

Legend for fold-out page		see
A	Jumper	 38
B	Analog inputs, terminal strip X3.1	
C	Analog outputs, terminal strip X3.2	 35
D	Digital inputs and outputs, terminal strip X3.3	 36
E	Nameplate	 25



Tip!

Current documentation and software updates concerning Lenze products can be found on the Internet in the "Services & Downloads" area under <http://www.Lenze.com>

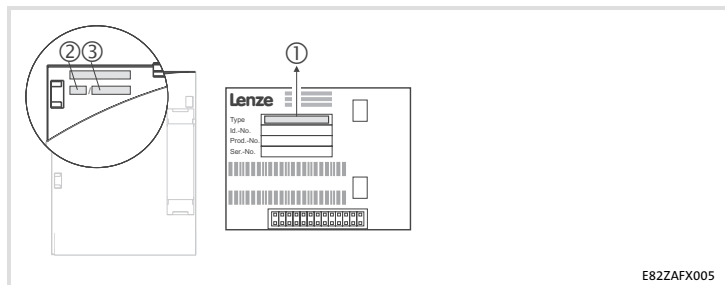
Validity

These instructions are valid for

► E82ZAFAC001, APPLICATION I/O function modules, as of version 3A.30.

These instructions are only valid together with the Operating Instructions for the standard devices permitted for the application.

Identification



E82ZAFX005

	①			②	③	
	E82ZAF	A	C	001	3A	30
Series						
APPLICATION I/O						
Generation						
Variant						
001: Coated design						
Hardware version						
Software version						

Order designation

E82ZAFAC00x3A30

Function

The function module enables the user to control Lenze frequency inverters with analog and digital control signals.

Application range

Can be used with		As of version
Frequency inverter	8200 vector	Vx14
	8200 motec	Vx14

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Definition of notes used

The following pictographs and signal words are used in this documentation to indicate dangers and important information:

Safety instructions

Structure of safety instructions:



Danger!

(characterises the type and severity of danger)

Note

(describes the danger and gives information about how to prevent dangerous situations)

Pictograph and signal word	Meaning
 Danger!	Danger of personal injury through dangerous electrical voltage. Reference to an imminent danger that may result in death or serious personal injury if the corresponding measures are not taken.
 Danger!	Danger of personal injury through a general source of danger. Reference to an imminent danger that may result in death or serious personal injury if the corresponding measures are not taken.
 Stop!	Danger of property damage. Reference to a possible danger that may result in property damage if the corresponding measures are not taken.

1 Safety instructions

Definition of notes used

Application notes

Pictograph and signal word	Meaning
 Note!	Important note to ensure troublefree operation
 Tip!	Useful tip for simple handling
	Reference to another documentation

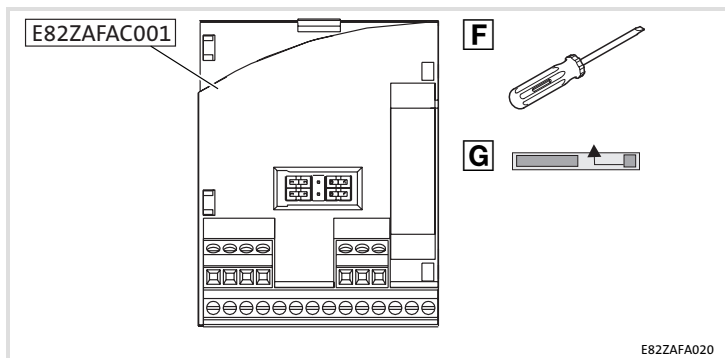
Residual hazards



Danger!

Observe the safety instructions and residual hazards included in the instructions for the standard device.

2 Scope of supply



Pos.	Scope of supply
	E82ZAFAC001 function module
	Mounting Instructions
F	Screwdriver
G	Adhesive tape

Follow the notes given in the Mounting Instructions for the standard device for the mechanical installation of the function module.

The Mounting Instructions for the standard device ...

- ▶ are part of the scope of supply and are enclosed with each device.
- ▶ provide tips for avoiding damage through improper handling.
- ▶ describe the obligatory order of installation steps.

4 Electrical installation

Wiring according to EMC

Wiring according to EMC

Please observe the following for wiring according to EMC guidelines:



Note!

- ▶ Separate control cables from motor cables.
- ▶ Lead the shields as far as possible to the terminals (unshielded core length < 40 mm).
- ▶ Connect control and data cable shields as follows:
 - *Analog* signal cable shields must be connected *with one end* at the inverter.
 - *Digital* signal cable shields must be connected *with both ends*.
- ▶ More information about wiring according to EMC guidelines can be obtained from the corresponding documentation for the standard device.

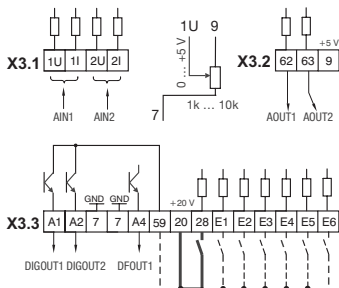
Wiring

Terminal data

Electrical connection	Terminal strip with screw connection
Possible connections	 rigid: 1.5 mm ² (AWG 16)
	flexible:
	 without wire end ferrule 1.0 mm ² (AWG 18)
	 with wire end ferrule, without plastic sleeve 0.5 mm ² (AWG 20)
	 with wire end ferrule, with plastic sleeve 0.5 mm ² (AWG 20)
Tightening torque	0.22 ... 0.25 Nm (1.9 ... 2.2 lb-in)
Bare end	5 mm

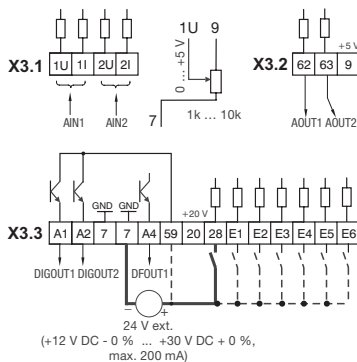
4 Electrical installation

Controller inhibit (CINH) supply via internal voltage source (X3.3/20)



E82ZAF001

Controller inhibit (CINH) supply via external voltage source



E82ZAF002

Minimum wiring required for operation

X3.1/	Signal type	Function	Level (Lenze setting: in bolt print)
1U/2U	Analog inputs	Actual or setpoint inputs (master voltage) Use jumper and C0034 to change range	0 ... +5 V 0 ... +10 V -10 V ... +10 V
1I/2I		Actual or setpoint inputs (master current) Use jumper and C0034 to change range	0 ... +20 mA +4 ... +20 mA +4 ... +20 mA (open-circuit monitored)
X3.2/	Signal type	Function	Level (Lenze setting: in bolt print)
62	Analog outputs	Output frequency	Voltage output: 0 ... +6 V 0 ... +10 V ¹⁾ Current output: (0 ... +12 mA) 0 ... +20 mA ¹⁾ +4 ... +20 mA ¹⁾
63		Motor current	
9	-	Internal, stabilised DC voltage supply for setpoint potentiometer	+5.2 V

¹⁾ Output level 0 ... + 10 V or 0/+4 ... +20 mA: Adapt offset (C0422) and gain (C0420).

4 Electrical installation

X3.3/	Signal type	Function	Level (Lenze setting: in bolt print)
A1	Digital outputs	Ready for operation	0/+20 V at DC internal 0/+24 V at DC external
A2		Not prefabricated	
7	-	GND, reference potential	-
A4	Frequency output	DC-bus voltage	HIGH: +18 V ... +24 V (HTL) LOW: 0 V
59	-	DC supply for X3/A1 and X3/A2	+20 V (internal, bridge to X3/20) +24 V (external)
20	-	Internal DC voltage supply for control of digital inputs and outputs	+20 V $\pm$ 10 %
28	Digital inputs	Controller inhibit (CINH)	1 = START
E1 ¹⁾		Activation of JOG frequencies JOG1 = 20 Hz JOG2 = 30 Hz JOG3 = 40 Hz	
			E1
			E2
E2 ¹⁾			
E3		DC-injection brake (DCB)	1 = DCB
E4		Change of direction of rotation CW/CCW rotation	
			E4
E5		Not prefabricated	-
E6		Not prefabricated	-

¹⁾ Optional frequency input 0 ... 102.4 kHz (single-tracked or double-tracked), configuration via C0425

Before switching on

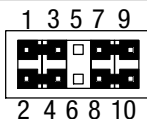


Note!

- ▶ If your configuration differs from the Lenze settings, please read the instructions given under "Individual settings".  40
- ▶ Please observe
 - that the jumpers can only be plugged when the device is switched off.
 - that the jumpers at the function module are set correctly.  38
 - that C0034 matches the jumper setting  38Example: Bipolar setpoint selection (-10 ... +10 V) via X3.1/1U
⇒ C0034/1 = 1, jumper in position "7 - 9"

5 Commissioning

Jumper positions for inputs



Lenze setting (bold printing in tables)

- 1 - 3
- 2 - 4
- 7 - 9
- 8 - 10



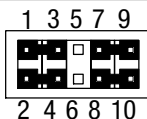
Note!

If a setpoint potentiometer is supplied internally via X3.2/9, the jumper must be set between 0 ... +5 V. Otherwise it is not possible to use the whole speed range.

Analog inputs		Possible levels		
		0 ... +5 V	0 ... +10 V	-10 ... +10 V
X3.1/1U Analog input 1, AIN1	Jumper	7 - 9: free	7 - 9	7 - 9
	Code	C0034/1 = 0	C0034/1 = 0	C0034/1 = 1
X3.1/2U Analog input 2, AIN2	Jumper	8 - 10: free	8 - 10	8 - 10
	Code	C0034/2 = 0	C0034/2 = 0	C0034/2 = 1

Analog inputs		Possible levels		
		0 ... +20 mA	+4 ... +20 mA	+4 ... +20 mA ¹⁾
X3.1/1I Analog input 1, AIN1	Jumper	optional	optional	optional
	Code	C0034/1 = 2	C0034/1 = 3	C0034/1 = 4
X3.1/2I Analog input 2, AIN2	Jumper	optional	optional	optional
	Code	C0034/2 = 2	C0034/2 = 3	C0034/2 = 4

¹⁾ open-circuit monitored



Lenze setting (bold printing in tables)

- 1 - 3
- 2 - 4
- 7 - 9
- 8 - 10

Analog outputs		Possible levels		
		0 ... +10 V	0 ... +20 mA	+4 ... +20 mA
X3.2/62 Analog output 1, AOUT1	Jumper	1 - 3	3 - 5	3 - 5
	Code	C0424/1 = 0	C0424/1 = 0	C0424/1 = 1
X3.2/63 Analog output 2, AOUT2	Jumper	2 - 4	4 - 6	4 - 6
	Code	C0424/2 = 0	C0424/2 = 0	C0424/2 = 1

5 Commissioning

Commissioning using Lenze settings

Commissioning using Lenze settings

Step	Procedure	Comments
1.	Switch on the mains voltage.	After approx. 1 second, the controller is ready for operation. Controller inhibit is active. Controller reaction The green LED is blinking. Keypad: RDY IMP (if attached)
2.	Control digital inputs.	Lenze setting • CW rotation: – E1, E2, E3, E4: LOW • CCW rotation: – E1, E2, E3: LOW – E4: HIGH Individual setting Adapt digital inputs under C0007 or C0410. The digital inputs must be controlled so that the drive can start via terminal after controller enable.
3.	Select setpoint	Lenze setting Setpoint: 0 ... +10 V Individual setting • Depending on jumper position at module – Apply master current to X3.1/1I or X3.1/2I or – apply master voltage to X3.1/1U or X3.1/2U • Check C0034
4.	Enable controller via terminal.	Lenze setting X3.3/28 = HIGH (+12 V ... +30 V) Controller reaction The green LED is on. Keypad: IMP Off
5.	The drive should be running now.	



Note!

- The controller is only ready for operation if a HIGH signal is applied to X3.3/28 (controller enable via terminal).
 - Please observe that the controller can be inhibited through various sources. All sources act like a series connection of switches.
 - If the drive does not start although the controller has been enabled via X3.3/28, check whether the controller has been inhibited through a different source. Another source could be the **STOP**-key of the keypad.

Connection data

X3.1/	
1U/2U 1I/2I	Temperature error (0...+60°C) for level (ref. to current value): 0 ... +5 V: 1 % 0 ... +10 V: 0.6 % -10 ... +10 V: 0.6 % 0/+4 ... +20 mA: 0.6 % Linearity error: ± 0.5 % <u>A/D converter:</u> Resolution: 10 bit, Error (ref. to limit value): 1 digit $\equiv$ 0.1 % <u>Input resistance:</u> Voltage signal: > 50 kΩ, current signal: 250 Ω
X3.2/	
62 63	Resolution: 10 bit Linearity error (ref. to current value): ± 0.5 % Temperature error (0...+60 °C): 0.6 % Load capacity (0 ... +10 V): $I_{\max} = 2$ mA Load resistance (0/+4 ... +20 mA): ≤ 500 Ω
9	Load capacity: $I_{\max} = 5$ mA
X3.3/	
A1 A2	Load capacity: $I_{\max} = 10$ mA, with internal supply $I_{\max} = 50$ mA, with external supply
A4	Load capacity: $I_{\max} = 8$ mA $f = 50$ Hz ... 10 kHz
20	Load capacity: $\Sigma I_{\max} = 60$ mA
28 E1 ¹⁾ E2 ¹⁾	Input resistance: 3.2 kΩ 1 = HIGH (+12 ... +30 V), PLC level, HTL 0 = LOW (0 ... +3 V), PLC level, HTL
E3	
E4	
E5	
E6	

¹⁾ Optional frequency input 0 ... 102.4 kHz (single or two-track), configuration via C0425

6 Technical data

Operating conditions

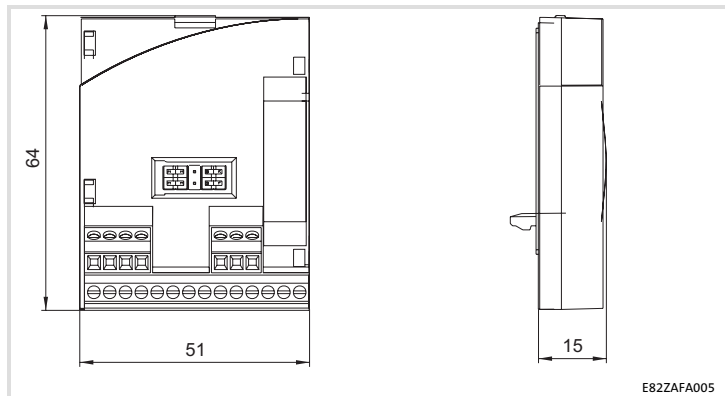
Operating conditions

Ambient conditions

Climatic conditions

Storage	1 K3 acc. to IEC/EN 60721-3-1	- 25 ... + 60 °C
Transport	2 K3 acc. to IEC/EN 60721-3-2	- 25 ... + 70 °C
Operation	3 K3 acc. to IEC/EN 60721-3-3	- 20 ... + 60 °C
Degree of pollution	2 acc. to IEC/EN 61800-5-1	
Enclosure	IP20	

Dimensions



All dimensions in mm