8200 vector | | |
| 24 V ²⁾ | Not required | <ul style="list-style-type: none"> Direct switching of a DC voltage permitted via the relay output of the 8200 vector rectifier | | |

| Brake coil voltage rating | Type of rectifier | Brake size (braking torque [Nm]) | | | | | |
|---------------------------|-------------------|--|---------|---------|----------|----------|----------|
| | | 12 (32.0) ³⁾ | 14 (60) | 16 (80) | 18 (150) | 20 (240) | 25 (360) |
| | | Corresponding motor frame size | | | | | |
| | | 100 | 112/132 | 132/160 | 160/180 | 180/200 | 200/225 |
| 180 V | Half wave | <ul style="list-style-type: none"> AC-controlled switching via the relay output of the 8200 vector only permitted with additional auxiliary relay DC-controlled switching or direct switching of a DC voltage via the relay output of the 8200 vector only permitted with additional auxiliary relay | | | | | |
| 205 V | Bridge | <ul style="list-style-type: none"> AC-controlled switching via the relay output of the 8200 vector DC-controlled switching or direct switching of a DC voltage via the relay output of the 8200 vector only permitted with an additional auxiliary relay | | | | | |
| 24 V ²⁾ | Not required | <ul style="list-style-type: none"> Direct switching of a DC voltage only permitted via the relay output of the 8200 vector with an additional auxiliary relay | | | | | |

¹⁾ Technical data for the relay output of the 8200 vector: see page 2-6.

The service life of the relay depends on the type of load and the connected power.

²⁾ DC-controlled switching requires a spark suppressor to protect the switching contact and the coil.

³⁾ At a brake coil voltage rating of 205 V and 24 V, a DC voltage may be switched directly via the relay output of the 8200 vector on inverters with ratings of 15 kW and higher.

⁴⁾ On 8200 vector types E82EV251K2Cxxx and E82EV371K2Cxxx, DC-controlled switching or direct switching of a DC voltage via the relay output is only permitted with an additional relay.

Activation of the brake

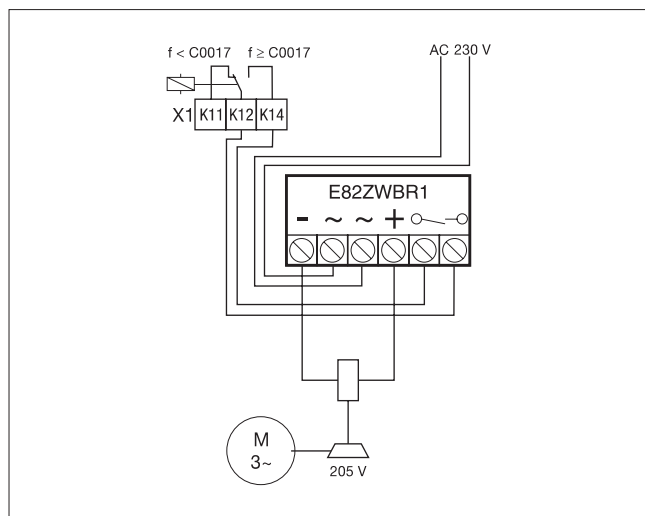
The relay must be programmed before the relay output of the 8200 vector frequency inverter can activate the electromechanical motor brake.

Example: Release/application of the brake (205 V) when an adjustable frequency threshold is exceeded/undercut. In this case the braking process can be initiated via a digital signal which leads to a quick stop of the drive.

(Programming: Use relay C0008 = 7, frequency threshold (Qmin) C0017 = 3 Hz; relay terminals K12, K14 at terminal strip X1 of the 8200 vector)

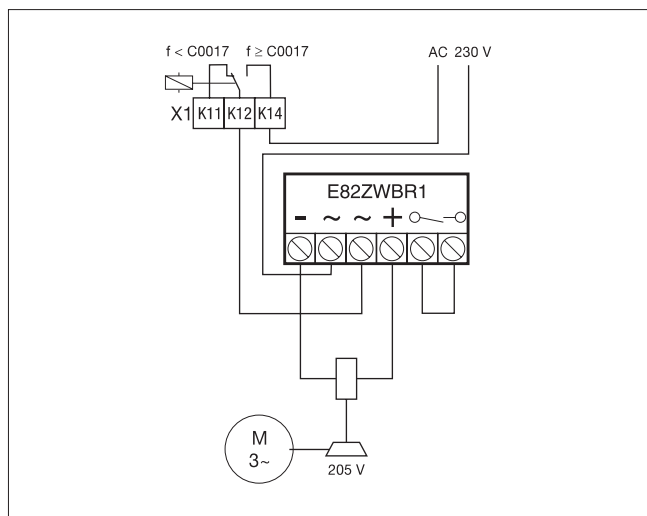
Schematic diagram

DC-controlled switching of the brake

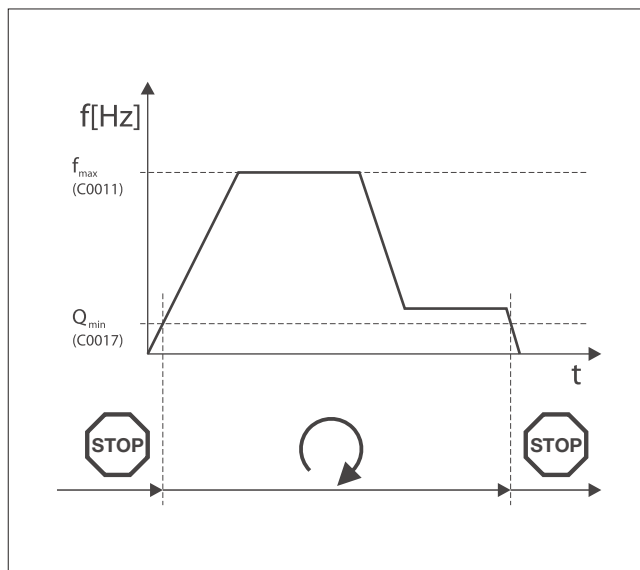


Schematic diagram

AC-controlled switching of the brake



Sequence diagram





DC fuse

Two ranges of fuses are required to provide DC fuses for the entire power range of the drive controller. Fuse size 14*51 mm covers the rated current range from 6 to 40 A and fuse size 22*58 mm covers the range from 12 to 100 A. Only fuse holders of the same size may be interconnected via DC busbars. DC currents above 100 A can be implemented by connecting 22*58 mm DC fuses in parallel. The 8200 vector range is suitable for operation with 120% overload.

Note: A DC busbar system is available for each fuse range. At average supply levels, the current capacity $I = 200$ A. The busbar system for the 22*58 mm fuse range can be fitted with 14*51 mm range fuse holders. The 2-pin 14*51 mm must be extended for this purpose and the pins may need to be removed. This restricts the contact protection.

| Type | Power [kW] | 14*51 fuse without signalling device | | 14*51 fuse with signalling device | |
|----------------------|------------|---|---------------|--------------------------------------|---------------|
| | | Fuse rating [A] | Order ref. | Fuse rating [A] | Order ref. |
| 1~ 230 V | | | | | |
| E82xV551K2C | 0.55 | 10 | EFSGR0100AYHN | 10 | EFSGR0100AYHK |
| E82xV751K2C | 0.75 | 12 | EFSGR0120AYHN | 12 | EFSGR0120AYHK |
| E82xV152K2C | 1.5 | 25 | EFSGR0250AYHN | 25 | EFSGR0250AYHK |
| E82xV222K2C | 2.2 | 32 | EFSGR0320AYHN | 32 | EFSGR0320AYHK |
| 3~ 230 V | | | | | |
| E82xV551K2C | 0.55 | 8 | EFSGR0080AYHN | 8 | EFSGR0080AYHK |
| E82xV751K2C | 0.75 | 10 | EFSGR0100AYHN | 10 | EFSGR0100AYHK |
| E82xV152K2C | 1.5 | 16 | EFSGR0160AYHN | 16 | EFSGR0160AYHK |
| E82xV222K2C | 2.2 | 25 | EFSGR0250AYHN | 25 | EFSGR0250AYHK |
| E82xV302K2C | 3 | 32 | EFSGR0320AYHN | 32 | EFSGR0320AYHK |
| E82xV402K2C | 4 | 40 | EFSGR0400AYHN | 40 | EFSGR0400AYHK |
| E82xV552K2C | 5.5 | 40 | EFSGR0400AYHN | 40 | EFSGR0400AYHK |
| E82xV752K2C | 7.5 | | | | |
| 3~ 400 V | | | | | |
| E82xV551K4C | 0.55 | 6 | EFSGR0060AYHN | 6 | EFSGR0060AYHK |
| E82xV751K4C | 0.75 | 6 | EFSGR0060AYHN | 6 | EFSGR0060AYHK |
| E82xV152K4C | 1.5 | 10 | EFSGR0100AYHN | 10 | EFSGR0100AYHK |
| E82xV222K4C | 2.2 | 12 | EFSGR0120AYHN | 12 | EFSGR0120AYHK |
| E82xV302K4C | 3 | 20 | EFSGR0200AYHN | 20 | EFSGR0200AYHK |
| E82xV402K4C | 4 | 25 | EFSGR0250AYHN | 25 | EFSGR0250AYHK |
| E82xV552K4C | 5.5 | 32 | EFSGR0320AYHN | 32 | EFSGR0320AYHK |
| E82xV752K4C | 7.5 | 40 | EFSGR0400AYHN | 40 | EFSGR0400AYHK |
| E82xV113K4C | 11 | 40 | EFSGR0400AYHN | 40 | EFSGR0400AYHK |
| Brake modules | | | | | |
| 9351 | | 20 | EFSGR0200AYHN | 20 | EFSGR0200AYHK |
| 9352 | | | | | |

Lenze offers a DC busbar system - EWZ 0036 - for DC fuses 14*51 mm with and without alarm contact.



| Type | Power [kW] | 22*38 fuse without signalling device | | 22*38 fuse with signalling device | |
|----------------------|------------|--------------------------------------|---------------|-----------------------------------|---------------|
| | | Fuse rating [A] | Order ref. | Fuse rating [A] | Order ref. |
| 1~ 230 V | | | | | |
| E82xV551K2C | 0.55 | 12 | EFSGR0120AYIN | 12 | EFSGR0120AYIK |
| E82xV751K2C | 0.75 | 12 | EFSGR0120AYIN | 12 | EFSGR0120AYIK |
| E82xV152K2C | 1.5 | 25 | EFSGR0250AYIN | 25 | EFSGR0250AYIK |
| E82xV222K2C | 2.2 | 32 | EFSGR0320AYIN | 32 | EFSGR0320AYIK |
| 3~ 230 V | | | | | |
| E82xV551K2C | 0.55 | 12 | EFSGR0120AYIN | 12 | EFSGR0120AYIK |
| E82xV751K2C | 0.75 | 12 | EFSGR0120AYIN | 12 | EFSGR0120AYIK |
| E82xV152K2C | 1.5 | 16 | EFSGR0160AYIN | 16 | EFSGR0160AYIK |
| E82xV222K2C | 2.2 | 25 | EFSGR0250AYIN | 25 | EFSGR0250AYIK |
| E82xV302K2C | 3 | 32 | EFSGR0320AYIN | 32 | EFSGR0320AYIK |
| E82xV402K2C | 4 | 40 | EFSGR0400AYIN | 40 | EFSGR0400AYIK |
| E82xV552K2C | 5.5 | 40 | EFSGR0400AYIN | 40 | EFSGR0400AYIK |
| E82xV752K2C | 7.5 | 63 | EFSGR0630AYIN | 63 | EFSGR0630AYIK |
| 3~ 400 V | | | | | |
| E82xV551K4C | 0.55 | 12 | EFSGR0120AYIN | 12 | EFSGR0120AYIK |
| E82xV751K4C | 0.75 | 12 | EFSGR0120AYIN | 12 | EFSGR0120AYIK |
| E82xV152K4C | 1.5 | 12 | EFSGR0120AYIN | 12 | EFSGR0120AYIK |
| E82xV222K4C | 2.2 | 12 | EFSGR0120AYIN | 12 | EFSGR0120AYIK |
| E82xV302K4C | 3 | 20 | EFSGR0200AYIN | 20 | EFSGR0200AYIK |
| E82xV402K4C | 4 | 25 | EFSGR0250AYIN | 25 | EFSGR0250AYIK |
| E82xV552K4C | 5.5 | 32 | EFSGR0320AYIN | 32 | EFSGR0320AYIK |
| E82xV752K4C | 7.5 | 40 | EFSGR0400AYIN | 40 | EFSGR0400AYIK |
| E82xV113K4C | 11 | 40 | EFSGR0400AYIN | 40 | EFSGR0400AYIK |
| Brake modules | | | | | |
| 9351 | | 20 | EFSGR0200AYIN | 20 | EFSGR0200AYIK |
| 9352 | | 50 | EFSGR0500AYIN | 50 | EFSGR0500AYIK |

Lenze offers a DC busbar system - EWZ 0036 - for DC fuses 22*38 mm with and without alarm contact.

| Fuse holder 14*51 mm | |
|---|------------|
| Name | Order ref. |
| Fuse holder, 2-pin, without signalling device ¹⁾ | EFH20005 |
| Fuse holder, 1-pin, with signalling device ^{2,3)} | EFH10005 |

| Fuse holder 22*58 mm | |
|---|------------|
| Name | Order ref. |
| Fuse holder, 2-pin, without signalling device ¹⁾ | EFH20007 |
| Fuse holder, 1-pin, with signalling device ^{2,3)} | EFH10004 |

| Miscellaneous accessories ²⁾ | |
|--|------------|
| Name | Order ref. |
| DC busbar for 14*51 mm, 1m | EWZ0036 |
| DC busbar for 22*58 mm, 1m | EWZ0037 |
| Fuse-link contacts for DC busbar (unit packs of 10) | EWZ0038 |
| 1-pin terminal for internal supply of busbars for 14*51 and 22*58 mm ⁴⁾ | EWZ0039 |

¹⁾ UL approval only for AC operation.

²⁾ The 14*51 and 22*58 mm fuse-links with signalling device, fuse holders with signalling device and accessories do not have UL approval.

³⁾ Two fuse holders are needed for each.

⁴⁾ The terminal provides a simple way of connecting a central power supply to the busbar system and of connecting busbar systems. Two terminals are required in each instance.

Setpoint potentiometer

Speed can be preselected through an external potentiometer (setpoint preselection or field frequency preselection).

For this purpose, the setpoint potentiometer can be connected to terminals 7, 8 and 9 of the standard I/O module. A scale and a rotary knob are also available.

| Name | Order ref. | Data | Dimensions |
|------------------------|----------------|----------------------|----------------|
| Setpoint potentiometer | ERPD0001k0001W | 1 k Ω /1 Watt | 6 mm x 35 mm |
| Rotary knob | ERZ0001 | | 36 mm diameter |
| Scale | ERZ0002 | 0...100% | 62 mm diameter |



Digital display

A voltmeter can be connected to the analog outputs to display the output frequency or the motor speed.

| Name | Order ref. | Measuring ranges | Mounting cut-out | Mounting depth |
|---------------------------|------------|----------------------------------|------------------|----------------|
| Voltmeter 3 1/2 digits | EPD203 | 0 - 6 V 0 - 20 V 0 - 200 V | 91 mm x 22.5 mm | 81.5 mm |





EMC shield support

The EMC shield support is available to speed up and facilitate the mounting of shielded control cables. A shield sheet and clips are supplied with the frequency inverter. The angular design means that the control cable can take the shortest route possible from the inverter into

the cable channel without bending the cable excessively. More detailed information about EMC installation can be found in the System Manual (see page 6-3).

| Type | Name | Order ref. |
|----------------------------------|--------------------|------------|
| E82xV251KxCxxx to E82xV371KxCxxx | EMC shield support | E82ZWEM1 |
| E82xV551KxCxxx to E82xV222KxCxxx | EMC shield support | E82ZWEM2 |
| E82xV302KxCxxx to E82xV112KxCxxx | EMC shield support | E82ZWEM3 |



PTC kit

The PTC kit must be used if you are using unshielded PTC cables in the motor cabling. In addition to the EMC shield support, the frequency inverter is also supplied with a PTC module.

The PTC module replaces a ferrite core installed in the PTC cable. Pre-assembled terminal connectors enable the PTC module to be installed quickly and easily.

| Type | Name | Order ref. |
|----------------------------------|---------|------------|
| E82xV251KxCxxx to E82xV371KxCxxx | PTC kit | E82ZPE1 |
| E82xV551KxCxxx to E82xV222KxCxxx | PTC kit | E82ZPE2 |
| E82xV302KxCxxx to E82xV112KxCxxx | PTC kit | E82ZPE3 |



Plug connector for function modules

The plug connector connects the function module to the inverter. The plug connector is supplied with the 8200 vector inverter.

| Plug connector | Order ref. | E82ZJ011 |
|----------------|------------|----------|
| | | |







“General accessories” overview tables

| Accessories | Name | Order ref. | |
|---|---------------------------|--|-----------|
| Function modules | Standard I/O PT | E82ZAFSC010 | |
| | Application I/O PT | E82ZAFAC010 | |
| | CAN PT (system bus) | E82ZAFCC010 | |
| | CAN I/O PT (system bus) | E82ZAFCC210 | |
| | LECOM-B PT (RS485) | E82ZAFLC010 | |
| | INTERBUS PT | E82ZAFIC010 | |
| | PROFIBUS-DP PT | E82ZAFPC010 | |
| | AS-Interface PT | E82ZAFFC010 | |
| Communication modules | LECOM-LI (optical fibres) | EMF2102IB-V003 | |
| | LECOM-AB (RS232/485) | EMF2102IB-V001 | |
| | LON | EMF2141IB | |
| | CAN | EMF2171IB | |
| | CAN (with addressing) | EMF2172IB | |
| | INTERBUS | EMF2111IB | |
| | INTERBUS Loop | EMF2112IB | |
| | PROFIBUS-DP | EMF2133IB | |
| | DeviceNet/CANopen | EMF2175IB | |
| | Keypad | E82ZBC | |
| | Keypad XT | EMZ9371BC | |
| | Miscellaneous | Hand terminal = Handheld keypad (additional connecting cable required) | E82ZBB |
| Hand terminal = Handheld Keypad XT (additional connecting cable required) | | E82ZBBXC | |
| Control cabinet installation kit ¹⁾ (additional connecting cable required) | | E82ZBHT | |
| Connecting cable | | 2.5 m | E82ZWL025 |
| | | 5 m | E82ZWL050 |
| | | 10 m | E82ZWL100 |
| “Global Drive Control” (GDC) parameter setting software | | ESP-GDC2 | |
| “Global Drive Control (GDCeasy)” parameter setting software | | ESP-GDC2-E | |
| PC system cable RS232 | | 0.5 m | EWL0048 |
| | | 5 m | EWL0020 |
| | | 10 m | EWL0021 |
| Optical fibre adapter for normal output power | | EMF2125IB | |
| Optical fibre adapter for high output power | | EMF2126IB | |
| Mains supply for optical fibre adapter | | EJ0013 | |
| Optical fibre, 1-wire, black PE sleeve (simple protection), sold by the metre | | EWZ0007 | |
| Optical fibre, 1-wire, red PUR sleeve (reinforced protection), sold by the metre | | EWZ0006 | |
| Setpoint potentiometer | | ERP0001K0001W | |
| Rotary knob for setpoint potentiometer | | ERZ0001 | |
| Scale for setpoint potentiometer | | ERZ0002 | |
| Digital display | | EPD203 | |
| EMC shield support 0.25 ... 0.37 kW | | E82ZWEM1 | |
| EMC shield support 0.55 ... 2.2 kW | | E82ZWEM2 | |
| EMC shield support 3.0 ... 11.0 kW | | E82ZWEM3 | |
| PTC kit 0.25 ... 0.37 kW | | E82ZPE1 | |
| PTC kit 0.55 ... 2.2 kW | | E82ZPE2 | |
| PTC kit 3.0 ... 11.0 kW | | E82ZPE3 | |
| Plug connector | | E82ZJ011 | |

¹⁾ Required for example if the keypad is to be mounted in the control cabinet door (only in connection with keypad E82ZBC)

Accessories

Miscellaneous

| Accessories | Name | Order ref. |
|--|--|----------------|
| Braking | Half wave rectifier (14.630.33.016) | E82ZWBR3 |
| | Bridge rectifier (14.630.32.016) | E82ZWBR1 |
| Automation | Drive PLC | EPL-10200 |
| | Extension Board 1 | EPZ-10201 |
| | Extension Board 2 | EPZ-10202 |
| | Extension Board 3 | EPZ-10203 |
| | Drive PLC Developer Studio BASIC | ESP-DDS1-B |
| | Drive PLC Developer Studio PROFESSIONAL | ESP-DDS1-P |
| | PC system bus converter (voltage supply via keyboard with DIN connection) | EMF2173IB |
| | PC system bus converter (voltage supply via keyboard with PS2 connection) | EMF2173IB-V002 |
| | Terminal extension for system bus (CAN) | EMZ9374IB |
| System manual 8200 vector ¹⁾ | German | EDS82EV903 |
| | English | |
| | French | |
| Communication manual CAN ¹⁾ | German | EDSCAN |
| | English | |
| | French | |
| Communication manual INTERBUS ¹⁾ | German | EDSIBUS |
| | English | |
| | French | |
| Communication manual PROFIBUS ¹⁾ | German | EDSPBUS |
| | English | |
| | French | |
| Communication manual LECOM ¹⁾ | German | EDSLECOM |
| | English | |
| | French | |

¹⁾ Please specify the required language when ordering documentation.



“Type-specific accessories” overview tables

Operation at rated power (normal operation) 1~230 V

| 8200 vector | | | | | | |
|-----------------------------------|----------------|--------------|----------------|--|--|---------------|
| Voltage [V] | 1~230 | | | | | |
| Type | E82EV251K2C | E82EV371K2C | E82EV551K2C | E82EV751K2C | E82EV152K2C | E82EV222K2C |
| Accessories | | | | | | |
| Name | Order ref. | | | | | |
| Circuit-breaker | EFA1C10A | EFA1C10A | EFA1B10A | EFA1B16A EFA1B10A ²⁾ | EFA1B20A EFA1B16A ²⁾ | EFA1B20A |
| Fuse | EFSM-0100AWE | EFSM-0100AWE | EFSM-0100AWE | EFSM-0160AWE EFSM-0100AWE ²⁾ | EFSM-0200AWE EFSM-0160AWE ²⁾ | EFSM-0200AWE |
| Fuse holder | EFH10001 | | | | | |
| Mains choke | ELN1-0900H005 | | ELN1-0500H009 | | ELN1-0250H018 ³⁾ | |
| LL RFI filter ¹⁾ | E82ZZ37112B220 | | E82ZZ75112B220 | | - | |
| SD RFI filter ¹⁾ | E82ZZ37112B200 | | E82ZZ75112B200 | | E82ZZ22212B200 | |
| LD RFI filter ¹⁾ | E82ZZ37112B210 | | E82ZZ75112B210 | | E82ZZ22212B210 | |
| Motor filter | E82ZM22232B | | | | | |
| Brake resistor | ERBM470R020W | | ERBM200R100W | | ERBM082R150W | ERBM052R200W |
| Swivel bracket | E82ZJ001 | | | | | |
| DIN rail mounting | E82ZJ002 | | | | | |
| EMC shield support | E82ZWEM1 | | E82ZWEM2 | | | |
| PTC kit | E82ZPE1 | | E82ZPE2 | | | |
| DC fuse without signalling device | - | | EFSGR0100AYHN | EFSGR0120AYHN | EFSGR0250AYHN | EFSGR0320AYHN |
| DC fuse with signalling device | - | | EFSGR0100AYHK | EFSGR0120AYHK | EFSGR0250AYHK | EFSGR0320AYHK |
| Plug connector | E82ZJ011 | | | | | |

3~230 V

| 8200 vector | | | | |
|-----------------------------------|----------------|--|--|--|
| Voltage [V] | 3~230 | | | |
| Type | E82EV551K2C | E82EV751K2C | E82EV152K2C | E82EV222K2C |
| Accessories | | | | |
| Name | Order ref. | | | |
| Circuit-breaker | EFA3B06A | EFA3B10A EFA3B06A ²⁾ | EFA3B16A EFA3B10A ²⁾ | EFA3B16A EFA3B10A ²⁾ |
| Fuse | EFSM-0060AWE | EFSM-0100AWE EFSM-0060AWE ²⁾ | EFSM-0160AWE EFSM-0100AWE ²⁾ | EFSM-0160AWE EFSM-0100AWE ²⁾ |
| Fuse holder | EFH10001 | | | |
| Mains choke | E82ZL75132B | | E82ZL22232B | |
| SD RFI filter ¹⁾ | E82ZZ75132B200 | | E82ZZ22232B200 | |
| LD RFI filter ¹⁾ | E82ZZ75132B210 | | E82ZZ22232B210 | |
| Motor filter | E82ZM22232B | | | |
| Brake resistor | ERBM200R100W | | ERBM082R150W | ERBM052R200W |
| Swivel bracket | E82ZJ001 | | | |
| Hutschienenbefestigung | E82ZJ002 | | | |
| EMC shield support | E82ZWEM2 | | | |
| PTC kit | E82ZPE2 | | | |
| DC fuse without signalling device | EFSGR0080AYHN | EFSGR0100AYHN | EFSGR0160AYHN | EFSGR0250AYHN |
| DC fuse with signalling device | EFSGR0080AYHK | EFSGR0100AYHK | EFSGR0160AYHK | EFSGR0250AYHK |
| Plug connector | E82ZJ011 | | | |

¹⁾ Only in conjunction with the 8200 vector, types E82EVxxxKxC200

²⁾ For operation with a mains choke

³⁾ Always use a mains choke

Accessories

Miscellaneous

Operation at rated power (normal operation), 3~230 V

| 8200 vector | | | | |
|-----------------------------------|--|--|--|-----------------------------|
| Voltage [V] | 3~230 | | | |
| Type | E82EV302K2C | E82EV402K2C | E82EV552K2C | E82EV752K2C |
| Accessories | | | | |
| Name | Order ref. | | | |
| Circuit-breaker | EFA3B20A EFA3B16A ²⁾ | EFA3B25A EFA3B20A ²⁾ | EFA3B25A ²⁾ | - |
| Fuse | EFSM-0200AWE EFSM-0160AWE ²⁾ | EFSM-0250AXH EFSM-0200AWE ²⁾ | EFSM-0320AWH EFSM-0250AXH ²⁾ | EFSM-0320AWH |
| Fuse holder | EFH10001 | EFH10002 EFH10001 ²⁾ | EFH10002 | |
| Mains choke | ELN3-0120H017 | | ELN3-0120H025 | ELN3-0088H035 ³⁾ |
| SD RFI filter ¹⁾ | E82ZZ40232B200 | | E82ZZ75232B200 | |
| LD RFI filter ¹⁾ | E82ZZ40232B210 | | E82ZZ75232B210 | |
| Motor filter | E82ZM75234B | | E82ZM11334B | |
| Brake resistor | ERBD047R01K2 | | | |
| Swivel bracket | E82ZJ005 | | E82ZJ006 | |
| EMC shield support | E82ZWEM3 | | | |
| PTC kit | E82ZPE3 | | | |
| DC fuse without signalling device | EFSGR0320AYHN | EFSGR0400AYHN | | - |
| DC fuse with signalling device | EFSGR0320AYHK | EFSGR0400AYHK | | - |
| Plug connector | E82ZJ011 | | | |

¹⁾ Only in conjunction with the 8200 vector, types E82EVxxxKxC200

²⁾ For operation with a mains choke

³⁾ Always use a mains choke



Operation at rated power (normal operation), 3~400 V

| 8200 vector | | | | |
|-----------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Voltage [V] | 3~400 | | | |
| Type | E82EV551K4C ⁴⁾ | E82EV751K4C ⁴⁾ | E82EV152K4C ⁴⁾ | E82EV222K4C ⁴⁾ |
| Accessories | | | | |
| Name | Order ref. | | | |
| Circuit-breaker | EFA3B06A | EFA3B06A | EFA3B10A | EFA3B10A |
| Fuse | EFSM-0060AWE | EFSM-0060AWE | EFSM-0100AWE | EFSM-0100AWE |
| Fuse holder | EFH10001 | | | |
| Mains choke | EZN3A1500H003 | | E82ZL22234B | |
| SD RFI filter ¹⁾ | E82ZZ75134B200 | | E82ZZ22234B200 | |
| LD RFI filter ¹⁾ | E82ZZ75134B210 | | E82ZZ22234B210 | |
| Motor filter | E82ZM75134B | | E82ZM22234B020 | |
| Brake resistor | ERBM470R100W | | ERBM370R150W | ERBM240R200W |
| Swivel bracket | E82ZJ001 | | | |
| DIN rail mounting | E82ZJ002 | | | |
| EMC shield support | E82ZWEM2 | | | |
| PTC kit | E82ZPE2 | | | |
| DC fuse without signalling device | EFSGR0060AYHN | | EFSGR0100AYHN | EFSGR0120AYHN |
| DC fuse with signalling device | EFSGR0060AYHK | | EFSGR0100AYHK | EFSGR0120AYHK |
| Plug connector | E82ZJ011 | | | |

¹⁾ Only in conjunction with the 8200 vector, types E82EVxxxKxC200

²⁾ For operation with a mains choke

³⁾ Always use a mains choke

⁴⁾ In case of the 8200 vector with integrated EMC filter the following applies:
In the mains voltage range from 484 V (-0 %) ... 550 V (+0 %), operation is only permitted with brake resistor

3~400 V

| 8200 vector | | | | | |
|-----------------------------------|--|---------------|--|--|-----------------------------|
| Voltage [V] | 3~400 | | | | |
| Type | E82EV302K4C | E82EV402K4C | E82EV552K4C | E82EV752K4C | E82EV113K4C |
| Accessories | | | | | |
| Name | Order ref. | | | | |
| Circuit-breaker | EFA3B16A EFA3B10A ²⁾ | EFA3B16A | EFA3B25A EFA3B20A ²⁾ | EFA3B32A EFA3B20A ²⁾ | EFA3B32A |
| Fuse | EFSM-0160AWE EFSM-0100AWE ²⁾ | EFSM-0160AWE | EFSM-0250AXH EFSM-0200AWE ²⁾ | EFSM-0320AWH EFSM-0200AWE ²⁾ | EFSM-0320AWH |
| Fuse holder | EFH10001 | | EFH10002 EFH10001 ²⁾ | EFH10002 EFH10001 ²⁾ | EFH10002 |
| Mains choke | EZN3A0500H007 | EZN3A0300H013 | | ELN3-0120H017 | ELN3-0150H024 ³⁾ |
| SD RFI filter ¹⁾ | E82ZZ55234B200 | | | E82ZZ11334B200 | |
| LD RFI filter ¹⁾ | E82ZZ55234B210 | | | E82ZZ11334B210 | |
| Motor filter | E82ZM40234B | | E82ZM75234B | | E82ZM11334B |
| Brake resistor | ERBD180R300W | ERBD100R600W | ERBD082R600W | ERBD068R800W | ERBD047R01K2 |
| Swivel bracket | E82ZJ005 | | | E82ZJ006 | |
| EMC shield support | E82ZWEM3 | | | | |
| PTC kit | E82ZPE3 | | | | |
| DC fuse without signalling device | EFSGR0200AYHN | EFSGR0250AYHN | EFSGR0320AYHN | EFSGR0400AYHN | |
| DC fuse with signalling device | EFSGR0200AYHK | EFSGR0250AYHK | EFSGR0320AYHK | EFSGR0400AYHK | |
| Plug connector | E82ZJ011 | | | | |

¹⁾ Only in conjunction with the 8200 vector, types E82EVxxxKxC200

²⁾ For operation with a mains choke

³⁾ Always use a mains choke

Operation at rated power (normal operation), 3~400 V

| 8200 vector | | | | |
|---------------------------------------|----------------|------------------------------|------------------------------|------------------------------|
| Voltage [V] | 3~400 | | | |
| Type | E82EV153K4B201 | E82EV223K4B201 ²⁾ | E82EV303K4B201 ²⁾ | E82EV453K4B201 ²⁾ |
| Accessories | | | | |
| Name | Order ref. | | | |
| Built-on mains filter A ¹⁾ | EZN3A0110H030 | EZN3A0080H042 | EZN3A0055H060 | EZN3A0037H090 |
| Built-on mains filter B ¹⁾ | EZN3B0110H030 | EZN3B0080H042 | EZN3B0055H060 | EZN3B0037H090 |
| Footprint RFI filters | E82ZZ15334B230 | - | - | - |
| Footprint mains filter | E82ZN22334B230 | E82ZN22334B230 | E82ZN30334B230 | E82ZN45334B230 |
| Mains choke | ELN3-088H035 | ELN3-0075H045 | ELN3-0055H055 | ELN3-0038H085 |
| Motor filter | ELM3-004H055 | ELM3-004H055 | on request | on request |
| Sinusoidal filter | on request | on request | on request | on request |
| Brake module | EMB9351-E | EMB9351-E | EMB9351-E | EMB9351-E |
| Brake chopper | EMB9352-E | EMB9352-E | EMB9352-E | EMB9352-E |
| Brake resistor | ERBD033R02K0 | ERBD022R03K0 | ERBD018R03K0 | ERBD022R03K0 |

¹⁾ Only in conjunction with the 8200 vector, types E82EVxxxKxB201

²⁾ Always use a mains choke or mains filter

3~400 V

| 8200 vector | | | |
|---------------------------------------|------------------------------|------------------------------|------------------------------|
| Voltage [V] | 3~400 | | |
| Type | E82EV553K4B201 ²⁾ | E82EV753K4B201 ²⁾ | E82EV903K4B201 ²⁾ |
| Accessories | | | |
| Name | Order ref. | | |
| Built-on mains filter A ¹⁾ | EZN3A0030H110 | EZN3A0022H150 | EZN3A0017H200 |
| Built-on mains filter B ¹⁾ | EZN3B0033H110 | EZN3B0022H150 | EZN3B0017H200 |
| Footprint mains filter | E82ZN55334B230 | E82ZN75334B230 | E82ZN90334B230 |
| Mains choke ¹⁾ | ELN3-0027H105 | ELN3-0022H130 | ELN3-0017H170 |
| Motor filter | on request | on request | on request |
| Sinusoidal filter | on request | on request | on request |
| Brake module | EMB9351-E | EMB9351-E | EMB9351-E |
| Brake chopper | EMB9352-E | EMB9352-E | EMB9352-E |
| Brake resistor | ERBD018R03K0 | ERBD022R03K0 | ERBD018R03K0 |

¹⁾ Only in conjunction with the 8200 vector, types E82EVxxxKxB201

²⁾ Always use a mains choke or mains filter



Operation at increased rated power, 1~230 V

| 8200 vector | | | | |
|-----------------------------------|----------------|----------------|-----------------------------|----------------|
| Voltage [V] | 1~230 | | | |
| Type | E82EV251K2C | E82EV551K2C | E82EV751K2C | E82EV152K2C |
| Accessories | | | | |
| Name | Order ref. | | | |
| Circuit-breaker | EFA1C10A | EFA1B10A | EFA1B16A | EFA1B20A |
| Fuse | EFSM-0100AWE | EFSM-0100AWE | EFSM-0160AWE | EFSM-0200AWE |
| Fuse holder | EFH10001 | | | |
| Mains choke | ELN1-0900H005 | ELN1-0500H009 | ELN1-0500H009 ³⁾ | ELN1-0250H018 |
| SD RFI filter ¹⁾ | E82ZZ37112B200 | E82ZZ75112B200 | | E82ZZ22212B200 |
| LD RFI filter ¹⁾ | E82ZZ37112B210 | E82ZZ75112B210 | | E82ZZ22212B210 |
| Motor filter | E82ZM22232B | | | |
| Brake resistor | ERBM470R020W | ERBM200R100W | | ERBM082R150W |
| Swivel bracket | E82ZJ001 | | | |
| DIN rail mounting | E82ZJ002 | | | |
| EMC shield support | E82ZWEM1 | E82ZWEM2 | | |
| PTC kit | E82ZPE1 | E82ZPE2 | | |
| DC fuse without signalling device | - | EFSGR0100AYHN | EFSGR0120AYHN | EFSGR0250AYHN |
| DC fuse with signalling device | - | EFSGR0100AYHK | EFSGR0120AYHK | EFSGR0250AYHK |
| Plug connector | E82ZJ011 | | | |

¹⁾ Only in conjunction with the 8200 vector, types E82EVxxxKxC200 ³⁾ Always use a mains choke when operating the system with increased power rating

²⁾ For operation with a mains choke

3~230 V

| 8200 vector | | | | |
|-----------------------------------|----------------|---------------------------|--|----------------|
| Voltage [V] | 3~230 | | | |
| Type | E82EV551K2C | E82EV751K2C | E82EV152K2C | |
| Accessories | | | | |
| Name | Order ref. | | | |
| Circuit-breaker | EFA3B06A | EFA3B10A | EFA3B16A EFA3B10A ²⁾ | |
| Fuse | EFSM-0060AWE | EFSM-0100AWE | EFSM-0160AWE EFSM-0100AWE ²⁾ | |
| Fuse holder | EFH10001 | | | |
| Mains choke | E82ZL75132B | E82ZL75132B ³⁾ | E82ZL22232B | |
| SD RFI filter ¹⁾ | E82ZZ75132B200 | | | E82ZZ22232B200 |
| LD RFI filter ¹⁾ | E82ZZ75132B210 | | | E82ZZ22232B210 |
| Motor filter | E82ZM22232B | | | |
| Brake resistor | ERBM200R100W | | | ERBM082R150W |
| Swivel bracket | E82ZJ001 | | | |
| DIN rail mounting | E82ZJ002 | | | |
| EMC shield support | E82ZWEM2 | | | |
| PTC kit | E82ZPE2 | | | |
| DC fuse without signalling device | EFSGR0080AYHN | EFSGR0100AYHN | EFSGR0160AYHN | |
| DC fuse with signalling device | EFSGR0080AYHK | EFSGR0100AYHK | EFSGR0160AYHK | |
| Plug connector | E82ZJ011 | | | |

¹⁾ Only in conjunction with the 8200 vector, types E82EVxxxKxC200 ³⁾ Always use a mains choke when operating the system with increased power rating

²⁾ For operation with a mains choke

Operation at increased rated power, 3~230 V

| 8200 vector | | |
|-----------------------------------|--|-----------------------------|
| Voltage [V] | 3~230 | |
| Type | E82EV302K2C | E82EV552K2C |
| Accessories | | |
| Name | Order ref. | |
| Circuit-breaker | EFA3B25A EFA3B20A ²⁾ | EFA3B32A |
| Fuse | EFSM-0250AXH EFSM-0200AWE ²⁾ | EFSM-0320AWH |
| Fuse holder | EFH10002 EFH10001 ²⁾ | EFH10002 |
| Mains choke | ELN3-0120H017 | ELN3-0088H035 ³⁾ |
| SD RFI filter ¹⁾ | E82ZZ40232B200 | E82ZZ75232B200 |
| LD RFI filter ¹⁾ | E82ZZ40232B210 | E82ZZ75232B210 |
| Motor filter | E82ZM75234B | E82ZM11334B |
| Brake resistor | ERBD047R01K2 | |
| Swivel bracket | E82ZJ005 | E82ZJ006 |
| EMC shield support | E82ZWEM3 | |
| PTC kit | E82ZPE3 | |
| DC fuse without signalling device | EFSGR0320AYHN | EFSGR0400AYHN |
| DC fuse with signalling device | EFSGR0320AYHK | EFSGR0400AYHK |
| Plug connector | E82ZJ011 | |

¹⁾ Only in conjunction with the 8200 vector, types E82EVxxxKxC200

²⁾ For operation with a mains choke

³⁾ Always use a mains choke



Operation at increased rated power, 3~400 V

| 8200 vector | | | |
|-----------------------------------|----------------|-----------------------------|----------------------------|
| Voltage [V] | 3~400 | | |
| Type | E82EV551K4C | E82EV751K4C | E82EV222K4C |
| Accessories | | | |
| Name | Order ref. | | |
| Circuit-breaker | EFA3B06A | EFA3B06A | EFA3B10A |
| Fuse | EFSM-0060AWE | EFSM-0060AWE | EFSM-0100AWE |
| Fuse holder | EFH10001 | | |
| Mains choke | EZN3A1500H003 | EZN3A1500H003 ³⁾ | EZ82ZL22234B ³⁾ |
| SD RFI filter ¹⁾ | E82ZZ75134B200 | | E82ZZ22234B200 |
| LD RFI filter ¹⁾ | E82ZZ75134B210 | | E82ZZ22234B210 |
| Motor filter | E82ZM75134B | | E82ZM22234B020 |
| Brake resistor | ERBM470R100W | | ERBM240R200W |
| Swivel bracket | E82ZJ001 | | |
| DIN rail mounting | E82ZJ002 | | |
| EMC shield support | E82ZWEM2 | | |
| PTC kit | E82ZPE2 | | |
| DC fuse without signalling device | EFSGR060AYHN | | EFSGR0120AYHN |
| DC fuse with signalling device | EFSGR060AYHK | | EFSGR0120AYHK |
| Plug connector | E82ZJ011 | | |

¹⁾ Only in conjunction with the 8200 vector, types E82EVxxxKxC200

²⁾ For operation with a mains choke

³⁾ Always use a mains choke when operating the system with increased power rating

3~400 V

| 8200 vector | | | |
|-----------------------------------|--|-----------------------------|--|
| Voltage [V] | 3~400 | | |
| Type | E82EV302K4C | E82EV402K4C | |
| Accessories | | | |
| Name | Order ref. | | |
| Circuit-breaker | EFA3B16A EFA3B10A ²⁾ | EFA3B16A | |
| Fuse | EFSM-0160AWE EFSM-0100AWE ²⁾ | EFSM-0160AWE | |
| Fuse holder | EFH10001 | | |
| Mains choke | EZN3A0300H013 | EZN3A0300H013 ³⁾ | |
| SD RFI filter ¹⁾ | E82ZZ55234B200 | | |
| LD RFI filter ¹⁾ | E82ZZ55234B210 | | |
| Motor filter | E82ZM40234B | | |
| Brake resistor | ERBD180R300W | ERBD100R600W | |
| Swivel bracket | E82ZJ005 | | |
| EMC shield support | E82ZWEM3 | | |
| PTC kit | E82ZPE3 | | |
| DC fuse without signalling device | EFSGR0200AYHN | EFSGR0250AYHN | |
| DC fuse with signalling device | EFSGR0200AYHK | EFSGR0250AYHK | |
| Plug connector | E82ZJ011 | | |

¹⁾ Only in conjunction with the 8200 vector, types E82EVxxxKxC200

²⁾ For operation with a mains choke

³⁾ Always use a mains choke when operating the system with increased power rating

Operation at increased rated power, 3~400 V

| 8200 vector | | | | |
|---------------------------------------|------------------------------|------------------------------|------------------------------|-------------------------------|
| Voltage [V] | 3~400 | | | |
| Type | E82EV153K4B201 ²⁾ | E82EV223K4B201 ²⁾ | E82EV303K4B201 ²⁾ | E82EV453K4B 201 ²⁾ |
| Accessories | | | | |
| Name | Order ref. | | | |
| Built-on mains filter A ¹⁾ | EZN3A0080H042 | EZN3A0060H054 | EZN3A0055H060 | EZN3A0030H110 |
| Built-on mains filter B ¹⁾ | EZN3B0080H042 | EZN3B0060H054 | EZN3B0055H060 | EZN3B0030H110 |
| Footprint mains filter | E82ZN22334B230 | E82ZN30334B230 | – | – |
| Mains choke ¹⁾ | ELN3-0075H045 | ELN3-0055H055 | ELN3-0055H055 | ELN3-0027H105 |
| Motor filter | ELM3-004H055 | on request | on request | on request |
| Sinusoidal filter | on request | on request | on request | on request |
| Brake module | EMB9351-E | EMB9351-E | EMB9351-E | EMB9351-E |
| Brake chopper | EMB9352-E | EMB9352-E | EMB9352-E | EMB9352-E |
| Brake resistor | ERBD033R02K0 | ERBD022R03K0 | ERBD018R03K0 | ERBD022R03K0 |

¹⁾ Only in conjunction with the 8200 vector, types E82EVxxxKxB201

²⁾ Always use a mains choke or mains filter

| 8200 vector | | | |
|---------------------------------------|------------------------------|------------------------------|------------------------------|
| Voltage [V] | 3~400 | | |
| Type | E82EV553K4B201 ²⁾ | E82EV753K4B201 ²⁾ | E82EV903K4B201 ²⁾ |
| Accessories | | | |
| Name | Order ref. | | |
| Built-on mains filter A ¹⁾ | – | EZN3A0022H150 | EZN3A0017H200 |
| Built-on mains filter B ¹⁾ | – | EZN3B0022H150 | EZN3B0017H200 |
| Footprint mains filter | – | E82ZN90334B230 | – |
| Mains choke ¹⁾ | ELN3-0022H130 | ELN3-0017H170 | ELN3-0014H200 |
| Motor filter | on request | on request | on request |
| Sinusoidal filter | on request | on request | on request |
| Brake module | EMB9351-E | EMB9351-E | EMB9351-E |
| Brake chopper | EMB9352-E | EMB9352-E (3 x) | EMB9352-E (3 x) |
| Brake resistor | ERBD018R03K0 (2 x) | ERBD022R03K0 | ERBD018R03K0 |

¹⁾ Only in conjunction with the 8200 vector, types E82EVxxxKxB201

²⁾ Always use a mains choke or mains filter





Application examples | 8200 vector

Setting applications (speed adjustment) _____ 5-2

Preselection of setpoints via a potentiometer ____ 5-2

Preselection of fixed setpoints _____ 5-3

Setpoint preselection via the UP/DOWN function __ 5-4

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Application examples

Setting applications (speed adjustment)

Preselection of setpoints via potentiometer

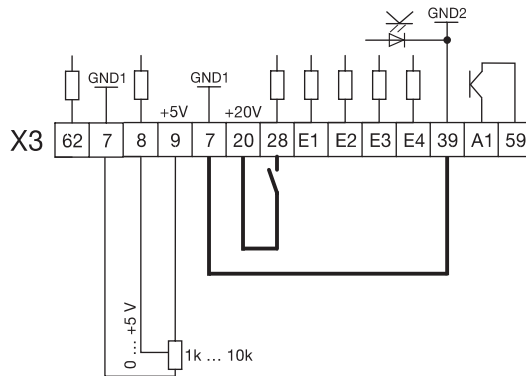
The setpoint for the 8200 vector frequency inverter is selected using a (rotary) potentiometer. The frequency inverter is started and stopped via a digital signal.

Required accessories for the 8200 vector:

- Standard I/O or Standard I/O PT function module
- Setpoint potentiometer (1 k...10 k)
- Keypad

Tip: The setpoint potentiometer, rotary knob and scale are available as accessories (see page 4-44)

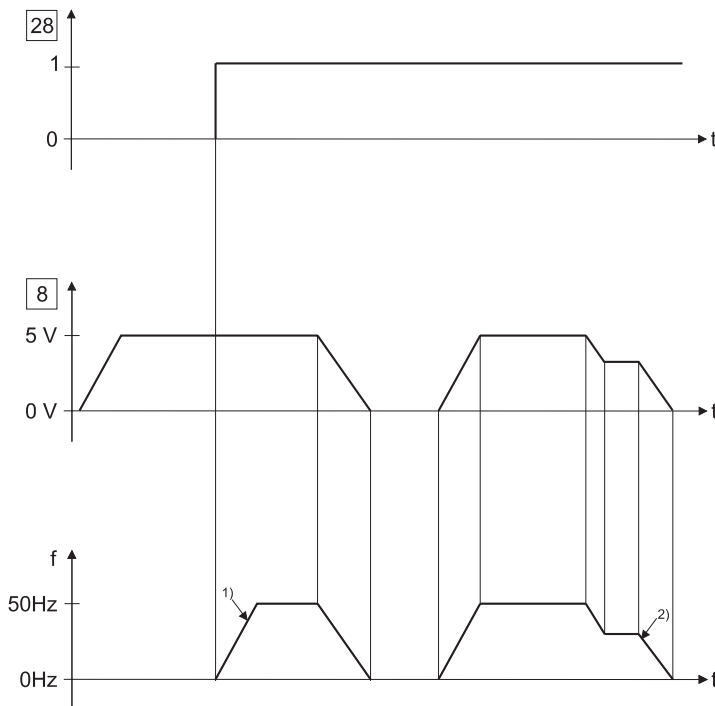
Terminal assignment on the Standard I/O function module:



Terminal assignment:

- 7, 8, 9: Potentiometer connection
- 28: Digital signal for START/STOP

Sequence diagram:



- 1) Adjustable acceleration ramp
- 2) Adjustable downward ramp
- 28 Terminal 28 (start/stop)
- 8 Terminal 8 (setpoint)
- f Output frequency

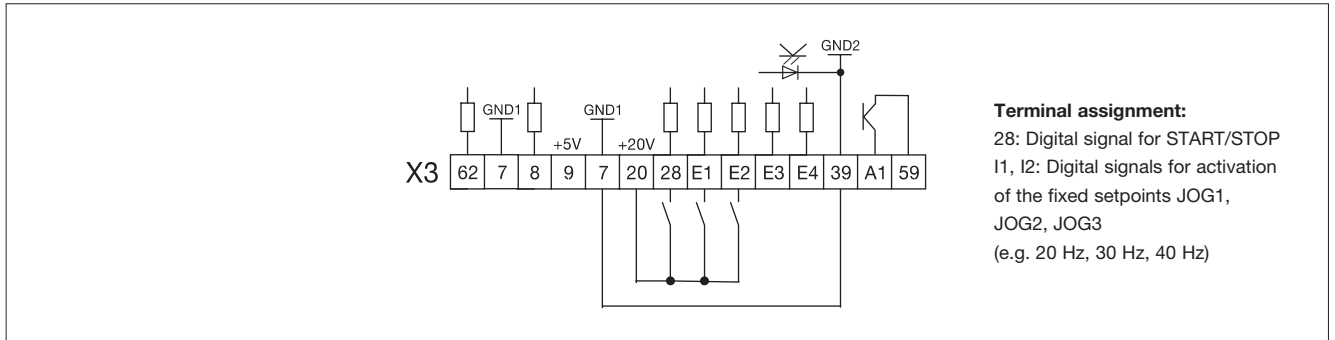
Preselection of fixed setpoints

The setpoint for the 8200 vector frequency inverter is selected via three fixed setpoints (JOG). Here, the three setpoints are entered once in the 8200 vector using the keypad. These setpoints are then activated via two digital signals. The frequency inverter is started and stopped via a further digital signal.

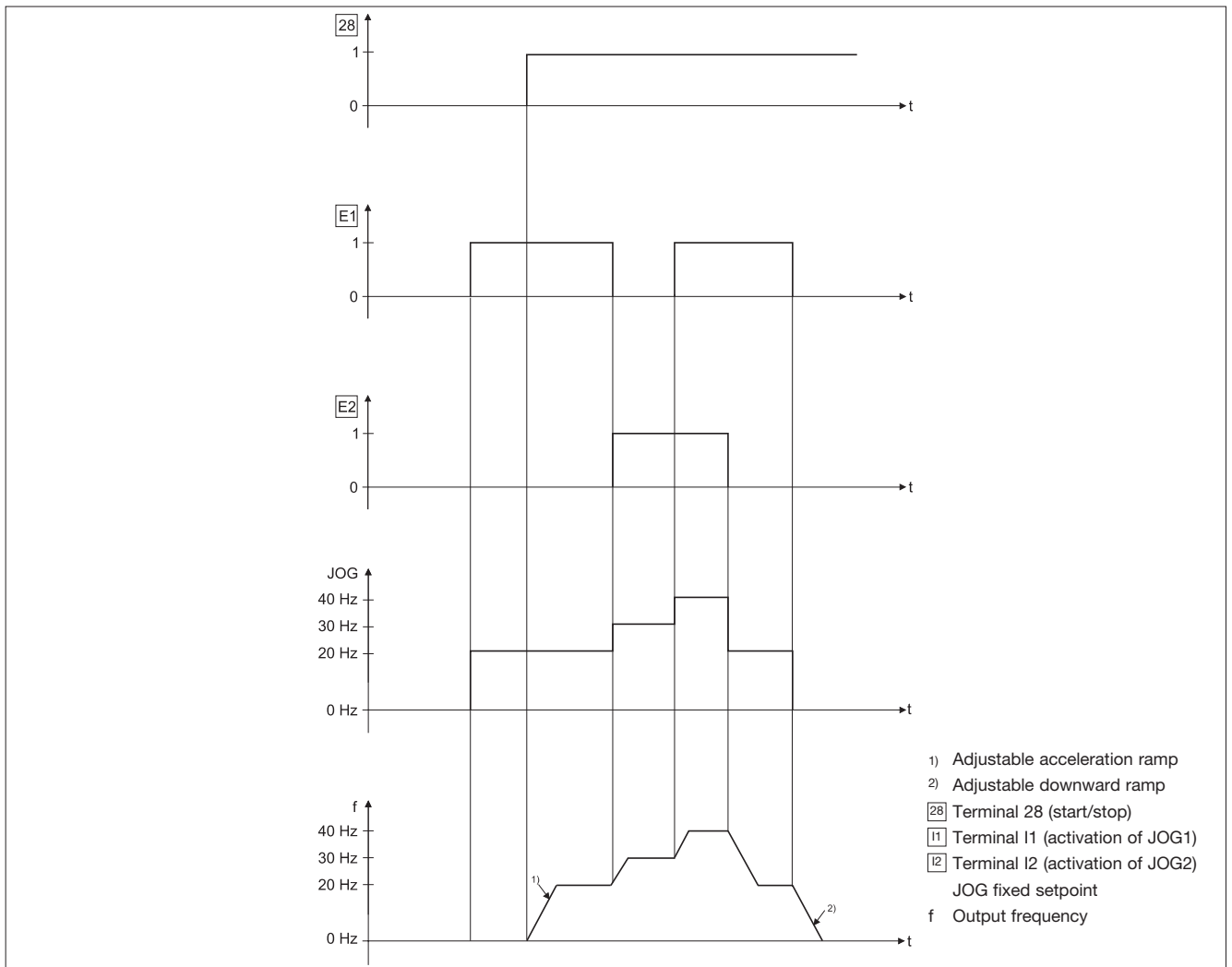
Required accessories for the 8200 vector:

- Standard I/O or Standard I/O PT function module
- Keypad

Terminal assignment on the Standard I/O function module:



Sequence diagram:



Application examples

Setting applications (speed adjustment)

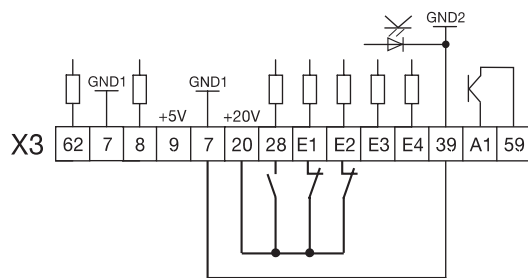
Setpoint preselection via the UP/DOWN function

The setpoint for the 8200 vector frequency inverter is selected via two digital signals (UP and DOWN) (fail-safe). The signals can be generated for example with a simple pushbutton. The frequency inverter is started and stopped via a further digital signal.

Required accessories for the 8200 vector:

- Standard I/O or Standard I/O PT function module
- Keypad

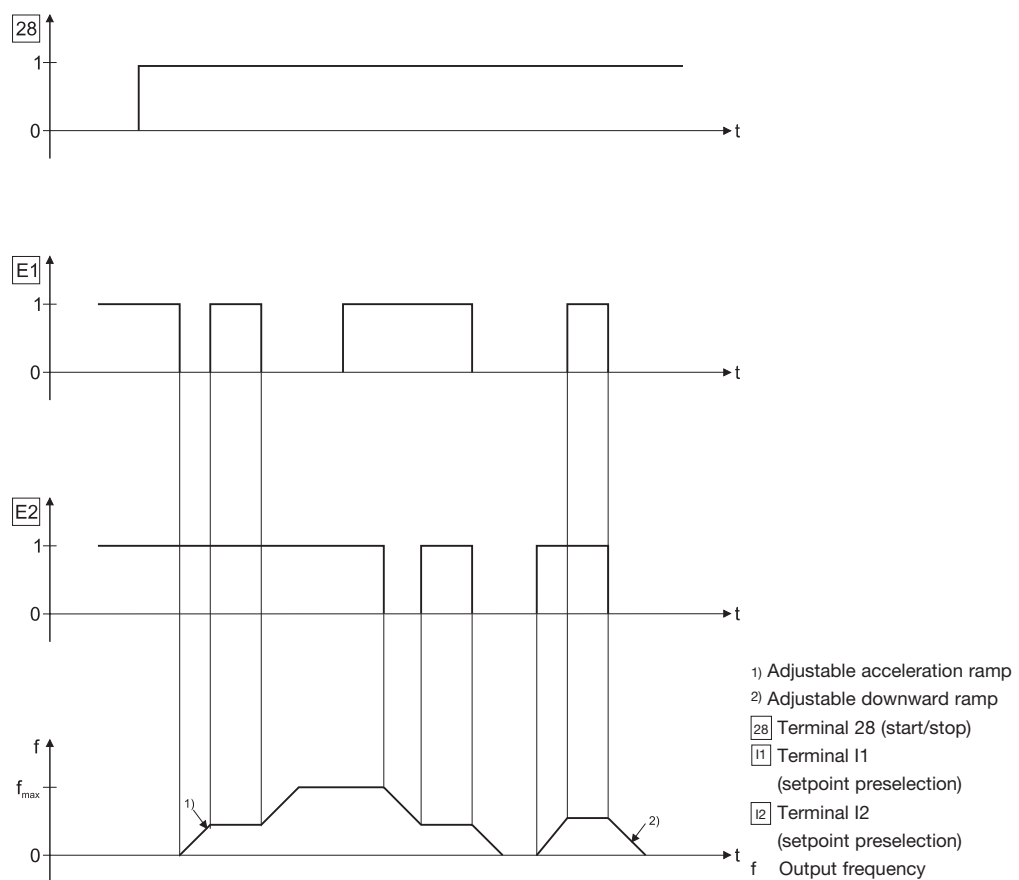
Terminal assignment on the Standard I/O function module:



Terminal assignment:

28: Digital signal for START/STOP I1, I2:
Digital signals for setpoint preselection (UP/DOWN) via pushbutton

Sequence diagram:



Preselection of setpoints via the keypad


The setpoint for the 8200 vector frequency inverter is selected via the **▲** and **▼** keys on the keypad. A reversal of the direction of rotation is possible here. The frequency inverter is started and stopped via the **RUN** and **STOP** keys.

Required accessories for the 8200 vector:


- Keypad


Selection of the setpoint:

The setpoint is selected using **Set**



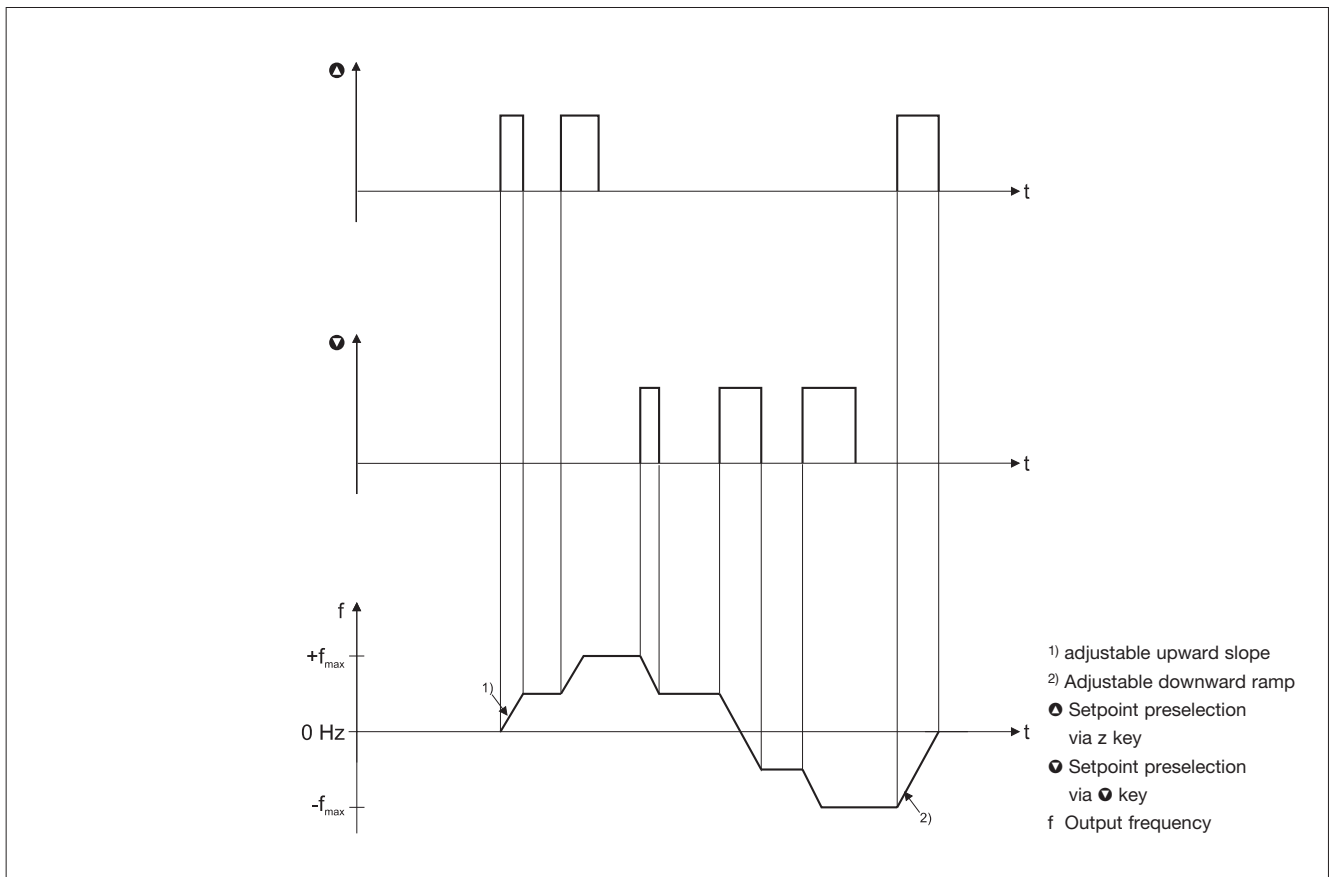
← **Set**

▲ 0...+50 Hz ⇒ 

▼ 0...- 50 Hz ⇒ 

function Note:
The setpoint is saved when the mains is connected

Sequence diagram:



Rotational speed control

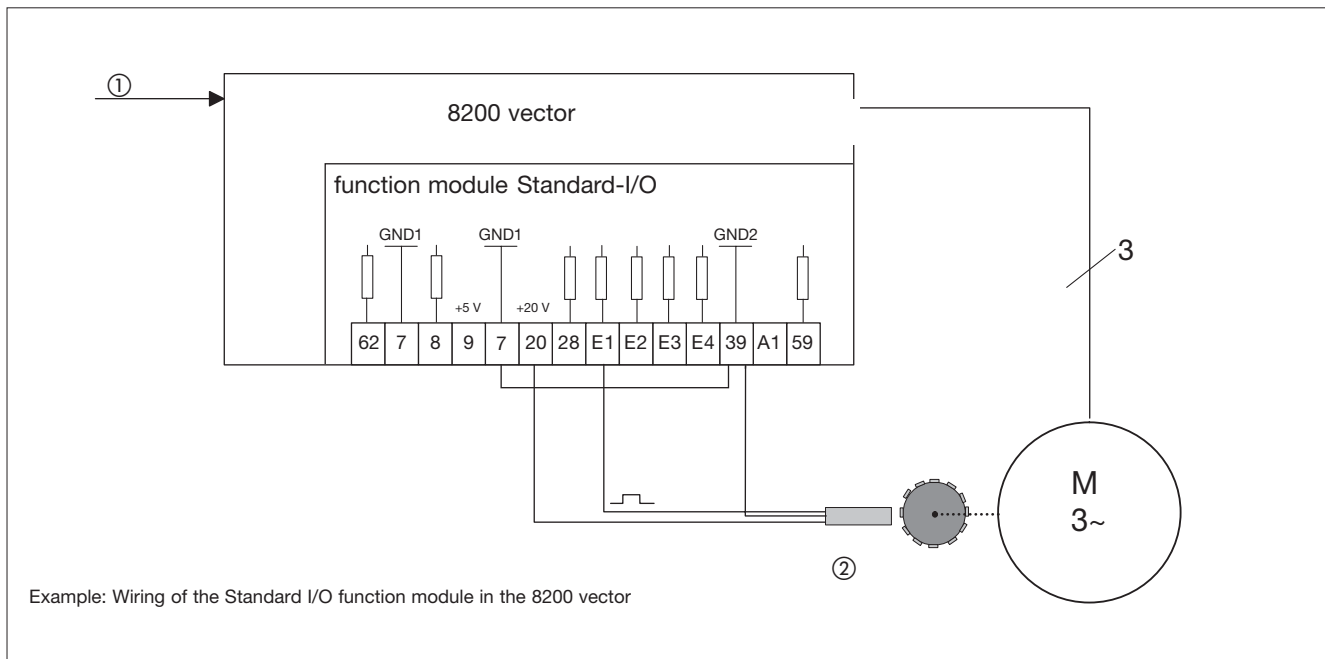
Rotational speed control with an inductive single-track 3-wire sensor.

The aim of the rotational speed controller is to count the error of the actual rotational speed from the setpoint speed, which arises as a result of the effects of loads (motive and generative) on the system. The inductive sensor measures the rotational speed by sensing for example a gear wheel, a metallic fan wheel or a cam. This inductive sensing can take place either directly on the motor or inside the machine.

Utilised functions

- Internal process controller for rotational speed control
- Input of rotational speed setpoint, e.g. via a keypad.
- Actual rotational speed value as a sequence of pulses via a digital input (configured as a frequency input).
- DC braking if the setpoint drops below an adjustable threshold.

Rotational speed control with a 3-wire sensor.



- ① Setpoint input via keypad
- ② 3-wire sensor

Further details about this application example can be found in the System Manual for the 8200 vector.

Tip:

Lenze three-phase AC motors and Lenze geared motors can be supplied with the Lenze pulse encoder ITD21 (512/2048 increments, HTL output signals). This enables **two-track** rotational speed feedback (tracks A and B) to be set up for the Application I/O function module.

Pressure control

A centrifugal pump (square load characteristic) is to maintain constant pressure in a pipe system (e.g. water supply for private households or industrial plants).

Application conditions

- PLC operation (preselection of the pressure setpoint, night-time pressure reduction)
- On-site set-up is possible
- During the night the pressure is reduced, and the pump then operates at an unregulated, low constant speed.
- Under no operating circumstances must the pump be operated at an output frequency of less than 10 Hz (running dry)
- Avoidance of pressure surges in the water network
- Avoidance of mechanical resonance at an output frequency of approx. 30 Hz
- Overheating protection for the motor
- Collective fault messaging to the PLC
- On-site display of readiness for operation and the actual pressure value
- On-site facility for stopping the pump

- Required drive components:
 - Lenze geared motor /three-phase AC motor
 - 8200 vector frequency inverter with Application I/O function module

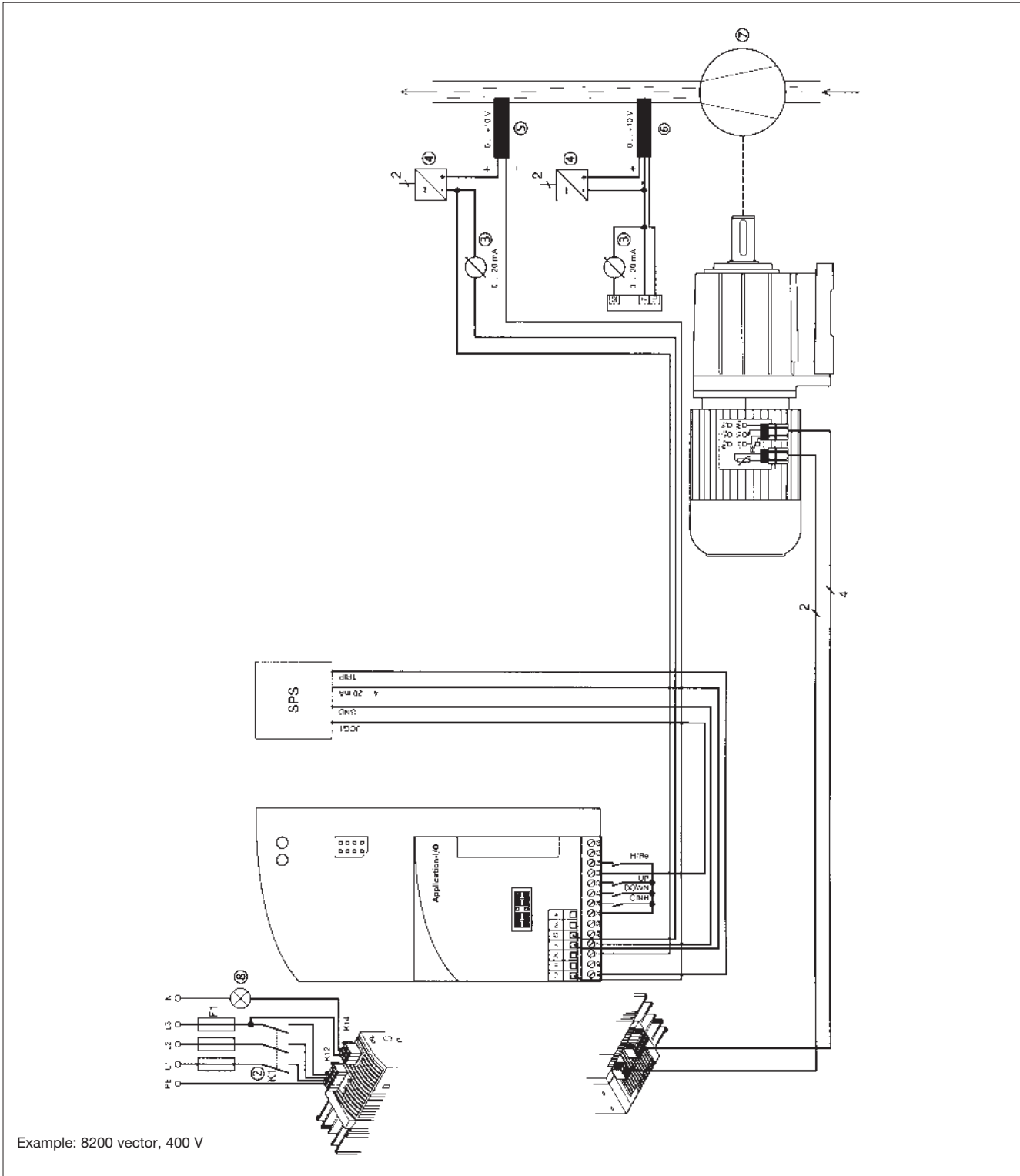
Utilised functions

- Internal process controller for the pressure control
 - pressure setpoint from the PLC (4 ... 20 mA)
 - actual pressure reading from the sensor (0 ... 10 V)
- Hand/remote switchover for on-site set-up
 - hand: pressure setpoint entered via a pushbutton with motor potentiometer function (UP/DOWN)
 - remote: pressure setpoint from the PLC
- Fixed speed (JOG) for pressure reduction during the night (activated via the PLC)
- Protection against running dry (setpoint-independent minimum speed)
- Smooth and jerk-free starting action with S-ramps
- Masking of mechanical resonances with a cancelling frequency
- PTC motor monitoring
- Trip error message via a digital output
- Readiness for operation signalled via a relay output
- Configurable analog outputs for actual pressure value
- Electronic security lock

Application examples

Control applications (speed control)

Basic circuit for a pressure control system



- ② Mains contactor
- ③ Analog display instrument for actual pressure values
- ④ External mains supply
- ⑤ 2-wire pressure sensor
- ⑥ 3-wire pressure sensor
- ⑦ Pump
- ⑧ Lamp on = ready for operation
- ⑤, ⑥: only use one pressure sensor

Further details about this application example can be found in the System Manual for the 8200 vector.

Dancer positioning control

Dancer position control is used in ongoing processes to give constant material tension. In the example described, the continuous material speed v_2 is synchronised with the line speed v_1 .

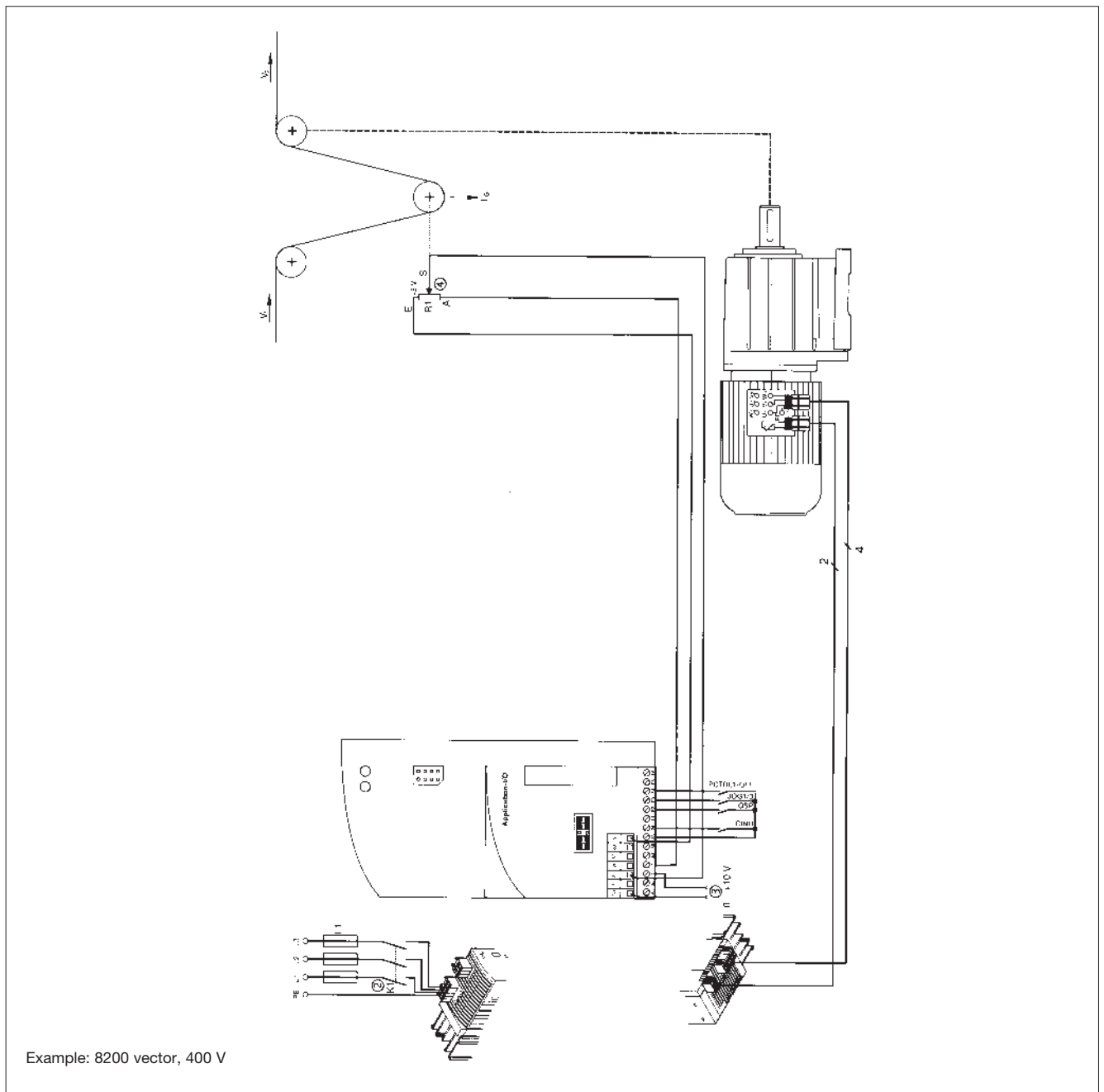
Required drive components

- Lenze geared motor/three-phase AC motor
- 8200 vector frequency inverter with Application I/O function module

Utilised functions

- Internal process controller as a position controller.
- Preselection of the line speed v_1 via analog inputs at the function module (terminal 1U).
- Actual dancer position value from the dancer potentiometer via an analog input at the function module (terminal 2U).
- Set-up speed via digital input at the function module (fixed speed/JOG via E3).
- Shut-off of the dancer controller via X3/E4 (external), also possible internally via an adjustable frequency threshold.

Basic circuit for a dancer position control system



- ② Mains contactor
- ③ Master setpoint $\sim V_1$
- ④ Dancer potentiometer

Further details about this application example can be found in the System Manual for the 8200 vector.

Application examples

Group of drives

In the operating mode “V/f characteristic control” it is possible to connect several motors in parallel to the 8200 vector.

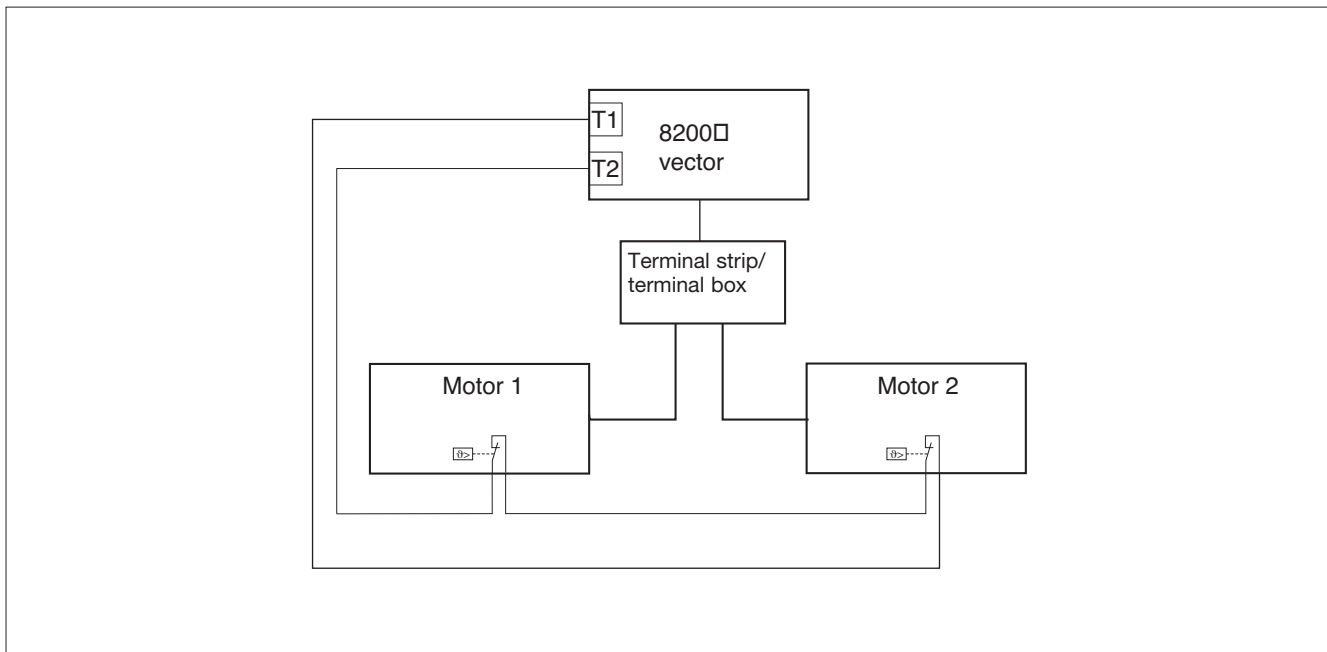
The total sum of the individual motor power ratings must not exceed the current rating of the 8200 vector.

Installation information

- The wiring is connected in parallel, e.g. in a terminal box.
- Every motor must be equipped with a temperature switch (NC contact), which is connected in series to X2/T1 and X2/T2.
- Resulting motor cable length:

$$l_{\text{res}} = \text{Sum of all motor cable lengths} \times \sqrt{\text{number of motor cables}}$$

Basic design of a drive group



5

Further details about this application example can be found in the System Manual for the 8200 vector.

Two refrigeration compressors supply several cooling consumers, which are switched on and off at irregular intervals.

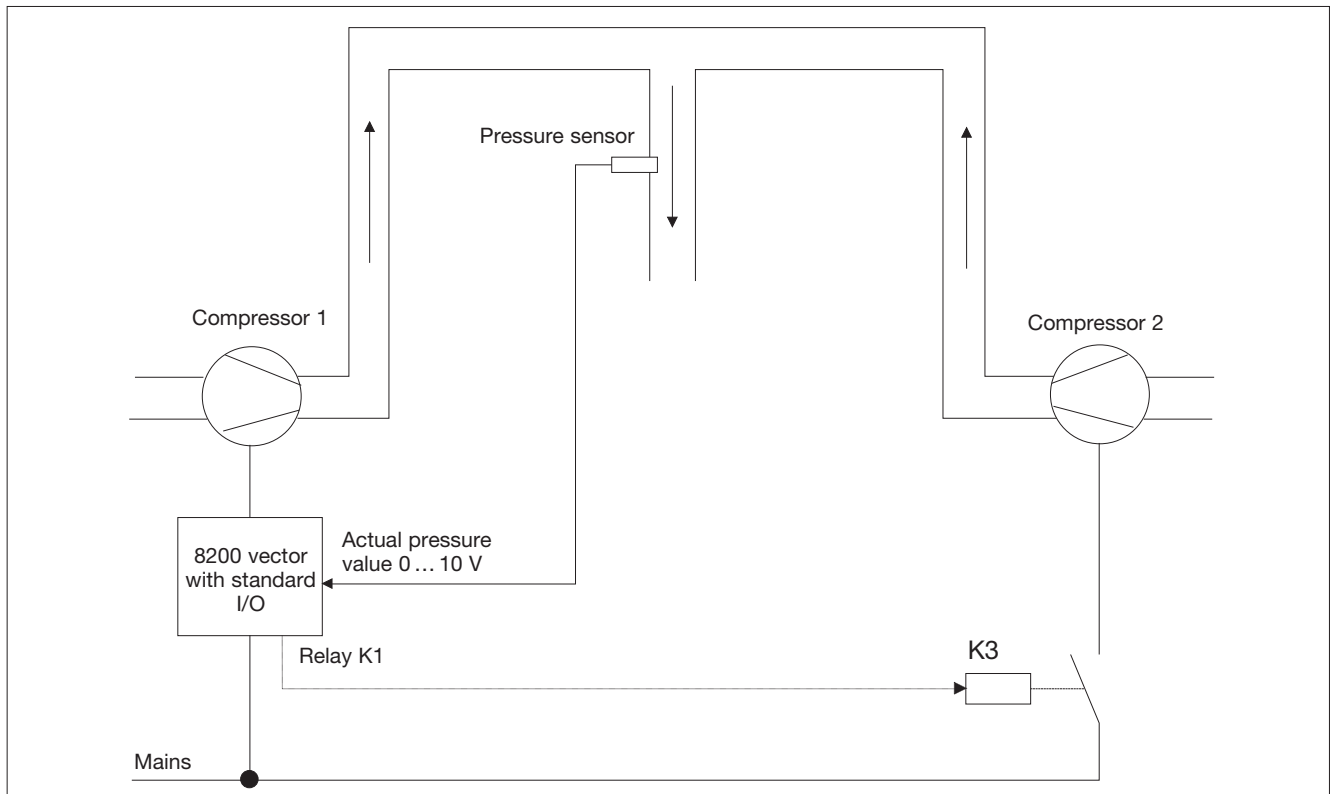
Conditions

- Compressor 1 is regulated with an 8200 vector.
- Compressor 2 has a fixed connection to the network and is switched on or off by the 8200 vector depending on the cooling requirements.
- The selection of the pressure setpoint of the refrigeration process is fixed in the 8200 vector.

Utilised functions

- Controller release/inhibit function for starting and stopping
- Internal process controller for pressure control
- Fixed frequency
- Programmable relay output K1
- Adjustable switching thresholds
- Parameter set transfer

The principle of sequential switching



Tip:

When using the Application I/O function module, time delays at relay output K1 may render the otherwise necessary external time delay element unnecessary – the time delay element prevents compressor 2 from switching on during temporary fluctuations in actual value.

Further details about this application example can be found in the System Manual for the 8200 vector.

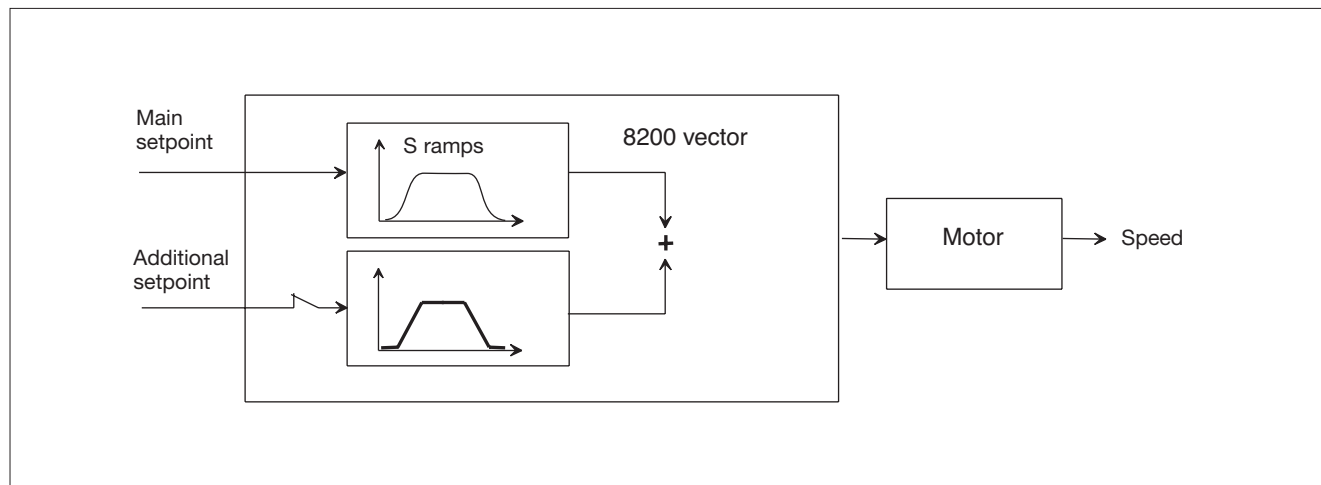
Application examples

Setpoint summation

Conveyor systems, pumps etc. are often operated at a basic speed which can be increased as required. Here, the speed is implemented by the 8200 vector by preselection of a master setpoint and an additional setpoint. These setpoints may originate from different sources (e.g. PLC and setpoint potentiometer).

The 8200 vector adds the two analog setpoints and then increases the speed of the motor accordingly. The upward and downward ramps for both setpoints are variable and can be adjusted to ensure smooth acceleration. In addition, the master setpoint ramps can be set to an S-shape.

Block diagram for setpoint summation

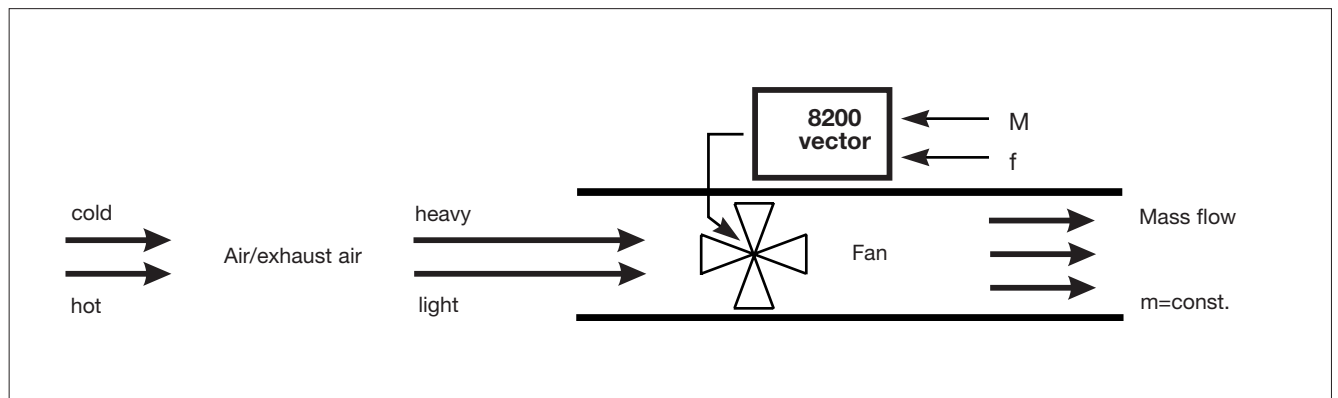


Further details about this application example can be found in the System Manual for the 8200 vector.

Power control (torque limitation) is used for example to ensure a constant flow of mass when media which change their specific gravity are moved – usually air at different temperatures. Here, a torque limit (M) and a rotational speed setpoint (f) are preselected for the 8200 vector.

Automatic adaptation of the rotational speed ensures that the torque limit is adhered to when the specific gravity changes, provided that the value of the rotational speed setpoint is selected high enough to not have a limiting effect.

The principle of power control demonstrated with a fan



Further details about this application example can be found in the System Manual for the 8200 vector.

Lenze

Services | 8200 vector

Service _____ 6-2

Related documentation _____ 6-3

Technical documentation _____ 6-3

Other product catalogs _____ 6-4

Fax order form _____ 6-7

Service – you can trust

For us, service is more than just supporting the use of our drives. The Lenze system approach begins with your enquiry. Next you get technical information and advice from the Internet and a network of sales outlets staffed by knowledgeable engineers. If you need it, we follow with training, commissioning, maintenance and repair.

With passion

The Lenze team doesn't just offer the necessary manpower and technical know-how – we are passionate and meticulous about what we do. We'll only be happy once you are entirely satisfied with our work. Our team of professionals provides assistance over the telephone or on-site, ensures the express delivery of spare parts and carries out repairs with incredible urgency. We're fast and reliable.

Someone to talk to

Should you come across a real problem, we can provide live assistance. Your local sales office is staffed with product trained engineers who can give expert advice. Technical support and service is available, even outside normal office hours. Check our website for contact numbers.

Around the world

Our products are available for speedy delivery worldwide. Lenze companies, Lenze factories and sales agencies are based in major industrial countries around the world. Contact them through our website www.lenze.com, which also gives you 24 hour access to technical instructions and product manuals. Local support, on-site if you need it, is available.





Technical documentation

The documentation for the 8200 vector contains supplementary information about the inverter and the various function and communication modules. The manuals are divided into clear sections, enabling you to find the information you need quickly and easily. All manuals are bound in ring binders.

| | | Order ref. |
|--|---------|------------|
| System manual 8200 vector ¹⁾ | German | EDS82EV903 |
| | English | |
| | French | |
| Communication manual CAN ¹⁾ | German | EDSCAN |
| | English | |
| | French | |
| Communication manual INTERBUS ¹⁾ | German | EDSIBUS |
| | English | |
| | French | |
| Communication manual PROFIBUS ¹⁾ | German | EDSPBUS |
| | English | |
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| Communication manual LECOM ¹⁾ | German | EDSLECOM |
| | English | |
| | French | |

¹⁾ Please specify the required language when ordering documentation.

Other product catalogs

Lenze manufactures state-of-the-art electronic drives and geared motors from DC and frequency inverters to servo technology, small drives, clutches and brakes, which are in use all over the world. Why not find out more?

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