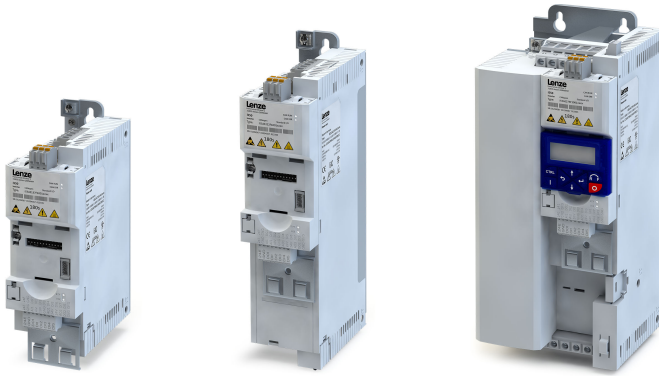




Inverters

Inverter i550 Cabinet 0.25 ... 132 kW

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About this document

Document description
Further documents



About this document

The information in this document represents the following version:

Product	Hardware data version	Date
i550	V0005	2018-02-16

Document description

This document is aimed at all persons who want to project inverters with the described products.

The data and information compiled here serve to support you in dimensioning and selecting and preparing the electrical and mechanical installation. You will receive information on product extensions and accessories.

Further documents

For certain tasks, information is available in further documents.

Document	Contents/topics
Configuration document	Basic information on project planning and ordering the product
Commissioning document	Fundamental information for the installation and commissioning of the product
"Functional safety" configuration document	Basic information on configuring "functional safety" of the product
Quick Reference Card	Brief information about operation and device properties of the product

For certain tasks, information is available in other forms.

Form	Contents/topics
Engineering Tools	For commissioning
AKB articles	Application Knowledge Base mit technischen Zusatzinformationen für Anwender
CAD data	Exports in different formats
EPLAN macros	Project planning, documentation and management of projects for P8. • Data reference via Lenze or EPLAN data portal



Information and tools with regard to the Lenze products can be found on the Internet:
<http://www.lenze.com> → Download



Notations and conventions

This document uses the following conventions to distinguish different types of information:

Numeric notation			
	Decimal separator	Point	The decimal point is always used. Example: 1 234.56
Warning			
	UL warning	UL	Are used in English and French.
	UR warning	UR	
Text			
	Engineering tools	» «	Software Example: »Engineer«, »EASY Starter«
Icons			
	Page reference		Reference to another page with additional information Example:  16 = see page 16
	Documentation reference		Reference to another documentation with additional information Example:  EDKxxx = see documentation EDKxxx

Layout of the safety instructions

DANGER!

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

WARNING!

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

CAUTION!

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

NOTICE

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



Product information

Product description

i500 is the new inverter series - a streamlined design, scalable functionality and exceptional user-friendliness.

The functional safety describes the necessary measures that need to be taken by means of electrical or electronic equipment to prevent or eliminate dangers due to functional errors.

Protective devices prevent any human access to dangerous areas during normal operation. However, persons may have to be in the danger areas in certain operating modes. The machine operator is protected by internal drive and control measures in these operating modes

Integrated safety

The integrated safety technology fulfils the control and drive conditions for implementing the protective functions. The expenses for planning and installation decrease. The machine functionality and availability increases thanks to the use of integrated safety technology. The integrated safety technology is applicable for protecting personnel working with machines in accordance with the Machinery Directive.

The motion functions continue to be executed by the inverter. The integrated safety system monitors the safe compliance with the limit values and provides the safe inputs. If monitored limit values are exceeded, the integrated safety system initiates control functions in the inverter to counteract possible errors according to EN 61800-5-2.

i500 is a high-quality inverter that already conforms to future standard in accordance with the EN 50598-2 efficiency classes (IE). Overall, this provides a reliable and future-proof drive for a wide range of machine applications.

The i550

This chapter provides the complete scope of the inverter i550. This inverter is suitable for a very broad use in inverter-operated drives. Basically, the device has the following features:

- All typical motor control types of modern inverters.
- Cyclic and continuous operation of the motor according to common operating modes.
- Industry-standard networking opportunities.
- High internal functional range.

Highlights

- Compact size
 - Up to 2.2 kW only 60 mm wide
 - Up to 11 kW only 130 mm deep
- Can be directly connected without external cooling
- Innovative interaction options enable better set-up times than ever.
- The wide-ranging modular system enables various product configurations depending on machine requirements.



Application ranges

- Pumps and fans
- Conveying and travelling drives
- Forming, tool and hoist drives

Product information

Identification of the products



Identification of the products

When the technical data of the different versions was listed, the product name was entered because it is easier to read than the individual product code of the product. The product name is also used for categorising the accessories. The assignment of product name and order code can be found in the Order chapter.

The product name contains the power in kW, the mains voltage class 120 V, 230 V or 400 V and the number of phases.

In the product name, the power information always refers to the "Heavy Duty" load characteristic.

The 1/3-phase inverters are marked at the end with "-2".

"C" marks the "Cabinet" version = inverter for the installation into the control cabinet.

In tables, the first 9 digits of the corresponding product code are used to identify the products:

Product code

		I	5	5	A	E	□□□	□	1	□	□	□	□	□□□□
Product type	Inverter	I												
Product family	i500		5											
Product	i550			5										
Product generation	Generation 1				A									
Mounting type	Control cabinet mounting					E								
Rated power [W] (Examples)	0.25 kW						125							
	0.55 kW						155							
	2.2 kW						222							
	3.0 kW						230							
	15 kW						315							
	30 kW						330							
Mains voltage and connection type	1/N/PE AC 120 V							A						
	1/N/PE AC 230/240 V							B						
	3/PE AC 230/240 V							C						
	1/N/PE AC 230/240 V							D						
	3/PE AC 230/240 V							F						
	3/PE AC 400 V													
	3/PE 480 V AC													
Motor connections	Single axis								1					
Integrated functional safety	Without safety function								0					
	Basic Safety STO								A					
Enclosure	IP20, coated									V				
Interference suppression	Without										0			
	Integrated RFI filter										1			
Application area	Default setting of parameters: EU region (50-Hz systems)											0		
	Default setting of parameters: US region (60-Hz systems)											1		
Design types	Standard I/O without network												000S	
	Application I/O without network												001S	
	Standard I/O with CANopen												002S	
	Standard I/O with Modbus RTU												003S	
	Standard I/O with PROFIBUS												004S	
	Standard I/O with POWERLINK												012S	
	Standard I/O with EtherCAT												00KS	
	Standard I/O with PROFINET												00LS	
	Standard I/O with EtherNet/IP												00MS	
	Standard I/O with Modbus TCP												00WS	



Product information

Identification of the products

Inverter series	Type	Rated power	Rated mains voltage	Number of phases	Inverter
		kW	V		
Inverter i550 Cabinet	C	0.25	120	1	i550-C0.25/120-1
		0.37			i550-C0.37/120-1
		0.75			i550-C0.75/120-1
		1.1			i550-C1.1/120-1

Inverter series	Type	Rated power	Rated mains voltage	Number of phases	Inverter
		kW	V		
Inverter i550 Cabinet	C	0.25	230	1	i550-C0.25/230-1
				1/3	i550-C0.25/230-2
		0.37		1	i550-C0.37/230-1
				1/3	i550-C0.37/230-2
		0.55		1	i550-C0.55/230-1
				1/3	i550-C0.55/230-2
		0.75		1	i550-C0.75/230-1
				1/3	i550-C0.75/230-2
		1.1		1	i550-C1.1/230-1
				1/3	i550-C1.1/230-2
		1.5		1	i550-C1.5/230-1
				1/3	i550-C1.5/230-2
		2.2		1	i550-C2.2/230-1
				1/3	i550-C2.2/230-2

Inverter series	Type	Rated power	Rated mains voltage	Number of phases	Inverter
		kW	V		
Inverter i550 Cabinet	C	0.25	240	1/3	i550-C0.25/230-2
		0.37			i550-C0.37/230-2
		0.55			i550-C0.55/230-2
		0.75			i550-C0.75/230-2
		1.1			i550-C1.1/230-2
		1.5			i550-C1.5/230-2
		2.2			i550-C2.2/230-2
		4		3	i550-C4.0/230-3
		5.5			i550-C5.5/230-3

Product information

Identification of the products



Inverter series	Type	Rated power		Rated mains voltage	Number of phases	Inverter
		Light duty	Heavy Duty			
		kW	kW			
Inverter i550 Cabinet	C	-	0.37	400	3	i550-C0.37/400-3
			0.55			i550-C0.55/400-3
			0.75			i550-C0.75/400-3
			1.1			i550-C1.1/400-3
			1.5			i550-C1.5/400-3
			2.2			i550-C2.2/400-3
		4	3			i550-C3.0/400-3
		5.5	4			i550-C4.0/400-3
		7.5	5.5			i550-C5.5/400-3
		11	7.5			i550-C7.5/400-3
		15	11			i550-C11/400-3
		18.5	15			i550-C15/400-3
		22	18.5			i550-C18/400-3
		30	22			i550-C22/400-3
		37	30			i550-C30/400-3
		45	37			i550-C37/400-3
		55	45			i550-C45/400-3
		75	55			i550-C55/400-3
		90	75			i550-C75/400-3
		110	90			i550-C90/400-3
		132	110			i550-C110/400-3

Inverter series	Type	Rated power		Rated mains voltage	Number of phases	Inverter
		Light duty	Heavy Duty			
		kW	kW			
Inverter i550 Cabinet	C	-	0.37	480	3	i550-C0.37/400-3
			0.55			i550-C0.55/400-3
			0.75			i550-C0.75/400-3
			1.1			i550-C1.1/400-3
			1.5			i550-C1.5/400-3
			2.2			i550-C2.2/400-3
		4	3			i550-C3.0/400-3
		5.5	4			i550-C4.0/400-3
		7.5	5.5			i550-C5.5/400-3
		11	7.5			i550-C7.5/400-3
		15	11			i550-C11/400-3
		18.5	15			i550-C15/400-3
		22	18.5			i550-C18/400-3
		30	22			i550-C22/400-3
		37	30			i550-C30/400-3
		45	37			i550-C37/400-3
		55	45			i550-C45/400-3
		75	55			i550-C55/400-3
		90	75			i550-C75/400-3
		110	90			i550-C90/400-3
		132	110			i550-C110/400-3

Example:

Product code	Meaning
I55AE311F1AV1000KS	Inverter i550 Cabinet, 11 kW, 3-phase, 400 V/480 V STO safety function, IP20, varnished, integrated RFI filter; 50 Hz variant Standard I/O with EtherCAT network



Features

The following figures give an overview of the elements and connections on the devices. Position, size and appearance of elements and connections may vary depending on the capacity and size of the equipment.

Some equipment may be optional.

Example of 0.25 kW ... 2.2 kW

PE connection

Mains connection X100

DC-bus X100 connection

Relay output X9

IT screw

from 0.55 kW

Network X2xx

Option

Network shield connection

Option

Network status LEDs

Basic network settings

DIP switch or rotary encoder switch

Interface X16

Diagnostic module

Memory module X20

IT screw

Motor connection X105

X105 brake resistor connection

Shield connection

Control connections

Safety module X1

Slot

PTC input X109

Control terminals X3

Standard I/O or Application I/O

Inverter status LEDs



Product information
Features



Example of 3 kW ... 11 kW

PE connection

Mains connection X100

DC-bus X100 connection

Network X2xx

Option

Network shield connection

Option

Relay output X9

Network status LEDs

Basic network settings

DIP switch or rotary encoder switch

Interface X16

Diagnostic module

Memory module X20

Inverter status LEDs

Control terminals X3

Standard I/O or Application I/O

Shield connection

Control connections

Safety module X1

Slot

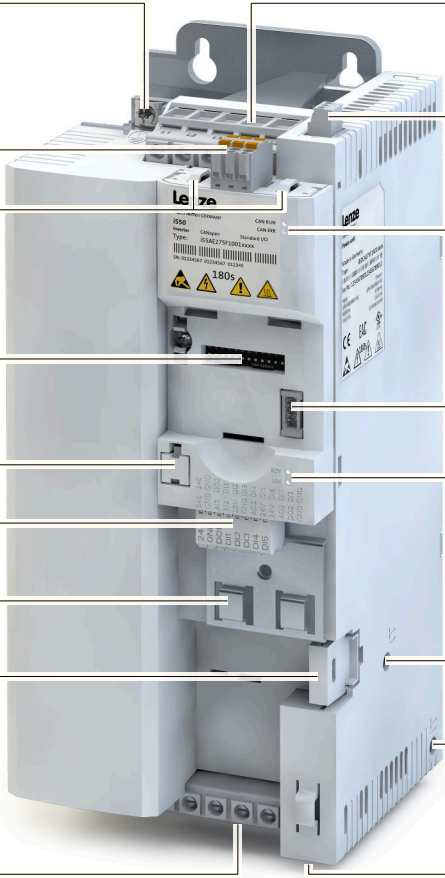
IT screw

IT screw

Motor connection X105

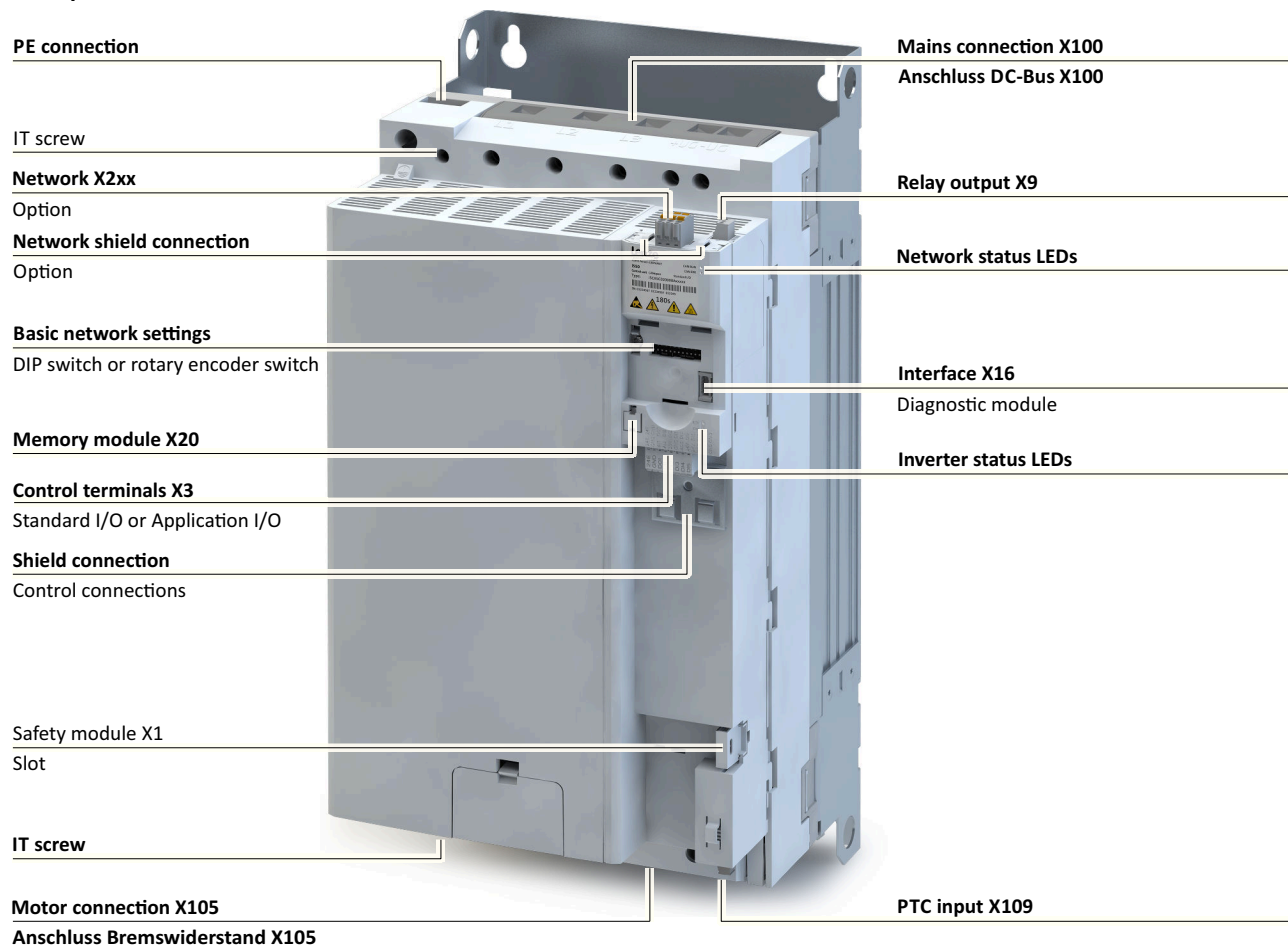
X105 brake resistor connection

PTC input X109



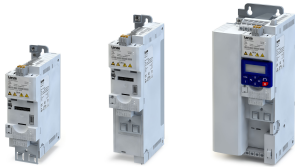


Example of 15 kW ... 45 kW

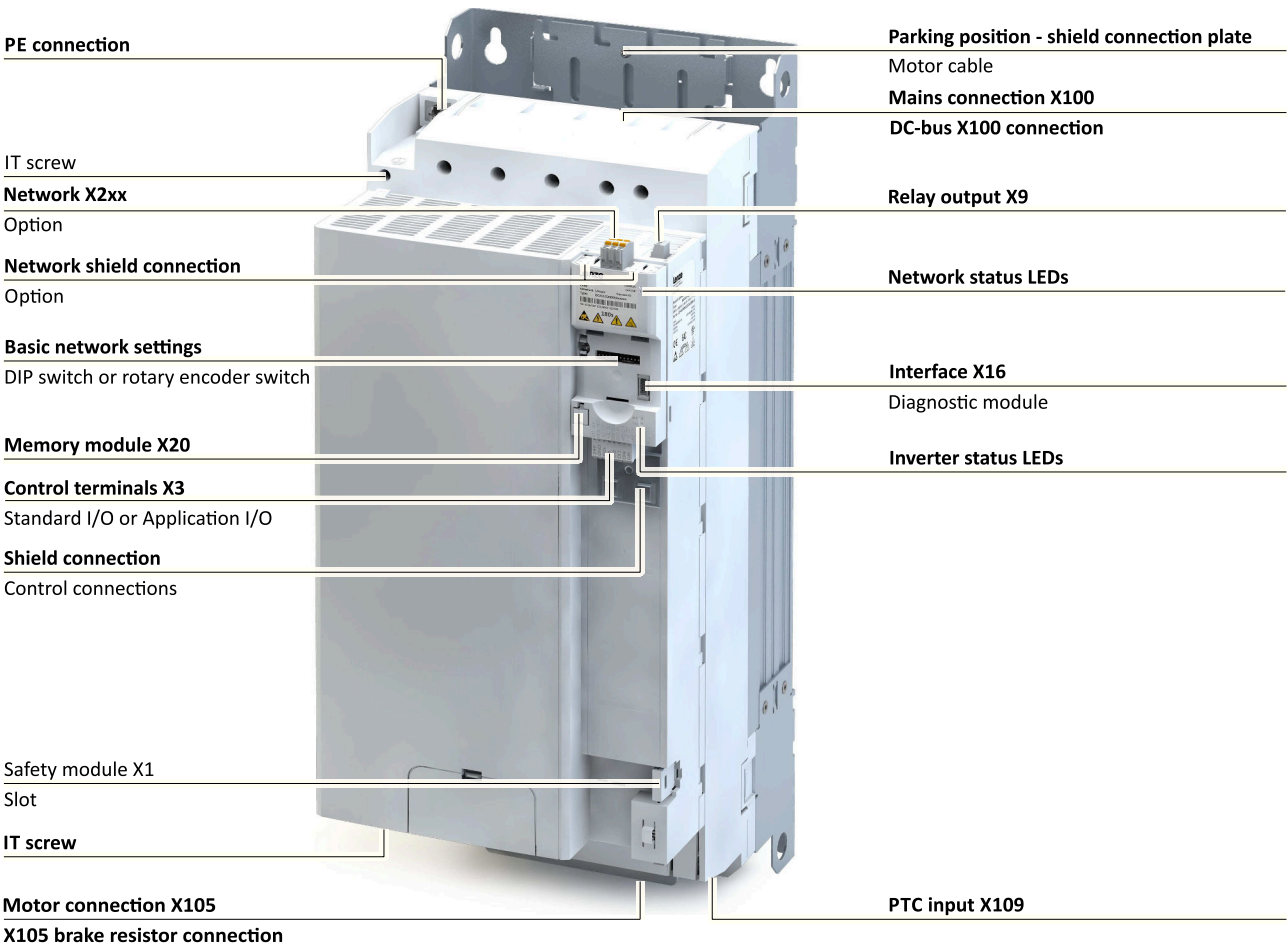


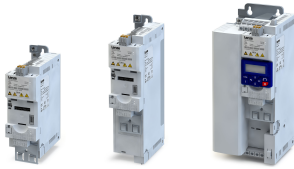
Product information

Features



Example of 55 kW ... 75 kW





Example of 90 kW ... 110 kW

PE connection

IT screw

Network X2xx

Option

Network shield connection

Option

Basic network settings

DIP switch or rotary encoder switch

Memory module X20

Control terminals X3

Standard I/O or Application I/O

Shield connection

Control connections

Safety module X1

Slot

IT screw

Motor connection X105

X105 brake resistor connection

Parking position - shield connection plate

Motor cable

Mains connection X100

DC-bus X100 connection

Relay output X9

Network status LEDs

Interface X16

Diagnostic module

Inverter status LEDs

PTC input X109

Position and meaning of the nameplates

Complete inverter		Inverter consisting of components	
①	Technical data of the inverter	①	Technical data of the component
④	Technical data of the control unit Type and serial number of the inverter	②	Type and serial number of the component
		③	Technical data, type and serial number of the safety module

Product information

The modular system
The concept

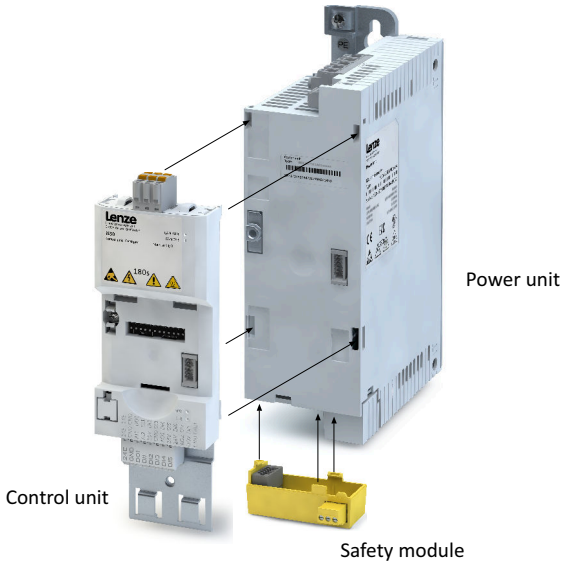


The modular system

The concept

Thanks to its flexible concept and modular structure consisting of power unit, control unit and safety module, the inverter can be optimally adapted to the application.

This provides the user with a flexible logistics concept - ordered as a complete inverter or single components.

Complete inverter	Inverter consisting of components
	

Power unit

The power unit is the power section of the inverter.

It is available in the power range from 0.25 kW to 110 kW.

Control unit

The control unit is the open and closed-loop control unit.

It contains I/O connections, an optional network, the interface for diagnostic modules, LED status displays and the memory module.

Safety module

The optional safety module is available with the functional safety STO (Safe torque off).



Product information

The modular system
Topologies / network

Topologies / network

The inverters can be equipped with different fieldbus networks.

The topologies and protocols typical for the prevailing networks are supported.

Currently available networks:

	CANopen® is a communication protocol based on CAN. CANopen® is a registered community trademark of the CAN user organisation CiA® (CAN in Automation e. V.). Device descriptions for the download: EDS files for Lenze devices
	The Modbus protocol is an open communication protocol based on a client/server architecture and developed for the communication with programmable logic controllers. The further development is carried out by the international user organisation Modbus Organization, USA.
	PROFIBUS® (Process Field Bus) is a widely-used fieldbus system for the automation of machines and production plants. PROFIBUS® is a registered trademark and patented technology licensed by the PROFIBUS & PROFINET International (PI) user organisation. Device descriptions for the download: GSD files for Lenze devices
	Safety over EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.
	EtherCAT® (Ethernet for Controller and Automation Technology) is an Ethernet-based fieldbus system which fulfils the application profile for industrial realtime systems EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany. Device descriptions for the download: XML/ESI files for Lenze devices
	EtherNet/IP™ (EtherNet Industrial Protocol) is a fieldbus system based on Ethernet which uses the Common Industrial Protocol™ (CIP™) for data exchange. EtherNet/IP™ and Common Industrial Protocol™ (CIP™) are trademarks and patented technologies, licensed by the user organisation ODVA (Open DeviceNet Vendor Association), USA. Device descriptions for the download: EDS files for Lenze devices
	PROFINET® (Process Field Network) is a real-time capable fieldbus system based on Ethernet. PROFINET® is a registered trademark and patented technology licensed by the PROFIBUS & PROFINET International (PI) user organisation. Device descriptions for the download: GSDML files for Lenze devices
	The certified safety protocol for the transfer of safety-related data via PROFINET®.
	Ethernet POWERLINK is and Ethernet-based fieldbus system which fulfils the application profile for industrial real-time systems. POWERLINK is an open technology. Detailed information on POWERLINK can be found on the web page of the Ethernet POWERLINK Standardization Group (EPG): http://www.ethernet-powerlink.org

More information on the supported networks can be found at:

<http://www.lenze.com>

Product information

The modular system
Ways of commissioning



Ways of commissioning

There are three methods to commission the inverter quickly and easily.

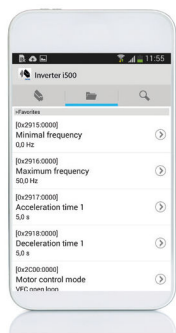
Thanks to Lenze's engineering philosophy, the high functionality is still easy to grasp. Parameterisation and set-up are impressive thanks to clear structure and simple dialogues, leading to the desired outcome quickly and reliably.

- Keypad
If it's only a matter of setting a few key parameters such as acceleration and deceleration time, this can be done quickly on the keypad.



- Smart-Keypad-App for Android or iOS
Ideal for the parameterisation of simple applications such as a conveyor belt.

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



Android



iOS

- »EASY Starter«
If functions such as the holding brake control or sequencer need to be set, it's best to use the »EASY Starter« engineering tool.





Functions

Overview

With regard to their functionality, the inverters i550 are adapted to extensive applications. This is also reflected in the total scope of the products.

Functions	
Motor control	Monitoring
V/f characteristic control linear/square-law (VFC plus)	Short circuit
V/f characteristic control (VFC closed loop)	earth fault
Energy saving function (VFC-ECO)	Device overload (i^*t)
Sensorless vector control (SLVC)	Motor overload (i^2*t)
Sensorless control for synchronous motors (SL-PSM) (up to 22 kW, from 30 kW ... 75 kW: in preparation)	Mains phase failure
Servo control for asynchronous motors (SC-ASM)	
Motor functions	Stalling protection
Flying restart circuit	Motor current limit
Slip compensation	Maximum torque
DC braking	Ultimate motor current
Oscillation damping	Motor speed
Skip frequencies	Load loss detection
Automatic identification of the motor data	Motor temperature
Brake energy management	Diagnostics
Holding brake control	Error history buffer
Voltage add – function	Logbook
Rotational Energy Ride Through (RERT)	LED status display
Speed feedback (HTL encoder)	Keypad language selection German, English
Brake resistor control (brake chopper integrated)	Network
Frequency setpoint	CANopen
DC-bus connection (400V devices)	Modbus RTU
Application functions	Modbus TCP
Process controller	PROFIBUS
Access protection	EtherCAT
Process controller - idle state and rinse function	EtherNet/IP
Freely assignable favourite menu	PROFINET
Parameter change-over	POWERLINK
S-shaped ramps for smooth acceleration	Safety functions
Motor potentiometer	STO (Safe torque off)
Flexible I/O configuration	
Automatic restart	
OEM parameter set	
Complete control with 8-key keypad	
UPS operation	
Frequency output via digital output DO1	
"Light Duty" load characteristic can be adjusted for selected inverters	

Product information

Functions
Motor control types



Motor control types

The following table contains the possible control types with Lenze motors.

Motors	V/f characteristic control VFCplus	Sensorless vector control SLVC	ASM servo control SC ASM
Three-phase AC motors			
MD	•	•	•
MF	•	•	•
mH	•	•	•
m500	•	•	•

Lenze synchronous servo motors are not suitable for the use with inverters, e. g. the MCS, MCM or m850 types.



Features

Motor setting range

Rated point 120 Hz



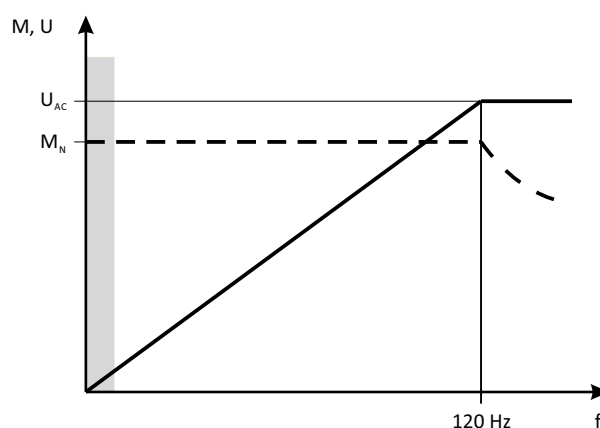
Only possible with Lenze MF motors.

The rated motor torque is available up to 120 Hz.

Compared to the 50-Hz operation, the setting range increases by 2.5 times.

Thus, a smaller motor can be selected at the same rated power.

V/f at 120 Hz



V Voltage

M Torque

f Frequency

U_{AC} Mains voltage

M_{rated} Rated torque

Rated point 87 Hz

The rated motor torque is available up to 87 Hz.

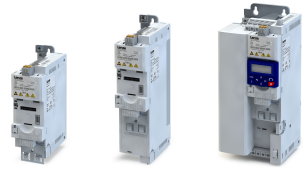
Compared to the 50-Hz operation, the setting range increases by 1.74 times.

For this purpose, a motor with 230/400 V in star connection is driven by a 400-V inverter.

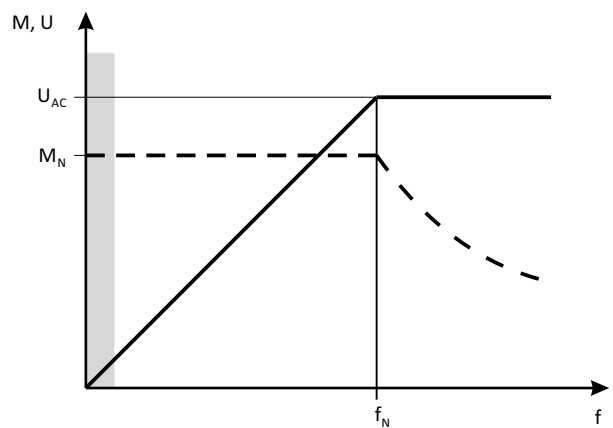
The inverter must be dimensioned for a rated motor current of 230 V.

Product information

Features
Motor setting range



V/f at 87 Hz

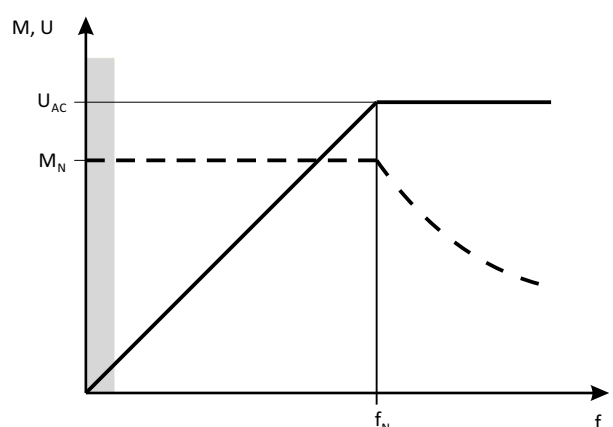


V	Voltage	U_{AC}	Mains voltage
M	Torque	M_{rated}	Rated torque
f	Frequency	f_{rated}	Rated frequency

Rated point 50 Hz

The rated motor torque is available up to 50 Hz.

V/f at 50 Hz



V	Voltage	U_{AC}	Mains voltage
M	Torque	M_{rated}	Rated torque
f	Frequency	f_{rated}	Rated frequency



Information on project planning

Project planning process

Dimensioning

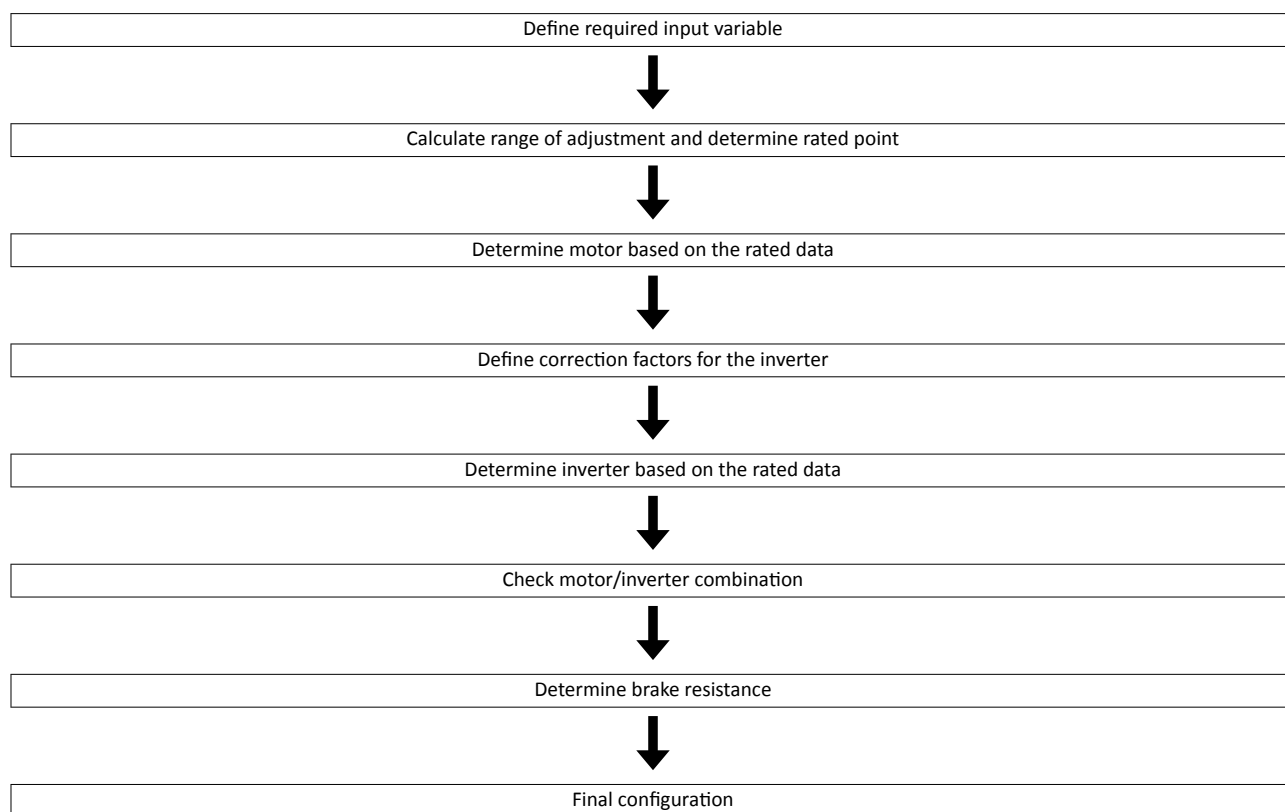
3 methods for dimensioning

Fast: Selection of the inverter based on the motor data of a 4-pole asynchronous motor.

Detailed: In order to optimise the selection of the inverter and all drive components, it is worth to execute the detailed system dimensioning based on the physical requirements of the application. For this purpose, Lenze provides the «Drive Solution Designer» (DSD) design program.

Manual: The following chapter guides you step by step to the selection of a drive system.

Workflow of a configuration process



Define required input variables

Operating mode			S1 or S6
Max. load torque	$M_{L,max}$	Nm	
Max. load speed	$n_{L,max}$	rpm	
Min. load speed	$n_{L,min}$	rpm	
Site altitude	H	m	
Temperature in the control cabinet	T_U	°C	

Information on project planning

Project planning process
Dimensioning



Calculate range of adjustment and determine rated point

	Calculation	
Setting range	$V = \frac{n_{L,max}}{n_{L,min}}$	
	Setting range	Rated point
Motor with integral fan	≤ 2.50 (20 - 50 Hz) ≤ 4.35 (20 - 87Hz) ≤ 6 (20 - 120Hz)	50 Hz 87 Hz 120 Hz
Motor with blower	≤ 10.0 (5 - 50 Hz)	50 Hz
Motor with integral fan (reduced torque)	≤ 17.4 (5 - 87Hz) ≤ 24 (5 - 120Hz)	87 Hz 120 Hz

Determine motor based on the rated data

			Check
Rated torque			
Operating mode S1	M_{rated}	Nm	$M_N \geq \frac{M_{L,max}}{T_{H,Mot} \times T_{U,Mot}}$
Operating mode S6	M_{rated}	Nm	$M_N \geq \frac{M_{L,max}}{2 \times T_{H,Mot} \times T_{U,Mot}}$
Rated speed	n_{rated}	rpm	$n_{rated} \geq n_{L,max}$ $\frac{n_n}{V} \leq n_{L,min}$

			Note
Rated torque	M_{rated}	Nm	→ Rated motor data
Rated speed	n_{rated}	rpm	
Rated point at		Hz	
Power factor	$\cos \varphi$		→ Rated motor data
Rated current	$I_{N,MOT}$	A	
Rated power	P_{rated}	kW	
Correction factor - site altitude	$T_{H,MOT}$		→ Technical motor data
Correction factor - ambient temperature	$T_{U,MOT}$		
Select motor			

Correction factors for the inverter

Site altitude Amsl		H				
		[m]	≤ 1000	≤ 2000	≤ 3000	≤ 4000
k _{H,INV}			1.00	0.95	0.90	0.85
Temperature in the control cabinet		T _U				
		[°C]	≤ 40	≤ 45	≤ 50	≤ 55
Switching frequency						
2 or 4 kHz	k _{TU,INV}		1.00	1.00	0.875	0.750
8 or 16 kHz			1.00	0.875	0.750	0.625
Switching frequency with the "Light Duty" load characteristic						
2 or 4 kHz	k _{TU,INV}		1.00	0.875	0.750	-
8 or 16 kHz			-	-	-	-

Determine inverter based on the rated data

			Check
Output current			
Continuous operation	I_{out}	A	$I_{out} \geq I_{N,Mot} / (k_{H,INV} \times k_{TU,INV})$
Overcurrent operation cycle 15 s	I_{out}	A	$I_{out} \geq I_{N,Mot} \times 2 / (k_{H,INV} \times k_{TU,INV})$
Overcurrent operation cycle 180 s	I_{out}	A	$I_{out} \geq I_{N,Mot} \times 1.5 / (k_{H,INV} \times k_{TU,INV})$



Determine the inverter based on the rated data for the "Light Duty" load characteristic

			Check
Output current			
Continuous operation	I_{out}	A	$I_{out} \geq I_{N,Mot} / (k_{H,INV} \times k_{TU,INV})$
Overcurrent operation cycle 15 s	I_{out}	A	$I_{out} \geq I_{N,Mot} \times 1.65 / (k_{H,INV} \times k_{TU,INV})$
Overcurrent operation cycle 180 s	I_{out}	A	$I_{out} \geq I_{N,Mot} \times 1.25 / (k_{H,INV} \times k_{TU,INV})$

Check motor/inverter combination

			Calculation
Motor torque	M	Nm	$M = \sqrt{\left(\frac{I_{out,INV}}{I_{N,MOT}}\right)^2 - (1 - \cos^2 \varphi)} \times \frac{M_N}{\cos \varphi}$

		Check
Overload capacity of the inverter		$\frac{M_{L,max}}{M} \leq 1.5$

Braking operation without additional measures

To decelerate small masses, the "DC injection brake DCB" function can be parameterised. DC-injection braking enables a quick deceleration of the drive to standstill without the need for an external brake resistor.

- A code can be used to select the braking current.
- The maximum braking torque to be realised by the DC braking current amounts to approx. 20 ... 30 % of the rated motor torque. It is lower compared to braking action in generator mode with external brake resistor.
- Automatic DC-injection braking (Auto-DCB) improves the starting performance of the motor when the operation mode without speed feedback is used.

Braking operation with external brake resistor

To decelerate greater moments of inertia or with a longer operation in generator mode an external brake resistor is required. It converts braking energy into heat.

The brake resistor is connected if the DC-bus voltage exceeds the switching threshold. This prevents the controller from setting pulse inhibit through the "Overvoltage" fault and the drive from coasting down. The external brake resistor serves to control the braking process at any time.

The brake chopper integrated in the controller connects the external brake resistor.

Determine brake resistance

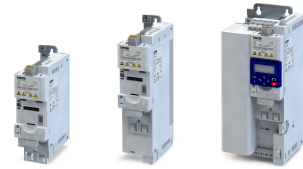
			Application	
			With active load	With passive load
Rated power	P_{rated}	kW	$P_N \geq P_{max} \times \eta_e \times \eta_m \times \frac{t_1}{t_2}$	$P_N \geq \frac{P_{max} \times \eta_e \times \eta_m \times t_1}{2 \times t_2}$
Thermal capacity	C_{th}	kWs	$C_{th} \geq P_{max} \times \eta_e \times \eta_m \times t_1$	$C_{th} \geq \frac{P_{max} \times \eta_e \times \eta_m \times t_1}{2}$
Rated resistance	R_{rated}	Ω	$R_N \geq \frac{U_{DC}^2}{P_{max} \times \eta_e \times \eta_m}$	

Active load	Can start to move independent of the drive (e.g. unwinder)
Passive load	Can stop independent of the drive (e.g. horizontal travelling drives, centrifuges, fans)
U_{DC} [V]	Switching threshold - brake chopper
P_{max} [W]	Maximum occurring braking power
η_e	Electrical efficiency
η_m	Mechanical efficiency
t_1 [s]	Braking time
t_2 [s]	Cycle time = time between two successive braking processes (t_1 + dead time)

Information on project planning

Project planning process

Operation in motor and generator mode



Final configuration

Product extensions and accessories can be found here:

- [Product extensions](#)  212
- [Accessories](#)  238

Operation in motor and generator mode

The energy analysis differs between operation in motor mode and generator mode.

During operation in motor mode, the energy flows from the supplying mains via the inverter to the motor which converts electrical energy into mechanical energy (e. g. for lifting a load).

During operation in generator mode, the energy flows back from the motor to the inverter. The motor converts the mechanical energy into electrical energy - it acts as a generator (e. g. when lowering a load).

The drive brakes the load in a controlled manner.

The energy recovery causes a rise in the DC-bus voltage. If this voltage exceeds an upper limit, the output stage of the inverter will be blocked to prevent the device from being destroyed.

The drive coasts until the DC-bus voltage reaches the permissible value range again.

In order that the excessive energy can be dissipated, a brake resistor or a regenerative module is required.



Overcurrent operation

The inverters can be driven at higher amperages beyond the rated current if the duration of this overcurrent operation is time limited.

Two utilisation cycles of 15 s and 180 s are defined. Within these utilisation cycles, an overcurrent is possible for a certain time if afterwards an accordingly long recovery phase takes place.

Cycle 15 s

During this operation, the inverter may be loaded for 3 s with up to 200 % of the rated current if afterwards a recovery time of 12 s with max. 75 % of the rated current is observed. A cycle corresponds to 15 s.

Cycle 180 s

During this operation, the inverter may be loaded for 60 s with up to 150 % of the rated current if afterwards a recovery time of 120 s with max. 75 % of the rated current is observed. A cycle corresponds to 180 s.

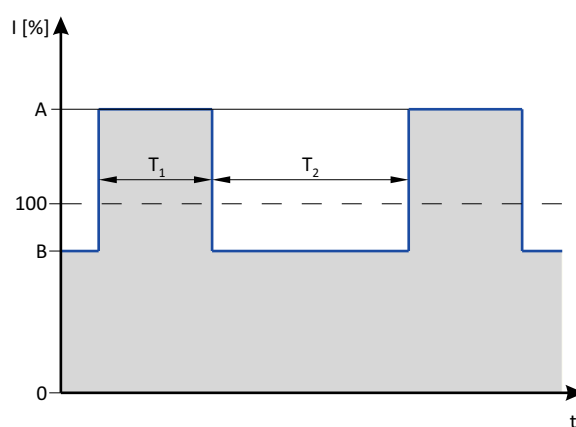
The monitoring of the device utilisation (Ixt) causes the set error response if one of the two utilisation values exceeds the threshold of 100 %.



The maximum output currents correspond to the switching frequencies and the overload behaviour of the inverters are given in the rated data.

In case of rotating frequencies < 10 Hz, the time-related overload behaviour may be reduced.

The graphics shows a cycle. The basic conditions given in the table (graphics field highlighted in grey) have to be complied with in order that the inverter will not be overloaded. Both cycles can be combined with each other.



	Max. output current	Max. overload time	Max. output current during the recovery time	Min. recovery time
	A	T_1	B	T_2
	%	s	%	s
Cycle 15 s	200	3	75	12
Cycle 180 s	150	60	75	120

Information on project planning

Project planning process
Overcurrent operation



Inverter load characteristics

The inverter has two different load characteristics: "Light Duty" and "Heavy Duty". The "Light Duty" load characteristic allows for a higher output current with restrictions regarding overload capacity, ambient temperature and switching frequency. This allows the motor required for the application to be driven by a less powerful inverter. Select the load characteristic according to the application.

Heavy Duty compared to Light Duty

The table compares both possible configurations:

	Heavy Duty	Light duty
Characteristics	High dynamic requirements	Low dynamic requirements
Typical applications	Main tool drives, travelling drives, hoist drives, winders, forming drives and conveyors	Pumps, fans, general horizontal materials handling technology and line drives
Overload capacity	3 s/200 %, 60 s/150 % see technical data	restricted see technical data



Devices with Light Duty load characteristic: See [137](#), [182](#)

Comply with all data for this load characteristic and the corresponding mains voltage range. This comprises the information on the type of installation as well as the required fuses, cable cross-sections, mains chokes and filters.



Safety instructions

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

Observe all specifications of the corresponding documentation supplied. This is the precondition for safe and trouble-free operation and for obtaining the product features specified.

Please observe the specific safety information in the other sections!

DANGER!

Electrical voltage

Possible consequences: Death or severe injuries

- ▶ Any work on the inverter must only be carried out in the deenergised state.
- ▶ Inverter up to 45 kW: After switching off the mains voltage, wait for at least 180 s before you start working.
- ▶ Inverter from 55 kW onwards: After switching off the mains voltage, wait for at least 600 s before you start working.

Basic safety instructions

Personnel

The product must only be used by qualified personnel. IEC 60364 or CENELEC HD 384 define the skills 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.

Process engineering

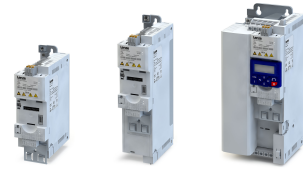
The procedural notes and circuit details described are only proposals. It is up to the user to check whether they can be adapted to the particular applications. Lenze does not take any responsibility for the suitability of the procedures and circuit proposals described.

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Information on project planning

Safety instructions

Application as directed



Application as directed

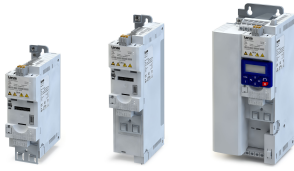
- The product must only be operated under the operating conditions prescribed in this documentation.
- The product meets the protection requirements of 2014/35/EU: Low-Voltage Directive.
- The product is not a machine in terms of 2006/42/EC: Machinery Directive.
- Commissioning or starting the operation as directed of a machine with the product is not permitted until it has been ensured that the machine meets the regulations of the EC Directive 2006/42/EC: Machinery Directive; observe EN 60204-1.
- Commissioning or starting operation as directed is only permissible if the EMC Directive 2014/30/EU is complied with.
- The harmonised standard EN 61800-5-1 is applied.
- The product is not a household appliance, but is only designed as a component for commercial or professional use in terms of EN 61000-3-2.
- The product can be used according to the technical data if drive systems have to comply with categories according to EN 61800-3.

In residential areas, the product may cause EMC interferences. The operator is responsible for taking interference suppression measures.

- The product must only be actuated with motors that are suitable for the operation with inverters.
 - Lenze L-force motors meet the requirements
 - Exception: m240 motors are designed for mains operation only.

The user is not allowed to change inverters that come with integrated safety technology.

The safety module must not be removed. If the safety module is defective, the inverter has to be replaced.



Handling

Transport, storage

Observe the notes regarding transport, storage and correct handling. Ensure proper handling and avoid mechanical stress. Do not bend any components and do not change any insulation distances during transport or handling. Do not touch any electronic components and contacts. Inverters contain electrostatically sensitive components which can easily be damaged by inappropriate handling. Do not damage or destroy any electrical components since thereby your health could be endangered!

Installation

The technical data and supply conditions can be obtained from the nameplate and the documentation. They must be strictly observed.

The inverters have to be installed and cooled according to the regulations given in the corresponding documentation. Observe the climatic conditions according to the technical data. The ambient air must not exceed the degree of pollution 2 according to EN 61800-5-1.

Electrical connection

When working on live inverters, observe the applicable national regulations for the prevention of accidents.

The electrical installation must be carried out according to the appropriate regulations (e. g. cable cross-sections, fuses, PE connection). Additional information can be obtained from the documentation.

This documentation contains information on installation in compliance with EMC (shielding, earthing, filter, and cables). These notes must also be observed for CE-marked inverters. The manufacturer of the system is responsible for compliance with the limit values demanded by EMC legislation. The inverters must be installed in housings (e. g. control cabinets) to meet the limit values for radio interferences valid at the site of installation. The housings must enable an EMC-compliant installation. Observe in particular that e. g. the control cabinet doors have a circumferential metal connection to the housing. Reduce housing openings and cutouts to a minimum.

Inverters may cause a DC current in the PE conductor. If a residual current device (RCD) is used for protection against direct or indirect contact for an inverter with three-phase supply, only a residual current device (RCD) of type B is permissible on the supply side of the inverter. If the inverter has a single-phase supply, a residual current device (RCD) of type A is also permissible. Apart from using a residual current device (RCD), other protective measures can be taken as well, e. g. electrical isolation by double or reinforced insulation or isolation from the supply system by means of a transformer.

operation

If necessary, systems including inverters must be equipped with additional monitoring and protection devices. Also comply with the safety regulations and provisions valid at the installation site.

After the inverter has been disconnected from the supply voltage, all live components and power terminals must not be touched immediately because capacitors can still be charged. Please observe the corresponding stickers on the inverter.

All protection covers and doors must be shut during operation.

You may adapt the inverters to your application by parameter setting within the limits available. For this, observe the notes in the documentation.

Safety functions

Certain inverter versions support safety functions (e. g. "safe torque off", formerly "safe standstill") according to the requirements of the EC Machinery Directive 2006/42/EC. The notes on the integrated safety provided in this documentation must be observed.

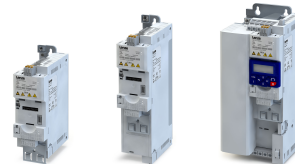
Maintenance and servicing

The inverters do not require any maintenance if the prescribed operating conditions are observed.

Information on project planning

Safety instructions

Handling



Disposal

In accordance with the current provisions, inverters and accessories have to be disposed of by means of professional recycling. Inverters contain recyclable raw material such as metal, plastics and electronic components.



Residual hazards

Even if notes given are taken into consideration and protective measures are implemented, the occurrence of residual risks cannot be fully prevented.

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 can lead to severe injuries to persons and damage to property!

Protection of persons

Before working on the inverter, check if no voltage is applied to the power terminals.

- Depending on the device, the power terminals X105 remain live for up to 3 ... 20 minutes.
- The power terminals X100 and X105 remain live even when the motor is stopped.

Motor protection

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

- E. g. by longer operation of self-ventilated motors at low speed.
- E. g. by longer operation of the DC-injection brake.

Protection of the machine/system

Drives can reach dangerous overspeeds.

- E. g. by setting high output frequencies in connection with motors and machines not suitable for this purpose.
- The inverters do not provide protection against such operating conditions. For this purpose, use additional components.

Switch contactors in the motor cable only if the controller is inhibited.

- Switching while the inverter is enabled is only permissible if no monitoring functions are activated.

Motor

If there is a short circuit of two power transistors, a residual movement of up to 180° /number of pole pairs can occur at the motor! (e. g. 4-pole motor: residual movement max. $180^\circ/2 = 90^\circ$).

Parameter set transfer

During the parameter set transfer, control terminals of the inverters can adopt undefined states.

- Thus, the control terminal of the digital input signals have to be removed before the transfer.
- This ensures that the inverter is inhibited. The control terminals are in a defined state.

Degree of protection - protection of persons and device protection

- Information applies to the mounted and ready-for-use state.
- Information does not apply to the wire range of the terminals.
 - Terminals that are not assigned only have a low protection against contact.
 - Terminals for large cable cross-sections have lower classes of protection, e. g. from 15 kW IP10 only.

Commissioning

If you use the Application Loader as a download tool for safety-related parameter sets, validate the parameter sets after the download.

Device exchange without tool

Exchange a maximum of one safe device before recommissioning.

Exchange of devices

Test the compatibility of the devices before exchanging.

Information on project planning

Safety instructions
Residual hazards



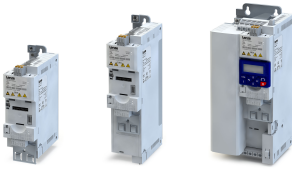
Risks when exchanging devices

WARNING!

Incorrect handling of devices.

Device damage.

- ▶ Check the compatibility of the devices before exchanging.
 - ▶ Check the memory cards of the devices before exchanging.
 - ▶ Set the safety address.
 - ▶ Undertake a functional check after the exchange.
-



Control cabinet structure

Control cabinet requirements

- Protection against electromagnetic interferences
- Compliance with the ambient conditions of the installed components

Mounting plate requirements

- The mounting plate must be electrically conductive.
 - Use zinc-coated mounting plates or mounting plates made of V2A.
 - Varnished mounting plates are unsuitable, even if the varnish is removed from the contact surfaces.
- When using several mounting plates, make a conductive connection over a large surface (e. g. using grounding strips).

Arrangement of components

- Division into power and control areas

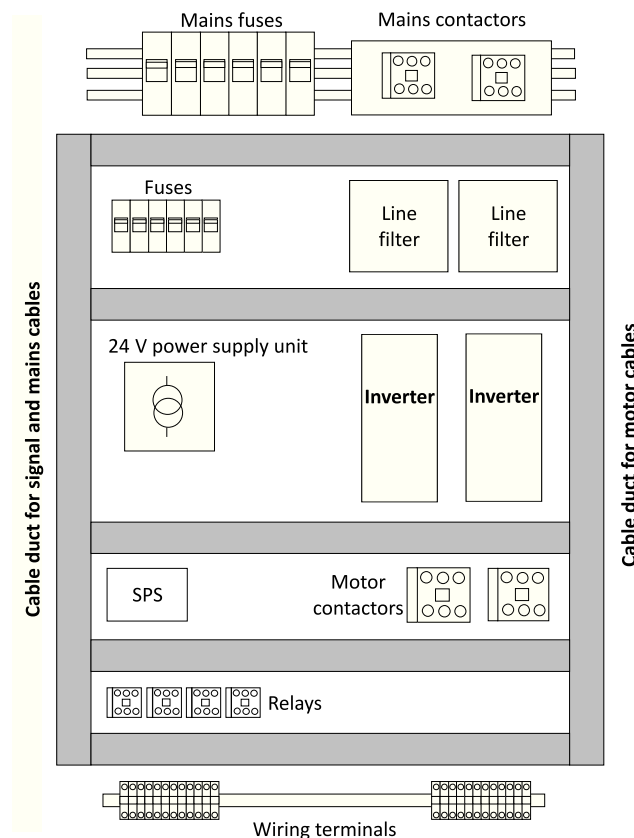


Fig. 1: Example for the ideal arrangement of components in the control cabinet

Information on project planning

Control cabinet structure

Earthing concept



Cables

Requirements

- The cables used must correspond to the requirements at the location (e. g. EN 60204–1, UL).
- The cable cross-section must be dimensioned for the assigned fusing. Observe national and regional regulations.
- You must observe the regulations for minimum cross-sections of PE conductors. The cross-section of the PE conductor must be at least as large as the cross-section of the power connections.

Installation inside the control cabinet

- Always install cables close to the mounting plate (reference potential), as freely suspended cables act like aerials.
- Use separated cable channels for motor cables and control cables. Do not mix up different cable types in one cable channel.
- Lead the cables to the terminals in a straight line (avoid tangles of cables).
- Minimise coupling capacities and coupling inductances by avoiding unnecessary cable lengths and reserve loops.
- Short-circuit unused cores to the reference potential.
- Install the cables of a 24 V DC supply (positive and negative cable) close to each other or twisted over the entire length to avoid loops.

Installation outside the control cabinet

- In the case of greater cable lengths, a greater cable distance between the cables is required.
- In the case of parallel routing (cable trays) of cables with different types of signals, the degree of interference can be minimised by using a metallic cable separator or isolated cable ducts.

Earthing concept

- Set up the earthing system with a star topology.
- Connect all components (inverters, filters, chokes) to a central earthing point (PE rail).
- Comply with the corresponding minimum cross-sections of the cables.
- When using several mounting plates, make a conductive connection over a large surface (e. g. using grounding strips).



EMC-compliant installation

Structure of a CE-typical drive system

The drive system (frequency inverter and drive) corresponds to 2014/30/EU: EMC Directive if it is installed according to the specifications of the CE-typical drive system.

The structure in the control cabinet must support the EMC-compliant installation with shielded cables.

- Please use highly 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.

Matching accessories makes effective shielding easier.

- Shield sheets
- Shield clips/shield clamps
- Metallic cable ties

Mains connection, DC supply

- Inverters, mains chokes, or mains filters may only be connected to the mains via unshielded single cores or unshielded cables.
- When a line filter is used, shield the cable between mains filter or RFI filter and inverter if its length exceeds 300 mm. Unshielded cores must be twisted.
- In DC-bus operation or DC supply, use shielded cables.
 - Only certain inverters are provided with this connection facility.

Rated mains voltage	DC voltage range
V	
400	DC 450 V - 0 % ... 750 V + 0 %
480	

Information on project planning

Control cabinet structure
EMC-compliant installation



Motor cable

- Only use low-capacitance and shielded motor cables with braid made of tinned or nickel-plated copper.
 - The overlap rate of the braid must be at least 70 % with an overlap angle of 90 °.
 - Shields made of steel braids are not suitable.
- Shield the cable for motor temperature monitoring (PTC or thermal contact) and install it separately from the motor cable.
 - In Lenze system cables, the cable for brake control is integrated into the motor cable. If this cable is not required for brake control, it can also be used to connect the motor temperature monitoring up to a length of 50 m.
 - Only certain inverters are provided with this connection facility.
- Connect the shield with a large surface and fix it with metal cable binders or conductive clamp. The following is suitable for the connection of the shield:
 - The mounting plate
 - A central grounding rail
 - A shielding plate, if necessary, optional
- This is optimal:
 - The motor cable is separated from the mains cables and control cables.
 - The motor cable only crosses mains cables and control cables at right angles.
 - The motor cable is not interrupted.
- If the motor cable must be opened all the same (e. g. by chokes, contactors, or terminals):
 - The unshielded cable ends must not be longer than 100 mm (depending on the cable cross-section).
 - Install chokes, contactors, terminals etc. spatially separated from other components (with a minimum distance of 100 mm).
 - Install the shield of the motor cable directly before and behind the point of separation to the mounting plate with a large surface.
- Connect the shield with a large surface to PE in the terminal box of the motor at the motor housing.
 - Metal EMC cable glands at the motor terminal box ensure a large surface connection of the shield with the motor housing.

Control cables

- Install the cables so that no induction-sensitive loops arise.
- Distance of shield connections of control cables to shield connections of motor cables and DC cables:
 - At least 50 mm
- Control cables for analog signals:
 - Must always be shielded
 - Connect the shield on one side of the inverter
- Control cables for digital signals:

	Cable length		
	< ca. 5 m	ca. 5 m ... ca. 30 m	> ca. 30 m
Design	unshielded option	unshielded twisted option	always shielded connected on both sides

Network cables

- Cables and wiring must comply with the specifications and requirements of the used network.
 - Ensures the reliable operation of the network in typical systems.



Information on project planning

Control cabinet structure
EMC-compliant installation

Detecting and eliminating EMC interferences

Trouble	Cause	Remedy
Interferences of analog setpoints of your own or other devices and measuring systems	Unshielded motor cable has been used	Use shielded motor cable
	Shield contact is not extensive enough	Carry out optimal shielding as specified
	Shield of the motor cable is interrupted, e. g. by terminal strips, switches etc.	- Separate components from other component parts with a minimum distance of 100 mm - Use motor chokes or motor filters
	Additional unshielded cables inside the motor cable have been installed, e. g. for motor temperature monitoring	Install and shield additional cables separately
	Too long and unshielded cable ends of the motor cable	Shorten unshielded cable ends to maximally 40 mm
Conducted interference level is exceeded on the supply side	Terminal strips for the motor cable are directly located next to the mains terminals	Spatially separate the terminal strips for the motor cable from mains terminals and other control terminals with a minimum distance of 100 mm
	Mounting plate varnished	Optimise PE connection: - Remove varnish - Use zinc-coated mounting plate
	HF short circuit	Check cable routing

Information on mechanical installation

Important notes



Information on mechanical installation

Important notes



After being mounted ,the safety module cannot be removed anymore!

Measures for cooling during operation

- Ensure unimpeded ventilation of cooling air and outlet of exhaust air.
- If the cooling air is polluted (fluff, (conductive) dust, soot, aggressive gases), take adequate countermeasures.
 - Install filters.
 - Arrange for regular cleaning of the filters.
- If required, implement a separate air guide.



Preparation

Further data and information for mechanical mounting:

▶ [Control cabinet structure](#) 39

▶ [Dimensions](#) 201



The scope of supply of the inverter comprises mounting instructions. They describe technical data and information on mechanical and electrical installation.

Mounting position

- Vertical alignment - all mains connections are at the top and the motor connections at the bottom.

Free spaces

- Maintain the specified free spaces above and below to the other installations.

Mechanical installation

- The mounting location and material must ensure a durable mechanical connection.
- Do not mount onto DIN rails!
- In case of continuous vibrations or shocks use vibration dampers.

How to mount the inverters onto the mounting plate.

Requirements:

- Mounting plate with conductive surface

Required:

- Tool for drilling and thread cutting
- Screwdriver
- Screw and washer assemblies or hexagon socket screws with washers.

1. Prepare mounting plate with corresponding threaded holes.
2. Fit screws and washers (if applicable).
3. Do not yet tighten the screws.
4. Mount the inverter on the prepared mounting plate via keyhole suspension.
5. Only tighten the screws hand-tight.
6. Pre-assemble further units if necessary.
7. Adjust the units.
8. Screw the units onto the mounting plate.

The inverters are mounted on the mounting plate. You can begin with the wiring.

Screw and washer assemblies or hexagon socket screws with washers are recommended..

M5 x ≥ 10 mm for devices up to and including 2.2 kW

M5 x ≥ 12 mm for devices up to and including 11 kW

M6 x ≥ 16 mm for devices up to and including 22 kW

M8 x ≥ 16 mm for devices up to and including 110 kW



Information on electrical installation

Important notes

DANGER!

Electrical voltage

Possible consequences: Death or severe injuries

- ▶ Any work on the inverter must only be carried out in the deenergised state.
- ▶ Inverter up to 45 kW: After switching off the mains voltage, wait for at least 180 s before you start working.
- ▶ Inverter from 55 kW onwards: After switching off the mains voltage, wait for at least 600 s before you start working.

DANGER!

Dangerous electrical voltage

The leakage current against earth (PE) is $> 3.5 \text{ mA AC}$ or $> 10 \text{ mA DC}$.

Possible consequences: Death or severe injuries when touching the device in the event of an error.

- ▶ Implement the measures requested in EN 61800-5-1 or EN 60204-1. Especially:
- ▶ Fixed installation
- ▶ The PE connection must comply with the standards (PE conductor diameter $\geq 10 \text{ mm}^2$ or use a double PE conductor)

NOTICE

No protection against excessively high mains voltage

The mains input is not fused internally.

Possible consequences: Destruction of the product in the event of excessively high mains voltage.

- ▶ Take note of the maximum permissible mains voltage.
- ▶ On the mains supply side, use fuses to adequately protect the product against mains fluctuations and voltage peaks.

DANGER!

Use of the inverter on a phase earthed mains with a rated mains voltage $\geq 400 \text{ V}$

The protection against accidental contact is not ensured without external measures.

- ▶ If protection against accidental contact according to EN 61800-5-1 is required for the control terminals of the inverters and the connections of the plugged device modules, ...
- ▶ an additional basic insulation has to be provided.
- ▶ the components to be connected have to come with a second basic insulation.



NOTICE

Overvoltage at devices with 230-V mains connection

An impermissible overvoltage may occur if the central supply of the N conductor is interrupted if the devices are connected to a TN three-phase system.

Possible consequences: Destruction of the device

► Provide for the use of isolating transformers.

NOTICE

The product contains electrostatic sensitive devices.

Possible consequences: Destruction of the device

► Before working in the connection area, the staff must ensure to be free of electrostatic charge.

NOTICE

Pluggable terminal strips or plug connections

Plugging or removing the terminal strips or plug connections during operation may cause high voltages and arcing.

Possible consequences: Damage of the devices

► Switch off device.

► Only plug or remove the terminal strips or plug connections in deenergised status.

NOTICE

Use of mains filters and RFI filters in IT systems

Mains filters and RFI filters from Lenze contain components that are interconnected against PE.

Possible consequences: The filters may be destroyed when an earth fault occurs.

Possible consequences: Monitoring of the IT system may be triggered.

► Do not use mains filters and RFI filters from Lenze in IT systems.

► Before using the inverter in the IT system, remove the IT screws.

NOTICE

Overvoltage at components

In case of an earth fault in IT systems, intolerable overvoltages may occur in the plant.

Possible consequences: Destruction of the device.

► Before using the inverter in the IT system, the contact screws must be removed.

► Positions and number of the contact screws depend on the device.



Ensure a trouble-free operation:

Carry out the total wiring so that the separation of the separate potential areas is preserved.



When implementing machines and systems for the use in the UL/CSA scope, you have to observe the relevant special notes.

These notes are marked with "UL marking".

WARNING!

► **UL marking**

► Suitable for motor group installation.

► **0.55 kW ... 30 kW devices** on a circuit capable of delivering not more than 5k rms symmetrical amperes, 480 V maximum when protected by fuses or circuit breakers. Ratings see table below.

► **Devices from 45 kW** on a circuit capable of delivering not more than 10k rms symmetrical amperes, 480 V maximum when protected by fuses. Ratings see table below.

► **Marquage UL**

► Convient pour une installation de groupes de moteurs.

► **Appareils de 0,55 kW à 30 kW** sur un circuit non susceptible de délivrer plus de 5k A en valeur efficace, à 480 V maximum et avec une protection par fusibles ou par disjoncteurs. Se reporter au tableau ci-dessous pour connaître les caractéristiques assignées.

► **Appareils à partir de 45 kW** sur un circuit non susceptible de délivrer plus de 10k A en valeur efficace, à 480 V maximum et avec protection par fusibles. Se reporter au tableau ci-dessous pour connaître les caractéristiques assignées.



You have to install the devices into housings (e. g. control cabinets) to comply with valid regulations.

Stickers with warning notes must be displayed prominently and close to the device.

Preparation

Further data and information for electrical installation:

► [EMC-compliant installation](#)  41

► [Standards and operating conditions](#)  73



The scope of supply of the inverter comprises mounting instructions. They describe technical data and information on mechanical and electrical installation.

A good shield connection at the transitions of the different areas reduce possible interferences caused by problems with the EMC.

Example of an EMC-compliant cable gland

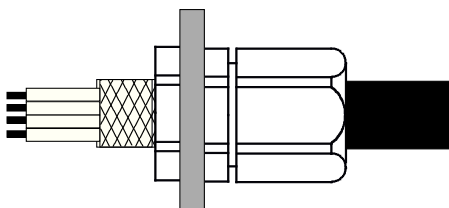
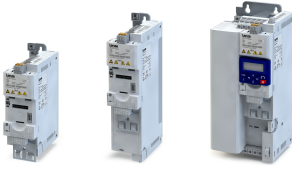


Fig. 2: EMC cable gland with a high degree of protection



Mains connection

The following should be considered for the mains connection of inverters:

Single inverters are either directly connected to the **AC system** or via upstream filters. RFI filters are already integrated in many inverters. Depending on the requirements, mains chokes or mains filters can be used.

Inverter groups are connected to the **DC system** with the DC bus. For this purpose, the inverters have to be provided with a connection for the DC bus, e. g. terminals +UG/-UG.

This enables the energy exchange in phases with operation in generator and motor mode of several drives in the network.

The DC system can be provided by power supply modules (AC/DC converters) or inverters with a power reserve.

The technical data informs about the possible applications in the given groups. In the dimensioning, data and further notes have to be observed.

Information on electrical installation

Mains connection

1-phase mains connection 120 V



1-phase mains connection 120 V

The connection plan is valid for the inverters i550-Cxxx/120-1.



Inverters i550-Cxxx/120-1 do not have an integrated RFI filter in the AC mains supply.

In order to meet the EMC requirements according to EN 61800-3, an external EMC filter according to IEC EN 60939 must be used.

The user must verify that the conformity with EN 61800-3 is fulfilled.

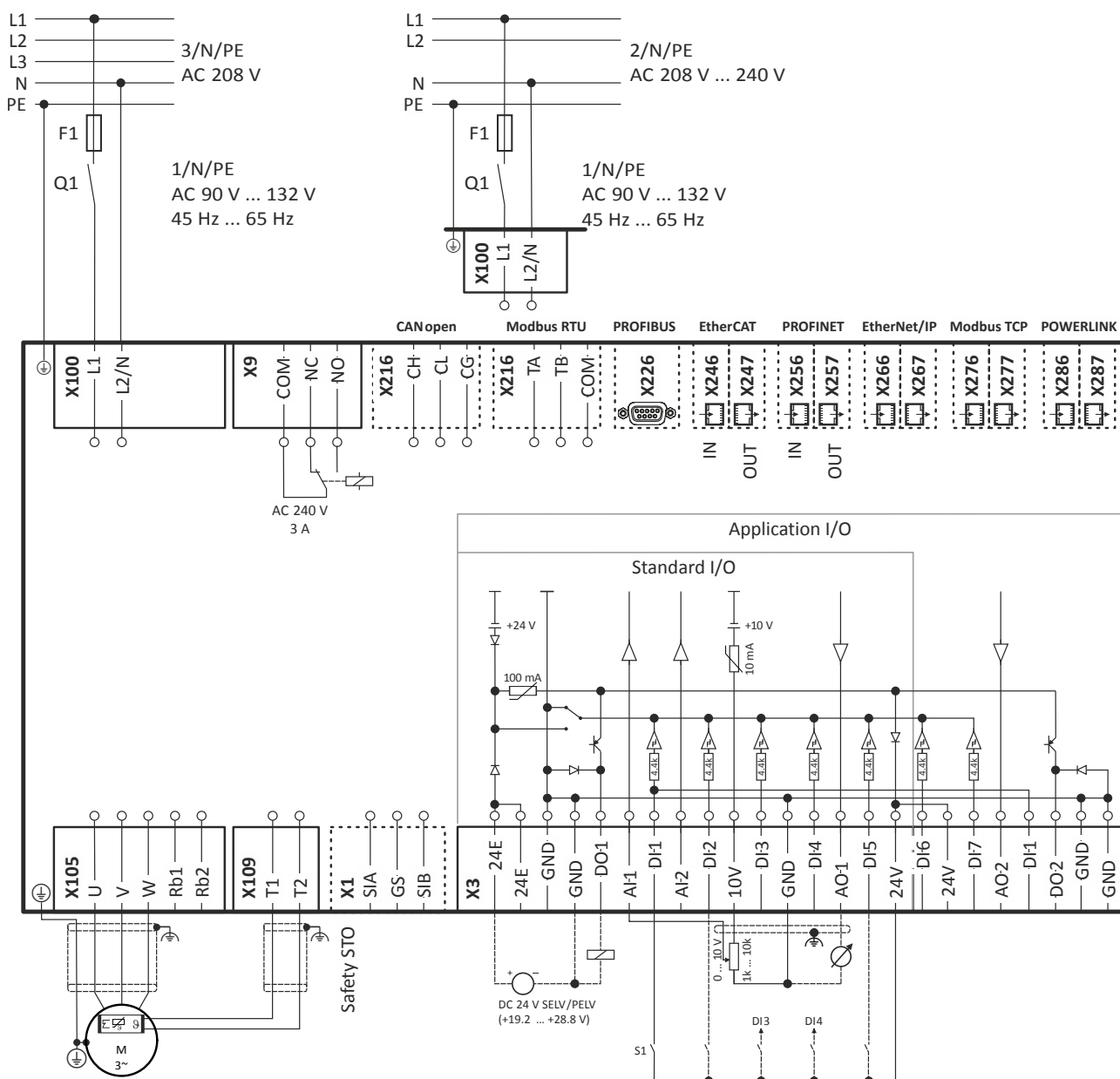


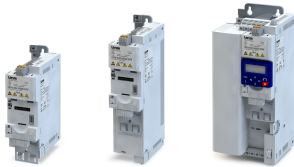
Fig. 3: Wiring example

S1 Start/Stop

Fx Fuses

Q1 Mains contactor

--- Dashed line = options



Information on electrical installation

Mains connection
1-phase mains connection 230/240 V

1-phase mains connection 230/240 V

The connection plan is valid for the inverters i550-Cxxx/230-1.

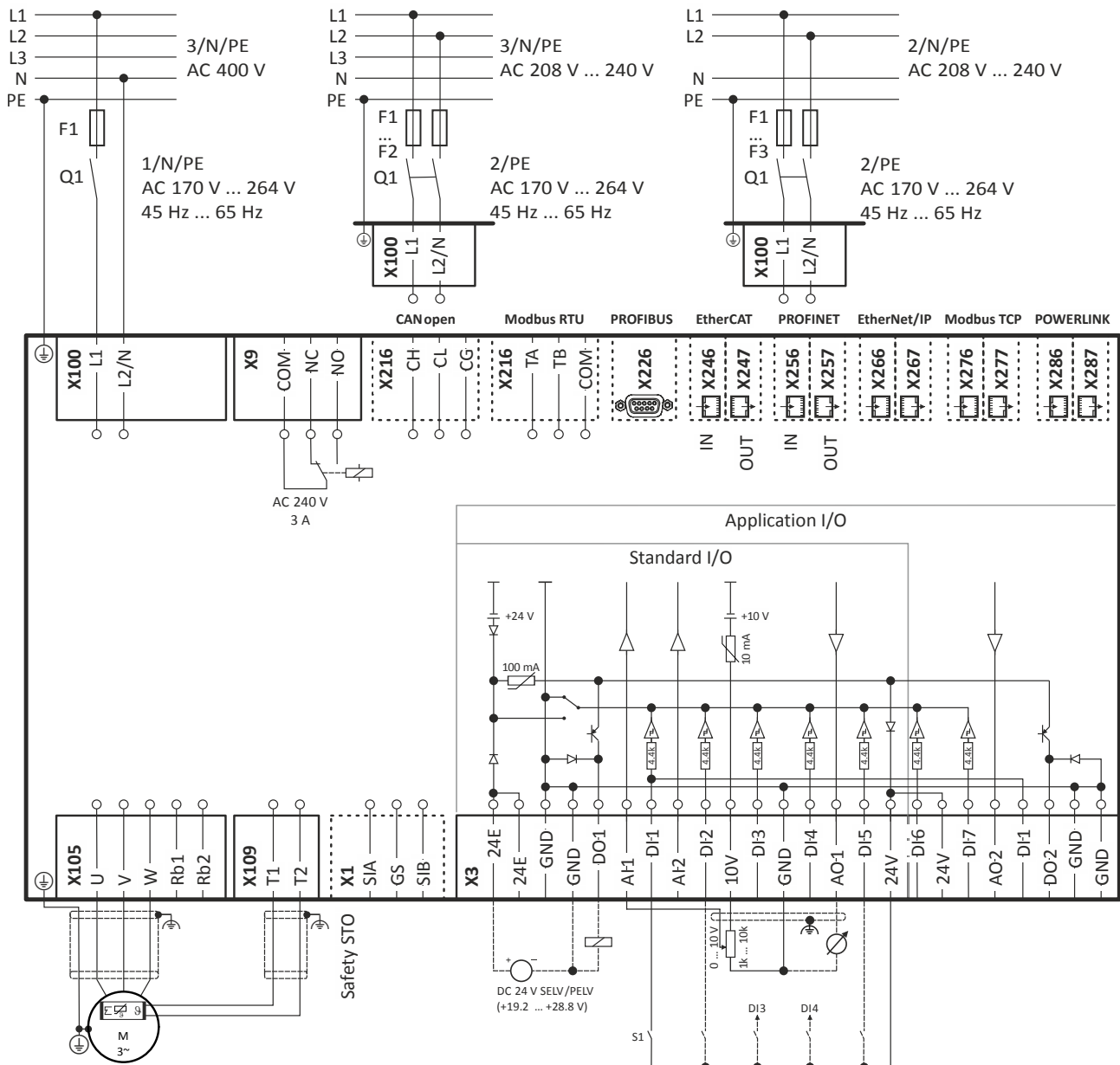
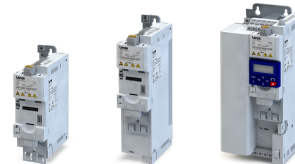


Fig. 4: Wiring example

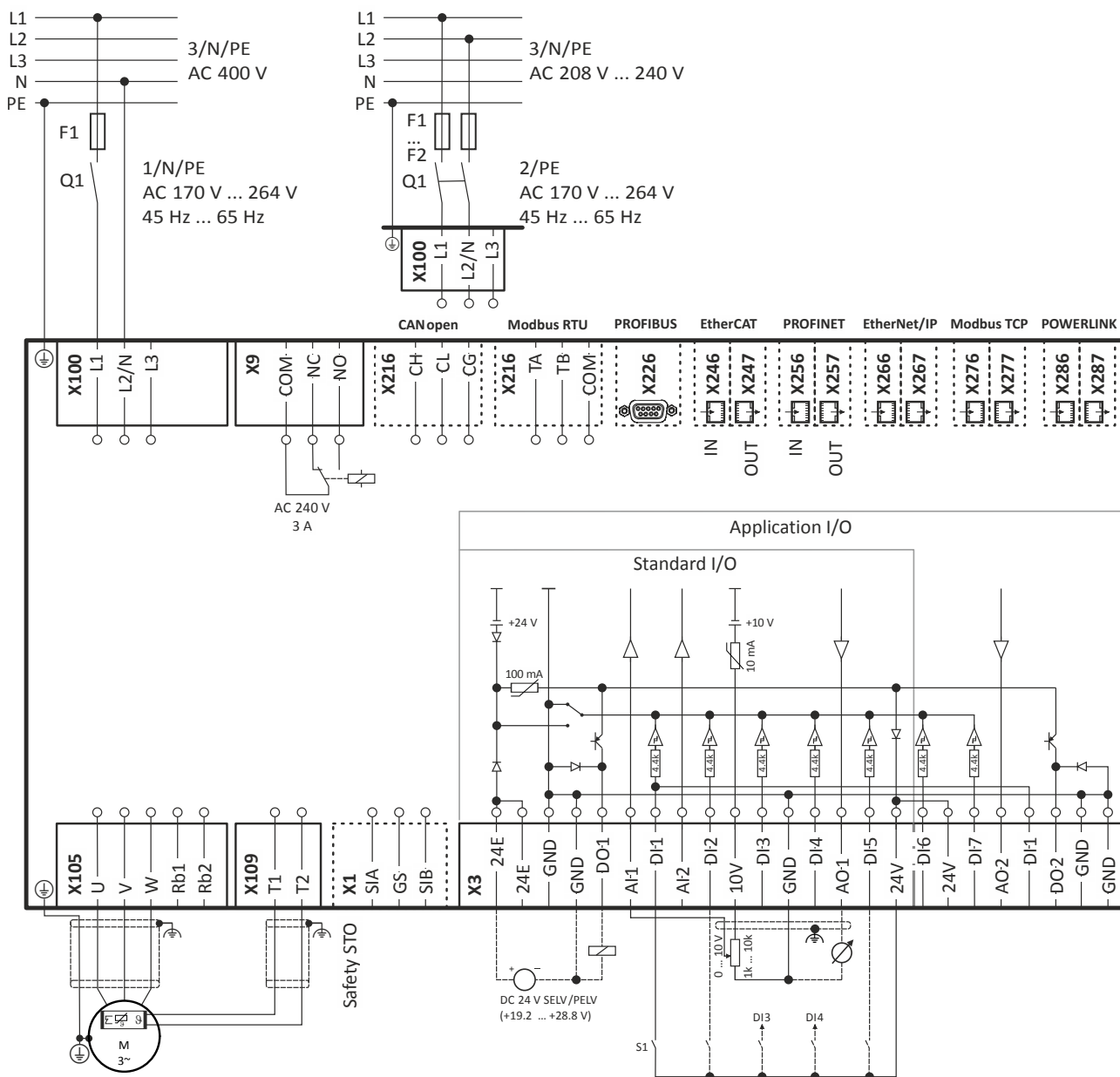
S1 Start/Stop
Fx Fuses

Q1 Mains contactor
--- Dashed line = options

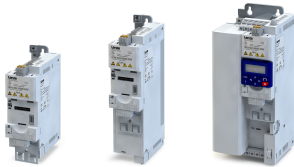
1-phase mains connection 230/240 V



The user must verify that the conformity with EN 61800-3 is fulfilled.



Q1 Mains contactor
--- Dashed line = options



Information on electrical installation

Mains connection
3-phase mains connection 230/240 V

3-phase mains connection 230/240 V

The connection plan is valid for the inverters i550-Cxxx/230-3.



Inverters i550-Cxxx/230-3 do not have an integrated RFI filter in the AC mains supply.

In order to meet the EMC requirements according to EN 61800-3, an external EMC filter according to IEC EN 60939 must be used.

The user must verify that the conformity with EN 61800-3 is fulfilled.

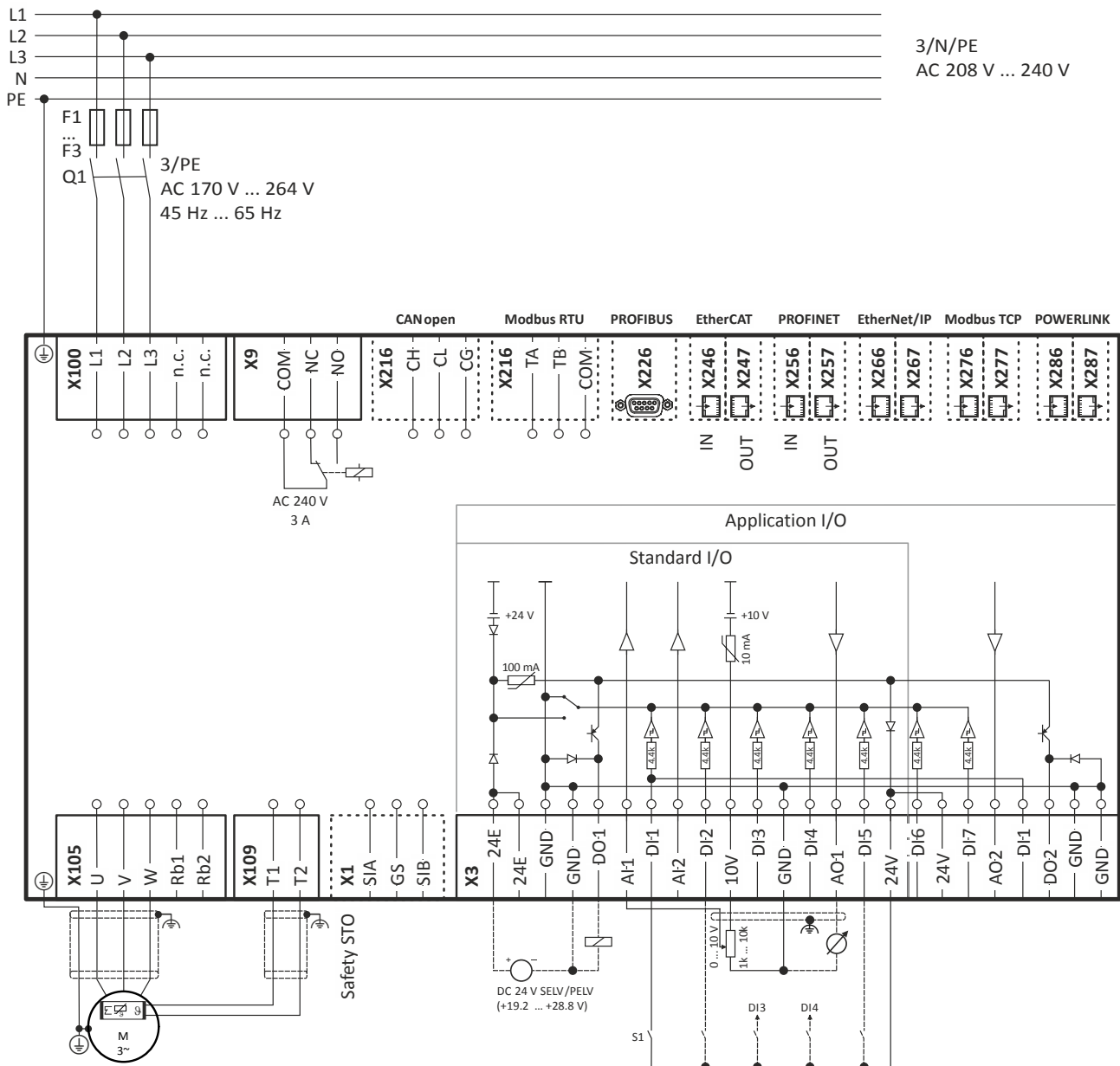
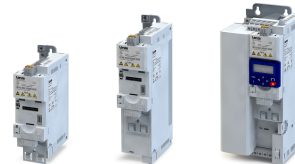


Fig. 6: Wiring example

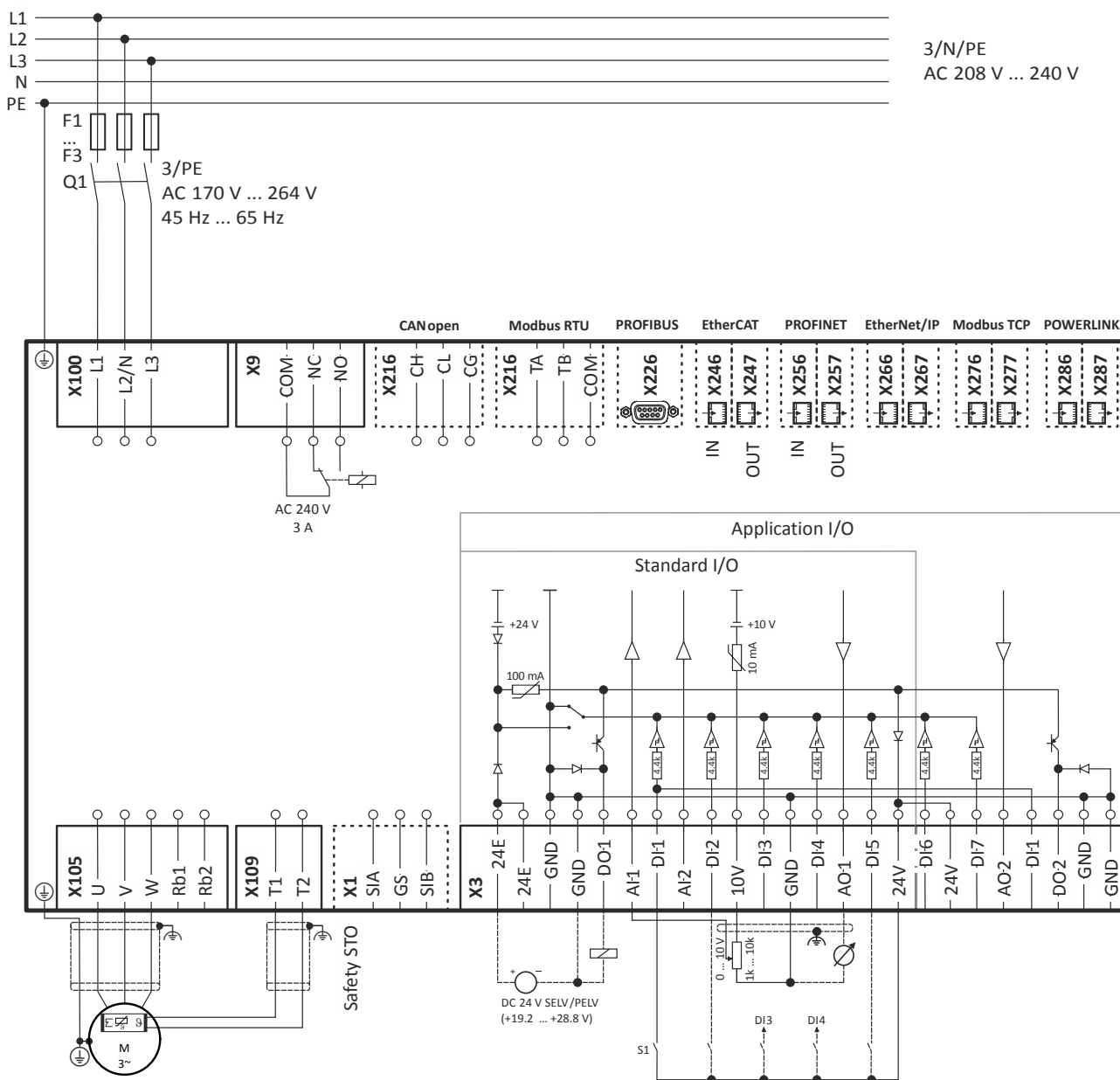
S1 Start/Stop
Fx Fuses

Q1 Mains contactor
--- Dashed line = options

Mains connection
3-phase mains connection 230/240 V

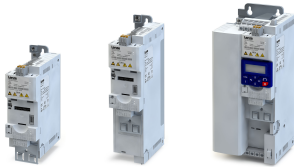


The user must verify that the conformity with EN 61800-3 is fulfilled.



S1	Start/Stop
Fx	Fuses

Q1 Mains contactor
--- Dashed line = options



Information on electrical installation

Mains connection
3-phase mains connection 400 V "Light Duty"

3-phase mains connection 400 V

The connection plan is valid for the inverters i550-Cxxx/400-3.

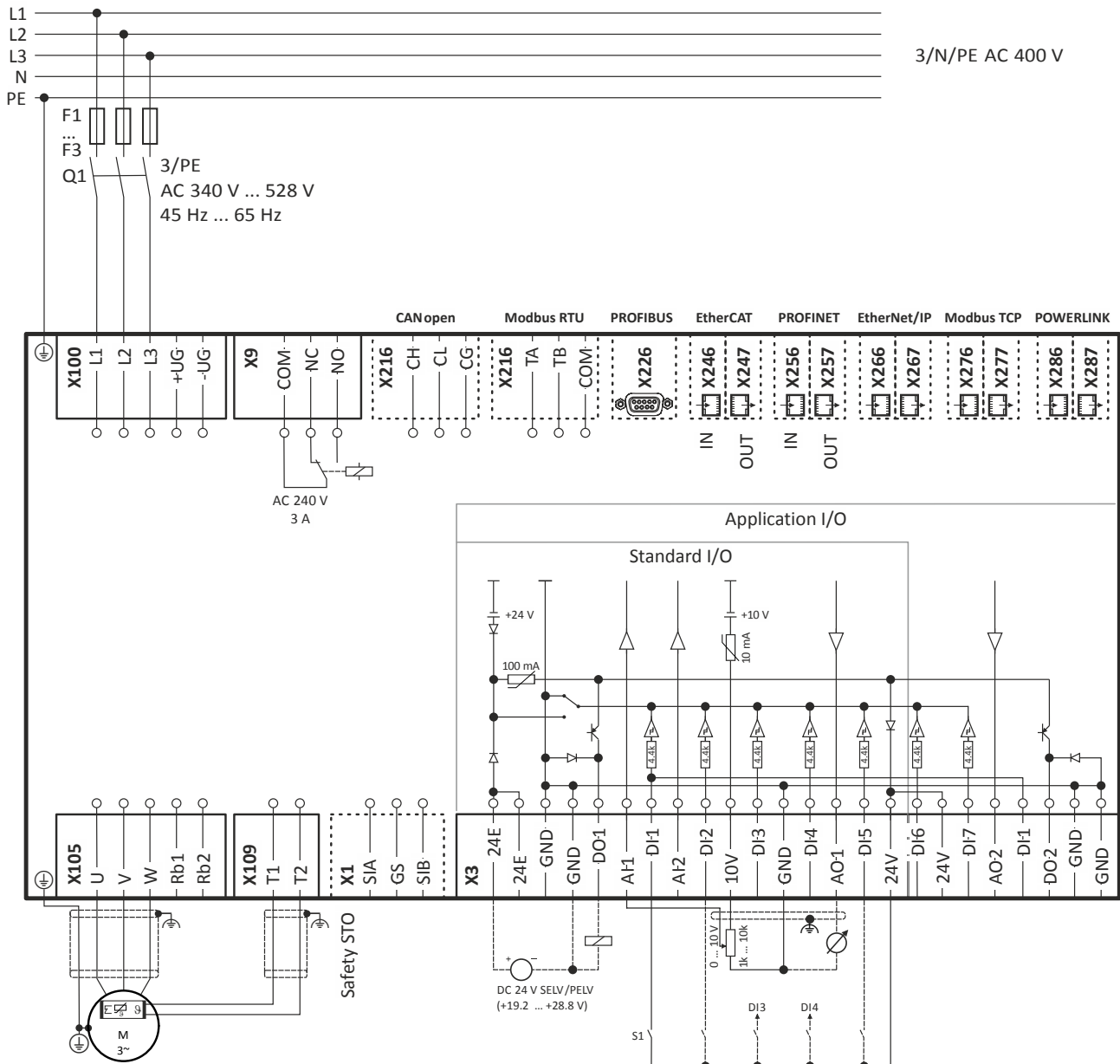


Fig. 8: Wiring example

S1 Start/Stop
Fx Fuses

Q1 Mains contactor
--- Dashed line = options

3-phase mains connection 400 V "Light Duty"

See "".

Information on electrical installation

Mains connection

3-phase mains connection 480 V "Light Duty"



3-phase mains connection 480 V

The connection plan is valid for the inverters i550-Cxxx/400-3.

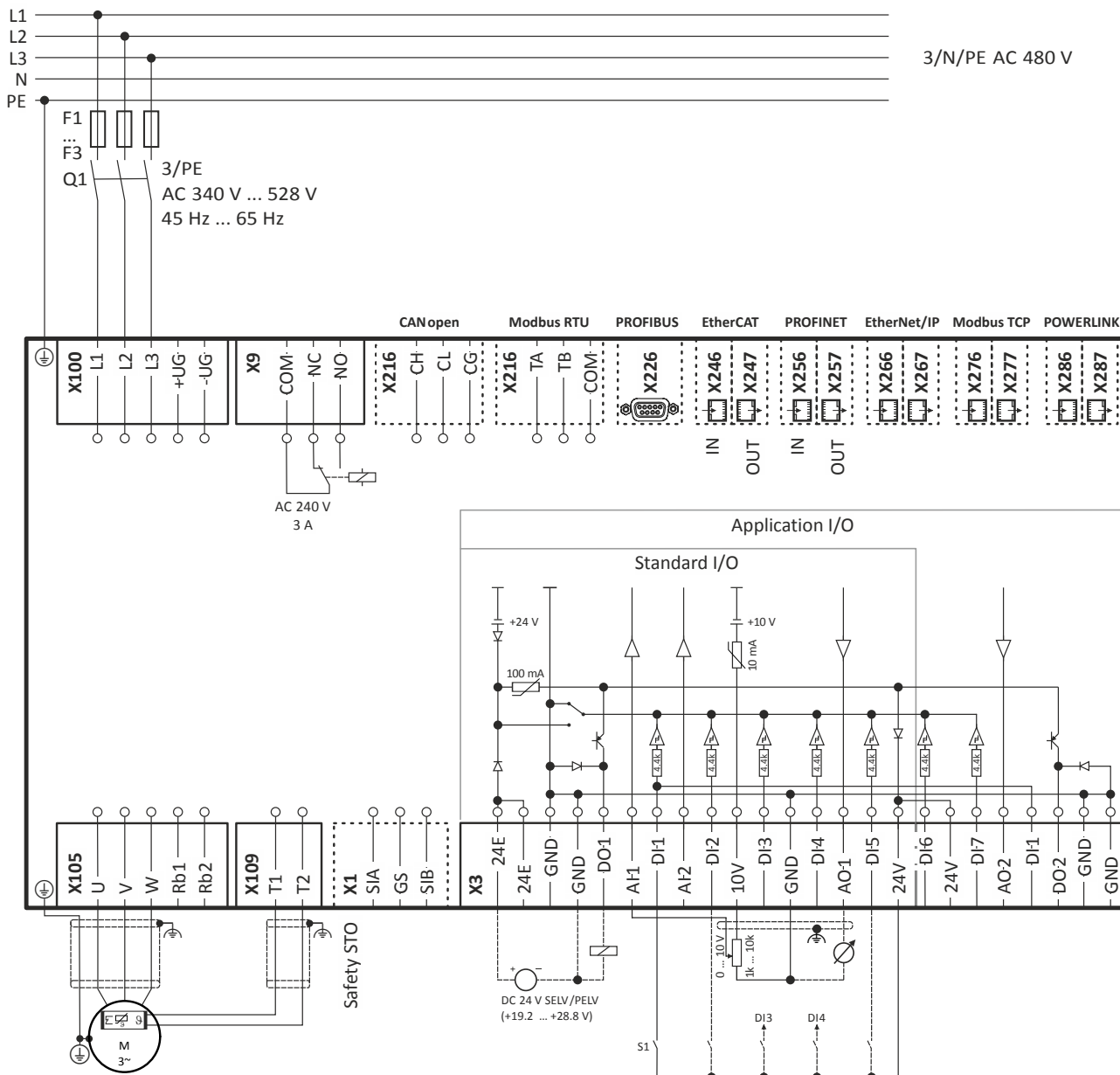


Fig. 9: Wiring example

S1 Start/Stop

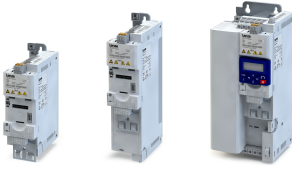
Fx Fuses

Q1 Mains contactor

--- Dashed line = options

3-phase mains connection 480 V "Light Duty"

See "".



Motor connection

Switching in the motor cable



Switching on the motor side of the inverter is permissible:

For safety shutdown (emergency stop).

In case several motors are driven by one inverter (only in V/f operating mode).

Please note the following:

The switching elements on the motor side must be dimensioned for with the maximum occurring load.

Motor cable lengths

- The rated data for the motor cable length must be observed.
- Keep the motor cable as short as possible as this has a positive effect on the drive behaviour and the EMC.
- Several motors connected to an inverter form a group drive.
In case of group drives, the resulting motor cable length l_{res} is relevant:

$$l_{res} [m] = (l_1 + l_2 + l_3 \dots l_i) \cdot \sqrt{i}$$

l_{res}	Resulting length of the motor cables
l_x	Length of the single motor cable
i	Number of the single motor cables

Shielding

A good shield connection and short cable lengths reduce possible interferences caused by problems with the EMC.

Example for preparing the EMC-compliant wiring or the motor cable

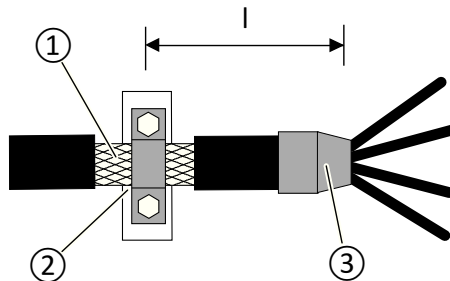
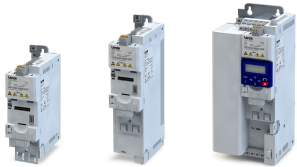


Fig. 10: Shield connection

- | | |
|---|------------------------|
| ① Braid | ③ Heat-shrinkable tube |
| ② large surface contacting of the braid | l maximally 500 mm |

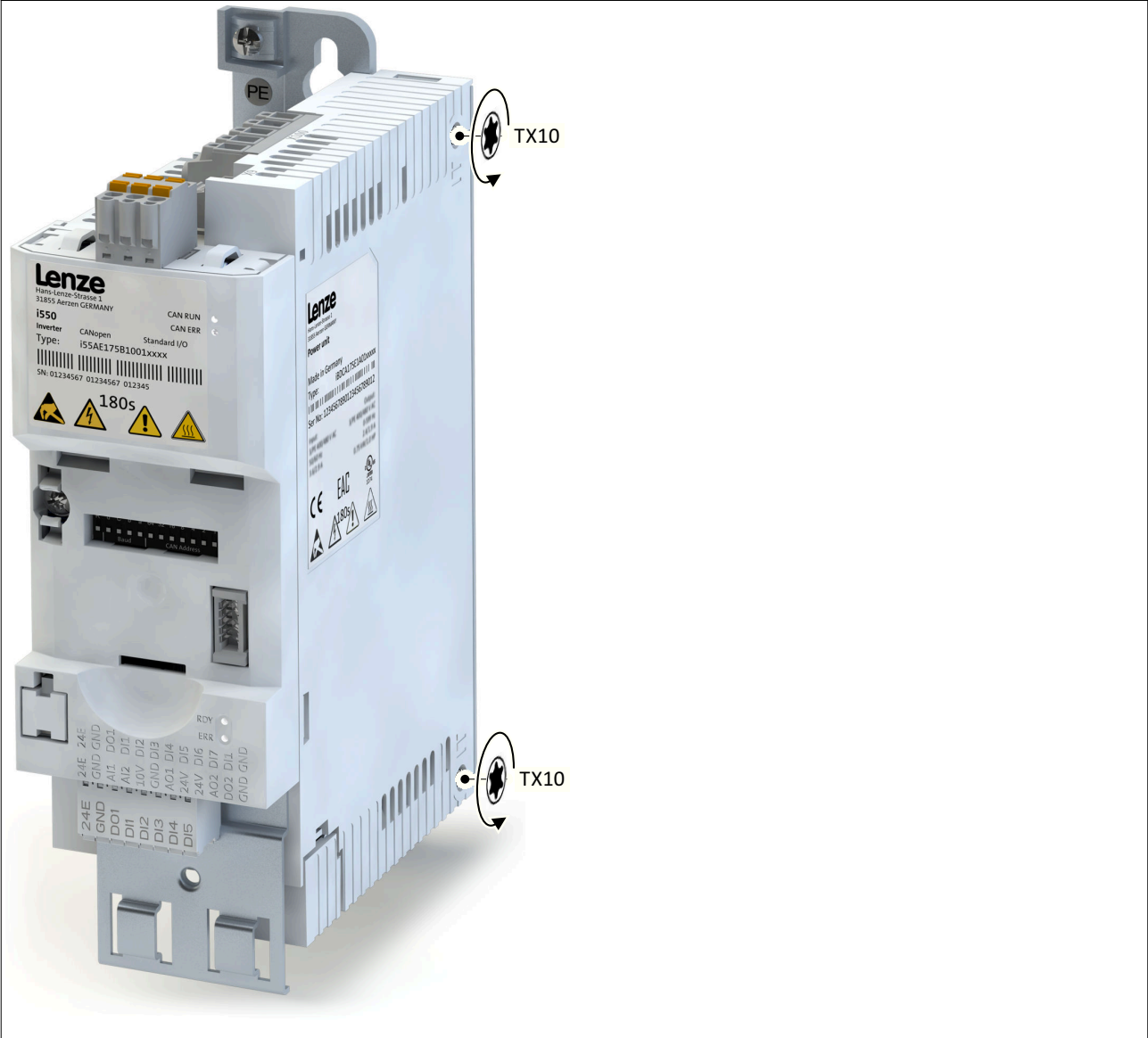
Information on electrical installation

Connection to the IT system

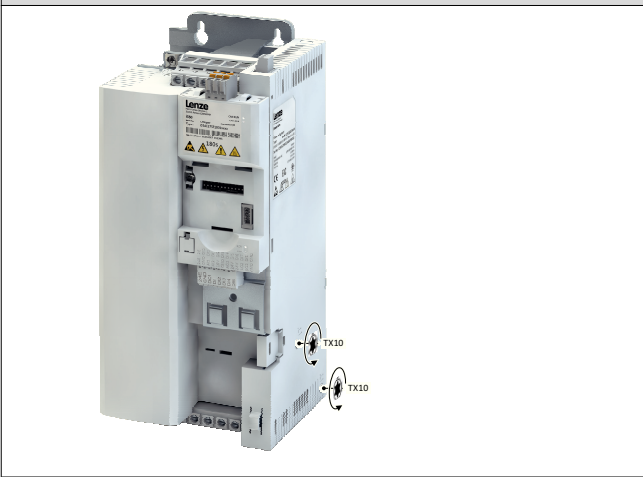


Connection to the IT system

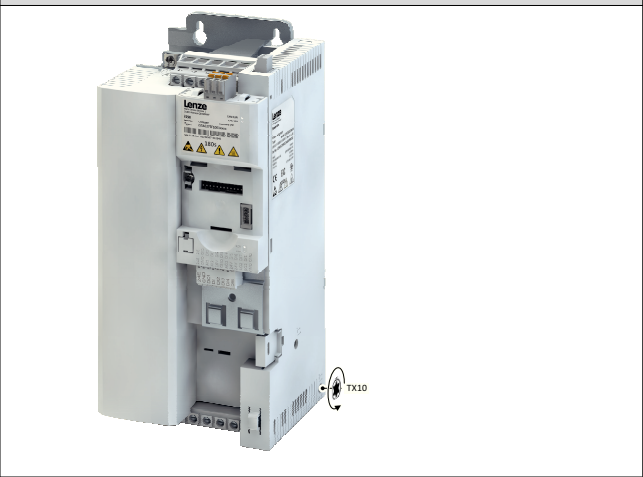
I55AE125x, I55AE137x, I55AE175x, I55AE211x



I55AE230F, I55AE240F, I55AE255F, I55AE275F, I55AE311F



I55AE240D, I55AE255D





Information on electrical installation

Connection to the IT system

I55AE315F, I55AE318F, I55AE322F, I55AE330F, I55AE337F, I55AE345F



Information on electrical installation

Connection of motor temperature monitoring



I55AE355F, I55AE375F, I55AE390F, I55AE411F



Connection of motor temperature monitoring



If the terminal X109 is used, e. g. to connect an external PTC thermistor (PTC) or a thermal contact, ensure at least one basic insulation to the potentials of motor, mains and control terminals to not restrict the protective separation of the control terminals.



Brake resistor connection

If wiring of the brake resistor can be kept short, it is sufficient to twist the cables. Up to 0.5 m of cable length, this applies to the cable of the brake resistor and the cable of temperature monitoring. This procedure reduces interferences caused by problems with the EMC.

Cables for a brake resistor - short version

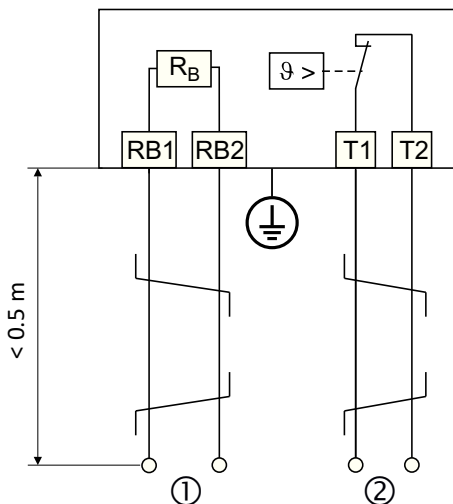


Fig. 11: Connection plan - brake resistor with a cable length of up to 0.5 m

- ① For the connection of the "brake resistor" to the inverter or another component with brake chopper
- ② For a control contact, e.g. digital input that is set to the monitoring mode of the thermal contact

If wiring of the brake resistor cannot be kept short, a shielded cable is required. The cable of the brake resistor shall not exceed a length of 5 m.

For the cable of temperature monitoring, twisting is sufficient. This procedure reduces interferences caused by problems with the EMC.

Cables for a brake resistor - long version

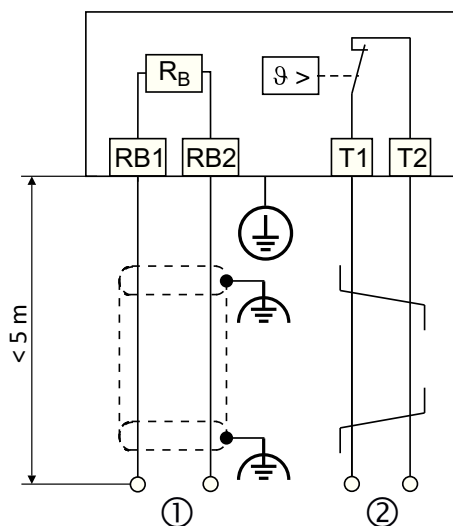
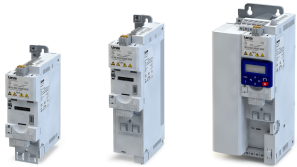


Fig. 12: Connection plan - brake resistor with a cable length of up to 5 m

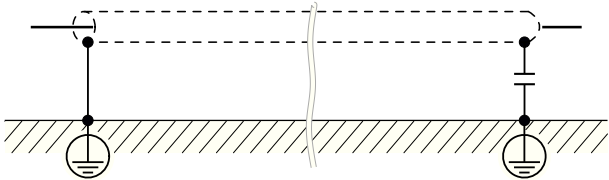
- ① For the connection of the "brake resistor" to the inverter or another component with brake chopper
- ② For a control contact, e.g. digital input that is set to the monitoring mode of the thermal contact



DC-bus connection

Rated mains voltage	DC voltage range
V	
400	DC 450 V - 0 % ... 750 V + 0 %
480	

Control connections



Terminal description			Control terminals
Connection			X3
Connection type			pluggable spring terminal
Max. cable cross-section	mm ²		1.5
Max. cable cross-section	AWG		16
Stripping length	mm		9
Stripping length	inch		0.35
Tightening torque	Nm		-
Tightening torque	lb-in		-
Required tool			0.4 x 2.5



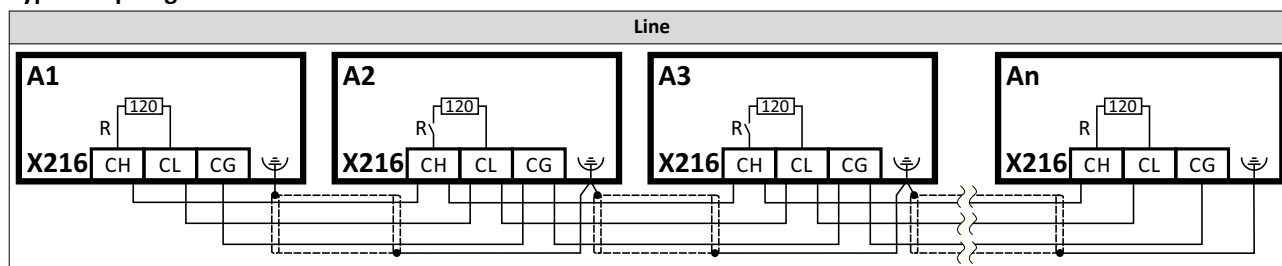
Information on electrical installation

Networks
EtherCAT

Networks

CANopen

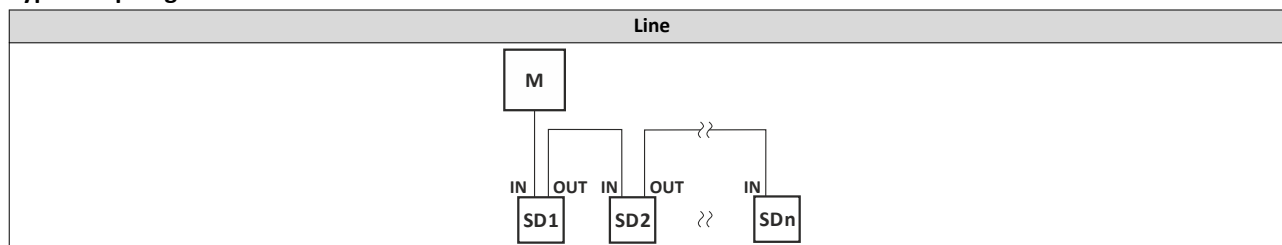
Typical topologies



Terminal description			CANopen
Connection			X216
Connection type			pluggable double spring terminal
Max. cable cross-section	mm ²		2.5
Max. cable cross-section	AWG		12
Stripping length	mm		10
Stripping length	inch		0.39
Tightening torque	Nm		-
Tightening torque	lb-in		-
Required tool			0.4 x 2.5

EtherCAT

Typical topologies



M Master
SD Slave Device

Bus-related information			
Name		EtherCAT	
Communication medium		Ethernet 100 Mbps, full duplex	
Used for...		Connection of the inverter to an EtherCAT network	
Connection system		RJ45	
Status display		2 LEDs	
Connection designation		In: X246 Out: X247	

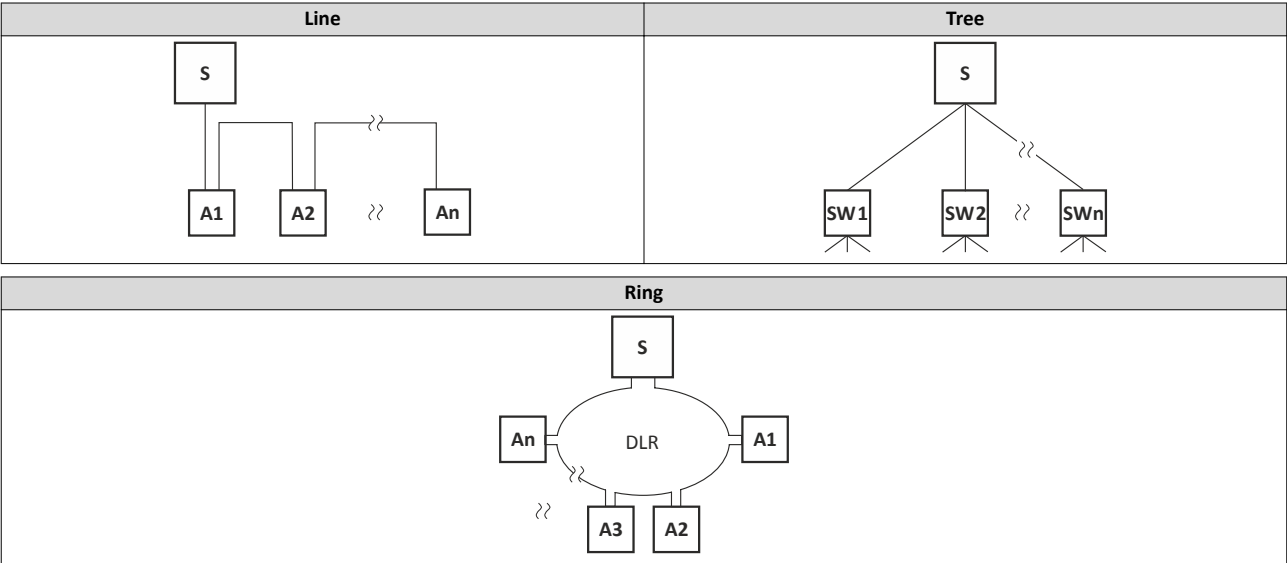
Information on electrical installation

Networks
Modbus RTU



EtherNet/IP

Typical topologies

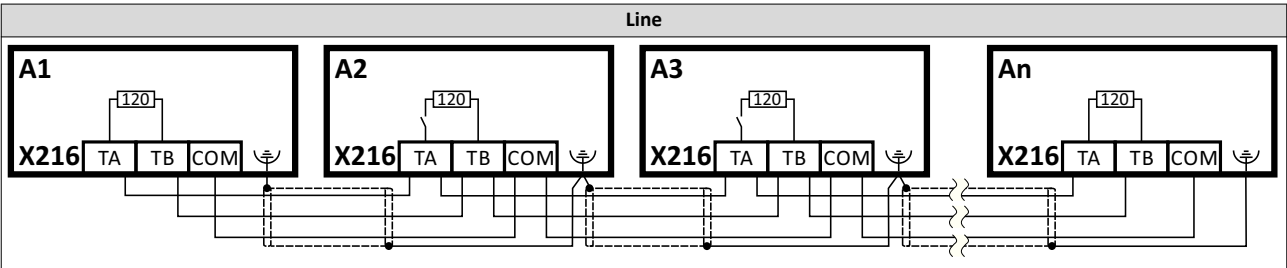


S Scanner
A Adapter
SW Switch

Bus-related information			
Name		EtherNet/IP	
Communication medium		Ethernet 10 Mbps, 100 Mbps, half duplex, full duplex	
Used for...		Connection of the inverter to an EtherNet/IP network	
Connection system		RJ45	
Status display		2 LEDs	
Connection designation		In: X266 Out: X267	

Modbus RTU

Typical topologies



Terminal description			Modbus RTU
Connection			X216
Connection type			pluggable double spring terminal
Max. cable cross-section	mm ²		2.5
Max. cable cross-section	AWG		12
Stripping length	mm		10
Stripping length	inch		0.39
Tightening torque	Nm		-
Tightening torque	lb-in		-
Required tool			0.4 x 2.5

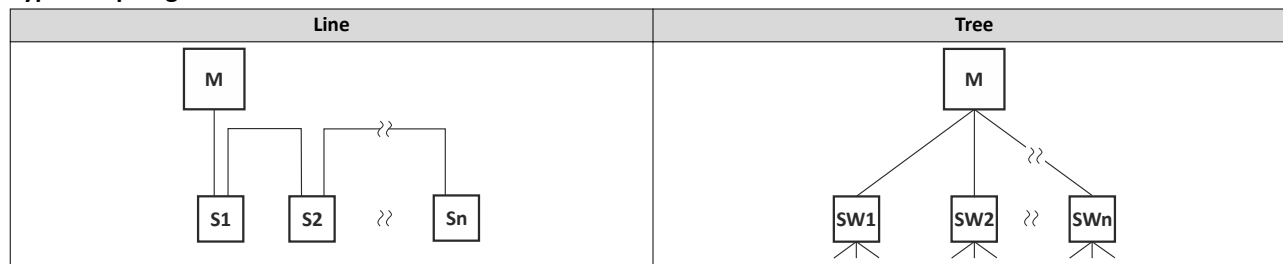


Information on electrical installation

Networks
POWERLINK

Modbus TCP

Typical topologies



M Master
S Slave

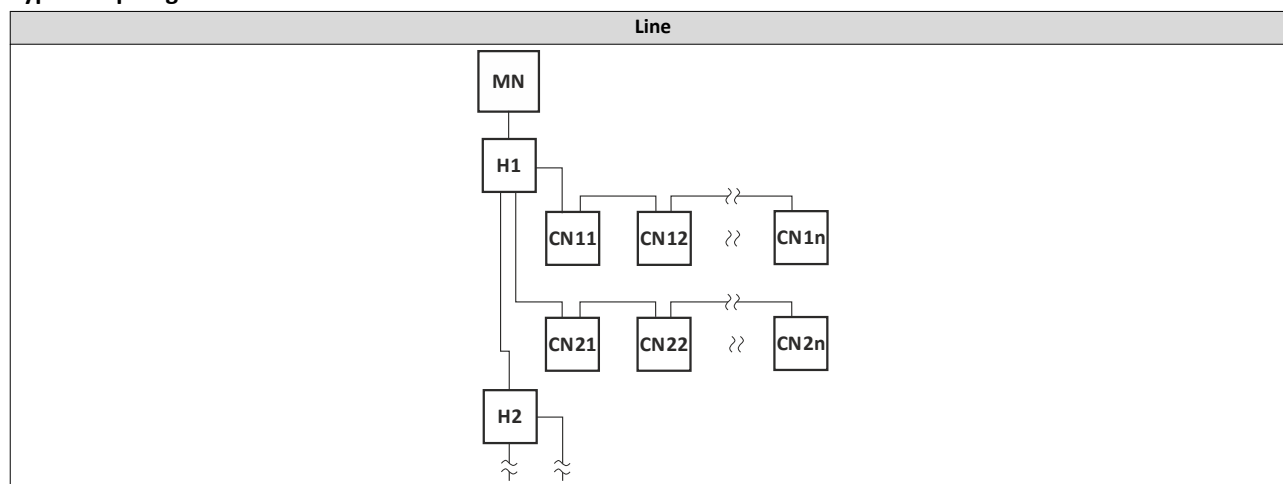
SW Switch

Bus-related information

Name		Modbus TCP	
Communication medium		Ethernet 10 Mbps, 100 Mbps, half duplex, full duplex	
Used for...		Connection of the inverter to a Modbus TCP network	
Connection system		RJ45	
Status display		2 LEDs	
Connection designation		Port 1: X276 Port 2: X277	

POWERLINK

Typical topologies



Mrated Managing Node
CN Controlled Node

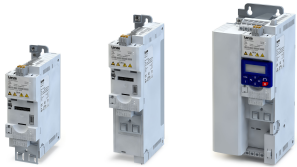
H Hub

Bus-related information

Name		Ethernet POWERLINK	
Communication medium		Ethernet 100 Mbps, half duplex	
Used for...		Connection of the inverter to a POWERLINK network	
Connection system		RJ45	
Status display		2 LEDs	
Connection designation		IN: X286 OUT: X287	

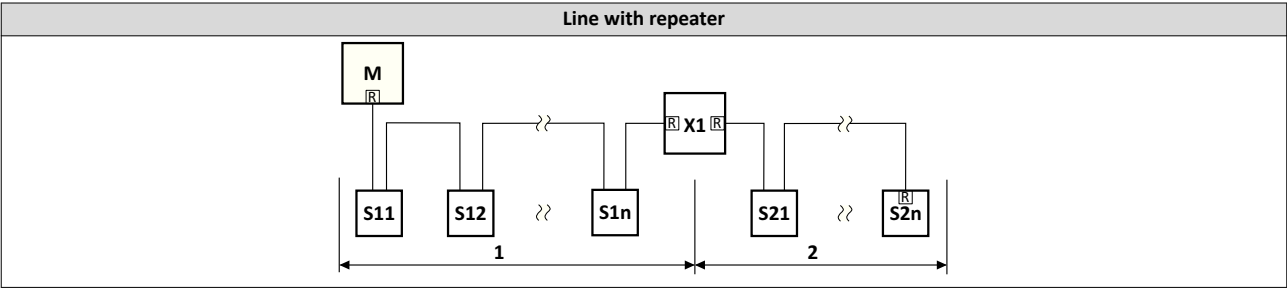
Information on electrical installation

Networks
PROFIBUS



PROFIBUS

Typical topologies



M Master
S Slave
X Repeater
R Activated bus terminating resistor

Terminal description			PROFIBUS
Connection			X226
Connection type			Sub-D 9p
Max. cable cross-section	mm ²		-
Max. cable cross-section	AWG		-
Stripping length	mm		-
Stripping length	inch		-
Tightening torque	Nm		-
Tightening torque	lb-in		-
Required tool			-

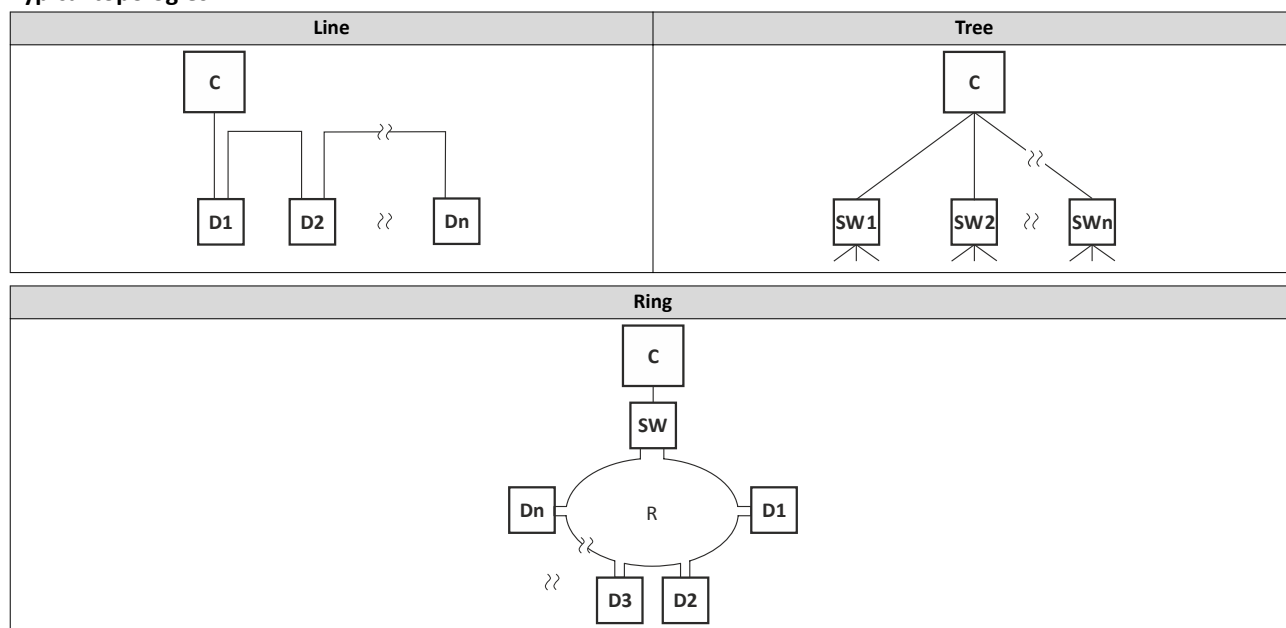
Sub D socket 9-pin - X226

View	Pin	Assignment	Description
	1	Shield	Additional shield connection
	2	n.c.	
	3	RxD/TxD-P	Data line-B (received data/transmitted data +)
	4	RTS	Request To Send (received data/transmitted data, no differential signal)
	5	M5V2	Reference potential (bus terminating resistor -)
	6	P5V2	5 V DC / 30 mA (bus terminating resistor +, OLM, OLP)
	7	n.c.	
	8	RxD/TxD-N	Data line-A (received data/transmitted data -)
	9	n.c.	



PROFINET

Typical topologies

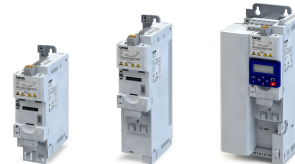


C IO controller
D IO device

SW Switch SCALANCE (MRP capable)
R Redundant domain

Bus-related information

Name		PROFINET RT	
Communication medium		Ethernet 100 Mbps, full duplex	
Used for...		Connection of the inverter to a PROFINET network	
Connection system		RJ45	
Status display		2 LEDs	
Connection designation		In: X256 Out: X257	



Functional safety

DANGER!

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

Possible consequences: Death or severe injuries

- ▶ Safety engineering systems may only be installed and commissioned by qualified and skilled personnel.
- ▶ All control components (switches, relays, PLC, ...) must comply with the requirements of the EN ISO 13849-1 and the EN ISO 13849-2.
- ▶ Switches, relays with at least IP54 enclosure.
- ▶ Control cabinet with at least IP54 enclosure.
- ▶ It is essential to use shields for the wiring.
- ▶ 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
- ▶ Ensure that no short circuits can occur according to the specifications of the EN ISO 13849-2.
- ▶ All further requirements and measures can be obtained from the EN ISO 13849-1 and the EN ISO 13849-2.
- ▶ If an external force acts upon the drive axes, additional brakes are required. Please observe that hanging loads are subject to the force of gravity!
- ▶ The user has to ensure that the inverter will only be used in its intended application within the specified environmental conditions. This is the only way to comply with the declared safety-related characteristics.

DANGER!

Automatic restart if the request of the safety function is deactivated.

Possible consequences: Death or severe injuries

- ▶ You must provide external measures according to EN ISO 13849-1 which ensure that the drive only restarts after a confirmation.

NOTICE

Excessively high humidity or condensation

Malfunction or destruction of the safety component

- ▶ Only commission the safety component when it has acclimatised.

NOTICE

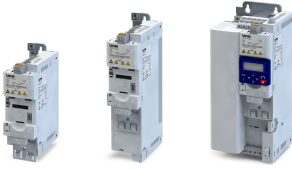
Overvoltage

Destruction of the safety component

- ▶ The maximum voltage (maximum rated) at the safety inputs is 30 V DC. The user must make provisions to avoid that this voltage is exceeded.

Identification of the components

Safety components and the respective terminals are yellow.



Important notes

Standards

Safety regulations are confirmed by laws and other governmental guidelines and measures and the prevailing opinion among experts, e.g. by technical regulations.

The regulations and rules to be applied must be observed in accordance with the application.

Risk assessment

This documentation can only accentuate the need for a risk assessment. The user of the integrated safety system must read up on standards and the legal situation.

Before a machine can be put into circulation, the manufacturer of the machine has to conduct a risk assessment according to the 2006/42/EC: Machinery Directive to determine the hazards associated with the use of the machine.

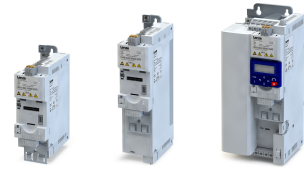
The Machinery Directive refers to three basic principles for the highest possible level of safety:

- Hazard elimination / minimisation by the construction itself.
- Taking the protective measures required against hazards that cannot be removed.
- Existing residual hazards must be documented and the user must be informed of them.

Detailed information on the risk assessment is provided in the DIN EN ISO 12100:2013-08: Safety of machinery – general principles for design – risk assessment and risk reduction . The result of the risk assessment determines the category for safety-related control systems according to EN ISO 13849-1. Safety-oriented parts of the machine control must be compliant.

Information on electrical installation

Functional safety
Basic Safety - STO



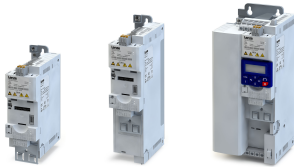
Basic Safety - STO

DANGER!

With the "Safe torque off" (STO) function, no "emergency switching-off" in terms with EN 60204-1 can be executed without additional measures. There is no isolation between the motor and inverter, no service switch or maintenance switch!

Possible consequence: death or severe injuries

► "Emergency switching-off" requires electrical isolation, e.g. by a central mains contactor.

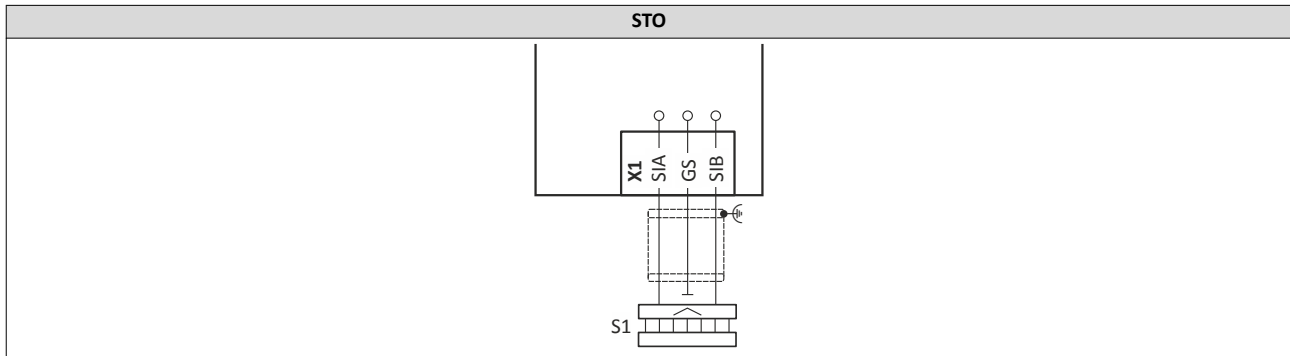


Information on electrical installation

Functional safety
Basic Safety - STO

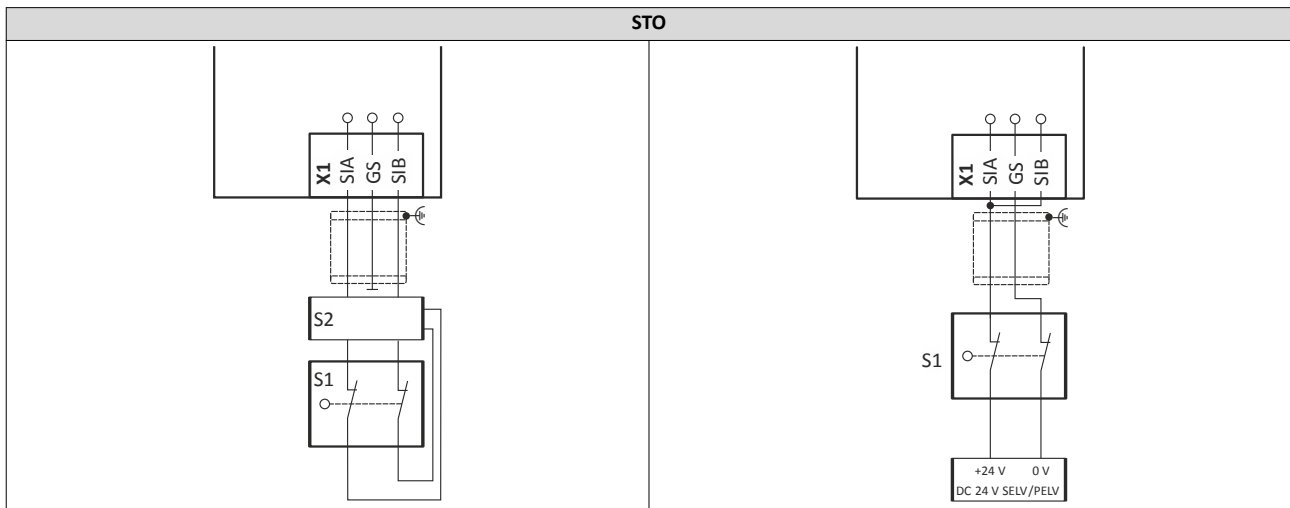
Connection diagram

Active sensors



S1 Active sensor - example of lightgrid

Passive sensors

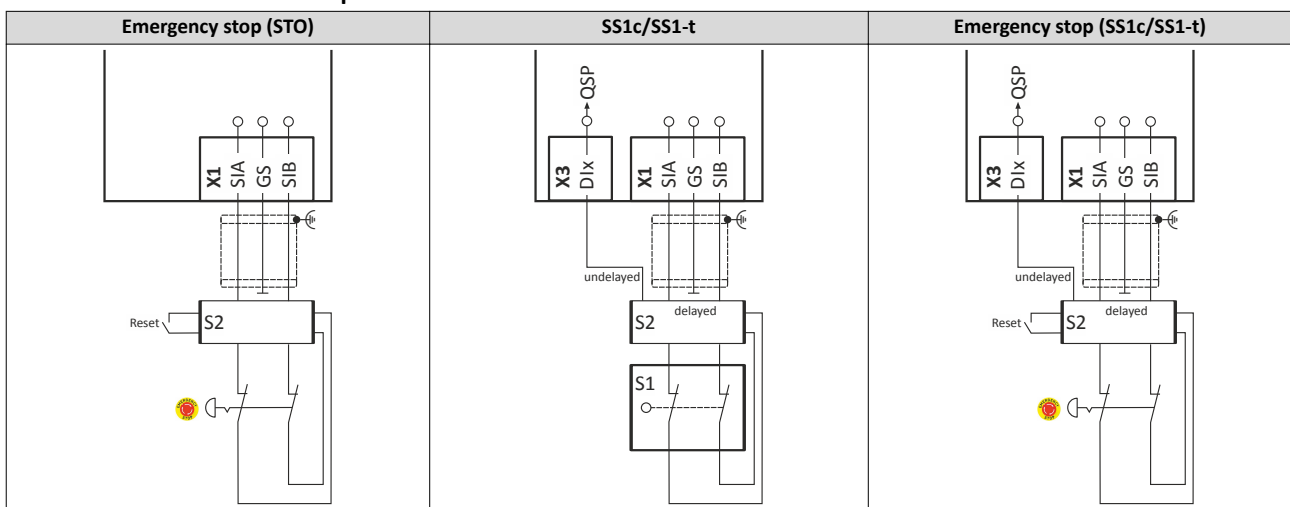


S1 Passive sensor

S2 Safety switching device

S1 Passive sensor

Passive sensors - further examples



S2 Safety switching device

S1 Passive sensor
S2 Safety switching device with delayed contacts

S2 Safety switching device with delayed contacts

Information on electrical installation

Functional safety
Basic Safety - STO



Terminal data

X1	Specification	Unit	min.	typ.	max.
SIA, SIB	LOW signal	V	-3	0	+5
	HIGH signal	V	+15	+24	+30
	Running time	ms		3	
	Clear 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		
GS	Reference potential for SIA and SIB				

Terminal description			Safety STO
Connection			X1
Connection type			pluggable double spring terminal
Max. cable cross-section	mm ²		1.5
Max. cable cross-section	AWG		16
Stripping length	mm		9
Stripping length	inch		0.35
Tightening torque	Nm		-
Tightening torque	lb-in		-
Required tool			0.4 x 2.5



Technical data

Standards and operating conditions

Conformities/approvals

Conformity		
CE	2014/35/EU	Low-Voltage Directive
CE	2014/30/EU	EMC Directive (reference: CE-typical drive system)
EAC	TR CU 004/2011	Eurasian conformity: safety of low voltage equipment
EAC	TR CU 020/2011	Eurasian conformity: electromagnetic compatibility of technical means
RoHS	2011/65/EU	Restrictions for the use of specific hazardous materials in electric and electronic devices
Approval		
UL	UL 61800-5-1	for USA and Canada (requirements of the CSA 22.2 No. 274)
UL	UL 61800-5-1	File No. E132659

Protection of persons and device protection

Enclosure		
IP20	EN 60529	Information applies to the mounted and ready-for-use state and not to the wire range of the terminals
	NEMA 250	Protection against contact only according to type 1
Open type		Only in UL-approved systems
Leakage current		
> 3.5 mA AC, > 10 mA DC	EN 61800-5-1	Observe regulations and safety instructions!
Starting current		
≤ 3 x rated mains current		
Insulation resistance		
Overvoltage category III	EN 61800-5-1	0 ... 2000 m a.m.s.l.
Overvoltage category II	EN 61800-5-1	above 2000 m a.m.s.l.
Control circuit isolation		
Safe mains isolation by double/reinforced insulation	EN 61800-5-1	
Protective measures against		
Short circuit		
earth fault		Earth fault strength depends on the operating status
Overvoltage		
Motor stalling		
Motor overtemperature		PTC or thermal contact, I ² t monitoring

EMC data

Noise emission		
Category C1	EN 61800-3	see rated data
Category C2	EN 61800-3	see rated data
Category C3	EN 61800-3	see rated data
Noise immunity		
Meets requirement in compliance with	EN 61800-3	
Actuation on public supply systems		
Implement measures to limit the radio interference to be expected:		The machine or plant manufacturer is responsible for compliance with the requirements for the machine/plant!
< 1 kW: with mains choke	EN 61000-3-2	
> 1 kW at mains current ≤ 16 A: without additional measures	EN 61000-3-2	
Mains current > 16 A: with mains choke or mains filter, when sizing for rated power.	EN 61000-3-12	

Technical data

Standards and operating conditions
Electrical supply conditions



Motor connection

Requirements to the shielded motor cable		
Capacitance per unit length		
C-core-core/C-core-shield < 75/150 pF/m		≤ 2.5 mm ² / AWG 14
C-core-core/C-core-shield < 150/300 pF/m		≥ 4 mm ² / AWG 12
Electric strength		
U _o /U = 0.6/1.0 kV		U _o = r.m.s. value external conductor to PE
U _o /U = 0.6/1.0 kV		U = r.m.s. value external conductor/external conductor
U ≥ 600 V	UL	U = r.m.s. value external conductor/external conductor

Environmental conditions

Climate		
1K3 (-25 ... +60 °C)	EN 60721-3-1	Storage
2K3 (-25 ... +70 °C)	EN 60721-3-2	Transport
3K3 (-10 ... +55 °C)	EN 60721-3-3	operation
		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 or 16 kHz: above +40°C, reduce rated output current by 2.5 %/°C
Site altitude		
0 ... 1000 m a.m.s.l.		
1000 ... 4000 m a.m.s.l.		Reduce rated output current by 5 %/1000 m
Vibration resistance		
Transport		
2M2 (sine, shock)	EN 60721-3-2	in original packaging
2M2 (sine, shock)	EN 60721-3-2	up to 45 kW
operation		
Amplitude 0.075 mm	EN 61800-5-1	10 ... 57 Hz
Acceleration resistant up to 1 g	EN 61800-5-1	57 ... 150 Hz
Pollution		
Degree of pollution 2	EN 61800-5-1	
Degree of pollution 2	UL 61800-5-1	
Energy efficiency		
Class IE2	EN 50598-2	

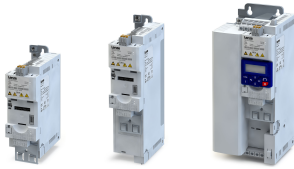
Electrical supply conditions

The connection to different supply forms enables a worldwide application of the inverters.

The following is supported:

- [1-phase mains connection 120 V](#) 76
- [1-phase mains connection 230/240 V](#) 82
- [3-phase mains connection 230/240 V](#) 99
- ▶ [3-phase mains connection 400 V](#) 111
- [3-phase mains connection 400 V "Light Duty"](#) 137
- ▶ [3-phase mains connection 480 V](#) 156
- [3-phase mains connection 480 V "Light Duty"](#) 182

Permissible mains systems		
TT		Voltage against earth: max. 300 V
TN		Voltage against earth: max. 300 V
IT		Apply the measures described for IT systems!
IT		IT systems are not relevant for UL-approved systems



Certification of the integrated safety

The certification of the integrated safety is based on these test fundamentals:

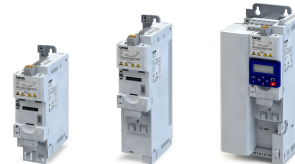
- EN ISO 13849-1: Safety of machinery – safety-related parts of control systems – Part 1
- EN ISO 13849-2: Safety of machinery – safety-related parts of control systems – Part 2
- EN 60204-1: Safety of machinery – electrical equipment of machines – Part 1
- EN 61508, Part 1-7: 1-7: Functional safety of safety-related electrical/electronic/programmable electronic systems
- EN 61800-3: Electric variable-speed drives – Part 3: EMC requirements including specific test procedures
- EN 61800-5-1: Adjustable speed electrical power drive systems – Part 5-1: Safety requirements – electrical, thermal and energy
- EN 61800-5-2: Adjustable speed electrical power drive systems – Part 5-2: Safety requirements – functional safety
- EN 62061: Safety of machinery – functional safety of safety-related electrical/electronic/programmable electronic systems



Declarations of Conformity and certificates can be found on the internet at
<http://www.Lenze.com>

Technical data

1-phase mains connection 120 V



1-phase mains connection 120 V



EMC filters are **not integrated** in inverters for this mains connection.



Technical data

1-phase mains connection 120 V
Rated data

Rated data

The output currents apply to these operating conditions:

- At a switching frequency of 2 kHz or 4 kHz: Max. ambient temperature 45°C.
- At a switching frequency of 8 kHz or 16 kHz: Max. ambient temperature 40 °C.

Inverter			i550-C0.25/120-1	i550-C0.37/120-1	i550-C0.75/120-1	i550-C1.1/120-1
Rated power	kW	P _N	0.25	0.37	0.75	1.1
Rated power	hp	P _N	0.33	0.5	1	1.5
Mains voltage range			1/PE AC 90 V ... 132 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-230/240 V			
Rated mains current						
without mains choke	A	I _{r, AC}	6.8	9.6	16.8	22.9
with mains choke	A	I _{r, AC}	6	8.5	14.7	17.1
Apparent output power	kVA	A _{ON}	0.6	0.9	1.6	2.2
Rated output current						
2 kHz	A	I _{OUT}	1.7	2.4	4.2	6
4 kHz	A	I _{OUT}	1.7	2.4	4.2	6
8 kHz	A	I _{OUT}	1.7	2.4	4.2	6
16 kHz	A	I _{OUT}	1.1	1.6	2.8	4
Power loss						
2 kHz	W		15	19	29	39
4 kHz	W		16	21	29	40
8 kHz	W		18	23	35	47
16 kHz	W		20	24	36	45
at inverter disablecontroller inhibit	W		6	6	6	6
Overcurrent cycle 180 s						
Max. output current	A	I _{max, out}	2.6	3.6	6.3	9
Overload time	s	t _{ol}	60	60	60	60
Recovery time	s	t _{re}	120	120	120	120
Max. output current during the recovery time	A		1.3	1.8	3.2	4.5
Overcurrent cycle 15 s						
Max. output current	A	I _{max, out}	3.4	4.8	8.4	12
Overload time	s	t _{ol}	3	3	3	3
Recovery time	s	t _{re}	12	12	12	12
Max. output current during the recovery time	A		1.3	1.8	3.2	4.5
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	I _{max, 1}	2.2	2.2	8.3	8.3
Min. brake resistance	Ω	R _{min}	180	180	47	47
Max. motor cable length shielded						
without EMC category	m		50	50	50	50
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Weight	kg		1	1	1.35	1.35
Weight	lb		2.2	2.2	3	3

Technical data

1-phase mains connection 120 V

Fusing data



Fusing data

Fusing data						
Inverter			i550-C0.25/120-1	i550-C0.37/120-1	i550-C0.75/120-1	i550-C1.1/120-1
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		16	16	25	25
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		16	16	25	25
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		16	16	25	25
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		16	16	25	25
Earth-leakage circuit breaker						
1-phase mains connection			≥ 30 mA, type A or B			



Technical data

1-phase mains connection 120 V
Fusing data

Fusing data						
Inverter			i550-C0.25/120-1	i550-C0.37/120-1	i550-C0.75/120-1	i550-C1.1/120-1
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		15	15	30	30
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			120 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			
Max. rated current	A		15	15	30	30
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			120 Volts Maximum			
with mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		15	15	30	30
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			120 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			
Max. rated current	A		15	15	30	30
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			120 Volts Maximum			
Earth-leakage circuit breaker						
1-phase mains connection			≥ 30 mA, type A or B			

Technical data

1-phase mains connection 120 V
Brake resistors



Terminal data

Mains connection						
Inverter			i550-C0.25/120-1	i550-C0.37/120-1	i550-C0.75/120-1	i550-C1.1/120-1
Connection			X100			
Connection type			pluggable screw terminal			
Max. cable cross-section	mm ²		2.5	2.5	6	6
Max. cable cross-section	AWG		12	12	10	10
Stripping length	mm		8	8	8	8
Stripping length	inch		0.32	0.32	0.32	0.32
Tightening torque	Nm		0.5	0.5	0.7	0.7
Tightening torque	lb-in		4.4	4.4	6.2	6.2
Required tool			0.5 x 3.0		0.6 x 3.5	

PE connection						
Inverter			i550-C0.25/120-1	i550-C0.37/120-1	i550-C0.75/120-1	i550-C1.1/120-1
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		6	6	6	6
Max. cable cross-section	AWG		10	10	10	10
Stripping length	mm		10	10	10	10
Stripping length	inch		0.39	0.39	0.39	0.39
Tightening torque	Nm		2	2	2	2
Tightening torque	lb-in		18	18	18	18
Required tool			Torx 20			

Motor connection						
Inverter			i550-C0.25/120-1	i550-C0.37/120-1	i550-C0.75/120-1	i550-C1.1/120-1
Connection			X105			
Connection type			pluggable screw terminal			
Max. cable cross-section	mm ²		2.5	2.5	2.5	2.5
Max. cable cross-section	AWG		12	12	12	12
Stripping length	mm		8	8	8	8
Stripping length	inch		0.32	0.32	0.32	0.32
Tightening torque	Nm		0.5	0.5	0.5	0.5
Tightening torque	lb-in		4.4	4.4	4.4	4.4
Required tool			0.5 x 3.0			

The terminal data for the terminal X1 can be found under: [Terminal data](#) 72

Brake resistors

Inverter	Brake resistor					
	Order code	Rated resistance	Rated power	Thermal capacity	Dimensions (h x b x t)	Weight
		Ω	W	kWs	mm	kg
i550-C0.25/120-1	ERBM180R050W	180	50	7.5	175 x 21 x 40	0.28
i550-C0.37/120-1						
i550-C0.75/120-1	ERBP047R200W	47	200	30	320 x 41 x 122	1
i550-C1.1/120-1						



Technical data

1-phase mains connection 120 V
Mains chokes

Mains chokes

Inverter	Mains choke					
	Order code	Number of phases	Output current	Inductance	Dimensions (h x b x t)	Weight
			A	mH	mm	kg
i550-C0.25/120-1	ELN1-0500H009	1	9	5	75 x 66 x 82	1.1
i550-C0.37/120-1						
i550-C0.75/120-1	ELN1-0250H018		18	2.5	96 x 96 x 90	2.1
i550-C1.1/120-1						

Technical data

1-phase mains connection 230/240 V



1-phase mains connection 230/240 V



When selecting the inverters, please note: **EMC filters** are integrated in the i550-Cxxx/230-1 **inverters**. **EMC filters** are not integrated in the inverters i550-Cxxx/230-2.



Technical data

1-phase mains connection 230/240 V
Rated data

Rated data

The output currents apply to these operating conditions:

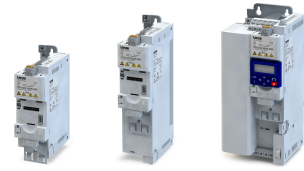
- At a switching frequency of 2 kHz or 4 kHz: Max. ambient temperature 45°C.
- At a switching frequency of 8 kHz or 16 kHz: Max. ambient temperature 40 °C.

Inverter			i550-C0.25/230-1	i550-C0.25/230-2	i550-C0.37/230-1	i550-C0.37/230-2
Rated power	kW	P _N	0.25	0.25	0.37	0.37
Rated power	hp	P _N	0.33	0.33	0.5	0.5
Mains voltage range			1/PE AC 170 V ... 264 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-230/240 V			
Rated mains current						
without mains choke	A	I _{r, AC}	4	4	5.7	5.7
with mains choke	A	I _{r, AC}	3.6	3.6	4.8	4.8
Apparent output power	kVA	A _{ON}	0.6	0.6	0.9	0.9
Rated output current						
2 kHz	A	I _{OUT}	-	-	-	-
4 kHz	A	I _{OUT}	1.7	1.7	2.4	2.4
8 kHz	A	I _{OUT}	1.7	1.7	2.4	2.4
16 kHz	A	I _{OUT}	1.1	1.1	1.6	1.6
Power loss						
2 kHz	W		-	-	-	-
4 kHz	W		15	15	18	18
8 kHz	W		15	15	20	20
16 kHz	W		19	19	24	24
at inverter disablecontroller inhibit	W		6	6	6	6
Overcurrent cycle 180 s						
Max. output current	A	I _{max, out}	2.6	2.6	3.6	3.6
Overload time	s	t _{ol}	60	60	60	60
Recovery time	s	t _{re}	120	120	120	120
Max. output current during the recovery time	A		1.3	1.3	1.8	1.8
Overcurrent cycle 15 s						
Max. output current	A	I _{max, out}	3.4	3.4	4.8	4.8
Overload time	s	t _{ol}	3	3	3	3
Recovery time	s	t _{re}	12	12	12	12
Max. output current during the recovery time	A		1.3	1.3	1.8	1.8
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	I _{max, 1}	2.2	2.2	2.2	2.2
Min. brake resistance	Ω	R _{min}	180	180	180	180
Max. motor cable length shielded						
without EMC category	m		50	50	50	50
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		3	-	3	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		15	-	15	-
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		15	-	15	-
Weight	kg		0.8	0.8	0.8	0.8
Weight	lb		1.8	1.8	1.8	1.8

Technical data

1-phase mains connection 230/240 V

Rated data



Inverter			i550-C0.55/230-1	i550-C0.55/230-2	i550-C0.75/230-1	i550-C0.75/230-2
Rated power	kW	P_N	0.55	0.55	0.75	0.75
Rated power	hp	P_N	0.75	0.75	1	1
Mains voltage range			1/PE AC 170 V ... 264 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-230/240 V			
Rated mains current						
without mains choke	A	$I_{r, AC}$	7.6	7.6	10	10
with mains choke	A	$I_{r, AC}$	7.1	7.1	8.8	8.8
Apparent output power	kVA	A_{ON}	1.2	1.2	1.6	1.6
Rated output current						
2 kHz	A	I_{OUT}	3.2	3.2	4.2	4.2
4 kHz	A	I_{OUT}	3.2	3.2	4.2	4.2
8 kHz	A	I_{OUT}	3.2	3.2	4.2	4.2
16 kHz	A	I_{OUT}	2.1	2.1	2.8	2.8
Power loss						
2 kHz	W		22	22	27	27
4 kHz	W		23	23	29	29
8 kHz	W		25	25	33	33
16 kHz	W		30	30	38	38
at inverter disablecontroller inhibit	W		6	6	6	6
Overcurrent cycle 180 s						
Max. output current	A	$I_{max, out}$	4.8	4.8	6.3	6.3
Overload time	s	t_{ol}	60	60	60	60
Recovery time	s	t_{re}	120	120	120	120
Max. output current during the recovery time	A		2.4	2.4	3.2	3.2
Overcurrent cycle 15 s						
Max. output current	A	$I_{max, out}$	6.4	6.4	8.4	8.4
Overload time	s	t_{ol}	3	3	3	3
Recovery time	s	t_{re}	12	12	12	12
Max. output current during the recovery time	A		2.4	2.4	3.2	3.2
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	$I_{max, 1}$	3.9	3.9	3.9	3.9
Min. brake resistance	Ω	R_{min}	100	100	100	100
Max. motor cable length shielded						
without EMC category	m		50	50	50	50
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		3	-	3	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	-	20	-
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		50	-	50	-
Weight	kg		1	1	1	1
Weight	lb		2.2	2.2	2.2	2.2



Technical data

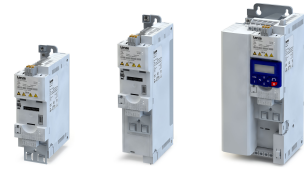
1-phase mains connection 230/240 V
Rated data

Inverter			i550-C1.1/230-1	i550-C1.1/230-2	i550-C1.5/230-1	i550-C1.5/230-2
Rated power	kW	P_N	1.1	1.1	1.5	1.5
Rated power	hp	P_N	1.5	1.5	2	2
Mains voltage range			1/PE AC 170 V ... 264 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-230/240 V			
Rated mains current						
without mains choke	A	$I_{r, AC}$	14.3	14.3	16.7	16.7
with mains choke	A	$I_{r, AC}$	11.9	11.9	13.9	13.9
Apparent output power	kVA	A_{ON}	2.2	2.2	2.6	2.6
Rated output current						
2 kHz	A	I_{OUT}	6	6	7	7
4 kHz	A	I_{OUT}	6	6	7	7
8 kHz	A	I_{OUT}	6	6	7	7
16 kHz	A	I_{OUT}	4	4	4.7	4.7
Power loss						
2 kHz	W		36	36	41	41
4 kHz	W		37	37	43	43
8 kHz	W		42	42	50	50
16 kHz	W		51	51	59	59
at inverter disablecontroller inhibit	W		6	6	6	6
Overcurrent cycle 180 s						
Max. output current	A	$I_{max, out}$	9	9	10.5	10.5
Overload time	s	t_{ol}	60	60	60	60
Recovery time	s	t_{re}	120	120	120	120
Max. output current during the recovery time	A		4.5	4.5	5.3	5.3
Overcurrent cycle 15 s						
Max. output current	A	$I_{max, out}$	12	12	14	14
Overload time	s	t_{ol}	3	3	3	3
Recovery time	s	t_{re}	12	12	12	12
Max. output current during the recovery time	A		4.5	4.5	5.3	5.3
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	$I_{max, 1}$	12	12	12	12
Min. brake resistance	Ω	R_{min}	33	33	33	33
Max. motor cable length shielded						
without EMC category	m		50	50	50	50
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		3	-	3	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	-	20	-
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		35	-	35	-
Weight	kg		1.35	1.35	1.35	1.35
Weight	lb		3	3	3	3

Technical data

1-phase mains connection 230/240 V

Rated data



Inverter			i550-C2.2/230-1	i550-C2.2/230-2
Rated power	kW	P_N	2.2	2.2
Rated power	hp	P_N	3	3
Mains voltage range			1/PE AC 170 V ... 264 V, 45 Hz ... 65 Hz	
Output voltage			3 AC 0-230/240 V	
Rated mains current				
without mains choke	A	$I_{r, AC}$	22.5	22.5
with mains choke	A	$I_{r, AC}$	16.9	16.9
Apparent output power	kVA	A_{ON}	3.6	3.6
Rated output current				
2 kHz	A	I_{OUT}	9.6	9.6
4 kHz	A	I_{OUT}	9.6	9.6
8 kHz	A	I_{OUT}	9.6	9.6
16 kHz	A	I_{OUT}	6.4	6.4
Power loss				
2 kHz	W		54	54
4 kHz	W		60	60
8 kHz	W		70	70
16 kHz	W		78	78
at inverter disablecontroller inhibit	W		6	6
Overcurrent cycle 180 s				
Max. output current	A	$I_{max, out}$	14.4	14.4
Overload time	s	t_{ol}	60	60
Recovery time	s	t_{re}	120	120
Max. output current during the recovery time	A		7.2	7.2
Overcurrent cycle 15 s				
Max. output current	A	$I_{max, out}$	19.2	19.2
Overload time	s	t_{ol}	3	3
Recovery time	s	t_{re}	12	12
Max. output current during the recovery time	A		7.2	7.2
Cyclic mains switching			3 times per minute	
Brake chopper				
Max. output current	A	$I_{max, 1}$	12	12
Min. brake resistance	Ω	R_{min}	33	33
Max. motor cable length shielded				
without EMC category	m		50	50
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		3	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	-
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		35	-
Weight	kg		1.35	1.35
Weight	lb		3	3



Technical data

1-phase mains connection 230/240 V
Fusing data

Fusing data

Fusing data						
Inverter			i550-C0.25/230-1	i550-C0.25/230-2	i550-C0.37/230-1	i550-C0.37/230-2
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		10	10	10	10
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		10	10	10	10
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		10	10	10	10
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		10	10	10	10
Earth-leakage circuit breaker						
1-phase mains connection			≥ 30 mA, type A or B			

Fusing data						
Inverter			i550-C0.55/230-1	i550-C0.55/230-2	i550-C0.75/230-1	i550-C0.75/230-2
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		16	16	16	16
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		16	16	16	16
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		16	16	16	16
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		16	16	16	16
Earth-leakage circuit breaker						
1-phase mains connection			≥ 30 mA, type A or B			

Technical data

1-phase mains connection 230/240 V

Fusing data



Fusing data						
Inverter			i550-C1.1/230-1	i550-C1.1/230-2	i550-C1.5/230-1	i550-C1.5/230-2
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		25	25	25	25
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		25	25	25	25
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		25	25	25	25
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		25	25	25	25
Earth-leakage circuit breaker						
1-phase mains connection			≥ 30 mA, type A or B			

Fusing data					
Inverter			i550-C2.2/230-1		i550-C2.2/230-2
Cable installation in compliance with			EN 60204-1		
without mains choke					
Circuit breaker					
Characteristics			B		
Max. rated current	A		25		25
Fuse					
Characteristics			gG/gL or gRL		
Max. rated current	A		25		25
with mains choke					
Circuit breaker					
Characteristics			B		
Max. rated current	A		25		25
Fuse					
Characteristics			gG/gL or gRL		
Max. rated current	A		25		25
Earth-leakage circuit breaker					
1-phase mains connection			≥ 30 mA, type A or B		



Technical data

1-phase mains connection 230/240 V
Fusing data

Fusing data						
Inverter			i550-C0.25/230-1	i550-C0.25/230-2	i550-C0.37/230-1	i550-C0.37/230-2
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		15	15	15	15
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			
Max. rated current	A		15	15	15	15
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
with mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		15	15	15	15
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			
Max. rated current	A		15	15	15	15
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
Earth-leakage circuit breaker						
1-phase mains connection			≥ 30 mA, type A or B			

Technical data

1-phase mains connection 230/240 V

Fusing data



Fusing data						
Inverter			i550-C0.55/230-1	i550-C0.55/230-2	i550-C0.75/230-1	i550-C0.75/230-2
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		15	15	15	15
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			
Max. rated current	A		15	15	15	15
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
with mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		15	15	15	15
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			
Max. rated current	A		15	15	15	15
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
Earth-leakage circuit breaker						
1-phase mains connection			≥ 30 mA, type A or B			



Technical data

1-phase mains connection 230/240 V
Fusing data

Fusing data						
Inverter			i550-C1.1/230-1	i550-C1.1/230-2	i550-C1.5/230-1	i550-C1.5/230-2
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		30	30	30	30
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			
Max. rated current	A		30	30	30	30
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
with mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		30	30	30	30
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			
Max. rated current	A		30	30	30	30
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
Earth-leakage circuit breaker						
1-phase mains connection			≥ 30 mA, type A or B			

Technical data

1-phase mains connection 230/240 V

Fusing data



Fusing data				
Inverter			i550-C2.2/230-1	i550-C2.2/230-2
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1	
without mains choke				
Circuit breaker				
Characteristics			-	
Max. rated current	A		30	30
Type of fusing			Standard	
SCCR: requirement			Standard short-circuit strength	
SCCR: max. short circuit current	kA		5	5
SCCR: voltage			240 Volts Maximum	
Fuse				
Characteristics			all acc. to UL 248 / Class CC	
Max. rated current	A		30	30
Type of fusing			Standard	
SCCR: requirement			Standard short-circuit strength	
SCCR: max. short circuit current	kA		5	5
SCCR: voltage			240 Volts Maximum	
with mains choke				
Circuit breaker				
Characteristics			-	
Max. rated current	A		30	30
Type of fusing			Standard	
SCCR: requirement			Standard short-circuit strength	
SCCR: max. short circuit current	kA		5	5
SCCR: voltage			240 Volts Maximum	
Fuse				
Characteristics			all acc. to UL 248 / Class CC	
Max. rated current	A		30	30
Type of fusing			Standard	
SCCR: requirement			Standard short-circuit strength	
SCCR: max. short circuit current	kA		5	5
SCCR: voltage			240 Volts Maximum	
Earth-leakage circuit breaker				
1-phase mains connection			≥ 30 mA, type A or B	



Technical data

1-phase mains connection 230/240 V
Terminal data

Terminal data

Mains connection						
Inverter			i550-C0.25/230-1	i550-C0.25/230-2	i550-C0.37/230-1	i550-C0.37/230-2
Connection			X100			
Connection type			pluggable screw terminal			
Max. cable cross-section	mm ²		2.5	2.5	2.5	2.5
Max. cable cross-section	AWG		12	12	12	12
Stripping length	mm		8	8	8	8
Stripping length	inch		0.32	0.32	0.32	0.32
Tightening torque	Nm		0.5	0.5	0.5	0.5
Tightening torque	lb-in		4.4	4.4	4.4	4.4
Required tool			0.5 x 3.0			

Mains connection						
Inverter			i550-C0.55/230-1	i550-C0.55/230-2	i550-C0.75/230-1	i550-C0.75/230-2
Connection			X100			
Connection type			pluggable screw terminal			
Max. cable cross-section	mm ²		2.5	2.5	2.5	2.5
Max. cable cross-section	AWG		12	12	12	12
Stripping length	mm		8	8	8	8
Stripping length	inch		0.32	0.32	0.32	0.32
Tightening torque	Nm		0.5	0.5	0.5	0.5
Tightening torque	lb-in		4.4	4.4	4.4	4.4
Required tool			0.5 x 3.0			

Mains connection						
Inverter			i550-C1.1/230-1	i550-C1.1/230-2	i550-C1.5/230-1	i550-C1.5/230-2
Connection			X100			
Connection type			pluggable screw terminal			
Max. cable cross-section	mm ²		6	6	6	6
Max. cable cross-section	AWG		10	10	10	10
Stripping length	mm		8	8	8	8
Stripping length	inch		0.32	0.32	0.32	0.32
Tightening torque	Nm		0.7	0.7	0.7	0.7
Tightening torque	lb-in		6.2	6.2	6.2	6.2
Required tool			0.6 x 3.5			

Mains connection					
Inverter			i550-C2.2/230-1		i550-C2.2/230-2
Connection			X100		
Connection type			pluggable screw terminal		
Max. cable cross-section	mm²		6		6
Max. cable cross-section	AWG		10		10
Stripping length	mm		8		8
Stripping length	inch		0.32		0.32
Tightening torque	Nm		0.7		0.7
Tightening torque	lb-in		6.2		6.2
Required tool			0.6 x 3.5		

Technical data

1-phase mains connection 230/240 V

Terminal data



PE connection						
Inverter			i550-C0.25/230-1	i550-C0.25/230-2	i550-C0.37/230-1	i550-C0.37/230-2
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		6	6	6	6
Max. cable cross-section	AWG		10	10	10	10
Stripping length	mm		10	10	10	10
Stripping length	inch		0.39	0.39	0.39	0.39
Tightening torque	Nm		2	2	2	2
Tightening torque	lb-in		18	18	18	18
Required tool			Torx 20			

PE connection						
Inverter			i550-C0.55/230-1	i550-C0.55/230-2	i550-C0.75/230-1	i550-C0.75/230-2
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		6	6	6	6
Max. cable cross-section	AWG		10	10	10	10
Stripping length	mm		10	10	10	10
Stripping length	inch		0.39	0.39	0.39	0.39
Tightening torque	Nm		2	2	2	2
Tightening torque	lb-in		18	18	18	18
Required tool			Torx 20			

PE connection						
Inverter			i550-C1.1/230-1	i550-C1.1/230-2	i550-C1.5/230-1	i550-C1.5/230-2
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		6	6	6	6
Max. cable cross-section	AWG		10	10	10	10
Stripping length	mm		10	10	10	10
Stripping length	inch		0.39	0.39	0.39	0.39
Tightening torque	Nm		2	2	2	2
Tightening torque	lb-in		18	18	18	18
Required tool			Torx 20			

PE connection					
Inverter			i550-C2.2/230-1		i550-C2.2/230-2
Connection			PE		
Connection type			PE screw		
Max. cable cross-section	mm²		6		6
Max. cable cross-section	AWG		10		10
Stripping length	mm		10		10
Stripping length	inch		0.39		0.39
Tightening torque	Nm		2		2
Tightening torque	lb-in		18		18
Required tool			Torx 20		



Technical data

1-phase mains connection 230/240 V
Terminal data

Motor connection						
Inverter			i550-C0.25/230-1	i550-C0.25/230-2	i550-C0.37/230-1	i550-C0.37/230-2
Connection			X105			
Connection type			pluggable screw terminal			
Max. cable cross-section	mm ²		2.5	2.5	2.5	2.5
Max. cable cross-section	AWG		12	12	12	12
Stripping length	mm		8	8	8	8
Stripping length	inch		0.32	0.32	0.32	0.32
Tightening torque	Nm		0.5	0.5	0.5	0.5
Tightening torque	lb-in		4.4	4.4	4.4	4.4
Required tool			0.5 x 3.0			

Motor connection						
Inverter			i550-C0.55/230-1	i550-C0.55/230-2	i550-C0.75/230-1	i550-C0.75/230-2
Connection			X105			
Connection type			pluggable screw terminal			
Max. cable cross-section	mm ²		2.5	2.5	2.5	2.5
Max. cable cross-section	AWG		12	12	12	12
Stripping length	mm		8	8	8	8
Stripping length	inch		0.32	0.32	0.32	0.32
Tightening torque	Nm		0.5	0.5	0.5	0.5
Tightening torque	lb-in		4.4	4.4	4.4	4.4
Required tool			0.5 x 3.0			

Motor connection						
Inverter			i550-C1.1/230-1	i550-C1.1/230-2	i550-C1.5/230-1	i550-C1.5/230-2
Connection			X105			
Connection type			pluggable screw terminal			
Max. cable cross-section	mm ²		2.5	2.5	2.5	2.5
Max. cable cross-section	AWG		12	12	12	12
Stripping length	mm		8	8	8	8
Stripping length	inch		0.32	0.32	0.32	0.32
Tightening torque	Nm		0.5	0.5	0.5	0.5
Tightening torque	lb-in		4.4	4.4	4.4	4.4
Required tool			0.5 x 3.0			

Motor connection					
Inverter			i550-C2.2/230-1		i550-C2.2/230-2
Connection			X105		
Connection type			pluggable screw terminal		
Max. cable cross-section	mm²		2.5		2.5
Max. cable cross-section	AWG		12		12
Stripping length	mm		8		8
Stripping length	inch		0.32		0.32
Tightening torque	Nm		0.5		0.5
Tightening torque	lb-in		4.4		4.4
Required tool			0.5 x 3.0		

The terminal data for the terminal X1 can be found under: [▶ Terminal data](#) [72](#)

Technical data

1-phase mains connection 230/240 V
Mains chokes



Brake resistors

Inverter	Brake resistor					
	Order code	Rated resistance	Rated power	Thermal capacity	Dimensions (h x b x t)	Weight
		Ω	W	kWs	mm	kg
i550-C0.25/230-1	ERBM180R050W	180	50	7.5	175 x 21 x 40	0.28
i550-C0.25/230-2						
i550-C0.37/230-1						
i550-C0.37/230-2						
i550-C0.55/230-1	ERBM100R100W	100	100	15	240 x 80 x 95	0.37
i550-C0.55/230-2						
i550-C0.75/230-1						
i550-C0.75/230-2						
i550-C1.1/230-1	ERBP033R200W	33	200	30	240 x 41 x 122	1
	ERBP033R300W		300	45	320 x 41 x 122	1.4
i550-C1.1/230-2	ERBP033R200W		200	30	240 x 41 x 122	1
	ERBP033R300W		300	45	320 x 41 x 122	1.4
i550-C1.5/230-1	ERBP033R200W		200	30	240 x 41 x 122	1
	ERBP033R300W		300	45	320 x 41 x 122	1.4
i550-C1.5/230-2	ERBP033R200W		200	30	240 x 41 x 122	1
	ERBP033R300W		300	45	320 x 41 x 122	1.4
i550-C2.2/230-1	ERBP033R200W		200	30	240 x 41 x 122	1
	ERBP033R300W		300	45	320 x 41 x 122	1.4
i550-C2.2/230-2	ERBP033R200W		200	30	240 x 41 x 122	1

Mains chokes

Inverter	Mains choke					
	Order code	Number of phases	Output current	Inductance	Dimensions (h x b x t)	Weight
			A	mH	mm	kg
i550-C0.25/230-1	ELN1-0900H005	1	5	9	75 x 66 x 82	1.1
i550-C0.25/230-2						
i550-C0.37/230-1						
i550-C0.37/230-2						
i550-C0.55/230-1	ELN1-0500H009		9	5		
i550-C0.55/230-2						
i550-C0.75/230-1						
i550-C0.75/230-2						
i550-C1.1/230-1	ELN1-0250H018		18	2.5	96 x 96 x 90	2.1
i550-C1.1/230-2						
i550-C1.5/230-1						
i550-C1.5/230-2						
i550-C2.2/230-1						
i550-C2.2/230-2						



Technical data

1-phase mains connection 230/240 V
RFI filters / Mains filters

RFI filters / Mains filters

Basic information on RFI filters, mains filters and EMC: from [246](#)



EMC filters can be used both in the side structure and in the substructure.

Maximum motor cable lengths and FI operation

Mains connection			1-phase, 230 V		
Inverter			i550-C0.25/230-1 i550-C0.37/230-1	i550-C0.55/230-1 i550-C0.75/230-1	i550-C1.1/230-1 i550-C1.5/230-1 i550-C2.2/230-1
Without RFI filter					
without EMC category Thermal limitation	Max. motor cable length shielded	m	50	50	50
	Max. motor cable length unshielded	m	100	100	200
With integrated RFI filter					
Category C1	Max. motor cable length shielded	m	3	3	3
Category C2		m	15	20	20
	Earth-leakage circuit breaker	mA	30	30	30
RFI filter Low Leakage					
Category C1	Max. motor cable length shielded	m	5	5	5
	Earth-leakage circuit breaker	mA	10	10	10
RFI filter Short Distance					
Category C1	Max. motor cable length shielded	m	25	25	25
Category C2		m	50	50	50
	Earth-leakage circuit breaker	mA	30	30	30
RFI filter Long Distance					
Category C1	Max. motor cable length shielded	m	50	50	50
Category C2		m	50	50	50
	Earth-leakage circuit breaker	mA	300	300	300

Low Leakage

Inverter	RFI filter		
	Order code	Dimensions (h x b x t)	Weight
		mm	kg
i550-C0.25/230-1	IOFAE137B100L0000S	226 x 60 x 50	0.85
i550-C0.37/230-1			
i550-C0.55/230-1	IOFAE175B100L0000S	276 x 60 x 50	1
i550-C0.75/230-1			
i550-C1.1/230-1	IOFAE222B100L0000S	346 x 60 x 50	1.4
i550-C1.5/230-1			
i550-C2.2/230-1			

Technical data

1-phase mains connection 230/240 V
RFI filters / Mains filters



Short Distance

Inverter	RFI filter		
	Order code	Dimensions (h x b x t)	Weight
		mm	kg
i550-C0.25/230-1	I0FAE175B100S0000S	276 x 60 x 50	0.85
i550-C0.37/230-1			
i550-C0.55/230-1			
i550-C0.75/230-1			
i550-C1.1/230-1	I0FAE222B100S0000S	346 x 60 x 50	1.2
i550-C1.5/230-1			
i550-C2.2/230-1			

Long Distance

Inverter	RFI filter		
	Order code	Dimensions (h x b x t)	Weight
		mm	kg
i550-C0.25/230-1	I0FAE175B100D0000S	276 x 60 x 50	0.85
i550-C0.37/230-1			
i550-C0.55/230-1			
i550-C0.75/230-1			
i550-C1.1/230-1	I0FAE222B100D0000S	346 x 60 x 50	1.2
i550-C1.5/230-1			
i550-C2.2/230-1			



Technical data

3-phase mains connection 230/240 V

3-phase mains connection 230/240 V



EMC filters are **not integrated** in inverters for this mains connection.

Technical data

3-phase mains connection 230/240 V

Rated data



Rated data

The output currents apply to these operating conditions:

- At a switching frequency of 2 kHz or 4 kHz: Max. ambient temperature 45°C.
- At a switching frequency of 8 kHz or 16 kHz: Max. ambient temperature 40 °C.

Inverter			i550-C0.25/230-2	i550-C0.37/230-2	i550-C0.55/230-2	i550-C0.75/230-2
Rated power	kW	P _N	0.25	0.37	0.55	0.75
Rated power	hp	P _N	0.33	0.5	0.75	1
Mains voltage range			3/PE AC 170 V ... 264 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-230/240 V			
Rated mains current						
without mains choke	A	I _{r, AC}	2.6	3.9	4.8	6.4
with mains choke	A	I _{r, AC}	2	3	3.8	5.1
Apparent output power	kVA	A _{ON}	0.6	0.9	1.2	1.6
Rated output current						
2 kHz	A	I _{OUT}	-	-	3.2	4.2
4 kHz	A	I _{OUT}	1.7	2.4	3.2	4.2
8 kHz	A	I _{OUT}	1.7	2.4	3.2	4.2
16 kHz	A	I _{OUT}	1.1	1.6	2.1	2.8
Power loss						
2 kHz	W		-	-	22	27
4 kHz	W		15	18	23	29
8 kHz	W		15	20	25	33
16 kHz	W		19	24	30	38
at inverter disablecontroller inhibit	W		6	6	6	6
Overcurrent cycle 180 s						
Max. output current	A	I _{max, out}	2.6	3.6	4.8	6.3
Overload time	s	t _{ol}	60	60	60	60
Recovery time	s	t _{re}	120	120	120	120
Max. output current during the recovery time	A		1.3	1.8	2.4	3.2
Overcurrent cycle 15 s						
Max. output current	A	I _{max, out}	3.4	4.8	6.4	8.4
Overload time	s	t _{ol}	3	3	3	3
Recovery time	s	t _{re}	12	12	12	12
Max. output current during the recovery time	A		1.3	1.8	2.4	3.2
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	I _{max, 1}	2.2	2.2	3.9	3.9
Min. brake resistance	Ω	R _{min}	180	180	100	100
Max. motor cable length shielded						
without EMC category	m		50	50	50	50
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Weight	kg		0.8	0.8	1	1
Weight	lb		1.8	1.8	2.2	2.2



Technical data

3-phase mains connection 230/240 V
Rated data

Inverter			i550-C1.1/230-2	i550-C1.5/230-2	i550-C2.2/230-2	i550-C4.0/230-3
Rated power	kW	P_N	1.1	1.5	2.2	4
Rated power	hp	P_N	1.5	2	3	5
Mains voltage range			3/PE AC 170 V ... 264 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-230/240 V			
Rated mains current						
without mains choke	A	$I_{r, AC}$	7.8	9.5	13.6	20.6
with mains choke	A	$I_{r, AC}$	5.6	6.8	9.8	15.7
Apparent output power	kVA	A_{ON}	2.2	2.6	3.6	6.4
Rated output current						
2 kHz	A	I_{OUT}	6	7	9.6	16.5
4 kHz	A	I_{OUT}	6	7	9.6	16.5
8 kHz	A	I_{OUT}	6	7	9.6	16.5
16 kHz	A	I_{OUT}	4	4.7	6.4	11
Power loss						
2 kHz	W		36	41	54	113
4 kHz	W		37	43	60	115
8 kHz	W		42	50	70	130
16 kHz	W		51	59	78	116
at inverter disablecontroller inhibit	W		6	6	6	6
Overcurrent cycle 180 s						
Max. output current	A	$I_{max, out}$	9	10.5	14.4	24.8
Overload time	s	t_{ol}	60	60	60	60
Recovery time	s	t_{re}	120	120	120	120
Max. output current during the recovery time	A		4.5	5.3	7.2	12.4
Overcurrent cycle 15 s						
Max. output current	A	$I_{max, out}$	12	14	19.2	33
Overload time	s	t_{ol}	3	3	3	3
Recovery time	s	t_{re}	12	12	12	12
Max. output current during the recovery time	A		4.5	5.3	7.2	12.4
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	$I_{max, 1}$	12	12	12	26
Min. brake resistance	Ω	R_{min}	33	33	33	15
Max. motor cable length shielded						
without EMC category	m		50	50	50	50
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Weight	kg		1.35	1.35	1.35	2.1
Weight	lb		3	3	3	4.6

Technical data

3-phase mains connection 230/240 V

Rated data



Inverter			i550-C5.5/230-3
Rated power	kW	P_N	5.5
Rated power	hp	P_N	7.5
Mains voltage range			3/PE AC 170 V ... 264 V, 45 Hz ... 65 Hz
Output voltage			3 AC 0-230/240 V
Rated mains current			
without mains choke	A	$I_{r, AC}$	28.8
with mains choke	A	$I_{r, AC}$	21.9
Apparent output power	kVA	A_{ON}	8.7
Rated output current			
2 kHz	A	I_{OUT}	23
4 kHz	A	I_{OUT}	23
8 kHz	A	I_{OUT}	23
16 kHz	A	I_{OUT}	15.3
Power loss			
2 kHz	W		166
4 kHz	W		175
8 kHz	W		195
16 kHz	W		159
at inverter disablecontroller inhibit	W		6
Overcurrent cycle 180 s			
Max. output current	A	$I_{max, out}$	34.5
Overload time	s	t_{ol}	60
Recovery time	s	t_{re}	120
Max. output current during the recovery time	A		17.3
Overcurrent cycle 15 s			
Max. output current	A	$I_{max, out}$	46
Overload time	s	t_{ol}	3
Recovery time	s	t_{re}	12
Max. output current during the recovery time	A		17.3
Cyclic mains switching			3 times per minute
Brake chopper			
Max. output current	A	$I_{max, 1}$	26
Min. brake resistance	Ω	R_{min}	15
Max. motor cable length shielded			
without EMC category	m		50
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		-
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		-
Weight	kg		2.1
Weight	lb		4.6



Technical data

3-phase mains connection 230/240 V
Fusing data

Fusing data

Fusing data						
Inverter			i550-C0.25/230-2	i550-C0.37/230-2	i550-C0.55/230-2	i550-C0.75/230-2
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		10	10	16	16
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		10	10	16	16
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		10	10	16	16
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		10	10	16	16
Earth-leakage circuit breaker						
3-phase mains connection			≥ 30 mA, type B			

Fusing data						
Inverter			i550-C1.1/230-2	i550-C1.5/230-2	i550-C2.2/230-2	i550-C4.0/230-3
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		25	25	25	32
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		25	25	25	32
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		25	25	25	32
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		25	25	25	32
Earth-leakage circuit breaker						
3-phase mains connection			≥ 30 mA, type B			≥ 300 mA, type B

Technical data

3-phase mains connection 230/240 V

Fusing data



Fusing data			
Inverter			i550-C5.5/230-3
Cable installation in compliance with			EN 60204-1
without mains choke			
Circuit breaker			
Characteristics			B
Max. rated current	A		32
Fuse			
Characteristics			gG/gL or gRL
Max. rated current	A		32
with mains choke			
Circuit breaker			
Characteristics			B
Max. rated current	A		32
Fuse			
Characteristics			gG/gL or gRL
Max. rated current	A		32
Earth-leakage circuit breaker			
3-phase mains connection			≥ 300 mA, type B



Technical data

3-phase mains connection 230/240 V
Fusing data

Fusing data						
Inverter			i550-C0.25/230-2	i550-C0.37/230-2	i550-C0.55/230-2	i550-C0.75/230-2
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		15	15	15	15
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			
Max. rated current	A		15	15	15	15
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
with mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		15	15	15	15
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			
Max. rated current	A		15	15	15	15
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 30 mA, type B			

Technical data

3-phase mains connection 230/240 V

Fusing data



Fusing data						
Inverter			i550-C1.1/230-2	i550-C1.5/230-2	i550-C2.2/230-2	i550-C4.0/230-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		30	30	30	-
Type of fusing			Standard			-
SCCR: requirement			Standard short-circuit strength			-
SCCR: max. short circuit current	kA		5	5	5	-
SCCR: voltage			240 Volts Maximum			-
Fuse						
Characteristics			all acc. to UL 248 / Class CC			all acc. to UL 248 / Class J, T, R
Max. rated current	A		30	30	30	40
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
with mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		30	30	30	-
Type of fusing			Standard			-
SCCR: requirement			Standard short-circuit strength			-
SCCR: max. short circuit current	kA		5	5	5	-
SCCR: voltage			240 Volts Maximum			-
Fuse						
Characteristics			all acc. to UL 248 / Class CC			all acc. to UL 248 / Class J, T, R
Max. rated current	A		30	30	30	40
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			240 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 30 mA, type B			≥ 300 mA, type B



Technical data

3-phase mains connection 230/240 V
Fusing data

Fusing data			
Inverter			i550-C5.5/230-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1
without mains choke			
Circuit breaker			
Characteristics			-
Max. rated current	A		-
Type of fusing			-
SCCR: requirement			-
SCCR: max. short circuit current	kA		-
SCCR: voltage			-
Fuse			
Characteristics			all acc. to UL 248 / Class J, T, R
Max. rated current	A		40
Type of fusing			Standard
SCCR: requirement			Standard short-circuit strength
SCCR: max. short circuit current	kA		5
SCCR: voltage			240 Volts Maximum
with mains choke			
Circuit breaker			
Characteristics			-
Max. rated current	A		-
Type of fusing			-
SCCR: requirement			-
SCCR: max. short circuit current	kA		-
SCCR: voltage			-
Fuse			
Characteristics			all acc. to UL 248 / Class J, T, R
Max. rated current	A		40
Type of fusing			Standard
SCCR: requirement			Standard short-circuit strength
SCCR: max. short circuit current	kA		5
SCCR: voltage			240 Volts Maximum
Earth-leakage circuit breaker			
3-phase mains connection			≥ 300 mA, type B

Technical data

3-phase mains connection 230/240 V

Terminal data



Terminal data

Mains connection						
Inverter			i550-C0.25/230-2	i550-C0.37/230-2	i550-C0.55/230-2	i550-C0.75/230-2
Connection			X100			
Connection type			pluggable screw terminal			
Max. cable cross-section	mm ²		2.5	2.5	2.5	2.5
Max. cable cross-section	AWG		12	12	12	12
Stripping length	mm		8	8	8	8
Stripping length	inch		0.32	0.32	0.32	0.32
Tightening torque	Nm		0.5	0.5	0.5	0.5
Tightening torque	lb-in		4.4	4.4	4.4	4.4
Required tool			0.5 x 3.0			

Mains connection						
Inverter			i550-C1.1/230-2	i550-C1.5/230-2	i550-C2.2/230-2	i550-C4.0/230-3
Connection			X100			
Connection type			pluggable screw terminal			Screw terminal
Max. cable cross-section	mm ²		6	6	6	6
Max. cable cross-section	AWG		10	10	10	8
Stripping length	mm		8	8	8	9
Stripping length	inch		0.32	0.32	0.32	0.35
Tightening torque	Nm		0.7	0.7	0.7	0.5
Tightening torque	lb-in		6.2	6.2	6.2	4.4
Required tool			0.6 x 3.5			

Mains connection			
Inverter			i550-C5.5/230-3
Connection			X100
Connection type			Screw terminal
Max. cable cross-section	mm ²		6
Max. cable cross-section	AWG		8
Stripping length	mm		9
Stripping length	inch		0.35
Tightening torque	Nm		0.5
Tightening torque	lb-in		4.4
Required tool			0.6 x 3.5

PE connection						
Inverter			i550-C0.25/230-2	i550-C0.37/230-2	i550-C0.55/230-2	i550-C0.75/230-2
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		6	6	6	6
Max. cable cross-section	AWG		10	10	10	10
Stripping length	mm		10	10	10	10
Stripping length	inch		0.39	0.39	0.39	0.39
Tightening torque	Nm		2	2	2	2
Tightening torque	lb-in		18	18	18	18
Required tool			Torx 20			



Technical data

3-phase mains connection 230/240 V
Terminal data

PE connection						
Inverter			i550-C1.1/230-2	i550-C1.5/230-2	i550-C2.2/230-2	i550-C4.0/230-3
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		6	6	6	6
Max. cable cross-section	AWG		10	10	10	10
Stripping length	mm		10	10	10	10
Stripping length	inch		0.39	0.39	0.39	0.39
Tightening torque	Nm		2	2	2	2
Tightening torque	lb-in		18	18	18	18
Required tool			Torx 20			

PE connection						
Inverter			i550-C5.5/230-3			
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		6			
Max. cable cross-section	AWG		10			
Stripping length	mm		10			
Stripping length	inch		0.39			
Tightening torque	Nm		2			
Tightening torque	lb-in		18			
Required tool			Torx 20			

Motor connection						
Inverter			i550-C0.25/230-2	i550-C0.37/230-2	i550-C0.55/230-2	i550-C0.75/230-2
Connection			X105			
Connection type			pluggable screw terminal			
Max. cable cross-section	mm ²		2.5	2.5	2.5	2.5
Max. cable cross-section	AWG		12	12	12	12
Stripping length	mm		8	8	8	8
Stripping length	inch		0.32	0.32	0.32	0.32
Tightening torque	Nm		0.5	0.5	0.5	0.5
Tightening torque	lb-in		4.4	4.4	4.4	4.4
Required tool			0.5 x 3.0			

Motor connection						
Inverter			i550-C1.1/230-2	i550-C1.5/230-2	i550-C2.2/230-2	i550-C4.0/230-3
Connection			X105			
Connection type			pluggable screw terminal			Screw terminal
Max. cable cross-section	mm ²		2.5	2.5	2.5	6
Max. cable cross-section	AWG		12	12	12	8
Stripping length	mm		8	8	8	9
Stripping length	inch		0.32	0.32	0.32	0.35
Tightening torque	Nm		0.5	0.5	0.5	0.5
Tightening torque	lb-in		4.4	4.4	4.4	4.4
Required tool			0.5 x 3.0			0.6 x 3.5

Technical data

3-phase mains connection 230/240 V
Mains chokes



Motor connection			
Inverter			i550-C5.5/230-3
Connection			X105
Connection type			Screw terminal
Max. cable cross-section	mm ²		6
Max. cable cross-section	AWG		8
Stripping length	mm		9
Stripping length	inch		0.35
Tightening torque	Nm		0.5
Tightening torque	lb-in		4.4
Required tool			0.6 x 3.5

The terminal data for the terminal X1 can be found under: [Terminal data](#) 72

Brake resistors

Inverter	Brake resistor					
	Order code	Rated resistance	Rated power	Thermal capacity	Dimensions (h x b x t)	Weight
		Ω	W	kWs	mm	kg
i550-C0.25/230-2	ERBM180R050W	180	50	7.5	175 x 21 x 40	0.28
i550-C0.37/230-2						
i550-C0.55/230-2	ERBM100R100W	100	100	15	240 x 80 x 95	0.37
i550-C0.75/230-2						
i550-C1.1/230-2	ERBP033R200W	33	200	30	240 x 41 x 122	1
	ERBP033R300W		300	45	320 x 41 x 122	1.4
i550-C1.5/230-2	ERBP033R200W		200	30	240 x 41 x 122	1
i550-C2.2/230-2	ERBP033R300W		300	45	320 x 41 x 122	1.4
	ERBP033R200W		200	30	240 x 41 x 122	1
					320 x 41 x 122	
	ERBP027R200W	27	600	90	550 x 110 x 105	3.1
i550-C4.0/230-3	ERBS027R600W					
	ERBS015R800W	15	800	120	710 x 110 x 105	3.9
	ERBS015R01K2		1200	180	1020 x 110 x 105	5.6
	ERBP018R300W	18	300	45	320 x 41 x 122	1.4
i550-C5.5/230-3	ERBP027R200W	27	200	30		1
	ERBS027R600W		600	90	550 x 110 x 105	3.1
	ERBS015R800W	15	800	120	710 x 110 x 105	3.9
	ERBS015R01K2		1200	180	1020 x 110 x 105	5.6
	ERBP018R300W	18	300	45	320 x 41 x 122	1.4

Mains chokes

Inverter	Mains choke					
	Order code	Number of phases	Output current	Inductance	Dimensions (h x b x t)	Weight
			A	mH	mm	kg
i550-C0.25/230-2	EZAELN3002B153	3	2	14.7	56 x 77 x 100	0.53
i550-C0.37/230-2	EZAELN3004B742		4	7.35	60 x 95 x 115	1.31
i550-C0.55/230-2						
i550-C0.75/230-2	EZAELN3006B492		6	4.9	69 x 95 x 120	1.45
i550-C1.1/230-2						
i550-C1.5/230-2	EZAELN3008B372		8	3.68	85 x 120 x 140	1.9
i550-C2.2/230-2	EZAELN3010B292		10	2.94		2
i550-C4.0/230-3	EZAELN3016B182		16	1.84	95 x 120 x 140	2.7
i550-C5.5/230-3	EZAELN3025B122		25	1.18	110 x 155 x 170	5.8



Technical data

3-phase mains connection 400 V
Rated data

3-phase mains connection 400 V

Rated data

The output currents apply to these operating conditions:

- At a switching frequency of 2 kHz or 4 kHz: Max. ambient temperature 45°C.
- At a switching frequency of 8 kHz or 16 kHz: Max. ambient temperature 40 °C.

Technical data

3-phase mains connection 400 V

Rated data



Inverter			i550-C0.37/400-3	i550-C0.55/400-3	i550-C0.75/400-3	i550-C1.1/400-3
Rated power	kW	P_N	0.37	0.55	0.75	1.1
Rated power	hp	P_N	0.5	0.75	1	1.5
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-400/480 V			
Rated mains current						
without mains choke	A	$I_{r, AC}$	1.8	2.5	3.3	4.4
with mains choke	A	$I_{r, AC}$	1.4	2	2.6	3
Apparent output power	kVA	A_{ON}	0.9	1.2	1.6	2.2
Rated output current						
2 kHz	A	I_{OUT}	-	1.8	2.4	3.2
4 kHz	A	I_{OUT}	1.3	1.8	2.4	3.2
8 kHz	A	I_{OUT}	1.3	1.8	2.4	3.2
16 kHz	A	I_{OUT}	0.9	1.2	1.6	2.1
Power loss						
2 kHz	W		-	24	30	38
4 kHz	W		20	25	32	40
8 kHz	W		24	31	40	51
16 kHz	W		24	31	40	51
at inverter disablecontroller inhibit	W		6	6	6	6
Overcurrent cycle 180 s						
Max. output current	A	$I_{max, out}$	2	2.7	3.6	4.8
Overload time	s	t_{ol}	60	60	60	60
Recovery time	s	t_{re}	120	120	120	120
Max. output current during the recovery time	A		1	1.4	1.8	2.4
Overcurrent cycle 15 s						
Max. output current	A	$I_{max, out}$	2.6	3.6	4.8	6.4
Overload time	s	t_{ol}	3	3	3	3
Recovery time	s	t_{re}	12	12	12	12
Max. output current during the recovery time	A		1	1.4	1.8	2.4
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	$I_{max, 1}$	2	2	2	4.3
Min. brake resistance	Ω	R_{min}	390	390	390	180
Max. motor cable length shielded						
without EMC category	m		15	50	50	50
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		3	3	3	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		15	20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		15	20	20	35
Weight	kg		0.8	1	1	1.35
Weight	lb		1.8	2.2	2.2	3



Technical data

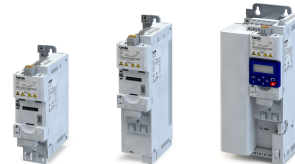
3-phase mains connection 400 V
Rated data

Inverter			i550-C1.5/400-3	i550-C2.2/400-3	i550-C3.0/400-3	i550-C4.0/400-3
Rated power	kW	P_N	1.5	2.2	3	4
Rated power	hp	P_N	2	3	4	5
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-400/480 V			
Rated mains current						
without mains choke	A	$I_{r, AC}$	5.4	7.8	9.6	12.5
with mains choke	A	$I_{r, AC}$	3.7	5.3	6.9	9
Apparent output power	kVA	A_{ON}	2.6	3.8	4.9	6.4
Rated output current						
2 kHz	A	I_{OUT}	3.9	5.6	7.3	9.5
4 kHz	A	I_{OUT}	3.9	5.6	7.3	9.5
8 kHz	A	I_{OUT}	3.9	5.6	7.3	9.5
16 kHz	A	I_{OUT}	2.6	3.7	4.9	6.3
Power loss						
2 kHz	W		45	62	79	102
4 kHz	W		48	66	85	110
8 kHz	W		61	85	110	140
16 kHz	W		61	85	109	140
at inverter disablecontroller inhibit	W		6	6	6	6
Overcurrent cycle 180 s						
Max. output current	A	$I_{max, out}$	5.9	8.4	11	14.3
Overload time	s	t_{ol}	60	60	60	60
Recovery time	s	t_{re}	120	120	120	120
Max. output current during the recovery time	A		2.9	4.2	5.5	7.1
Overcurrent cycle 15 s						
Max. output current	A	$I_{max, out}$	7.8	11.2	14.6	19
Overload time	s	t_{ol}	3	3	3	3
Recovery time	s	t_{re}	12	12	12	12
Max. output current during the recovery time	A		2.9	4.2	5.5	7.1
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	$I_{max, 1}$	4.3	4.3	9.5	16.6
Min. brake resistance	Ω	R_{min}	180	150	82	47
Max. motor cable length shielded						
without EMC category	m		50	50	100	100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		35	35	35	35
Weight	kg		1.35	1.35	2.3	2.3
Weight	lb		3	3	5	5

Technical data

3-phase mains connection 400 V

Rated data



Inverter			i550-C5.5/400-3	i550-C7.5/400-3	i550-C11/400-3	i550-C15/400-3
Rated power	kW	P_N	5.5	7.5	11	15
Rated power	hp	P_N	7.5	10	15	20
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-400/480 V			
Rated mains current						
without mains choke	A	$I_{r, AC}$	17.2	20	28.4	38.7
with mains choke	A	$I_{r, AC}$	12.4	15.7	22.3	28.8
Apparent output power	kVA	A_{ON}	8.7	11	16	22
Rated output current						
2 kHz	A	I_{OUT}	13	16.5	23.5	32
4 kHz	A	I_{OUT}	13	16.5	23.5	32
8 kHz	A	I_{OUT}	13	16.5	23.5	32
16 kHz	A	I_{OUT}	8.7	11	15.7	21.3
Power loss						
2 kHz	W		137	172	242	340
4 kHz	W		145	185	260	360
8 kHz	W		190	240	340	460
16 kHz	W		189	238	337	469
at inverter disablecontroller inhibit	W		6	6	6	18
Overcurrent cycle 180 s						
Max. output current	A	$I_{max, out}$	19.5	25	35	48
Overload time	s	t_{ol}	60	60	60	60
Recovery time	s	t_{re}	120	120	120	120
Max. output current during the recovery time	A		9.8	12.4	17.6	24
Overcurrent cycle 15 s						
Max. output current	A	$I_{max, out}$	26	33	47	64
Overload time	s	t_{ol}	3	3	3	3
Recovery time	s	t_{re}	12	12	12	12
Max. output current during the recovery time	A		9.8	12.4	17.6	24
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	$I_{max, 1}$	16.6	29	29	43
Min. brake resistance	Ω	R_{min}	47	27	27	18
Max. motor cable length shielded						
without EMC category	m		100	100	100	100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		35	50	50	35
Weight	kg		2.3	3.7	3.7	10.3
Weight	lb		5	8	8	23



Technical data

3-phase mains connection 400 V
Rated data

Inverter			i550-C18/400-3	i550-C22/400-3	i550-C30/400-3	i550-C37/400-3
Rated power	kW	P_N	18.5	22	30	37
Rated power	hp	P_N	25	30	40	50
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-400/480 V			
Rated mains current						
without mains choke	A	I _{r, AC}	48.4	-	-	-
with mains choke	A	I _{r, AC}	36	42	54.9	68
Apparent output power	kVA	A _{ON}	27	32	41	51
Rated output current						
2 kHz	A	I _{OUT}	40	47	61	76
4 kHz	A	I _{OUT}	40	47	61	76
8 kHz	A	I _{OUT}	40	47	61	76
16 kHz	A	I _{OUT}	26.6	31.3	40.6	50.6
Power loss						
2 kHz	W		420	491	639	790
4 kHz	W		450	520	680	840
8 kHz	W		570	670	880	1100
16 kHz	W		581	680	884	1095
at inverter disablecontroller inhibit	W		18	18	25	25
Overcurrent cycle 180 s						
Max. output current	A	I _{max, out}	60	71	92	114
Overload time	s	t _{ol}	60	60	60	60
Recovery time	s	t _{re}	120	120	120	120
Max. output current during the recovery time	A		30	35	46	57
Overcurrent cycle 15 s						
Max. output current	A	I _{max, out}	80	94	122	152
Overload time	s	t _{ol}	3	3	3	3
Recovery time	s	t _{re}	12	12	12	12
Max. output current during the recovery time	A		30	35	46	57
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	I _{max, 1}	52	52	98	98
Min. brake resistance	Ω	R _{min}	15	15	7.5	7.5
Max. motor cable length shielded						
without EMC category	m		100	100	100	100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		35	35	35	35
Weight	kg		10.3	10.3	17.2	17.2
Weight	lb		23	23	38	38

Technical data

3-phase mains connection 400 V

Rated data



Inverter			i550-C45/400-3	i550-C55/400-3	i550-C75/400-3	i550-C90/400-3
Rated power	kW	P _N	45	55	75	90
Rated power	hp	P _N	60	75	100	125
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-400/480 V			
Rated mains current						
without mains choke	A	I _{r, AC}	-	-	-	-
with mains choke	A	I _{r, AC}	80	99	135	168
Apparent output power	kVA	A _{ON}	60	75	100	121
Rated output current						
2 kHz	A	I _{OUT}	89	110	150	180
4 kHz	A	I _{OUT}	89	110	150	180
8 kHz	A	I _{OUT}	89	110	150	162
16 kHz	A	I _{OUT}	59.3	73.3	100	108
Power loss						
2 kHz	W		920	1137	1539	1841
4 kHz	W		980	1210	1640	1961
8 kHz	W		1280	1580	2140	2312
16 kHz	W		1278	1579	2143	2312
at inverter disablecontroller inhibit	W		25	30	30	30
Overcurrent cycle 180 s						
Max. output current	A	I _{max, out}	134	165	225	270
Overload time	s	t _{ol}	60	60	60	60
Recovery time	s	t _{re}	120	120	120	120
Max. output current during the recovery time	A		67	83	113	135
Overcurrent cycle 15 s						
Max. output current	A	I _{max, out}	178	220	300	360
Overload time	s	t _{ol}	3	3	3	3
Recovery time	s	t _{re}	12	12	12	12
Max. output current during the recovery time	A		67	83	113	135
Cyclic mains switching			3 times per minute	1 time per minute		
Brake chopper						
Max. output current	A	I _{max, 1}	98	166	166	333
Min. brake resistance	Ω	R _{min}	7.5	4.7	4.7	2.4
Max. motor cable length shielded						
without EMC category	m		100	100	100	100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		35	100	100	100
Weight	kg		17.2	24	24	35.6
Weight	lb		38	53	53	78.5



Technical data

3-phase mains connection 400 V
Rated data

Inverter			i550-C110/400-3
Rated power	kW	P_N	110
Rated power	hp	P_N	150
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz
Output voltage			3 AC 0-400/480 V
Rated mains current			
without mains choke	A	$I_{r, AC}$	-
with mains choke	A	$I_{r, AC}$	198
Apparent output power	kVA	A_{ON}	142
Rated output current			
2 kHz	A	I_{OUT}	212
4 kHz	A	I_{OUT}	212
8 kHz	A	I_{OUT}	191
16 kHz	A	I_{OUT}	127
Power loss			
2 kHz	W		2163
4 kHz	W		2305
8 kHz	W		2717
16 kHz	W		2717
at inverter disablecontroller inhibit	W		30
Overcurrent cycle 180 s			
Max. output current	A	$I_{max, out}$	318
Overload time	s	t_{ol}	60
Recovery time	s	t_{re}	120
Max. output current during the recovery time	A		159
Overcurrent cycle 15 s			
Max. output current	A	$I_{max, out}$	424
Overload time	s	t_{ol}	3
Recovery time	s	t_{re}	12
Max. output current during the recovery time	A		159
Cyclic mains switching			1 time per minute
Brake chopper			
Max. output current	A	$I_{max, 1}$	333
Min. brake resistance	Ω	R_{min}	2.4
Max. motor cable length shielded			
without EMC category	m		100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		100
Weight	kg		35.6
Weight	lb		78.5

Technical data

3-phase mains connection 400 V

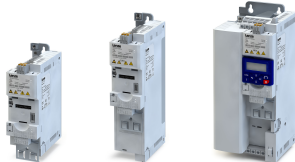
Fusing data



Fusing data

Fusing data						
Inverter			i550-C0.37/400-3	i550-C0.55/400-3	i550-C0.75/400-3	i550-C1.1/400-3
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		10	10	10	16
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		10	10	10	16
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		10	10	10	16
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		10	10	10	16
Earth-leakage circuit breaker						
3-phase mains connection			≥ 30 mA, type B			

Fusing data					
Inverter			i550-C1.5/400-3		i550-C2.2/400-3
Cable installation in compliance with			EN 60204-1		
without mains choke					
Circuit breaker					
Characteristics			B		
Max. rated current	A		16	16	
Fuse					
Characteristics			gG/gL or gRL		
Max. rated current	A		16	16	
with mains choke					
Circuit breaker					
Characteristics			B		
Max. rated current	A		16	16	
Fuse					
Characteristics			gG/gL or gRL		
Max. rated current	A		16	16	
Earth-leakage circuit breaker					
3-phase mains connection			≥ 30 mA, type B		



Technical data

3-phase mains connection 400 V
Fusing data

Fusing data						
Inverter			i550-C3.0/400-3	i550-C4.0/400-3	i550-C5.5/400-3	i550-C7.5/400-3
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		25	25	25	32
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		25	25	25	32
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		25	25	25	32
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		25	25	25	32
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Fusing data						
Inverter			i550-C11/400-3			
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		32			
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		32			
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		32			
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		32			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Technical data

3-phase mains connection 400 V

Fusing data



Fusing data						
Inverter			i550-C15/400-3	i550-C18/400-3	i550-C22/400-3	i550-C30/400-3
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B		-	
Max. rated current	A		63	63	-	-
Fuse						
Characteristics			gG/gL or gRL		-	
Max. rated current	A		63	63	-	-
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		63	63	63	80
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		63	63	63	80
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Fusing data						
Inverter			i550-C37/400-3		i550-C45/400-3	
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		-		-	
Fuse						
Characteristics			-			
Max. rated current	A		-		-	
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		100		125	
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		100		125	
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			



Technical data

3-phase mains connection 400 V
Fusing data

Fusing data						
Inverter			i550-C55/400-3	i550-C75/400-3	i550-C90/400-3	i550-C110/400-3
Cable installation in compliance with			EN 60204-1			
with mains choke						
Fuse						
Characteristics			gR			
Max. rated current	A		160	160	300	300
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Fusing data						
Inverter			i550-C0.37/400-3	i550-C0.55/400-3	i550-C0.75/400-3	i550-C1.1/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Fuse						
Characteristics			all acc. to UL 248 / Class CC			
Max. rated current	A		15	15	15	15
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
with mains choke						
Fuse						
Characteristics			all acc. to UL 248 / Class CC			
Max. rated current	A		15	15	15	15
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 30 mA, type B			

Technical data

3-phase mains connection 400 V

Fusing data



Fusing data				
Inverter			i550-C1.5/400-3	i550-C2.2/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1	
without mains choke				
Fuse				
Characteristics			all acc. to UL 248 / Class CC	
Max. rated current	A		15	15
Type of fusing			Standard	
SCCR: requirement			Standard short-circuit strength	
SCCR: max. short circuit current	kA		5	5
SCCR: voltage			480/277 Volts Maximum	
with mains choke				
Fuse				
Characteristics			all acc. to UL 248 / Class CC	
Max. rated current	A		15	15
Type of fusing			Standard	
SCCR: requirement			Standard short-circuit strength	
SCCR: max. short circuit current	kA		5	5
SCCR: voltage			480/277 Volts Maximum	
Earth-leakage circuit breaker				
3-phase mains connection			≥ 30 mA, type B	



Technical data

3-phase mains connection 400 V
Fusing data

Fusing data						
Inverter			i550-C3.0/400-3	i550-C4.0/400-3	i550-C5.5/400-3	i550-C7.5/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		25	25	25	35
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			all acc. to UL 248 / Class J, T, R
Max. rated current	A		25	25	25	40
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
with mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		25	25	25	35
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			all acc. to UL 248 / Class J, T, R
Max. rated current	A		25	25	25	40
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Technical data

3-phase mains connection 400 V

Fusing data



Fusing data			
Inverter			i550-C11/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1
without mains choke			
Circuit breaker			
Characteristics			-
Max. rated current	A		-
Type of fusing			-
SCCR: requirement			-
SCCR: max. short circuit current	kA		-
SCCR: voltage			-
Fuse			
Characteristics			all acc. to UL 248 / Class J, T, R
Max. rated current	A		40
Type of fusing			Standard
SCCR: requirement			Standard short-circuit strength
SCCR: max. short circuit current	kA		5
SCCR: voltage			480/277 Volts Maximum
with mains choke			
Circuit breaker			
Characteristics			-
Max. rated current	A		-
Type of fusing			-
SCCR: requirement			-
SCCR: max. short circuit current	kA		-
SCCR: voltage			-
Fuse			
Characteristics			all acc. to UL 248 / Class J, T, R
Max. rated current	A		40
Type of fusing			Standard
SCCR: requirement			Standard short-circuit strength
SCCR: max. short circuit current	kA		5
SCCR: voltage			480/277 Volts Maximum
Earth-leakage circuit breaker			
3-phase mains connection			≥ 300 mA, type B



Technical data

3-phase mains connection 400 V

Fusing data

Fusing data						
Inverter			i550-C15/400-3	i550-C18/400-3	i550-C22/400-3	i550-C30/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Fuse						
Characteristics			all acc. to UL 248 / Class J, T, R		-	
Max. rated current	A		70	70	-	-
Type of fusing			Standard		-	
SCCR: requirement			Standard short-circuit strength		-	
SCCR: max. short circuit current	kA		5	5	-	-
SCCR: voltage			480/277 Volts Maximum		-	
with mains choke						
Fuse						
Characteristics			all acc. to UL 248 / Class J, T, R			
Max. rated current	A		70	70	70	80
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Fusing data						
Inverter			i550-C37/400-3		i550-C45/400-3	
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Fuse						
Characteristics			-			
Max. rated current	A		-		-	
Type of fusing			-			
SCCR: requirement			-			
SCCR: max. short circuit current	kA		-		-	
SCCR: voltage			-			
with mains choke						
Fuse						
Characteristics			all acc. to UL 248 / Class J, T, R			
Max. rated current	A		100		125	
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5		10	
SCCR: voltage			480/277 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Technical data

3-phase mains connection 400 V

Fusing data



Fusing data						
Inverter			i550-C55/400-3	i550-C75/400-3	i550-C90/400-3	i550-C110/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
with mains choke						
Fuse						
Characteristics			acc. to UL 248 / Class J (recommended: HSI by Mersen)			
Max. rated current	A		200	200	300	300
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		10	10	10	10
SCCR: voltage			480/277 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			



Technical data

3-phase mains connection 400 V

Terminal data

Terminal data

Mains connection						
Inverter			i550-C0.37/400-3	i550-C0.55/400-3	i550-C0.75/400-3	i550-C1.1/400-3
Connection			X100			
Connection type			pluggable screw terminal			
Max. cable cross-section	mm ²		2.5	2.5	2.5	2.5
Max. cable cross-section	AWG		12	12	12	12
Stripping length	mm		8	8	8	8
Stripping length	inch		0.32	0.32	0.32	0.32
Tightening torque	Nm		0.5	0.5	0.5	0.5
Tightening torque	lb-in		4.4	4.4	4.4	4.4
Required tool			0.5 x 3.0			

Mains connection						
Inverter			i550-C1.5/400-3	i550-C2.2/400-3	i550-C3.0/400-3	i550-C4.0/400-3
Connection			X100			
Connection type			pluggable screw terminal		Screw terminal	
Max. cable cross-section	mm ²		2.5	2.5	6	6
Max. cable cross-section	AWG		12	12	10	10
Stripping length	mm		8	8	9	9
Stripping length	inch		0.32	0.32	0.35	0.35
Tightening torque	Nm		0.5	0.5	0.5	0.5
Tightening torque	lb-in		4.4	4.4	4.4	4.4
Required tool			0.5 x 3.0		0.6 x 3.5	

Mains connection						
Inverter			i550-C5.5/400-3	i550-C7.5/400-3	i550-C11/400-3	i550-C15/400-3
Connection			X100			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		6	16	16	35
Max. cable cross-section	AWG		10	6	6	2
Stripping length	mm		9	11	11	18
Stripping length	inch		0.35	0.43	0.43	0.7
Tightening torque	Nm		0.5	1.2	1.2	3.8
Tightening torque	lb-in		4.4	11	11	34
Required tool			0.6 x 3.5	0.8 x 4.0		0.8 x 5.5

Mains connection						
Inverter			i550-C18/400-3	i550-C22/400-3	i550-C30/400-3	i550-C37/400-3
Connection			X100			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		35	35	50	50
Max. cable cross-section	AWG		2	2	1/0	1/0
Stripping length	mm		18	18	19	19
Stripping length	inch		0.7	0.7	0.75	0.75
Tightening torque	Nm		3.8	3.8	4	4
Tightening torque	lb-in		34	34	35	35
Required tool			0.8 x 5.5		Hexagon socket 5	

Technical data

3-phase mains connection 400 V

Terminal data



Mains connection						
Inverter			i550-C45/400-3	i550-C55/400-3	i550-C75/400-3	i550-C90/400-3
Connection			X100			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		50	95	95	150
Max. cable cross-section	AWG		1/0	4/0	4/0	2 x 2/0
Stripping length	mm		19	22	22	28
Stripping length	inch		0.75	0.87	0.87	1.1
Tightening torque	Nm		4	10	10	18
Tightening torque	lb-in		35	89	89	160
Required tool			Hexagon socket 5	Hexagon socket 6		Hexagon socket 8

Mains connection						
Inverter			i550-C110/400-3			
Connection			X100			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		150			
Max. cable cross-section	AWG		2 x 2/0			
Stripping length	mm		28			
Stripping length	inch		1.1			
Tightening torque	Nm		18			
Tightening torque	lb-in		160			
Required tool			Hexagon socket 8			

PE connection						
Inverter			i550-C0.37/400-3	i550-C0.55/400-3	i550-C0.75/400-3	i550-C1.1/400-3
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		6	6	6	6
Max. cable cross-section	AWG		10	10	10	10
Stripping length	mm		10	10	10	10
Stripping length	inch		0.39	0.39	0.39	0.39
Tightening torque	Nm		2	2	2	2
Tightening torque	lb-in		18	18	18	18
Required tool			Torx 20			

PE connection						
Inverter			i550-C1.5/400-3	i550-C2.2/400-3	i550-C3.0/400-3	i550-C4.0/400-3
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		6	6	6	6
Max. cable cross-section	AWG		10	10	10	10
Stripping length	mm		10	10	10	10
Stripping length	inch		0.39	0.39	0.39	0.39
Tightening torque	Nm		2	2	2	2
Tightening torque	lb-in		18	18	18	18
Required tool			Torx 20			



Technical data

3-phase mains connection 400 V

Terminal data

PE connection						
Inverter			i550-C5.5/400-3	i550-C7.5/400-3	i550-C11/400-3	i550-C15/400-3
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		6	16	16	25
Max. cable cross-section	AWG		10	6	6	2
Stripping length	mm		10	11	11	16
Stripping length	inch		0.39	0.43	0.43	0.63
Tightening torque	Nm		2	3.4	3.4	4
Tightening torque	lb-in		18	30	30	35
Required tool			Torx 20		PZ2	

PE connection						
Inverter			i550-C18/400-3	i550-C22/400-3	i550-C30/400-3	i550-C37/400-3
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		25	25	25	25
Max. cable cross-section	AWG		2	2	2	2
Stripping length	mm		16	16	16	16
Stripping length	inch		0.63	0.63	0.63	0.63
Tightening torque	Nm		4	4	4	4
Tightening torque	lb-in		35	35	35	35
Required tool			PZ2			

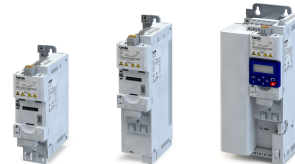
PE connection						
Inverter			i550-C45/400-3	i550-C55/400-3	i550-C75/400-3	i550-C90/400-3
Connection			PE			
Connection type			PE screw			PE bolt
Max. cable cross-section	mm ²		25	25	25	150
Max. cable cross-section	AWG		2	2	2	2 x 2/0
Stripping length	mm		16	16	16	-
Stripping length	inch		0.63	0.63	0.63	-
Tightening torque	Nm		4	4	4	10
Tightening torque	lb-in		35	35	35	89
Required tool			PZ2			Width across flats 13

PE connection						
Inverter			i550-C110/400-3			
Connection			PE			
Connection type			PE bolt			
Max. cable cross-section	mm ²		150			
Max. cable cross-section	AWG		2 x 2/0			
Stripping length	mm		-			
Stripping length	inch		-			
Tightening torque	Nm		10			
Tightening torque	lb-in		89			
Required tool			Width across flats 13			

Technical data

3-phase mains connection 400 V

Terminal data



Motor connection						
Inverter			i550-C0.37/400-3	i550-C0.55/400-3	i550-C0.75/400-3	i550-C1.1/400-3
Connection			X105			
Connection type			pluggable screw terminal			
Max. cable cross-section	mm ²		2.5	2.5	2.5	2.5
Max. cable cross-section	AWG		12	12	12	12
Stripping length	mm		8	8	8	8
Stripping length	inch		0.32	0.32	0.32	0.32
Tightening torque	Nm		0.5	0.5	0.5	0.5
Tightening torque	lb-in		4.4	4.4	4.4	4.4
Required tool			0.5 x 3.0			

Motor connection						
Inverter			i550-C1.5/400-3	i550-C2.2/400-3	i550-C3.0/400-3	i550-C4.0/400-3
Connection			X105			
Connection type			pluggable screw terminal		Screw terminal	
Max. cable cross-section	mm ²		2.5	2.5	6	6
Max. cable cross-section	AWG		12	12	10	10
Stripping length	mm		8	8	9	9
Stripping length	inch		0.32	0.32	0.35	0.35
Tightening torque	Nm		0.5	0.5	0.5	0.5
Tightening torque	lb-in		4.4	4.4	4.4	4.4
Required tool			0.5 x 3.0		0.6 x 3.5	

Motor connection						
Inverter			i550-C5.5/400-3	i550-C7.5/400-3	i550-C11/400-3	i550-C15/400-3
Connection			X105			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		6	16	16	35
Max. cable cross-section	AWG		10	6	6	2
Stripping length	mm		9	11	11	18
Stripping length	inch		0.35	0.43	0.43	0.7
Tightening torque	Nm		0.5	1.2	1.2	3.8
Tightening torque	lb-in		4.4	11	11	34
Required tool			0.6 x 3.5	0.8 x 4.0		0.8 x 5.5

Motor connection						
Inverter			i550-C18/400-3	i550-C22/400-3	i550-C30/400-3	i550-C37/400-3
Connection			X105			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		35	35	50	50
Max. cable cross-section	AWG		2	2	1/0	1/0
Stripping length	mm		18	18	19	19
Stripping length	inch		0.7	0.7	0.75	0.75
Tightening torque	Nm		3.8	3.8	4	4
Tightening torque	lb-in		34	34	35	35
Required tool			0.8 x 5.5		Hexagon socket 5	



Technical data

3-phase mains connection 400 V
Terminal data

Motor connection						
Inverter			i550-C45/400-3	i550-C55/400-3	i550-C75/400-3	i550-C90/400-3
Connection			X105			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		50	95	95	150
Max. cable cross-section	AWG		1/0	4/0	4/0	2 x 2/0
Stripping length	mm		19	22	22	28
Stripping length	inch		0.75	0.87	0.87	1.1
Tightening torque	Nm		4	10	10	18
Tightening torque	lb-in		35	89	89	160
Required tool			Hexagon socket 5	Hexagon socket 6		Hexagon socket 8

Motor connection			
Inverter			i550-C110/400-3
Connection			X105
Connection type			Screw terminal
Max. cable cross-section	mm ²		150
Max. cable cross-section	AWG		2 x 2/0
Stripping length	mm		28
Stripping length	inch		1.1
Tightening torque	Nm		18
Tightening torque	lb-in		160
Required tool			Hexagon socket 8

The terminal data for the terminal X1 can be found under: [▶ Terminal data](#) [72](#)

Technical data

3-phase mains connection 400 V
Brake resistors



Brake resistors

Inverter	Brake resistor					
	Order code	Rated resistance	Rated power	Thermal capacity	Dimensions (h x b x t)	Weight
		Ω	W	kWs	mm	kg
i550-C0.37/400-3	ERBM390R100W	390	100	15	235 x 21 x 40	0.37
i550-C0.55/400-3						
i550-C0.75/400-3						
i550-C1.1/400-3	ERBP180R200W	180	200	30	240 x 41 x 122	1
	ERBP180R300W		300	45	320 x 41 x 122	1.4
i550-C1.5/400-3	ERBP180R200W		200	30	240 x 41 x 122	1
i550-C2.2/400-3	ERBP180R300W		300	45	320 x 41 x 122	1.4
	ERBP180R200W		200	30	240 x 41 x 122	1
i550-C3.0/400-3	ERBP082R200W				320 x 41 x 122	
	ERBS082R780W	82	780	117	666 x 124 x 122	3.6
i550-C4.0/400-3	ERBP047R200W	47	200	30	320 x 41 x 122	1
	ERBS047R400W		400	60	400 x 110 x 105	2.3
	ERBS047R800W		800	120	710 x 110 x 105	4
i550-C5.5/400-3	ERBP047R200W		200	30	320 x 41 x 122	1
	ERBS047R400W		400	60	400 x 110 x 105	2.3
	ERBS047R800W		800	120	710 x 110 x 105	4
i550-C7.5/400-3	ERBP027R200W	27	200	30	320 x 41 x 122	1
	ERBS027R600W		600	90	550 x 110 x 105	3.1
	ERBS027R01K2		1200	180	1020 x 110 x 105	5.6
i550-C11/400-3	ERBP027R200W		200	30	320 x 41 x 122	1
	ERBS027R600W		600	90	550 x 110 x 105	3.1
	ERBS027R01K2		1200	180	1020 x 110 x 105	5.6
i550-C15/400-3	ERBS018R800W	18	800	120	710 x 110 x 105	3.9
	ERBS018R01K4		1400	210	1110 x 110 x 105	6.2
	ERBS018R02K8		2800	420	1110 x 200 x 105	12
	ERBG018R04K3		4300	645	486 x 426 x 302	13.5
	ERBP018R300W		300	45	320 x 41 x 122	1.4
i550-C18/400-3	ERBS015R800W	15	800	120	710 x 110 x 105	3.9
	ERBS015R01K2		1200	180	1020 x 110 x 105	5.6
	ERBS015R02K4		2400	420	1020 x 200 x 105	10
	ERBG015R06K2		6200	930	486 x 526 x 302	17
	ERBG015R03K3		3300	495	486 x 326 x 302	12.6
i550-C22/400-3	ERBS015R800W		800	120	710 x 110 x 105	3.9
	ERBS015R01K2		1200	180	1020 x 110 x 105	5.6
	ERBS015R02K4		2400	420	1020 x 200 x 105	10
	ERBG015R06K2		6200	930	486 x 526 x 302	17
	ERBG015R03K3		3300	495	486 x 326 x 302	12.6
i550-C30/400-3	ERBG075D01K9	7.5	1900	285	486 x 236 x 302	9.5
i550-C37/400-3						
i550-C45/400-3						
i550-C55/400-3	ERBG005R02K6	5	2600	390	486 x 326 x 302	11
i550-C75/400-3						
i550-C90/400-3	ERBG028D04K1	2.8	4100	615	486 x 426 x 302	12.8
i550-C110/400-3						



Technical data

3-phase mains connection 400 V
Mains chokes

Mains chokes

Inverter	Mains choke					
	Order code	Number of phases	Output current	Inductance	Dimensions (h x b x t)	Weight
			A	mH	mm	kg
i550-C0.37/400-3	EZAELN3002B203	3	1.5	19.6	56 x 77 x 100	0.52
i550-C0.55/400-3	EZAELN3002B153		2	14.7		0.53
i550-C0.75/400-3	EZAELN3004B742		4	7.35	60 x 95 x 115	1.31
i550-C1.1/400-3						
i550-C1.5/400-3						
i550-C2.2/400-3	EZAELN3006B492		6	4.9	69 x 95 x 120	1.45
i550-C3.0/400-3	EZAELN3008B372		8	3.68	85 x 120 x 140	1.9
i550-C4.0/400-3	EZAELN3010B292		10	2.94		2
i550-C5.5/400-3	EZAELN3016B182		16	1.84	95 x 120 x 140	2.7
i550-C7.5/400-3						
i550-C11/400-3	EZAELN3025B122		25	1.18	110 x 155 x 170	5.8
i550-C15/400-3	EZAELN3030B981		30	0.98		5.85
i550-C18/400-3	EZAELN3040B741		40	0.74	112 x 185 x 200	6.8
i550-C22/400-3	EZAELN3045B651		45	0.65		8.25
i550-C30/400-3	EZAELN3063B471		63	0.47	122 x 185 x 210	9.65
i550-C37/400-3	EZAELN3080B371		80	0.37	125 x 210 x 240	12.5
i550-C45/400-3						
i550-C55/400-3	EZAELN3100B301		100	0.3	139 x 267 x 205	16.5
i550-C75/400-3	EZAELN3160B191		160	0.19	149 x 291 x 215	22.5
i550-C90/400-3	EZAELN3180B171		180	0.17	164 x 316 x 235	26
i550-C110/400-3	EZAELN3200B151		200	0.15	144 x 352 x 265	25

Technical data

3-phase mains connection 400 V
RFI filters / Mains filters



RFI filters / Mains filters

Basic information on RFI filters, mains filters and EMC: from [246](#)



EMC filters can be used both in the side structure and in the substructure.

Maximum motor cable lengths and FI operation

Mains connection			3-phase, 400 V/480 V			
Inverter			i550-C0.37/400-3	i550-C0.55/400-3 i550-C0.75/400-3	i550-C1.1/400-3 i550-C1.5/400-3 i550-C2.2/400-3	i550-C3.0/400-3 i550-C4.0/400-3 i550-C5.5/400-3
Without RFI filter						
Without EMC category Thermal limitation	Max. motor cable length shielded	m	15	50	50	100
	Max. motor cable length unshielded	m	30	100	200	200
With integrated RFI filter						
Category C1	Max. motor cable length shielded	m	3	3	-	-
Category C2		m	15	20	20	20
	Earth-leakage circuit breaker	mA	30	30	30	300
RFI filter Low Leakage						
Category C1	Max. motor cable length shielded	m	-	-	-	-
	Earth-leakage circuit breaker	mA	-	-	-	-
RFI filter Short Distance						
Category C1	Max. motor cable length shielded	m	15	25	25	25
Category C2		m	15	50	50	50
	Earth-leakage circuit breaker	mA	30	30	30	30
RFI filter Long Distance						
Category C1	Max. motor cable length shielded	m	15	50	50	50
Category C2		m	15	50	50	100
	Earth-leakage circuit breaker	mA	300	300	300	300



Technical data

3-phase mains connection 400 V
RFI filters / Mains filters

Mains connection			3-phase, 400 V/480 V			
Inverter			i550-C7.5/400-3 i550-C11/400-3	i550-C15/400-3 i550-C18/400-3 i550-C22/400-3	i550-C30/400-3 i550-C37/400-3 i550-C45/400-3	i550-C55/400-3 i550-C75/400-3
Without RFI filter						
Without EMC category	Max. motor cable length shielded	m	100	100	100	100
Thermal limitation	Max. motor cable length unshielded	m	200	200	200	200
With integrated RFI filter						
Category C1	Max. motor cable length shielded	m	-	-	-	-
Category C2		m	20	20	20	20
	Earth-leakage circuit breaker	mA	300	300	300	300
RFI filter Low Leakage						
Category C1	Max. motor cable length shielded	m	-	-	-	-
	Earth-leakage circuit breaker	mA	-	-	-	-
RFI filter Short Distance						
Category C1	Max. motor cable length shielded	m	25	-	-	-
Category C2		m	50	-	-	-
	Earth-leakage circuit breaker	mA	30	-	-	-
RFI filter Long Distance				from 22 kW: Mains filter		
Category C1	Max. motor cable length shielded	m	50	50	50	50
Category C2		m	100	50	50	50
	Earth-leakage circuit breaker	mA	300	300	300	300

Short Distance

Inverter	RFI filter		
	Order code	Dimensions (h x b x t)	Weight
		mm	kg
i550-C0.37/400-3	I0FAE175F100S0000S	276 x 60 x 50	0.9
i550-C0.55/400-3			
i550-C0.75/400-3			
i550-C1.1/400-3	I0FAE222F100S0000S	346 x 60 x 50	1.1
i550-C1.5/400-3			
i550-C2.2/400-3			
i550-C3.0/400-3	I0FAE255F100S0000S	346 x 90 x 60	2.1
i550-C4.0/400-3			
i550-C5.5/400-3			
i550-C7.5/400-3	I0FAE311F100S0000S	371 x 120 x 60	2.4
i550-C11/400-3			

Technical data

3-phase mains connection 400 V
Sine filter



Long Distance

Inverter	RFI filter		
	Order code	Dimensions (h x b x t)	Weight
		mm	kg
i550-C0.37/400-3	I0FAE175F100D0000S	276 x 60 x 50	0.9
i550-C0.55/400-3			
i550-C0.75/400-3			
i550-C1.1/400-3	I0FAE222F100D0000S	346 x 60 x 50	1.1
i550-C1.5/400-3			
i550-C2.2/400-3			
i550-C3.0/400-3	I0FAE255F100D0000S	346 x 90 x 60	1.7
i550-C4.0/400-3			
i550-C5.5/400-3			
i550-C7.5/400-3	I0FAE311F100D0000S	371 x 120 x 60	2
i550-C11/400-3			
i550-C15/400-3			
i550-C18/400-3	E84AZESR1834LD	436 x 205 x 90	7.5
i550-C22/400-3	E84AZESM2234LD		14
i550-C30/400-3	I0FAE322F100D0000S		18.5
i550-C37/400-3	E84AZESM3034LD	590 x 250 x 105	23
i550-C45/400-3	E84AZESM3734LD		25
i550-C55/400-3	I0FAE345F100D0000S		32
i550-C75/400-3	I0FAE355F100D0000S	700 x 250 x 105	36
i550-C90/400-3	I0FAE375F100D0000S		41.5
i550-C110/400-3	I0FAE411F100D0000S	855 x 250 x 130	63

From 22 kW, long distance mains filters are used. Mains filters are a combination of mains choke and RFI filter.

Sine filter

Inverter		Sine filters		
	Switching frequency	Order code	Rated inductance	Max. output frequency
	kHz		mH	Hz
i550-C0.37/400-3	4 8	EVS3-004A200	11.0	150
i550-C0.55/400-3				
i550-C0.75/400-3				
i550-C1.1/400-3		EVS3-010A200	5.10	
i550-C1.5/400-3				
i550-C2.2/400-3				
i550-C3.0/400-3		EVS3-017A200	3.07	
i550-C4.0/400-3				
i550-C5.5/400-3				
i550-C7.5/400-3		EVS3-024A200	2.50	
i550-C11/400-3		EVS3-032A200	2.00	
i550-C15/400-3		EVS3-037A200	1.70	
i550-C18/400-3		EVS3-048A200	1.20	
i550-C22/400-3		EVS3-048A200	1.20	
i550-C30/400-3		EVS3-061A200	1.00	
i550-C37/400-3		EVS3-090A200	0.8	
i550-C45/400-3		EVS3-090A200	0.8	
i550-C55/400-3	2	EVS3-115A200	0.7	
i550-C75/400-3	4	EVS3-150A200	0.5	



Technical data

3-phase mains connection 400 V "Light Duty"
Rated data

3-phase mains connection 400 V "Light Duty"

Rated data

The output currents apply to these operating conditions:

- At a switching frequency of 2 kHz or 4 kHz: Ambient temperature above 40 °C with a rated output current reduced by 2.5 %/°C.
- If the load characteristic "Light Duty" and the switching frequencies 8 kHz or 16 kHz are selected, only the values of the load characteristic "Heavy Duty" are reached.

Technical data

3-phase mains connection 400 V "Light Duty"

Rated data



Inverter			i550-C3.0/400-3	i550-C4.0/400-3	i550-C5.5/400-3	i550-C7.5/400-3
Rated power	kW	P_N	4	5.5	7.5	11
Rated power	hp	P_N	5	7.5	10	15
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-400/480 V			
Rated mains current						
without mains choke	A	$I_{r, AC}$	10.3	14	18.3	28
with mains choke	A	$I_{r, AC}$	8.2	11	14.5	22
Apparent output power	kVA	A_{ON}	5.9	8	10.5	15
Rated output current						
2 kHz	A	I_{OUT}	8.8	11.9	15.6	23
4 kHz	A	I_{OUT}	8.8	11.9	15.6	23
8 kHz	A	I_{OUT}	-	-	-	-
16 kHz	A	I_{OUT}	-	-	-	-
Power loss						
2 kHz	W		94	125	163	238
4 kHz	W		100	133	173	253
8 kHz	W		-	-	-	-
16 kHz	W		-	-	-	-
at inverter disablecontroller inhibit	W		6	6	6	6
Overcurrent cycle 180 s						
Max. output current	A	$I_{max, out}$	11	14.3	19.5	23.6
Overload time	s	t_{ol}	60	60	60	60
Recovery time	s	t_{re}	120	120	120	120
Max. output current during the recovery time	A		5.5	7.1	9.8	12.4
Overcurrent cycle 15 s						
Max. output current	A	$I_{max, out}$	14.6	19	26	33
Overload time	s	t_{ol}	3	3	3	3
Recovery time	s	t_{re}	12	12	12	12
Max. output current during the recovery time	A		5.5	7.1	9.8	12.4
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	$I_{max, 1}$	9.5	16.6	16.6	29
Min. brake resistance	Ω	R_{min}	82	47	47	27
Max. motor cable length shielded						
without EMC category	m		100	100	100	100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		35	35	35	50
Weight	kg		2.3	2.3	2.3	3.7
Weight	lb		5	5	5	8



Technical data

3-phase mains connection 400 V "Light Duty"
Rated data

Inverter			i550-C11/400-3	i550-C15/400-3	i550-C18/400-3	i550-C22/400-3
Rated power	kW	P_N	15	18.5	22	30
Rated power	hp	P_N	20	25	30	40
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-400/480 V			
Rated mains current						
without mains choke	A	$I_{r, AC}$	-	48	-	-
with mains choke	A	$I_{r, AC}$	27.1	36	43	55
Apparent output power	kVA	A_{ON}	19	26	32	38
Rated output current						
2 kHz	A	I_{OUT}	28.2	38.4	48	56.4
4 kHz	A	I_{OUT}	28.2	38.4	48	56.4
8 kHz	A	I_{OUT}	-	-	-	-
16 kHz	A	I_{OUT}	-	-	-	-
Power loss						
2 kHz	W		290	404	501	585
4 kHz	W		309	430	533	623
8 kHz	W		-	-	-	-
16 kHz	W		-	-	-	-
at inverter disablecontroller inhibit	W		6	18	18	18
Overcurrent cycle 180 s						
Max. output current	A	$I_{max, out}$	35	48	60	71
Overload time	s	t_{ol}	60	60	60	60
Recovery time	s	t_{re}	120	120	120	120
Max. output current during the recovery time	A		17.6	24	30	35
Overcurrent cycle 15 s						
Max. output current	A	$I_{max, out}$	47	64	80	94
Overload time	s	t_{ol}	3	3	3	3
Recovery time	s	t_{re}	12	12	12	12
Max. output current during the recovery time	A		17.6	24	30	35
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	$I_{max, 1}$	29	43	52	52
Min. brake resistance	Ω	R_{min}	27	18	15	15
Max. motor cable length shielded						
without EMC category	m		100	100	100	100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		50	35	35	35
Weight	kg		3.7	10.3	10.3	10.3
Weight	lb		8	23	23	23

Technical data

3-phase mains connection 400 V "Light Duty"

Rated data



Inverter			i550-C30/400-3	i550-C37/400-3	i550-C45/400-3	i550-C55/400-3
Rated power	kW	P_N	37	45	55	75
Rated power	hp	P_N	50	60	75	100
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-400/480 V			
Rated mains current						
without mains choke	A	$I_{r, AC}$	-	-	-	-
with mains choke	A	$I_{r, AC}$	69	86	100	119
Apparent output power	kVA	A_{ON}	49	61	72	89
Rated output current						
2 kHz	A	I_{OUT}	73.2	91.2	107	132
4 kHz	A	I_{OUT}	73.2	91.2	107	132
8 kHz	A	I_{OUT}	-	-	-	-
16 kHz	A	I_{OUT}	-	-	-	-
Power loss						
2 kHz	W		761	942	1101	1358
4 kHz	W		810	1004	1171	1446
8 kHz	W		-	-	-	-
16 kHz	W		-	-	-	-
at inverter disablecontroller inhibit	W		25	25	25	30
Overcurrent cycle 180 s						
Max. output current	A	$I_{max, out}$	92	114	134	165
Overload time	s	t_{ol}	60	60	60	60
Recovery time	s	t_{re}	120	120	120	120
Max. output current during the recovery time	A		46	57	67	83
Overcurrent cycle 15 s						
Max. output current	A	$I_{max, out}$	122	152	178	220
Overload time	s	t_{ol}	3	3	3	3
Recovery time	s	t_{re}	12	12	12	12
Max. output current during the recovery time	A		46	57	67	83
Cyclic mains switching			3 times per minute			1 time per minute
Brake chopper						
Max. output current	A	$I_{max, 1}$	98	98	98	166
Min. brake resistance	Ω	R_{min}	7.5	7.5	7.5	4.7
Max. motor cable length shielded						
without EMC category	m		100	100	100	100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		35	35	35	100
Weight	kg		17.2	17.2	17.2	24
Weight	lb		38	38	38	53



Technical data

3-phase mains connection 400 V "Light Duty"
Rated data

Inverter			i550-C75/400-3	i550-C90/400-3	i550-C110/400-3
Rated power	kW	P_N	90	110	132
Rated power	hp	P_N	125	150	175
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz		
Output voltage			3 AC 0-400/480 V		
Rated mains current					
without mains choke	A	$I_{r, AC}$	-	-	-
with mains choke	A	$I_{r, AC}$	160	200	234
Apparent output power	kVA	A_{ON}	121	145	171
Rated output current					
2 kHz	A	I_{OUT}	180	216	254
4 kHz	A	I_{OUT}	180	216	254
8 kHz	A	I_{OUT}	-	-	-
16 kHz	A	I_{OUT}	-	-	-
Power loss					
2 kHz	W		1841	2203	2589
4 kHz	W		1961	2348	2760
8 kHz	W		-	-	-
16 kHz	W		-	-	-
at inverter disablecontroller inhibit	W		30	30	30
Overcurrent cycle 180 s					
Max. output current	A	$I_{max, out}$	225	270	318
Overload time	s	t_{ol}	60	60	60
Recovery time	s	t_{re}	120	120	120
Max. output current during the recovery time	A		113	135	159
Overcurrent cycle 15 s					
Max. output current	A	$I_{max, out}$	300	360	424
Overload time	s	t_{ol}	3	3	3
Recovery time	s	t_{re}	12	12	12
Max. output current during the recovery time	A		113	135	159
Cyclic mains switching			1 time per minute		
Brake chopper					
Max. output current	A	$I_{max, 1}$	166	333	333
Min. brake resistance	Ω	R_{min}	4.7	2.4	2.4
Max. motor cable length shielded					
without EMC category	m		100	100	100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		100	100	100
Weight	kg		24	35.6	35.6
Weight	lb		53	78.5	78.5

Technical data

3-phase mains connection 400 V "Light Duty"

Fusing data



Fusing data

Fusing data						
Inverter			i550-C3.0/400-3	i550-C4.0/400-3	i550-C5.5/400-3	i550-C7.5/400-3
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		25	25	25	32
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		25	25	25	32
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		25	25	25	32
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		25	25	25	32
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Fusing data						
Inverter			i550-C11/400-3			
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		-			
Fuse						
Characteristics			-			
Max. rated current	A		-			
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		32			
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		32			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			



Technical data

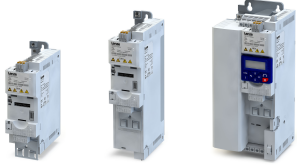
3-phase mains connection 400 V "Light Duty"
Fusing data

Fusing data						
Inverter			i550-C15/400-3	i550-C18/400-3	i550-C22/400-3	i550-C30/400-3
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B	-		
Max. rated current	A		63	-	-	-
Fuse						
Characteristics			gG/gL or gRL	-		
Max. rated current	A		63	-	-	-
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		63	63	63	80
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		63	63	63	80
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Fusing data				
Inverter			i550-C37/400-3	i550-C45/400-3
Cable installation in compliance with			EN 60204-1	
without mains choke				
Circuit breaker				
Characteristics			-	
Max. rated current	A		-	-
Fuse				
Characteristics			-	
Max. rated current	A		-	-
with mains choke				
Circuit breaker				
Characteristics			B	
Max. rated current	A		100	125
Fuse				
Characteristics			gG/gL or gRL	
Max. rated current	A		100	125
Earth-leakage circuit breaker				
3-phase mains connection			≥ 300 mA, type B	

Technical data

3-phase mains connection 400 V "Light Duty"
Fusing data



Fusing data						
Inverter			i550-C55/400-3	i550-C75/400-3	i550-C90/400-3	i550-C110/400-3
Cable installation in compliance with			EN 60204-1			
with mains choke						
Fuse						
Characteristics			gR			
Max. rated current	A		160	160	300	300
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			



Technical data

3-phase mains connection 400 V "Light Duty"
Fusing data

Fusing data						
Inverter			i550-C3.0/400-3	i550-C4.0/400-3	i550-C5.5/400-3	i550-C7.5/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		25	25	25	35
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			all acc. to UL 248 / Class J, T, R
Max. rated current	A		25	25	25	40
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
with mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		25	25	25	35
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			all acc. to UL 248 / Class J, T, R
Max. rated current	A		25	25	25	40
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Technical data

3-phase mains connection 400 V "Light Duty"

Fusing data



Fusing data			
Inverter			i550-C11/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1
without mains choke			
Circuit breaker			
Characteristics			-
Max. rated current	A		-
Type of fusing			-
SCCR: requirement			-
SCCR: max. short circuit current	kA		-
SCCR: voltage			-
Fuse			
Characteristics			-
Max. rated current	A		-
Type of fusing			-
SCCR: requirement			-
SCCR: max. short circuit current	kA		-
SCCR: voltage			-
with mains choke			
Circuit breaker			
Characteristics			-
Max. rated current	A		-
Type of fusing			-
SCCR: requirement			-
SCCR: max. short circuit current	kA		-
SCCR: voltage			-
Fuse			
Characteristics			all acc. to UL 248 / Class J, T, R
Max. rated current	A		40
Type of fusing			Standard
SCCR: requirement			Standard short-circuit strength
SCCR: max. short circuit current	kA		5
SCCR: voltage			480/277 Volts Maximum
Earth-leakage circuit breaker			
3-phase mains connection			≥ 300 mA, type B



Technical data

3-phase mains connection 400 V "Light Duty"
Fusing data

Fusing data						
Inverter			i550-C15/400-3	i550-C18/400-3	i550-C22/400-3	i550-C30/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Fuse						
Characteristics			all acc. to UL 248 / Class J, T, R	-		
Max. rated current	A		70	-	-	-
Type of fusing			Standard	-		
SCCR: requirement			Standard short-circuit strength	-		
SCCR: max. short circuit current	kA		5	-	-	-
SCCR: voltage			480/277 Volts Maximum	-		
with mains choke						
Fuse						
Characteristics			all acc. to UL 248 / Class J, T, R			
Max. rated current	A		70	70	70	80
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Fusing data				
Inverter			i550-C37/400-3	i550-C45/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1	
without mains choke				
Fuse				
Characteristics			-	
Max. rated current	A		-	-
Type of fusing			-	
SCCR: requirement			-	
SCCR: max. short circuit current	kA		-	-
SCCR: voltage			-	
with mains choke				
Fuse				
Characteristics			all acc. to UL 248 / Class J, T, R	
Max. rated current	A		100	125
Type of fusing			Standard	
SCCR: requirement			Standard short-circuit strength	
SCCR: max. short circuit current	kA		5	10
SCCR: voltage			480/277 Volts Maximum	
Earth-leakage circuit breaker				
3-phase mains connection			≥ 300 mA, type B	

Technical data

3-phase mains connection 400 V "Light Duty"

Fusing data



Fusing data						
Inverter			i550-C55/400-3	i550-C75/400-3	i550-C90/400-3	i550-C110/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
with mains choke						
Fuse						
Characteristics			acc. to UL 248 / Class J (recommended: HSI by Mersen)			
Max. rated current	A		200	200	300	300
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		10	10	10	10
SCCR: voltage			480/277 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			



Technical data

3-phase mains connection 400 V "Light Duty"
Terminal data

Terminal data

Mains connection						
Inverter			i550-C3.0/400-3	i550-C4.0/400-3	i550-C5.5/400-3	i550-C7.5/400-3
Connection			X100			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		6	6	6	16
Max. cable cross-section	AWG		10	10	10	6
Stripping length	mm		9	9	9	11
Stripping length	inch		0.35	0.35	0.35	0.43
Tightening torque	Nm		0.5	0.5	0.5	1.2
Tightening torque	lb-in		4.4	4.4	4.4	11
Required tool			0.6 x 3.5			0.8 x 4.0

Mains connection						
Inverter			i550-C11/400-3	i550-C15/400-3	i550-C18/400-3	i550-C22/400-3
Connection			X100			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		16	35	35	35
Max. cable cross-section	AWG		6	2	2	2
Stripping length	mm		11	18	18	18
Stripping length	inch		0.43	0.7	0.7	0.7
Tightening torque	Nm		1.2	3.8	3.8	3.8
Tightening torque	lb-in		11	34	34	34
Required tool			0.8 x 4.0	0.8 x 5.5		

Mains connection						
Inverter			i550-C30/400-3	i550-C37/400-3	i550-C45/400-3	i550-C55/400-3
Connection			X100			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		50	50	50	95
Max. cable cross-section	AWG		1/0	1/0	1/0	4/0
Stripping length	mm		19	19	19	22
Stripping length	inch		0.75	0.75	0.75	0.87
Tightening torque	Nm		4	4	4	10
Tightening torque	lb-in		35	35	35	89
Required tool			Hexagon socket 5			Hexagon socket 6

Mains connection					
Inverter			i550-C75/400-3	i550-C90/400-3	i550-C110/400-3
Connection			X100		
Connection type			Screw terminal		
Max. cable cross-section	mm ²		95	150	150
Max. cable cross-section	AWG		4/0	2 x 2/0	2 x 2/0
Stripping length	mm		22	28	28
Stripping length	inch		0.87	1.1	1.1
Tightening torque	Nm		10	18	18
Tightening torque	lb-in		89	160	160
Required tool			Hexagon socket 6	Hexagon socket 8	

Technical data

3-phase mains connection 400 V "Light Duty"

Terminal data



PE connection						
Inverter			i550-C3.0/400-3	i550-C4.0/400-3	i550-C5.5/400-3	i550-C7.5/400-3
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		6	6	6	16
Max. cable cross-section	AWG		10	10	10	6
Stripping length	mm		10	10	10	11
Stripping length	inch		0.39	0.39	0.39	0.43
Tightening torque	Nm		2	2	2	3.4
Tightening torque	lb-in		18	18	18	30
Required tool			Torx 20			PZ2

PE connection						
Inverter			i550-C11/400-3	i550-C15/400-3	i550-C18/400-3	i550-C22/400-3
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		16	25	25	25
Max. cable cross-section	AWG		6	2	2	2
Stripping length	mm		11	16	16	16
Stripping length	inch		0.43	0.63	0.63	0.63
Tightening torque	Nm		3.4	4	4	4
Tightening torque	lb-in		30	35	35	35
Required tool			PZ2			

PE connection						
Inverter			i550-C30/400-3	i550-C37/400-3	i550-C45/400-3	i550-C55/400-3
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		25	25	25	25
Max. cable cross-section	AWG		2	2	2	2
Stripping length	mm		16	16	16	16
Stripping length	inch		0.63	0.63	0.63	0.63
Tightening torque	Nm		4	4	4	4
Tightening torque	lb-in		35	35	35	35
Required tool			PZ2			

PE connection					
Inverter			i550-C75/400-3	i550-C90/400-3	i550-C110/400-3
Connection			PE		
Connection type			PE screw	PE bolt	
Max. cable cross-section	mm²		25	150	150
Max. cable cross-section	AWG		2	2 x 2/0	2 x 2/0
Stripping length	mm		16	-	-
Stripping length	inch		0.63	-	-
Tightening torque	Nm		4	10	10
Tightening torque	lb-in		35	89	89
Required tool			PZ2	Width across flats 13	



Technical data

3-phase mains connection 400 V "Light Duty"
Terminal data

Motor connection						
Inverter			i550-C3.0/400-3	i550-C4.0/400-3	i550-C5.5/400-3	i550-C7.5/400-3
Connection			X105			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		6	6	6	16
Max. cable cross-section	AWG		10	10	10	6
Stripping length	mm		9	9	9	11
Stripping length	inch		0.35	0.35	0.35	0.43
Tightening torque	Nm		0.5	0.5	0.5	1.2
Tightening torque	lb-in		4.4	4.4	4.4	11
Required tool			0.6 x 3.5			0.8 x 4.0

Motor connection						
Inverter			i550-C11/400-3	i550-C15/400-3	i550-C18/400-3	i550-C22/400-3
Connection			X105			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		16	35	35	35
Max. cable cross-section	AWG		6	2	2	2
Stripping length	mm		11	18	18	18
Stripping length	inch		0.43	0.7	0.7	0.7
Tightening torque	Nm		1.2	3.8	3.8	3.8
Tightening torque	lb-in		11	34	34	34
Required tool			0.8 x 4.0	0.8 x 5.5		

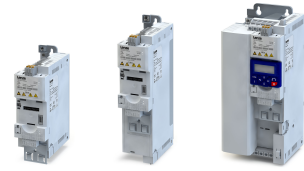
Motor connection						
Inverter			i550-C30/400-3	i550-C37/400-3	i550-C45/400-3	i550-C55/400-3
Connection			X105			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		50	50	50	95
Max. cable cross-section	AWG		1/0	1/0	1/0	4/0
Stripping length	mm		19	19	19	22
Stripping length	inch		0.75	0.75	0.75	0.87
Tightening torque	Nm		4	4	4	10
Tightening torque	lb-in		35	35	35	89
Required tool			Hexagon socket 5			Hexagon socket 6

Motor connection					
Inverter			i550-C75/400-3	i550-C90/400-3	i550-C110/400-3
Connection			X105		
Connection type			Screw terminal		
Max. cable cross-section	mm ²		95	150	150
Max. cable cross-section	AWG		4/0	2 x 2/0	2 x 2/0
Stripping length	mm		22	28	28
Stripping length	inch		0.87	1.1	1.1
Tightening torque	Nm		10	18	18
Tightening torque	lb-in		89	160	160
Required tool			Hexagon socket 6	Hexagon socket 8	

The terminal data for the terminal X1 can be found under: [Terminal data](#) 72

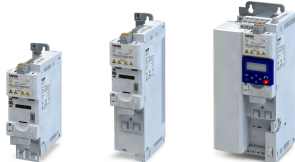
Technical data

3-phase mains connection 400 V "Light Duty"
Brake resistors



Brake resistors

Inverter	Brake resistor					
	Order code	Rated resistance	Rated power	Thermal capacity	Dimensions (h x b x t)	Weight
		Ω	W	kWs	mm	kg
i550-C3.0/400-3	ERBP082R200W	82	200	30	320 x 41 x 122	1
	ERBS082R780W		780	117	666 x 124 x 122	3.6
i550-C4.0/400-3	ERBP047R200W	47	200	30	320 x 41 x 122	1
	ERBS047R400W		400	60	400 x 110 x 105	2.3
	ERBS047R800W		800	120	710 x 110 x 105	4
i550-C5.5/400-3	ERBP047R200W	47	200	30	320 x 41 x 122	1
	ERBS047R400W		400	60	400 x 110 x 105	2.3
	ERBS047R800W		800	120	710 x 110 x 105	4
i550-C7.5/400-3	ERBP027R200W	27	200	30	320 x 41 x 122	1
	ERBS027R600W		600	90	550 x 110 x 105	3.1
	ERBS027R01K2		1200	180	1020 x 110 x 105	5.6
i550-C11/400-3	ERBP027R200W	27	200	30	320 x 41 x 122	1
	ERBS027R600W		600	90	550 x 110 x 105	3.1
	ERBS027R01K2		1200	180	1020 x 110 x 105	5.6
i550-C15/400-3	ERBS018R800W	18	800	120	710 x 110 x 105	3.9
	ERBS018R01K4		1400	210	1110 x 110 x 105	6.2
	ERBS018R02K8		2800	420	1110 x 200 x 105	12
	ERBG018R04K3		4300	645	486 x 426 x 302	13.5
	ERBP018R300W		300	45	320 x 41 x 122	1.4
i550-C18/400-3	ERBS015R800W	15	800	120	710 x 110 x 105	3.9
	ERBS015R01K2		1200	180	1020 x 110 x 105	5.6
	ERBS015R02K4		2400	420	1020 x 200 x 105	10
	ERBG015R06K2		6200	930	486 x 526 x 302	17
	ERBG015R03K3		3300	495	486 x 326 x 302	12.6
i550-C22/400-3	ERBS015R800W	15	800	120	710 x 110 x 105	3.9
	ERBS015R01K2		1200	180	1020 x 110 x 105	5.6
	ERBS015R02K4		2400	420	1020 x 200 x 105	10
	ERBG015R06K2		6200	930	486 x 526 x 302	17
	ERBG015R03K3		3300	495	486 x 326 x 302	12.6
i550-C30/400-3	ERBG075D01K9	7.5	1900	285	486 x 236 x 302	9.5
i550-C37/400-3						
i550-C45/400-3						
i550-C55/400-3	ERBG005R02K6	5	2600	390	486 x 326 x 302	11
i550-C75/400-3						
i550-C90/400-3	ERBG028D04K1	2.8	4100	615	486 x 426 x 302	12.8
i550-C110/400-3						



Technical data

3-phase mains connection 400 V "Light Duty"
Mains chokes

Mains chokes

Inverter	Mains choke					
	Order code	Number of phases	Output current	Inductance	Dimensions (h x b x t)	Weight
			A	mH	mm	kg
i550-C3.0/400-3	EZAELN3010B292	3	10	2.94	85 x 120 x 140	2
i550-C4.0/400-3	EZAELN3016B182		16	1.84	95 x 120 x 140	2.7
i550-C5.5/400-3						
i550-C7.5/400-3	EZAELN3025B122		25	1.18	110 x 155 x 170	5.8
i550-C11/400-3	EZAELN3030B981		30	0.98		5.85
i550-C15/400-3	EZAELN3040B741		40	0.74	112 x 185 x 200	6.8
i550-C18/400-3	EZAELN3045B651		45	0.65		8.25
i550-C22/400-3	EZAELN3063B471		63	0.47	122 x 185 x 210	9.65
i550-C30/400-3	EZAELN3080B371		80	0.37	125 x 210 x 240	12.5
i550-C37/400-3	EZAELN3090B331		90	0.33	115 x 267 x 205	11.5
i550-C45/400-3	EZAELN3100B301		100	0.3	139 x 267 x 205	16.5
i550-C55/400-3	EZAELN3125B241		125	0.24	139 x 291 x 215	17.5
i550-C75/400-3	EZAELN3160B191		160	0.19	149 x 291 x 215	22.5
i550-C90/400-3	EZAELN3200B151		200	0.15	144 x 352 x 265	25
i550-C110/400-3	EZAELN3250B121		250	0.12	207 x 352 x 260	31

Technical data

3-phase mains connection 400 V "Light Duty"
RFI filters / Mains filters



RFI filters / Mains filters

Basic information on RFI filters, mains filters and EMC: from [246](#)



EMC filters can be used both in the side structure and in the substructure.

Maximum motor cable lengths and FI operation

Mains connection			3-phase, 400 V/480 V, Light Duty			
Inverter			i550-C3.0/400-3 i550-C4.0/400-3 i550-C5.5/400-3	i550-C7.5/400-3 i550-C11/400-3	i550-C15/400-3 i550-C18/400-3 i550-C22/400-3	i550-C30/400-3 i550-C37/400-3 i550-C45/400-3 i550-C55/400-3 i550-C75/400-3
Without RFI filter						
Without EMC category Thermal limitation	Max. motor cable length shielded	m	100	100	100	100
	Max. motor cable length unshielded	m	200	200	200	200
With integrated RFI filter						
Category C1	Max. motor cable length shielded	m	-	-	-	-
Category C2		m	20	20	20	20
	Earth-leakage circuit breaker	mA	300	300	300	300
RFI filter Low Leakage						
Category C1	Max. motor cable length shielded	m	-	-	-	-
	Earth-leakage circuit breaker	mA	-	-	-	-
RFI filter Short Distance						
Category C1	Max. motor cable length shielded	m	25	25	-	-
Category C2		m	50	50	-	-
	Earth-leakage circuit breaker	mA	30	30	-	-
RFI filter Long Distance						
Category C1	Max. motor cable length shielded	m	50	50	-	-
Category C2		m	100	100	-	-
	Earth-leakage circuit breaker	mA	300	300	-	-

Short Distance

Inverter	RFI filter		
	Order code	Dimensions (h x b x t)	Weight
		mm	kg
i550-C3.0/400-3	IOFAE255F100S0000S	346 x 90 x 60	2.1
i550-C4.0/400-3			
i550-C5.5/400-3			
i550-C7.5/400-3	IOFAE311F100S0000S	371 x 120 x 60	2.4
i550-C11/400-3			



Technical data

3-phase mains connection 400 V "Light Duty"
Sine filter

Long Distance

Inverter	RFI filter		
	Order code	Dimensions (h x b x t)	Weight
		mm	kg
i550-C3.0/400-3	IOFAE255F100D0000S	346 x 90 x 60	1.7
i550-C4.0/400-3			
i550-C5.5/400-3			
i550-C7.5/400-3	IOFAE311F100D0000S	371 x 120 x 60	2
i550-C11/400-3			
i550-C15/400-3	E84AZESR1834LD	436 x 205 x 90	7.5
i550-C18/400-3	E84AZESM2234LD		14
i550-C22/400-3	IOFAE322F100D0000S		18.5
i550-C30/400-3	E84AZESM3034LD	590 x 250 x 105	23
i550-C37/400-3	E84AZESM3734LD		25
i550-C45/400-3	IOFAE345F100D0000S		32
i550-C55/400-3	IOFAE355F100D0000S	700 x 250 x 105	36
i550-C75/400-3	IOFAE375F100D0000S		41.5
i550-C90/400-3	IOFAE411F100D0000S	855 x 250 x 130	63
i550-C110/400-3			

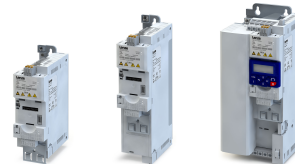
Sine filter

Inverter		Sine filter			
	Switching frequency	Order code	Rated inductance	Max. output frequency	
	kHz		mH	Hz	
i550-C3.0/400-3	4	EZS3-010A200	5.10	150	
i550-C4.0/400-3		EZS3-017A200	3.07		
i550-C5.5/400-3					
i550-C7.5/400-3		EZS3-024A200	2.50		
i550-C11/400-3		EZS3-032A200	2.00		
i550-C15/400-3		EZS3-048A200	1.20		
i550-C18/400-3		EZS3-048A200	1.20		
i550-C22/400-3		EZS3-061A200	1.00		
i550-C30/400-3		EZS3-090A200	0.8		
i550-C37/400-3		EZS3-090A200	0.8		
i550-C45/400-3		EZS3-115A200	0.7		
i550-C55/400-3		EZS3-150A200	0.5		
i550-C75/400-3		EZS3-180A200	0.4	90	

Technical data

3-phase mains connection 480 V

Rated data



3-phase mains connection 480 V

Rated data

The output currents apply to these operating conditions:

- At a switching frequency of 2 kHz or 4 kHz: Max. ambient temperature 45°C.
- At a switching frequency of 8 kHz or 16 kHz: Max. ambient temperature 40 °C.



Technical data

3-phase mains connection 480 V
Rated data

Inverter			i550-C0.37/400-3	i550-C0.55/400-3	i550-C0.75/400-3	i550-C1.1/400-3
Rated power	kW	P_N	0.37	0.55	0.75	1.1
Rated power	hp	P_N	0.5	0.75	1	1.5
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-400/480 V			
Rated mains current						
without mains choke	A	$I_{r, AC}$	1.5	2.1	2.8	3.7
with mains choke	A	$I_{r, AC}$	1.2	1.7	2.2	2.5
Apparent output power	kVA	A_{ON}	0.9	1.2	1.6	2.2
Rated output current						
2 kHz	A	I_{OUT}	-	1.6	2.1	3
4 kHz	A	I_{OUT}	1.1	1.6	2.1	3
8 kHz	A	I_{OUT}	1.1	1.6	2.1	3
16 kHz	A	I_{OUT}	0.7	1.1	1.4	2
Power loss						
2 kHz	W		-	24	30	38
4 kHz	W		20	25	32	40
8 kHz	W		24	31	40	51
16 kHz	W		24	31	40	51
at inverter disablecontroller inhibit	W		6	6	6	6
Overcurrent cycle 180 s						
Max. output current	A	$I_{max, out}$	1.7	2.4	3.2	4.5
Overload time	s	t_{ol}	60	60	60	60
Recovery time	s	t_{re}	120	120	120	120
Max. output current during the recovery time	A		0.8	1.2	1.6	2.3
Overcurrent cycle 15 s						
Max. output current	A	$I_{max, out}$	2.2	3.2	4.2	6
Overload time	s	t_{ol}	3	3	3	3
Recovery time	s	t_{re}	12	12	12	12
Max. output current during the recovery time	A		0.8	1.2	1.6	2.3
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	$I_{max, 1}$	2	2	2	4.3
Min. brake resistance	Ω	R_{min}	390	390	390	180
Max. motor cable length shielded						
without EMC category	m		15	50	50	50
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		3	3	3	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		15	20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		15	20	20	35
Weight	kg		0.8	1	1	1.35
Weight	lb		1.8	2.2	2.2	3

Technical data

3-phase mains connection 480 V

Rated data



Inverter			i550-C1.5/400-3	i550-C2.2/400-3	i550-C3.0/400-3	i550-C4.0/400-3
Rated power	kW	P_N	1.5	2.2	3	4
Rated power	hp	P_N	2	3	4	5
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-400/480 V			
Rated mains current						
without mains choke	A	$I_{r, AC}$	4.5	6.5	8	10.5
with mains choke	A	$I_{r, AC}$	3.1	4.4	5.8	7.5
Apparent output power	kVA	A_{ON}	2.6	3.8	4.9	6.4
Rated output current						
2 kHz	A	I_{OUT}	3.5	4.8	6.3	8.2
4 kHz	A	I_{OUT}	3.5	4.8	6.3	8.2
8 kHz	A	I_{OUT}	3.5	4.8	6.3	8.2
16 kHz	A	I_{OUT}	2.3	3.2	4.2	5.5
Power loss						
2 kHz	W		45	62	79	102
4 kHz	W		48	66	85	110
8 kHz	W		61	85	110	140
16 kHz	W		61	85	109	140
at inverter disablecontroller inhibit	W		6	6	6	6
Overcurrent cycle 180 s						
Max. output current	A	$I_{max, out}$	5.3	7.2	9.5	12.3
Overload time	s	t_{ol}	60	60	60	60
Recovery time	s	t_{re}	120	120	120	120
Max. output current during the recovery time	A		2.6	3.6	4.8	6.2
Overcurrent cycle 15 s						
Max. output current	A	$I_{max, out}$	7	9.6	12.6	16.4
Overload time	s	t_{ol}	3	3	3	3
Recovery time	s	t_{re}	12	12	12	12
Max. output current during the recovery time	A		2.6	3.6	4.7	6.2
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	$I_{max, 1}$	4.3	4.3	9.5	16.6
Min. brake resistance	Ω	R_{min}	180	150	82	47
Max. motor cable length shielded						
without EMC category	m		50	50	100	100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		35	35	35	35
Weight	kg		1.35	1.35	2.3	2.3
Weight	lb		3	3	5	5



Technical data

3-phase mains connection 480 V
Rated data

Inverter			i550-C5.5/400-3	i550-C7.5/400-3	i550-C11/400-3	i550-C15/400-3
Rated power	kW	P_N	5.5	7.5	11	15
Rated power	hp	P_N	7.5	10	15	20
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-400/480 V			
Rated mains current						
without mains choke	A	$I_{r, AC}$	14.3	16.6	23.7	32.3
with mains choke	A	$I_{r, AC}$	10.3	13.1	18.6	24
Apparent output power	kVA	A_{ON}	8.7	11	16	22
Rated output current						
2 kHz	A	I_{OUT}	11	14	21	27
4 kHz	A	I_{OUT}	11	14	21	27
8 kHz	A	I_{OUT}	11	14	21	27
16 kHz	A	I_{OUT}	7.3	9.3	14	18
Power loss						
2 kHz	W		137	172	242	340
4 kHz	W		145	185	260	360
8 kHz	W		190	240	340	460
16 kHz	W		189	238	337	469
at inverter disablecontroller inhibit	W		6	6	6	18
Overcurrent cycle 180 s						
Max. output current	A	$I_{max, out}$	16.5	21	31.5	40.5
Overload time	s	t_{ol}	60	60	60	60
Recovery time	s	t_{re}	120	120	120	120
Max. output current during the recovery time	A		8.3	10.5	15.8	20.3
Overcurrent cycle 15 s						
Max. output current	A	$I_{max, out}$	22	28	42	54
Overload time	s	t_{ol}	3	3	3	3
Recovery time	s	t_{re}	12	12	12	12
Max. output current during the recovery time	A		8.3	10.5	15.8	20.3
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	$I_{max, 1}$	16.6	29	29	43
Min. brake resistance	Ω	R_{min}	47	27	27	18
Max. motor cable length shielded						
without EMC category	m		100	100	100	100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		35	50	50	35
Weight	kg		2.3	3.7	3.7	10.3
Weight	lb		5	8	8	23

Technical data

3-phase mains connection 480 V

Rated data



Inverter			i550-C18/400-3	i550-C22/400-3	i550-C30/400-3	i550-C37/400-3
Rated power	kW	P_N	18.5	22	30	37
Rated power	hp	P_N	25	30	40	50
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-400/480 V			
Rated mains current						
without mains choke	A	$I_{r, AC}$	40.3	47.4	-	-
with mains choke	A	$I_{r, AC}$	30	35.3	45.7	57
Apparent output power	kVA	A_{ON}	27	32	41	51
Rated output current						
2 kHz	A	I_{OUT}	34	40.4	52	65
4 kHz	A	I_{OUT}	34	40.4	52	65
8 kHz	A	I_{OUT}	34	40.4	52	65
16 kHz	A	I_{OUT}	22.6	26.9	34.6	43.3
Power loss						
2 kHz	W		420	491	639	790
4 kHz	W		450	520	680	840
8 kHz	W		570	670	880	1100
16 kHz	W		581	680	884	1095
at inverter disablecontroller inhibit	W		18	18	25	25
Overcurrent cycle 180 s						
Max. output current	A	$I_{max, out}$	51	61	78	98
Overload time	s	t_{ol}	60	60	60	60
Recovery time	s	t_{re}	120	120	120	120
Max. output current during the recovery time	A		25.5	30	39	49
Overcurrent cycle 15 s						
Max. output current	A	$I_{max, out}$	68	81	104	130
Overload time	s	t_{ol}	3	3	3	3
Recovery time	s	t_{re}	12	12	12	12
Max. output current during the recovery time	A		25.5	30	39	49
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	$I_{max, 1}$	52	52	98	98
Min. brake resistance	Ω	R_{min}	15	15	7.5	7.5
Max. motor cable length shielded						
without EMC category	m		100	100	100	100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		35	35	35	35
Weight	kg		10.3	10.3	17.2	17.2
Weight	lb		23	23	38	38



Technical data

3-phase mains connection 480 V
Rated data

Inverter			i550-C45/400-3	i550-C55/400-3	i550-C75/400-3	i550-C90/400-3
Rated power	kW	P _N	45	55	75	90
Rated power	hp	P _N	60	75	100	125
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-400/480 V			
Rated mains current						
without mains choke	A	I _{r, AC}	-	-	-	-
with mains choke	A	I _{r, AC}	66.7	83	113	146
Apparent output power	kVA	A _{ON}	60	75	100	121
Rated output current						
2 kHz	A	I _{OUT}	77	96	124	156
4 kHz	A	I _{OUT}	77	96	124	156
8 kHz	A	I _{OUT}	77	96	124	140
16 kHz	A	I _{OUT}	51.3	63.9	83.1	93.6
Power loss						
2 kHz	W		920	1137	1539	1841
4 kHz	W		980	1210	1640	1961
8 kHz	W		1280	1580	2140	2312
16 kHz	W		1278	1579	2143	2312
at inverter disablecontroller inhibit	W		25	30	30	30
Overcurrent cycle 180 s						
Max. output current	A	I _{max, out}	116	144	186	234
Overload time	s	t _{ol}	60	60	60	60
Recovery time	s	t _{re}	120	120	120	120
Max. output current during the recovery time	A		58	72	93	117
Overcurrent cycle 15 s						
Max. output current	A	I _{max, out}	154	192	248	312
Overload time	s	t _{ol}	3	3	3	3
Recovery time	s	t _{re}	12	12	12	12
Max. output current during the recovery time	A		58	72	93	117
Cyclic mains switching			3 times per minute	1 time per minute		
Brake chopper						
Max. output current	A	I _{max, 1}	98	166	166	333
Min. brake resistance	Ω	R _{min}	7.5	4.7	4.7	2.4
Max. motor cable length shielded						
without EMC category	m		100	100	100	100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		35	100	100	100
Weight	kg		17.2	24	24	35.6
Weight	lb		38	53	53	78.5

Technical data

3-phase mains connection 480 V

Rated data



Inverter			i550-C110/400-3
Rated power	kW	P_N	110
Rated power	hp	P_N	150
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz
Output voltage			3 AC 0-400/480 V
Rated mains current			
without mains choke	A	$I_{r, AC}$	-
with mains choke	A	$I_{r, AC}$	168
Apparent output power	kVA	A_{ON}	142
Rated output current			
2 kHz	A	I_{OUT}	180
4 kHz	A	I_{OUT}	180
8 kHz	A	I_{OUT}	162
16 kHz	A	I_{OUT}	108
Power loss			
2 kHz	W		2163
4 kHz	W		2305
8 kHz	W		2717
16 kHz	W		2717
at inverter disablecontroller inhibit	W		30
Overcurrent cycle 180 s			
Max. output current	A	$I_{max, out}$	270
Overload time	s	t_{ol}	60
Recovery time	s	t_{re}	120
Max. output current during the recovery time	A		135
Overcurrent cycle 15 s			
Max. output current	A	$I_{max, out}$	360
Overload time	s	t_{ol}	3
Recovery time	s	t_{re}	12
Max. output current during the recovery time	A		135
Cyclic mains switching			1 time per minute
Brake chopper			
Max. output current	A	$I_{max, 1}$	333
Min. brake resistance	Ω	R_{min}	2.4
Max. motor cable length shielded			
without EMC category	m		100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		100
Weight	kg		35.6
Weight	lb		78.5



Technical data

3-phase mains connection 480 V
Fusing data

Fusing data

Fusing data						
Inverter			i550-C0.37/400-3	i550-C0.55/400-3	i550-C0.75/400-3	i550-C1.1/400-3
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		10	10	10	16
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		10	10	10	16
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		10	10	10	16
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		10	10	10	16
Earth-leakage circuit breaker						
3-phase mains connection			≥ 30 mA, type B			

Fusing data				
Inverter			i550-C1.5/400-3	i550-C2.2/400-3
Cable installation in compliance with			EN 60204-1	
without mains choke				
Circuit breaker				
Characteristics			B	
Max. rated current	A		16	16
Fuse				
Characteristics			gG/gL or gRL	
Max. rated current	A		16	16
with mains choke				
Circuit breaker				
Characteristics			B	
Max. rated current	A		16	16
Fuse				
Characteristics			gG/gL or gRL	
Max. rated current	A		16	16
Earth-leakage circuit breaker				
3-phase mains connection			≥ 30 mA, type B	

Technical data

3-phase mains connection 480 V

Fusing data



Fusing data						
Inverter			i550-C3.0/400-3	i550-C4.0/400-3	i550-C5.5/400-3	i550-C7.5/400-3
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		25	25	25	32
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		25	25	25	32
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		25	25	25	32
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		25	25	25	32
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Fusing data						
Inverter			i550-C11/400-3			
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		32			
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		32			
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		32			
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		32			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			



Technical data

3-phase mains connection 480 V
Fusing data

Fusing data						
Inverter			i550-C15/400-3	i550-C18/400-3	i550-C22/400-3	i550-C30/400-3
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B			-
Max. rated current	A		63	63	63	-
Fuse						
Characteristics			gG/gL or gRL			-
Max. rated current	A		63	63	63	-
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		63	63	63	80
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		63	63	63	80
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Fusing data					
Inverter			i550-C37/400-3		i550-C45/400-3
Cable installation in compliance with			EN 60204-1		
without mains choke					
Circuit breaker					
Characteristics			-		
Max. rated current	A		-	-	
Fuse					
Characteristics			-		
Max. rated current	A		-	-	
with mains choke					
Circuit breaker					
Characteristics			B		
Max. rated current	A		100	125	
Fuse					
Characteristics			gG/gL or gRL		
Max. rated current	A		100	125	
Earth-leakage circuit breaker					
3-phase mains connection			≥ 300 mA, type B		

Technical data

3-phase mains connection 480 V

Fusing data



Fusing data						
Inverter			i550-C55/400-3	i550-C75/400-3	i550-C90/400-3	i550-C110/400-3
Cable installation in compliance with			EN 60204-1			
with mains choke						
Fuse						
Characteristics			gR			
Max. rated current	A		160	160	300	300
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Fusing data						
Inverter			i550-C0.37/400-3	i550-C0.55/400-3	i550-C0.75/400-3	i550-C1.1/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Fuse						
Characteristics			all acc. to UL 248 / Class CC			
Max. rated current	A		15	15	15	15
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
with mains choke						
Fuse						
Characteristics			all acc. to UL 248 / Class CC			
Max. rated current	A		15	15	15	15
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 30 mA, type B			



Technical data

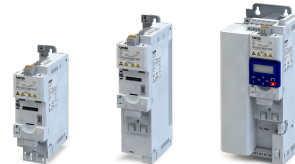
3-phase mains connection 480 V
Fusing data

Fusing data				
Inverter			i550-C1.5/400-3	i550-C2.2/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1	
without mains choke				
Fuse				
Characteristics			all acc. to UL 248 / Class CC	
Max. rated current	A		15	15
Type of fusing			Standard	
SCCR: requirement			Standard short-circuit strength	
SCCR: max. short circuit current	kA		5	5
SCCR: voltage			480/277 Volts Maximum	
with mains choke				
Fuse				
Characteristics			all acc. to UL 248 / Class CC	
Max. rated current	A		15	15
Type of fusing			Standard	
SCCR: requirement			Standard short-circuit strength	
SCCR: max. short circuit current	kA		5	5
SCCR: voltage			480/277 Volts Maximum	
Earth-leakage circuit breaker				
3-phase mains connection			≥ 30 mA, type B	

Technical data

3-phase mains connection 480 V

Fusing data



Fusing data						
Inverter			i550-C3.0/400-3	i550-C4.0/400-3	i550-C5.5/400-3	i550-C7.5/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		25	25	25	35
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			all acc. to UL 248 / Class J, T, R
Max. rated current	A		25	25	25	40
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
with mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		25	25	25	35
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			all acc. to UL 248 / Class J, T, R
Max. rated current	A		25	25	25	40
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			



Technical data

3-phase mains connection 480 V
Fusing data

Fusing data			
Inverter			i550-C11/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1
without mains choke			
Circuit breaker			
Characteristics			-
Max. rated current	A		-
Type of fusing			-
SCCR: requirement			-
SCCR: max. short circuit current	kA		-
SCCR: voltage			-
Fuse			
Characteristics			all acc. to UL 248 / Class J, T, R
Max. rated current	A		40
Type of fusing			Standard
SCCR: requirement			Standard short-circuit strength
SCCR: max. short circuit current	kA		5
SCCR: voltage			480/277 Volts Maximum
with mains choke			
Circuit breaker			
Characteristics			-
Max. rated current	A		-
Type of fusing			-
SCCR: requirement			-
SCCR: max. short circuit current	kA		-
SCCR: voltage			-
Fuse			
Characteristics			all acc. to UL 248 / Class J, T, R
Max. rated current	A		40
Type of fusing			Standard
SCCR: requirement			Standard short-circuit strength
SCCR: max. short circuit current	kA		5
SCCR: voltage			480/277 Volts Maximum
Earth-leakage circuit breaker			
3-phase mains connection			≥ 300 mA, type B

Technical data

3-phase mains connection 480 V

Fusing data



Fusing data						
Inverter			i550-C15/400-3	i550-C18/400-3	i550-C22/400-3	i550-C30/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Fuse						
Characteristics			all acc. to UL 248 / Class J, T, R			-
Max. rated current	A		70	70	70	-
Type of fusing			Standard			-
SCCR: requirement			Standard short-circuit strength			-
SCCR: max. short circuit current	kA		5	5	5	-
SCCR: voltage			480/277 Volts Maximum			-
with mains choke						
Fuse						
Characteristics			all acc. to UL 248 / Class J, T, R			
Max. rated current	A		70	70	70	80
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Fusing data						
Inverter			i550-C37/400-3		i550-C45/400-3	
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Fuse						
Characteristics			-			
Max. rated current	A		-		-	
Type of fusing			-			
SCCR: requirement			-			
SCCR: max. short circuit current	kA		-		-	
SCCR: voltage			-			
with mains choke						
Fuse						
Characteristics			all acc. to UL 248 / Class J, T, R			
Max. rated current	A		100		125	
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5		10	
SCCR: voltage			480/277 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			



Technical data

3-phase mains connection 480 V
Fusing data

Fusing data						
Inverter			i550-C55/400-3	i550-C75/400-3	i550-C90/400-3	i550-C110/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
with mains choke						
Fuse						
Characteristics			acc. to UL 248 / Class J (recommended: HSI by Mersen)			
Max. rated current	A		200	200	300	300
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		10	10	10	10
SCCR: voltage			480/277 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Technical data

3-phase mains connection 480 V

Terminal data



Terminal data

Mains connection						
Inverter			i550-C0.37/400-3	i550-C0.55/400-3	i550-C0.75/400-3	i550-C1.1/400-3
Connection			X100			
Connection type			pluggable screw terminal			
Max. cable cross-section	mm ²		2.5	2.5	2.5	2.5
Max. cable cross-section	AWG		12	12	12	12
Stripping length	mm		8	8	8	8
Stripping length	inch		0.32	0.32	0.32	0.32
Tightening torque	Nm		0.5	0.5	0.5	0.5
Tightening torque	lb-in		4.4	4.4	4.4	4.4
Required tool			0.5 x 3.0			

Mains connection						
Inverter			i550-C1.5/400-3	i550-C2.2/400-3	i550-C3.0/400-3	i550-C4.0/400-3
Connection			X100			
Connection type			pluggable screw terminal		Screw terminal	
Max. cable cross-section	mm ²		2.5	2.5	6	6
Max. cable cross-section	AWG		12	12	10	10
Stripping length	mm		8	8	9	9
Stripping length	inch		0.32	0.32	0.35	0.35
Tightening torque	Nm		0.5	0.5	0.5	0.5
Tightening torque	lb-in		4.4	4.4	4.4	4.4
Required tool			0.5 x 3.0		0.6 x 3.5	

Mains connection						
Inverter			i550-C5.5/400-3	i550-C7.5/400-3	i550-C11/400-3	i550-C15/400-3
Connection			X100			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		6	16	16	35
Max. cable cross-section	AWG		10	6	6	2
Stripping length	mm		9	11	11	18
Stripping length	inch		0.35	0.43	0.43	0.7
Tightening torque	Nm		0.5	1.2	1.2	3.8
Tightening torque	lb-in		4.4	11	11	34
Required tool			0.6 x 3.5	0.8 x 4.0		0.8 x 5.5

Mains connection						
Inverter			i550-C18/400-3	i550-C22/400-3	i550-C30/400-3	i550-C37/400-3
Connection			X100			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		35	35	50	50
Max. cable cross-section	AWG		2	2	1/0	1/0
Stripping length	mm		18	18	19	19
Stripping length	inch		0.7	0.7	0.75	0.75
Tightening torque	Nm		3.8	3.8	4	4
Tightening torque	lb-in		34	34	35	35
Required tool			0.8 x 5.5		Hexagon socket 5	



Technical data

3-phase mains connection 480 V
Terminal data

Mains connection						
Inverter			i550-C45/400-3	i550-C55/400-3	i550-C75/400-3	i550-C90/400-3
Connection			X100			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		50	95	95	150
Max. cable cross-section	AWG		1/0	4/0	4/0	2 x 2/0
Stripping length	mm		19	22	22	28
Stripping length	inch		0.75	0.87	0.87	1.1
Tightening torque	Nm		4	10	10	18
Tightening torque	lb-in		35	89	89	160
Required tool			Hexagon socket 5	Hexagon socket 6		Hexagon socket 8

Mains connection						
Inverter			i550-C110/400-3			
Connection			X100			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		150			
Max. cable cross-section	AWG		2 x 2/0			
Stripping length	mm		28			
Stripping length	inch		1.1			
Tightening torque	Nm		18			
Tightening torque	lb-in		160			
Required tool			Hexagon socket 8			

PE connection						
Inverter			i550-C0.37/400-3	i550-C0.55/400-3	i550-C0.75/400-3	i550-C1.1/400-3
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		6	6	6	6
Max. cable cross-section	AWG		10	10	10	10
Stripping length	mm		10	10	10	10
Stripping length	inch		0.39	0.39	0.39	0.39
Tightening torque	Nm		2	2	2	2
Tightening torque	lb-in		18	18	18	18
Required tool			Torx 20			

PE connection						
Inverter			i550-C1.5/400-3	i550-C2.2/400-3	i550-C3.0/400-3	i550-C4.0/400-3
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		6	6	6	6
Max. cable cross-section	AWG		10	10	10	10
Stripping length	mm		10	10	10	10
Stripping length	inch		0.39	0.39	0.39	0.39
Tightening torque	Nm		2	2	2	2
Tightening torque	lb-in		18	18	18	18
Required tool			Torx 20			

Technical data

3-phase mains connection 480 V

Terminal data



PE connection						
Inverter			i550-C5.5/400-3	i550-C7.5/400-3	i550-C11/400-3	i550-C15/400-3
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		6	16	16	25
Max. cable cross-section	AWG		10	6	6	2
Stripping length	mm		10	11	11	16
Stripping length	inch		0.39	0.43	0.43	0.63
Tightening torque	Nm		2	3.4	3.4	4
Tightening torque	lb-in		18	30	30	35
Required tool			Torx 20		PZ2	

PE connection						
Inverter			i550-C18/400-3	i550-C22/400-3	i550-C30/400-3	i550-C37/400-3
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		25	25	25	25
Max. cable cross-section	AWG		2	2	2	2
Stripping length	mm		16	16	16	16
Stripping length	inch		0.63	0.63	0.63	0.63
Tightening torque	Nm		4	4	4	4
Tightening torque	lb-in		35	35	35	35
Required tool			PZ2			

PE connection						
Inverter			i550-C45/400-3	i550-C55/400-3	i550-C75/400-3	i550-C90/400-3
Connection			PE			
Connection type			PE screw			PE bolt
Max. cable cross-section	mm ²		25	25	25	150
Max. cable cross-section	AWG		2	2	2	2 x 2/0
Stripping length	mm		16	16	16	-
Stripping length	inch		0.63	0.63	0.63	-
Tightening torque	Nm		4	4	4	10
Tightening torque	lb-in		35	35	35	89
Required tool			PZ2			Width across flats 13

PE connection						
Inverter			i550-C110/400-3			
Connection			PE			
Connection type			PE bolt			
Max. cable cross-section	mm ²		150			
Max. cable cross-section	AWG		2 x 2/0			
Stripping length	mm		-			
Stripping length	inch		-			
Tightening torque	Nm		10			
Tightening torque	lb-in		89			
Required tool			Width across flats 13			



Technical data

3-phase mains connection 480 V

Terminal data

Motor connection						
Inverter			i550-C0.37/400-3	i550-C0.55/400-3	i550-C0.75/400-3	i550-C1.1/400-3
Connection			X105			
Connection type			pluggable screw terminal			
Max. cable cross-section	mm ²		2.5	2.5	2.5	2.5
Max. cable cross-section	AWG		12	12	12	12
Stripping length	mm		8	8	8	8
Stripping length	inch		0.32	0.32	0.32	0.32
Tightening torque	Nm		0.5	0.5	0.5	0.5
Tightening torque	lb-in		4.4	4.4	4.4	4.4
Required tool			0.5 x 3.0			

Motor connection						
Inverter			i550-C1.5/400-3	i550-C2.2/400-3	i550-C3.0/400-3	i550-C4.0/400-3
Connection			X105			
Connection type			pluggable screw terminal		Screw terminal	
Max. cable cross-section	mm ²		2.5	2.5	6	6
Max. cable cross-section	AWG		12	12	10	10
Stripping length	mm		8	8	9	9
Stripping length	inch		0.32	0.32	0.35	0.35
Tightening torque	Nm		0.5	0.5	0.5	0.5
Tightening torque	lb-in		4.4	4.4	4.4	4.4
Required tool			0.5 x 3.0		0.6 x 3.5	

Motor connection						
Inverter			i550-C5.5/400-3	i550-C7.5/400-3	i550-C11/400-3	i550-C15/400-3
Connection			X105			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		6	16	16	35
Max. cable cross-section	AWG		10	6	6	2
Stripping length	mm		9	11	11	18
Stripping length	inch		0.35	0.43	0.43	0.7
Tightening torque	Nm		0.5	1.2	1.2	3.8
Tightening torque	lb-in		4.4	11	11	34
Required tool			0.6 x 3.5	0.8 x 4.0		0.8 x 5.5

Motor connection						
Inverter			i550-C18/400-3	i550-C22/400-3	i550-C30/400-3	i550-C37/400-3
Connection			X105			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		35	35	50	50
Max. cable cross-section	AWG		2	2	1/0	1/0
Stripping length	mm		18	18	19	19
Stripping length	inch		0.7	0.7	0.75	0.75
Tightening torque	Nm		3.8	3.8	4	4
Tightening torque	lb-in		34	34	35	35
Required tool			0.8 x 5.5		Hexagon socket 5	

Technical data

3-phase mains connection 480 V

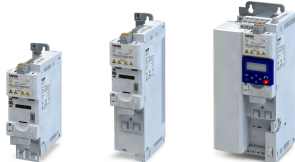
Terminal data



Motor connection						
Inverter			i550-C45/400-3	i550-C55/400-3	i550-C75/400-3	i550-C90/400-3
Connection			X105			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		50	95	95	150
Max. cable cross-section	AWG		1/0	4/0	4/0	2 x 2/0
Stripping length	mm		19	22	22	28
Stripping length	inch		0.75	0.87	0.87	1.1
Tightening torque	Nm		4	10	10	18
Tightening torque	lb-in		35	89	89	160
Required tool			Hexagon socket 5	Hexagon socket 6		Hexagon socket 8

Motor connection			
Inverter			i550-C110/400-3
Connection			X105
Connection type			Screw terminal
Max. cable cross-section	mm ²		150
Max. cable cross-section	AWG		2 x 2/0
Stripping length	mm		28
Stripping length	inch		1.1
Tightening torque	Nm		18
Tightening torque	lb-in		160
Required tool			Hexagon socket 8

The terminal data for the terminal X1 can be found under: [▶ Terminal data](#) [72](#)



Technical data

3-phase mains connection 480 V
Brake resistors

Brake resistors

Inverter	Brake resistor					
	Order code	Rated resistance	Rated power	Thermal capacity	Dimensions (h x b x t)	Weight
		Ω	W	kWs	mm	kg
i550-C0.37/400-3	ERBM390R100W	390	100	15	235 x 21 x 40	0.37
i550-C0.55/400-3						
i550-C0.75/400-3						
i550-C1.1/400-3	ERBP180R200W	180	200	30	240 x 41 x 122	1
	ERBP180R300W		300	45	320 x 41 x 122	1.4
i550-C1.5/400-3	ERBP180R200W		200	30	240 x 41 x 122	1
i550-C2.2/400-3	ERBP180R300W		300	45	320 x 41 x 122	1.4
	ERBP180R200W		200	30	240 x 41 x 122	1
i550-C3.0/400-3	ERBP082R200W		780	117	320 x 41 x 122	
	ERBS082R780W				666 x 124 x 122	3.6
i550-C4.0/400-3	ERBP047R200W	47	200	30	320 x 41 x 122	1
	ERBS047R400W		400	60	400 x 110 x 105	2.3
	ERBS047R800W		800	120	710 x 110 x 105	4
i550-C5.5/400-3	ERBP047R200W		200	30	320 x 41 x 122	1
	ERBS047R400W		400	60	400 x 110 x 105	2.3
	ERBS047R800W		800	120	710 x 110 x 105	4
i550-C7.5/400-3	ERBP027R200W	27	200	30	320 x 41 x 122	1
	ERBS027R600W		600	90	550 x 110 x 105	3.1
	ERBS027R01K2		1200	180	1020 x 110 x 105	5.6
i550-C11/400-3	ERBP027R200W		200	30	320 x 41 x 122	1
	ERBS027R600W		600	90	550 x 110 x 105	3.1
	ERBS027R01K2		1200	180	1020 x 110 x 105	5.6
i550-C15/400-3	ERBS018R800W	18	800	120	710 x 110 x 105	3.9
	ERBS018R01K4		1400	210	1110 x 110 x 105	6.2
	ERBS018R02K8		2800	420	1110 x 200 x 105	12
	ERBG018R04K3		4300	645	486 x 426 x 302	13.5
	ERBP018R300W		300	45	320 x 41 x 122	1.4
i550-C18/400-3	ERBS015R800W	15	800	120	710 x 110 x 105	3.9
	ERBS015R01K2		1200	180	1020 x 110 x 105	5.6
	ERBS015R02K4		2400	420	1020 x 200 x 105	10
	ERBG015R06K2		6200	930	486 x 526 x 302	17
	ERBG015R03K3		3300	495	486 x 326 x 302	12.6
i550-C22/400-3	ERBS015R800W		800	120	710 x 110 x 105	3.9
	ERBS015R01K2		1200	180	1020 x 110 x 105	5.6
	ERBS015R02K4		2400	420	1020 x 200 x 105	10
	ERBG015R06K2		6200	930	486 x 526 x 302	17
	ERBG015R03K3		3300	495	486 x 326 x 302	12.6
i550-C30/400-3	ERBG075D01K9	7.5	1900	285	486 x 236 x 302	9.5
i550-C37/400-3						
i550-C45/400-3						
i550-C55/400-3	ERBG005R02K6	5	2600	390	486 x 326 x 302	11
i550-C75/400-3						
i550-C90/400-3	ERBG028D04K1	2.8	4100	615	486 x 426 x 302	12.8
i550-C110/400-3						

Technical data

3-phase mains connection 480 V
Mains chokes



Mains chokes

Inverter	Mains choke					
	Order code	Number of phases	Output current	Inductance	Dimensions (h x b x t)	Weight
			A	mH	mm	kg
i550-C0.37/400-3	EZAELN3002B203	3	1.5	19.6	56 x 77 x 100	0.52
i550-C0.55/400-3	EZAELN3002B153		2	14.7		0.53
i550-C0.75/400-3	EZAELN3004B742		4	7.35	60 x 95 x 115	1.31
i550-C1.1/400-3						
i550-C1.5/400-3						
i550-C2.2/400-3	EZAELN3006B492		6	4.9	69 x 95 x 120	1.45
i550-C3.0/400-3						
i550-C4.0/400-3	EZAELN3008B372		8	3.68	85 x 120 x 140	1.9
i550-C5.5/400-3	EZAELN3016B182		16	1.84	95 x 120 x 140	2.7
i550-C7.5/400-3						
i550-C11/400-3	EZAELN3020B152		20	1.47	95 x 155 x 165	3.8
i550-C15/400-3	EZAELN3025B122		25	1.18	110 x 155 x 170	5.8
i550-C18/400-3	EZAELN3030B981		30	0.98		5.85
i550-C22/400-3	EZAELN3040B741		40	0.74	112 x 185 x 200	6.8
i550-C30/400-3	EZAELN3050B591		50	0.59	112 x 185 x 210	8.35
i550-C37/400-3	EZAELN3063B471		63	0.47	122 x 185 x 210	9.65
i550-C45/400-3	EZAELN3080B371		80	0.37	125 x 210 x 240	12.5
i550-C55/400-3	EZAELN3090B331		90	0.33	115 x 267 x 205	11.5
i550-C75/400-3	EZAELN3125B241		125	0.24	139 x 291 x 215	17.5
i550-C90/400-3	EZAELN3160B191		160	0.19	149 x 291 x 215	22.5
i550-C110/400-3	EZAELN3180B171		180	0.17	164 x 316 x 235	26



Technical data

3-phase mains connection 480 V
RFI filters / Mains filters

RFI filters / Mains filters

Basic information on RFI filters, mains filters and EMC: from [246](#)



EMC filters can be used both in the side structure and in the substructure.

Maximum motor cable lengths and FI operation

Mains connection			3-phase, 400 V/480 V			
Inverter			i550-C0.37/400-3	i550-C0.55/400-3 i550-C0.75/400-3	i550-C1.1/400-3 i550-C1.5/400-3 i550-C2.2/400-3	i550-C3.0/400-3 i550-C4.0/400-3 i550-C5.5/400-3
Without RFI filter						
Without EMC category Thermal limitation	Max. motor cable length shielded	m	15	50	50	100
	Max. motor cable length unshielded	m	30	100	200	200
With integrated RFI filter						
Category C1	Max. motor cable length shielded	m	3	3	-	-
Category C2		m	15	20	20	20
	Earth-leakage circuit breaker	mA	30	30	30	300
RFI filter Low Leakage						
Category C1	Max. motor cable length shielded	m	-	-	-	-
	Earth-leakage circuit breaker	mA	-	-	-	-
RFI filter Short Distance						
Category C1	Max. motor cable length shielded	m	15	25	25	25
Category C2		m	15	50	50	50
	Earth-leakage circuit breaker	mA	30	30	30	30
RFI filter Long Distance						
Category C1	Max. motor cable length shielded	m	15	50	50	50
Category C2		m	15	50	50	100
	Earth-leakage circuit breaker	mA	300	300	300	300

Technical data

3-phase mains connection 480 V
RFI filters / Mains filters



Mains connection			3-phase, 400 V/480 V			
Inverter			i550-C7.5/400-3 i550-C11/400-3	i550-C15/400-3 i550-C18/400-3 i550-C22/400-3	i550-C30/400-3 i550-C37/400-3 i550-C45/400-3	i550-C55/400-3 i550-C75/400-3
Without RFI filter						
Without EMC category	Max. motor cable length shielded	m	100	100	100	100
Thermal limitation	Max. motor cable length unshielded	m	200	200	200	200
With integrated RFI filter						
Category C1	Max. motor cable length shielded	m	-	-	-	-
Category C2		m	20	20	20	20
	Earth-leakage circuit breaker	mA	300	300	300	300
RFI filter Low Leakage						
Category C1	Max. motor cable length shielded	m	-	-	-	-
	Earth-leakage circuit breaker	mA	-	-	-	-
RFI filter Short Distance						
Category C1	Max. motor cable length shielded	m	25	-	-	-
Category C2		m	50	-	-	-
	Earth-leakage circuit breaker	mA	30	-	-	-
RFI filter Long Distance				from 22 kW: Mains filter		
Category C1	Max. motor cable length shielded	m	50	50	50	50
Category C2		m	100	50	50	50
	Earth-leakage circuit breaker	mA	300	300	300	300

Short Distance

Inverter	RFI filter		
	Order code	Dimensions (h x b x t)	Weight
		mm	kg
i550-C0.37/400-3	I0FAE175F100S0000S	276 x 60 x 50	0.9
i550-C0.55/400-3			
i550-C0.75/400-3			
i550-C1.1/400-3	I0FAE222F100S0000S	346 x 60 x 50	1.1
i550-C1.5/400-3			
i550-C2.2/400-3			
i550-C3.0/400-3	I0FAE255F100S0000S	346 x 90 x 60	2.1
i550-C4.0/400-3			
i550-C5.5/400-3			
i550-C7.5/400-3	I0FAE311F100S0000S	371 x 120 x 60	2.4
i550-C11/400-3			



Technical data

3-phase mains connection 480 V
RFI filters / Mains filters

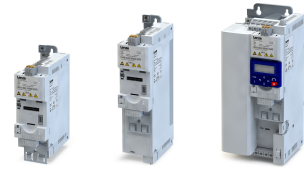
Long Distance

Inverter	RFI filter		
	Order code	Dimensions (h x b x t)	Weight
		mm	kg
i550-C0.37/400-3	I0FAE175F100D0000S	276 x 60 x 50	0.9
i550-C0.55/400-3			
i550-C0.75/400-3			
i550-C1.1/400-3	I0FAE222F100D0000S	346 x 60 x 50	1.1
i550-C1.5/400-3			
i550-C2.2/400-3			
i550-C3.0/400-3	I0FAE255F100D0000S	346 x 90 x 60	1.7
i550-C4.0/400-3			
i550-C5.5/400-3			
i550-C7.5/400-3	I0FAE311F100D0000S	371 x 120 x 60	2
i550-C11/400-3			
i550-C15/400-3	E84AZESR1834LD	436 x 205 x 90	7.5
i550-C18/400-3	E84AZESM2234LD		14
i550-C22/400-3	I0FAE322F100D0000S		18.5
i550-C30/400-3	E84AZESM3034LD	590 x 250 x 105	23
i550-C37/400-3	E84AZESM3734LD		25
i550-C45/400-3	I0FAE345F100D0000S		32
i550-C55/400-3	I0FAE355F100D0000S	700 x 250 x 105	36
i550-C75/400-3	I0FAE375F100D0000S		41.5
i550-C90/400-3	I0FAE411F100D0000S	855 x 250 x 130	63
i550-C110/400-3			

From 22 kW, long distance mains filters are used. Mains filters are a combination of mains choke and RFI filter.

Technical data

3-phase mains connection 480 V "Light Duty"
Rated data



3-phase mains connection 480 V "Light Duty"

Rated data

The output currents apply to these operating conditions:

- At a switching frequency of 2 kHz or 4 kHz: Ambient temperature above 40 °C with a rated output current reduced by 2.5 %/°C.
- If the load characteristic "Light Duty" and the switching frequencies 8 kHz or 16 kHz are selected, only the values of the load characteristic "Heavy Duty" are reached.



Technical data

3-phase mains connection 480 V "Light Duty"
Rated data

Inverter			i550-C3.0/400-3	i550-C4.0/400-3	i550-C5.5/400-3	i550-C7.5/400-3
Rated power	kW	P_N	4	5.5	7.5	11
Rated power	hp	P_N	5	7.5	10	15
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-400/480 V			
Rated mains current						
without mains choke	A	$I_{r, AC}$	8.6	11.2	15.3	22
with mains choke	A	$I_{r, AC}$	6.8	8.8	12.1	17.2
Apparent output power	kVA	A_{ON}	5.9	8	10.5	15
Rated output current						
2 kHz	A	I_{OUT}	7.6	9.8	13.2	18.3
4 kHz	A	I_{OUT}	7.6	9.8	13.2	18.3
8 kHz	A	I_{OUT}	-	-	-	-
16 kHz	A	I_{OUT}	-	-	-	-
Power loss						
2 kHz	W		94	125	163	238
4 kHz	W		100	133	173	253
8 kHz	W		-	-	-	-
16 kHz	W		-	-	-	-
at inverter disablecontroller inhibit	W		6	6	6	6
Overcurrent cycle 180 s						
Max. output current	A	$I_{max, out}$	9.5	12.3	16.5	21
Overload time	s	t_{ol}	60	60	60	60
Recovery time	s	t_{re}	120	120	120	120
Max. output current during the recovery time	A		4.8	6.2	8.3	10.5
Overcurrent cycle 15 s						
Max. output current	A	$I_{max, out}$	12.6	16.4	22	28
Overload time	s	t_{ol}	3	3	3	3
Recovery time	s	t_{re}	12	12	12	12
Max. output current during the recovery time	A		4.7	6.2	8.3	10.5
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	$I_{max, 1}$	9.5	16.6	16.6	29
Min. brake resistance	Ω	R_{min}	82	47	47	27
Max. motor cable length shielded						
without EMC category	m		100	100	100	100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		35	35	35	50
Weight	kg		2.3	2.3	2.3	3.7
Weight	lb		5	5	5	8

Technical data

3-phase mains connection 480 V "Light Duty"

Rated data



Inverter			i550-C11/400-3	i550-C15/400-3	i550-C18/400-3	i550-C22/400-3
Rated power	kW	P_N	15	18.5	22	30
Rated power	hp	P_N	20	25	30	40
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-400/480 V			
Rated mains current						
without mains choke	A	$I_{r, AC}$	-	40	-	-
with mains choke	A	$I_{r, AC}$	22.6	30	38	46
Apparent output power	kVA	A_{ON}	19	26	32	38
Rated output current						
2 kHz	A	I_{OUT}	25.2	32.4	40.8	48.5
4 kHz	A	I_{OUT}	25.2	32.4	40.8	48.5
8 kHz	A	I_{OUT}	-	-	-	-
16 kHz	A	I_{OUT}	-	-	-	-
Power loss						
2 kHz	W		290	404	501	585
4 kHz	W		309	430	533	623
8 kHz	W		-	-	-	-
16 kHz	W		-	-	-	-
at inverter disablecontroller inhibit	W		6	18	18	18
Overcurrent cycle 180 s						
Max. output current	A	$I_{max, out}$	31.5	40.5	51	61
Overload time	s	t_{ol}	60	60	60	60
Recovery time	s	t_{re}	120	120	120	120
Max. output current during the recovery time	A		15.8	20.3	25.5	30
Overcurrent cycle 15 s						
Max. output current	A	$I_{max, out}$	42	54	68	81
Overload time	s	t_{ol}	3	3	3	3
Recovery time	s	t_{re}	12	12	12	12
Max. output current during the recovery time	A		15.8	20.3	25.5	30
Cyclic mains switching			3 times per minute			
Brake chopper						
Max. output current	A	$I_{max, 1}$	29	43	52	52
Min. brake resistance	Ω	R_{min}	27	18	15	15
Max. motor cable length shielded						
without EMC category	m		100	100	100	100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		50	35	35	35
Weight	kg		3.7	10.3	10.3	10.3
Weight	lb		8	23	23	23



Technical data

3-phase mains connection 480 V "Light Duty"
Rated data

Inverter			i550-C30/400-3	i550-C37/400-3	i550-C45/400-3	i550-C55/400-3
Rated power	kW	P_N	37	45	55	75
Rated power	hp	P_N	50	60	75	100
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz			
Output voltage			3 AC 0-400/480 V			
Rated mains current						
without mains choke	A	$I_{r, AC}$	-	-	-	-
with mains choke	A	$I_{r, AC}$	59	73	86	105
Apparent output power	kVA	A_{ON}	49	61	72	89
Rated output current						
2 kHz	A	I_{OUT}	62.4	78	92.4	115
4 kHz	A	I_{OUT}	62.4	78	92.4	115
8 kHz	A	I_{OUT}	-	-	-	-
16 kHz	A	I_{OUT}	-	-	-	-
Power loss						
2 kHz	W		761	942	1101	1358
4 kHz	W		810	1004	1171	1446
8 kHz	W		-	-	-	-
16 kHz	W		-	-	-	-
at inverter disablecontroller inhibit	W		25	25	25	30
Overcurrent cycle 180 s						
Max. output current	A	$I_{max, out}$	78	98	116	144
Overload time	s	t_{ol}	60	60	60	60
Recovery time	s	t_{re}	120	120	120	120
Max. output current during the recovery time	A		39	49	58	72
Overcurrent cycle 15 s						
Max. output current	A	$I_{max, out}$	104	130	154	192
Overload time	s	t_{ol}	3	3	3	3
Recovery time	s	t_{re}	12	12	12	12
Max. output current during the recovery time	A		39	49	58	72
Cyclic mains switching			3 times per minute			1 time per minute
Brake chopper						
Max. output current	A	$I_{max, 1}$	98	98	98	166
Min. brake resistance	Ω	R_{min}	7.5	7.5	7.5	4.7
Max. motor cable length shielded						
without EMC category	m		100	100	100	100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		35	35	35	100
Weight	kg		17.2	17.2	17.2	24
Weight	lb		38	38	38	53

Technical data

3-phase mains connection 480 V "Light Duty"

Rated data



Inverter			i550-C75/400-3	i550-C90/400-3	i550-C110/400-3
Rated power	kW	P_N	90	110	132
Rated power	hp	P_N	125	150	175
Mains voltage range			3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz		
Output voltage			3 AC 0-400/480 V		
Rated mains current					
without mains choke	A	$I_{r, AC}$	-	-	-
with mains choke	A	$I_{r, AC}$	135	175	200
Apparent output power	kVA	A_{ON}	121	145	171
Rated output current					
2 kHz	A	I_{OUT}	149	187	216
4 kHz	A	I_{OUT}	149	187	216
8 kHz	A	I_{OUT}	-	-	-
16 kHz	A	I_{OUT}	-	-	-
Power loss					
2 kHz	W		1841	2203	2589
4 kHz	W		1961	2348	2760
8 kHz	W		-	-	-
16 kHz	W		-	-	-
at inverter disablecontroller inhibit	W		30	30	30
Overcurrent cycle 180 s					
Max. output current	A	$I_{max, out}$	186	234	270
Overload time	s	t_{ol}	60	60	60
Recovery time	s	t_{re}	120	120	120
Max. output current during the recovery time	A		93	117	135
Overcurrent cycle 15 s					
Max. output current	A	$I_{max, out}$	248	312	360
Overload time	s	t_{ol}	3	3	3
Recovery time	s	t_{re}	12	12	12
Max. output current during the recovery time	A		93	117	135
Cyclic mains switching			1 time per minute		
Brake chopper					
Max. output current	A	$I_{max, 1}$	166	333	333
Min. brake resistance	Ω	R_{min}	4.7	2.4	2.4
Max. motor cable length shielded					
without EMC category	m		100	100	100
Category C1 (2 kHz, 4 kHz, 8 kHz)	m		-	-	-
Category C2 (2 kHz, 4 kHz, 8 kHz)	m		20	20	20
Category C3 (2 kHz, 4 kHz, 8 kHz)	m		100	100	100
Weight	kg		24	35.6	35.6
Weight	lb		53	78.5	78.5



Technical data

3-phase mains connection 480 V "Light Duty"

Fusing data

Fusing data

Fusing data						
Inverter			i550-C3.0/400-3	i550-C4.0/400-3	i550-C5.5/400-3	i550-C7.5/400-3
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		25	25	25	32
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		25	25	25	32
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		25	25	25	32
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		25	25	25	32
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Fusing data						
Inverter			i550-C11/400-3			
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		-			
Fuse						
Characteristics			-			
Max. rated current	A		-			
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		32			
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		32			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Technical data

3-phase mains connection 480 V "Light Duty"

Fusing data



Fusing data						
Inverter			i550-C15/400-3	i550-C18/400-3	i550-C22/400-3	i550-C30/400-3
Cable installation in compliance with			EN 60204-1			
without mains choke						
Circuit breaker						
Characteristics			B	-		
Max. rated current	A		63	-	-	-
Fuse						
Characteristics			gG/gL or gRL	-		
Max. rated current	A		63	-	-	-
with mains choke						
Circuit breaker						
Characteristics			B			
Max. rated current	A		63	63	63	80
Fuse						
Characteristics			gG/gL or gRL			
Max. rated current	A		63	63	63	80
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Fusing data					
Inverter			i550-C37/400-3		i550-C45/400-3
Cable installation in compliance with			EN 60204-1		
without mains choke					
Circuit breaker					
Characteristics			-		
Max. rated current	A		-	-	
Fuse					
Characteristics			-		
Max. rated current	A		-	-	
with mains choke					
Circuit breaker					
Characteristics			B		
Max. rated current	A		100	125	
Fuse					
Characteristics			gG/gL or gRL		
Max. rated current	A		100	125	
Earth-leakage circuit breaker					
3-phase mains connection			≥ 300 mA, type B		



Technical data

3-phase mains connection 480 V "Light Duty"
Fusing data

Fusing data						
Inverter			i550-C55/400-3	i550-C75/400-3	i550-C90/400-3	i550-C110/400-3
Cable installation in compliance with			EN 60204-1			
with mains choke						
Fuse						
Characteristics			gR			
Max. rated current	A		160	160	300	300
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Technical data

3-phase mains connection 480 V "Light Duty"

Fusing data



Fusing data						
Inverter			i550-C3.0/400-3	i550-C4.0/400-3	i550-C5.5/400-3	i550-C7.5/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		25	25	25	35
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			all acc. to UL 248 / Class J, T, R
Max. rated current	A		25	25	25	40
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
with mains choke						
Circuit breaker						
Characteristics			-			
Max. rated current	A		25	25	25	35
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Fuse						
Characteristics			all acc. to UL 248 / Class CC			all acc. to UL 248 / Class J, T, R
Max. rated current	A		25	25	25	40
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			



Technical data

3-phase mains connection 480 V "Light Duty"
Fusing data

Fusing data			
Inverter			i550-C11/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1
without mains choke			
Circuit breaker			
Characteristics			-
Max. rated current	A		-
Type of fusing			-
SCCR: requirement			-
SCCR: max. short circuit current	kA		-
SCCR: voltage			-
Fuse			
Characteristics			-
Max. rated current	A		-
Type of fusing			-
SCCR: requirement			-
SCCR: max. short circuit current	kA		-
SCCR: voltage			-
with mains choke			
Circuit breaker			
Characteristics			-
Max. rated current	A		-
Type of fusing			-
SCCR: requirement			-
SCCR: max. short circuit current	kA		-
SCCR: voltage			-
Fuse			
Characteristics			all acc. to UL 248 / Class J, T, R
Max. rated current	A		40
Type of fusing			Standard
SCCR: requirement			Standard short-circuit strength
SCCR: max. short circuit current	kA		5
SCCR: voltage			480/277 Volts Maximum
Earth-leakage circuit breaker			
3-phase mains connection			≥ 300 mA, type B

Technical data

3-phase mains connection 480 V "Light Duty"

Fusing data



Fusing data						
Inverter			i550-C15/400-3	i550-C18/400-3	i550-C22/400-3	i550-C30/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
without mains choke						
Fuse						
Characteristics			all acc. to UL 248 / Class J, T, R	-		
Max. rated current	A		70	-	-	-
Type of fusing			Standard	-		
SCCR: requirement			Standard short-circuit strength	-		
SCCR: max. short circuit current	kA		5	-	-	-
SCCR: voltage			480/277 Volts Maximum	-		
with mains choke						
Fuse						
Characteristics			all acc. to UL 248 / Class J, T, R			
Max. rated current	A		70	70	70	80
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		5	5	5	5
SCCR: voltage			480/277 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Fusing data				
Inverter			i550-C37/400-3	i550-C45/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1	
without mains choke				
Fuse				
Characteristics			-	
Max. rated current	A		-	-
Type of fusing			-	
SCCR: requirement			-	
SCCR: max. short circuit current	kA		-	-
SCCR: voltage			-	
with mains choke				
Fuse				
Characteristics			all acc. to UL 248 / Class J, T, R	
Max. rated current	A		100	125
Type of fusing			Standard	
SCCR: requirement			Standard short-circuit strength	
SCCR: max. short circuit current	kA		5	10
SCCR: voltage			480/277 Volts Maximum	
Earth-leakage circuit breaker				
3-phase mains connection			≥ 300 mA, type B	



Technical data

3-phase mains connection 480 V "Light Duty"
Fusing data

Fusing data						
Inverter			i550-C55/400-3	i550-C75/400-3	i550-C90/400-3	i550-C110/400-3
Cable installation in compliance with			US National Electrical Code NFPA 70 / Canadian Electrical Code C22.1			
with mains choke						
Fuse						
Characteristics			acc. to UL 248 / Class J (recommended: HSI by Mersen)			
Max. rated current	A		200	200	300	300
Type of fusing			Standard			
SCCR: requirement			Standard short-circuit strength			
SCCR: max. short circuit current	kA		10	10	10	10
SCCR: voltage			480/277 Volts Maximum			
Earth-leakage circuit breaker						
3-phase mains connection			≥ 300 mA, type B			

Technical data

3-phase mains connection 480 V "Light Duty"

Terminal data



Terminal data

Mains connection						
Inverter			i550-C3.0/400-3	i550-C4.0/400-3	i550-C5.5/400-3	i550-C7.5/400-3
Connection			X100			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		6	6	6	16
Max. cable cross-section	AWG		10	10	10	6
Stripping length	mm		9	9	9	11
Stripping length	inch		0.35	0.35	0.35	0.43
Tightening torque	Nm		0.5	0.5	0.5	1.2
Tightening torque	lb-in		4.4	4.4	4.4	11
Required tool			0.6 x 3.5			0.8 x 4.0

Mains connection						
Inverter			i550-C11/400-3	i550-C15/400-3	i550-C18/400-3	i550-C22/400-3
Connection			X100			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		16	35	35	35
Max. cable cross-section	AWG		6	2	2	2
Stripping length	mm		11	18	18	18
Stripping length	inch		0.43	0.7	0.7	0.7
Tightening torque	Nm		1.2	3.8	3.8	3.8
Tightening torque	lb-in		11	34	34	34
Required tool			0.8 x 4.0	0.8 x 5.5		

Mains connection						
Inverter			i550-C30/400-3	i550-C37/400-3	i550-C45/400-3	i550-C55/400-3
Connection			X100			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		50	50	50	95
Max. cable cross-section	AWG		1/0	1/0	1/0	4/0
Stripping length	mm		19	19	19	22
Stripping length	inch		0.75	0.75	0.75	0.87
Tightening torque	Nm		4	4	4	10
Tightening torque	lb-in		35	35	35	89
Required tool			Hexagon socket 5			Hexagon socket 6

Mains connection					
Inverter			i550-C75/400-3	i550-C90/400-3	i550-C110/400-3
Connection			X100		
Connection type			Screw terminal		
Max. cable cross-section	mm ²		95	150	150
Max. cable cross-section	AWG		4/0	2 x 2/0	2 x 2/0
Stripping length	mm		22	28	28
Stripping length	inch		0.87	1.1	1.1
Tightening torque	Nm		10	18	18
Tightening torque	lb-in		89	160	160
Required tool			Hexagon socket 6	Hexagon socket 8	



Technical data

3-phase mains connection 480 V "Light Duty"
Terminal data

PE connection						
Inverter			i550-C3.0/400-3	i550-C4.0/400-3	i550-C5.5/400-3	i550-C7.5/400-3
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		6	6	6	16
Max. cable cross-section	AWG		10	10	10	6
Stripping length	mm		10	10	10	11
Stripping length	inch		0.39	0.39	0.39	0.43
Tightening torque	Nm		2	2	2	3.4
Tightening torque	lb-in		18	18	18	30
Required tool			Torx 20			PZ2

PE connection						
Inverter			i550-C11/400-3	i550-C15/400-3	i550-C18/400-3	i550-C22/400-3
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		16	25	25	25
Max. cable cross-section	AWG		6	2	2	2
Stripping length	mm		11	16	16	16
Stripping length	inch		0.43	0.63	0.63	0.63
Tightening torque	Nm		3.4	4	4	4
Tightening torque	lb-in		30	35	35	35
Required tool			PZ2			

PE connection						
Inverter			i550-C30/400-3	i550-C37/400-3	i550-C45/400-3	i550-C55/400-3
Connection			PE			
Connection type			PE screw			
Max. cable cross-section	mm ²		25	25	25	25
Max. cable cross-section	AWG		2	2	2	2
Stripping length	mm		16	16	16	16
Stripping length	inch		0.63	0.63	0.63	0.63
Tightening torque	Nm		4	4	4	4
Tightening torque	lb-in		35	35	35	35
Required tool			PZ2			

PE connection					
Inverter			i550-C75/400-3	i550-C90/400-3	i550-C110/400-3
Connection			PE		
Connection type			PE screw	PE bolt	
Max. cable cross-section	mm²		25	150	150
Max. cable cross-section	AWG		2	2 x 2/0	2 x 2/0
Stripping length	mm		16	-	-
Stripping length	inch		0.63	-	-
Tightening torque	Nm		4	10	10
Tightening torque	lb-in		35	89	89
Required tool			PZ2	Width across flats 13	

Technical data

3-phase mains connection 480 V "Light Duty"

Terminal data



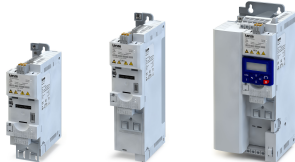
Motor connection						
Inverter			i550-C3.0/400-3	i550-C4.0/400-3	i550-C5.5/400-3	i550-C7.5/400-3
Connection			X105			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		6	6	6	16
Max. cable cross-section	AWG		10	10	10	6
Stripping length	mm		9	9	9	11
Stripping length	inch		0.35	0.35	0.35	0.43
Tightening torque	Nm		0.5	0.5	0.5	1.2
Tightening torque	lb-in		4.4	4.4	4.4	11
Required tool			0.6 x 3.5			0.8 x 4.0

Motor connection						
Inverter			i550-C11/400-3	i550-C15/400-3	i550-C18/400-3	i550-C22/400-3
Connection			X105			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		16	35	35	35
Max. cable cross-section	AWG		6	2	2	2
Stripping length	mm		11	18	18	18
Stripping length	inch		0.43	0.7	0.7	0.7
Tightening torque	Nm		1.2	3.8	3.8	3.8
Tightening torque	lb-in		11	34	34	34
Required tool			0.8 x 4.0	0.8 x 5.5		

Motor connection						
Inverter			i550-C30/400-3	i550-C37/400-3	i550-C45/400-3	i550-C55/400-3
Connection			X105			
Connection type			Screw terminal			
Max. cable cross-section	mm ²		50	50	50	95
Max. cable cross-section	AWG		1/0	1/0	1/0	4/0
Stripping length	mm		19	19	19	22
Stripping length	inch		0.75	0.75	0.75	0.87
Tightening torque	Nm		4	4	4	10
Tightening torque	lb-in		35	35	35	89
Required tool			Hexagon socket 5			Hexagon socket 6

Motor connection					
Inverter			i550-C75/400-3	i550-C90/400-3	i550-C110/400-3
Connection			X105		
Connection type			Screw terminal		
Max. cable cross-section	mm ²		95	150	150
Max. cable cross-section	AWG		4/0	2 x 2/0	2 x 2/0
Stripping length	mm		22	28	28
Stripping length	inch		0.87	1.1	1.1
Tightening torque	Nm		10	18	18
Tightening torque	lb-in		89	160	160
Required tool			Hexagon socket 6	Hexagon socket 8	

The terminal data for the terminal X1 can be found under: [Terminal data](#) 72



Technical data

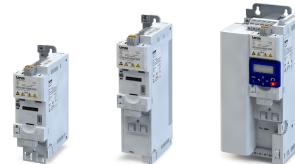
3-phase mains connection 480 V "Light Duty"
Brake resistors

Brake resistors

Inverter	Brake resistor					
	Order code	Rated resistance	Rated power	Thermal capacity	Dimensions (h x b x t)	Weight
		Ω	W	kWs	mm	kg
i550-C3.0/400-3	ERBP082R200W	82	200	30	320 x 41 x 122	1
	ERBS082R780W		780	117	666 x 124 x 122	3.6
i550-C4.0/400-3	ERBP047R200W	47	200	30	320 x 41 x 122	1
	ERBS047R400W		400	60	400 x 110 x 105	2.3
	ERBS047R800W		800	120	710 x 110 x 105	4
i550-C5.5/400-3	ERBP047R200W	47	200	30	320 x 41 x 122	1
	ERBS047R400W		400	60	400 x 110 x 105	2.3
	ERBS047R800W		800	120	710 x 110 x 105	4
i550-C7.5/400-3	ERBP027R200W	27	200	30	320 x 41 x 122	1
	ERBS027R600W		600	90	550 x 110 x 105	3.1
	ERBS027R01K2		1200	180	1020 x 110 x 105	5.6
i550-C11/400-3	ERBP027R200W	27	200	30	320 x 41 x 122	1
	ERBS027R600W		600	90	550 x 110 x 105	3.1
	ERBS027R01K2		1200	180	1020 x 110 x 105	5.6
i550-C15/400-3	ERBS018R800W	18	800	120	710 x 110 x 105	3.9
	ERBS018R01K4		1400	210	1110 x 110 x 105	6.2
	ERBS018R02K8		2800	420	1110 x 200 x 105	12
	ERBG018R04K3		4300	645	486 x 426 x 302	13.5
	ERBP018R300W		300	45	320 x 41 x 122	1.4
i550-C18/400-3	ERBS015R800W	15	800	120	710 x 110 x 105	3.9
	ERBS015R01K2		1200	180	1020 x 110 x 105	5.6
	ERBS015R02K4		2400	420	1020 x 200 x 105	10
	ERBG015R06K2		6200	930	486 x 526 x 302	17
	ERBG015R03K3		3300	495	486 x 326 x 302	12.6
i550-C22/400-3	ERBS015R800W	15	800	120	710 x 110 x 105	3.9
	ERBS015R01K2		1200	180	1020 x 110 x 105	5.6
	ERBS015R02K4		2400	420	1020 x 200 x 105	10
	ERBG015R06K2		6200	930	486 x 526 x 302	17
	ERBG015R03K3		3300	495	486 x 326 x 302	12.6
i550-C30/400-3	ERBG075D01K9	7.5	1900	285	486 x 236 x 302	9.5
i550-C37/400-3						
i550-C45/400-3						
i550-C55/400-3	ERBG005R02K6	5	2600	390	486 x 326 x 302	11
i550-C75/400-3						
i550-C90/400-3	ERBG028D04K1	2.8	4100	615	486 x 426 x 302	12.8
i550-C110/400-3						

Technical data

3-phase mains connection 480 V "Light Duty"
Mains chokes



Mains chokes

Inverter	Mains choke					
	Order code	Number of phases	Output current	Inductance	Dimensions (h x b x t)	Weight
			A	mH	mm	kg
i550-C3.0/400-3	EZAELN3008B372	3	8	3.68	85 x 120 x 140	1.9
i550-C4.0/400-3	EZAELN3010B292		10	2.94		2
i550-C5.5/400-3	EZAELN3016B182		16	1.84	95 x 120 x 140	2.7
i550-C7.5/400-3	EZAELN3020B152		20	1.47	95 x 155 x 165	3.8
i550-C11/400-3	EZAELN3025B122		25	1.18	110 x 155 x 170	5.8
i550-C15/400-3	EZAELN3030B981		30	0.98		5.85
i550-C18/400-3	EZAELN3040B741		40	0.74	112 x 185 x 200	6.8
i550-C22/400-3	EZAELN3050B591		50	0.59	112 x 185 x 210	8.35
i550-C30/400-3	EZAELN3063B471		63	0.47	122 x 185 x 210	9.65
i550-C37/400-3	EZAELN3080B371		80	0.37	125 x 210 x 240	12.5
i550-C45/400-3	EZAELN3090B331		90	0.33	115 x 267 x 205	11.5
i550-C55/400-3	EZAELN3125B241		125	0.24	139 x 291 x 215	17.5
i550-C75/400-3	EZAELN3160B191		160	0.19	149 x 291 x 215	22.5
i550-C90/400-3	EZAELN3180B171		180	0.17	164 x 316 x 235	26
i550-C110/400-3	EZAELN3200B151		200	0.15	144 x 352 x 265	25



Technical data

3-phase mains connection 480 V "Light Duty"
RFI filters / Mains filters

RFI filters / Mains filters

Basic information on RFI filters, mains filters and EMC: from [246](#)



EMC filters can be used both in the side structure and in the substructure.

Maximum motor cable lengths and FI operation

Mains connection			3-phase, 400 V/480 V, Light Duty			
Inverter			i550-C3.0/400-3 i550-C4.0/400-3 i550-C5.5/400-3	i550-C7.5/400-3 i550-C11/400-3	i550-C15/400-3 i550-C18/400-3 i550-C22/400-3	i550-C30/400-3 i550-C37/400-3 i550-C45/400-3 i550-C55/400-3 i550-C75/400-3
Without RFI filter						
Without EMC category Thermal limitation	Max. motor cable length shielded	m	100	100	100	100
	Max. motor cable length unshielded	m	200	200	200	200
With integrated RFI filter						
Category C1	Max. motor cable length shielded	m	-	-	-	-
Category C2		m	20	20	20	20
	Earth-leakage circuit breaker	mA	300	300	300	300
RFI filter Low Leakage						
Category C1	Max. motor cable length shielded	m	-	-	-	-
	Earth-leakage circuit breaker	mA	-	-	-	-
RFI filter Short Distance						
Category C1	Max. motor cable length shielded	m	25	25	-	-
Category C2		m	50	50	-	-
	Earth-leakage circuit breaker	mA	30	30	-	-
RFI filter Long Distance						
Category C1	Max. motor cable length shielded	m	50	50	-	-
Category C2		m	100	100	-	-
	Earth-leakage circuit breaker	mA	300	300	-	-

Short Distance

Inverter	RFI filter		
	Order code	Dimensions (h x b x t)	Weight
		mm	kg
i550-C3.0/400-3	IOFAE255F100S0000S	346 x 90 x 60	2.1
i550-C4.0/400-3			
i550-C5.5/400-3			
i550-C7.5/400-3	IOFAE311F100S0000S	371 x 120 x 60	2.4
i550-C11/400-3			

Technical data

3-phase mains connection 480 V "Light Duty"
RFI filters / Mains filters



Long Distance

Inverter	RFI filter		
	Order code	Dimensions (h x b x t)	Weight
		mm	kg
i550-C3.0/400-3	IOFAE255F100D0000S	346 x 90 x 60	1.7
i550-C4.0/400-3			
i550-C5.5/400-3			
i550-C7.5/400-3	IOFAE311F100D0000S	371 x 120 x 60	2
i550-C11/400-3			
i550-C15/400-3	E84AZESR1834LD	436 x 205 x 90	7.5
i550-C18/400-3	E84AZESM2234LD		14
i550-C22/400-3	IOFAE322F100D0000S		18.5
i550-C30/400-3	E84AZESM3034LD	590 x 250 x 105	23
i550-C37/400-3	E84AZESM3734LD		25
i550-C45/400-3	IOFAE345F100D0000S		32
i550-C55/400-3	IOFAE355F100D0000S	700 x 250 x 105	36
i550-C75/400-3	IOFAE375F100D0000S		41.5
i550-C90/400-3	IOFAE411F100D0000S	855 x 250 x 130	63
i550-C110/400-3			

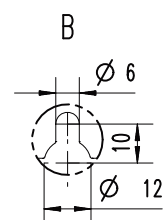
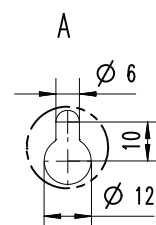
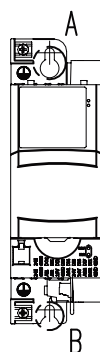
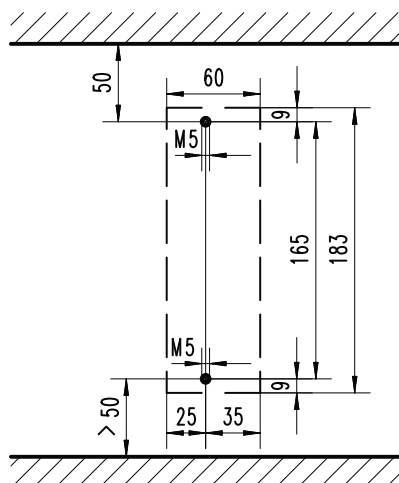
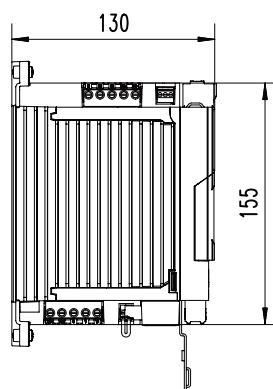
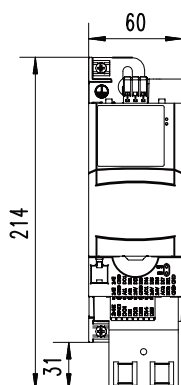


Dimensions

0.25 kW ... 0.37 kW

The dimensions in mm apply to:

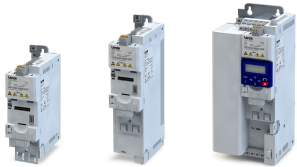
0.25 kW	i550-C0.25/230-1	i550-C0.25/230-2	
0.37 kW	i550-C0.37/230-1	i550-C0.37/230-2	i550-C0.37/400-3



8800263

Technical data

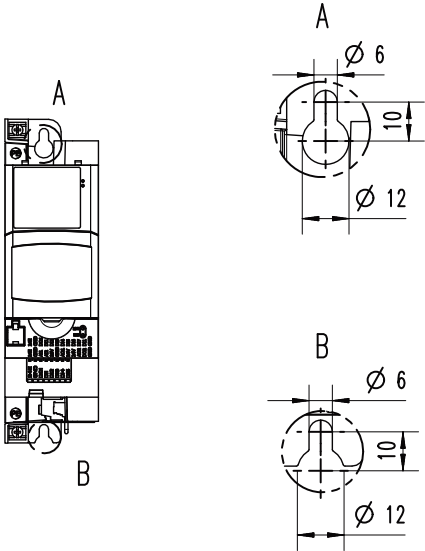
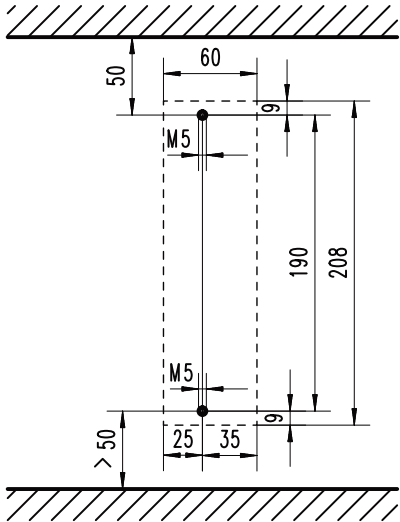
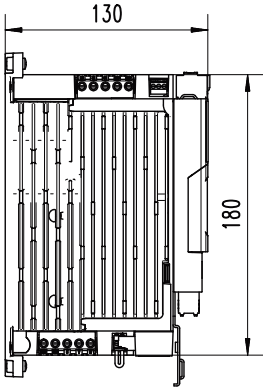
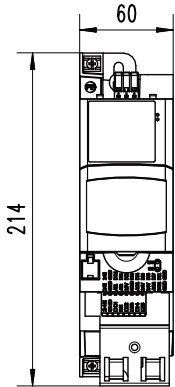
Dimensions



0.25 kW ... 0.37 kW
(120 V)

The dimensions in mm apply to:

0.25 kW	i550-C0.25/120-1
0.37 kW	i550-C0.37/120-1



8800264



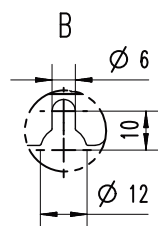
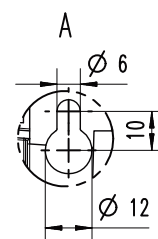
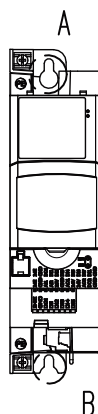
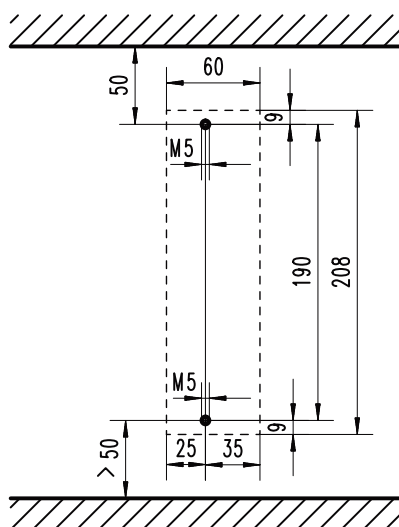
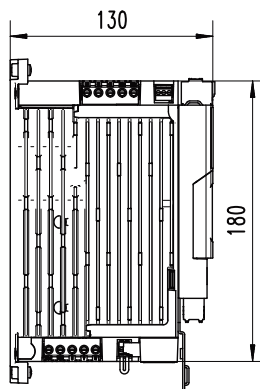
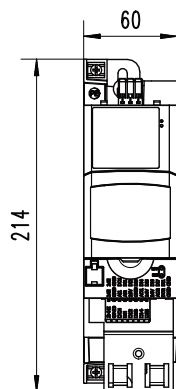
Technical data

Dimensions

0.55 kW ... 0.75 kW

The dimensions in mm apply to:

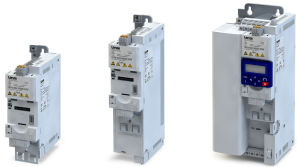
0.55 kW	i550-C0.55/230-1	i550-C0.55/230-2	i550-C0.55/400-3
0.75 kW	i550-C0.75/230-1	i550-C0.75/230-2	i550-C0.75/400-3



8800264

Technical data

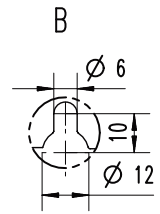
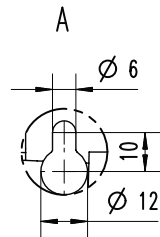
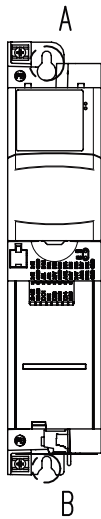
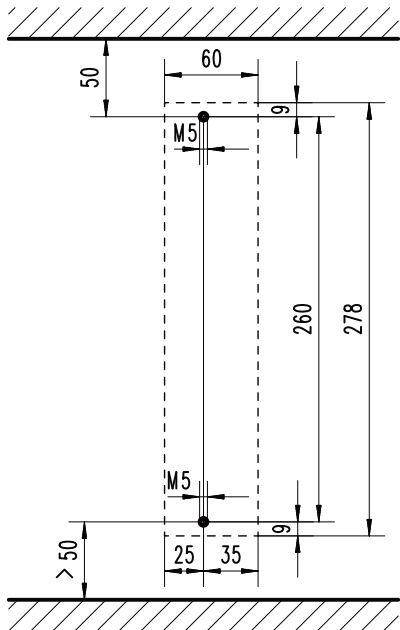
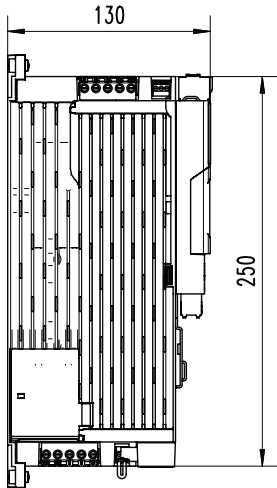
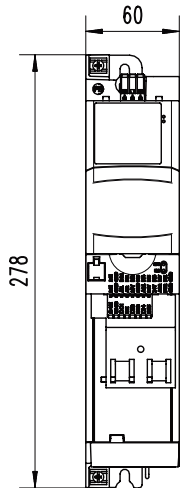
Dimensions



0.75 kW ... 1.1 kW
(120 V)

The dimensions in mm apply to:

0.75 kW	i550-C0.75/120-1
1.1 kW	i550-C1.1/120-1



8800265



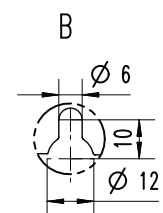
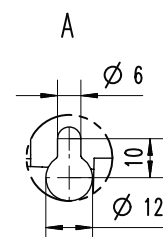
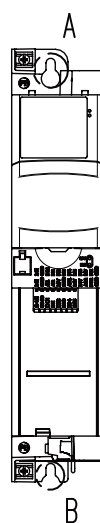
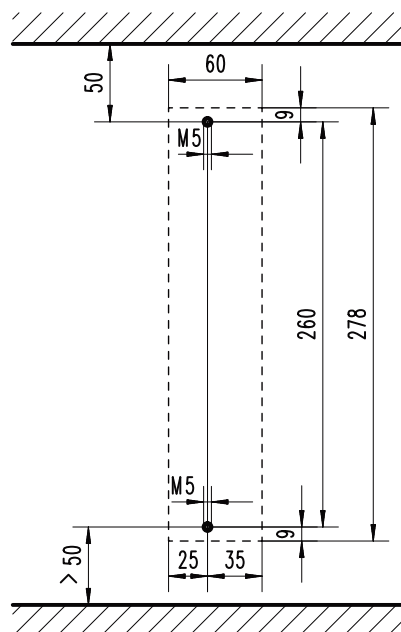
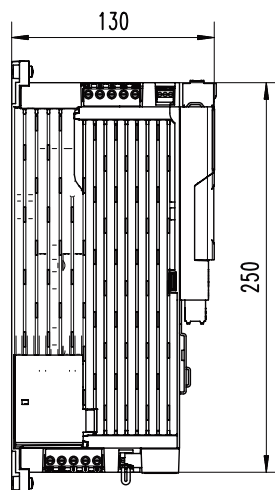
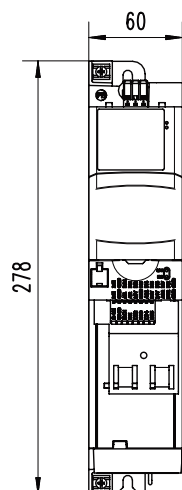
Technical data

Dimensions

1.1 kW ... 2.2 kW

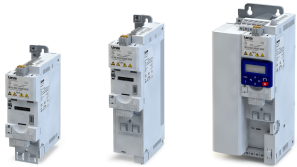
The dimensions in mm apply to:

1.1 kW	i550-C1.1/230-1	i550-C1.1/230-2	i550-C1.1/400-3
1.5 kW	i550-C1.5/230-1	i550-C1.5/230-2	i550-C1.5/400-3
2.2 kW	i550-C2.2/230-1	i550-C2.2/230-2	i550-C2.2/400-3



8800265

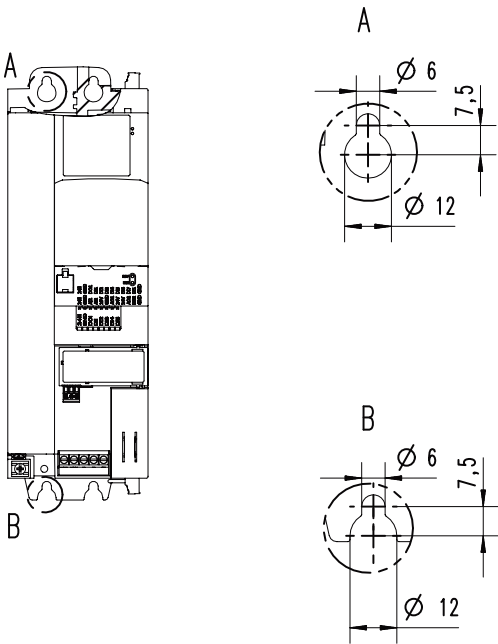
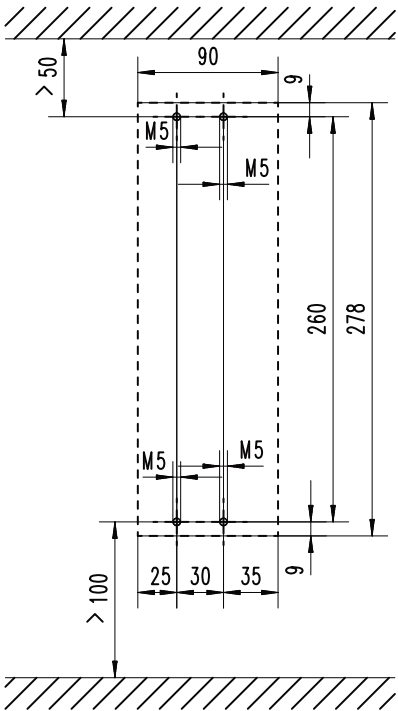
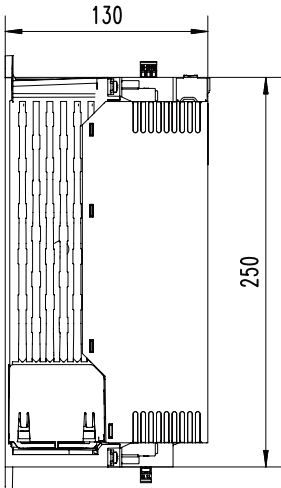
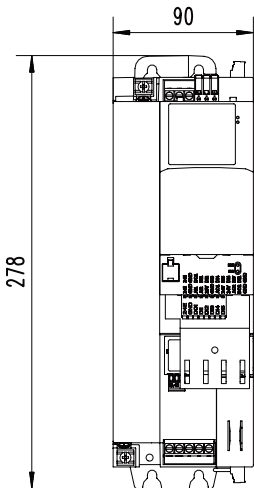
Technical data
Dimensions



3 kW ... 5.5 kW

The dimensions in mm apply to:

3 kW		i550-C3.0/400-3
4 kW	i550-C4.0/230-3	i550-C4.0/400-3
5.5 kW	i550-C5.5/230-3	i550-C5.5/400-3



8800288



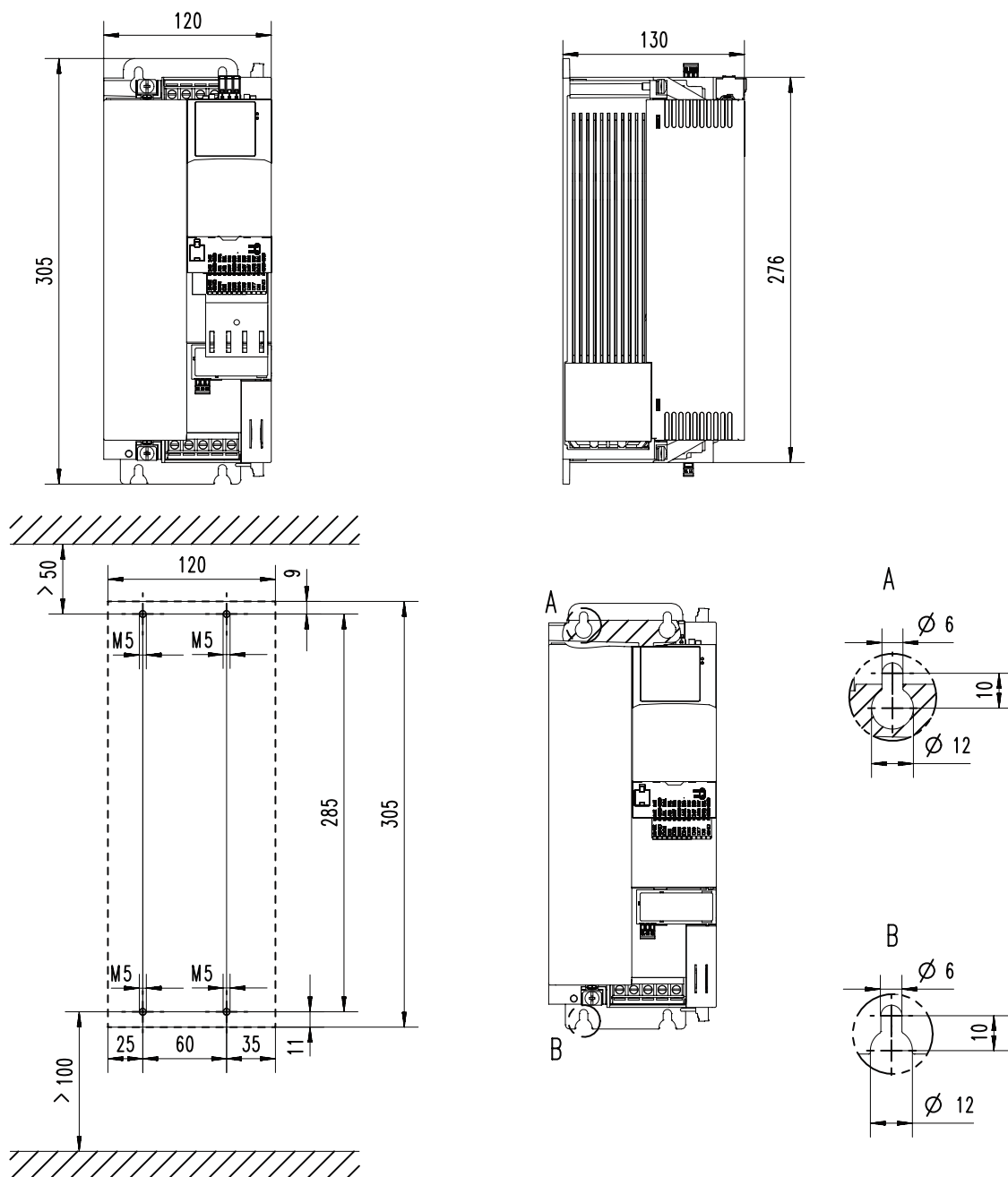
Technical data

Dimensions

7.5 kW ... 11 kW

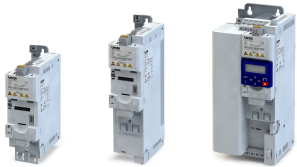
The dimensions in mm apply to:

7.5 kW	i550-C7.5/400-3
11 kW	i550-C11/400-3



8800296

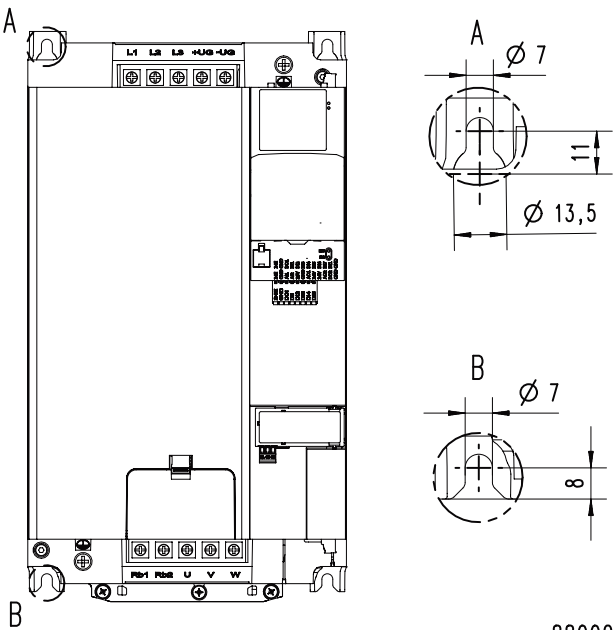
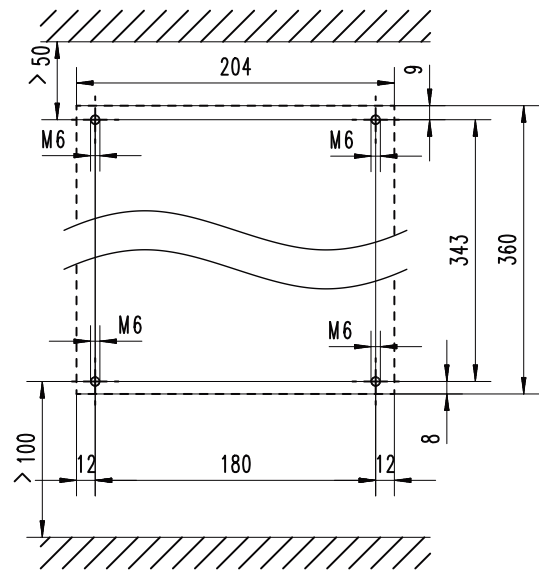
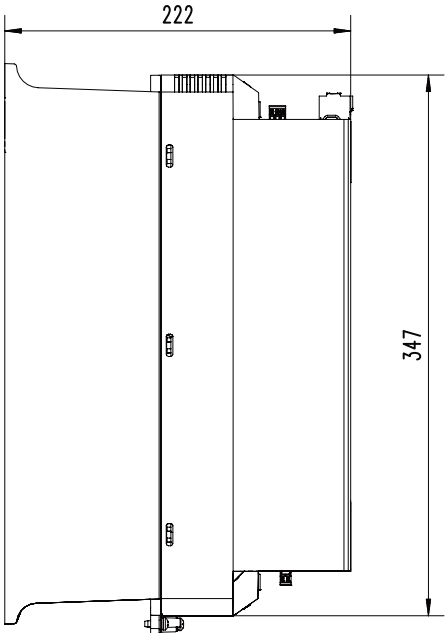
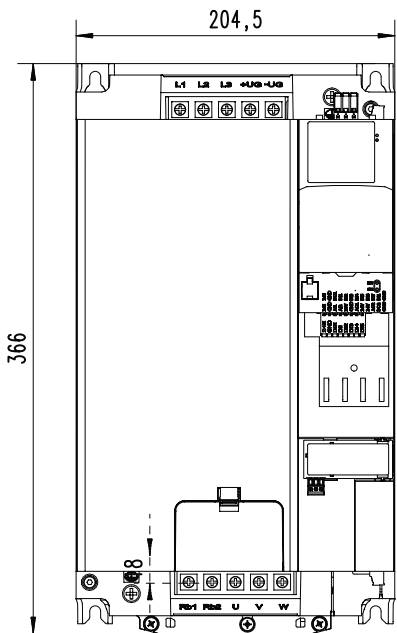
Technical data
Dimensions



15 kW ... 22 kW

The dimensions in mm apply to:

15 kW	i550-C15/400-3
18.5 kW	i550-C18/400-3
22 kW	i550-C22/400-3



8800297



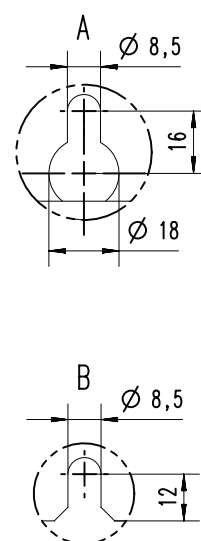
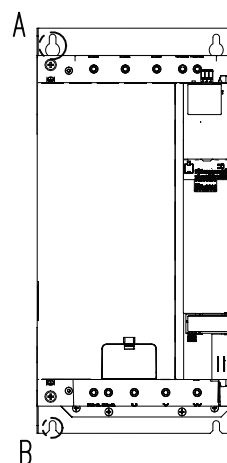
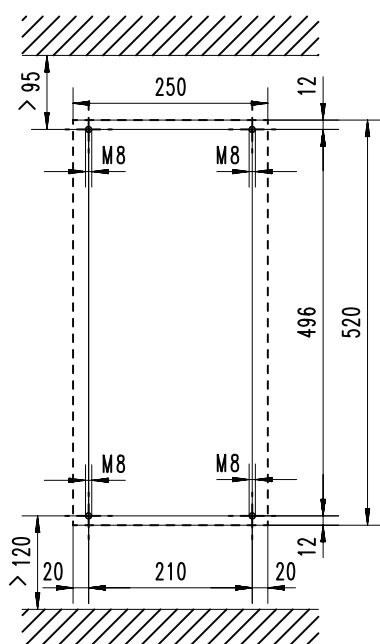
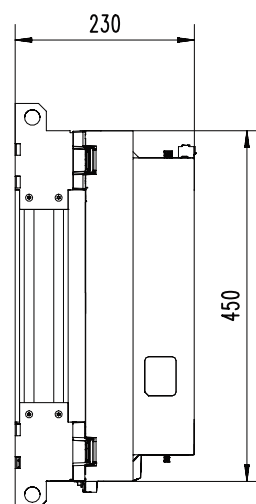
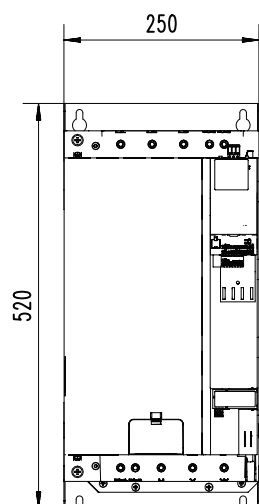
Technical data

Dimensions

30 kW ... 45 kW

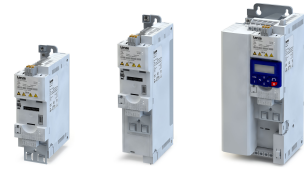
The dimensions in mm apply to:

30 kW	i550-C30/400-3
37 kW	i550-C37/400-3
45 kW	i550-C45/400-3



8800313

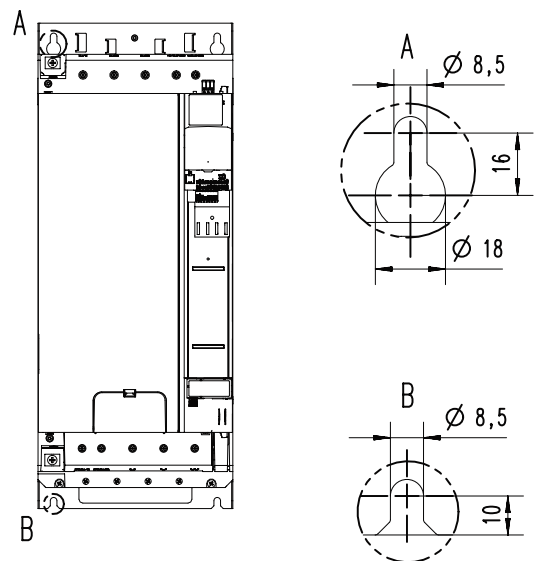
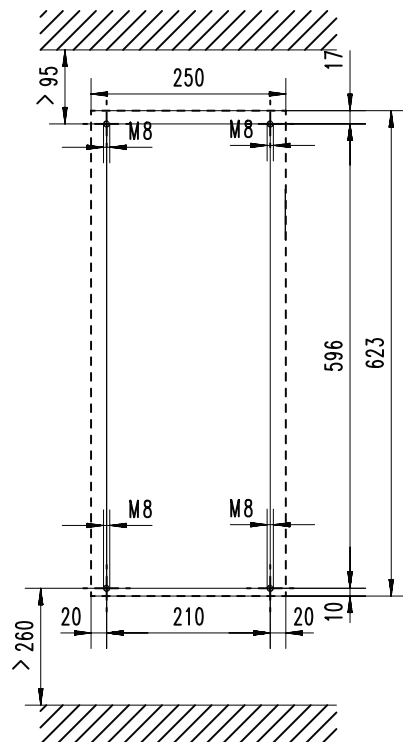
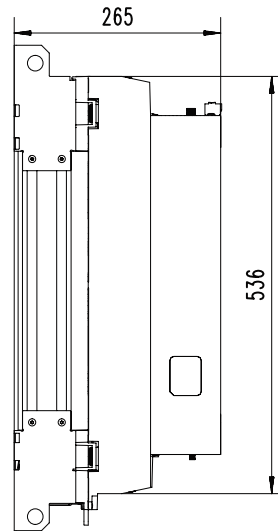
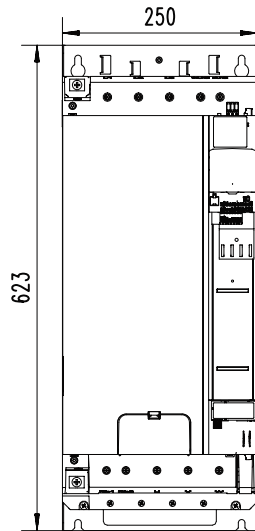
Dimensions



55 kW ... 75 kW

The dimensions in mm apply to:

55 kW	i550-C55/400-3
75 kW	i550-C75/400-3



8800315



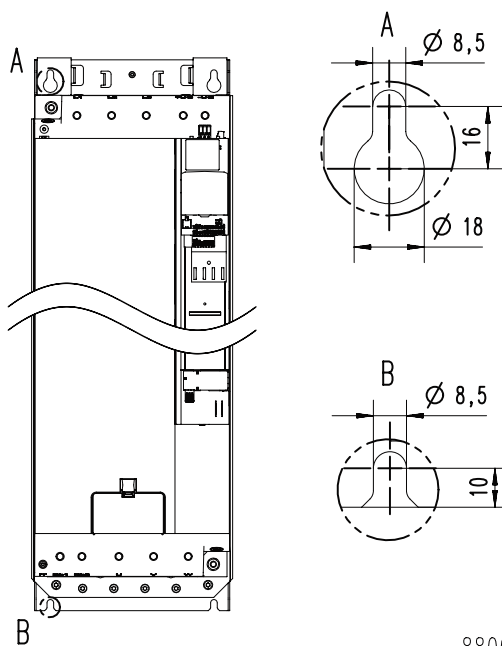
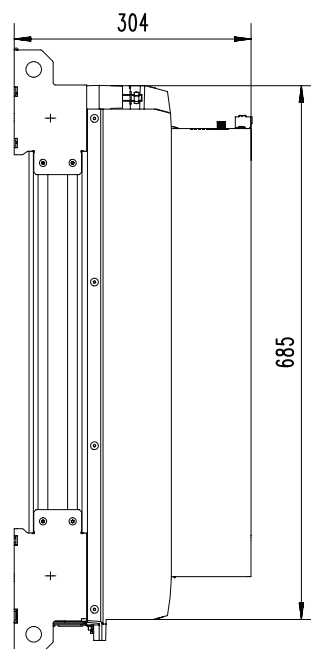
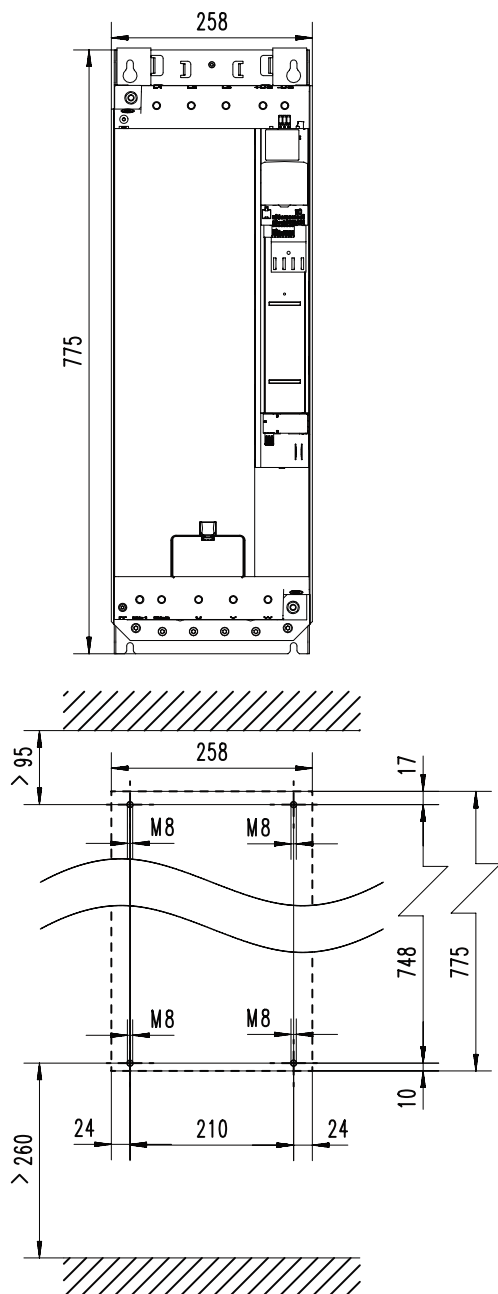
Technical data

Dimensions

90 kW ... 110 kW

The dimensions in mm apply to:

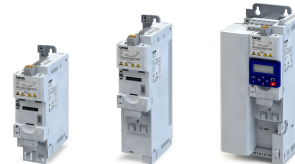
90 kW	i550-C90/400-3
110 kW	i550-C110/400-3



8800536

Product extensions

Overview



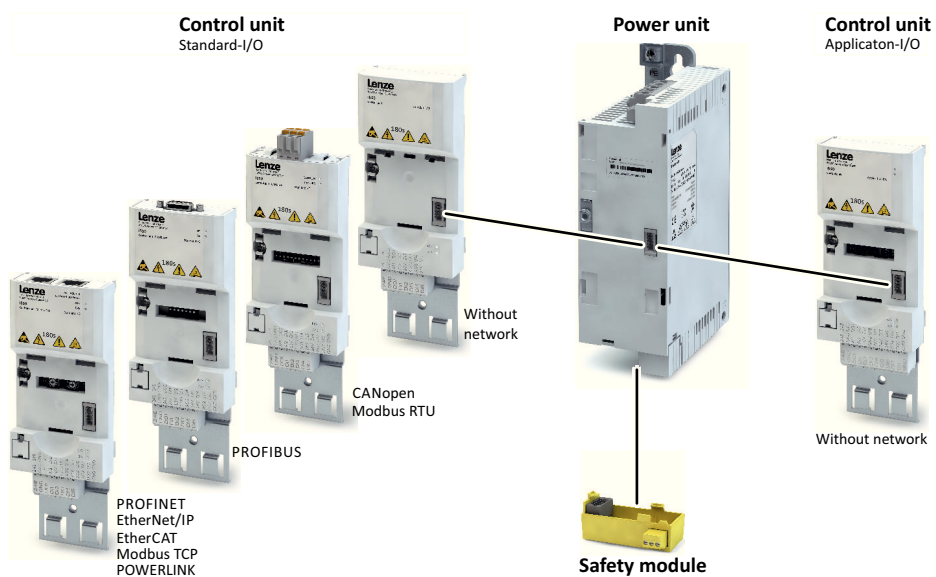
Product extensions

Overview

The inverters can be easily integrated into the machine. The scalable product extensions serve to flexibly match the required functions to your application.

The control unit with standard I/O can be extended with different networks.

The control unit with application I/O provides additional inputs and outputs (I/Os). A network component is not available.





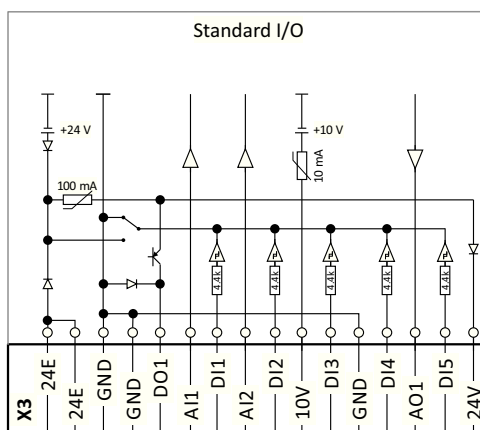
Product extensions

I/O extensions
Standard I/O

I/O extensions

Standard I/O

The standard I/O provides the inverter with analog and digital inputs and outputs and is designed for standard applications. The standard I/O is available with different networks.



Digital inputs	Terminal X3: DI1, DI2, DI3, DI4, DI5	DI3/DI4 can be optionally used as frequency or encoder input. HIGH active/LOW active switchable
Digital outputs	Terminal X3: DO1	
Analog inputs	Terminal X3: AI1, AI2	can be optionally used as voltage or current input.
Analog outputs	Terminal X3: AO1	Can be optionally used as voltage or current output.
24-V input	Terminal X3: 24E	Mains-independent DC supply of the control electronics (incl. communication)
10-V output	Terminal X3: 10V	Reference voltage or setpoint potentiometer
24-V output	Terminal X3: 24V	
Reference potential	Terminal X3: GND	
Connection system	Pluggable spring terminal	

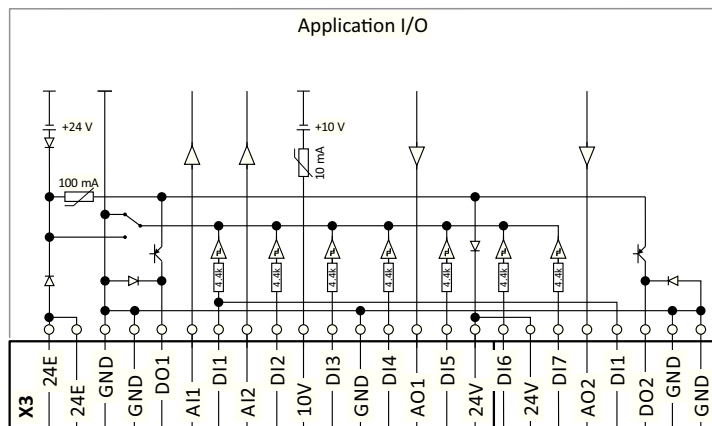
Product extensions

I/O extensions
Application I/O



Application I/O

In addition to the standard I/O, the application I/O provides the inverter with more digital and analog inputs and is intended for individual applications. The combination with network components is not available.



Digital inputs	Terminal X3: DI1, DI2, DI3, DI4, DI5, DI6, DI7	DI3/DI4 can be optionally used as frequency or encoder input. HIGH active/LOW active switchable
Digital outputs	Terminal X3: DO1, DO2	
Analog inputs	Terminal X3: AI1, AI2	can be optionally used as voltage or current input.
Analog outputs	Terminal X3: AO1, AO2	Can be optionally used as voltage or current output.
24-V input	Terminal X3: 24E	Mains-independent DC supply of the control electronics (incl. communication)
10-V output	Terminal X3: 10V	Reference voltage or setpoint potentiometer
24-V output	Terminal X3: 24V	
Reference potential	Terminal X3: GND	
Connection system	pluggable spring terminal	



Product extensions

I/O extensions
Data of control connections

Data of control connections

Digital inputs

Switching type		PNP, NPN	Parameterisable
PNP switching level			
LOW	V	< +5	IEC 61131-2, type 1
HIGH	V	> +15	
NPN switching level			
LOW	V	> +15	
HIGH	V	< +5	
Input resistance	kΩ	4.6	
Cycle time	ms	1	can be changed by software filtering
Electric strength of external voltage	V	± 30	

Frequency input			
Connection		X3/DI3, X3/DI4	
Frequency range	kHz	0 ... 100	

Encoder input			
Type		Incremental HTL encoder	
Two-track connection		X3/DI3 X3/DI4	Track A Track B
Frequency range	kHz	0 ... 100	

Analog inputs

Cycle time	ms	1	
Resolution of A/D converter	Bit	12	
Operation as voltage input			
Connection designation		X3/AI1, X3/AI2	
Input voltage DC	V	-10 ... 10	
Input resistance	kΩ	70	
Accuracy	mV	± 50	Typical
Input voltage in case of open circuit	V	- 0.2 ... 0.2	Display "0"
Electric strength of external voltage	V	± 24	
Operation as current input			
Connection designation		X3/AI1, X3/AI2	
Input current	mA	0 ... 20 4 ... 20	open-circuit monitored
Accuracy	mA	± 0.1	Typical
Input current in case of open circuit	mA	< 0.1	Display "0"
Input resistance	Ω	< 250	
Electric strength of external voltage	V	± 24	

Product extensions

I/O extensions

Data of control connections



Analog outputs

Short-circuit strength		Unlimited period	
Electric strength of external voltage	V	+ 24V	
Operation as voltage output			
Resolution of D/A converter	Bit	12	
Output voltage DC	V	0 ... 10	
max. output current	mA	5	
min. load resistance	kΩ	≥ 2.2	
Max. capacitive load	μF	1	
Accuracy	mV	± 100	Typical
Operation as current output			
Output current	mA	0 ... 20	
		4 ... 20	open-circuit monitored
Accuracy	mA	± 0.3	Typical

10-V output

Use		Primarily for the supply of a potentiometer (1 ... 10 kΩ)	
Output voltage DC			
Typical	V	10	
Accuracy	mV	± 100	
Max. output current	mA	10	
Max. capacitive load	μF	1	
Short-circuit strength		Unlimited period	
Electric strength of external voltage	V	+ 24	

24-V input

Use		Input for mains-independent DC supply of the control electronics (incl. communication)	
Input voltage DC			
Typical	V	24	IEC 61131-2
Area	V	19.2 ... 28.8	
Input power			
Typical	W	3.6	
Max.	W	6	Depending on the use and state of inputs and outputs.
Input current			
Typical	A	0.150	
Max.	A	1.0	When switching on for 50 ms
Capacity to be charged	μF	440	
Polarity reversal protection		When polarity is reversed: No function and no destruction	
Suppression of voltage pulses		Suppressor diode 30 V, bidirectional	
Power supply unit		SELV/PELV	Externally to create a mains-independent DC supply
Max. current	A	8.0	While looping-through

24-V output

Use		Primarily for the supply of digital inputs	
Output voltage DC			
Typical	V	24	
Area	V	16 ... 28	
max. output current	mA	100	Total current for DO... and 24V
Short-circuit strength		Unlimited period	
Electric strength of external voltage	V	+ 30	
Excess current release		Automatically resettable	



Product extensions

Further control connections
PTC input

Further control connections

Terminal description			Relay output
Connection			X9
Connection type			pluggable screw terminal
Max. cable cross-section	mm ²		1.5
Max. cable cross-section	AWG		14
Stripping length	mm		6
Stripping length	inch		0.24
Tightening torque	Nm		0.2
Tightening torque	lb-in		1.8
Required tool			0.4 x 2.5

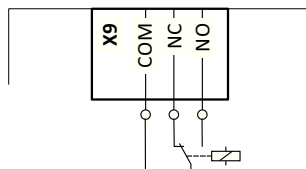
Relay output



Relay is not suitable for direct switching of a electromechanical holding brake!

Use a corresponding suppressor circuit in case of an inductive or capacitive load!

Connection			Terminal X9: COM	Centre contact (common)
			Terminal X9: NC	Normally-closed contact
			Terminal X9: NO	Normally-open contact
Minimum DC contact load				
	Voltage	V	10	A correct switching of the relay contacts needs both values to be exceeded simultaneously.
	Current	mA	10	
Switching voltage/switching current				
Maximum	AC 240 V	A	3	According to UL: General Purpose
	DC 24 V	A	2	According to UL: Resistive
	DC 240 V	A	0.16	

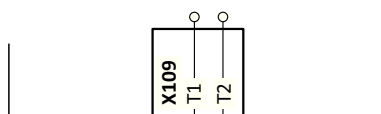


PTC input



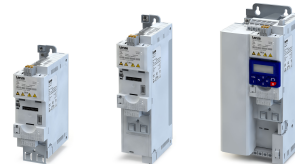
In the Lenze setting, motor temperature monitoring is activated! In the delivery status, there is a wire jumper between the terminals T1 and T2. Before connecting a thermal sensor, remove the wire jumper.

Use	Connection of PTC or thermal contact
Connection	Terminal X109: T1 Terminal X109: T2
Sensor types	PTC single sensor (DIN 44081) PTC triple sensor (DIN 44082) Thermal contact



Product extensions

Networks
CANopen



Networks

CANopen

CANopen is an internationally approved communication protocol which is designed for commercial and industrial automation applications. High data transfer rates in connection with efficient data formatting provide for the coordination of motion control devices in multi-axis applications.

General information			
Design		Optional Integrated in standard I/O	
DC supply of the control electronics and optional fieldbus		internally via the inverter	Mains-dependent
		optionally: External supply	Mains-independent 24 V DC at X3/24E...GND
Bus-related information			
Name		CANopen CiA 301 V4.2.0	
Communication medium		CAN cable in accordance with ISO 11898-2	
Use		Connection of the inverter to a CANopen network	
Connection system		pluggable double spring terminal	
Status display		2 LEDs	
Connection designation		X216: CH, CL, CG	
Technical data			
Bus terminating resistor	Ω	120	Terminated on both sides
integrated bus terminating resistor		Yes	Activation via DIP switch
Network topology			
without repeater		Line	
with repeater		Line or tree	
Station			
Type		Slave	
Max. number without repeater		127	per bus segment, incl. host system
Address		1 ... 127	Adjustable via code or DIP switch
Baud rate	kbps	20, 50, 125, 250, 500, 800 or 1000	Adjustable via code or DIP switch
Max. bus length	m	2500, 1000, 500, 250, 100, 50 or 25	Total cable length depends on the baud rate
Max. cable length between two nodes		not limited, the max. bus length is decisive	
Process data			
Transmit PDOs		3 TPDOs with 1 ... 8 bytes (adjustable)	
Receive PDOs		3 RPDOs with 1 ... 8 bytes (adjustable)	
Transmission mode for TPDOs			
With change of data		Yes	
Time-controlled, multiple of	ms	10	
After reception		1 ... 240 sync telegrams	
Parameter data			
SDO channels		Max. 2 servers	
Communication time			
Communication time depends on		Processing time in the inverter	Time between the start of a request and arrival of the response
		Telegram runtime (baud rate, telegram length)	
		Nesting depth of the network	
		Bus load	



Product extensions

Networks
CANopen

Processing time of process data			
Update cycle, multiple of	ms	10	In the inverter
Processing time	ms	0 ... 1	
application task runtime of the technology application used (tolerance)	ms	1 ... x	
Other data			
Note		There are no interdependencies between parameter data and process data.	

Product extensions

Networks
EtherCAT



EtherCAT

EtherCAT is a common fieldbus for the connection of inverters to different control systems in plants.

General information			
Design		Optional Integrated in standard I/O	
DC supply of the control electronics and optional fieldbus		internally via the inverter	Mains-dependent
		optionally: External supply	Mains-independent 24 V DC at X3/24E...GND

Terminal description			EtherCAT	EtherCAT
Connection			X246	X247
Connection type			RJ45	
Max. cable cross-section	mm ²		-	-
Max. cable cross-section	AWG		-	-
Stripping length	mm		-	-
Stripping length	inch		-	-
Tightening torque	Nm		-	-
Tightening torque	lb-in		-	-
Required tool			-	

Technical data			
Communication profile		EtherCAT	
		CANopen over EtherCAT (CoE)	
Bus terminating resistor	Ω	not required	
integrated bus terminating resistor		No	
Network topology			
Without repeater		Line, switch	
With repeater		-	
Station			
Type		EtherCAT slave	
Max. number		65535	In the entire network
Address			Adjustable via parameter
Max. cable length	m	-	Not limited The length between the nodes is decisive.
Max. cable length between two nodes	m	100	
Process data			
Transmit PDOs		16 words	max. 32 bits (4 bytes) as a coherent PDO object
Receive PDOs		16 words	
Cycle times	ms	integer multiple of 1	

Communication time			
Communication time depends on		Processing time in the inverter	Time between the start of a request and arrival of the response
		Telegram runtime (baud rate, telegram length)	
		Nesting depth of the network	
		Bus load	

Processing time of process data			
Update cycle, multiple of	ms	10	In the inverter
Processing time	ms	0 ... 1	
application task runtime of the technology application used (tolerance)	ms	1 ... x	



Other data			
Note		There are no interdependencies between parameter data and process data.	

Product extensions

Networks
EtherNet/IP



EtherNet/IP

EtherNET/IP is a common fieldbus for the connection of inverters to different control systems in plants.

General information			
Design		Optional Integrated in standard I/O	
DC supply of the control electronics and optional fieldbus		internally via the inverter	Mains-dependent
		optionally: External supply	Mains-independent 24 V DC at X3/24E...GND

Terminal description			EtherNet/IP	EtherNet/IP
Connection			X266	X267
Connection type			RJ45	
Max. cable cross-section	mm ²		-	-
Max. cable cross-section	AWG		-	-
Stripping length	mm		-	-
Stripping length	inch		-	-
Tightening torque	Nm		-	-
Tightening torque	lb-in		-	-
Required tool			-	

Technical data			
Communication profile		EtherNet/IP	
		AC Drive	
Bus terminating resistor		not required	
integrated bus terminating resistor		No	
Network topology			
Without repeater		Tree, star and line	
With repeater		-	
Station			
Type		Adapter (slave)	
Max. number		254	Per subnetwork
Address		Station name	
Max. cable length	m	-	Not limited The length between the nodes is decisive.
Max. cable length between two nodes	m	100	
Process data			
Transmit PDOs		16 words	max. 32 bits (4 bytes) as a coherent PDO object
Receive PDOs		16 words	
Cycle time	ms	> 4	
Switching method		Store-and-Forward Cut-Through	
Switch latency	µs	~ 125	At maximum telegram length
Other data		Additional TCP/IP channel	

Communication time			
Communication time depends on		Processing time in the inverter	Time between the start of a request and arrival of the response
		Telegram runtime (baud rate, telegram length)	
		Nesting depth of the network	
		Bus load	



Product extensions

Networks
EtherNet/IP

Processing time of process data			
Update cycle, multiple of	ms	10	In the inverter
Processing time	ms	0 ... 1	
application task runtime of the technology application used (tolerance)	ms	1 ... x	
Other data			
Note		There are no interdependencies between parameter data and process data.	

Product extensions

Networks
Modbus RTU



Modbus RTU

Modbus is an internationally approved, asynchronous, serial communication protocol, designed for commercial and industrial automation applications.

General information			
Design		Optional Integrated in standard I/O	
DC supply of the control electronics and optional fieldbus		internally via the inverter	Mains-dependent
		optionally: External supply	Mains-independent 24 V DC at X3/24E...GND

Bus-related information			
Name		Modbus RTU	
Communication medium		RS485 (EIA)	
Use		Connection of the inverter to a Modbus network	
Connection system		pluggable double spring terminal	
Status display		2 LEDs	
Connection designation		X216: TA, TB, COM	

Technical data			
Communication profile		Modbus RTU	
Bus terminating resistor	Ω	120	Terminated on both sides
integrated bus terminating resistor		Yes	Activation via DIP switch
Network topology			
Without repeater		Line	
Station			
Type		Slave	
Max. number without repeater		32	per bus segment, incl. host system
Max. number with repeater		90	
Address		1 ... 247	Adjustable via code or DIP switch
Baud rate	kbps	4.8 ... 115	Adjustable via code or DIP switch, alternatively automatic detection via DIP switch can be activated
Max. cable length	m	12 ... 600	Per bus segment, depending on the baud rate and the used cable type
Max. cable length between two nodes		not limited, the max. bus length is decisive	
Data channel			
SDO channels		Max. 2 servers, with 1 ... 8 bytes	Supported functions: Read Holding Registers Preset Single Register Preset Multiple Registers Read/Write 4 x registers

Communication time			
Communication time depends on		Processing time in the inverter	Time between the start of a request and arrival of the response
		Telegram runtime (baud rate, telegram length)	
		Nesting depth of the network	
		Bus load	

Processing time of process data			
Update cycle, multiple of	ms	10	In the inverter
Processing time	ms	0 ... 1	
application task runtime of the technology application used (tolerance)	ms	1 ... x	



Product extensions

Networks
Modbus RTU

Other data			
Note		There are no interdependencies between parameter data and process data.	

Product extensions

Networks
Modbus TCP



Modbus TCP

Modbus is an internationally approved Ethernet-based communication protocol, designed for commercial and industrial automation applications.

General information			
Design		Optional Integrated in standard I/O	
DC supply of the control electronics and optional fieldbus		internally via the inverter	Mains-dependent
		optionally: External supply	Mains-independent 24 V DC at X3/24E...GND

Technical data			
Communication profile		Modbus/TCP	
Bus terminating resistor		not required	
integrated bus terminating resistor		No	
Network topology			
Without repeater		Tree, star and line	
With repeater		-	
Station			
Type		Adapter (slave)	
Max. number		254	Per subnetwork
Address		Station name	
Max. cable length	m	-	Not limited The length between the nodes is decisive.
Max. cable length between two nodes	m	100	
Process data			
Transmit PDOs		256 bytes	
Receive PDOs		256 bytes	
Cycle time	ms	> 4	
Switching method		-	
Switch latency	µs	~ 125	At maximum telegram length
Other data		Additional TCP/IP channel	

Communication time			
Communication time depends on		Processing time in the inverter	Time between the start of a request and arrival of the response
		Telegram runtime (baud rate, telegram length)	
		Nesting depth of the network	
		Bus load	

Processing time of process data			
Update cycle, multiple of	ms	10	In the inverter
Processing time	ms	0 ... 1	
application task runtime of the technology application used (tolerance)	ms	1 ... x	



Other data				
Note			There are no interdependencies between parameter data and process data.	

Terminal description			Modbus TCP	
Connection			X276	X277
Connection type			RJ45	
Max. cable cross-section	mm ²		-	-
Max. cable cross-section	AWG		-	-
Stripping length	mm		-	-
Stripping length	inch		-	-
Tightening torque	Nm		-	-
Tightening torque	lb-in		-	-
Required tool			-	

Product extensions

Networks
POWERLINK



POWERLINK

Ethernet POWERLINK is a common fieldbus for the connection of inverters to different control systems in plants.

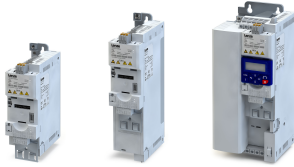
General information			
Design		Optional Integrated in standard I/O	
DC supply of the control electronics and optional fieldbus		internally via the inverter	Mains-dependent
		optionally: External supply	Mains-independent 24 V DC at X3/24E...GND

Terminal description			POWERLINK	POWERLINK
Connection			X286	X287
Connection type			RJ45	
Max. cable cross-section	mm ²		-	-
Max. cable cross-section	AWG		-	-
Stripping length	mm		-	-
Stripping length	inch		-	-
Tightening torque	Nm		-	-
Tightening torque	lb-in		-	-
Required tool			-	

Technical data			
Communication profile		POWERLINK	
		AC Drive	
Bus terminating resistor		not required	
integrated bus terminating resistor		No	
Network topology			
Without repeater		Tree, star and line	
With repeater		-	
Station			
Type		Adapter (controlled node, CN)	
Max. number		240	
Address		Station name	
Max. cable length	m	-	Not limited The length between the nodes is decisive.
Max. cable length between two nodes	m	100	
Process data			
Transmit PDOs		4 words	max. 16 bits (2 bytes) as a coherent PDO object
Receive PDOs		2 words	
Cycle time	ms	Multiple of 0.4 ms and 0.5 ms	
Other data		Additional TCP/IP channel	

Communication time			
Communication time depends on		Processing time in the inverter	Time between the start of a request and arrival of the response
		Telegram runtime (baud rate, telegram length)	
		Nesting depth of the network	
		Bus load	

Processing time of process data			
Update cycle, multiple of	ms	10	In the inverter
Processing time	ms	0 ... 1	
application task runtime of the technology application used (tolerance)	ms	1 ... x	



Other data			
Note		There are no interdependencies between parameter data and process data.	

Product extensions

Networks
PROFIBUS



PROFIBUS

PROFIBUS is a common fieldbus for the connection of inverters to different control systems in plants.

General information			
Design		Optional Integrated in standard I/O	
DC supply of the control electronics and optional fieldbus		internally via the inverter	Mains-dependent
		optionally: External supply	Mains-independent 24 V DC at X3/24E...GND

Bus-related information			
Name		PROFIBUS-DP	
Communication medium		RS485	
Use		Connection of the inverter to a PROFIBUS-DP network	
Connection system		9-pole Sub-D socket	
Status display		2 LEDs	
Connection designation		X226: Pin 1 ... 9	

Technical data			
Communication profile		PROFIBUS-DP-V0	DRIVECOM parameter data channel
		PROFIBUS-DP-V1	PROFIdrive parameter data channel
Bus terminating resistor	Ω	120	Terminated on both sides
integrated bus terminating resistor		No	
Network topology			
Without repeater		Line	
With repeater		-	
Station			
Type		Slave	
Max. number without repeater		32	per bus segment, incl. host system
Max. number with repeater		125	
Address		1 ... 127	Adjustable via code or DIP switch
Baud rate	kbps	9.6 ... 12000	Automatic detection for cable type A (EN 50170)
Max. bus length	m	1200	Per bus segment, depending on the baud rate and the used cable type
Max. cable length between two nodes		not limited, the max. bus length is decisive	
Process data			
PZD		1 ... 16 words (16 bits/word) in each direction	max. 32 bits (4 bytes) as a coherent PDO object
Transmission mode			
Data length, cyclic		1 ... 16 words, process data channel + 4 words of disconnectable parameter data channel	
Identification number		0x0E550	
User data			
Cyclic (DP-V0)		4 bytes	
Acyclic (DP-V1)		Max. 240 bytes	

Communication time			
Communication time depends on		Processing time in the inverter	Time between the start of a request and arrival of the response
		Telegram runtime (baud rate, telegram length)	
		Nesting depth of the network	
		Bus load	



Product extensions

Networks
PROFINET

Processing time of process data			
Update cycle, multiple of	ms	10	In the inverter
Processing time	ms	0 ... 1	
application task runtime of the technology application used (tolerance)	ms	1 ... x	

Other data			
Note		There are no interdependencies between parameter data and process data.	

PROFINET

PROFINET is a common fieldbus for the connection of inverters to different control systems in plants.

General information			
Design		Optional Integrated in standard I/O	
DC supply of the control electronics and optional fieldbus		internally via the inverter	Mains-dependent
		optionally: External supply	Mains-independent 24 V DC at X3/24E...GND

Terminal description			PROFINET	PROFINET
Connection			X257	X256
Connection type			RJ45	
Max. cable cross-section	mm ²		-	-
Max. cable cross-section	AWG		-	-
Stripping length	mm		-	-
Stripping length	inch		-	-
Tightening torque	Nm		-	-
Tightening torque	lb-in		-	-
Required tool			-	

Technical data			
Communication profile		PROFINET RT	
Bus terminating resistor		not required	
integrated bus terminating resistor		No	
Network topology			
Without repeater		Tree, star and line	
With repeater		-	
Station			
Type		I/O device with real time (RT) communication properties	
Max. number		255	Per subnetwork
Address		Station name	
Max. cable length	m	-	Not limited The length between the nodes is decisive.
Max. cable length between two nodes	m	100	
Process data			
Transmit PDOs		16 words	max. 32 bits (4 bytes) as a coherent PDO object
Receive PDOs		16 words	
Cycle time	ms	2,4,8,16	
Switching method		Store-and-Forward	
Switch latency	µs	~ 125	At maximum telegram length
Other data		Additional TCP/IP channel	

Product extensions

Functional safety

General information and basics



Functional safety

General information and basics

The functional safety describes the necessary measures that need to be taken by means of electrical or electronic equipment to prevent or eliminate dangers due to functional errors.

Protective devices prevent any human access to dangerous areas during normal operation. However, persons may have to be in the danger areas in certain operating modes. The machine operator is protected by internal drive and control measures in these operating modes

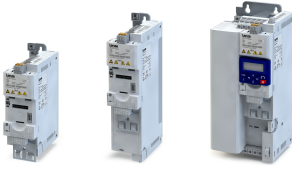
Integrated safety

The integrated safety technology fulfils the control and drive conditions for implementing the protective functions. The expenses for planning and installation decrease. The machine functionality and availability increases thanks to the use of integrated safety technology. The integrated safety technology is applicable for protecting personnel working with machines in accordance with the Machinery Directive.

The motion functions continue to be executed by the inverter. The integrated safety system monitors the safe compliance with the limit values and provides the safe inputs. If monitored limit values are exceeded, the integrated safety system initiates control functions in the inverter to counteract possible errors according to EN 61800–5–2.

Identification of the components

Safety components and the respective terminals are yellow.



Safety sensors

The components used must comply with the risk reduction required for the application.

Active sensors

Active sensors are units with 2-channel semiconductor outputs (OSSD outputs).

Test pulses for monitoring the outputs and lines are permissible.

P/M-switching sensors switch the positive and negative cable or the signal and ground cable of a sensor signal.

Please note the following:

- The maximum permissible connection capacity of the outputs.
- Active sensors are connected directly to the terminal strip, see section "Active sensor connection".
- Monitoring for short circuits must be carried out by the active sensor.

The outputs have to switch simultaneously (equivalently). Safety functions will be activated if only one channel is switched. Active triggering of only one channel points to faulty sensors or impermissible wiring.

Examples of active sensors:

- Lightgrid
- Laser scanner
- Control systems

Passive sensors

Passive sensors are 2-switching elements with contacts.

Please note the following:

- The switches must be wired according to the closed-circuit principle.
- Passive sensors are connected to the terminal strip via a safety switching device, see section "Passive sensor connection".
- The connecting cables and the sensor function must be monitored by an external safety component.

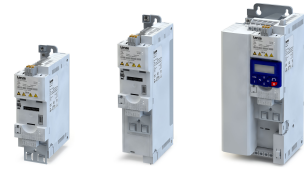
The contacts must switch simultaneously (equivalently). Safety functions will be activated if only one channel is switched. Switching of only one channel points to faulty sensors or impermissible wiring.

Examples of passive sensors:

- Door contact switch
- Emergency stop control units

Product extensions

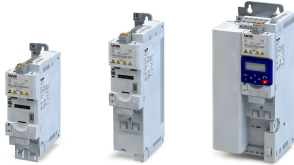
Functional safety
Safety functions



Safety functions

Supported safety functions for "Basic Safety-STO"

► [Safe Torque Off \(STO\)](#)  235



Safe Torque Off (STO)

The motor cannot generate torque and movements of the drive.

⚠ DANGER!

Automatic restart if the request of the safety function is deactivated.

Possible consequences: Death or severe injuries

- You must provide external measures according to EN ISO 13849–1 which ensure that the drive only restarts after a confirmation.

⚠ DANGER!

The power supply is not safely disconnected.

Death or serious injury due to electrical voltage.

- Turn off the power supply.

Details

Safe disconnection of the drive

1. A safety sensor requests the safety function.
 2. The pulse width modulation is safely switched off by the safety unit.
- The inverter switches to the STO active device status (0x6041, Bit15 = 0).

The power drivers do not generate a rotating field anymore.

The motor is safely switched to torqueless operation (STO).



The functional principle depicted applies to Basic Safety (STO) and Extended Safety. The terminals shown apply to Basic-Safety.

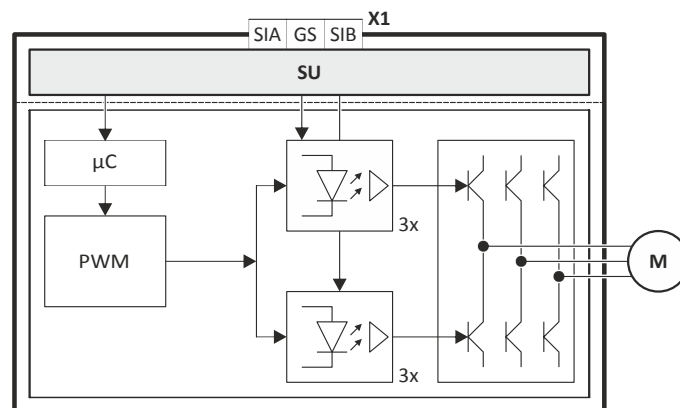


Fig. 13: Functional principle of safety technology for Extended Safety and Basic Safety (STO)

X1	Control terminals of the safety unit	μC	Microcontroller
SU	Basic Safety (STO) or Extended Safety	PWM	Pulse width modulation
		M	Motor

Functional description

Product extensions

Functional safety
Acceptance

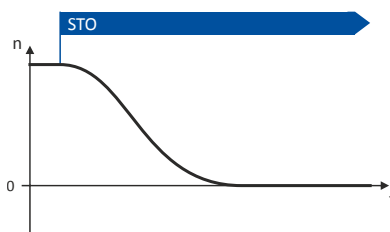


Fig. 14: Safety function STO



Functional sequence and error response have no adjustable parameters.

Truth table

Safe input / channel		Inverter	Inverter status word		CiA402 status word
SIA	SIB	Device status	Bit 55	Bit 155	Object 0x6041, bit 15
LOW	LOW	STO active	1	1	0
LOW	HIGH	Impermissible state	1	0	0
HIGH	LOW		1	0	0
HIGH	HIGH	Drive enabled	0	0	1



If the GS connection is interrupted or in case of a short circuit/short circuit of GS to SIA/SIB, STO is active.

Acceptance

The machine manufacturer must check and prove the operability of the safety functions used.

- The machine manufacturer must authorise a person with expertise and knowledge of the safety functions to carry out the test.
- The test result of every safety function must be documented and signed by the inspector.

A complete test comprises the following:

- Documenting the plant including the safety functions:
 - Creating an overview screen of the plant.
 - Describing the plant.
 - Describing the safety equipment.
 - Documenting the safety functions used.
 - Checking the function of the safety functions used.
- Preparing the test report:
 - Documenting the functional test.
 - Checking the parameters.
 - Signing the test report.
- Preparing the appendix with test records:
 - Protocols for the plant
 - External recording



The tester must repeat the test after each change and record the results in the test report.







Accessories



Accessories



Mains chokes

Mains chokes reduce the effects of the inverter on the supplying mains.

The switching operations in the inverter cause high-frequency interferences that will be transmitted unfiltered to the supplying mains. Mains chokes smooth the steep and pulse-like curves coming from the Inverter and make them more sinusoidal. Moreover, the effective mains current is reduced and thus energy is saved.

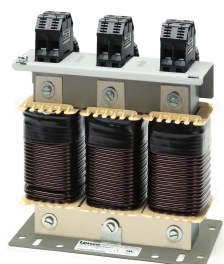
Mains chokes can be used without restrictions in conjunction with RFI filters.

Please note that the use of a mains choke reduces the mains voltage at the input of the inverter. The typical voltage drop across the mains choke is around 4 % at its rated point.



Inverters from 22 kW must always be used together with mains chokes.

For operation with the "Light Duty" load characteristic, inverters from 18.5 kW (i550-C11/400-3) must always be used together with mains chokes.



The adapted assignment of these accessories and the technical data are provided with the devices.

Accessories

RFI filters / Mains filters



RFI filters / Mains filters

RFI and mains filters are used to ensure compliance with the EMC requirements of European Standard EN 61800-3. This standard defines the EMC requirements for electrical drive system in various categories.

- RFI filters are capacitive accessory components. RFI filters reduce conducted noise emissions. RFI filters are also called EMC filters.
- Mains filters are a combination of mains choke and RFI filter. Mains filters reduce the conducted noise emission.

Definition of the environments

(EN 61800-3)

First environment

The first environment comprises residential buildings or locations that are directly connected to a low-voltage system for supplying residential areas.

Second environment

The second environment comprises facilities or locations that are not directly connected to a low-voltage system for supplying residential areas.

Category C1

Category C1 defines the requirements for drive systems that are intended for the use in the first environment at a rated voltage lower than 1000 V.

The limit values of the EN 61800-3 comply with EN 55011 class B.

Category C2

Category C2 defines the requirements for permanently installed drive systems that are intended for the use in the first environment at a rated voltage lower than 1000 V. Installation and commissioning must only be carried out by qualified personnel with EMC knowledge.

The limit values of the EN 61800-3 comply with EN 55011 class A group 1.

Category C3

Category C3 defines the requirements for drive systems that are exclusively intended for the use in the second environment at a rated voltage lower than 1000 V.

The limit values of the EN 61800-3 comply with EN 55011 class A group 2.



When working with stricter line-bound noise emission requirements which cannot be met using the radio interference suppression measures integrated in the inverter, external filters can be used. The filters can be installed below or next to the inverter.

If necessary, the internal filters have to be deactivated when external filters are used. For this purpose, remove the IT screws of the inverters.



Comparison of integrated and external RFI filters

RFI filters	Filter types			
	Integrated in the inverter	External		
		Low Leakage	Short Distance	Long Distance
Use	In standard applications.	In mobile systems.	With short cable length.	At switching frequencies 4 kHz and 8 kHz.
Optimisation	Easy use.	For low leakage current.	For low leakage current.	For long motor cable.
Reduces noise emissions	Cable-guided and radiated	Cable-guided	Cable-guided	Cable-guided



The adapted assignment of these accessories and the technical data are provided with the devices.

Sine filter

A sinusoidal filter in the motor cable limits the rate of voltage rise and the capacitive charge/discharge currents between the conductors that occur during inverter operation.



Only use a sinusoidal filter with standard asynchronous motors 0 to 550 V.
Operation only with V/f or square-law V/f characteristic control.
Set the switching frequency permanently to the specified value.
Limit the output frequency of the inverter to the given value.



The adapted assignment of these accessories and the technical data are provided with the devices.

Power supply units

For the external supply of the control electronics of the inverter.

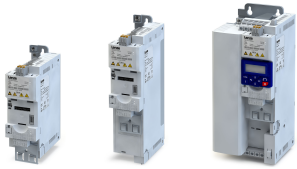
The parameterisation and diagnostics can be executed when the mains input at the inverter is deenergised.



Order code		EZV1200-000	EZV2400-000	EZV4800-000	EZV1200-001	EZV2400-001	EZV4800-001
Rated voltage	V	230			400		
Rated mains current	A	0.8	1.2	2.3	0.3	0.6	1.0
Input voltage	V	AC 85 - 264 DC 90 ...350			AC 320 ... 575 DC 450 ...800		
Output voltage	V	DC 22.5 - 28.5					
Rated output current	A	5.0	10.0	20.0	5.0	10.0	20.0

Accessories

Brake switches



Brake switches

For switching an electromechanical brake.

The brake switch consists of a rectifier and an electronic circuit breaker.

It is mounted on the control cabinet plate by means of two screws. Control is performed using a digital output on the inverter.



Brake switches		Half-wave rectifiers	Bridge rectifiers
Order code		E82ZWBRE	E82ZWBRB
Input voltage	V	AC 320 - 550	AC 180 - 317
Output voltage	V	DC 180 (with AC 400) DC 225 (with AC 500)	DC 205 (with AC 230)
Max. brake current	A	0.61	0.54



Mounting

Shield mounting kit

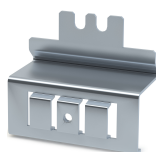
Motor cable

If the shielding of the motor cable is centrally connected to an earthing bus in the control cabinet, no shielding is required.

For a direct connection of the shielding of the motor cable to the inverter, the optionally available accessories can be used consisting of shield sheet and fixing clips or wire clamps.



From 15 kW, the shield sheet is integrated.



Inverter	Shield mounting kit	
	Order code	VPE
		Piece
i550-C0.25/230-1	EZAMBHXM014/M	5x motor shield sheet 10x fixing clip
i550-C0.25/230-2		
i550-C0.37/230-1		
i550-C0.37/230-2		
i550-C0.55/230-1		
i550-C0.55/230-2		
i550-C0.75/230-1		
i550-C0.75/230-2		
i550-C1.1/230-1		
550-C1.1/230-2		
i550-C1.5/230-1		
i550-C1.5/230-2		
i550-C2.2/230-1		
i550-C2.2/230-2		
i550-C0.37/400-3		
i550-C0.55/400-3		
i550-C0.75/400-3		
i550-C1.1/400-3		
i550-C1.5/400-3		
i550-C2.2/400-3		
i550-C3.0/400-3	EZAMBHXM015/M	5x motor shield sheet 5x fixing clip 5x wire clamp (cable diameter 4 ... 15 mm)
i550-C4.0/400-3		
i550-C5.5/400-3		
i550-C7.5/400-3	EZAMBHXM016/M	5x motor shield sheet 5x fixing clip 5x wire clamp (cable diameter 10 ... 20 mm)
i550-C11/400-3		
i550-C15/400-3	EZAMBHXM004/M EZAMBHXM005/M	5x wire clamp (cable diameter 15 ... 28 mm) 5x wire clamp (cable diameter 20 ... 37 mm)
i550-C18.5/400-3		
i550-C22/400-3		
i550-C30/400-3		
i550-C37/400-3		
i550-C45/400-3	EZAMBHXM005/M	5x wire clamp (cable diameter 20 ... 37 mm)
i550-C55/400-3		
i550-C75/400-3		

Accessories

Mounting
Terminal strips



Shield mounting of the control cables

In case of the control unit, the shield sheet for control cables is integrated.

Usually, the shields can be fixed with standard plastic cable ties.

Optionally, fixing clips are suitable for the shield connections of the control cables of inverters 0.25 kW ... 0.75 kW.

Shield mounting kit	
Order code	VPE
	Piece
EZAMBHXM007/M	20x fixing clip

Terminal strips

For connecting the inverter, the connections are equipped with pluggable terminal strips. Pluggable terminal strips are available separately for service purposes or if cable harnesses need to be physically separated.

Inverter	Terminal strips Mains connection X100		Terminal strips Motor connection X105			
	Order code	VPE	Order code	VPE		
		Piece		Piece		
i550-C0.25/230-1	EZA EVE032/M	10	EZA EVE039/M	5		
i550-C0.37/230-1						
i550-C0.55/230-1						
i550-C0.75/230-1						
i550-C1.1/230-1	EZA EVE033/M					
i550-C1.5/230-1						
i550-C2.2/230-1						
i550-C0.25/230-2	EZA EVE034/M	10				
i550-C0.37/230-2						
i550-C0.55/230-2						
i550-C0.75/230-2						
i550-C1.1/230-2	EZA EVE035/M					
i550-C1.5/230-2						
i550-C2.2/230-2						
i550-C0.37/400-3	EZA EVE037/M	5				
i550-C0.55/400-3						
i550-C0.75/400-3						
i550-C1.1/400-3						
i550-C1.5/400-3						
i550-C2.2/400-3						

Terminal strips	Order code	VPE	Terminal strips	Order code	VPE
		Piece			Piece
Safety (STO) X1	EZA EVE029/M	10	Standard I/O X3	EZA EVE040/M	5
Relay X9	EZA EVE030/M	10	Application-I/O X3	EZA EVE041/M	5
Motor PTC X109	EZA EVE031/M	10	CANopen / Modbus X216	EZA EVE042/M	10



Purchase order

Notes on ordering

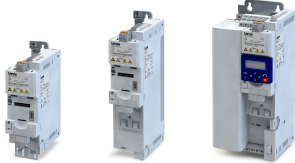
There are two ways to order an inverter.

As a complete inverter or as single components consisting of power unit, control unit and safety module.

Complete inverter	Inverter consisting of components
	 Power unit Control unit Safety module

Purchase order

Order code



Order code

Delivery as complete inverter

If always the same inverter is used in the machine the inverter can be ordered "out of the box".

Order data: Order code of the complete device.

Order example

Description of the component	Order code
Complete inverter	i55AE222F1AV10002S
3-phase mains connection 400 V	
Power 2.2 kW (i550-C2.2/400-3)	
Safety engineering: STO safety function	
Default setting of parameters: EU region (50-Hz systems)	
Standard I/O with CANopen	



Complete inverter								
Performance		Inverter	Order code					
kW	HP							
1-phase mains connection 120 V, EMC filter not integrated								
0.25	0.33	i550-C0.25/120-1	i55AE125A1					
0.37	0.5	i550-C0.37/120-1	i55AE137A1					
0.75	1	i550-C0.75/120-1	i55AE175A1					
1.1	1.5	i550-C1.1/120-1	i55AE211A1					
1-phase mains connection 230 V, EMC filter integrated								
0.25	0.33	i550-C0.25/230-1	i55AE125B1					
0.37	0.5	i550-C0.37/230-1	i55AE137B1					
0.55	0.75	i550-C0.55/230-1	i55AE155B1					
0.75	1	i550-C0.75/230-1	i55AE175B1					
1.1	1.5	i550-C1.1/230-1	i55AE211B1					
1.5	2	i550-C1.5/230-1	i55AE215B1					
2.2	3	i550-C2.2/230-1	i55AE222B1					
1/3-phase mains connection 230/240 V, EMC filter not integrated								
0.25	0.33	i550-C0.25/230-2	i55AE125D1					
0.37	0.5	i550-C0.37/230-2	i55AE137D1					
0.55	0.75	i550-C0.55/230-2	i55AE155D1					
0.75	1	i550-C0.75/230-2	i55AE175D1					
1.1	1.5	i550-C1.1/230-2	i55AE211D1					
1.5	2	i550-C1.5/230-2	i55AE215D1					
2.2	3	i550-C2.2/230-2	i55AE222D1					
3-phase mains connection 230/240 V, EMC filter not integrated								
4.0	5	i550-C4.0/230-3	i55AE240C1					
5.5	7.5	i550-C5.5/230-3	i55AE255C1					
3-phase mains connection 400/480 V, EMC filter integrated								
0.37	0.5	i550-C0.37/400-3	i55AE137F1					
0.55	0.75	i550-C0.55/400-3	i55AE155F1					
0.75	1	i550-C0.75/400-3	i55AE175F1					
1.1	1.5	i550-C1.1/400-3	i55AE211F1					
1.5	2	i550-C1.5/400-3	i55AE215F1					
2.2	3	i550-C2.2/400-3	i55AE222F1					
3	4	i550-C3.0/400-3	i55AE230F1					
4	5	i550-C4.0/400-3	i55AE240F1					
5.5	7.5	i550-C5.5/400-3	i55AE255F1					
7.5	10	i550-C7.5/400-3	i55AE275F1					
11	15	i550-C11/400-3	i55AE311F1					
15	20	i550-C15/400-3	i55AE315F1					
18.5	25	i550-C18/400-3	i55AE318F1					
22	30	i550-C22/400-3	i55AE322F1					
30	40	i550-C30/400-3	i55AE330F1					
37	50	i550-C37/400-3	i55AE337F1					
45	60	i550-C45/400-3	i55AE345F1					
55	74	i550-C55/400-3	i55AE355F1					
75	100	i550-C75/400-3	i55AE375F1					
90	120	i550-C90/400-3	i55AE390F1					
110	150	i550-C110/400-3	i55AE411F1					
Continuation ...								

Purchase order

Order code



Complete inverter				
Performance		Inverter	Order code	
kW	HP			
Continuation ...				
Safety engineering		V		
Without safety engineering				0
Safety function STO				A
Not relevant				
EMC filter				
not integrated	i550-Cxxx/ 120-1 i550-Cxxx/ 230-2 i550-Cxxx/ 230-3	0		
Integrated	i550-Cxxx/ 230-1 i550-Cxxx/ 400-3	1		
Delivery status				
Default setting of parameters: EU region (50-Hz systems)			0	
Default setting of parameters: US region (60-Hz systems)			1	
Control unit				
Standard I/O without network			000S	
Application I/O without network			001S	
Standard I/O with CANopen			002S	
Standard I/O with Modbus RTU			003S	
Standard I/O with Modbus TCP			00WS	
Standard I/O with PROFIBUS			004S	
Standard I/O with EtherCAT			00KS	
Standard I/O with PROFINET			00LS	
Standard I/O with EtherNet/IP			00MS	
Standard I/O with POWERLINK			012S	

Delivery of individual components

If different product versions are required in the machine, the various components can be ordered individually. Depending on the application, the components can be plugged together easily an without any further tools.

Order data: Order codes of the individual components.

Order example

Description of components	Order code
Power unit	
3-phase mains connection 400/480 V	I5DAE222F10V10000S
Power 2.2 kW (i550-C2.2/400-3)	
Safety module	
Safety function STO	I5MASAV000000S
Control unit	
Standard I/O with CANopen	I5CA5C02000VA0000S
Default setting of parameters: EU region (50-Hz systems)	



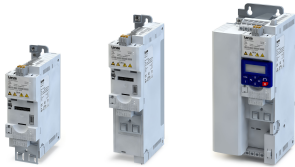
Purchase order

Order code

Power unit			
Performance		Inverter	Order code
kW	HP		
1-phase mains connection 120 V, EMC filter not integrated			
0.25	0.33	i550-C0.25/120-1	I5DAE125A10V00000S
0.37	0.5	i550-C0.37/120-1	I5DAE137A10V00000S
0.75	1	i550-C0.75/120-1	I5DAE175A10V00000S
1.1	1.5	i550-C1.1/120-1	I5DAE211A10V00000S
1-phase mains connection 230 V, EMC filter integrated			
0.25	0.33	i550-C0.25/230-1	I5DAE125B10V10000S
0.37	0.5	i550-C0.37/230-1	I5DAE137B10V10000S
0.55	0.75	i550-C0.55/230-1	I5DAE155B10V10000S
0.75	1	i550-C0.75/230-1	I5DAE175B10V10000S
1.1	1.5	i550-C1.1/230-1	I5DAE211B10V10000S
1.5	2	i550-C1.5/230-1	I5DAE215B10V10000S
2.2	3	i550-C2.2/230-1	I5DAE222B10V10000S
1/3-phase mains connection 230/240 V, EMC filter not integrated			
0.25	0.33	i550-C0.25/230-2	I5DAE125D10V00000S
0.37	0.5	i550-C0.37/230-2	I5DAE137D10V00000S
0.55	0.75	i550-C0.55/230-2	I5DAE155D10V00000S
0.75	1	i550-C0.75/230-2	I5DAE175D10V00000S
1.1	1.5	i550-C1.1/230-2	I5DAE211D10V00000S
1.5	2	i550-C1.5/230-2	I5DAE215D10V00000S
2.2	3	i550-C2.2/230-2	I5DAE222D10V00000S
3-phase mains connection 230/240 V, EMC filter not integrated			
4.0	5	i550-C4.0/230-3	I5DAE240C10V00000S
5.5	7.5	i550-C5.5/230-3	I5DAE255C10V00000S
3-phase mains connection 400/480 V, EMC filter integrated			
0.37	0.5	i550-C0.37/400-3	I5DAE137F10V10000S
0.55	0.75	i550-C0.55/400-3	I5DAE155F10V10000S
0.75	1	i550-C0.75/400-3	I5DAE175F10V10000S
1.1	1.5	i550-C1.1/400-3	I5DAE211F10V10000S
1.5	2	i550-C1.5/400-3	I5DAE215F10V10000S
2.2	3	i550-C2.2/400-3	I5DAE222F10V10000S
3	4	i550-C3.0/400-3	I5DAE230F10V10000S
4	5	i550-C4.0/400-3	I5DAE240F10V10000S
5.5	7.5	i550-C5.5/400-3	I5DAE255F10V10000S
7.5	10	i550-C7.5/400-3	I5DAE275F10V10000S
11	15	i550-C11/400-3	I5DAE311F10V10000S
15	20	i550-C15/400-3	I5DAE315F10V10000S
18.5	25	i550-C18/400-3	I5DAE318F10V10000S
22	30	i550-C22/400-3	I5DAE322F10V10000S
30	40	i550-C30/400-3	I5DAE330F10V10000S
37	50	i550-C37/400-3	I5DAE337F10V10000S
45	60	i550-C45/400-3	I5DAE345F10V10000S
55	74	i550-C55/400-3	I5DAE355F10V10000S
75	100	i550-C75/400-3	I5DAE375F10V10000S
90	120	i550-C90/400-3	I5DAE390F10V10000S
110	150	i550-C110/400-3	I5DAE411F10V10000S
Safety module			Order code
Safety function STO			I5MASAV000000S

Purchase order

Order code



Control unit	Order code	
	Delivery status Default setting of parameters: EU region (50-Hz systems)	Delivery status Default setting of parameters: US region (60-Hz systems)
Standard I/O without network	I5CA5002000VA0000S	I5CA5002000VA1000S
Application I/O without network	I5CA5003000VA0000S	I5CA5003000VA1000S
Standard I/O with CANopen	I5CA5C02000VA0000S	I5CA5C02000VA1000S
Standard I/O with Modbus RTU	I5CA5W02000VA0000S	I5CA5W02000VA1000S
Standard I/O with Modbus TCP	I5CA5V02000VA0000S	I5CA5V02000VA1000S
Standard I/O with PROFIBUS	I5CA5P02000VA0000S	I5CA5P02000VA1000S
Standard I/O with EtherCAT	I5CA5T02000VA0000S	I5CA5T02000VA1000S
Standard I/O with PROFINET	I5CA5R02000VA0000S	I5CA5R02000VA1000S
Standard I/O with EtherNet/IP	i5CA5G02000VA0000S	I5CA5G02000VA1000S
Standard I/O with POWERLINK	I5CA5N02000VA0000S	I5CA5N02000VA1000S



Appendix

Good to know

Approvals/directives

CCC	China Compulsory Certification documents the compliance with the legal product safety requirements of the PR of China - GB standards.
cCSA _{US}	CSA certificate, tested according to US and Canada standards
CE	Communauté Européenne documents the declaration of the manufacturer that EC Directives are complied with.
CEL	China Energy Label documents the compliance with the legal energy efficiency requirements for motors, tested according to PR of China standards
CSA	Canadian Standards Association CSA certificate, tested according to Canada standards
UL ^{Energy} _{US CA}	Energy Verified Certificate Determining the energy efficiency according to CSA C390 for products within the scope of energy efficiency requirements in the USA and Canada
cUL _{US}	UL certificate for products, tested according to US and Canada standards
cUR _{US}	UL certificate for components, tested according to US and Canada standards
EAC	Customs union Russia / Belarus / Kazakhstan certificate documents the declaration of the manufacturer that the specifications for the Eurasian conformity (EAC) required for placing electronic and electromechanical products on the market of the entire territory of the Customs Union (Russia, Belarus, Kazakhstan) are complied with.
UL	Underwriters Laboratory Listed Product
UR	UL certificate for components, tested according to US standards



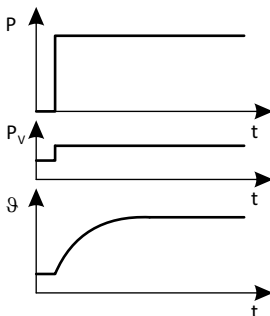
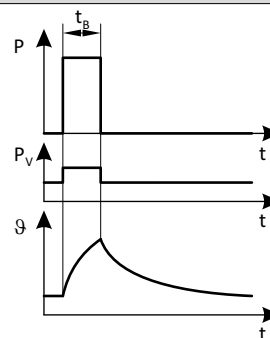
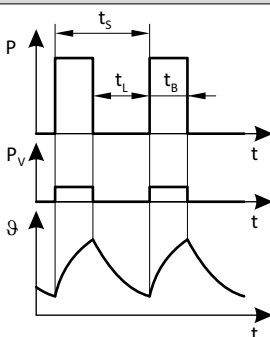
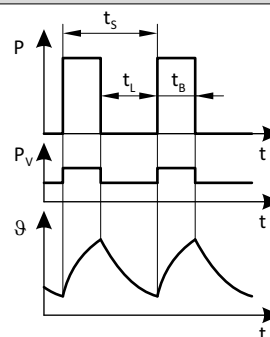
Operating modes of the motor

Operating modes S1 ... S10 as specified by EN 60034-1 describe the basic stress of an electrical machine.

In continuous operation a motor reaches its permissible temperature limit if it outputs the rated power dimensioned for continuous operation. However, if the motor is only subjected to load for a short time, the power output by the motor may be greater without the motor reaching its permissible temperature limit. This behaviour is referred to as overload capacity.

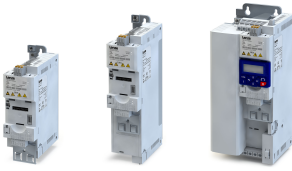
Depending on the duration of the load and the resulting temperature rise, the required motor can be selected reduced by the overload capacity.

The most important operating modes

Continuous operation S1	Short-time operation S2
	
Operation with a constant load until the motor reaches the thermal steady state. The motor may be actuated continuously with its rated power.	Operation with constant load; however, the motor does not reach the thermal steady state. During the following standstill, the motor winding cools down to the ambient temperature again. The increase in power depends on the load duration.
Intermittent operation S3	Non-intermittent periodic operation S6
	
Sequence of identical duty cycles comprising operation with a constant load and subsequent standstill. Start-up and braking processes do not have an impact on the winding temperature. The steady-state is not reached. The guide values apply to a cycle duration of 10 minutes. The power increase depends on the cycle duration and on the load period/downtime ratio.	Sequence of identical duty cycles comprising operation with a constant load and subsequent no-load operation. The motor cools down during the no-load phase. Start-up and braking processes do not have an impact on the winding temperature. The steady-state is not reached. The guide values apply to a cycle duration of 10 minutes. The power increase depends on the cycle duration and on the load period/idle time ratio.

P Power
t Time
 t_L Idle time
 ϑ Temperature

P_v Power loss
 t_B Load period
 t_S Cycle duration



Motor control types

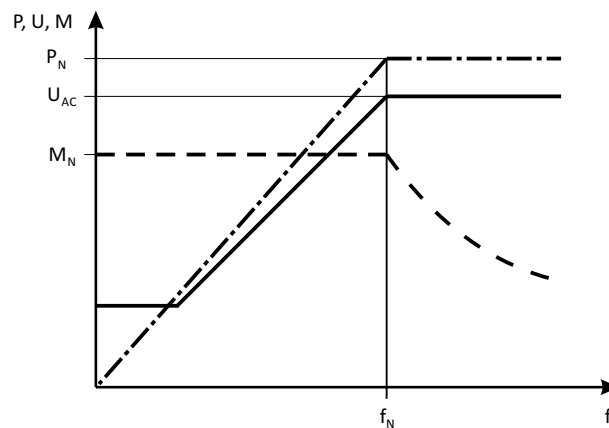
The inverter provides various motor control types.

Linear V/f characteristic control

The output voltage is increased proportionately to the output frequency.

In case of low output frequencies, the motor voltage can be increased to ensure a minimum current for the breakaway torque. In the field weakening range, the output voltage of the inverter is constant (mains voltage) and the frequency can be further increased depending on the load. The maximum torque of the motor is reduced squarely to the frequency increase. the maximum output power of the motor being constant.

Application areas are for instance: Single drives with constant load.



P	Power	M_{rated}	Rated torque
V	Voltage	f_{rated}	Rated frequency
M	Torque	M_{rated}	Rated torque
f	Frequency	f_{rated}	Rated frequency

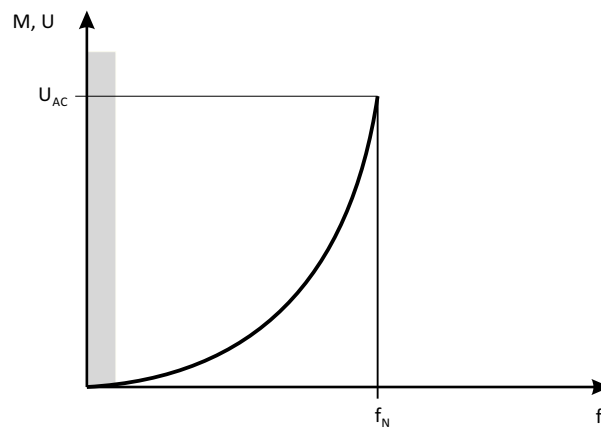
Square-law V/f characteristic control

The output voltage is increased squarely to the output frequency.

In case of low output frequencies, the motor voltage can be increased to ensure a minimum current for the breakaway torque. In the field weakening range, the output voltage of the inverter is constant (mains voltage) and the frequency can be further increased depending on the load. The maximum torque of the motor is reduced squarely to the frequency increase. the maximum output power of the motor being constant.

Application areas are for instance:

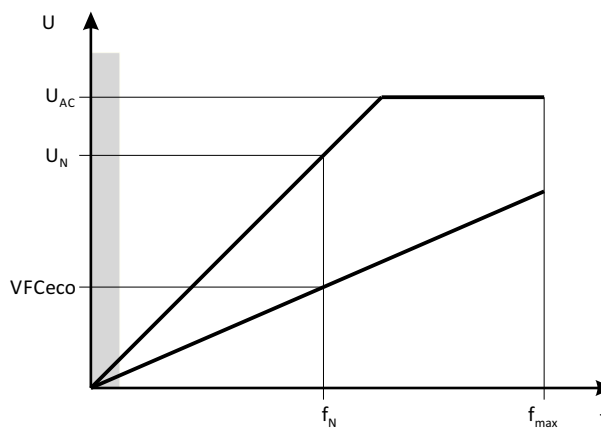
- Pumps
- Fans
- Fan



V	Voltage	U_{AC}	Mains voltage
f	Frequency	f_{rated}	Rated frequency
M	Torque		

VFCeco

The VFCeco mode has a special effect in the partial load operational range. Usually, three-phase AC motors are supplied there with a higher magnetising current than required by the operating conditions. The VFCeco mode reduces the losses in the partial load operational range so that savings up to 30 % are possible.



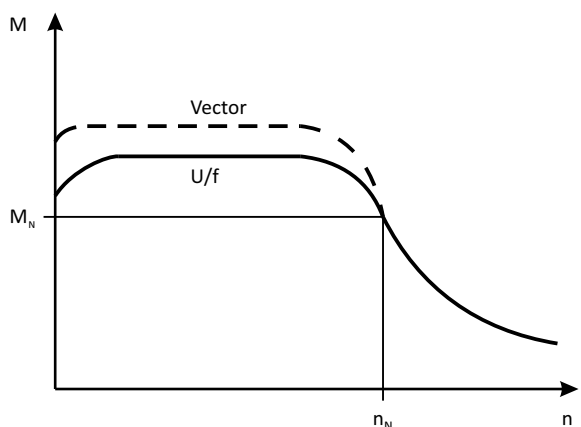
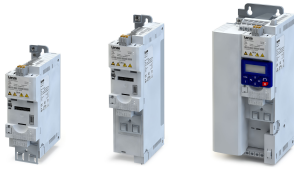
V	Voltage	f	Frequency
U_{AC}	Mains voltage	f_{rated}	Rated frequency
U_{rated}	Rated voltage	f_{max}	Max. frequency

Sensorless vector control (SLVC)

In vector control, an inverted voltage model is used for calculation. The parameters are detected via a parameter identification. The inverter determines the angle between current and voltage. This imposes a current on the motor".

Compared to the V/f characteristic control, the vector control serves to achieve improved drive characteristics thanks to:

- higher torque throughout the entire speed range
- higher speed accuracy and higher concentricity factor
- higher efficiency



M	Torque	M_{rated}	Rated torque
n	Speed	n_{rated}	Rated speed

- Application areas are for instance:
- Single drives with changing loads
 - Single drives with high starting duty
 - Sensorless speed control of three-phase AC motors

Switching frequencies

On an inverter, the term "switching frequency" is understood to mean the frequency with which the input and outputs of the output module (inverter) are switched. On an inverter, the switching frequency can generally be set to values between 2 and 16 kHz, whereby the selection is based on the respective power output

As switching the modules cause heat losses, the inverter can provide higher output currents at low switching frequencies than at high frequencies. Additionally, it is distinguished between the operation at a permanently set switching frequency and a variably set switching frequency. Here, the switching frequency is automatically reduced as a function of the device utilisation.

At a higher switching frequency, the noise generation is less.

Features	Versions
Switching frequencies	• 2 kHz • 4 kHz • 8 kHz • 16 kHz • variable (automatic adjustment)



Enclosures

The degree of protection indicates the suitability of a motor for specific ambient conditions with regard to humidity as well as the protection against contact and the ingress of foreign particles. The degrees of protection are classified by EN 60529.

The first code number after the code letters IP indicates the protection against the ingress of foreign particles and dust. The second code number refers to the protection against the ingress of humidity.

Code number 1	Degree of protection	Code number 2	Degree of protection
0	No protection	0	No protection
1	Protection against the ingress of foreign particles $d > 50$ mm. No protection in case of deliberate access.	1	Protection against vertically dripping water (dripping water).
2	Protection against medium-sized foreign particles, $d > 12$ mm, keeping away fingers or similar.	2	Protection against diagonally falling water (dripping water), 15° compared to normal service position.
3	Protection against small foreign particles $d > 2.5$ mm. Keeping away tools, wires or similar.	3	Protection against spraying water, up to 60° to the vertical
4	Protection against granular foreign particles, $d > 1$ mm, keeping away tools, wire or similar.	4	Protection against spraying water from all directions.
5	Protection against dust deposits (dust-protected), complete protection against contact.	5	Protection against water jets from all directions.
6	Protection against the ingress of dust (dust-proof), complete protection against contact.	6	Protection against choppy seas or heavy water jets (flood protection).

Glossary

Abbreviation	Meaning
AIE	Acknowledge In Error
AIS	Acknowledge In Stop
OFF state	Signal status of the safety sensor when it triggers or responds
CCF	Common Cause Error (also β -value)
EC_FS	Error Class Fail Safe
EC_SS1	Error Class Stop 1
EC_SS2	Error Class Stop 2
EC_STO	Error Class Stop 0
ON – status	Signal status of the safety sensor in normal operation
FIT	Failure In Time, 1 FIT = 10^{-9} Error/h
FMEA	Failure Mode and Effect Analysis
FSOE	Safety over EtherCAT (Fail Safe over EtherCAT)
GSDML	File with device-specific data for establishing PROFINET communication
HFT	Hardware Failure Tolerance
Cat.	Category in accordance with EN ISO 13849-1
OSSD	Output Signal Switching Device, tested signal output
PELV	Functional extra-low voltage with safe isolation (Protective Extra Low Voltage)
PL	Performance Level (in accordance with ISO 13849)
PM	Plus-Minus – switched signal paths
PP	Plus-Plus – switched signal paths
PS	PROFIsafe
PWM	Pulse width modulation
SCS	Safe crawling speed
SD-In	Safe Digital Input
SD-Out	Safe Digital Output
SELV	Safety Extra Low Voltage
SFF	Safe Failure Fraction
SIL	Safety Integrity Level in accordance with IEC 61508

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