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- Electrical installation
- Commissioning
- Troubleshooting
- Disposal

i550 protec frequency inverter



IP31
0.37 ... 75 kW



IP55/IP66

General information

Overview

Information

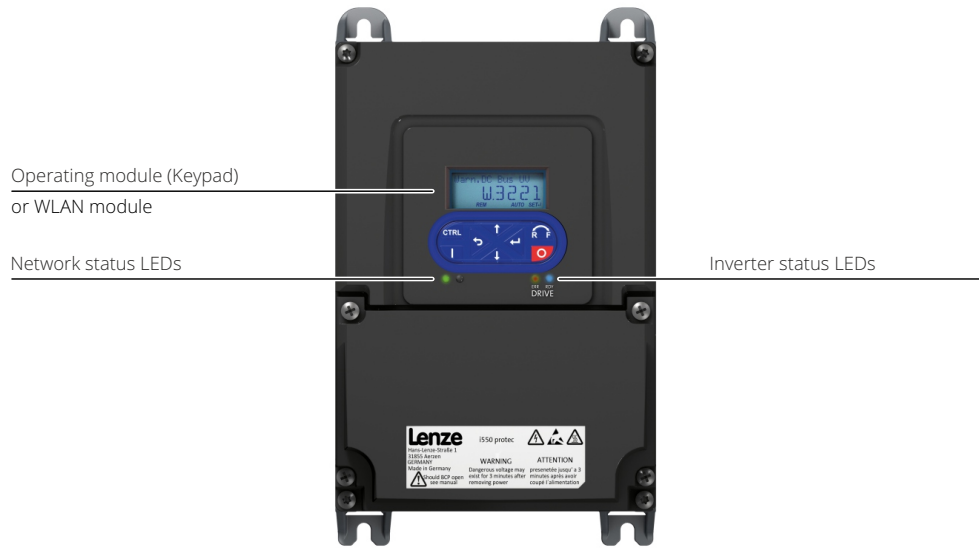
Identification

Extension box

Conventions

Hardware overview of the inverter

Version with protection class IP55 (NEMA type 12) / IP66 (type 4X outdoor)



The keypad/WLAN module is replaceable in the version with protection class IP31 (NEMA type 1).



X2xx Network, Option
EtherCAT, PROFINET,
EtherNet/IP, Modbus TCP
Rotary encoder switch

X2xx Network, Option
CANopen, Modbus RTU,
IO-Link
DIP switch

X16 Diagnostic interface

Shield connection
Control cable

X100 Power supply

PE connection

Cable glands
with shield connection for motor cable

X20 Memory module

X109 PTC input

X3 Control terminals
Standard I/O

X9 Relay output

X1 Safety module
Slot

X105 Motor connection
Brake resistor
connection
DC bus

General information

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Please read this documentation carefully before installing the inverter and observe the safety instructions!

This document only includes the most frequently asked questions and presents them in a simplified form for a better overview. Detailed technical and functional explanations can be found in the comprehensive product documentation. The complete documentation, further information and tools regarding Lenze products can be found on the Internet: www.lenze.com

Application as directed

- The product is a piece of professional equipment intended for use by trades, specific professions or industry, and not for sale to the general public. IEC 60050 [IEV161-05-05]
- To prevent personal injury and damage to property, higher-level safety and protection systems must be used!
- All transport locks must be removed.
- The product may only be operated under the specified operating conditions and in the specified mounting positions.
- The product is only suitable for installation in control cabinets and, depending on the protection class, for wall mounting.
- The product must only be actuated with motors that are suitable for the operation with inverters.
- The product must not be operated in private areas, in potentially explosive atmospheres and in areas with harmful gases, oils, acids and radiation.

Device-specific standards and directives

- The product meets the protection requirements of the Low-Voltage Directive 2014/35/EU.
- The harmonized standard EN IEC 61800-5-1 is used for the inverters. (Europe).
- UL 61800-5-1 and CAN/CSA C22.2 No.274 are the North American electrical safety standards.

Relevant standards and directives for the operator

- If the product is used in accordance with the technical data, the drive systems comply with the EN IEC 61800-3 categories (Category C2 is similar to FCC Class A).
- The test voltage for insulation resistance tests between a control potential of 24 V and PE must be measured in accordance with EN IEC 61800-5-1.
- The cables must be installed in accordance with EN IEC 60204-1 or US National Electrical Code NFPA 70/Canadian Electrical Code C22.1.

Commissioning

- Commissioning or starting the operation as directed of a machine with the product is prohibited until it has been ensured that the machine meets the regulations of the Machinery Directive 2006/42/EG and the standard EN IEC 60204-1.
- Commissioning or starting the operation as directed is only permissible if the EMC Directive 2014/30/EU is complied with.
- In residential areas, the product may cause EMC interference. The operator is responsible for executing the interference suppression measures.

License information PROFINET

The PROFINET firmware is optional. The PROFINET firmware uses the following open source software packages under a modified GPL license: eCos Operating System. These components are used at the operating system level of the firmware. The protocol stack does not use source code under a GPL license.

View license: <http://ecos.sourceforge.org/license-overview.html>

General information

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Identification of the products

I 5 5 A P 137¹ F² 0³ A⁴ 7⁵ 0⁶ 0⁷ K⁸ 00S⁹

1

| Rated power | |
|-------------|---------|
| 137 | 0.37 kW |
| 155 | 0.55 kW |
| 175 | 0.75 kW |
| 211 | 1.1 kW |
| 215 | 1.5 kW |
| 222 | 2.2 kW |
| 230 | 3 kW |
| 240 | 4 kW |
| 255 | 5.5 kW |
| 275 | 7.5 kW |
| 311 | 11 kW |
| 315 | 15 kW |
| 318 | 18.5 kW |
| 322 | 22 kW |
| 330 | 30 kW |
| 337 | 37 kW |
| 345 | 45 kW |
| 355 | 55 kW |
| 375 | 75 kW |

2

| Mains voltage and connection type | |
|-----------------------------------|--|
| A | 1/N/PE AC 120 V |
| B | 1/N/PE AC 230/240 V |
| C | 3/PE AC 230/240 V |
| D | 1/N/PE AC 230/240 V 3/PE AC 230/240 V |
| F | 3/PE AC 400 V 3/PE AC 480 V |
| G | 3/PE AC 480 V 3/PE AC 600 V |

3

| Extension box | |
|---------------|--------------------------------------|
| 0 | Without extension box |
| 1 | Empty extension box |
| 2 | Extension box with disconnect switch |

4

| Integrated functional safety | |
|------------------------------|---------------------------|
| 0 | Without functional safety |
| A | Basic Safety - STO |

5

| Degree of protection | |
|----------------------|---------------------------------------|
| 3 | IP31, uncoated / NEMA type 1 |
| 7 | IP66, uncoated / NEMA type 4X outdoor |
| 8 | IP55, uncoated / NEMA type 12 |

6

| Interference suppression | |
|--------------------------|----------------------------------|
| 0 | Without interference suppression |
| 1 | Integrated RFI filter |

7

| Application area | |
|------------------|--|
| 0 | Default parameter setting: Region EU (50-Hz networks) |
| 1 | Default parameter setting: Region US (60-Hz networks) |

8

| Product extension | |
|-------------------|-------------------------------|
| 0 | Standard I/O |
| K | Keypad with Standard I/O |
| W | WLAN module with Standard I/O |

9

| Network | |
|---------|-----------------|
| 00S | Without network |
| 02S | CANopen |
| 03S | Modbus RTU |
| 06S | IO-Link |
| xKS | EtherCAT |
| xLS | PROFINET |
| xMS | EtherNet/IP |
| xWS | Modbus TCP |

General information

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Extension box

The i550 protec frequency inverters 0.37 ... 22 kW can be ordered with an IP66 housing (extension box) that is enlarged at the bottom. This extension box can be purchased empty or with an integrated disconnect switch. It offers additional space or holes for cable entries.

Additional solution options for the extension box in the "empty" model:

- Integration of a terminal for looping through the mains voltage
- Integration of operating elements
- Integration of a brake rectifier for controlling a 180 V / 205 V DC holding brake



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Safety instructions

By safety instructions, we mean information for the use of products that serves to warn the user of hazards and to instruct behavior that will not result in harm to people. In this document, these are distinguished as follows according to ANSI Z535.6:

DANGER!

Indicates an extremely hazardous situation. Failure to comply with this notice will result in severe irreparable injury and even death.

WARNING!

Indicates an extremely hazardous situation. Failure to comply with this notice may result in severe irreparable injury and even death.

CAUTION!

Indicates a hazardous situation. Failure to comply with this notice may result in slight to medium injury.

NOTICE

Indicates a material hazard. Failure to comply with this notice may result in material damage.

Numeric notation

As a rule, a period is used as a decimal separator in this documentation.

Example: 1234.56

Safety instructions

Basic safety instructions

Residual hazards

Basic safety instructions

DANGER!

Disregarding the following basic safety instructions and safety information may lead to severe personal injury and damage to property!

- Only use the product as directed.
- Never commission the product in the event of visible damage.
- Never modify the product technically.
- Never commission the product before assembly has been completed.
- Never operate the product without the required covers.
- Connect/disconnect all pluggable connections only in deenergized state!
- Only remove the product from the installation in a deenergized state.
- The product can - depending on their degree of protection - have live, movable or rotating parts during or after operation. Surfaces can be hot. Surfaces can be hot.
- Observe all specifications of the corresponding documentation supplied. This is the condition for safe and trouble-free operation and the achievement of the specified product features.
- The procedural notices and circuit details given in the associated documentation are suggestions and their transferability to the respective application must be checked. The manufacturer of the product does not take responsibility for the suitability of the process and circuit proposals.
- All work with and on the product may only be carried out by qualified personnel. IEC 60364 and CENELEC HD 384 define the qualifications of these persons:
 - They are familiar with installing, mounting, commissioning, and operating the product.
 - They have the corresponding qualifications for their work.
 - They know and can apply all regulations for the prevention of accidents, directives, and laws applicable at the place of use.

WARNING!

Functional safety

Certain variants of the product support safety functions (e.g. "Safe Torque Off (STO)") in accordance with the requirements of 2006/42/EC: Machinery Directive [UKCA: S.I. 2008/1597 - The Supply of Machinery (Safety) Regulations 2008]. Be sure to observe the notices in the documentation regarding the integrated safety technology.

NOTICE

Device protection

Carry out insulation resistance tests between 24-V control potential terminals and PE. The maximum test voltage must not exceed 110 V DC.

NOTICE

Foreseeable misuse

Inverters are not to be operated with DC motors.

Safety instructions

Basic safety instructions

Residual hazards

Residual hazards

The user must take the residual hazards mentioned into consideration in the risk assessment for his/her machine/system. If the above is disregarded, this may result in injuries to persons and material damage!



Dangerous electrical voltage

During operation and up to 20 minutes after power-off, hazardous electrical voltages may be present at the connections of the product.

The leakage current to earth (PE) is > 3.5 mA AC or > 10 mA DC.

Possible consequences

- Death or serious injuries from electric shock

Protective measures

- Any work on the product must only be carried out in a deenergized state.
- Check that no voltage is present!
- After switching off the mains voltage, observe the signs on the product.
- After switching off, wait until the drive is at a standstill.
- Implement the measures required by EN IEC 61800-5-1 or EN IEC 60204-1, i.e. fixed installation and standards-compliant PE connection.

Degree of protection - Protection of persons and device protection

Information applies to the mounted and ready-for-use state.

Motor protection

With some settings of the inverter, the connected motor can be overheated.

- E.g. via the operation of self-ventilated motors at low speeds over a long period.
- E.g. by operating DC-injection braking over a long period.

Product

Observe the warning signs on the product!

Dangerous electrical voltage



Before working on the product, check whether all power connections are deenergized!

After mains disconnection, the power terminals carry the hazardous electrical voltage for the time specified next to the symbol!



Electrostatic sensitive devices

Before working on the product, the staff must ensure to be free of electrostatic charge.



High leakage current

Carry out fixed installation and PE connection in compliance with the following standard:

EN IEC 61800-5-1/EN IEC 60204-1



Hot surface

Use personal protective equipment or wait until the device has cooled down!

Protection of the machine/system

- Drives can reach dangerous overspeeds, e.g. from setting high output frequencies for motors and machines which are not suitable. The inverters do not provide any protection against such operating conditions. Use additional external components for this purpose.
- Only switch the contactor in the motor cable when the inverter is inhibited. Switching them when the inverter is enabled is only permissible when no monitoring components respond.

Motor

In the event of a short circuit of two power transistors, a residual movement of up to 180°/number of pole pairs on the motor may occur (e.g. 4-pole motor): Residual movement max. $180^\circ/2 = 90^\circ$).

Technical data

Standards and operating conditions

Standards and operating conditions

| | | | | |
|--------------------------------|--|-----------------------------|--|---|
| Market approvals | CE (European Union) | | Further information and certificates of approval: https://www.lenze.com/en-de/products/inverters/frequency-inverters/i550-protoc-frequency-inverter | |
| | UKCA (Great Britain) | | | |
| | UL (USA) | | | |
| | CSA (Canada) | | | |
| | CCC (China) | | | |
| | EAC (Belarus, Russia, Kyrgyzstan, Kazakhstan and Armenia) | | | |
| Environment | RoHS | | | |
| Energy efficiency | High Efficiency | EN IEC 61800-9-2 | Class IE2 | |
| Degree of protection | EN | EN IEC 60529 | IP31 | ≤ 22 kW, Type code I55□P □□□ □□ □ 3 |
| | | | IP55 | ≥ 30 kW, Type code I55□P □□□ □□ □ 8 |
| | | | IP66 | ≤ 22 kW, Type code I55□P □□□ □□ □ 7 |
| | UL | UL 50E | Type 1 | ≤ 22 kW, Type code I55□P □□□ □□ □ 3 UL 50E Type 1 comparable to NEMA 1 |
| | | | Type 12 | ≥ 30 kW, Type code I55□P □□□ □□ □ 8 UL 50E Type 12 comparable to NEMA 12 |
| | | | Type 4X outdoor | ≤ 22 kW, Type code I55□P □□□ □□ □ 7 UL 50E Type 4X comparable to NEMA 4X |
| Climate | Operation | EN 60721-3-3:1995 + A2:1997 | 3K3 (-30 ... +60 °C) | Operation at a switching frequency of 2 or 4 kHz: Above +45°C: reduce rated output current by 2.5 %/°C Operation at a switching frequency of 8, 12 or 16 kHz: Above +40°C: reduce rated output current by 2.5 %/°C |
| | | | 3C2 | For chemically active substances |
| | | | 3C3 (for IP66) | |
| | | | 3S2 3S3 (for IP66) | For mechanically active substances |
| Power systems | TT, TN | | Voltage against earth: max. 300 V | |
| Mains switching | 3 x within one minute possible | | | |
| Max. motor cable length | device-specific; see technical data in project planning document | | | |
| Max. output frequency | 0 Hz ... 599 Hz | | | |
| Overload capacity | Heavy Duty: 200 % for 3s, 150 % for 60s Light Duty 167 % for 3 s, 125 % for 60 s (only applies to devices with protection class IP31/UL 50E type 1) | | | |

Further standards and operating conditions can be found in the project planning documents.

Mechanical installation

Without extension box

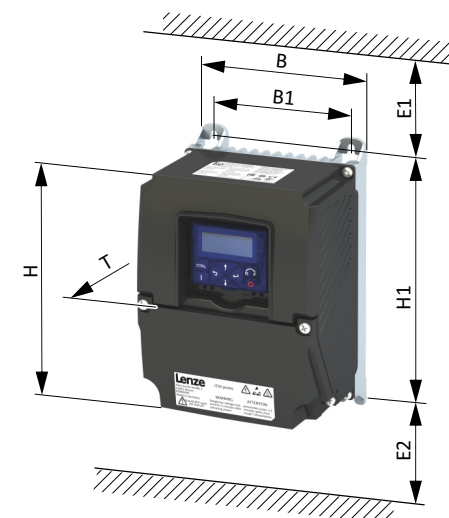
With extension box

Dimensions and assembly – Inverter without extension box

NOTICE

The specified installation clearances are minimum dimensions to ensure a sufficient air circulation for cooling purposes. They do not take into account the bending radii of the connecting cables.

| Inverter | Rated power [kW] | Weight [kg] | H [mm] | B [mm] | T [mm] | H1 [mm] | B1 [mm] | Screws | E1 [mm] | E2 [mm] |
|--|---------------------|----------------|-----------|-----------|-----------|------------|------------|--------|------------|------------|
| 1-phase mains connection 120 V devices | | | | | | | | | | |
| I55APxxxA | 0.37 | 1.8 | 190 | 140 | 117 | 205 | 115 | 4x M5 | >50 | >50 |
| I55APxxxA | 0.75 ... 1.1 | 2.7 | 205 | 140 | 140 | 220 | 115 | 4x M5 | >50 | >50 |
| 1-phase mains connection 230/240 V devices | | | | | | | | | | |
| I55APxxxB | 0.37 ... 0.75 | 1.8 | 190 | 140 | 117 | 205 | 115 | 4x M5 | >50 | >50 |
| I55APxxxB | 1.1 ... 2.2 | 2.7 | 205 | 140 | 140 | 220 | 115 | 4x M5 | >50 | >50 |
| 1-/3-phase mains connection 230/240 V devices | | | | | | | | | | |
| I55APxxxD | 0.37 ... 0.75 | 1.7 | 190 | 140 | 117 | 205 | 115 | 4x M5 | >50 | >50 |
| I55APxxxD | 1.1 ... 2.2 | 2.6 | 205 | 140 | 140 | 220 | 115 | 4x M5 | >50 | >50 |
| I55APxxxC | 3 ... 5.5 | 4.8 | 250 | 180 | 168 | 267 | 150 | 4x M5 | >50 | >50 |
| I55APxxxC | 7.5 ... 11 | 5 | 290 | 180 | 173 | 310 | 150 | 4x M5 | >50 | >50 |
| I55APxxxC | 15 ... 18.5 | 9.4 | 405 | 230 | 187 | 428 | 200 | 4x M6 | >50 | >100 |
| I55APxxxC | 30 | 46 | 778 | 298 | 285.5 | 810 | 225 | 4x M8 | >100 | >130 |
| I55APxxxC | 45 | 53 | 778 | 298 | 377.5 | 810 | 225 | 4x M10 | >100 | >260 |
| 3-phase mains connection 400/480 V devices | | | | | | | | | | |
| I55APxxxF | 0.37 ... 0.75 | 1.8 | 190 | 140 | 117 | 205 | 115 | 4x M5 | >50 | >50 |
| I55APxxxF | 1.1 ... 2.2 | 2.7 | 205 | 140 | 140 | 220 | 115 | 4x M5 | >50 | >50 |
| I55APxxxF | 3 ... 5.5 | 4.9 | 250 | 180 | 168 | 267 | 150 | 4x M5 | >50 | >50 |
| I55APxxxF | 7.5 ... 11 | 5.1 | 290 | 180 | 173 | 310 | 150 | 4x M5 | >50 | >50 |
| I55APxxxF | 15 ... 22 | 10.2 | 405 | 230 | 187 | 428 | 200 | 4x M6 | >50 | >100 |
| I55APxxxF | 30 ... 45 | 46 | 778 | 298 | 285.5 | 810 | 225 | 4x M8 | >100 | >130 |
| I55APxxxF | 55 ... 75 | 53 | 778 | 298 | 377.5 | 810 | 225 | 4x M10 | >100 | >260 |
| 3-phase mains connection 600 V devices | | | | | | | | | | |
| I55APxxxG | 0.75 | 1.8 | 190 | 140 | 117 | 205 | 115 | 4x M5 | >50 | >50 |
| I55APxxxG | 1.5 ... 2.2 | 2.7 | 205 | 140 | 140 | 220 | 115 | 4x M5 | >50 | >50 |
| I55APxxxG | 3 ... 5.5 | 4.9 | 250 | 180 | 168 | 267 | 150 | 4x M5 | >50 | >50 |
| I55APxxxG | 7.5 ... 11 | 5.1 | 290 | 180 | 173 | 310 | 150 | 4x M5 | >50 | >50 |
| I55APxxxG | 15 ... 22 | 10.2 | 405 | 230 | 187 | 428 | 200 | 4x M6 | >50 | >100 |



Mechanical installation

Without extension box

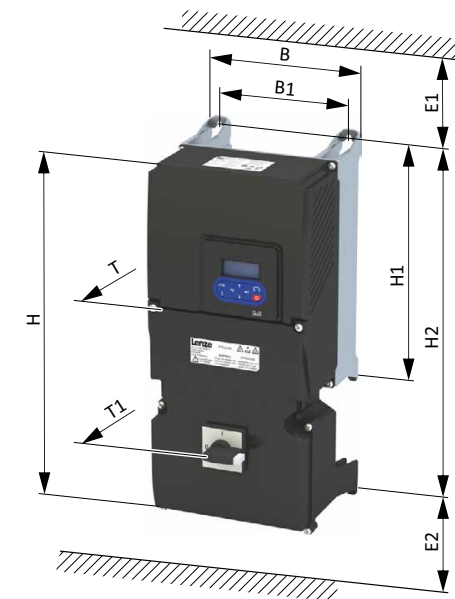
With extension box

Dimensions and assembly – Inverter with extension box

NOTICE

The specified installation clearances are minimum dimensions to ensure a sufficient air circulation for cooling purposes. They do not take into account the bending radii of the connecting cables.

| Inverter | Rated power [kW] | Weight [kg] | H [mm] | B [mm] | T [mm] | T1 [mm] | H1 [mm] | H2 [mm] | B1 [mm] | Screws | E1 [mm] | E2 [mm] |
|--|------------------|-------------|--------|--------|--------|---------|---------|---------|---------|--------|---------|---------|
| 1-phase mains connection 120 V devices | | | | | | | | | | | | |
| I55APxxxA | 0.37 | 2.3 / 2.5 | 330 | 140 | 117 | 151 | 205 | 337 | 115 | 6x M5 | >50 | >50 |
| I55APxxxA | 0.75 ... 1.1 | 3.3 / 3.5 | 346 | 140 | 140 | 173 | 220 | 352 | 115 | 6x M5 | >50 | >50 |
| 1-phase mains connection 230/240 V devices | | | | | | | | | | | | |
| I55APxxxB | 0.37 ... 0.75 | 2.3 / 2.5 | 330 | 140 | 117 | 151 | 205 | 337 | 115 | 6x M5 | >50 | >50 |
| I55APxxxB | 1.1 ... 2.2 | 3.3 / 3.5 | 346 | 140 | 140 | 173 | 220 | 352 | 115 | 6x M5 | >50 | >50 |
| 1-/3-phase mains connection 230/240 V devices | | | | | | | | | | | | |
| I55APxxxD | 0.37 ... 0.75 | 2.2 / 2.4 | 330 | 140 | 117 | 151 | 205 | 337 | 115 | 6x M5 | >50 | >50 |
| I55APxxxD | 1.1 ... 2.2 | 3.2 / 3.4 | 346 | 140 | 140 | 173 | 220 | 352 | 115 | 6x M5 | >50 | >50 |
| I55APxxxC | 3 ... 5.5 | 5.7 / 5.9 | 396 | 180 | 165 | 199 | 267 | 403 | 150 | 6x M5 | >50 | >50 |
| I55APxxxC | 7.5 ... 11 | 6 / 6.2 | 471 | 180 | 170 | 203.5 | 310 | 479.5 | 150 | 6x M5 | >50 | >50 |
| I55APxxxC | 15 ... 18.5 | 11.4 / 11.9 | 612 | 230 | 184 | 220 | 428 | 620 | 200 | 6x M6 | >50 | >100 |
| 3-phase mains connection 400/480 V devices | | | | | | | | | | | | |
| I55APxxxF | 0.37 ... 0.75 | 2.3 / 2.5 | 330 | 140 | 117 | 151 | 205 | 337 | 115 | 6x M5 | >50 | >50 |
| I55APxxxF | 1.1 ... 2.2 | 3.3 / 3.5 | 346 | 140 | 140 | 173 | 220 | 352 | 115 | 6x M5 | >50 | >50 |
| I55APxxxF | 3 ... 5.5 | 5.8 / 6 | 396 | 180 | 165 | 199 | 267 | 403 | 150 | 6x M5 | >50 | >50 |
| I55APxxxF | 7.5 ... 11 | 6.1 / 6.3 | 471 | 180 | 170 | 203.5 | 310 | 479.5 | 150 | 6x M5 | >50 | >50 |
| I55APxxxF | 15 ... 22 | 11.5 / 12 | 612 | 230 | 184 | 220 | 428 | 620 | 200 | 6x M6 | >50 | >100 |
| 3-phase mains connection 600 V devices | | | | | | | | | | | | |
| I55APxxxG | 0.75 | 2.3 / 2.5 | 330 | 140 | 117 | 151 | 205 | 337 | 115 | 6x M5 | >50 | >50 |
| I55APxxxG | 1.5 ... 2.2 | 3.3 / 3.5 | 346 | 140 | 140 | 173 | 220 | 352 | 115 | 6x M5 | >50 | >50 |
| I55APxxxG | 3 ... 5.5 | 5.8 / 6 | 396 | 180 | 165 | 199 | 267 | 403 | 150 | 6x M5 | >50 | >50 |
| I55APxxxG | 7.5 ... 11 | 6.1 / 6.3 | 471 | 180 | 170 | 203.5 | 310 | 479.5 | 150 | 6x M5 | >50 | >50 |
| I55APxxxG | 15 ... 22 | 11.5 / 12 | 612 | 230 | 184 | 220 | 428 | 620 | 200 | 6x M6 | >50 | >100 |



Please observe the following:

- The lower weight applies for the i550 protec with empty extension box, and the higher weight applies for the i550 protec with extension box and disconnect switch.
- The dimension T1 is only relevant for i550 protec with disconnect switch.

Electrical installation

Preparation

Cable glands

Connection diagram

1-phase | 120 V

1-phase | 230/240 V

3-phase | 230/240 V

3-phase | 400 V

3-phase | 480 V

3-phase | 600 V

EMC filter motor cable

Brake resistor

Control terminals

Relay output

PTC input

Networks

Functional safety

Safe torque off (STO)

Preparation

For wiring, the housing cover must be removed:

1. Loosen the 4 screws in the housing cover using a crosstip screwdriver.
2. Remove housing cover



After completing the electrical installation, replace the housing cover using the 4 screws to maintain the degree of protection.

NOTICE**Assembly does not satisfy protection class requirements**

Possible consequences: Damage to property due to ingress of humidity and foreign bodies.

- All cable glands and mounting parts must at least correspond to the protection class of the inverter.
- All openings in the housing must be closed according to the protection class.
- The cover must be screwed on with the specified tightening torque.
- Always use cable glands with long thread.

Electrical installation

| | | | | | | | | | |
|----------------|---------------------|--------------------|-----------------|---------------------|---------------------|-----------------------|-----------------|-----------------|------------------------|
| Preparation | Cable glands | Connection diagram | 1-phase 120 V | 1-phase 230/240 V | 3-phase 230/240 V | 3-phase 400 V | 3-phase 480 V | 3-phase 600 V | EMC filter motor cable |
| Brake resistor | Control terminals | Relay output | PTC input | Networks | Functional safety | Safe torque off (STO) | | | |

Cable gland with shield connection

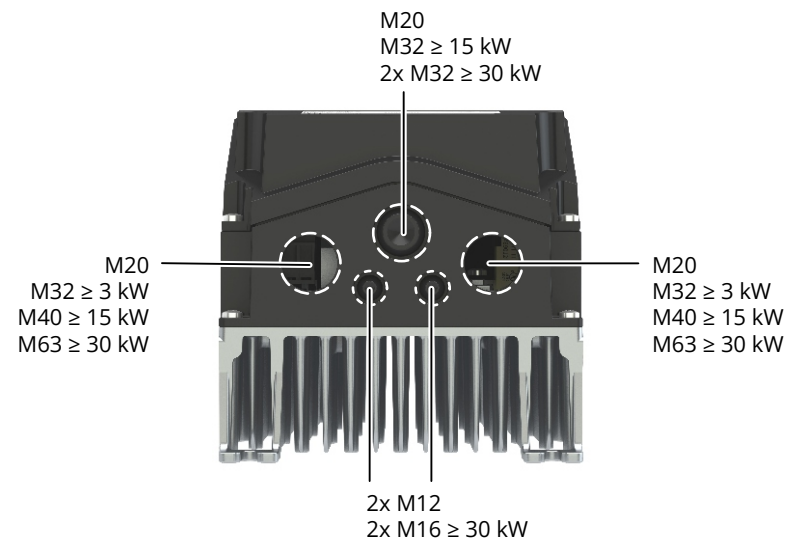
Thanks to its protection class, the inverter can be installed directly on the wall. For connection, the device has cable glands on the bottom. Suitable mounting sets with screwed connections are available as accessories (see project planning document).

| Rated power | kW | 0.37 ... 2.2 | 3 ... 11 | 15 ... 22 | 30 ... 75 |
|---|----|--|--|--|-----------------------------------|
| With pre-drilled holes: | | | | | |
| Mains cable | | M20 / ½" conduit hub | M32 / 1" conduit hub | M40 / 1¼" conduit hub | M63 / 2" conduit hub |
| Motor cable | | M20 / ½" conduit hub | M32 / 1" conduit hub | M40 / 1¼" conduit hub | M63 / 2" conduit hub |
| Additional positions with centering aid: | | | | | |
| Control cables, network cables, brake resistor | | 2x M12 1x M20 / ½" conduit hub 2x M20 / ½" conduit hub * | 2x M12 1x M20 / ½" conduit hub 2x M20 / ½" conduit hub * | 2x M12 1x M32 / 1" conduit hub 2x M20 / ½" conduit hub * | 2x M16 2x M32 / 1" conduit hub |

* Only for extension box

When using electrically conductive conduits:

- Individual unshielded conductors or multi-core unshielded cables which have been laid in a metallic conduit are considered equivalent for the purposes of EMC conformity of a shielded motor cable.
- Both a rigid and a flexible metallic conduit are permissible.
- The conduit must be connected properly at both ends using metallic screwed connections on the inverter and on the motor so as to connect all devices.
- Non-metallic junctions or screwed connections which interrupt the electrical conductivity of the metallic conduit are not permissible.

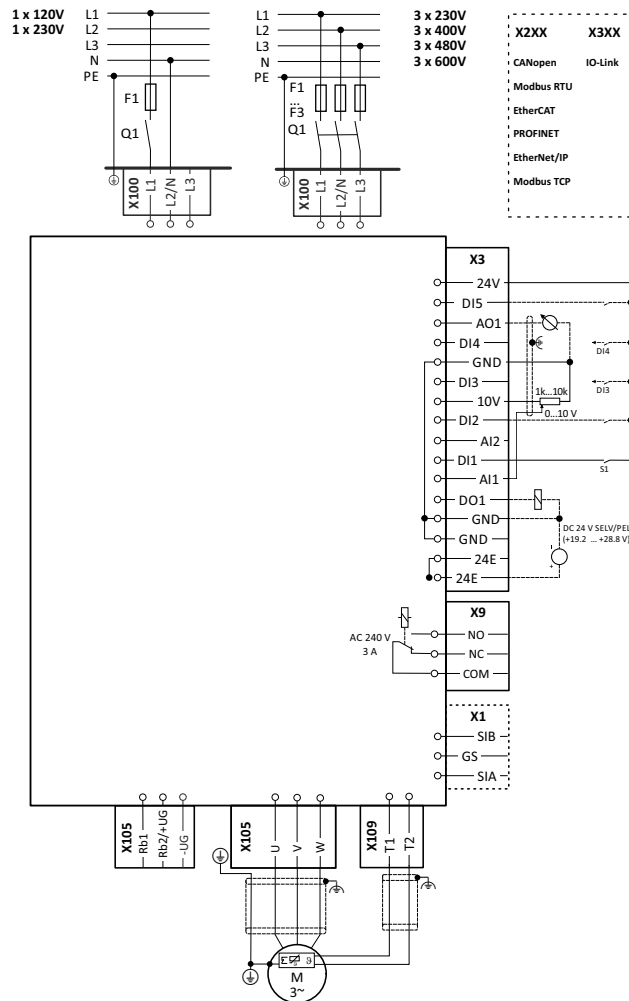


Electrical installation

| | | | | | | | | | |
|----------------|-------------------|---------------------------|-----------------|---------------------|---------------------|-----------------------|-----------------|-----------------|------------------------|
| Preparation | Cable glands | Connection diagram | 1-phase 120 V | 1-phase 230/240 V | 3-phase 230/240 V | 3-phase 400 V | 3-phase 480 V | 3-phase 600 V | EMC filter motor cable |
| Brake resistor | Control terminals | Relay output | PTC input | Networks | Functional safety | Safe torque off (STO) | | | |

Connection diagram

The connection diagram is considered exemplary for all voltage and power classes.

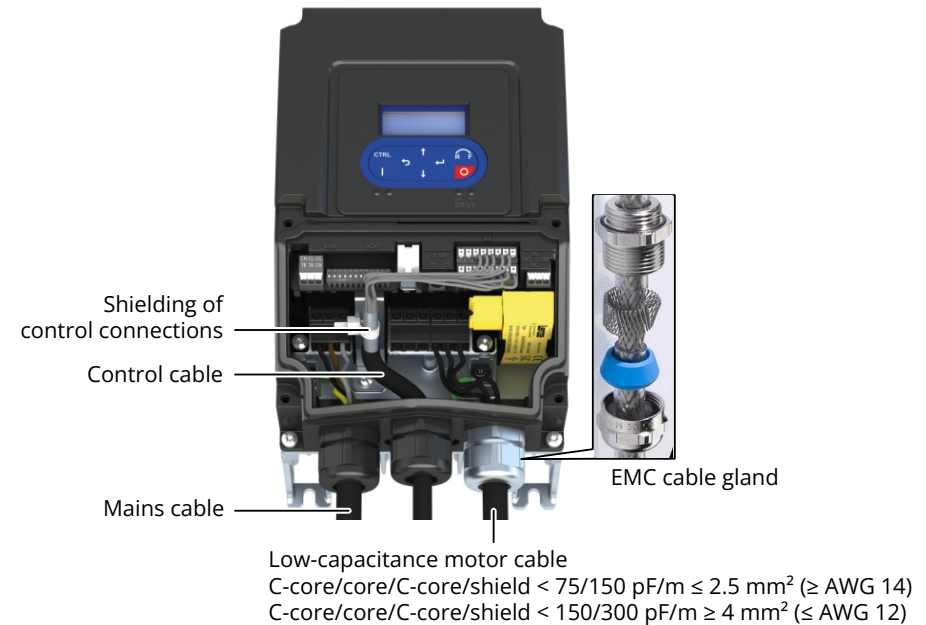


EMC-compliant installation

The drive system of inverter and drive comply with the EMC Directive 2014/30/EU if they are installed according to the specifications of CE-typical drive systems. These guidelines should also be followed in installations requiring FCC Part 15 or ICES 001 compliance. The structure at the installation location must support the EMC-compliant installation with shielded motor cables.

- Please use sufficiently conductive shield connections.
- Connect the housing with shielding effect to the grounded mounting plate with a surface as large as possible, e.g. of inverters and RFI filters.
- Use central earthing points.

The following example shows the effective wiring.



Electrical installation

- Preparation
- Cable glands
- Connection diagram
- 1-phase | 120 V
- 1-phase | 230/240 V
- 3-phase | 230/240 V
- 3-phase | 400 V
- 3-phase | 480 V
- 3-phase | 600 V
- EMC filter motor cable
- Brake resistor
- Control terminals
- Relay output
- PTC input
- Networks
- Functional safety
- Safe torque off (STO)

1-phase mains connection 120 V (90 V ... 132 V, 45 Hz ... 65 Hz)

Terminal data

| Inverter | | I55APxxxA | | | | | | | | | |
|--------------------------|-----------------|-----------------------|--|----------------|--|---------------|--|-----------------------|--|----------------|--|
| Rated power | kW | 0.37 | | 0.75 ... 1.1 | | 0.37 ... 1.1 | | 0.37 | | 0.75 ... 1.1 | |
| Connection | | Mains connection X100 | | | | PE connection | | Motor connection X105 | | | |
| Connection type | | Screw terminal | | | | Screw | | Screw terminal | | | |
| Max. cable cross-section | mm ² | 4 | | 4 | | 6 | | 4 | | 4 | |
| Stripping length | mm | 10 | | 10 | | 10 | | 10 | | 10 | |
| Tightening torque | Nm | 0.5 | | 0.5 | | 2 | | 0.5 | | 0.5 | |
| Required tool | | ⊖ 1.2 x 8.0 | | ⊖ 0.6 x 3.5 | | ⊕ TX20 | | ⊖ 1.2 x 8.0 | | ⊖ 0.6 x 3.5 | |

Rated data and fusing data

| Inverter | | I55AP | | |
|--------------------------------------|----|-----------------|------|------|
| | | 137A | 175A | 211A |
| Rated power | kW | 0.37 | 0.75 | 1.1 |
| Rated output current (8 kHz) | A | 2.4 | 4.2 | 6 |
| Max output current (≤ 8 kHz) * | A | 4.8 | 8.4 | 12 |
| Operation without mains choke | | | | |
| Rated mains current | A | 9.6 | 16.8 | 22.9 |
| Fuse (EN 60204-1) | | | | |
| Characteristic | | gG/gL or gRL | | |
| Max. rated current | A | 32 | 32 | 32 |
| Max. short-circuit current (SCCR) | kA | 5 | 5 | 5 |
| Circuit breaker (EN 60204-1) | | | | |
| Characteristic | | B | | |
| Max. rated current | A | 32 | 32 | 32 |
| Max. short-circuit current (SCCR) | kA | 5 | 5 | 5 |
| Residual current device (RCD) | | ≥ 30 mA, type B | | |

* Overload time = 3 s, recovery time = 12 s

Electrical installation

- Preparation
- Cable glands
- Connection diagram
- 1-phase | 120 V
- 1-phase | 230/240 V
- 3-phase | 230/240 V
- 3-phase | 400 V
- 3-phase | 480 V
- 3-phase | 600 V
- EMC filter motor cable
- Brake resistor
- Control terminals
- Relay output
- PTC input
- Networks
- Functional safety
- Safe torque off (STO)

1-phase mains connection 230/240 V (170 V ... 264 V, 45 Hz ... 65 Hz)

Terminal data

| Inverter | | I55APxxxB (1-phase), I55APxxxD (1/3-phase) | | |
|--------------------------|-----------------|--|---------------|-----------------------|
| Rated power | kW | 0.37 ... 2.2 | | |
| Connection | | Mains connection X100 | PE connection | Motor connection X105 |
| Connection type | | Screw terminal | Screw | Screw terminal |
| Max. cable cross-section | mm ² | 4 | 10 | 4 |
| Stripping length | mm | 10 | 10 | 10 |
| Tightening torque | Nm | 0.5 | 2 | 0.5 |
| Required tool | | ⊖ 1.2 x 8.0 | ⊕ TX20 | ⊖ 1.2 x 8.0 |

Rated data (Heavy Duty) und fusing data

| Inverter | | I55AP | | | | | | | | | | | |
|-----------------------------------|----|-----------------|------|------|------|------|------|------|------|------|------|------|------|
| | | 137B | 137D | 155B | 155D | 175B | 175D | 211B | 211D | 215B | 215D | 222B | 222D |
| Rated power | kW | 0.37 | | 0.55 | | 0.75 | | 1.1 | | 1.5 | | 2.2 | |
| Rated output current (8 kHz) | A | 2.4 | | 3.2 | | 4.2 | | 6 | | 7 | | 9.6 | |
| Max output current (≤ 8 kHz) * | A | 4.8 | | 6.4 | | 8.4 | | 12 | | 14 | | 19.2 | |
| Operation without mains choke | | | | | | | | | | | | | |
| Rated mains current | A | 5.7 | | 7.6 | | 10 | | 14.3 | | 16.7 | | 22.5 | |
| Fuse (EN 60204-1) | | | | | | | | | | | | | |
| Characteristic | | gG/gL or gRL | | | | | | | | | | | |
| Max. rated current | A | 40 | | 40 | | 40 | | 40 | | 40 | | 40 | |
| Max. short-circuit current (SCCR) | kA | 65 | | 65 | | 65 | | 65 | | 65 | | 65 | |
| Circuit breaker (EN 60204-1) | | | | | | | | | | | | | |
| Characteristic | | B | | | | | | | | | | | |
| Max. rated current | A | 32 | | 32 | | 32 | | 32 | | 32 | | 32 | |
| Max. short-circuit current (SCCR) | kA | 5 | | 5 | | 5 | | 5 | | 5 | | 5 | |
| Residual current device (RCD) | | ≥ 30 mA, type B | | | | | | | | | | | |

Rated data (Light Duty) – Data only applies to devices with Protection class IP31/NEMA 1

| Inverter | | I55AP | | | | | |
|------------------------------|----|-------|------|------|------|------|------|
| | | 137D | 155D | 175D | 211D | 215D | 222D |
| Rated power | kW | 0.55 | 0.75 | 1.1 | 1.5 | 2.2 | 3 |
| Rated output current (4 kHz) | A | 2.9 | 3.8 | 5 | 7.2 | 8.4 | 11.5 |
| Max. output current * | A | 4.8 | 6.4 | 8.4 | 12 | 14 | 19.2 |

* Overload time = 3 s, recovery time = 12 s

Electrical installation

| | | | | | | | | | |
|----------------|-------------------|--------------------|-----------------|---------------------|---------------------|-----------------------|-----------------|-----------------|------------------------|
| Preparation | Cable glands | Connection diagram | 1-phase 120 V | 1-phase 230/240 V | 3-phase 230/240 V | 3-phase 400 V | 3-phase 480 V | 3-phase 600 V | EMC filter motor cable |
| Brake resistor | Control terminals | Relay output | PTC input | Networks | Functional safety | Safe torque off (STO) | | | |

3-phase mains connection 230/240 V (195 V ... 264 V, 45 Hz ... 65 Hz)

Terminal data

| Inverter | | I55APxxxD (1/3-phase), I55APxxxC (3-phase) | | | | | | | | | | | | | | | |
|--------------------------|-----------------|--|----------------|----------------|----------------|----------|----------|---------------|------------|-------------|-----------|-----------------------|----------------|----------------|----------------|----------|----------|
| Rated power | kW | 0.37 ... 0.75 | 1.1 ... 5.5 | 7.5 ... 11 | 15 ... 18.5 | 30 | 45 | 0.37 ... 5.5 | 7.5 ... 11 | 15 ... 18.5 | 30 ... 45 | 0.37 ... 0.75 | 1.1 ... 5.5 | 7.5 ... 11 | 15 ... 18.5 | 30 | 45 |
| Connection | | Mains connection X100 | | | | | | PE connection | | | | Motor connection X105 | | | | | |
| Connection type | | Screw terminal | | | | | | Screw | | | Bolt | Screw terminal | | | | | |
| Max. cable cross-section | mm ² | 4 | 6 | 16 | 35 | 50 | 95 | 6 | 16 | 25 | 95 | 4 | 6 | 16 | 35 | 50 | 95 |
| Stripping length | mm | 10 | 9 | 11 | 18 | 19 | 22 | 10 | 11 | 16 | - | 10 | 9 | 11 | 18 | 19 | 22 |
| Tightening torque | Nm | 0.5 | 0.5 | 1.2 | 3.8 | 4 | 10 | 2 | 3.4 | 4 | 10 | 0.5 | 0.5 | 1.2 | 3.8 | 4 | 10 |
| Required tool | | ⊖ 1.2 x 8.0 | ⊖ 0.6 x 3.5 | ⊖ 0.8 x 4.0 | ⊖ 0.8 x 4.5 | ⊕ 4.0 | ⊕ 6.0 | ⊕ TX20 | ⊕ PZ2 | ⊕ PZ2 | ⊕ 13 | ⊖ 1.2 x 8.0 | ⊖ 0.6 x 3.5 | ⊖ 0.8 x 4.0 | ⊖ 0.8 x 4.5 | ⊕ 4.0 | ⊕ 6.0 |

Rated data (Heavy Duty) und fusing data

| Inverter | | I55AP | | | | | | | | | | | | | | | |
|-----------------------------------|----|-----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------------------|-----------|
| | | 137D | 155D | 175D | 211D | 215D | 222D | 230C | 240C | 255C | 275C | 311C | 315C | 318C | 330C | 345C | |
| Rated power | kW | 0.37 | 0.55 | 0.75 | 1.1 | 1.5 | 2.2 | 3 | 4 | 5.5 | 7.5 | 11 | 15 | 18.5 | 30 | 45 | |
| Rated output current (8 kHz) | A | 2.4 | 3.2 | 4.2 | 6 | 7 | 9.6 | 12 | 16.5 | 23 | 29 | 42 | 54 | 68 | 89 | 150 | |
| Max output current (≤ 8 kHz) * | A | 4.8 | 6.4 | 8.4 | 12 | 14 | 19.2 | 24 | 33 | 46 | 58 | 84 | 108 | 136 | 178 | 300 | |
| Operation without mains choke | | | | | | | | | | | | | | | | | |
| Rated mains current | A | 3.9 | 4.8 | 6.4 | 7.8 | 9.5 | 13.6 | 15 | 20.6 | 28.8 | 36.3 | 52.2 | 62 | 78 | 80 | 135 | |
| Fuse (EN 60204-1) | | | | | | | | | | | | | | | | | |
| Characteristic | | gG/gL or gRL | | | | | | | | | | | | | | | gG/gL, gR |
| Max. rated current | A | 40 | 40 | 40 | 40 | 40 | 40 | 80 | 80 | 80 | 80 | 80 | 125 | 125 | 125 | 200 | |
| Max. short-circuit current (SCCR) | kA | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 5 | 5 | 5 | 5 | 5 | 5 | 10 | 10 | |
| Circuit breaker (EN 60204-1) | | | | | | | | | | | | | | | | | |
| Characteristic | | B | | | | | | | | | | | | | | | |
| Max. rated current | A | 32 | 32 | 32 | 32 | 32 | 32 | 80 | 80 | 80 | 80 | 80 | 125 | 125 | 125 | 200 | |
| Max. short-circuit current (SCCR) | kA | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 10 | 10 | |
| Residual current device (RCD) | | ≥ 30 mA, type B | | | | | | | | | | | | | | ≥ 300 mA, type B | |

Rated data (Light Duty) – Data only applies to devices with Protection class IP31/NEMA 1

| Inverter | | I55AP | | | | | | | | | | | | | | | |
|------------------------------|----|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|
| | | 137D | 155D | 175D | 211D | 215D | 222D | 230C | 240C | 255C | 275C | 311C | 315C | 318C | 330C | 345C | |
| Rated power | kW | 0.55 | 0.75 | 1.1 | 1.5 | 2.2 | 3 | 4 | 5.5 | 7.5 | 11 | - | 18.5 | 22 | - | - | |
| Rated output current (4 kHz) | A | 2.9 | 3.8 | 5 | 7.2 | 8.4 | 11.5 | 14.4 | 19.8 | 27.6 | 34.8 | - | 64.8 | 81.6 | - | - | |
| Max. output current * | A | 4.8 | 6.4 | 8.4 | 12 | 14 | 19.2 | 24 | 33 | 46 | 58 | - | 108 | 136 | - | - | |

* Overload time = 3 s, recovery time = 12 s

Electrical installation

| | | | | | | | | | |
|----------------|-------------------|--------------------|-----------------|---------------------|---------------------|-----------------------|-----------------|-----------------|------------------------|
| Preparation | Cable glands | Connection diagram | 1-phase 120 V | 1-phase 230/240 V | 3-phase 230/240 V | 3-phase 400 V | 3-phase 480 V | 3-phase 600 V | EMC filter motor cable |
| Brake resistor | Control terminals | Relay output | PTC input | Networks | Functional safety | Safe torque off (STO) | | | |

3-phase mains connection 400 V (340 V ... 528 V, 45 Hz ... 65 Hz)

Terminal data

| Inverter | | I55APxxxF | | | | | | | | | | | | | | |
|--------------------------|-----------------|-----------------------|----------------|----------------|-----------|-----------|---------------|------------|-----------|-----------|----------------|-----------------------|----------------|-----------|-----------|--|
| Rated power | kW | 0.37 ... 5.5 | 7.5 ... 11 | 15 ... 22 | 30 ... 45 | 55 ... 75 | 0.37 ... 5.5 | 7.5 ... 11 | 15 ... 22 | 30 ... 75 | 0.37 ... 5.5 | 7.5 ... 11 | 15 ... 22 | 30 ... 45 | 55 ... 75 | |
| Connection | | Mains connection X100 | | | | | PE connection | | | | | Motor connection X105 | | | | |
| Connection type | | Screw terminal | | | | | Screw | | | Bolt | Screw terminal | | | | | |
| Max. cable cross-section | mm ² | 4 | 16 | 35 | 50 | 95 | 6 | 16 | 25 | 95 | 4 | 16 | 35 | 50 | 95 | |
| Stripping length | mm | 10 | 11 | 18 | 19 | 22 | 10 | 11 | 16 | - | 10 | 11 | 18 | 19 | 22 | |
| Tightening torque | Nm | 0.5 | 1.2 | 3.8 | 4 | 10 | 2 | 3.4 | 4 | 10 | 0.5 | 1.2 | 3.8 | 4 | 10 | |
| Required tool | | ⊖ 1.2 x 8.0 | ⊖ 0.8 x 4.0 | ⊖ 0.8 x 4.5 | ⊕ 4.0 | ⊕ 6.0 | ⊕ TX20 | ⊕ TX20 | ⊕ PZ2 | ⊕ 13 | ⊖ 0.6 x 3.5 | ⊖ 1.2 x 8.0 | ⊖ 0.8 x 4.5 | ⊕ 4.0 | ⊕ 6.0 | |

Rated data (Heavy Duty) und fusing data

| Inverter | | I55AP | | | | | | | | | | | | | | | | | | |
|-----------------------------------|----|-----------------|------|------|------|------|------|------|------|------|------|------------------|------|------|------|------|------|------|------|------|
| | | 137F | 155F | 175F | 211F | 215F | 222F | 230F | 240F | 255F | 275F | 311F | 315F | 318F | 322F | 330F | 337F | 345F | 355F | 375F |
| Rated power | kW | 0.37 | 0.55 | 0.75 | 1.1 | 1.5 | 2.2 | 3 | 4 | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 | 30 | 37 | 45 | 55 | 75 |
| Rated output current (8 kHz) | A | 1.3 | 1.8 | 2.4 | 3.2 | 3.9 | 5.6 | 7.3 | 9.5 | 13 | 16.5 | 23.5 | 32 | 40 | 47 | 61 | 76 | 89 | 110 | 150 |
| Max output current (≤ 8 kHz) * | A | 2.6 | 3.6 | 4.8 | 6.4 | 7.8 | 11.2 | 14.6 | 19 | 26 | 33 | 47 | 64 | 80 | 94 | 122 | 152 | 178 | 220 | 300 |
| Operation without mains choke | | | | | | | | | | | | | | | | | | | | |
| Rated mains current | A | 1.8 | 2.5 | 3.3 | 4.4 | 5.4 | 7.8 | 9.6 | 12.5 | 17.2 | 20 | 28.4 | 37 | 46 | 53 | 54.9 | 68 | 80 | 99 | 135 |
| Fuse (EN 60204-1) | | | | | | | | | | | | | | | | | | | | |
| Characteristic | | gG/gL or gRL | | | | | | | | | | | | | | | | | gR | |
| Max. rated current | A | 32 | 32 | 32 | 32 | 32 | 32 | 50 | 50 | 50 | 50 | 50 | 80 | 80 | 80 | 125 | 125 | 125 | 200 | 200 |
| Max. short-circuit current (SCCR) | kA | 65 | 65 | 65 | 65 | 65 | 65 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 10 | 10 | 10 | 10 | 10 |
| Circuit breaker (EN 60204-1) | | | | | | | | | | | | | | | | | | | | |
| Characteristic | | B | | | | | | | | | | | | | | | | | | |
| Max. rated current | A | 32 | 32 | 32 | 32 | 32 | 32 | 50 | 50 | 50 | 50 | 50 | 80 | 80 | 80 | 125 | 125 | 125 | 200 | 200 |
| Max. short-circuit current (SCCR) | kA | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 10 | 10 | 10 | 10 | 10 |
| Residual current device (RCD) | | ≥ 30 mA, type B | | | | | | | | | | ≥ 300 mA, type B | | | | | | | | |

Rated data (Light Duty) – Data only applies to devices with Protection class IP31/NEMA 1

| Inverter | | I55AP | | | | | | | | | | | | | | | | | | |
|------------------------------|----|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | 137F | 155F | 175F | 211F | 215F | 222F | 230F | 240F | 255F | 275F | 311F | 315F | 318F | 322F | 330F | 337F | 345F | 355F | 375F |
| Rated power | kW | 0.55 | 0.75 | 1.1 | 1.5 | 2.2 | 3 | 4 | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 | 30 | - | - | - | - | - |
| Rated output current (4 kHz) | A | 1.6 | 2.2 | 2.9 | 3.8 | 4.7 | 6.7 | 8.8 | 11.9 | 15.6 | 23 | 28.2 | 38.4 | 48 | 56.4 | - | - | - | - | - |
| Max. output current * | A | 2.6 | 3.6 | 4.8 | 6.4 | 7.8 | 11.2 | 14.6 | 19 | 26 | 33 | 47 | 64 | 80 | 94 | - | - | - | - | - |

* Overload time = 3 s, recovery time = 12 s

Electrical installation

- Preparation
- Cable glands
- Connection diagram
- 1-phase | 120 V
- 1-phase | 230/240 V
- 3-phase | 230/240 V
- 3-phase | 400 V
- 3-phase | 480 V
- 3-phase | 600 V
- EMC filter motor cable
- Brake resistor
- Control terminals
- Relay output
- PTC input
- Networks
- Functional safety
- Safe torque off (STO)

3-phase mains connection 480 V (340 V ... 528 V, 45 Hz ... 65 Hz)

Terminal data

| Inverter | | I55APxxxF | | | | | | | | | | | | | | |
|--------------------------|-----------------|-----------------------|----------------|----------------|-----------|-----------|---------------|------------|-----------|-----------|----------------|-----------------------|----------------|-----------|-----------|--|
| Rated power | kW | 0.37 ... 5.5 | 7.5 ... 11 | 15 ... 22 | 30 ... 45 | 55 ... 75 | 0.37 ... 5.5 | 7.5 ... 11 | 15 ... 22 | 30 ... 75 | 0.37 ... 5.5 | 7.5 ... 11 | 15 ... 22 | 30 ... 45 | 55 ... 75 | |
| Connection | | Mains connection X100 | | | | | PE connection | | | | | Motor connection X105 | | | | |
| Connection type | | Screw terminal | | | | | Screw | | | Bolt | Screw terminal | | | | | |
| Max. cable cross-section | mm ² | 4 | 16 | 35 | 50 | 95 | 6 | 16 | 25 | 95 | 4 | 16 | 35 | 50 | 95 | |
| Stripping length | mm | 10 | 11 | 18 | 19 | 22 | 10 | 11 | 16 | - | 10 | 11 | 18 | 19 | 22 | |
| Tightening torque | Nm | 0.5 | 1.2 | 3.8 | 4 | 10 | 2 | 3.4 | 4 | 10 | 0.5 | 1.2 | 3.8 | 4 | 10 | |
| Required tool | | ⊖ 1.2 x 8.0 | ⊖ 0.8 x 4.0 | ⊖ 0.8 x 4.5 | ⊕ 4.0 | ⊕ 6.0 | ⊕ TX20 | ⊕ TX20 | ⊕ PZ2 | ⊕ 13 | ⊖ 0.6 x 3.5 | ⊖ 1.2 x 8.0 | ⊖ 0.8 x 4.5 | ⊕ 4.0 | ⊕ 6.0 | |

Rated data (Heavy Duty) und fusing data

| Inverter | | I55AP | | | | | | | | | | | | | | | | | | |
|-----------------------------------|----|-----------------|------|------|------|------|------|------|------|------|------|------|------------------|------|------|------|------|------|------|------|
| | | 137F | 155F | 175F | 211F | 215F | 222F | 230F | 240F | 255F | 275F | 311F | 315F | 318F | 322F | 330F | 337F | 345F | 355F | 375F |
| Rated power | kW | 0.37 | 0.55 | 0.75 | 1.1 | 1.5 | 2.2 | 3 | 4 | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 | 30 | 37 | 45 | 55 | 75 |
| Rated output current (8 kHz) | A | 1.1 | 1.6 | 2.1 | 3 | 3.5 | 4.8 | 6.3 | 8.2 | 11 | 14 | 21 | 27 | 34 | 40.4 | 52 | 65 | 77 | 96 | 124 |
| Max output current (≤ 8 kHz) * | A | 2.2 | 3.2 | 4.2 | 6 | 7 | 9.6 | 12.6 | 16.4 | 22 | 28 | 42 | 54 | 68 | 80.8 | 104 | 130 | 154 | 192 | 248 |
| Operation without mains choke | | | | | | | | | | | | | | | | | | | | |
| Rated mains current | A | 1.5 | 2.1 | 2.8 | 3.7 | 4.5 | 6.5 | 8 | 10.5 | 14.3 | 16.6 | 23.7 | 30.7 | 38 | 44.2 | 45.7 | 57 | 66.7 | 83 | 113 |
| Fuse (EN 60204-1) | | | | | | | | | | | | | | | | | | | | |
| Characteristic | | gG/gL or gRL | | | | | | | | | | | | | | | | | gR | |
| Max. rated current | A | 32 | 32 | 32 | 32 | 32 | 32 | 50 | 50 | 50 | 50 | 50 | 80 | 80 | 80 | 125 | 125 | 125 | 200 | 200 |
| Max. short-circuit current (SCCR) | kA | 65 | 65 | 65 | 65 | 65 | 65 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 10 | 10 | 10 | 10 | 10 |
| Circuit breaker (EN 60204-1) | | | | | | | | | | | | | | | | | | | | |
| Characteristic | | B | | | | | | | | | | | | | | | | | | |
| Max. rated current | A | 32 | 32 | 32 | 32 | 32 | 32 | 50 | 50 | 50 | 50 | 50 | 80 | 80 | 80 | 125 | 125 | 125 | 200 | 200 |
| Max. short-circuit current (SCCR) | kA | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 10 | 10 | 10 | 10 | 10 |
| Residual current device (RCD) | | ≥ 30 mA, type B | | | | | | | | | | | ≥ 300 mA, type B | | | | | | | |

Rated data (Light Duty) – Data only applies to devices with Protection class IP31/NEMA 1

| Inverter | | I55AP | | | | | | | | | | | | | | | | | | |
|------------------------------|----|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | 137F | 155F | 175F | 211F | 215F | 222F | 230F | 240F | 255F | 275F | 311F | 315F | 318F | 322F | 330F | 337F | 345F | 355F | 375F |
| Rated power | kW | 0.55 | 0.75 | 1.1 | 1.5 | 2.2 | 3 | 4 | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 | 30 | - | - | - | - | - |
| Rated output current (4 kHz) | A | 1.3 | 1.9 | 2.5 | 3.6 | 4.2 | 5.8 | 7.6 | 9.8 | 13.2 | 18.3 | 25.2 | 32.4 | 40.8 | 48.5 | - | - | - | - | - |
| Max. output current * | A | 2.2 | 3.2 | 4.2 | 6 | 7 | 9.6 | 12.6 | 16.4 | 22 | 28 | 42 | 54 | 68 | 80.8 | - | - | - | - | - |

* Overload time = 3 s, recovery time = 12 s

Electrical installation

| | | | | | | | | | |
|----------------|-------------------|--------------------|-----------------|---------------------|---------------------|-----------------------|-----------------|-----------------|------------------------|
| Preparation | Cable glands | Connection diagram | 1-phase 120 V | 1-phase 230/240 V | 3-phase 230/240 V | 3-phase 400 V | 3-phase 480 V | 3-phase 600 V | EMC filter motor cable |
| Brake resistor | Control terminals | Relay output | PTC input | Networks | Functional safety | Safe torque off (STO) | | | |

3-phase mains connection 600 V (432 V ... 660 V, 45 Hz ... 65 Hz)

Terminal data

| Inverter | | I55APxxxG | | | | | | | | |
|--------------------------|-----------------|-----------------------|----------------|----------------|---------------|------------|-----------|-----------------------|----------------|----------------|
| Rated power | kW | 0.75 ... 5.5 | 7.5 ... 11 | 15 ... 22 | 0.75 ... 5.5 | 7.5 ... 11 | 15 ... 22 | 0.75 ... 5.5 | 7.5 ... 11 | 15 ... 22 |
| Connection | | Mains connection X100 | | | PE connection | | | Motor connection X105 | | |
| Connection type | | Screw terminal | | | Screw | | | Screw terminal | | |
| Max. cable cross-section | mm ² | 4 | 16 | 35 | 6 | 16 | 25 | 4 | 16 | 35 |
| Stripping length | mm | 10 | 11 | 18 | 10 | 11 | 16 | 10 | 11 | 18 |
| Tightening torque | Nm | 0.5 | 1.2 | 3.8 | 2 | 3.4 | 4 | 0.5 | 1.2 | 3.8 |
| Required tool | | ⊖ 1.2 x 8.0 | ⊖ 0.8 x 4.0 | ⊖ 0.8 x 4.5 | ⊕ TX20 | ⊕ PZ2 | ⊕ PZ2 | ⊖ 1.2 x 8.0 | ⊖ 0.8 x 4.0 | ⊖ 0.8 x 4.5 |

Rated data (Heavy Duty) und fusing data

| Inverter | | I55AP | | | | | | | | | |
|-----------------------------------|----|-----------------|------|------|------|------|------|------|------|------|------|
| | | 175G | 215G | 222G | 240G | 255G | 275G | 311G | 315G | 318G | 322G |
| Rated power | kW | 0.75 | 1.5 | 2.2 | 4 | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 |
| Rated output current (8 kHz) | A | 1.7 | 2.7 | 3.9 | 6.1 | 9 | 11 | 17 | 22 | 27 | 32 |
| Max output current (≤ 8 kHz) * | A | 3.4 | 5.4 | 7.8 | 12.2 | 18 | 22 | 34 | 44 | 54 | 64 |
| Operation without mains choke | | | | | | | | | | | |
| Rated mains current | A | 2.0 | 3.2 | 4.4 | 6.8 | 10.2 | 12.4 | 19.7 | 25 | 31 | 36 |
| Fuse (EN 60204-1) | | | | | | | | | | | |
| Characteristic | | gG/gL or gRL | | | | | | | | | |
| Max. rated current | A | 20 | 20 | 20 | 40 | 40 | 40 | 40 | 60 | 60 | 60 |
| Max. short-circuit current (SCCR) | kA | 65 | 65 | 65 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Circuit breaker (EN 60204-1) | | | | | | | | | | | |
| Characteristic | | - | | | | | | | | | |
| Max. rated current | A | - | - | - | - | - | - | - | - | - | - |
| Max. short-circuit current (SCCR) | kA | - | - | - | - | - | - | - | - | - | - |
| Residual current device (RCD) | | ≥ 30 mA, type B | | | | | | | | | |

Rated data (Light Duty) – Data only applies to devices with Protection class IP31/NEMA 1

| Inverter | | I55AP | | | | | | | | | |
|------------------------------|----|-------|------|------|------|------|------|------|------|------|------|
| | | 175G | 215G | 222G | 240G | 255G | 275G | 311G | 315G | 318G | 322G |
| Rated power | kW | 1.1 | 2.2 | 3 | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 | 30 |
| Rated output current (4 kHz) | A | 2 | 3.2 | 4.7 | 7.9 | 10.8 | 13.2 | 22 | 27 | 32.4 | 41 |
| Max. output current * | A | 3.4 | 5.4 | 7.8 | 12.2 | 18 | 22 | 34 | 44 | 54 | 64 |

* Overload time = 3 s, recovery time = 12 s

Electrical installation

Preparation

Cable glands

Connection diagram

1-phase | 120 V

1-phase | 230/240 V

3-phase | 230/240 V

3-phase | 400 V

3-phase | 480 V

3-phase | 600 V

EMC filter motor cable

Brake resistor

Control terminals

Relay output

PTC input

Networks

Functional safety

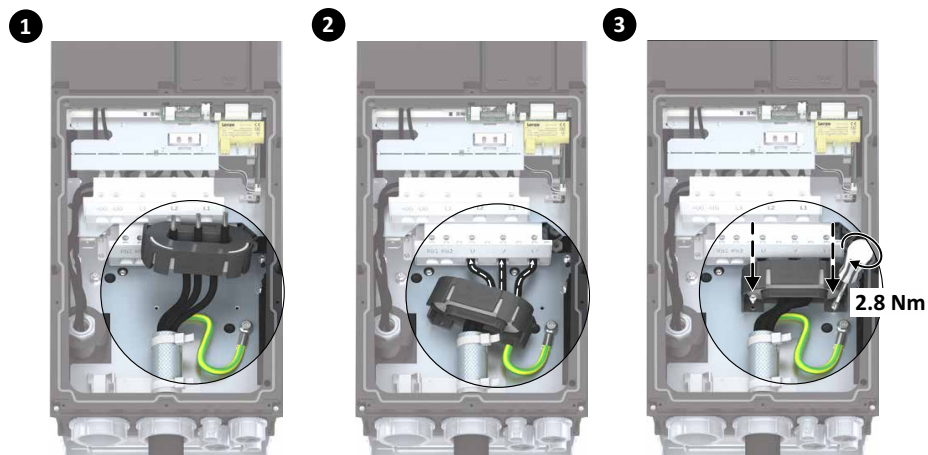
Safe torque off (STO)

EMC filter for motor cable

EMC filters are used to ensure compliance with the EMC requirements in accordance with the EN IEC 61800-3 standard.

For inverters ≥ 30 kW: If category C2 is to be complied with, an EMC filter is required for the motor cable and the motor cable length must not exceed 15 m. In addition, the parameter "Switching frequency" (0x2939) must be left at the default setting.

The EMC filter for the motor cable (ferrite core) is mounted in the terminal box of the device:



Electrical installation

| | | | | | | | | | |
|-----------------------|-------------------|--------------------|-----------------|---------------------|---------------------|-----------------------|-----------------|-----------------|------------------------|
| Preparation | Cable glands | Connection diagram | 1-phase 120 V | 1-phase 230/240 V | 3-phase 230/240 V | 3-phase 400 V | 3-phase 480 V | 3-phase 600 V | EMC filter motor cable |
| Brake resistor | Control terminals | Relay output | PTC input | Networks | Functional safety | Safe torque off (STO) | | | |

Brake resistor connection

NOTICE

Overload

Possible consequences: Irreversible damage to the brake resistor

- Protect the brake resistor of the inverter against overload with suitable parameterization.
- The thermostat of the brake resistor can be used to establish a safety shutdown to disconnect the inverter from the mains.

Recommendation: Use intrinsically safe brake resistors to be able to dispense with a separate switch-off device (e.g. a contactor).

| | Short connection cables up to 0.5 m | Long connection cables up to max. 5 m |
|---|--|---|
| | <p>Up to a cable length of 0.5 m, the cable for the brake resistor and that of the temperature monitoring can be twisted. This procedure reduces problems caused by EMC interference.</p> | <p>The cable of the brake resistor must be shielded. The maximum length is 5 m. For the temperature monitoring cable, twisting is sufficient.</p> |
| 1 | Wiring to the "brake resistor" connection on the inverter or another component with brake chopper. | |
| 2 | Optional: Wiring to a control contact that is set to monitor the thermal contact. If the thermal contact responds, the voltage supply to the inverter must be disconnected (e.g. switch off the control of the mains contactor). | |

Electrical installation

- Preparation
- Cable glands
- Connection diagram
- 1-phase | 120 V
- 1-phase | 230/240 V
- 3-phase | 230/240 V
- 3-phase | 400 V
- 3-phase | 480 V
- 3-phase | 600 V
- EMC filter motor cable
- Brake resistor
- Control terminals
- Relay output
- PTC input
- Networks
- Functional safety
- Safe torque off (STO)

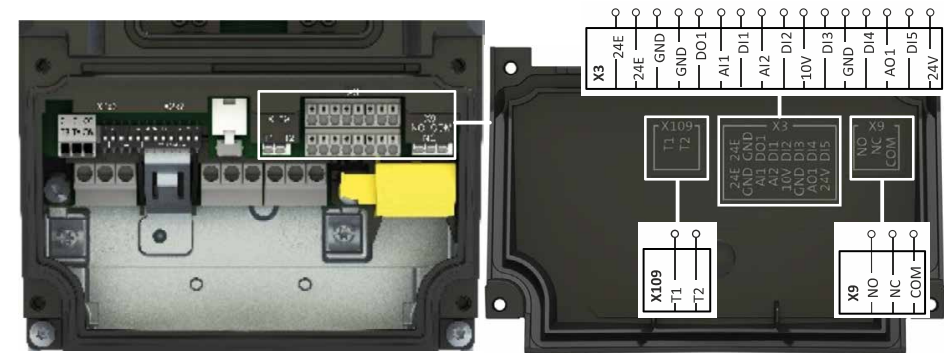
Control terminals X3

| | | |
|---------------------------------|---------------------------------|--|
| Connection type | | Spring terminal, not pluggable |
| Max. cable cross-section | mm ² | 1.5 |
| Stripping length | mm | 9 |
| Required tool | | ⊖ 0.4 x 2.5 |
| Application | D11 D12 D13 D14 D15 | Digital inputs D13/D14 can optionally be used as frequency input or encoder input. HIGH active/LOW active switchable LOW = 0 ... +3 V HIGH = +12 V ... +30 V |
| | DO1 | Digital output Max. 100 mA for DO1 and 24 V output |
| | A11 A12 | Analog inputs Can optionally be used as voltage input or current input. |
| | AO1 | Analog output Can be optionally used as voltage output or current output. |
| | 24E | 24-V input For mains-independent power DC supply of control electronics (including communication). Max. 1 A |
| | 10V 24V | 10 V output Primarily for the supply of a potentiometer (1 ... 10 kΩ). Max. 10 mA 24 V output Primarily for the supply of digital inputs. Max. 100 mA for DO1 and 24 V output |

NOTICE

For voltage supply with DC 24 V (± 20 %), use only a safely separated power supply unit in accordance with prevailing SELV/PELV requirements.

The terminal designations can be found on the inside of the cover.



Electrical installation

Preparation Cable glands Connection diagram 1-phase | 120 V 1-phase | 230/240 V 3-phase | 230/240 V 3-phase | 400 V 3-phase | 480 V 3-phase | 600 V EMC filter motor cable

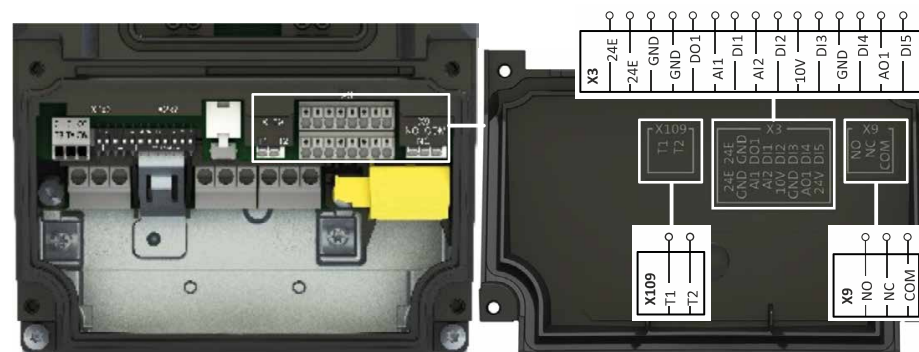
Brake resistor Control terminals **Relay output** PTC input Networks Functional safety Safe torque off (STO)

Relay output X9

The relay is not suitable for direct switching of an electromechanical holding brake. Use a corresponding suppressor circuit in case of an inductive or capacitive load.

| | | |
|---|-----------------|--------------------------------|
| Connection type | | Spring terminal, not pluggable |
| Max. cable cross-section | mm ² | 1.5 |
| Stripping length | mm | 9 |
| Required tool | | ⊖ 0.4 x 2.5 |
| Application | NO | Normally-open contact |
| | NC | Normally-closed contact |
| | COM | Center contact |
| Max. switching voltage/switching current | | AC 240 V/3 A |
| | | DC 24 V/2 A |
| | | DC 240 V/0.16 A |

The terminal designations can be found on the inside of the cover.



Electrical installation

- Preparation
- Cable glands
- Connection diagram
- 1-phase | 120 V
- 1-phase | 230/240 V
- 3-phase | 230/240 V
- 3-phase | 400 V
- 3-phase | 480 V
- 3-phase | 600 V
- EMC filter motor cable
- Brake resistor
- Control terminals
- Relay output
- PTC input
- Networks
- Functional safety
- Safe torque off (STO)

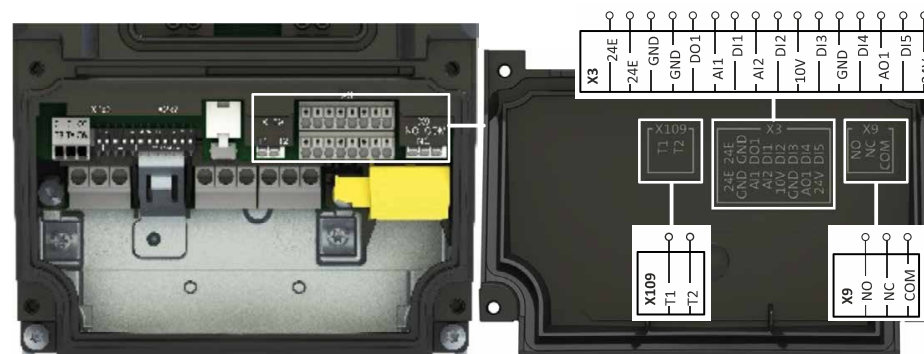
PTC input X109 *

In the default setting, the motor temperature monitoring is active! By default, a wire jumper is installed between the terminals T1 and T2. Before connecting a thermal sensor, remove the wire jumper.

| | | |
|---------------------------------|-----------------|--|
| Connection type | | Spring terminal, not pluggable |
| Max. cable cross-section | mm ² | 1.5 |
| Stripping length | mm | 9 |
| Required tool | | ⊖ 0.4 x 2.5 |
| Application | T1 T2 | Connection of PTC or thermal contact |
| Sensor types | | PTC single sensor (DIN 44081) PTC triplet sensor (DIN 44082) Thermal contact |

* Devices for a rated mains voltage of 600 V do not have a PTC input.

The terminal designations can be found on the inside of the cover.



Electrical installation

- Preparation
- Cable glands
- Connection diagram
- 1-phase | 120 V
- 1-phase | 230/240 V
- 3-phase | 230/240 V
- 3-phase | 400 V
- 3-phase | 480 V
- 3-phase | 600 V
- EMC filter motor cable
- Brake resistor
- Control terminals
- Relay output
- PTC input
- Networks
- Functional safety
- Safe torque off (STO)

Networks

| Network | | CANopen | Modbus RTU | IO-Link | EtherCAT | EtherNet/IP | Modbus TCP | PROFINET |
|--------------------------|-----------------|--------------------------------|------------|---------|--------------|--------------|--------------|--------------|
| Connection | | X216 | | X316 | X246 X247 | X266 X267 | X276 X277 | X256 X257 |
| Connection type | | Spring terminal, not pluggable | | | RJ45 | RJ45 | RJ45 | RJ45 |
| Max. cable cross-section | mm ² | 1.5 | | | - | - | - | - |
| Stripping length | mm | 9 | | | - | - | - | - |
| Required tool | | ⊖ 0.4 x 2.5 | | | - | - | - | - |

CANopen / Modbus RTU

The network must be terminated with a resistor at the first and last physical node. At these nodes, set the DIP switch "R" to ON.

You can use the other DIP switches to set the node address and baud rate. When these DIP switches are all in the OFF position: Node address = setting in P510.01, baud rate = setting in P510.02. For Modbus RTU, the baud rate and parity are detected automatically in OFF position.

EtherCAT

You can set the EtherCAT identifier for "Explicit Device Identification" using the rotary encoder switches. When both are in position 0: Identifier = setting in P510.04.

Ethernet/IP / Modbus TCP

You can set the last byte of the IP address using the rotary encoder switches: 192.168.124.<switch position>. When both are in position 0: IP address = setting in P510.01.

PROFINET

The rotary encoder switches have no function.

Electrical installation

| | | | | | | | | | |
|----------------|-------------------|--------------------|-----------------|---------------------|--------------------------|-----------------------|-----------------|-----------------|------------------------|
| Preparation | Cable glands | Connection diagram | 1-phase 120 V | 1-phase 230/240 V | 3-phase 230/240 V | 3-phase 400 V | 3-phase 480 V | 3-phase 600 V | EMC filter motor cable |
| Brake resistor | Control terminals | Relay output | PTC input | Networks | Functional safety | Safe torque off (STO) | | | |

Functional safety

⚠ DANGER!

Uncontrolled start-up

Improper installation of the safety technology can cause an uncontrolled starting action of the drives.

Possible consequences: Death or severe injuries

- Safety technology may only be installed and commissioned by qualified personnel.
- All wiring must be EMC-compliant.
- All control components (switches, relays, PLC, ...) must comply with the requirements of EN ISO 13849-1 and EN ISO 13849-2.
- Switches, relays with at least IP54 enclosure.
- Devices with a degree of protection less than IP54 must always be installed in a control cabinet with a minimum protection class of IP54.
- The wiring must be shielded.
- It is essential to use insulated wire end ferrules for wiring.
- All safety-relevant cables outside the control cabinet must be protected, e.g. by means of a cable duct.
- Securely eliminate short-circuits and crossed wires according to the specifications of EN ISO 13849-2.
- Please refer to EN ISO 13849-1 and EN ISO 13849-2 for all further requirements and measures.
- In the case of an external force effect on the drive axes, additional brakes are necessary. In particular, please observe the effect of gravitational force on hanging loads!
- For safety-related braking functions, use safety-rated brakes only.
- The user must ensure that the inverter is only operated within the specified environmental conditions in its intended application. Only by doing so can the specified safety-related characteristics be adhered to.

⚠ DANGER!

Automatic restart when the requirement of the safety function is disabled.

Possible consequences: Death or severe injuries

- You must implement external measures in accordance with EN ISO 13849-1 to ensure that the drive only starts up again after an acknowledgement.

NOTICE

Overvoltage

Possible consequences: Destruction of the safety component

- Make sure that the maximum voltage (maximum rated) at the safe inputs does not exceed 32 V DC.

NOTICE

Excessive humidity or condensation

Possible consequences: Malfunction or irreparable damage to safety component

- Only commission the safety component when it has acclimatized.

Electrical installation

- Preparation
- Cable glands
- Connection diagram
- 1-phase | 120 V
- 1-phase | 230/240 V
- 3-phase | 230/240 V
- 3-phase | 400 V
- 3-phase | 480 V
- 3-phase | 600 V
- EMC filter motor cable
- Brake resistor
- Control terminals
- Relay output
- PTC input
- Networks
- Functional safety
- Safe torque off (STO)

Safe torque off (STO)

⚠ DANGER!

No "Emergency switching off" in accordance with EN 60204-1

When using the "Safe torque off (STO)" function, additional measures are required for an "Emergency switching off" in accordance with EN 60204-1. There is no electrical isolation between the motor and inverter, no service switch or disconnect switch!

Possible consequences: Death or severe injuries

– An "Emergency off" requires an electrical isolation, e.g. by a central mains contactor.

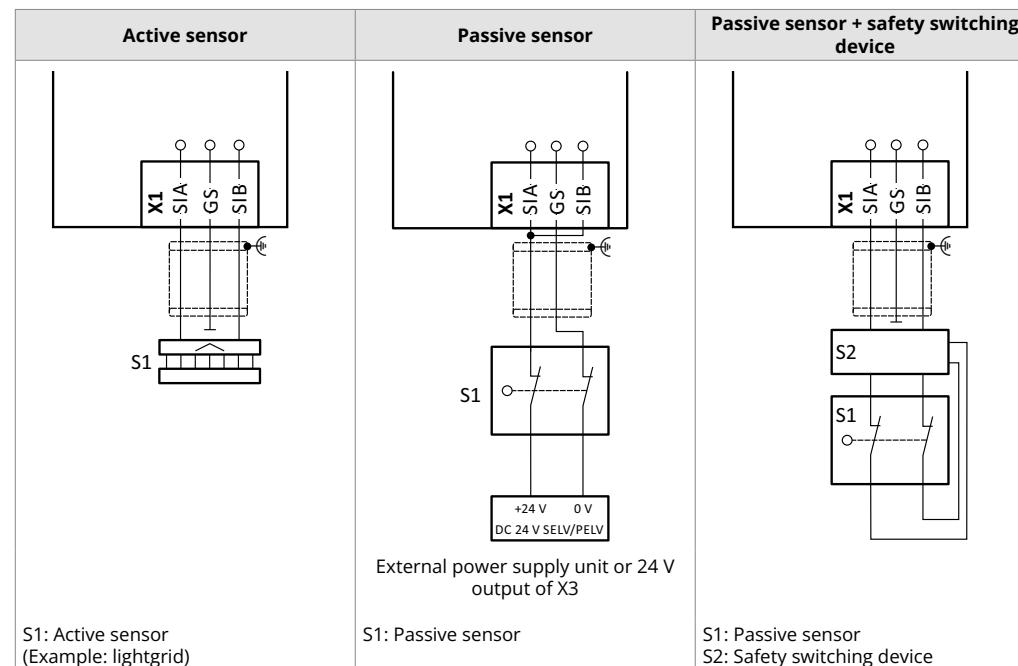
Control terminals X1

| | | |
|---------------------------------|-----------------|---|
| Connection type | | Spring terminal, pluggable |
| Max. cable cross-section | mm ² | 1.5 |
| Stripping length | mm | 9 |
| Required tool | | ⊖ 0.4 x 2.5 |
| Application | SIA | Inputs for connecting active or passive sensors |
| | SIB | |
| | GS | Reference potential for SIA and SIB |

| Specifications for SIA, SIB | | minimum | typical | maximum |
|-----------------------------|----|---------|---------|---------|
| LOW signal | V | -3 | 0 | +5 |
| HIGH signal | V | +15 | +24 | +30 |
| Runtime | ms | | 3 | |
| Switch-off time | ms | | 50 | 60 |
| Input current SIA | mA | | 10 | 14 |
| Input current SIB | mA | | 7 | 12 |
| Input peak current | mA | | 100 | |
| Test pulse duration | ms | | | 1 |
| Test pulse interval | ms | 10 | | |

Connection of active and passive sensors

The connection diagrams shown are only example circuits. The user is responsible for the correct safety-related design and selection of the components!



Safety-related characteristic values and further example circuits can be found in the project planning document.

Commissioning

Initial switch-on

Important notes

Keypad module

Keypad control

Terminal control

Extended
terminal control

Parameter overview

Favorites

Basic setting

Motor control

Additional functions

Initial switch-on

 **DANGER!****Unexpected states during commissioning**

Incorrect wiring can cause unexpected states during the commissioning phase.

Possible consequences: Death, severe injuries, or damage to property

- Wiring must be complete and correct.
- Wiring must be free of short circuits and earth faults.
- The motor circuit configuration (star/delta) must be adapted to the inverter.
- The motor must be connected in-phase (rotating direction).
- Check the "emergency switching off" function of the overall system.
- Clear hazardous area.
- Observe safety instructions and safety clearances.

Preconditions:

- The power connections must be wired.
- The digital inputs X3/DI1 (start/stop), X3/DI3 (reversal) and X3/DI4 (frequency preset 20 Hz) must be wired.
- The analog input X3/AI1 must not be wired or connected to GND.

1. Switch on mains voltage.
2. Check readiness for operation.
3. Observe LED status displays "RDY" and "ERR" on the inverter front panel.

Commissioning

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Important notes

⚠ DANGER!

Unexpected and dangerous motor movements and system movements

Incorrect settings during commissioning may cause unexpected and dangerous motor and system movements.

Possible consequences: Death, severe injuries, or damage to property

- Clear hazardous area.
- Observe safety instructions and safety clearances.

Instead of the keypad module, the inverter is also available with the following accessories from the factory:

- WLAN module
- without module

Keypad module

Commissioning with the keypad module is described on the following pages.

WLAN module

A connection to the WLAN module is established upon entering the connection data.

Default setting:

- IP address: 192.168.178.1
- SSID: "Product type"_"10-digit identification"
- WLAN password: password

Micro USB port

The inverter has a built-in micro USB port.

- The micro USB port may only be used temporarily for the diagnostics and parameterization of the inverter. We recommend keeping the inverter and diagnostics device on the same ground potential or disconnecting the diagnostics device from the mains.

Engineering Tool »EASY Starter«

Commissioning and diagnostics can be carried out with the »EASY Starter« engineering tool. For communication, a standard USB cable (A plug to micro B plug) is required.

SMART Keypad App

The Lenze SMART Keypad App for Android or iOS allows you to diagnose and parameterize an inverter. A WLAN module on the inverter is required for communication.

- Ideal for the parameterization of simple applications such as a conveyor belt.
- Ideal for the diagnostics of the inverter.

The app can be found in the Google Play Store or in the Apple App Store.



Android



iOS

Commissioning

Initial switch-on

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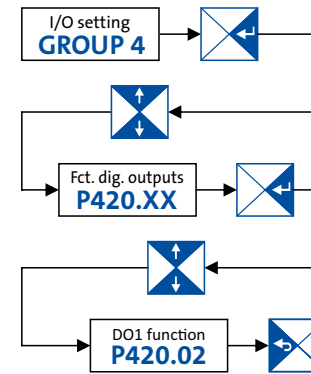
Keypad module – Functions of the keys

| Key | Actuation | Action |
|--|-----------------------|---|
|  Up arrow key  Down arrow key | press briefly | · Navigation in the menu · Parameter alteration |
|  | press briefly | Go to Menu/Parameter · Confirm parameter |
| | press and hold for 3s | Save parameter ("P.SAVED" appears on screen when parameter is saved.) |
|  | press briefly | Quit Menu/Parameters |
|  | press briefly | Activate keypad control |
|  | press briefly | Start motor |
|  | press briefly | Reverse rotating direction |
|  | press briefly | Stop motor |

- The motor must be at standstill before parameters can be changed or confirmed.
- The settings are saved temporarily until the motor is switched off again. Press and hold the enter key for 3 s to save the settings permanently.

Example of the keypad handling

Function assignment for digital output DO1 with parameter P420.02:



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**Keypad control**

Activate temporary keypad control:

1. Press the CTRL key to activate the keypad control.
2. Press the enter key to confirm the change.

Deactivate temporary keypad control:

1. Press the CTRL key to deactivate the keypad control.
2. Press the enter key to confirm the change.

Activate permanent keypad control:

If the keypad does not have a CTRL key, the motor control is activated via the following parameters:

- Set P200.00 to 1.
- Set P201.01 to 1.
- Set P400.01 to 1.
- Set P400.02 to 1.

Start/control/stop motor with keypad:

1. Press the start key to start the motor.
 - The keypad shows the motor speed.
2. Change the frequency setpoint using the up arrow key or the down arrow key.
3. Press the stop key to stop the motor.

Reverse rotating direction:

1. Press the R/F key.
2. Press the enter key to confirm the reversal of rotating direction.

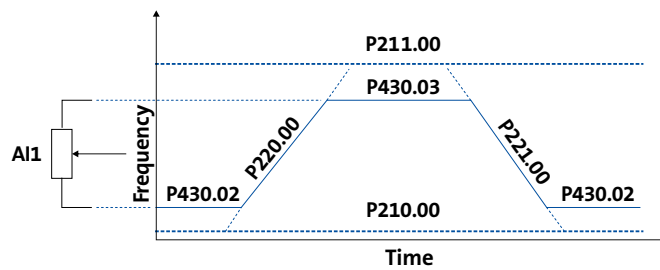
Commissioning

- Initial switch-on
 - Important notes
 - Keypad module
 - Keypad control
 - Terminal control
 - Extended terminal control
 - Parameter overview
 - Favorites
 - Basic setting
 - Motor control
- Additional functions

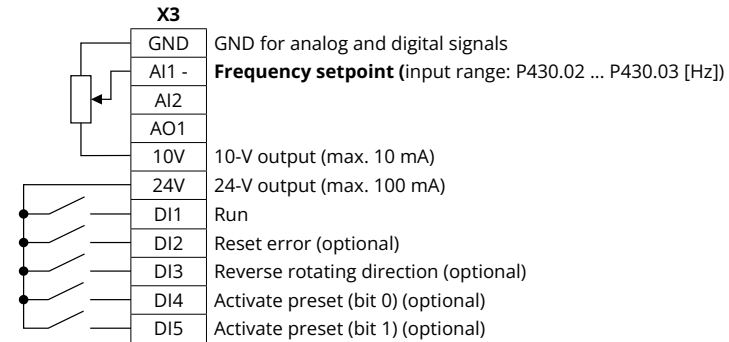
Quick commissioning – terminal control

The following quick overview with graphical parameter representation is sufficient for commissioning many applications with terminal control. Further setting options are described in this document or in the commissioning document.

1. Load default setting: Set P700.01 to 1.
2. Set the following parameters for V/f characteristic control:
 - P208.01: Mains voltage
 - P303.01: V/f characteristic data: Base voltage
 - P303.02: V/f characteristic data: Base frequency
 - P210.00: Minimum frequency
 - P211.00: Maximum frequency
 - P220.00: Acceleration time 1
 - P221.00: Deceleration time 1
 - P430.02: Analog input 1: Min frequency value
 - P430.03: Analog input 1: Max. frequency value



3. Save settings: Press and hold the enter key for 3 s.
4. With the wiring shown on the right, the inverter can be operated using the control terminals.



Preset 1 is activated if DI4 is connected.

Preset 2 is activated if DI5 is connected.

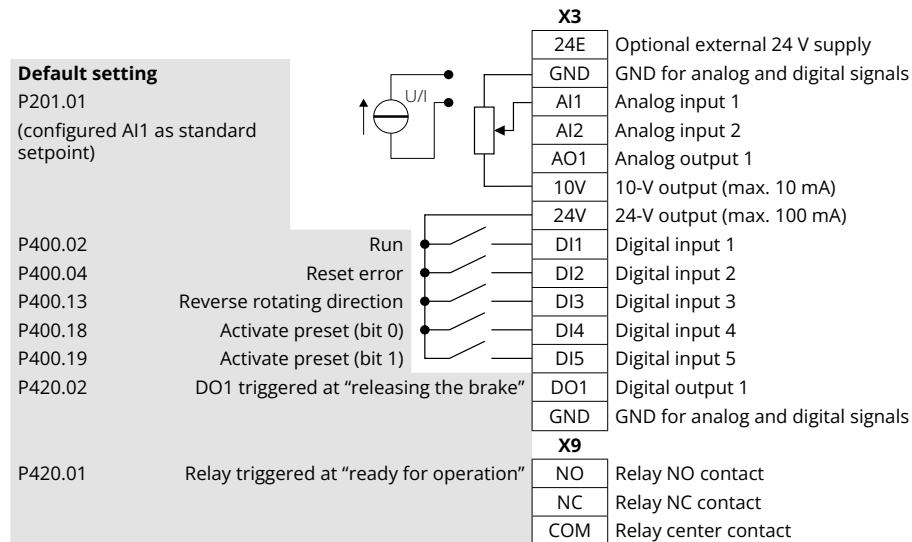
Preset 3 is activated if DI4 and DI5 are connected at the same time.

Commissioning

- Initial switch-on
 - Important notes
 - Keypad module
 - Keypad control
 - Terminal control
 - Extended terminal control
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 - Basic setting
 - Motor control
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Extended terminal control

The following illustration shows a more extensive wiring of the control terminals linked with the respective parameters.



Setpoint selection and configuration:

| DI5 | DI4 | Setpoint | Configuration | Default setting | |
|-----|-----|----------------|---------------|-----------------|--------------------|
| 0 | 0 | Analog input 1 | P430.01 | AI1 input area | 0 ... 10 VDC |
| | | | P430.02 | AI1 freq @ min | 0.0 Hz |
| | | | P430.03 | AI1 freq @ max | 50.0 Hz / 60.0 Hz* |
| 0 | 1 | Preset value 1 | P450.01 | Freq. preset 1 | 20.0 Hz |
| 1 | 0 | Preset value 2 | P450.02 | Freq. preset 2 | 40.0 Hz |
| 1 | 1 | Preset value 3 | P450.03 | Freq. preset 3 | 50.0 Hz / 60.0 Hz* |

* Depending on whether device is for 50-Hz mains or 60-Hz mains

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**The most important parameters at a glance**

This chapter contains the most important parameters and selections.

You can find a detailed description in the commissioning document:

www.lenze.com/product-information



The parameters are divided into the following function groups:

- Pxxx.xx group 0: Favorites
- P1xx.xx group 1: Diagnostics
- P2xx.xx group 2: Basic setting
- P3xx.xx group 3: Motor control
- P4xx.xx group 4: I/O setting
- P5xx.xx group 5: Network setting
- P6xx.xx group 6: Process controller
- P7xx.xx group 7: Additional functions
- P8xx.xx group 8: Sequencer

**Favorites (group 0)**

Group 0 contains the configurable favorites that are also contained in the groups 1 to 4. In the default setting these are the most common parameters for the solution of typical applications.

Commissioning

- Initial switch-on
- Important notes
- Keypad module
- Keypad control
- Terminal control
- Extended terminal control
- Parameter overview
- Favorites**
- Basic setting
- Motor control

Additional functions

Favorites (group 0)

| Display code | Name | Possible settings/ Value ranges | Keypad code | Information |
|--------------|-------------------|------------------------------------|---------------|---|
| P100.00 | Output frequency | x.x Hz (read only) | | Display of the actual output frequency. |
| P103.00 | Actual current | x.x % (read only) | | Display of the actual motor current. |
| P106.00 | Motor voltage | x VAC (read only) | | Display of the actual motor voltage. |
| P150.00 | Error code | - (Read only) | | Error message. |
| P200.00 | Control selection | Flexible I/O | [0] | This selection enables a flexible assignment of the start, stop, and rotating direction commands with digital signal sources. |
| | | Keypad | [1] | This selection enables the motor to start exclusively via the start key of the keypad. Other signal sources for starting the motor are ignored. |
| P201.01 | F-setp.source | Keypad | [1] | The setpoint is specified locally by the keypad. |
| | | Analog input 1 | [2] | The setpoint is defined as analog signal via the analog input 1. |
| | | Analog input 2 | [3] | The setpoint is defined as analog signal via the analog input 2. |
| | | HTL input | [4] | The digital inputs DI3 and DI4 can be configured as HTL input to use an HTL encoder as setpoint encoder or define the setpoint as a reference frequency ("pulse train"). |
| | | Network | [5] | The setpoint is defined as process data object via the network. |
| P203.01 | Start method | Frequency preset 1 ... 15 | [11] ... [25] | For the setpoint selection, "preset" values can be parameterized and selected. All frequency presets are described in detail in the commissioning manual. |
| | | Standard | [0] | After start command, the standard ramps are active. |
| | | DC braking | [1] | After start command, the "DC braking" function is active for the time set in P704.02. |
| | | Flying restart circuit | [2] | After the start command, the flying restart circuit is active. |
| P203.03 | Stop method | Premagnetization | [3] | After start command, the standard ramps are active and the premagnetization of the motor is activated. This reduces the motor current and smoothes the acceleration curve during the starting process (only relevant in the V/f motor control mode). |
| | | Coasting | [0] | The motor has no torque (coasts down to standstill). |
| | | Standard ramp | [1] | The motor is brought to a standstill with the deceleration time 1 P221.00 (or deceleration time 2 P223.00 if activated). |
| | | Quick stop ramp | [2] | The motor is brought to a standstill with the deceleration time (P225.00) set for the "quick stop" function. |
| | | Switch-off positioning | [3] | Is similar to the stop method "standard ramp [1]". Depending on the actual output frequency, however, the inverter delays the beginning of the down-ramping so that the number of motor revolutions until a standstill is reached and thus the stop position is always relatively constant. |

* Default setting dependent on the size



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Favorites (group 0)

| Display code | Name | Possible settings/ Value ranges | Keypad code | Information |
|--------------|--------------------------|--|-------------|---|
| P208.01 | Mains voltage | 230 Veff | [0] | Selection of the mains voltage for actuating the inverter. |
| | | 400 Veff | [1] | |
| | | 480 Veff | [2] | |
| | | 120 Veff | [3] | |
| | | 480 Veff (600 V devices) | [5] | |
| | | 600 Veff | [6] | |
| P210.00 | Min. frequency | 0.0 ... 599.0 Hz | | Lower limit value for all frequency setpoints. |
| P211.00 | Max. frequency | Device for 50-Hz mains: 50 Hz * Device for 60-Hz mains: 60 Hz * | | Upper limit value for all frequency setpoints. |
| P220.00 | Acceleration 1 | 0.0 ... 5.0 ... 3600.0 s | | Acceleration time 1. |
| P221.00 | Deceleration 1 | 0.0 ... 5.0 ... 3600.0 s | | Deceleration time 1 |
| P300.00 | Motor ctrl mode | Servo control (SC ASM) | [2] | This control mode is used for servo control of an asynchronous motor. |
| | | Sensorless control (SL PSM) | [3] | This control mode is used for sensorless control of a synchronous motor. |
| | | Sensorless vector control (SLVC) | [4] | This control mode is used for sensorless vector control of an asynchronous motor. |
| | | V/f characteristic control VFC open loop | [6] | This control mode is used for the speed control of an asynchronous motor via a V/f characteristic and is the simplest control mode. |
| | | V/f characteristic control (VFC closed loop) | [7] | The control mode is used for speed control of an asynchronous motor via a V/f characteristic with speed feedback. |
| | | Sensorless control (SLSM-PSM) | [8] | This control mode is used for sensorless control of a synchronous motor. This control mode is not available in the version with network IO-Link! |
| P302.00 | V/f characteristic shape | Linear | [0] | Linear characteristic for drives with constant load torque over the speed. |
| | | Square-law | [1] | Square-law characteristic for drives with a square-law load torque over the speed. |
| | | Eco | [3] | Linear characteristic with energy optimization in the partial load operational range. |
| P303.01 | Base voltage | 0 ... 230 ... 5000 V * | | Base voltage and base frequency define the V/f ratio and thus the gradient of the V/f characteristic. |
| P303.02 | Base frequency | Device for 50-Hz mains: 50 Hz * Device for 60-Hz mains: 60 Hz * | | – The V/f base voltage is usually set to the rated motor voltage. – The V/f base frequency is usually set to the rated motor frequency. |
| P304.00 | Limitation of rotation | Only clockwise (CW) | [0] | The motor can only rotate clockwise (CW). The transfer of negative frequency and PID setpoints to the motor control is prevented. |
| | | Both rotating directions | [1] | Both directions of motor rotation are enabled. |
| P305.00 | Switching frequency | 8 kHz var/opt/4 * | | Selection of the inverter switching frequency. |

* Default setting dependent on the size

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Favorites (group 0)

| Display code | Name | Possible settings/ Value ranges | Keypad code | Information |
|--------------|--------------------|------------------------------------|-------------|---|
| P306.01 | Overload selection | Heavy duty | [0] | Load characteristic for high dynamic requirements. |
| | | Light Duty | [1] | Load characteristic for low dynamic requirements. |
| P308.01 | Max. load for 60s | 30 ... 150 ... 200 % | | Maximum permissible thermal motor utilization (max. permissible motor current for 60 seconds). With regard to rated motor current (P323.00). |
| P316.01 | Fixed V/f boost | 0.0 ... 2.5 ... 20.0 % * | | Constant voltage boost for the V/f characteristic control without feedback. |
| P323.00 | Rated. mot curr. | 0.001 ... 1.700 ... 500.000 A * | | Setting of the rated motor current according to motor nameplate. |
| P324.00 | Max. current | 0.0 ... 200.0 ... 3000.0 % | | Maximum overload current of the inverter. With regard to rated motor current (P323.00). |
| P400.01 | Inverter enable | TRUE | [1] | Assignment of a trigger to the "inverter enable" function. Trigger = TRUE: The inverter is enabled (unless there is another cause for inverter disable). Trigger = FALSE: The inverter is disabled. The motor has no torque and coasts. |
| P400.02 | Run | Digital input 1 | [11] | Assignment of a trigger to the "Run" function. Function 1: Start / stop motor (default setting) Function 1 is active if no further start commands (start forward/start reverse) have been connected to triggers, no keypad control is active and no network control is active. Trigger = TRUE: Let motor rotate forward (CW). Trigger = FALSE: Stop motor according to stop function (P203.03). |
| | | | | Function 2: Start enable/stop motor Function 2 is active if further start commands have been connected to triggers, the keypad control is active or the network control is active. Trigger = TRUE: Start commands of the active control source are enabled. Trigger = FALSE: Stop motor. |
| P400.03 | Quick stop | Not connected | [0] | Assignment of a trigger to the "Activate quick stop" function. Trigger = TRUE: Activate quick stop. Quick stop ramp adjustable in P225.00. Trigger = FALSE: Deactivate quick stop |
| P400.04 | Error reset | Digital input 2 | [12] | Assignment of a trigger to the "Reset error" function. Trigger = FALSE > TRUE (edge): Active error is reset (acknowledged) if the error condition is not active anymore and the error is resettable. Trigger = FALSE: No action. |
| P400.05 | DC braking | Not connected | [0] | Assignment of a trigger to the "Activate DC braking" function. Trigger = TRUE: Activate DC braking. Trigger = FALSE: Deactivate DC braking. |
| P400.06 | Start forward | Not connected | [0] | Assignment of a trigger to the "Start forward (CW)" function. Trigger = FALSE > TRUE (edge): Let motor rotate forward. Trigger = TRUE > FALSE (edge): No action. Stop via P400.02 (default setting of digital input 1). |

* Default setting dependent on the size



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| Display code | Name | Possible settings/ Value ranges | Keypad code | Information |
|--------------|-------------------|------------------------------------|-------------|---|
| P400.07 | Start reverse | Not connected | [0] | Assignment of a trigger to the "Start reverse (CCW)" function. Trigger = FALSE > TRUE (edge): Let motor rotate backward. Trigger = TRUE > FALSE (edge): No action. Stop via P400.02 (default setting of digital input 1). |
| P400.08 | Run forward | Not connected | [0] | Assignment of a trigger to the "Run forward (CW)" function. Trigger = TRUE: Let motor rotate forward. Trigger = FALSE: Stop motor. |
| P400.09 | Run reverse | Not connected | [0] | Assignment of a trigger to the "Run reverse (CCW)" function. Trigger = TRUE: Let motor rotate backward. Trigger = FALSE: Stop motor. |
| P400.13 | Reverse rot. dir. | Digital input 3 | [13] | Assignment of a trigger to the "Reverse rotating direction" function. Trigger = TRUE: The setpoint specified is inverted (i.e. the sign is inverted). Trigger = FALSE: No action/deactivate function again. |
| P400.18 | Setp: Preset B0 | Digital input 4 | [14] | Assignment of a trigger to the "Activate preset (bit 0)" function. Bit with the valency 2 ⁰ for the bit-coded selection and activation of a parameterized setpoint (preset value). Trigger = FALSE: Bit = "0". Trigger = TRUE: Bit = "1". |
| P400.19 | Setp: Preset B1 | Digital input 5 | [15] | Assignment of a trigger to the "Activate preset (bit 1)" function. Bit with the valency 2 ¹ for the bit-coded selection and activation of a parameterized setpoint (preset value). Trigger = FALSE: Bit = "0". Trigger = TRUE: Bit = "1". |
| P400.20 | Setp: Preset B2 | Not connected | [0] | Assignment of a trigger to the "Activate preset (bit 2)" function. Bit with the valency 2 ² for the bit-coded selection and activation of a parameterized setpoint (preset value). Trigger = FALSE: Bit = "0". Trigger = TRUE: Bit = "1". |
| P420.01 | Relay function | Running | [50] | TRUE if inverter and start are enabled and output frequency > 0.2 Hz. Otherwise FALSE. |
| | | Ready for operation | [51] | TRUE if inverter is ready for operation (no error active, no STO active and DC-bus voltage ok). Otherwise FALSE. |
| | | Operation enabled | [52] | TRUE if inverter and start are enabled. Otherwise FALSE. |
| | | Stop active | [53] | TRUE if inverter is enabled and motor is not started and output frequency = 0. |
| | | Error active | [56] | TRUE if error is active. Otherwise FALSE. |
| | | Device warning active | [58] | TRUE if warning is active. Otherwise FALSE. |
| P420.02 | DO1 function | Release brake | [115] | Assignment of a trigger to digital output 1. Trigger = FALSE: X3/DO1 set to LOW level. Trigger = TRUE: X3/DO1 set to HIGH level. |

* Default setting dependent on the size

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| Display code | Name | Possible settings/ Value ranges | Keypad code | Information |
|--------------|-----------------|---|-------------|---|
| P430.01 | AI1 input area | 0 ... 10 VDC | [0] | Definition of the input range for analog input AI1. |
| | | 0 ... 5 VDC | [1] | |
| | | 2 ... 10 VDC | [2] | |
| | | -10 ... +10 VDC | [3] | |
| | | 4 ... 20 mA | [4] | |
| | | 0 ... 20 mA | [5] | |
| P430.02 | AI1 freq @ min | -1000.0 ... 0.0 ... 1000.0 Hz | | Scaling of the input signal AI1 to the frequency value. – Direction of rotation according to sign. |
| P430.03 | AI1 freq @ max | -1000.0 ... 50.0 60.0 ... 1000.0 Hz * | | – The standard setpoint source for operating mode “MS: Velocity mode” is selected in P201.01. |
| P440.01 | AO1 output area | Disabled | [0] | Definition of the output range for analog output AO1. |
| | | 0 ... 10 VDC | [1] | |
| | | 0 ... 5 VDC | [2] | |
| | | 2 ... 10 VDC | [3] | |
| | | 4 ... 20 mA | [4] | |
| | | 0 ... 20 mA | [5] | |
| P440.02 | AO1 function | Output frequency | [1] | Current output frequency (resolution: 0.1 Hz). |
| | | Frequency setpoint | [2] | Current frequency setpoint (resolution: 0.1 Hz). |
| | | Analog input 1 | [3] | Input signal of analog input 1 (resolution: 0.1 %). |
| P440.03 | AO1 min. signal | -2147483648 ... 0 ... 2147483647 | | Definition of the signal value that corresponds to the minimum value at analog output 1. |
| P440.04 | AO1 max. signal | -2147483648 ... 1000 ... 2147483647 | | Definition of the signal value that corresponds to the maximum value at analog output 1. |
| P450.01 | Freq. preset 1 | 0.0 ... 20.0 ... 599.0 Hz | | Parameterizable frequency setpoints (preset 1). |
| P450.02 | Freq. preset 2 | 0.0 ... 40.0 ... 599.0 Hz | | Parameterizable frequency setpoints (preset 2). |
| P450.03 | Freq. preset 3 | 0.0 ... 50.0 60.0 ... 599.0 Hz * | | Parameterizable frequency setpoints (preset 3). |
| P450.04 | Freq. preset 4 | 0.0 ... 0.0 ... 599.0 Hz | | Parameterizable frequency setpoints (preset 4). |

* Default setting dependent on the size

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| Display code | Name | Possible settings | Keypad code | Information |
|--------------|--------------|-------------------|-------------|---|
| P225.00 | QSP del.time | 1.0 s | | "Quick stop deceleration time for "MS: Velocity mode" – If the "Quick stop" function is activated, the motor is brought to a standstill within the deceleration time set here. – The braking deceleration time set refers to the deceleration from the maximum frequency set (P211.00) to standstill. In the case of a lower actual frequency, the actual deceleration time is reduced accordingly. – Setting is not effective in the operating mode P301.00 = "CiA: Velocity mode [2]". |

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Motor control (group 3)

| Display code | Name | Possible settings | Keypad code | Information |
|--------------|-----------------|--|-------------|--|
| P320.04 | Rated torque | 50 ... 50000 rpm | | General motor data. Carry out settings as specified by motor nameplate data. Notice! When you enter the motor nameplate data, take into account the phase connection implemented for the motor (star or delta connection). Only enter the data applying to the connection type selected. |
| P320.05 | Rated frequency | 1.0 ... 10000.0 Hz | | |
| P320.06 | Rated power | 0.00 ... 655.35 kW 0.00 ... 878.84 hp | | |
| P320.07 | Rated voltage | 0 ... 65535 V | | |
| P320.08 | Cos phi | 0.00 ... 1.00 | | |
| P327.04 | Mot. identif. | 0 ... 1 | | |
| P327.05 | Mot. calibrate | 0 ... 1 | | |
| | | | | |

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Additional functions (group 7)

| Display code | Name | Possible settings | Keypad code | Information |
|--------------|-----------------------|-------------------|-------------|--|
| P700.01 | Load default settings | On / start | [1] | 1 = reset all parameters in the RAM memory of the inverter to the default setting stored in the inverter firmware. – All parameter changes made by the user are lost during this process! – This process may take some seconds. When the device command has been executed successfully, the value 0 is shown. – Loading parameters has a direct effect on cyclic communication: The data exchange for control is interrupted and a communication error is generated. |
| | | Off/ready | [0] | Only status feedback |
| P700.03 | Save user data | On / start | [1] | 1 = save current parameter settings in the user memory of the memory module with mains failure protection. – This process may take some seconds. When the device command has been executed successfully, the value 0 is shown. – Do not switch off the supply voltage during the saving process and do not unplug the memory module from the inverter! – When the inverter is switched on, all parameters are automatically loaded from the user memory of the memory module to the RAM memory of the inverter. |
| | | Off/ready | [0] | Only status feedback |

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Error message

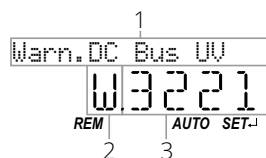
Error codes

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If an error is pending, the keypad shows the following information.



1 = Error text

2 = Error type (F = fault, T = trouble, W = warning)

3 = Error code (hexadecimal)

- Faults (F) and trouble (T) are displayed continuously. The inverter is disabled.
- Warnings (W) are displayed every 2 seconds for a short time. The inverter is probably disabled.

Reset error via keypad

Errors can be reset via the stop key.

- Prerequisite: Cause of error has been eliminated and no blocking time is active.
- Press the stop key to reset the error. The motor is stopped.
- Press the start key to cancel the stop.

Reset error via terminal control

When terminal control is used, errors can be reset in two ways:

1. Via start signal P400.02 (default setting of digital input 1).
 - Prerequisite: Cause of error has been eliminated and no blocking time is active.
 - The signal at the digital input 1 must drop and then be applied again.
2. Via error reset signal (P400.04, default setting of digital input 2).
 - Prerequisite: Cause of error has been eliminated and no blocking time is active.
 - The error is reset if a signal is applied to digital input 2.

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| Error code | Description | Classification | Remedy | Blocking time [s] |
|------------|---|----------------|---|-------------------|
| 2250 | CiA: Continuous overcurrent (inside the device) | Error | <ul style="list-style-type: none"> – Check motor and wiring for short circuits. – Check brake resistor and wiring. – Check motor circuit (delta connection, star connection). – Check setting of the motor data. | 5 |
| 2320 | Short circuit or earth leakage on motor side | Error | <ul style="list-style-type: none"> – Check motor cable. – Check the length of the motor cable. – Use shorter or lower-capacitance motor cable. | 5 |
| 2340 | CiA: Short circuit (inside the device) | Error | <ul style="list-style-type: none"> – Check motor cable for short circuit. | 5 |
| 2350 | CiA: $i^2 \cdot t$ overload (thermal state) | Error | <ul style="list-style-type: none"> – Check drive sizing. – Check machine/driven mechanics for excessive load. – Check setting of the motor data. – Reduce values for slip compensation (P315.01, P315.02) and oscillation damping (P318.01, P318.02). | 5 |
| 2382 | Error: Device utilization (Ixt) too high | Error | <ul style="list-style-type: none"> – Check drive sizing. – Reduce maximum overload current of the inverter (P324.00). – In case of high mass inertias, reduce maximum overload current of the inverter (P324.00) to 150 %. | 3 |
| 2383 | Warning: Device utilization (Ixt) too high | Warning | <ul style="list-style-type: none"> – Check drive sizing. | 0 |
| 3120 | Mains phase fault | Error | <ul style="list-style-type: none"> – Check mains connection wiring. – Check fuses. | 0 |
| 3210 | DC-bus overvoltage | Error | <ul style="list-style-type: none"> – Reduce dynamic performance of the load profile. – Check mains voltage. | 0 |
| 3211 | Warning: DC-bus overvoltage | Warning | <ul style="list-style-type: none"> – Check settings for the brake energy management. – Connect brake resistor to the power unit and activate the integrated brake chopper. (P706.01 = 0: brake resistance) | 0 |
| 3220 | DC bus undervoltage | Trouble | <ul style="list-style-type: none"> – Check mains voltage. – Check fuses. | 0 |
| 3221 | Warning: DC bus undervoltage | Warning | <ul style="list-style-type: none"> – Check DC-bus voltage (P105.00). – Check mains settings. | 0 |
| 3222 | DC-bus voltage too low for switch-on | Warning | <ul style="list-style-type: none"> – Check mains voltage. – Check fuses. – Check mains settings. | 0 |
| 4210 | PU: Overtemperature fault | Error | <ul style="list-style-type: none"> – Check mains voltage. – Provide for a sufficient cooling of the device (display of the heatsink temperature in P117.01). – Clean fan and ventilation slots. If required, replace fan. – Reduce switching frequency (P305.00). | 0 |
| 4281 | Heatsink fan warning | Warning | <ul style="list-style-type: none"> – Clean fan and ventilation slots. If required, replace fan. The fans can be unlocked via locking hooks and can then be removed. | 0 |

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| Error code | Description | Classification | Remedy | Blocking time [s] |
|-------------|---|----------------|--|-------------------|
| 4310 | Error: Motor overtemperature | Error | <ul style="list-style-type: none"> – Check drive sizing. – Check motor temperature sensor and wiring (terminals X109/T1 and X109/T2). | 5 |
| 5112 | 24 V supply critical | Warning | <ul style="list-style-type: none"> – Check optional external 24 V voltage supply (terminal X3/24E), if connected. – Check mains voltage. | 0 |
| 5180 | 24 V supply overload | Warning | <ul style="list-style-type: none"> – Check 24 V output and digital outputs for earth fault or overload. | 0 |
| 6280 | Trigger/functions connected incorrectly | Trouble | <ul style="list-style-type: none"> – Check and correct the assignment of the triggers to the functions. – With keypad or network control, the two functions “Inverter enable” (P400.01) and “Run” (P400.02) can also be set to “Constant TRUE [1]” to start the motor. | 0 |
| 7180 | Motor overcurrent | Error | <ul style="list-style-type: none"> – Check motor load. – Check drive sizing. – Adapt the set error threshold (P353.01). | 1 |
| 9080 | Keypad removed | Error | <ul style="list-style-type: none"> – Connect the keypad again or activate another control source. | 0 |
| FF02 | Error: Brake resistor overload | Error | <ul style="list-style-type: none"> – Check drive sizing. – Check settings for the brake energy management. – Notice! The error will be reset if the thermal load falls below the error threshold (P707.09) of - 20 %. | 5 |
| FF06 | Motor overspeed | Error | <ul style="list-style-type: none"> – Adapt the maximum motor speed (P322.00) and the error threshold (P350.01). | 1 |
| FF36 | Warning: Brake resistor overload | Warning | <ul style="list-style-type: none"> – Check drive sizing. – Check settings for the brake energy management. – Notice! The warning will be reset if the thermal load falls below the warning threshold (P707.08) of - 20 %. | 0 |
| FF37 | Automatic start disabled | Error | <ul style="list-style-type: none"> – Deactivate start command and reset error. | 0 |
| FF85 | Keypad full control active | Warning | <ul style="list-style-type: none"> – Press the CTRL key to exit control mode. | 0 |

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Error message













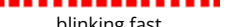


Error codes

Status LEDs

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Status LEDs

Meaning of the status LEDs for the inverter:

| LED "RDY" (blue) | LED "ERR" (red) | State/meaning |
|---|---|--|
| off | off | No supply voltage |
|  |  | Mains voltage is switched on, inverter initialized |
|  | off | Safe torque off (STO) active. The inverter has been disabled by the integrated functional safety. |
| blinking |  | Safe torque off (STO) active, warning present. The inverter has been disabled by the integrated functional safety. |
|  | off | Inverter disabled |
| blinking |  | Inverter disabled, warning active. |
|  |  | Inverter disabled, error active. |
|  |  | Inverter disabled, no DC-bus voltage. |
|  | off | Inverter enabled. The motor rotates according to the specified setpoint or quick stop active. |
|  |  | Inverter enabled, warning active. The motor rotates according to the specified setpoint or quick stop active. |
|  |  | Inverter enabled, quick stop active as response to a fault. |

Meaning of the status LEDs for the different networks:

| Network | Left LED (green) | Right LED (red) |
|-------------|------------------|-----------------|
| CANopen | CAN RUN | CAN-ERR |
| EtherCAT | RUN | ERR |
| EtherNet/IP | NS | MS |
| Modbus RTU | COMM | ERR |
| Modbus TCP | NS | MS |
| PROFINET | BUS-RDY | BUS-ERR |
| IO-Link | RUN | - |

Network status LEDs

Inverter status LEDs



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Support

Further information can be found on the online page

www.lenze.com/product-information



The material number of the product can be found on the nameplate.

Disposal

Disposal



If pollutants are disposed off improperly, they may cause a lasting damage to human health and the environment. Thus, electrical and electronic equipment must be collected separately from unsorted municipal waste so that it may be recycled or disposed of properly. If available, put the components to the company internal disposal from where it is passed on to specialized waste management companies. It is also possible to return the components to the manufacturer. For this purpose, please contact the customer service of the manufacturer. More detailed information on disposal can be obtained from the corresponding specialist firms and the competent authorities. The packaging of the component must be disposed of separately. Paper, cardboard and plastics must be recycled.