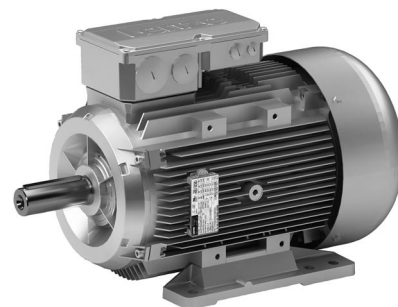




AC motors

m500-P; m540-P; m550-P |
0.75 kW ... 55 kW

Three-phase AC motors

Operating instructions

EN



13536578

Lenze



Please read these instructions before you start working!
Follow the safety instructions enclosed.



Note!

For safety-rated built-on accessories, the manufacturer's operating instructions have to be observed!

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Contents

- The present documentation is intended for safe working on and with the drives. It contains safety instructions that must be observed.
- All persons working on and with the drives must have the documentation at hand during work and observe the information and notes relevant for it.
- The documentation must always be complete and in a perfectly readable state.

If the information and notes provided in this documentation do not meet your requirements, please refer to the gearbox documentation.



Tip!

Information and tools concerning the Lenze products can be found in the download area at www.lenze.com

Validity

This documentation is valid for three-phase AC motors:

Type	Name
m500-P m540-P m550-P	Three-phase AC motors (squirrel-cage induction motor)

Target group

This documentation is directed at qualified skilled personnel according to IEC 60364.

Qualified skilled personnel are persons who have the required qualifications to carry out all activities involved in installing, mounting, commissioning, and operating the product.

1.1 Document history

Material number	Version			Description
13493941	1.0	06/2015	TD09	First edition for the pilot series
13510928	2.0	04/2016	TD09	Extended by: 0.75kW; motor, B14 type and sizes 080...112 Supplementation of the approvals and Appendix chapter Change of the starting torques and power terminals
13520640	3.0	09/2016	TD09	Extended by m54AP motor
13536578	4.0	06/2017	TD09	"Technical data in compliance with ordinances "(EU) No. 4/2014 or (EC) No. 640/2009" table changed

1 About this documentation

Conventions used

1.2 Conventions used

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

Type of information	Writing	Example/notes
Numeric notation		
Decimal	Standard notation	Example: 1234
Decimal separator	Point	The decimal point is always used. For example: 1234.56
Icons		
Page reference		Reference to another page with additional information For instance:  16 = see page 16
Documentation reference		Reference to another documentation with additional information Example:  EDKxxx = see EDKxxx documentation
Wildcard		Wildcard for options, selection data

1.3 Terminology used

Term	Describes the following
Motor	Three-phase AC motor (squirrel cage induction motor) in versions according to product key,  13 .
Inverter	Any servo inverter Any frequency inverter
Drive system	Drive systems including three-phase AC motors and other Lenze drive components

1.4 Notes used

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

Safety instructions

Layout of the 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.

Application notes

Pictograph and signal word	Meaning
Note!	Important note to ensure trouble-free operation
Tip!	Useful tip for easy handling
	Reference to another document

2 Safety instructions

General safety instructions for drive components

2.1 General safety instructions for drive components

At the time of dispatch, the drive components are in line with the latest state of the art and can be regarded as operationally safe.

Scope

The following general safety instructions apply to all Lenze drive and automation components.

The product-specific safety and application notes given in this documentation must be observed!

General hazards



Danger!

Disregarding the following basic safety measures may lead to severe personal injury and damage to material assets!

- Lenze drive and automation components ...
 - ... must only be used for the intended purpose.
 - ... must never be operated if damaged.
 - ... must never be subjected to technical modifications.
 - ... must never be operated unless completely assembled.
 - ... must never be operated without the covers/guards.
 - ... can - depending on their degree of protection - have live, movable or rotating parts during or after operation. Surfaces can be hot.
- All specifications of the corresponding enclosed documentation must be observed.

This is vital for safe and trouble-free operation and for achieving the specified product features.
- Only qualified skilled personnel are permitted to work with or on Lenze drive and automation components.

According to IEC 60364 or CENELEC HD 384, these are persons ...

 - ... who are familiar with the installation, assembly, commissioning and operation of the product,
 - ... possess the appropriate qualifications for their work,
 - ... and are acquainted with and can apply all the accident prevent regulations, directives and laws applicable at the place of use.

Storage

- In a dry, low-vibration environment without aggressive atmosphere;
- In the original packaging;
- Protect against dust and impacts;
- Observe climatic conditions according to the technical data.

Storage conditions

- Up to one year:
 - Shafts and uncoated surfaces are delivered with rust protection. Aftertreatment is required where the corrosion protection has been damaged.
- More than one year, up to two years:
 - Apply a long-term corrosion preventive (e.g. Anticorit BW 366 from the Fuchs company) to the shafts and uncoated surfaces before storing the motor away.

Transport

Before transport

- Check that all components are securely mounted;
- Check that all components with a loose fastening are secured or removed;
- Tighten all transport aids (eye bolts or support plate).

Use lifting devices for the transport! (📖 20)



Stop!

Danger by tipping or falling loads!

Observe carrying capacity!

- The carrying capacity of the hoists and load handling devices must be at least the weight of the load, weights 📖 catalogue.
- Secure the load to prevent it from tipping over or falling down.
- Standing beneath suspended loads is prohibited!

Risk of breakage!

The motors mounted to the gearbox are partly equipped with transport eyebolts that are **solely** intended for mounting/dismounting the motor to/from the gearbox and that **must not** be used for transport of the geared motor!



Danger!

Completely screw in transport aids (such as eye bolts or bearing plates), they must be flat and applied over their entire surface!

If possible, the transport aids (such as eye bolts or bearing plates) must be stressed vertically in the direction of the screw axis! Angular tension or tension to the sides reduces the payload! Observe the information provided in DIN 580!

Use additional appropriate lifting aids, if required, to achieve a direction of loading which is as vertical as possible (highest payload). Secure lifting aids against shifting!

2 Safety instructions

Application as directed

Corrosion protection

Lenze offers paints with different resistance characteristics for drive systems. Since the resistance may be reduced when the paint coat is damaged, defects in paint work (e.g. through transport or assembly) must be removed professionally to reach the required corrosion resistance.

Mechanical installation

- Provide for careful handling and avoid mechanical overload. During handling neither bend components, nor change the insulation distances.

Electrical installation

- Carry out the electrical installation according to the relevant regulations (e. g. cable cross-sections, fusing, connection to the PE conductor). Additional notes are included in the documentation.
- Only plug in or remove pluggable terminals in the deenergised state!

Commissioning

- If required, you have to equip the system with additional monitoring and protective devices in accordance with the respective valid safety regulations (e. g. law on technical equipment, regulations for the prevention of accidents).
- Before commissioning remove transport locking devices and keep them for later transports.

2.2 Application as directed

All products which this documentation applies to are no household appliances but are exclusively intended as components for re-utilisation for commercial use or professional use in terms of IEC/EN 61000-3-2. They meet the requirements of the Low-Voltage Directive 2006/95/EC and the requirements of the harmonised standards of the IEC/EN 60034 series.

Only use the products under the operating conditions and power limits specified in this documentation.

Do not use the brakes installed as fail-safe brakes. It cannot be ruled out that the braking torque is reduced by disruptive factors which cannot be influenced.

Low-voltage machines with IP23 protection or less are only intended for outdoor use when applying special protective features.

Products included in the scope of application of the EU regulations (EG) 640/2009 and (EU) 4/2014 (and hence ErP Directive 2009/125/EG) and which did not comply with minimum efficiency requirements when first put into circulation, are not CE compliant and will not receive CE marking. The product is for exclusive use outside the European Economic Area (EEA) only.

Any other use shall be deemed inappropriate!

2.3 Foreseeable misuse

- Do not operate the motors
 - ... in explosion-protected areas
 - ... in aggressive environments (acid, gas, vapour, dust, oil)
 - ... in water
 - ... in radiation environments

**Note!**

Increased surface and corrosion protection can be achieved by using adapted coating systems.

2.4 Residual hazards

Protection of persons

- The motor surfaces can become very hot. Danger of burns when touching!
 - Provide protection against accidental contact, if necessary.
- Danger of unintentional starting or electrical shocks
 - Connections must only be made when the equipment is deenergised and the motor is at standstill.
 - Installed brakes are no fail-safe brakes.

Motor protection

- Installed thermal detectors are **no full protection** for the machine.
 - Installed overload protection does not prevent an overload under any conditions.
- Installed brakes are **no fail-safe brakes**.
 - The torque may be reduced by disruptive factors that cannot be influenced such as contamination by oil.
- Fuses are no motor protection.
 - Use current-dependent motor protection switches at average operating frequency.
 - Use installed thermal detectors at high operating frequency.
- Too high torques cause a fraction of the motor shaft.
 - The maximum torques according to catalogue must not be exceeded.
- Lateral forces from the motor shaft may occur.
 - Align shafts of motor and driving machine exactly to each other.
- If deviations from normal operation occur, e.g. increased temperature, noise, vibration, determine the cause and, if necessary, contact the manufacturer. If in doubt, switch off the motor.

2 Safety instructions

Disposal

Fire protection

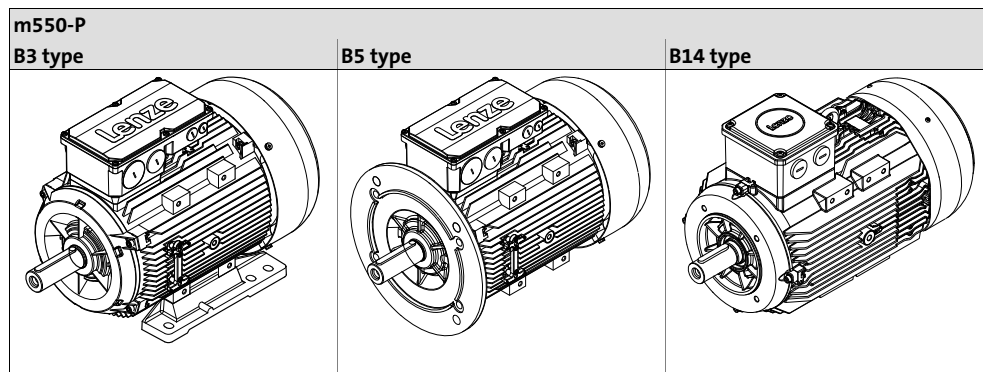
- Fire hazard
 - Prevent contact with flammable substances.

2.5 Disposal

Sort individual parts according to their properties. Dispose of them as specified by the current national regulations.

3.1 Identification

Three-phase AC motors



3.1.1 Motor name

Each motor has a motor name and a motor code. In the sales documents, the motors are identified by the motor name. The technical documentation and nameplate show the motor code.

The table below shows a list of the motor names and the first eleven digits of the corresponding motor code:

m500-P	
Motor name	Motor code
m500-P132M4	M50AP132M04
m500-P132L4	M50AP132L04
m500-P160M4	M50AP160M04
m500-P160L4	M50AP160L04
m500-P180M4	M50AP180M04
m500-P180L4	M50AP180L04
m500-P180V4	M50AP180V04
m500-P500M4	M50AP500M04
m500-P225M4	M50AP225M04
m500-P225L4	M50AP225L04

m540-P	
Motor name	Motor code
m540-P90/M4	M54AP090M04
m540-P90/L4	M54AP090L04
m540-P100/M4	M54AP100M04
m540-P100/L4	M54AP100L04
m540-P112/M4	M54AP112M04
m540-P132/M4	M54AP132M04
m540-P132/L4	M54AP132L04
m540-P160/M4	M54AP160M04
m540-P160/L4	M54AP160L04
m540-P180/M4	M54AP180M04
m540-P180/L4	M54AP180L04
m540-P200/M4	M54AP200M04
m540-P225/M4	M54AP225M04
m540-P225/L4	M54AP225L04
m540-P250/M4	M54AP250M04

3 Product description

Identification

Motor name

m550-P	
Motor name	Motor code
m550-P80/M4	M55AP080M04
m550-P90/M4	M55AP090M04
m550-P90/L4	M55AP090L04
m550-P100/M4	M55AP100M04
m550-P100/L4	M55AP100L04
m550-P112/M4	M55AP112M04
m550-P132/M4	M55AP132M04
m550-P132/L4	M55AP132L04
m550-P160/M4	M55AP160M04
m550-P160/L4	M55AP160L04
m550-P180/M4	M55AP180M04
m550-P180/L4	M55AP180L04
m550-P180/V4	M55AP180V04
m550-P200/M4	M55AP200M04
m550-P225/M4	M55AP225M04
m550-P225/L4	M55AP225L04

3.1.2 Motor code

m500-P / m540-P / m550-P three-phase AC motors

Example		m50A-	P	132	M	4	S	E	F	O	C	T
Meaning	Variant											
Efficiency class	Premium - IE3		P									
Size				080								
				090								
				100								
				112								
				132								
				160								
				180								
				200								
				225								
Overall length	Very short			K								
	Abbr.			S								
	Medium			M								
	Long			L								
	Very long			V								
Number of poles	4-pole					04						
Enclosure	IP54/55											
Cooling	Self-ventilation											
	Forced ventilation											
	No ventilation											
Brake attachment	No brake									0		
	Spring-applied brake									F		
Act. value encoder	No encoder										0	
	Incremental encoder										E	
	Resolver										R	
	Absolute value encoder										A	
Approvals	CE UL											R
	CE UL-CSA											V
	CE CSA											S
	CE											C
	CE CCC											3
	None											N
	UL-CSA											V
	CCC											4
	CE UL-CSA CCC											W
	UL-CSA CCC											Y
Design version	Internal key											T

3 Product description

Identification
Encoder code

3.1.3 Encoder code

Example		SFC	1024	-	8V	-	K	2
Meaning	Type	Encoder code						
Product line	Resolver	RS						
	Resolver for safety function	RV						
	Incremental encoder	IG						
	Incremental encoder with commutation signal	IK						
	Singleturn absolute value encoder	SFC						
	Multiturn absolute value encoder	AM						
Number	2-pole resolver for servo motors		0					
	2-pole resolver for three-phase AC motors		1					
	Number of pole pairs for resolvers		2, 3, 4, ...					
	Number of steps / increments per revolution		32, 128, 512, 1024, 2048, ...					
Voltage	Medium supply voltage			-	5V, 8V, 15V, 24V, ...			
Interface or signal level	Standard							
	TTL						T	
	HTL (for incremental encoders)						H	
	Hiperface (for absolute value encoders)						H	
	EnDat						E	
	sin/cos 1 V _{SS}						S	
	For safety function							
	TTL						U	
	HTL (for incremental encoders)						K	
	Hiperface (for absolute value encoders)						K	
	EnDat						F	
	sin/cos 1 V _{SS}						V	
	Safety integration level (SIL)							1
								2
								3
								4



Note!

If feedback systems for safety functions are used, the manufacturer's documentation must be observed!

3.1.4 Nameplate

Geared motor with a directly mounted motor (layout A)

Lenze		1		15	
2	21	Hz	16.1	26	
3	18	kW	16.2	15	
4	17	V	16.4	19	
5.1	5.2		16.4	23	
5.3	5.4	A	16.5	13	
6	7.1	7.2	16.5	14.1	
8.1	8.2	8.3	r/min	16.3	14.2
9			η %	16.7	14.3
10.2	10.3		$\cos \varphi$	16.6	27
11			C86	22	
			20.1		

Geared motor with a directly mounted motor (layout B, with QR code)

Lenze		1		43		15	
2	14.1	21	14.3	23	13	14.2	
3		18		Hz	16.1		
4		17		kW	16.2		
5.1	5.2			V	16.4		
5.3	5.4	30			16.4		
6	7.1	7.2		A	16.5		
8.1	8.2	8.3	33.1 33.2	r/min	16.3		
20.1				η %	16.7		
11				$\cos \varphi$	16.6		
10.2	10.3			C86	22		

Three-phase AC motor with a standard output flange

Lenze		1		15	
2	14.2	14.1	23	26	Hz
4			22		kW
21	13	14.3			r/min
8.1	8.2	8.3	27		V
9					
24					A
	20.1				
10.2	10.3	18			$\cos \varphi$
11					η %

3 Product description

Nameplate

Pos.	Contents
1	Manufacturer / production location
2	Type of motor / standard
3	Gearbox type
4	Motor type
5	Technical data
5.1	Ratio
5.2	Rated torque
5.3	Rated speed
5.4	Rated frequency
6	Position of system modules / mounting position
7	Lubricant details
7.1	Lubricant amount
7.2	Lubricant type
8	Brake data
8.1	Type
8.2	AC/DC brake voltage
8.3	Braking torque, electrical power input
9	For feedback / pulse encoder or resolver data,  16
10	Production data
10.2	Material number
10.3	Serial number
11	Bar code
13	Information with regard to the operating mode
14	Additional motor specifications
14.1	Temperature class
14.2	Enclosure
14.3	Motor protection
15	Applicable conformities, approvals and certificates
16	Rated data for various frequencies
16.1	Hz = frequency
16.2	kW = motor power
16.3	rpm = motor speed
16.4	V = motor voltage
16.5	A = motor current
16.6	cos φ = motor power factor
16.7	η = motor efficiency: at a rated power of 100%
17	Application factor / load capacity
18	Year of manufacture / week of manufacture
19	UL file number
20	Customer data
20.1	Additional customer data
21	UL category (e.g. inverter duty motor)
22	C86 = motor code for inverter parameterisation (code 0086)
23	Efficiency class
24	Partial load efficiencies for 50Hz operation at a rated power of 50% and 75%
26	CC number Department of Energy (optional)
27	Permissible ambient temperature (e.g. $T_a \leq 40^\circ\text{C}$)
30	Weight
43	Internal key: QR code

4.1 General data and operating conditions

General data

Conformity and approval			
Conformity			
CE	2014/35/EU	Low-Voltage Directive	
	2009/125/EC	ErP Directive Regulation No. 4/2014 and No. 640/2009 on the ecodesign of electric motors	
	2014/30/EU	EMC Directive	
EAC	TP TC 004/2011 (TR CU 004/2011)	On safety of low voltage equipment	Eurasian Conformity TR CU: Technical Regulation of Customs Union
	TP TC 020/2011 (TR CU 020/2011)	Electromagnetic compatibility of technical means	Eurasian Conformity TR CU: Technical Regulation of Customs Union
Approvals			
UL	UL 1004-8	File No. E210321	Inverter Duty Motors
CSA	CSA C22.2 No. 100		Motors and Generators
Energy Verified	CFR Part 431.23	File No. E210321 CC1278B	Energy Efficiency Program for Certain Commercial and Industrial Equipment
	CSA C390-10		Energy Efficiency Test Methods for Three-Phase Induction Motors
CCC	GB Standard 12350-2009	Safety requirements of small-power motors	

The applicable approvals for the product you have ordered require labelling and are specified on the nameplate.

Protection of persons and devices		
Enclosure	IEC/EN 60034-5	See nameplate
		Degrees of protection only apply to horizontal installation
		All unused connectors must be closed with protection covers or blanking plugs.
Temperature class	F (155 °C) IEC/EN 60034-1	Exceedance of the temperature limit weakens or destroys the insulation

Operating conditions

Ambient conditions			
Climatic			
Transport	IEC/EN 60721-3-2	2K3 (-20 °C ... +70 °C)	
Storage	IEC/EN 60721-3-1	1K3 (-20 °C ... +60 °C)	< 3 months
		1K3 (-20 °C ... +40 °C)	> 3 months
Operation	IEC/EN 60721-3-3	3K3 (-20 °C ... +40 °C)	Without brake
		3K3 (-10 °C ... +40 °C)	With brake
		> +40 °C	With power reduction, see catalogue
Site altitude		< 1000 m amsl - without power reduction > 1000 m amsl < 4000m amsl with power reduction, see catalogue	
Humidity		Relative humidity ≤ 85 %, without condensation	
Mechanical			
	IEC/EN60721-3-3	3M6	

5 Mechanical installation

Important notes

5.1 Important notes



Danger!

Some of the motors mounted to the gearboxes are equipped with transport aids. They are **only** intended for the mounting/dismounting of the motor to the gearbox and must **not** be used for the entire geared motor!

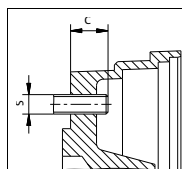
- Only move the drive with means of transport or hoists that have sufficient load-bearing capacity.
- Ensure safe fixing.
- Avoid shocks!

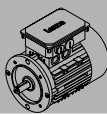
Screw-on dimensions B14 flange



Stop!

Observe the maximally permissible screw-in depth for B14 flange!



		c max.	s
		[mm]	
M55AP080□□□	FT100	10	M6
	FT130	12	M8
M55AP090□□□	FT115	16	M8
	FT130	12	M8
M55AP100□□□	FT130	12	M8
M55AP112□□□	FT130	12	M8

5.2 Preparation

Remove the corrosion protection from the shaft ends and flanges. If necessary, remove dirt using standard cleaning solvents.



Stop!

Bearings or seals must not come into contact with the solvent - material damages.

After a long storage period (> 1 year) you have to check whether moisture has entered the motor. For this purpose, measure the insulation resistance (measuring voltage 500 V_{DC}). In case of values ≤1kΩ per volt of rated voltage, dry the winding.

5.3 Installation

- The mounting surface must be dimensioned for the design, the weight, and the torque of the motor.
- The foot and flange faces must rest flat on the mounting surface.
 - An insufficient alignment of the motor shortens the service life of the roller bearings and the transmission elements.

Blows to shafts can cause damage to the bearings.

- Do not exceed the permissible range of ambient operating temperature (📖 19).
- Securely fasten the motor.
- Ensure unobstructed ventilation. The exhaust air, also that of adjacent aggregates, must not be inlet again immediately.
- During operation, surface temperatures of up to 140 °C are possible! Protect against contact!

**Note!**

From the air inlet to other component parts, a minimum distance of 10% of the outer diameter of the fan cover must be complied with!

Ensure an even surface, solid foot or flange mounting and exact alignment if a direct clutch is connected. Avoid resonances with the rotational frequency and double supply frequency which may be caused during assembly.

Only mount or remove transmission elements using appropriate means. In order to facilitate handling, heat them beforehand. Cover belt pulleys and clutches with a touch guard.

**Stop!**

Ensure a correct belt tension!

The machines are halfkey balanced. The clutch must be halfkey balanced, too. The visible jutting out part of the key must be removed.

Designs with shaft end at the bottom must be protected with a cover at the N-end, preventing the ingress of foreign particles into the fan.

5 Mechanical installation

Assembly of built-on accessories

5.4 Assembly of built-on accessories

Follow these instructions carefully. Please note that the warranty and product liability will become void in the event of impermissible alterations or modifications to the motors.

- Mount the transmission elements:
 - Shocks and impacts must be avoided! They could destroy the motor.
 - For mounting always use the centre bore in the motor shaft as specified by DIN 332-DR-M...
 - Tolerances of the shaft ends:
 $\leq \varnothing 50 \text{ mm}$: ISO k6, $> \varnothing 50 \text{ mm}$: ISO m6.
- Only use an extractor for the disassembly.
- When using belts for torque/power transmission:
 - Tension the belts in a controlled manner.
 - Provide protection against accidental contact! During operation, surface temperatures of up to 140°C are possible.

5.5 Spring-applied brakes

Important notes

As an option, the motors can be fitted with a brake. The installation of brakes (in or on the motor) increases the length of the motor.



Note!

The brakes used are not fail-safe because interference factors which cannot be influenced (e.g. oil ingress) may lead to a reduction in torque.

The brakes are used as holding brakes and serve to hold the axes at standstill or in the deenergised state.

Emergency stops at higher speeds are possible but high switching energy increases wear on the friction surfaces and the hub, (▢ 42).

The spring-applied brakes work on the basis of the closed-circuit principle, i.e. the brake is closed in the deenergised state. The brakes for DC supply can be fed with a bridge-rectified DC voltage (bridge rectifier) or with a smoothed DC voltage. The permissible voltage tolerance is $\pm 10\%$.

In case of long motor cables the voltage drop must be checked due to increasing conductor resistance and compensated for by higher input voltage if necessary.

The following applies to Lenze system cables:

$U^* = U_B + \left[\frac{0.08 \, \Omega}{m} \cdot L \cdot I_B \right]$	U^* [V]	Resulting supply voltage
	U_B [V]	Rated voltage of the brake
	L [m]	Cable length
	I_B [A]	Rated current of the brake



Stop!

If no suitable voltage (incorrect value, incorrect polarity) is applied to the brake, the brake will be applied and can be overheated and destroyed by the motor continuing to rotate.

The shortest operating times of the brakes are achieved by DC switching of the voltage and an external suppressor circuit (varistor or spark suppressor). Without suppressor circuit, the operating times may increase. A varistor/spark suppressor limits the breaking voltage peaks. It must be ensured that the power limit of the suppressor circuit is not exceeded. This limit depends on the brake current, brake voltage, disengagement time and the switching operations per time unit.

Furthermore the suppressor circuit is necessary for interference suppression and for increasing the service life of the relay contacts (external, not integrated into the motor).

5 Mechanical installation

Spring-applied brakes
Locking of the manual release

For permissible operating speeds and characteristics, please see the motor catalogue applicable in each case. Emergency stops at higher speeds are possible, but high switching energy increases wear on the friction surfaces and the hub.



Stop!

The friction surfaces must always be free from oil and grease because even small amounts of grease or oil will considerably reduce the braking torque.

The formula below provides a simplified way to calculate friction energy per switching cycle which must not exceed the limit value for emergency stops that depends on the operating frequency (see motor catalogue; Lenze drive solutions: formulas, dimensioning, and tables).

$Q = \frac{1}{2} \cdot J_{\text{tot}} \cdot \Delta\omega^2 \cdot \frac{M_K}{M_K - M_L}$	Q [J]	Friction energy
	J_{tot} [kgm ²]	Total mass inertia (motor + load)
	$\Delta\omega$ [1/s]	Angular velocity $\omega = 2\pi \cdot n / 60$, n = speed [rpm]
	M_K [Nm]	Characteristic torque
	M_L [Nm]	Load torque

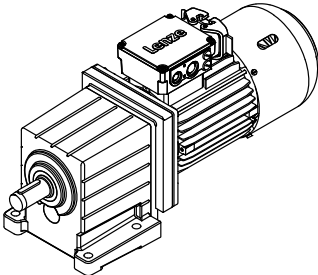
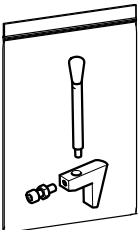
Depending on the operating conditions and possible heat dissipation, surface temperatures can be up to 130 °C.



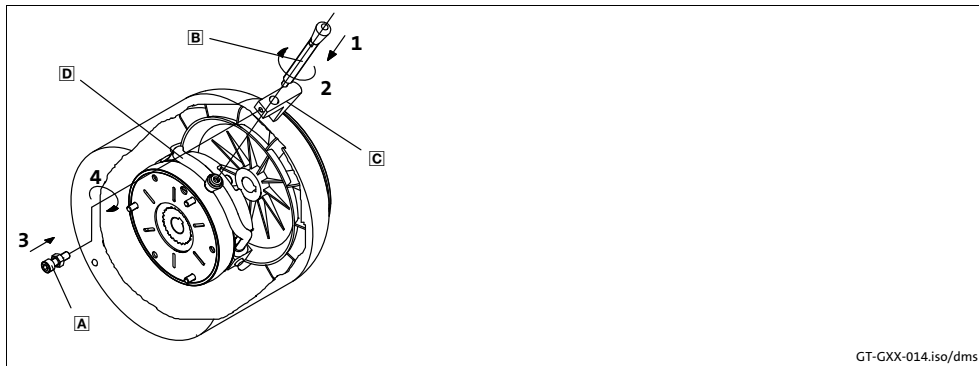
More detailed information on the used brakes is provided in the corresponding catalogues.

5.6 Locking of the manual release

Scope of supply

Geared motor	Shipping bag
 GT-GNG-GST-010.iso/dms	 GT-GXX-012.iso/dms GT-GXX-013.iso/dms • 1 Manual release lever with knob • 1 Terminal block • 1 Cheese head screw with nut

Mounting



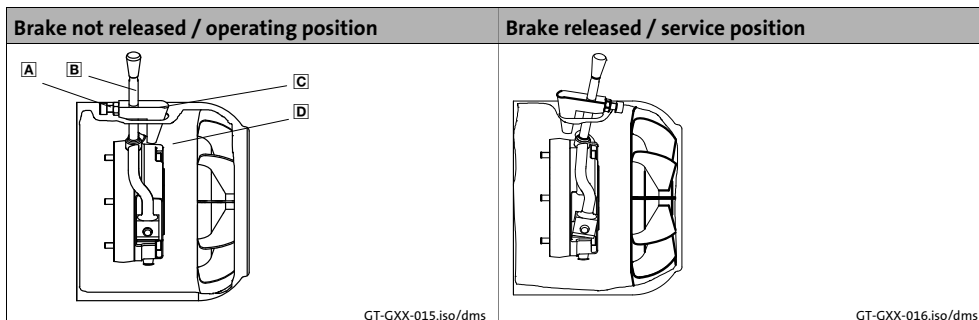
- | | |
|---|---|
| A Cheese head screw with nut | C Terminal block |
| B Manual release lever with knob | D Manual release shackle (brake) |

Handling



Stop!

- Lock the manual release only for service work!
- The manual release must not be locked during operation, otherwise the brake could be damaged!
- Always secure the terminal block against loosening in every position with cheese head screw and nut!



- | | |
|---|-------------------------|
| A Cheese head screw with nut | C Terminal block |
| B Manual release lever with knob | D Fan cover |

6 Electrical installation

Important notes

6.1 Important notes



Danger!

Hazardous voltage on the power connections even when disconnected from mains: residual voltage >60 V!

Before working on the power connections, always disconnect the drive component from the mains and wait until the motor is at standstill. Verify safe isolation from supply!



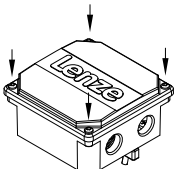
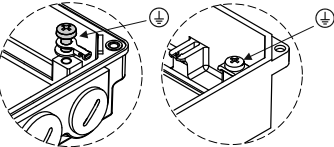
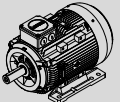
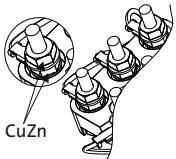
Stop!

Electrical connections must be carried out in accordance with the national and regional regulations!

- Observe tolerances according to IEC/EN 60034-1:
 - Voltage $\pm 10\%$
 - Frequency $\pm 2\%$
 - Wave form, symmetry (increases heating and affects electromagnetic compatibility)
- Observe notes on wiring, information on the nameplate, and the connection scheme in the terminal box.
- The terminal box has to be free of foreign bodies, dirt, and humidity.
- All unused cable entries and the box itself must be sealed against dust and water.
- The connection must ensure a continuous and safe electrical supply, i.e.
 - no loose wire ends,
 - use assigned cable end fittings,
 - ensure good electrical conductivity of the contact (remove residual lacquer) if an (additional) PE connection on the motor housing is used,
 - establish a safe PE conductor connection,
 - tighten the plugin connector to the limit stop,
 - all connections at the terminal board are tightened.
- The smallest air gaps between uncoated, live parts and against earth must not fall below the following values.

Motor diameter	Minimum requirements for basic insulation according to IEC/EN 60664-1 (CE)	Higher requirements for UL design
< 178 mm	3.87 mm	6.4 mm
> 178 mm		9.5 mm

Tightening torques

↻ [Nm] +/- 10%	M4	M5	Ø M6	M8	M10
	2.2	3.5	4.5	----	----
	2.5	3.5	----	----	----
	063...080	090...112	132...160	180...200	225
	1.5	2.0	3.5	6.0	8.0



m500-P / m550-P

↻ [Nm]	Material	M12x1.5	M16x1.5	M20x1.5	M25x1.5	M32x1.5	M40x1.5	M50x1.5
	Plastics	0.7	1	1	2.5	3	3	3
	Metal	3	3	4	6	8	10	14

m540-P

↻ [Nm]	Material	M12x1.5	M16x1.5	M20x1.5	M25x1.5	M32x1.5	M40x1.5	M50x1.5
	Plastics	4	4	4	4	6	6	6
	Metal	8	10	12	12	18	18	20

Tab. 1 Locking screws and cable glands

6 Electrical installation

Three-phase AC motor operation on a frequency inverter

6.2 Three-phase AC motor operation on a frequency inverter

m500-P, m540-P, and m550-P three-phase AC motors are optimised and qualified for the use on Lenze frequency inverters and **can** be combined without any restrictions.

When actuating the motors on a third-party inverter, the voltage peaks (V_{pk}) at a given rise time (t_r) that are shown in the diagram must not be exceeded.

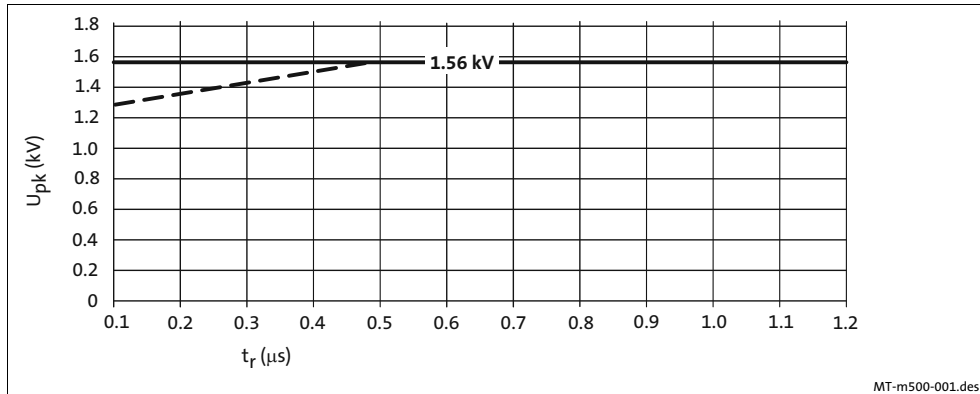


Fig. 1 Permissible voltage peaks for actuation on the frequency inverter
— — — IEC/TS 60034-25:2007 (corresponds to IVIC C/B/B @500 V): m540-P
———— Lenze standard A+: m500-P, m550-P

Possible counteractive measures

If it cannot be excluded that the permissible voltage peaks are exceeded, suitable counteractive measures have to be implemented:

- Reduction of the DC-bus voltage (threshold for brake chopper voltage);
- Use of filters, chokes;
- Use of special motor cables.

6.3 EMC-compliant wiring

The EMC-compliant wiring of the motors is described in detail in the operating instructions for the Lenze inverters.

- Using metal EMC cable glands with shield connection.
- Shield connection at the motor and the device.
- Shield connection at the terminal strip encoder.

6.3.1 Power connections on the terminal board

Motor

Multivoltage motors M50AP, M55AP		M54AP
MT_MXXXX_001.iso/dms		

Legend for the circuit diagrams	
L1/L2/L3	Power connection
YY	Low voltage
Y	High voltage

Temperature monitoring

Terminal strip / terminal board		
Contact	Meaning	Note
(1)TB1	Thermal contact - TCO	Max. 250 V~
(1)TB2		Max. 1.6 A ~
(1)TP1	PTC thermistor	
(1)TP2		
(1)R1	Thermal sensor +KTY	Observe polarity
(1)R2	Thermal sensor -KTY	

Terminal board or terminal possible for all thermal sensors.

Blowers via blower terminal box / motor terminal box

Blower 3~

Terminal board		
Contact	Meaning	Note
U1	Connection to L1 - mains	Observe direction of rotation! In case of wrong direction of rotation, L1 - L2 must be interchanged
V1	Connection to L2 - mains	
W1	Connection to L3 - mains	

Separate fan 1~

Terminal board		
Contact	Meaning	Note
U1		Connection to L1 - mains
V1 / U2		Connection to N - mains

6 Electrical installation

EMC-compliant wiring
Brake connection to terminal

6.3.2 Brake connection to terminal

Contact	Meaning	Additional specifications
~		Connection to L1 - mains
~		Connection to N - mains
+		Brake connection
-		Brake connection
		Switching contact, DC switching
(1)BD1	Brake, DC operated	DC connection
(1)BD2		
MS1 / 2S1	Brake microswitch, release control	Two-way switch
MS2 / 2S2		NC contact
MS4 / 2S3		NO contact
MS1 / 3S1	Brake microswitch, wear control	Two-way switch
MS2 / 3S2		NC contact
MS4 / 3S3		NO contact
MS1	Brake microswitch, manual release	Two-way switch
MS2		NC contact
MS4		NO contact

6.3.3 Feedback system

Resolver		
Contact	Name	Meaning
B1	+ Ref	Transformer windings (reference windings)
B2	- Ref	
B3	Not assigned	
B4	+COS	Stator winding cosine
B5	-COS	
B6	+SIN	Stator winding sine
B7	-SIN	
B8	Not assigned	

Incremental encoder / sin/cos absolute value encoder with Hiperface		
Contact	Designation	Meaning
B1	+ U _B	Supply +
B2	GND	Mass
B3	A / + COS	Track A / process data channel
B4	$\bar{A}$ / Ref cos	Track A inverse / process data channel
B5	B / + SIN	Track B / process data channel
B6	$\bar{B}$ / Ref sin	Track B inverse / process data channel
B7	Z / data +	Zero track / parameter channel + RS485
B8	$\bar{Z}$ / data -	Zero track inverse / parameter channel - RS485
B10 ¹⁾	Shield - housing	Shield - incremental encoder

1) The terminal is not assigned if insulation at N-end shield of the motor has been selected!

6.4 Plug connectors

Only for m500-P / m550-P



Stop!

- Tighten the coupling ring of the connector.
- If plugs **without** SpeedTec bayonet nut connectors are used, the connector boxes for the power / encoder / fan connections must be secured by O-rings if loadings by vibration occur:
 - M17 connector box with O-ring 15 x 1.3 mm
 - M23 connector box with O-ring 18 x 1.5 mm

Plug-in connectors (plug/connector box) with SpeedTec bayonet nut connectors are vibration-proof.

- If SpeedTec bayonet nut connectors are used, O-rings must be removed (if any)!
- Never disconnect plugs when voltage is being applied! Otherwise, the plugs could be destroyed! Inhibit the inverter before disconnecting the plugs!



When connecting the cable connector to the motor connector, make sure that the aids to orientation (pos. 1) are facing each other. Only then trouble-free operation is ensured.

6.4.1 Motor plug connection assignment



Note!

When making your selection, the motor data and permissible currents of the cables according to the "System cables" system manual must be observed.

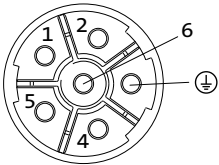
6 Electrical installation

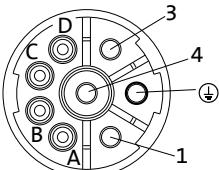
Plug connectors
Power connections

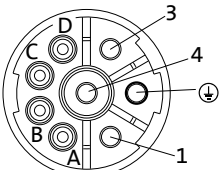
6.4.2 Power connections

Power / brake / thermal sensor

ICN, 6-pole and 8-pole

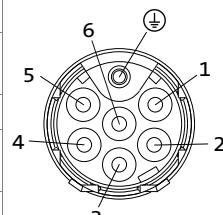
6-pole (external view of poles)			
Contact	Name	Meaning	M23
1	BD1 / BA1	Brake + / ~	
2	BD2 / BA2	Brake - / ~	
⊕	PE	PE conductor	
4	V	Power phase U	
5	V	Power phase V	
6	W	Power phase W	

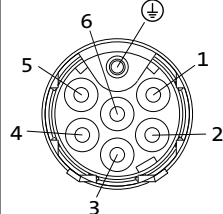
8-pole (external view of poles)			
Contact	Name	Name	M23
1	V	Power phase U	
⊕	PE	PE conductor	
3	W	Power phase W	
4	V	Power phase V	
A	TB1 / TP1 / R1	Thermal sensor: TCO / PTC / + KTY	
B	TB2 / TP2 / R2		
C	BD1 / BA1	Brake + / AC <250 V	
D	BD2 / BA2		

8-pole (external view of poles) / connection variant ICN 8B			
Contact	Name	Name	M23
1	V	Power phase U	
⊕	PE	PE conductor	
3	W	Power phase W	
4	V	Power phase V	
A	TB1 / TP1 / R1	Thermal sensor TCO / PTC / + KTY	
B	TB2 / TP2 / R2		
C	BD1 / BA 1	Switching contact of rectifier	
D	BD2 / BA2		

Connection variant **ICN 8B** - switching contact of the rectifier for DC switching. Rectifier supply via motor terminal board. Only possible during mains operation!

Fan**Only for m500-P / m550-P****ICN, 7-pole**

Single-phase (external view of poles)			
Contact	Name	Meaning	M17
⊕	PE	PE conductor	
1	U1	AC fan	
2	U2		
3	Not assigned		
4	U+	DC fan	
5	U-		
6	Not assigned		

Three-phase (external view of poles)			
Contact	Standard description	Name	M17
⊕	PE	PE conductor	
1	U	Fan	
2	Not assigned		
3	V	Fan	
4	Not assigned		
5	Not assigned		
6	W	Fan	

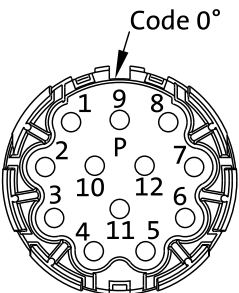
6 Electrical installation

Plug connectors
Feedback system

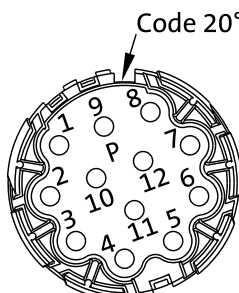
6.4.3 Feedback system

Resolver / incremental encoder / absolute value encoder

ICN, 12-pole

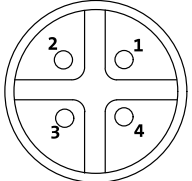
Resolver (external view of poles)				
Contact	Name	Meaning	M23	
1	+ Ref	Transformer windings (reference windings)		
2	- Ref			
3	not assigned			
4	+COS	Stator windings cosine		
5	-COS			
6	+SIN	Stator windings sine		
7	-SIN			
8	not assigned			
9	not assigned			
10	Shield	Encoder housing shield		
11	+ KTY	Thermal detector KTY		
12	- KTY			

MT plug-in
connector-001.iso/dms

Incremental encoder / sin/cos absolute value encoder Hiperface (external view of poles)			
Contact	Name	Meaning	M23
1	B	Track B / + SIN	
2	$\bar{A}$	Track A inverse / - COS	
3	A	Track A / + COS	
4	+ U _B	Supply + Mass	
5	GND		
6	$\bar{Z}$	Zero track inverse / - RS485	
7	Z	Zero track / + RS485	
8	Not assigned		
9	$\bar{B}$	Track B inverse / - SIN	
10	Shield	Encoder housing shield	
11	+ KTY	Thermal detector KTY	
12	- KTY		

Circular connector

4-pole

Incremental encoder (external view of poles)			
Contact	Name	Meaning	M12
1	+ U _B	Supply +	
2	B	Track B	
3	GND	Mass	
4	A	Track A	

ICN, 8-pole

Incremental encoder (external view of poles)			
Contact	Name	Meaning	M12
1	$\bar{B}$	- SIN	
2	B	+ SIN	
3	$\bar{A}$	- COS	
4	A	+ COS	
5	Z	+ RS485	
6	$\bar{Z}$	- RS485	
7	GNG	Mass	
8	+ U _B	Supply +	



Further information is provided in the "System cables" system manual at:

www.Lenze.com → Download → Technical documentation →
Finding technical documentation

Filter: Type of contents

System manual

Filter: Product

System cable

6.5 Terminal box HAN connectors

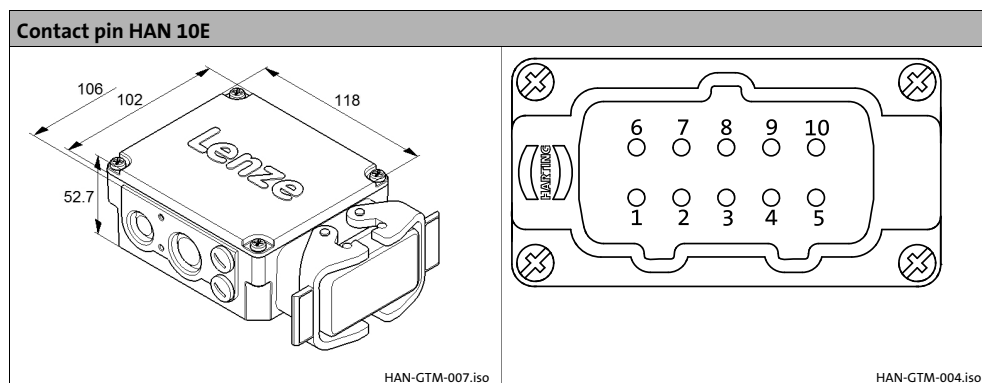
Only for m500-P / m550-P

Contact pin HAN-Modular 16 A	
HAN-GTM-007.iso	HAN-GTM-004.iso
Contact pin HAN-Modular 40 A	
HAN-GTM-008.iso	HAN-GTM-004.iso

6 Electrical installation

Terminal box HAN connectors Feedback system

Terminal box			
Module	Contact	Name	Meaning
a	1	U1	Terminal board
	2	V1	Terminal board
	3	W1	Terminal board
b	Blind module		
c	1	+KTY / PTC / TCO	Thermal sensor
	2	+ / AC	Brake
	3	- / AC	Brake
	4	Switching contact	Rectifier
	5		
	6	-KTY / PTC / TCO	Thermal sensor



Terminal box		
Contact	Name	Meaning
1	U1	Terminal board
2	V1	
3	W1	
4	+ / AC	Holding brake
5	- / AC	
6	W2	Terminal board
7	U2	
8	V2	
9	+KTY / PTC / TCO	Thermal sensor
10	-KTY / PTC / TCO	



Note!

Carry out the wiring in Υ or Δ in the counter plug:

- Υ - wiring: 6-7-8
- Δ - wiring: 1-6/2-7/3-8

7.1 Important notes

For trial run without output elements, lock the featherkey. Do not deactivate the protective devices, not even in a trial run.

Check the correct operation of the brake before commissioning motors with brakes.

7.2 Before switching on



Note!

Before switch-on, you must ensure that the motor starts with the intended direction of rotation.

Lenze motors rotate CW (looking at the driven shaft) if a clockwise three-phase field $L1 \rightarrow U1$, $L2 \rightarrow V1$, $L3 \rightarrow W1$ is applied.

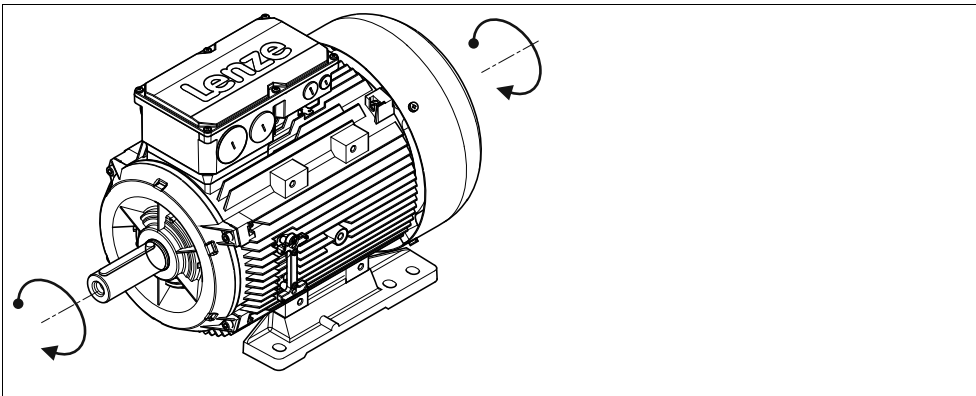


Fig. 2 Rotating direction of the driven shaft

7 Commissioning and operation

Functional test

Before initial commissioning, before commissioning after an extended standstill period, or before commissioning after an overhaul of the motor, the following must be checked:

- Measure the insulation resistance, in case of values $\leq 1 \text{ k}\Omega$ per volt of rated voltage, dry the winding.
- Have all screwed connections of the mechanical and electrical parts been firmly tightened?
- Is the unrestricted supply and removal of cooling air ensured?
- Has the PE conductor been connected correctly?
- Have the protective devices against overheating (temperature sensor evaluation) been activated?
- Is the inverter correctly parameterised for the motor?
(ⓘ Inverter operating instructions)?
- Are the electrical connections o.k.?
- Does the motor connection have the correct phase sequence?
- Are rotating parts and surfaces which can become very hot protected against accidental contact?
- Is the contact of good electrical conductivity if a PE connection on the motor housing is used?

7.3 Functional test

- Check all functions of the drive after commissioning:
- Direction of rotation of the motor
 - Direction of rotation in the disengaged state (see chapter "Electrical connection").
- Torque behaviour and current consumption
- Function of the feedback system

7.4 During operation



Stop!

- Fire hazard! Do not clean or spray motors with flammable detergents or solvents.
- Avoid overheating! Deposits on the drives impede the heat dissipation required and have to be removed regularly.



Danger!

During operation, motor surfaces must not be touched. According to the operating status, the surface temperature for motors can be up to 140°C. For the protection against burn injuries, provide protection against contact, if necessary. Observe cooling-off times!

During operation, carry out inspections on a regular basis. Pay special attention to:

- Unusual noises
- Oil spots on drive end or leakages
- Irregular running
- Increased vibration
- Loose fixing elements
- Condition of electrical cables
- Speed variations
- Impeded heat dissipation
 - Deposits on the drive system and in the cooling channels
 - Pollution of the air filter

In case of irregularities or faults: (📖 51).

8 Maintenance/repair

Important notes
Motor

8.1 Important notes



Danger!

Hazardous voltage on the power connections even when disconnected from mains: residual voltage >60 V!

Before working on the power connections, always disconnect the drive component from the mains and wait until the motor is at standstill. Verify safe isolation from supply!

Shaft sealing rings and roller bearings have a limited service life.

Regrease bearings with relubricating devices while the low-voltage machine is running. Only use the grease recommended by the manufacturer.

If the grease drain holes are sealed with a plug, (IP54 drive end; IP23 drive and nondrive end), remove plug before commissioning. Seal bore holes with grease.

8.2 Maintenance intervals

Inspections

- If the machine is exposed to dirt, clean the air channels regularly.

8.2.1 Motor

- Only the bearings and shaft sealing rings become worn.
 - Check bearings for noise (after approx. 15,000 h at the latest).
- In order to prevent overheating, remove dirt deposits on the drives regularly.
- We recommend carrying out an inspection after the first 50 operating hours. In this way, you can detect and correct any irregularities or faults at an early stage.

8.2.2 Encoder



Stop!

Repair work or replacement of defective safety encoders must only be carried out by Lenze service personnel!

After a service life of 10 years, an inspection of the metal elastomer torque plate is required for the AS1024-8V-K, AS1024-8V-K2; AM1024-8V-K, and AM1024-8V-K2 encoders. If no replacement is required, an inspection interval of max. 5 years has to be observed.

8.2.3 Spring-operated brakes

To ensure safe and trouble-free operation, spring-applied brakes must be checked and maintained at regular intervals. Servicing can be made easier if good accessibility of the brakes is provided in the plant. This must be considered when installing the drives in the plant.

Primarily, the necessary maintenance intervals for industrial brakes result from the load during operation. When calculating the maintenance interval, all causes for wear must be taken into account, (( 43). For brakes with low loads such as holding brakes with emergency stop, we recommend a regular inspection at a fixed time interval. To reduce the cost, the inspection can be carried out along with other regular maintenance work in the plant if necessary.

If the brakes are not maintained, failures, production losses or damage to the system may occur. Therefore, a maintenance concept adapted to the particular operating conditions and brake loads must be defined for every application. For the spring-applied brakes, the maintenance intervals and maintenance operations listed in the below table must be provided. The maintenance operations must be carried out as described in the detailed descriptions.

Type	Service brake	Holding brake with emergency stop
Spring-applied brake	• according to service life calculation • otherwise every six months • after 4,000 operating hours at the latest	• at least every two years • after 1 million cycles at the latest • provide shorter intervals in the case of frequent emergency stops

8.3 Maintenance operations

8.3.1 Motor



Stop!

- Make sure that no foreign bodies can enter the inside of the motor!
- Do not remove plugs when voltage is being applied!



Danger!

- Only work on the motor when it is deenergised!
- Hot motor surfaces of up to 140 °C. Observe cooling times!
- Remove loads acting on motors or secure loads acting on the drive!

8 Maintenance/repair

Maintenance operations
Spring-operated brakes

8.3.2 Spring-operated brakes

The brake is mounted to the N-end shield of the motor. Remove the fan cover or blower unit or the encoder, if available, to check, maintain, or set the brake.



Note!

Brakes with defective armature plates, cheese head screws, springs or counter friction faces must always be replaced completely.

Generally observe the following for inspections and maintenance works:

- Remove oil and grease linked impurities using brake cleaning agents, if necessary, replace brake after identifying the cause of the contamination. Dirt deposits in the air gap between stator and armature plate impair the function of the brake and must be removed.
- After replacing the rotor, the original braking torque will not be reached until the run-in operation of the friction surfaces has been completed. After replacing the rotor, run-in armature plates and counter friction faces have an increased initial rate of wear.

Wear on spring-applied brakes

The used spring-applied brakes have a low rate of wear and are designed for long maintenance intervals.

However, the friction lining, the teeth between the brake rotor and the hub, and also the braking mechanism are naturally subject to function-related wear which depends on the application case (see table). In order to ensure safe and problem-free operation, the brake must therefore be checked and maintained regularly and, if necessary, replaced (see brake maintenance and inspection).

The following table describes the different causes of wear and their effect on the components of the spring-applied brake. In order to calculate the useful life of the rotor and brake and determine the maintenance intervals to be prescribed, the relevant influencing factors must be quantified. The most important factors are the applied friction energy, the starting speed of braking and the switching frequency. If several of the indicated causes of wear on the friction lining occur in an application, their effects are to be added together.

Component	Effect	Influencing factors	Cause
Friction lining	Wear on the friction lining	Applied friction energy	Braking during operation (impermissible, holding brakes!)
			Emergency stops
			Overlapping wear when the drive starts and stops
Armature plate and flange	Running-in of armature plate and flange	Applied friction energy	Active braking by the drive motor with the help of the brake (quick stop)
			Starting wear if motor is mounted in a position with the shaft vertical, even if the brake is open
Teeth of the brake rotor	Teeth wear (primarily at the rotor end)	Number of start-stop cycles, Level of the braking torque, Dynamics of the application, Speed fins in operation	Friction between the brake lining and the armature plate or flange e.g. during emergency braking or service brake operation
Armature plate bracket	Armature plate, cap screws and bolts are deflected	Number of start-stop cycles, Level of braking torque	Relative movement and impacts between brake rotor and brake hub
Springs	Fatigue failure of the springs	Number of switching operations of the brake	Load changes and impacts due to reversal error during interaction between armature plate, cap screws and guide bolts
			Axial load cycle and shearing stress on the springs due to radial reversing error of the armature plate

Tab. 2 Causes for wear

8.3.3 Checking the component parts

With a mounted brake	- Check ventilation function and activation/deactivation - Check air gap (if required, re-adjust it) - Measure rotor thickness (if required, replace rotor) - Thermal damage of the armature plate or flange (tarnished in dark blue)	 45  45  44
With a dismounted brake	- Check clearance of the rotor gear teeth (replace rotors that are damaged by vibration) - Damage by vibration of the torque support at the sleeve bolts, cylindrical pins, and armature plate - Check springs for damage - Check armature plate and flange or end shield - Evenness for size 06...12 < 0.06 mm - Evenness from size 14 < 0.1 mm - Max. run-in depth = rated air gap of the design size	 46

8 Maintenance/repair

Maintenance operations
Checking the rotor thickness

Check the mounting dimension of the manual release



Stop!

Dimension "s" must be maintained! Check air gap "s_L"!
(operating instructions)

	Size	s _L (mm)	s +0.1 (mm)	s + s _L (mm)
	06	0.2	1	1.2
	08			
	10			
	12	0.3	1.5	1.8
	14			
	16			
	18	0.4	2	2.4
	20			
	25	0.5	2.5	3

8.3.4 Checking the rotor thickness



Danger!

When the rotor thickness is checked, the motor must not run.

1. Remove fan cover and cover ring if attached.
2. Measure rotor thickness with calliper gauge. If a friction plate is attached, ensure a flanged edge at the outer diameter of the friction plate.
3. Compare measured rotor thickness with minimally permissible rotor thickness (values 46).
4. If required, exchange the entire rotor. Description 46.

8.3.5 Checking the air gap

1. Check the air gap "s_L" near the fixing screws between the armature plate and stator using a feeler gauge (46).
2. Compare air gap measured to maximally permissible air gap "s_{L max.}" (46).
3. If required, set air gap to "s_{LN}" (45).

8.3.6 Release / voltage

**Danger!**

The rotating rotor must not be touched.

**Danger!**

Live connections must not be touched.

1. Observe the brake's function while the drive is being operated. The armature plate must be tightened and the rotor must move free of residual torque.
2. Measure the DC voltage on the brake.
 - The DC voltage measured after the overexcitation time (Ⓢ operating instructions, forced voltage rectifier) must equal the voltage for the holding. A deviation of up to $\pm 10\%$ is permissible.

8.3.7 Adjusting the air gap

**Danger!**

The brake must be free of residual torque.

**Stop!**

For the flange design, please observe the following if the flange is mounted with additional screws:

Clearing holes in the end shield must be provided behind the threaded holes in the flange that are designed for the screws. Without clearing holes, the minimum rotor thickness cannot be utilised fully. In no case must the screws press against the end shield.

1. Loosen screws (10).
2. Screw the sleeve bolts further into the stator using an open-jawed spanner. $\frac{1}{6}$ revolution reduces the air gap by approx. 0.15 mm.
3. Tighten screws, torques (Ⓢ 46).
4. Check air gap " s_L " near the screws using a feeler gauge, " s_{Lrated} " (Ⓢ 46).
5. If the deviation of " s_{Lrated} " is too great, repeat the adjustment process.

8 Maintenance/repair

Installation of a spring-applied brake Rotor replacement

8.3.8 Rotor replacement



Danger!

The brake must be free of residual torque.

1. Loosen the connecting cable.
2. Evenly release the screws and remove them completely.
3. Completely remove the stator from the end shield. Observe the connecting cables.
4. Completely remove the rotor from the hub.
5. Check the toothed part of the hub.
6. In case of wear, replace the hub, too.
7. Check the friction surface of the end shield. If the flange / friction plate is severely gouged, it must be replaced. If the end shield is severely gouged, the friction surface must be reprocessed.
8. Measure the rotor thickness (new rotor) and the height of head of the sleeve bolts using a caliper gauge.
9. The distance between the stator and the armature plate is calculated as follows:

Distance = rotor thickness + s_{Lrated} - height of head

" s_{Lrated} " (▢ 46)

10. Evenly remove the sleeve bolts until the calculated distance is reached between the stator and the armature plate.
11. Mount and set new complete rotor and stator, (▢ 47).
12. Connect the connecting cable again.

8.4 Installation of a spring-applied brake

8.4.1 Brake characteristics

Brake size	s_{LN} +0.1 mm -0.05 mm [mm]	$s_{Lmax.}$ service brake [mm]	$s_{Lmax.}$ holding brake [mm]	Max. adjustment, permissible wear path [mm]	Rotor thickness		Tightening torque of the fixing screws [Nm]
					min. ¹⁾ [mm]	max. [mm]	
06	0.2	0.5	0.3	1.5	4.5	6.0	3.0
08					5.5	7.0	5.9
10					7.5	9.0	10.1
12	0.3	0.75	0.45	2.0	8.0	10.0	10.1
14				2.5	7.5	10.0	24.6
16				3.5	8.0	11.5	24.6
18	0.4	1.0	0.6	3.0	10.0	13.0	24.6
20				4.0	12.0	16.0	48.0
25	0.5	1.25	0.75	4.5	15.5	20.0	48.0

Tab. 3 Characteristics of the spring-applied brake

- 1) The dimension of the friction lining allows for adjustment of the brake for at least five times.

8.4.2 Installation of the brake

**Stop!**

- Check the state of the end shield (15). It must be free from oil and grease.

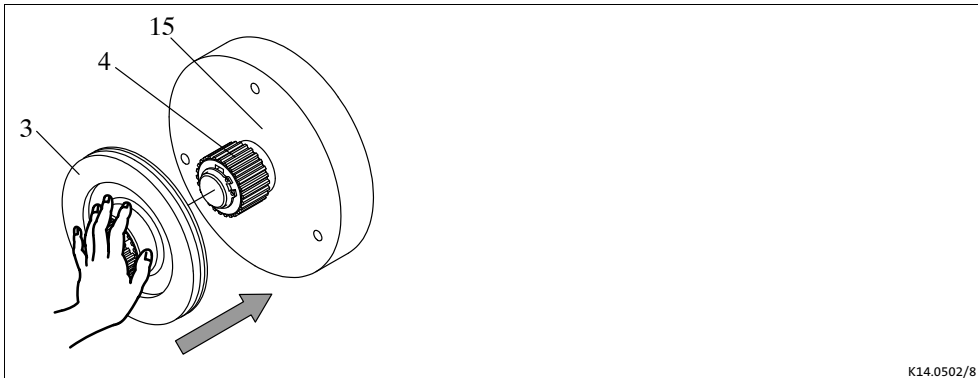


Fig. 3 Rotor mounting

3 Rotor

4 Hub

15 End shield

1. Push the rotor (3) onto the hub (4) and check whether it can be moved by hand (Fig. 3).

**Stop!**

Please note the following for the version "brake with shaft sealing ring in torque adjustment ring":

2. Lightly lubricate the lip of the shaft seal with grease.
3. When assembling the stator (1), push the shaft sealing ring carefully over the shaft.
 - The shaft should be located concentrically to the shaft seal.
4. Use the screws (10) to mount the stator (7) completely to the end shield (15) (Fig. 4).
 - Tighten the screws evenly, tightening torque (📖 46).

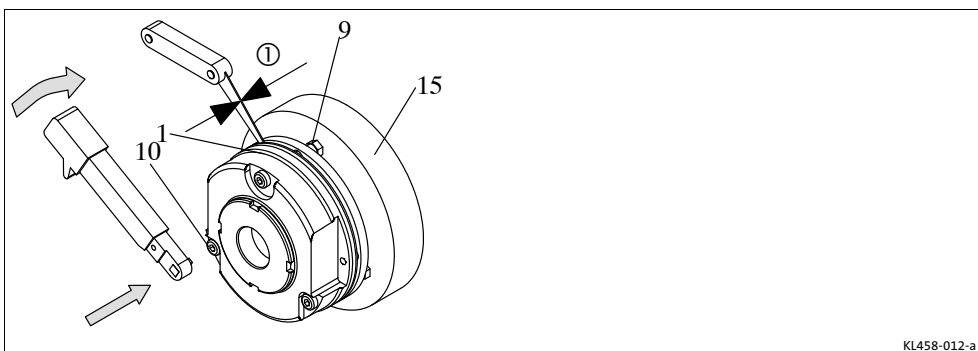


Fig. 4 Stator mounting

1 Stator

10 Cheese head screw

9 Sleeve bolt

15 End shield

① s_{Lrated}

1. Check air gap near the screws (10) using a feeler gauge and compare the values to the data for " s_{Lrated} " in the table, 📖 46.

8 Maintenance/repair

Installation of a spring-applied brake
Adjusting the air gap



Note!

Do not insert feeler gauge further than 10 mm between the armature plate (2) and stator (1)!

If " s_L " (46) is not within the tolerance, readjust the air gap.

8.4.3 Adjusting the air gap



Danger!

Disconnect voltage. The brake must be free of residual torque.

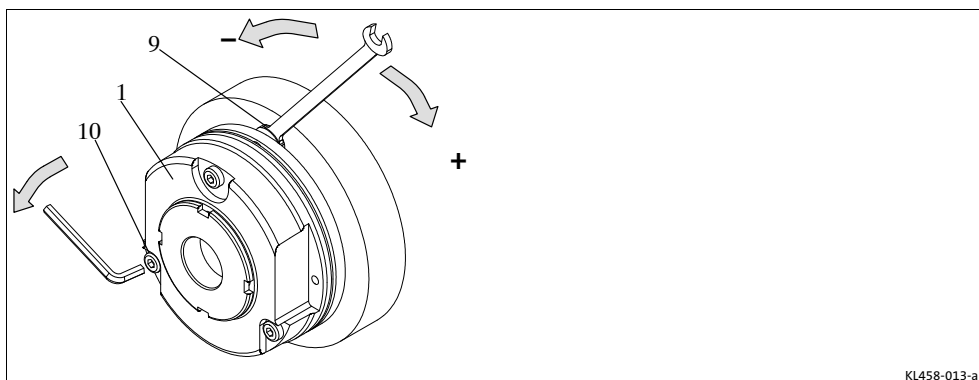


Fig. 5 Re-adjust air gap

- 1 Complete stator
- 9 Sleeve bolt

- 10 Cheese head screw

If the measured value " s_L " is outside the tolerance of " s_{Lrated} ", set the dimension:

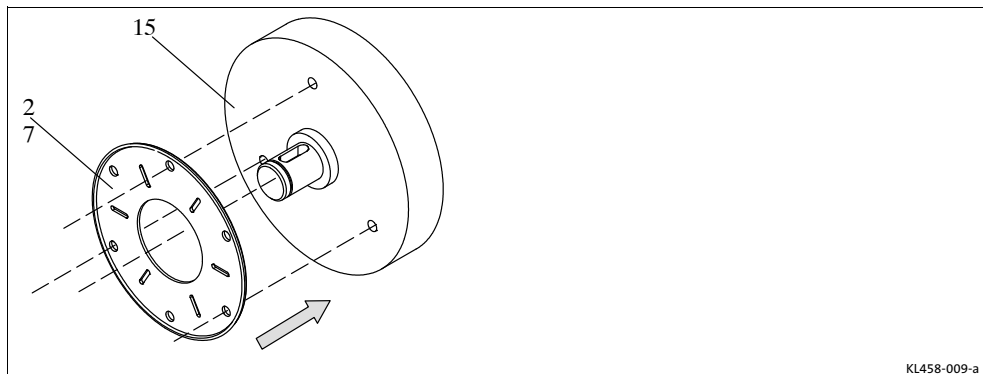
8.4.4 Assembly of the friction plate, sizes 06 to 16

Fig. 6 Friction plate mounting

15 End shield

27 Friction plate

1. Put a friction plate (27) or flange (6) against the end shield (15).

**Note!**

The flanged edge of the friction plate must remain visible!

2. Align pitch circle and fastening bore hole thread.

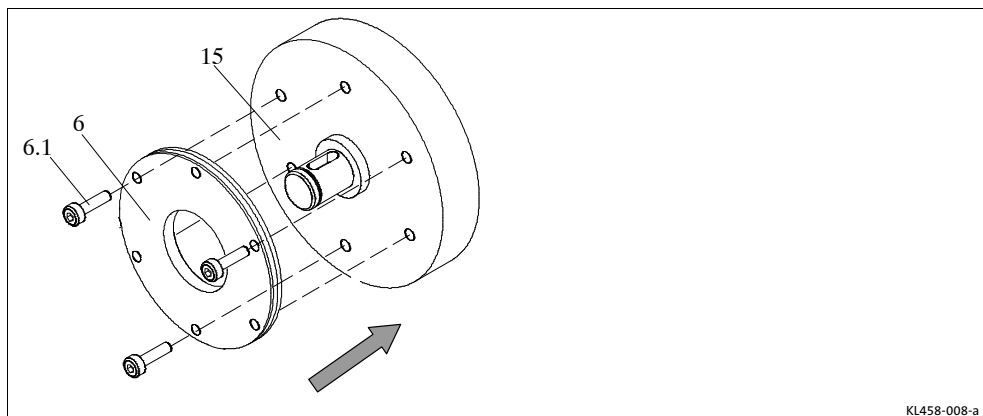
8.4.5 Assembly of the flange

Fig. 7 Flange mounting

6 Flange

15 End shield

6.1 Set of screws

1. Hold the flange (6) against the end shield (15) and check the pitch circle and retaining screw drill hole threading.
2. Fasten the flange (6) on the end shield (15) with the screws (6.1).
3. Tighten the cheese head screws (6.1) evenly, (tightening torques (📖 46).
4. Check the height of the screw heads. The screw heads may not be higher than the minimum rotor thickness. We recommend using screws according to DIN 6912, dimensions (📖 46).

8 Maintenance/repair

Repair Assembly of the cover seal

Mounting the flange without additional screws

1. Apply the flange (6) to the end shield (15). Check pitch circle and thread of the screw-on bore holes.
2. Mount the brake.

8.4.6 Assembly of the cover seal

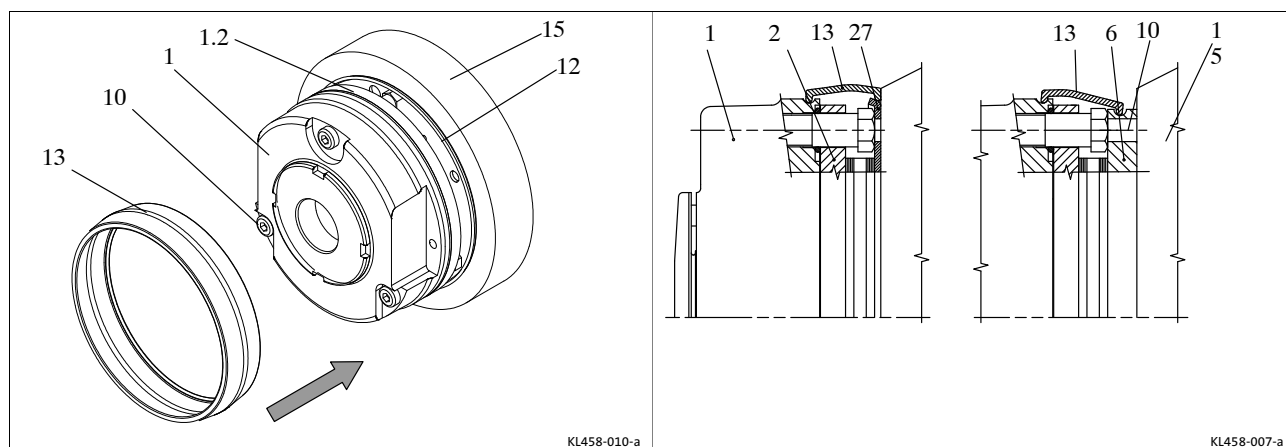


Fig. 8 Cover ring mounting

1	Complete stator	10	Cheese head screw	15	End shield
2	Armature plate	27	Friction plate		
6	Flange	13	Cover ring		

1. Insert the cable through the cover ring.
2. Push the cover ring over the stator.
3. Press the lips of the cover ring into the groove of rotor and flange.
 - If a friction plate is used, the lip must be pulled over the flanged edge.

8.5 Repair

- We recommend having all repairs carried out by the Lenze customer service.

If faults occur during operation of the drive system:

- First check the possible causes of malfunction according to the following table.



Note!

Also observe the corresponding chapters in the operating instructions for the other components of the drive system.

If the fault cannot be remedied using one of the listed measures, please contact the Lenze Service.

Fault	Cause	Remedy
Motor too hot Can only be evaluated by measuring the surface temperature: • Non-ventilated motors > 140 °C • Externally ventilated or self-ventilated motors > 110 °C	Insufficient cooling air, blocked air ducts.	Ensure unimpeded circulation of cooling air
	Preheated cooling air	Ensure a sufficient supply of fresh cooling air
	Overload, with normal mains voltage the current is too high and the speed too low	Use larger drive (determined by power measurement)
	Rated operating mode exceeded (S1 to S8 IEC/EN 60034-1)	Adjust rated operating mode to the specified operating conditions. Determination of correct drive by expert or Lenze customer service
	Loose contact in supply cable (temporary two-phase operation!)	Tighten loose contact
	Fuse has blown (two-phasing!)	Replace fuse
	Overload of the drive	Check load and, if necessary, reduce by means of longer ramp-up times
	Heat dissipation impeded by deposits	Check winding temperature Clean surface and cooling fins of the drives
Motor does not start	Voltage supply interrupted	Check error message on the inverter Check electrical connection, 26
	Inverter inhibited	Check display on the inverter Check inverter enable
	Fuse has blown	Replace fuse
	Interrupted encoder cable	Check error message on the inverter Check encoder cable
	Brake does not release	Check electrical connection, 26 Check air gap, brake documentation Check continuity of magnetic coil
	Drive blocks	Check components for easy movement, remove foreign particles if necessary
	Motor cable with reverse polarity	Check electrical connection, 26
	Overload monitoring of the inverter is activated	Check inverter settings Reduce load caused by longer acceleration times
Incorrect rotating direction of the motor	Motor cable with reverse polarity	Check and correct polarity
Motor rotates normally but does not reach the expected torque	Motor cable interchanged cyclically	Connect the phases at the motor cable connection correctly
	Not all motor phases connected	
Motor turns in one direction at maximum speed in an uncontrolled manner	Motor cable interchanged cyclically	Check motor connector and correct it if necessary
	Polarity of encoder cable reversed	Check encoder connection and correct it if necessary
Motor rotates slowly in one direction and cannot be influenced by the inverter	Polarity of motor cable and encoder cable reversed	Check and correct polarity
Irregular running	Insufficient shielding of motor or resolver cable	Checking shielding and earth connection
	Drive inverter gain too large	Adjust the gains of the inverters (see operating instructions for drive inverter)
Vibrations	Insufficiently balanced coupling elements or machine	Rebalance
	Inadequate alignment of drive train	Realign machine unit, check foundation if necessary
Running noises	Loose fixing screws	Check and tighten screw connections
	Foreign particles inside the motor	Repair by manufacturer if necessary
Surface temperature > 140°C	Bearing damage	
	Overload of the drive	Check load Check winding temperature
	Heat dissipation impeded by deposits	Clean surface and cooling fins of the drives

10 Appendix

Technical data as specified by ordinances (EU) No. 4/2014 and (EC) No. 640/2009

10.1 Technical data as specified by ordinances (EU) No. 4/2014 and (EC) No. 640/2009

This chapter includes the technical data in compliance with the specifications laid down by ordinances (EU) No. 4/2014 and (EC) No. 640/2009.

Annex 1 Clause 2 of ordinance (EC) No. 640/2009 stipulates the publication of the following technical data in the fixed order 1 ... 12:

No.	Meaning
1	Rated efficiency (η) at 100 %, 75 % and 50 % of the rated load and rated voltage (U_{rated})
2	Efficiency level: "IE2" or "IE3"
3	Year of manufacture
4	Name or trademark, official registration number and manufacturer's place of establishment
5	Model number of the product
6	Number of poles of the motor
7	Rated output power(s) or rated output power interval [kW]
8	Rated input frequency (frequencies) of the motor [Hz]
9	Rated voltage(s) or rated voltage interval [V]
10	Rated speed(s) or rated speed interval [rpm]
11	Relevant information for the disassembly, recycling or disposal after the final decommissioning
12	Information regarding the range of operating conditions for which the motor is specially designed:
i)	Altitudes above sea level
ii)	Ambient air temperatures, also for motors with air cooling
iii)	Cooling fluid temperature at the inlet of the product
iv)	Maximum operating temperature
v)	Hazardous areas

Technical data in compliance with ordinance (EC) No. 640/2009																		
No.	m500-P/m550-P motors																	
1	$\eta_{100\%}$	[%]	82.5	85.0	85.0	87.0	88.0	88.6	89.6	90.4	91.4	92.1	92.6	93	93.6	93.6	93.9	94.2
	$\eta_{75\%}$	[%]	83.9	84.1	84.9	87.3	87.2	88.3	90.3	90.5	91.2	91.9	93.2	93.2	93.7	93.7	94.2	93.9
	$\eta_{50\%}$	[%]	81.7	81.5	82.4	86	85.8	87.3	88.6	89.7	89.8	90.9	93.0	92.9	93.4	93.4	93.4	93.1
2			IE3	IE3	IE3	IE3	IE3	IE3	IE3	IE3	IE3	IE3	IE3	IE3	IE3	IE3	IE3	IE3
3			For year of manufacture and week of manufacture see nameplate: 17															
4			Lenze Drives GmbH, Breslauer Straße 3, D-32699 Extertal, GERMANY, HR Lemgo B 6478															
5	Motor code		M55AP 080M04	M55AP 090M04	M55AP 090L04	M55AP 100M04	M55AP 100L04	M55AP 112M04	M55AP 132M04 M50AP 132M04	M55AP 132L04 M50AP 132L04	M55AP 160M04 M50AP 160M04	M55AP 160L04 M50AP 160L04	M55AP 180M04 M50AP 180M04	M55AP 180L04 M50AP 180L04	M55AP 180V04 M50AP 180V04	M55AP 200M04 M50AP 200M04	M55AP 225M04 M50AP 225M04	M55AP 225L04 M50AP 225L04
6	Number of poles		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
7	P_{rated}	[kW]	0.75	1.1	1.5	2.2	3	4	5.5	7.5	11	15	18.5	22	30	30	37	45
8	f_r	[Hz]	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
9	V_{rated}	[V]	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
10	n_r	[rpm]	1450	1444	1442	1452	1449	1453	1460	1477	1478	1470	1483	1480	1478	1478	1483	1482
11			Information regarding the disposal: 12															
12																		
i)			Permissible installation height: 19															
ii)			Permissible ambient air temperatures: 19 Permissible ambient air temperatures: 19															
iii)			Not relevant, since motors are not liquid-cooled.															
iv)			Maximum operating temperature: 155 °C (temperature class F)															
v)			Operation in hazardous areas prohibited.															

Technical data in compliance with ordinance (EC) No. 640/2009																	
No.			m540-P motors														
1	$\eta_{100\%}$	[%]	84.1	85.3	86.7	87.7	88.6	89.6	90.4	91.4	92.1	92.6	93	93.6	93.9	94.2	94.6
	$\eta_{75\%}$	[%]	84.7	85.9	87	88.9	89.2	90	91.1	91.8	92.3	93.1	93.6	94.2	94.5	94.9	95.1
	$\eta_{50\%}$	[%]	83.4	84.9	85.9	87.9	88.6	89.4	90.8	91.2	91.5	93	93.6	94.2	94.4	95.1	95
2			IE3	IE3	IE3	IE3	IE3	IE3	IE3	IE3	IE3	IE3	IE3	IE3	IE3	IE3	IE3
3			For year of manufacture and week of manufacture see nameplate: 17														
4			Lenze Drives GmbH, Breslauer Straße 3, D-32699 Extetal, GERMANY, HR Lemgo B 6478														
5	Motor code		M54AP 090M04	M54AP 090L04	M55AP 100M04	M54AP 100L04	M54AP 112M04	M54AP 132M04	M54AP 132L04	M54AP 160M04	M54AP 160L04	M54AP 180M04	M54AP 180L04	M54AP 200M04	M5AP 225M04	M54AP 225L04	M54AP 250M04
6	Number of poles		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
7	P_{rated}	[kW]	1.1	1.5	2.2	3	4	5.5	7.5	11	15	18.5	22	30	37	45	55
8	f_r	[Hz]	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
9	V_{rated}	[V]	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
10	n_r	[rpm]	1440	1445	1465	1460	1460	1470	1465	1475	1475	1470	1470	1470	1478	1478	1482
11			Information regarding the disposal: 12														
12																	
i)			Permissible installation height: 19														
ii)			Permissible ambient air temperatures: 19														
iii)			Not relevant, since motors are not liquid-cooled.														
iv)			Maximum operating temperature: 155 °C (temperature class F)														
v)			Operation in hazardous areas prohibited.														



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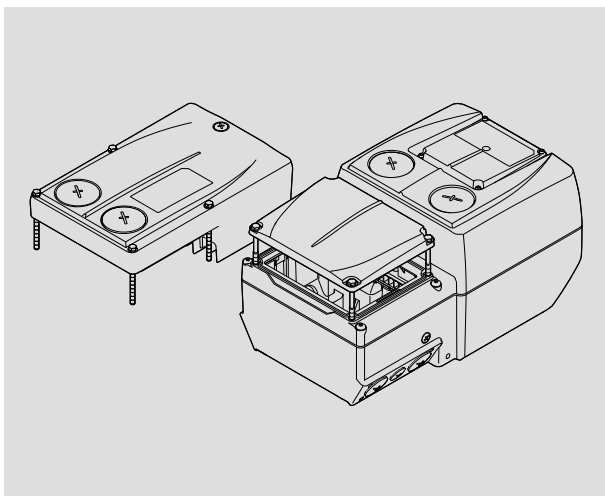


L-force *Drives*

Montageanleitung

Mounting Instructions

8400 motec *0.37 ... 7.5 kW*



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Drive Unit

Lenze



Lesen Sie zuerst diese Anleitung, bevor Sie mit den Arbeiten beginnen!
Beachten Sie die enthaltenen Sicherheitshinweise.



Please read these instructions before you start working!
Follow the enclosed safety instructions.



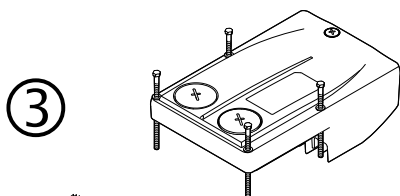
Warnings!

Operation of this equipment requires detailed installation and operation instructions provided in the Hardware manual intended for use with this product. This information is provided on the CD-ROM included in the container this device was packaged in. It should be retained with this device at all times. A hard copy of this information may be ordered by phone or e-mail, printed on the back of this document.

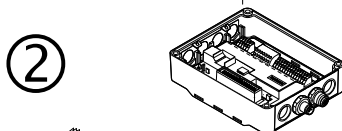


Avertissements !

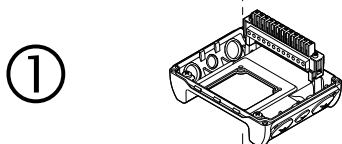
Pour assurer le bon fonctionnement de cet équipement, se conformer aux instructions d'installation et de mise en service contenues dans le manuel correspondant et régissant l'utilisation de ce produit. Ces informations sont contenues sur le CD-ROM compris dans l'emballage livré, qui doit être consultable à tout moment. Une version papier de ces informations peut être commandée par téléphone ou par mail (coordonnées figurant au dos du présent document).



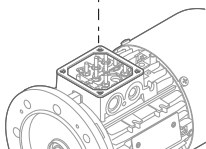
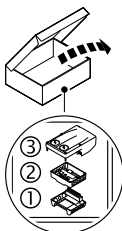
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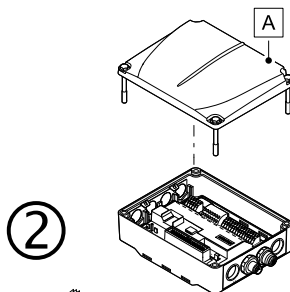
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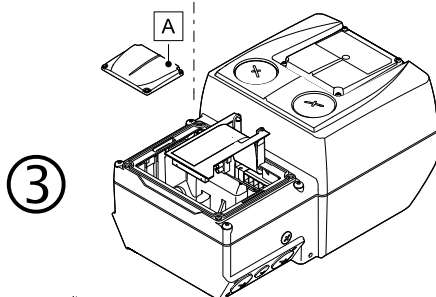
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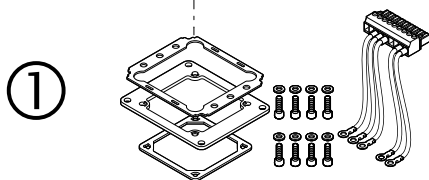
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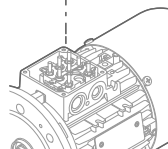
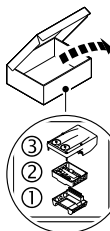
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EDK84DGDVBxxx4



EDK84DGVN4E



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1 Über diese Dokumentation

1.1 Dokumenthistorie

Materialnummer	Version			Beschreibung
13523272	7.1	12/2016	TD29	DE/EN/FR/ES/IT (nur PDF)
13523101	7.0	11/2016	TD15	Ergänzung von Funktionsbeschreibungen, Fehlerkorrekturen, Überarbeitung der Dokumentstruktur
13478084	6.1	02/2015	TD15	DE/EN/FR/ES/IT (nur PDF)
13478084	6.0	12/2014	TD15	Korrekturen UL
13410321	5.3	07/2014	TD15	DE/EN/FR/ES/IT (nur PDF)
13410320	5.2	07/2014	TD15	UL-Hinweise in französischer Sprache für Canada EAC-Konformität
13410321	5.1	06/2012	TD15	allgemeine Korrekturen, DE/EN/FR/ES/IT (nur PDF)
13410320	5.0	06/2012	TD15	allgemeine Korrekturen
13392616	4.1	12/2011	TD15	Erweiterung 4 ... 3 kW, DE/EN/FR/ES/IT (nur PDF)
13392614	4.0	11/2011	TD15	Erweiterung 4 ... 7.5 kW
13373549	3.0	04/2011	TD15	Erweiterung 2.2 ... 3 kW, PROFINET, EtherCAT
13371646	2.0	02/2011	TD15	allgemeine Korrekturen
13336813	1.5	09/2010	TD15	Erstausgabe DE/EN/FR/ES/IT (nur PDF)
13336813	1.0	08/2010	TD15	Erstausgabe DE/EN



Tipp!

Informationen und Hilfsmittel rund um die Lenze-Produkte finden Sie im Download-Bereich unter

www.lenze.com

1.2 Zielgruppe

Diese Dokumentation richtet sich an qualifiziertes Fachpersonal nach IEC 60364.

Qualifiziertes Fachpersonal sind Personen, die für die auszuführenden Tätigkeiten bei der Aufstellung, Montage, Inbetriebsetzung und dem Betrieb des Produkts über entsprechende Qualifikationen verfügen.

1.3

Informationen zur Gültigkeit

Diese Anleitung ist gültig für Antriebsregler 8400 motec mit der Typenbezeichnung:

Typenbezeichnung	ab HW	ab SW
E84DGDVBxxx4	VA	01.00

Weitere Informationen zum Typenschlüssel enthält das Kapitel Produktbeschreibung im Gerätehandbuch 8400 motec. (📖 EDS84DG752)

1.4

Verwendete Konventionen

Diese Dokumentation verwendet folgende Konventionen zur Unterscheidung verschiedener Arten von Information:

Informationsart	Auszeichnung	Beispiele/Hinweise
Zahlenschreibweise		
Dezimaltrennzeichen	Punkt	Es wird generell der Dezimalpunkt verwendet. Zum Beispiel: 1234.56
Warnhinweise		
UL-Warnhinweise		Werden in englischer und französischer Sprache verwendet.
UR-Warnhinweise		
Textauszeichnung		
Programmname	» «	PC-Software Zum Beispiel: »Engineer«, »Global Drive Control« (GDC)
Symbole		
Seitenverweis		Verweis auf eine andere Seite mit zusätzlichen Informationen Zum Beispiel:  16 = siehe Seite 16
Dokumentationsverweis		Verweis auf eine andere Dokumentation mit zusätzlichen Informationen Zum Beispiel:  EDKxxx = siehe Dokumentation EDKxxx

1.5 Verwendete Hinweise

Um auf Gefahren und wichtige Informationen hinzuweisen, werden in dieser Dokumentation folgende Piktogramme und Signalwörter verwendet:

Sicherheitshinweise

Aufbau der Sicherheitshinweise:

**Gefahr!**
(kennzeichnet die Art und die Schwere der Gefahr)
Hinweistext
(beschreibt die Gefahr und gibt Hinweise, wie sie vermieden werden kann)

Piktogramm und Signalwort	Bedeutung
 Gefahr!	Gefahr von Personenschäden durch gefährliche elektrische Spannung Hinweis auf eine unmittelbar drohende Gefahr, die den Tod oder schwere Verletzungen zur Folge haben kann, wenn nicht die entsprechenden Maßnahmen getroffen werden.
 Gefahr!	Gefahr von Personenschäden durch eine allgemeine Gefahrenquelle Hinweis auf eine unmittelbar drohende Gefahr, die den Tod oder schwere Verletzungen zur Folge haben kann, wenn nicht die entsprechenden Maßnahmen getroffen werden.
 Stop!	Gefahr von Sachschäden Hinweis auf eine mögliche Gefahr, die Sachschäden zur Folge haben kann, wenn nicht die entsprechenden Maßnahmen getroffen werden.

Anwendungshinweise

Piktogramm und Signalwort	Bedeutung
 Hinweis!	Wichtiger Hinweis für die störungsfreie Funktion
 Tipp!	Nützlicher Tipp für die einfache Handhabung
	Verweis auf andere Dokumentation

Spezielle Sicherheitshinweise und Anwendungshinweise

Piktogramm und Signalwort	Bedeutung
 Warnings!	Sicherheitshinweis oder Anwendungshinweis für den Betrieb nach UL- oder CSA-Anforderungen. Die Maßnahmen sind erforderlich, um die Anforderungen nach UL oder CSA zu erfüllen.
 Warnings!	

2 Sicherheitshinweise



Gefahr!

Gefährliche elektrische Spannung

- Die Leistungsanschlüsse führen bis zu 3 Minuten nach Netz-Ausschalten gefährliche elektrische Spannung.

Mögliche Folgen:

- Tod oder schwere Verletzungen beim Berühren der Leistungsanschlüsse.

Schutzmaßnahmen:

- Vor Arbeiten am Gerät Netzspannung ausschalten und mindestens 3 Minuten warten.
- Prüfen, ob alle Leistungsanschlüsse spannungsfrei sind.

Warnung durch Symbole

Symbol	Beschreibung
	Lange Entladezeit: Alle Leistungsklemmen führen bis zu 3 Minuten nach Netz-Ausschalten gefährliche Spannung!
	Hoher Ableitstrom: Festinstallation und PE-Anschluss nach EN 61800-5-1 ausführen!
	Elektrostatisch gefährdete Bauelemente: Vor Arbeiten am Gerät muss sich das Personal von elektrostatischen Aufladungen befreien!
	Heiße Oberfläche: Persönliche Schutzausrüstung verwenden oder Abkühlung abwarten!

Beachten Sie auch weitere wichtige Informationen zur Geräte- und Sicherheitstechnik auf der beiliegenden CD-ROM!

Original - Englisch

**Warnings!**

- ▶ These devices are suitable for field wiring.
- ▶ Intended for use with 75 °C wire.
- ▶ Intended for use with copper conductors only.
- ▶ Suitable for use in a surrounding air temperature of 45 °C, and
 - additionally 60 °C when de-rating rules are followed.
- ▶ Hot surface. Risk of burn.
- ▶ Should this device be mounted on a motor, the combination needs to be suitable for the type rating.
- ▶ The supply terminals are to be tightened to:
 - For model suffix's 371, 551, 751, 112, 152 tighten to 4.4 - 5.3 lb-in.
 - For model suffix's 222, and 302, tighten to 7 lb-in.
- ▶ These devices are suitable for use on a circuit capable of delivering not more than 200 000 rms Symmetrical Amperes, 480 V maximum
 - When protected by CC, R, T, or J class fuses or
 - When protected by a circuit breaker having an interrupting rating not less than 200 000 rms symmetrical amperes, 480 V maximum.
- ▶ Use fuses and circuit breakers only.
- ▶ Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code and any additional local codes.
- ▶ The opening of branch circuit protective devices may be an indication that a fault current has been interrupted. To reduce the risk of fire or electric shock, current carrying parts and other components, the controller should be examined and replaced if damaged.
- ▶ These devices provide overload protection rated for 125 % of the rated FLA.

CAUTION!

- ▶ Risk of electric shock. Please allow 180 s for the internal capacitors to discharge.

Original - Französisch

**Avertissements !**

- ▶ Ces équipements sont adaptés à un câblage à pied d'oeuvre.
- ▶ Utiliser des conducteurs 75 °C.
- ▶ Utiliser exclusivement des conducteurs en cuivre.
- ▶ Convient à une utilisation à une température ambiante maximale de 45 °C ainsi que
 - 60 °C en cas d'application des règles de réduction de puissance.
- ▶ Température élevée en surface. Risque de brûlure.
- ▶ En cas de montage de l'équipement sur le moteur, la combinaison doit être conforme à la qualification du type.
- ▶ Couples de serrage des bornes réseau :
 - Pour les types contenant le suffixe 371, 551, 751, 112, 152 : 0,5 à 0,6 Nm.
 - Pour les types contenant le suffixe 222 et 302 : 0,8 Nm.
- ▶ Convient aux circuits non susceptibles de délivrer plus de 200 000 ampères symétriques eff., maximum 480 V
 - Protection par des fusibles CC de calibre R, T ou J ; ou
 - Protection par disjoncteur à pouvoir de coupure nominal d'au moins 200 000 ampères symétriques eff., maximum 480 V.
- ▶ Utiliser exclusivement des fusibles et des disjoncteurs.
- ▶ La protection statique intégrée n'offre pas la même protection qu'un disjoncteur. Une protection par disjoncteur externe doit être fournie, conformément au National Electrical Code et aux autres dispositions applicables au niveau local.
- ▶ Le déclenchement des dispositifs de protection du circuit de dérivation peut être dû à une coupure qui résulte d'un courant de défaut. Pour limiter le risque d'incendie ou de choc électrique, examiner les pièces porteuses de courant et les autres éléments du contrôleur ; les remplacer s'ils sont endommagés.
- ▶ Ces équipements intègrent une protection contre les surcharges conçue pour se déclencher à 125 % de l'intensité assignée à pleine charge.

ATTENTION !

- ▶ Risque de choc électrique. Patientez 180 s pour permettre aux condensateurs internes de se décharger.

3

Technische Daten

3.1

Allgemeine Daten und Einsatzbedingungen

Konformität und Approbation			
Konformität			
CE	2006/95/EG	Niederspannungsrichtlinie	
EAC	TP TC 004/2011 (TR ZU 004/2011)	Über die Sicherheit von Niederspannungs- ausrüstung	Eurasische Konformität TR ZU: Technische Regulie- rung der Zollunion
EAC	TP TC 020/2011 (TR ZU 020/2011)	Elektromagnetische Verträglichkeit von technischen Erzeugnis- sen	Eurasische Konformität TR ZU: Technische Regulie- rung der Zollunion
Approbation			
UR	UL 508C	Power Conversion Equipment, File No. E170350	
cUR	C22.2 No 274-13		
Approbation Field Package			
cULus	UL 508C C22.2 No 274-13	Power Conversion Equipment, File No. E132659	

Personenschutz und Geräteschutz			
Schutzart		- Nicht benutzte Bohrungen für Kabelverschraubungen mit Blindstopfen verschließen! - Nicht benutzte Steckverbinder mit Schutzkappen oder Blindsteckern verschließen!	
	EN 60529	8400 motec Set:	IP65
		Frame Unit mit Serviceschalter / mit Serviceschalter und Bedienelementen	IP54
		Frame Unit mit Serviceschalter und Schutzfunktion	IP64
	NEMA 250	8400 motec Set:	Typ 4
		Field Package ohne Schalter	
		0.37 ... 3.0 kW	Typ 1
		4.0 ... 7.5 kW	Typ 4X (Innenbereich)
		Field Package mit Schalter	
		0.37 ... 3.0 kW	Typ 1
(Erd-) Ableitstrom	EN 61800-5-1	> 3.5 mA AC, > 10 mA DC	Bestimmungen und Sicherheitshinweise beachten!
Summen-Fehlerstrom		In TN-Netzen dürfen folgende Fehlerstrom-Schutzschalter eingesetzt werden:	
Motormontage		0.37 ... 3.0 kW	30 mA, Typ B
		4.0 ... 7.5 kW, $f_{ch} = 8/16$ kHz	30 mA, Typ B
		4.0 ... 7.5 kW, $f_{ch} = 4$ kHz	300 mA, Typ B
Wandmontage und Lenze-Systemleitung ≤ 3 m		0.37 ... 3.0 kW	30 mA, Typ B
		4.0 ... 7.5 kW, $f_{ch} = 8/16$ kHz	30 mA, Typ B
		4.0 ... 7.5 kW, $f_{ch} = 4$ kHz	300 mA, Typ B
Wandmontage und Lenze-Systemleitung > 3 m		0.37 ... 7.5 kW	300 mA, Typ B
zusätzlicher Potenzialausgleich		M5-Gewinde mit Klemme in der WU für den Anschluss einer 16 mm ² PE-Leitung	
Isolierung von Steuerungsschaltkreisen	EN 61800-5-1	Sichere Trennung vom Netz durch doppelte (verstärkte) Isolierung	
Isolationsfestigkeit	EN 61800-5-1	<2000 m ü. NN: Überspannungskategorie III	
		>2000 m Ü. NN: Überspannungskategorie II	

Personenschutz und Geräteschutz			
Kurzschlussfestigkeit	EN 61800-5-1	Anschluss:	
		Motor	bedingt, der Regler wird gesperrt, Fehlerquittierung erforderlich
		Motorhaltebremse, Bremswiderstand	nein
		PTC, Steueranschlüsse	voll
Erdschlussfestigkeit	EN 61800-5-1	Anschluss:	
		Motor (bei Reglerfreigabe)	bedingt, der Regler wird gesperrt, Fehlerquittierung erforderlich
		Motor (im Betrieb)	nein
		Bremswiderstand, PTC	nein
Schutzmaßnahmen gegen		• motorseitigen Kurzschluss beim Einschalten und während des Betriebs • Kippen des Motors • Motor-Übertemperatur – Eingang für PTC oder Thermokontakt – I²t-Überwachung	
Zyklisches Netzschalten		• Schaltungen/Minute	3
		• Schaltungen/Stunde	max. 20
		• Schaltpause	Auf ein 3-maliges Netzschalten in einer Minute, muss eine Schaltpause von 9 min folgen.
Einschaltstrom		$\leq 2 \times I_N$	

Anschlussbedingungen

Netzanschluss

Netzsystem

TT, TN (mit geerdetem Sternpunkt)		Betrieb uneingeschränkt erlaubt.
IT		Die für IT-Netze beschriebene Maßnahme anwenden (IT-Schraube entfernen). Die Einhaltung der EMV-Anforderungen für die Störaussendung (EN 61800-3) für die Maschine/ Anlage liegt in der Verantwortung des Maschinen-/ Anlagenherstellers! Der Betrieb mit integrierter Sicherheitstechnik ist nicht zulässig.

Motoranschluss

Motoren	EN 60034	Nur für den Umrichterbetrieb geeignete Motoren einsetzen. Isolationsfestigkeit: min. $\dot{u} \geq 1.5 \text{ kV}$, min. $du/dt \geq 5 \text{ kV}/\mu\text{s}$
Länge der Motorlei- tung		< 20 m (Lenze-Systemleitung, geschirmt)

Umgebungsbedingungen

Klimatisch

Lagerung	IEC/EN 60721-3-1	1K3 (-30 ... +60 °C)
Transport	IEC/EN 60721-3-2	2K3 (-30 ... +75 °C)
Betrieb	IEC/EN 60721-3-3	3K3 (-30 ... +55 °C) Betrieb bei 4 kHz: > +45 °C den Ausgangs-Bemes- sungsstrom um 2,5 %/°C reduzieren. Betrieb bei 8/16 kHz: > +40 °C den Ausgangs-Bemes- sungsstrom um 2,5 %/°C reduzieren.
Aufstellhöhe		< 4000 m üNN > 1000 m üNN den Ausgangs-Bemessungsstrom um 5 %/ 1000 m reduzieren.
Verschmutzung	IEC/EN 61800-5-1	Verschmutzungsgrad 2

Mechanisch

Rüttelfestigkeit ($9.81 \text{ m/s}^2 = 1 \text{ g}$)

Motormontage	Germanischer Lloyd	Allgemeine Bedingungen: beschleunigungsfest bis 2 g	
	IEC/EN 60721-3-3	3M6	
Wandmontage mit E84DZMAWE1	Germanischer Lloyd	Allgemeine Bedingungen: beschleunigungsfest bis 2 g	
	IEC/EN 60721-3-3	3M6	

Montagebedingungen			
Einbauort			
Motormontage		Standard	
Wandmontage		mit optionalem Wandadapter	In Nischen die Konvektionskühlung gewährleisten!
Einbaulage			
Wandmontage			
0.37 ... 3.0 kW		vertikal mit Kühlrippen oben, gedreht, horizontal	• Derating beachten, siehe Gerätehandbuch 8400 motec (📖 EDS84DG752) • Anreihen mehrer Geräte nur seitlich, damit die Konvektionskühlung gewährleistet bleibt!
4.0 ... 7.5 kW		beliebig	
Steuerung			
Steuerungsverfahren			
	VFCplus: • U/f-Steuerung (linear oder quadratisch), • Rückführsystem erforderlich SLVC: • Sensorlose Vectorregelung (Drehzahl) VFCplus eco: • U/f-Steuerung, energetisch optimiert SLPSM: • Sensorlose Regelung für Synchronmotoren		
Schaltfrequenz			
	4 kHz, 8 kHz, 16 kHz		

3.2 Bemessungsdaten

Eingangsdaten

Netz	Spannung U _{LN} [V]	Spannungsbereich U _{LN} [V]	Frequenzbereich f [Hz]
3/PE AC	400	320 - 0 % ... 440 + 0 %	45 - 0 % ... 65 + 0 %
3/PE AC	480	432 - 0 % ... 528 + 0 %	45 - 0 % ... 65 + 0 %

	Spannung [V]	Frequenz [Hz]	Bemessungsstrom [A]		Phasen- zahl
			bis +45 °C ①	bis +55 °C ①	
E84DGDVB3714	400/480	50/60	1.3/1.1	1.0/0.8	3
E84DGDVB5514	400/480	50/60	1.8/1.5	1.4/1.1	3
E84DGDVB7514	400/480	50/60	2.4/2.0	1.8/1.5	3
E84DGDVB1124	400/480	50/60	3.2/2.7	2.4/2.0	3
E84DGDVB1524	400/480	50/60	3.8/3.1	2.9/2.3	3
E84DGDVB2224	400/480	50/60	5.6/4.6	4.2/3.5	3
E84DGDVB3024	400/480	50/60	7.2/5.9	5.4/4.4	3
E84DGDVB4024	400/480	50/60	9.3/7.7	7.0/5.8	3
E84DGDVB5524	400/480	50/60	12.8/10.6	9.6/8.0	3
E84DGDVB7524	400/480	50/60	16.3/13.5	12.3/10.1	3

① Umgebungstemperatur, Schaltfrequenz 4 kHz

Ausgangsdaten

	Spannung [V]	Frequenz [Hz]	Bemessungsstrom [A]		Phasen- zahl
			bis +45 °C ①	bis +55 °C ①	
E84DGDVB3714	0 ... 400/480	0 ... 300	1.3/1.1	1.0/0.8	3
E84DGDVB5514	0 ... 400/480	0 ... 300	1.8/1.5	1.4/1.1	3
E84DGDVB7514	0 ... 400/480	0 ... 300	2.4/2.0	1.8/1.5	3
E84DGDVB1124	0 ... 400/480	0 ... 300	3.2/2.7	2.4/2.0	3
E84DGDVB1524	0 ... 400/480	0 ... 300	3.9/3.2	2.9/2.4	3
E84DGDVB2224	0 ... 400/480	0 ... 300	5.6/4.7	4.2/3.5	3
E84DGDVB3024	0 ... 400/480	0 ... 300	7.3/6.0	5.4/4.5	3
E84DGDVB4024	0 ... 400/480	0 ... 300	9.5/7.9	7.1/5.9	3
E84DGDVB5524	0 ... 400/480	0 ... 300	13.0/10.8	9.8/8.1	3
E84DGDVB7524	0 ... 400/480	0 ... 300	16.5/13.7	12.4/10.3	3

① Umgebungstemperatur, Schaltfrequenz 4 kHz

4 Mechanische Installation

4.1 Vorbereitung

Die Montage und Verdrahtung der Wiring Unit und Communication Unit entsprechend der Montageanleitungen muss abgeschlossen sein.



Tipp!

Bevor Sie die Montage des 8400 motec fortführen und abschließen können, sind Entscheidungen zur Parametrierung und Inbetriebnahme zu treffen.

Soll der Antriebsregler mit DIP1, DIP2, P2 oder P3 voreingestellt werden?

- ▶ Einstellungen nach Anforderungen vornehmen.
 - Das Kapitel Einstellungen enthält die notwendigen Information. (📖 23)
- ▶ Drive Unit montieren. (📖 19)

Soll der Antriebsregler mit L-Force »Engineer« oder mit einem Handterminal parametrierung werden?

- ▶ Drive Unit montieren. (📖 19)

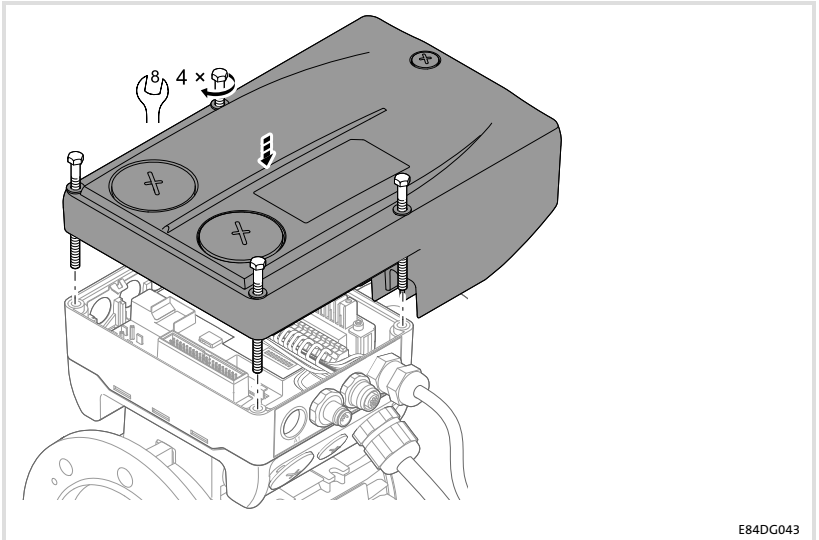
Ist der Antriebsregler Bestandteil eines Drive Package?

- ▶ Der Antriebsregler ist in Abstimmung mit Motor und Getriebe werkseitig eingestellt.
 - Werkseitige Einstellungen nicht verändern!
- ▶ Drive Unit montieren. (📖 19)

4.2 Montage

0.37 ... 3 kW

Setzen Sie die Drive Unit -ohne zu verkanten- auf die vorher montierte Communication Unit auf. Befestigen Sie die Drive Unit mit den gelieferten vier Schrauben (Drehmoment: 5.0 Nm/44 lb-in).



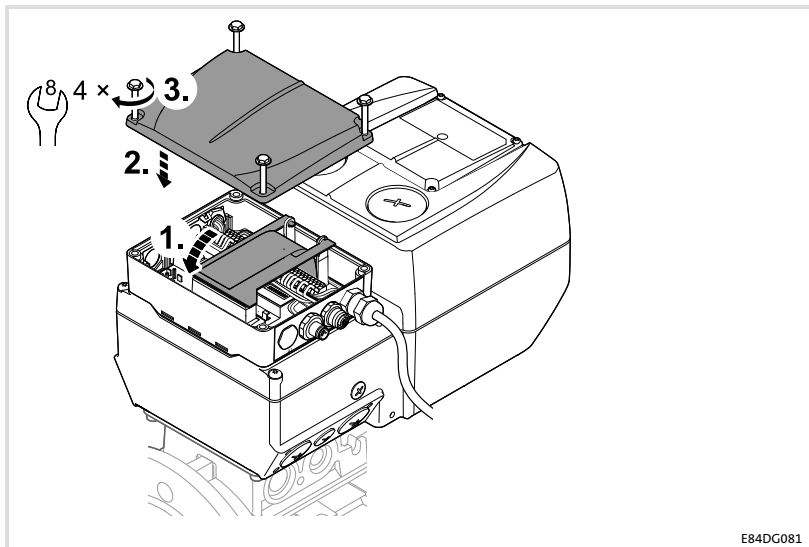
E84DG043

4 ... 7.5 kW

Die Drive Unit wurde bereits mit der Wiring Unit montiert.

So schließen Sie die Montage ab:

1. Die klappbare Buchsenleiste zur CU drehen und vorsichtig in den Gegenstecker drücken.
2. Deckel der DU auf die Communication Unit setzen und
3. mit den vier Schrauben befestigen (Drehmoment: 1.5 Nm/14 lb-in).



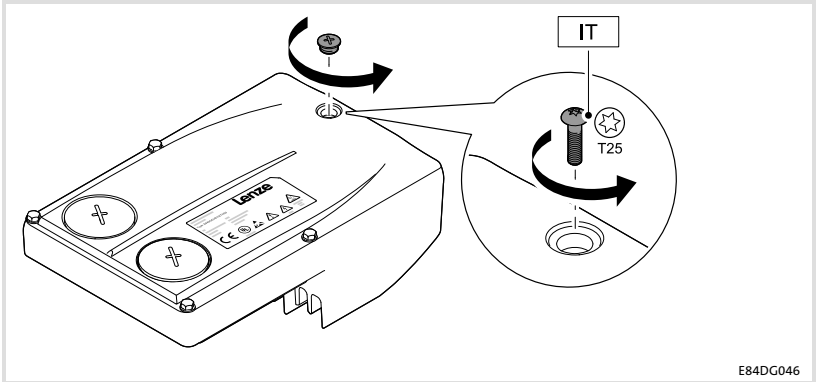
4.3 Maßnahme bei Einsatz in IT-Netzen

Wird der Antrieb in einem IT-Netz installiert, müssen interne Filter vom Schutzleiter getrennt werden.

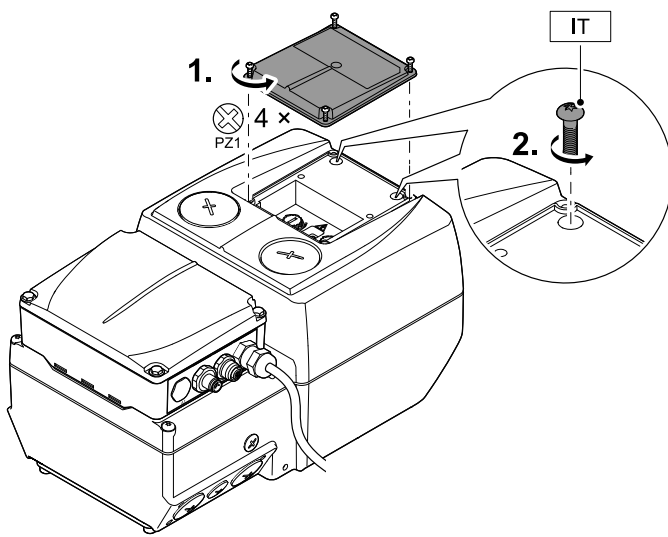
So gehen Sie vor:

1. Bei bereits montiertem Antriebsregler: Netzspannung abschalten!
2. IT-Schraube zugänglich machen.
 - Geräte bis 3 kW: Kleine Verschlusskappe auf der Oberseite heraus drehen.
 - Geräte ab 4 kW: Kleinen Deckel auf der Oberseite abnehmen.
3. Die Schraube(n) heraus drehen und entfernen.
4. Verschlusskappe hinein drehen oder Deckel anbringen.

0.37 ... 3 kW



4 ... 7.5 kW



E84DG084

5 Einstellungen



Stop!

Automatischer Motoranlauf

Im "Local mode" ist die Autostart-Option "Sperrung bei Netzein" nicht gesetzt. Der Motor läuft mit dem Netzeinschalten an, wenn die Reglerfreigabe RFR gedrückt oder gesetzt ist.

("Local mode" => DIP1/1 = ON und DIP2/5-7 = OFF)

Mögliche Folgen:

- Gefahren oder Schäden durch den unerwarteten Motoranlauf.

Schutzmaßnahmen:

- Bei der Inbetriebnahme den Motor vom Antriebsstrang entkoppeln.
- Ersetzen der werkseitigen Brücke an RFR durch einen Schließer.
- Reglerfreigabe nicht setzen.

Für die erste Inbetriebnahme können Sie Einstellungen per DIP-Schalter und Potentiometer vornehmen. Die Einstellungen müssen vor Montage der Drive Unit vorgenommen werden, da die Einstellelemente von außen nicht zugänglich sind.

Ab Softwareversion 07.00.00 können Sie mit DIP2/8 zwei unterschiedliche Vorbelegungen von DIP1, DIP2, P1, P2 und P3 einstellen:

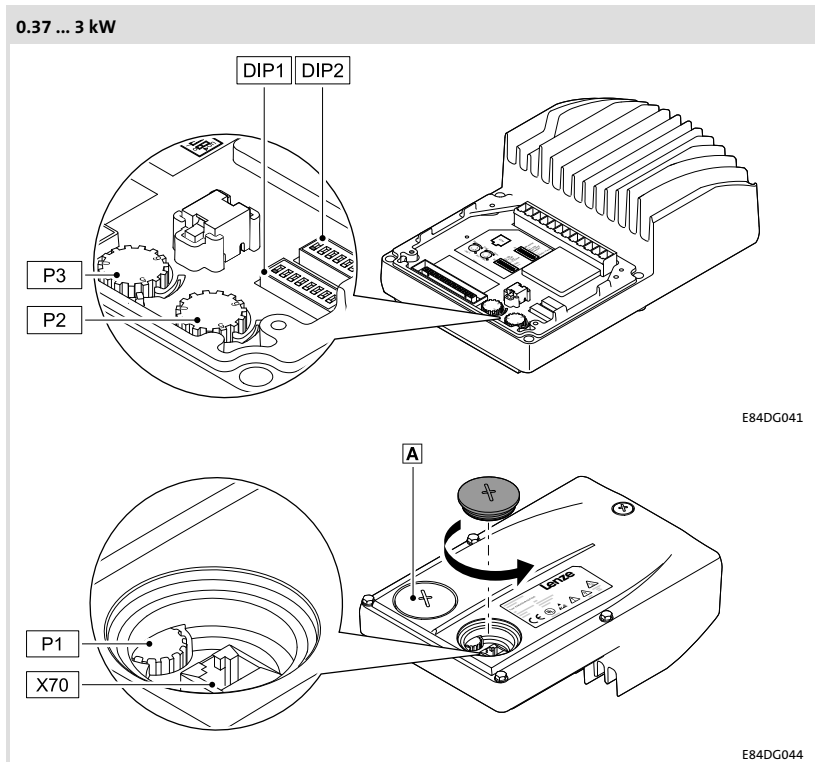
- DIP2/8 = OFF: DIP-Schalter-/ Potibelegung 0
- DIP2/8 = ON: DIP-Schalter-/ Potibelegung 1

Bis Softwareversion 07.00.00 ist nur die DIP-Schalter-/ Potibelegung 0 verfügbar.

Einstellelemente 0.37 ... 3 kW

Auf der Innenseite der Drive Unit finden Sie die Einstellelemente.

Vorgenommene Einstellungen durch DIP1, DIP2, P2, P3 und P1 müssen mit DIP1/1 aktiviert werden. Die Einstellungen werden bei jedem Netzeinschalten erneut übernommen. Zwischenzeitliche Änderungen an Parametern können dadurch überschrieben werden.



	Bezeichnung
DIP1	DIP-Schalter zur Inbetriebnahme
DIP2	
P1	Einstellung "Top Cover: Speed ... %"
P2	Einstellung "Speed ... %", (Drehzahl)
P3	Einstellung "Ramp ... s", (Auf- / Ablaufzeit)
X70	Anschluss für USB-Diagnoseadapter E94AZCUS oder Handterminal
A	LED-Statusanzeige

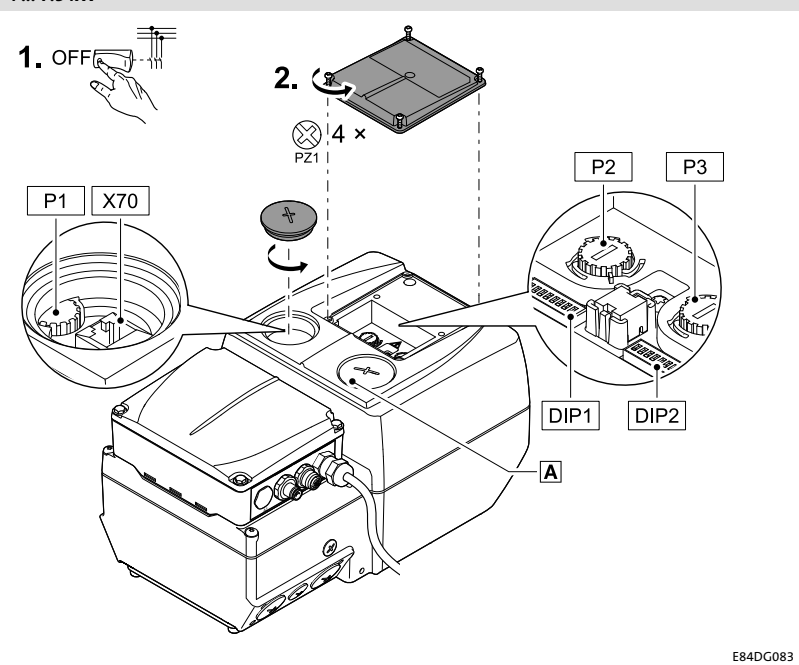
Einstellelemente 4 ... 7.5 kW

Auf der Oberseite der Drive Unit finden Sie die Einstellelemente.

- ▶ Spannungsfreiheit sicherstellen und gegen Wiedereinschalten sichern.
- ▶ Kleinen Deckel auf der Oberseite abnehmen.

Vorgenommene Einstellungen durch DIP1, DIP2, P2, P3 und P1 müssen mit DIP1/1 aktiviert werden. Die Einstellungen werden bei jedem Netzeinschalten erneut übernommen. Zwischenzeitliche Änderungen an Parametern können dadurch überschrieben werden.

4 ... 7.5 kW



E84DG083

	Bezeichnung
DIP1	DIP-Schalter zur Inbetriebnahme
DIP2	
P1	Einstellung "Top Cover: Speed ... %"
P2	Einstellung "Speed ... %", (Drehzahl)
P3	Einstellung "Ramp ... s", (Auf- / Ablaufzeit)
X70	Anschluss für USB-Diagnoseadapter E94AZCUS oder Handterminal
A	LED-Statusanzeige

5.1

DIP-Schalter-/ Potibelegung 0

Einstellungen mit DIP1

(Lenze-Einstellung **fett**)

DIP1		Schalter							
Beschreibung		1	2	3	4	5	6	7	8
DIP1, DIP2, P1, P2 und P3 aktiv	aktiv	ON							
	inaktiv	OFF							
Drehrichtung	links		ON						
	rechts		OFF						
Regelung	quadratisch			ON					
	linear			OFF					
Fangschaltung	aktiv				ON				
	inaktiv				OFF				
reserviert	-					OFF	OFF	OFF	
Gerätezustand	Drive Ready: NO/COM = Closed								ON
	Drive Fail: DO1 = HIGH								
Gerätezustand	Drive Ready: DO1 = HIGH								OFF
	Drive Fail: NO/COM = Closed								

Einstellungen mit DIP2
(Lenze-Einstellung **fett**)

DIP2		Schalter							
Beschreibung		1	2	3	4	5	6	7	8
Motorbemes- sungsfrequenz / Bezugsdrehzahl	50 Hz Υ / 1500 min-1	OFF	OFF						
	60 Hz Υ / 1800 min-1	ON	OFF						
	87 Hz Δ / 2610 min-1	OFF	ON						
	120 Hz Υ / 3600 min-1	ON	ON						
Modus analoger Eingang	0 ... 10 V			OFF	OFF				
	0 ... 20 mA			ON	OFF				
	4 ... 20 mA			OFF	ON				
	nicht zulässig			ON	ON				
Steuermodus Technologieap- plikation	9 (Local mode)					OFF	OFF	OFF	
	10 (Klemmen 0)					ON	OFF	OFF	
	12 (Klemmen 2)					OFF	ON	OFF	
	14 (Klemmen 11)					ON	ON	OFF	
	16 (Klemmen 16)					OFF	OFF	ON	
	reserviert					ON	OFF	ON	
	reserviert					OFF	ON	ON	
	40 (MCI)					ON	ON	ON	
reserviert	-								OFF

Steuermodi DIP2/5-7	Beschreibung (Dix → High)										
9 (Local mode)	Die Steuerung der Technologieapplikation erfolgt lokal über Elemente am Antriebsregler und die digitalen Eingangsklemmen:  Bei Netzeinschalten läuft der Motor automatisch an, wenn RFR gebrückt oder gesetzt ist! <table> <tr> <td>DI1 Sollwert von P2 (Speed)</td><td rowspan="2">Festsollwert 3</td></tr> <tr> <td>DI2 Festsollwert 2</td></tr> <tr> <td>DI3 Gleichstrombremse aktivieren</td><td></td></tr> <tr> <td>DI4 Drehrichtungswechsel (nicht möglich, wenn DIP1/2 = on (links) ist)</td><td></td></tr> <tr> <td>DI5 Haltebremse manuell lüften (Betriebsmodus nach Einstellung C02580)</td><td></td></tr> </table>	DI1 Sollwert von P2 (Speed)	Festsollwert 3	DI2 Festsollwert 2	DI3 Gleichstrombremse aktivieren		DI4 Drehrichtungswechsel (nicht möglich, wenn DIP1/2 = on (links) ist)		DI5 Haltebremse manuell lüften (Betriebsmodus nach Einstellung C02580)		
DI1 Sollwert von P2 (Speed)	Festsollwert 3										
DI2 Festsollwert 2											
DI3 Gleichstrombremse aktivieren											
DI4 Drehrichtungswechsel (nicht möglich, wenn DIP1/2 = on (links) ist)											
DI5 Haltebremse manuell lüften (Betriebsmodus nach Einstellung C02580)											
10 (Klemmen 0)	Die Steuerung der Technologieapplikation erfolgt über die digitalen Eingangsklemmen des Antriebsreglers: <table> <tr> <td>DI1 Festsollwert 1</td><td rowspan="2">Festsollwert 3</td></tr> <tr> <td>DI2 Festsollwert 2</td></tr> <tr> <td>DI3 Gleichstrombremse aktivieren</td><td></td></tr> <tr> <td>DI4 Drehrichtungswechsel</td><td></td></tr> <tr> <td>DI5 Haltebremse manuell lüften (Betriebsmodus nach Einstellung C02580)</td><td></td></tr> </table>	DI1 Festsollwert 1	Festsollwert 3	DI2 Festsollwert 2	DI3 Gleichstrombremse aktivieren		DI4 Drehrichtungswechsel		DI5 Haltebremse manuell lüften (Betriebsmodus nach Einstellung C02580)		
DI1 Festsollwert 1	Festsollwert 3										
DI2 Festsollwert 2											
DI3 Gleichstrombremse aktivieren											
DI4 Drehrichtungswechsel											
DI5 Haltebremse manuell lüften (Betriebsmodus nach Einstellung C02580)											
12 (Klemmen 2)	Die Steuerung der Technologieapplikation erfolgt über die digitalen Eingangsklemmen des Antriebsreglers: <table> <tr> <td>DI1 Festsollwert 1</td><td rowspan="2">Festsollwert 3</td></tr> <tr> <td>DI2 Festsollwert 2</td></tr> <tr> <td>DI3 Schnellhalt</td><td></td></tr> <tr> <td>DI4 Drehrichtungswechsel</td><td></td></tr> <tr> <td>DI5 Haltebremse manuell lüften (Betriebsmodus nach Einstellung C02580)</td><td></td></tr> </table>	DI1 Festsollwert 1	Festsollwert 3	DI2 Festsollwert 2	DI3 Schnellhalt		DI4 Drehrichtungswechsel		DI5 Haltebremse manuell lüften (Betriebsmodus nach Einstellung C02580)		
DI1 Festsollwert 1	Festsollwert 3										
DI2 Festsollwert 2											
DI3 Schnellhalt											
DI4 Drehrichtungswechsel											
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DI1 Drehrichtungswechsel											
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16 (Klemmen 16)	Die Steuerung der Technologieapplikation erfolgt über die digitalen Eingangsklemmen des Antriebsreglers: <table> <tr> <td>DI1 Festsollwert 1</td><td rowspan="2">Festsollwert 3</td></tr> <tr> <td>DI2 Festsollwert 2</td></tr> <tr> <td>DI3 Rechtslauf/Schnellhalt</td><td></td></tr> <tr> <td>DI4 Linkslauf/Schnellhalt</td><td></td></tr> <tr> <td>DI5 Haltebremse manuell lüften (Betriebsmodus nach Einstellung C02580)</td><td></td></tr> </table>	DI1 Festsollwert 1	Festsollwert 3	DI2 Festsollwert 2	DI3 Rechtslauf/Schnellhalt		DI4 Linkslauf/Schnellhalt		DI5 Haltebremse manuell lüften (Betriebsmodus nach Einstellung C02580)		
DI1 Festsollwert 1	Festsollwert 3										
DI2 Festsollwert 2											
DI3 Rechtslauf/Schnellhalt											
DI4 Linkslauf/Schnellhalt											
DI5 Haltebremse manuell lüften (Betriebsmodus nach Einstellung C02580)											
40 (MCI)	Die Steuerung der Technologieapplikation erfolgt per Feldbuskommunikation. Abhängig von der vorhandenen Communication Unit										

Einstellungen mit P2

(Lenze-Einstellung **fett**)

Mit P2 stellen Sie in 10 Stufen die Motorsolldrehzahl prozentual der Bemessungsdrehzahl in C00011 ein (Drehzahl-Festsollwert). Der Festsollwert wird nur aktiviert, wenn im "Local mode" der Eingang DI1 gesetzt wird.

P2		Stellung									
Beschreibung		0	1	2	3	4	5	6	7	8	9
Motordrehzahl in Prozent der Einstellung Bemessungsdrehzahl C00011	[%]	0	11	22	33	44	55	66	77	88	100

Einstellungen mit P3

(Lenze-Einstellung **fett**)

Mit P3 stellen Sie die Hoch- und Ablaufzeit des Motors ein.

P3		Stellung									
Beschreibung		0	1	2	3	4	5	6	7	8	9
Hoch- und Ablaufzeit des Motors in Sekunden	[s]	0.1	0.5	1	2	5	10	20	30	60	120

Einstellungen mit P1

(Lenze-Einstellung **fett**)

Während des Betriebs können Sie mit P1 stufenlos die Motordrehzahl prozentual der Bemessungsdrehzahl in C00011 einstellen, sofern kein Drehzahl-Festsollwert P2 über DI1 aktiv ist.

Verschlussdeckel entfernen, um Potentiometer P1 einstellen zu können.

- Verschlussdeckel nach dem Einstellen wieder aufschrauben, um den Schutzgrad des Antriebsreglers zu gewährleisten.

P1		Stellung		
Beschreibung		0	...	9
Motordrehzahl in Prozent der Nenndrehzahl C00011	[%]	0	...	100

5.2

DIP-Schalter-/ Potibelegung 1

(ab Softwareversion 07.00.00)

Einstellungen mit DIP1

(Lenze-Einstellung **fett**)

DIP1		Schalter							
Beschreibung		1	2	3	4	5	6	7	8
DIP1, DIP2, P1, P2, P3	aktiv	ON							
	inaktiv	OFF							
Motorleistung	Motorleistung > Inverterleistung		ON						
	Motorleistung = Inverterleistung		OFF						
Regelung	VFCplus ECO			ON					
	VFCplus linear			OFF					
Bremsenansteuerung / Fangen	Bremsenansteuerung aus, Fangen aus				OFF	OFF			
	Bremsenansteuerung aus, Fangen ein				ON	OFF			
	Bremsenansteuerung automatisch Horizontal, Fangen aus				OFF	ON			
	Bremsenansteuerung automatisch Vertikal, Fangen aus				ON	ON			
Anbaurichtung Motor	invertiert						ON		
	nicht invertiert						OFF		
Funktion P1	Festsollwert 3 wird immer mit P1 beschrieben							ON	
	Festsollwert 3 wird bei Netzeinschalten einmalig mit P1 beschrieben							OFF	
Parameter laden nach Netzeinschalten	Parameter aus Memory Modul laden								ON
	Parameter der Lenze-Einstellung laden								OFF

Einstellungen mit DIP2
(Lenze-Einstellung **fett**)

DIP2		Schalter							
Beschreibung		1	2	3	4	5	6	7	8
Motorbemes- sungsfrequenz / Bezugsdrehzahl	50 Hz Υ / 1500 min-1	OFF	OFF						
	60 Hz Υ / 1800 min-1	ON	OFF						
	87 Hz Δ / 2610 min-1	OFF	ON						
	120 Hz Υ / 3600 min-1	ON	ON						
Konfiguration Applikation	Stellantrieb Drehzahl (1000)			OFF	OFF				
	AC-Drive Profil (1100)			ON	OFF				
	Abschaltpositionierung (3000)			OFF	ON				
	reserviert			ON	ON				
Steuermodus Technologieap- plikation	9 (Local mode)					OFF	OFF	OFF	
	10 (Klemmen 0)					ON	OFF	OFF	
	12 (Klemmen 2)					OFF	ON	OFF	
	14 (Klemmen 11)					ON	ON	OFF	
	16 (Klemmen 16)					OFF	OFF	ON	
	reserviert					ON	OFF	ON	
	41 (AS-Interface)					OFF	ON	ON	
	40 (MCI/CAN)					ON	ON	ON	
Auswahl DIP- Schalter- /Poti- belegung	DIP-Schalter-/ Potibelegung 0								OFF
	DIP-Schalter-/ Potibelegung 1								ON

Steuermodi DIP2/5-7	Beschreibung (Dix → High)										
9 (Local mode)	Die Steuerung der Technologieapplikation erfolgt lokal über Elemente am Antriebsregler und die digitalen Eingangsklemmen:  Bei Netzeinschalten läuft der Motor automatisch an, wenn RFR gebrückt oder gesetzt ist! <table> <tr> <td>DI1 Sollwert von P2 (Speed)</td><td rowspan="2">Festsollwert 3</td></tr> <tr> <td>DI2 Festsollwert 2</td></tr> <tr> <td>DI3 Gleichstrombremse aktivieren</td><td></td></tr> <tr> <td>DI4 Drehrichtungswechsel (nicht möglich, wenn DIP1/2 = on (links) ist)</td><td></td></tr> <tr> <td>DI5 Haltebremse manuell lüften (Betriebsmodus nach Einstellung C02580)</td><td></td></tr> </table>	DI1 Sollwert von P2 (Speed)	Festsollwert 3	DI2 Festsollwert 2	DI3 Gleichstrombremse aktivieren		DI4 Drehrichtungswechsel (nicht möglich, wenn DIP1/2 = on (links) ist)		DI5 Haltebremse manuell lüften (Betriebsmodus nach Einstellung C02580)		
DI1 Sollwert von P2 (Speed)	Festsollwert 3										
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DI5 Haltebremse manuell lüften (Betriebsmodus nach Einstellung C02580)											
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DI3 Gleichstrombremse aktivieren											
DI4 Drehrichtungswechsel											
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DI1 Festsollwert 1	Festsollwert 3										
DI2 Festsollwert 2											
DI3 Schnellhalt											
DI4 Drehrichtungswechsel											
DI5 Haltebremse manuell lüften (Betriebsmodus nach Einstellung C02580)											
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DI1 Drehrichtungswechsel											
DI2 Gleichstrombremse aktivieren											
DI3 Motorpotentiometer: Drehzahl höher											
DI4 Motorpotentiometer: Drehzahl tiefer											
DI5 Haltebremse manuell lüften (Betriebsmodus nach Einstellung C02580)											
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DI1 Festsollwert 1	Festsollwert 3										
DI2 Festsollwert 2											
DI3 Rechtslauf/Schnellhalt											
DI4 Linkslauf/Schnellhalt											
DI5 Haltebremse manuell lüften (Betriebsmodus nach Einstellung C02580)											
40 (MCI)	Die Steuerung der Technologieapplikation erfolgt per Feldbuskommunikation. Abhängig von der vorhandenen Communication Unit										

Einstellungen mit P2

(Lenze-Einstellung **fett**)

Mit P2 können Sie verschiedene Festsollwerte in C00039/1 und C00039/2 schreiben.

P2		Stellung									
Beschreibung		0	1	2	3	4	5	6	7	8	9
Festsollwert 1 in C00039/1 schreiben	[%]	5	10	15	20	25	30	35	40	45	50
Festsollwert 2 in C00039/2 schreiben	[%]	10	20	30	40	50	60	70	80	90	100

Einstellungen mit P3

(Lenze-Einstellung **fett**)

Mit P3 können Sie verschiedene Hoch-/ Ablaufzeiten in C00012/C00013 mit verschiedenen Ablaufzeiten für den Schnellhalt in C00105 schreiben.

P3		Stellung									
Beschreibung		0	1	2	3	4	5	6	7	8	9
Hoch-/ Ablaufzeit in C00012/C00013 schreiben	[s]	0.1	0.5	0.7	1	1.5	2	5	10	30	60
Ablaufzeit Schnellhalt in C00105 schreiben	[s]	0.1	0.2	0.5	0.7	1	1.5	2	5	10	30

Einstellungen mit P1

(Lenze-Einstellung **fett**)

Mit P1 schreiben Sie einen Drehzahl-Festsollwert in C00039/3. Abhängig von der Schalterstellung DIP1/7 wird C00039/3 einmalig bei Netzeinschalten oder permanent beschrieben.

Verschlussdeckel entfernen, um Potentiometer P1 einstellen zu können.

- Verschlussdeckel nach dem Einstellen wieder aufschrauben, um den Schutzgrad des Antriebsreglers zu gewährleisten.

P1		Stellung		
Beschreibung		0	...	9
Festsollwert 3 in C00039/3 schreiben	[%]	0	...	100

Inbetriebnahme**6.1****Vor dem ersten Einschalten**

- ▶ Die Wiring Unit ist gemäß Anleitung montiert und verdrahtet,
 - direkt auf einem Motorklemmflansch oder
 - mit dem Wandadapter auf einer geeigneten Fläche nahe des Motors.
- ▶ Anschlüsse mit Netz, Motor, Haltebremsen usw. sind hergestellt.
- ▶ Die Communication Unit wurde montiert und entsprechend der geplanten Anwendung verdrahtet.
 - Eingangs- und Ausgangssignale
 - Sicherer Eingang
 - Feldbus(je nach Ausführung nur optional vorhanden)
- ▶ Bei Bedarf wurden die Grundeinstellungen für "Local mode" vorgenommen.
 - DIP-Schalter
 - Potentiometer
- ▶ Die Drive Unit wurde montiert und verschraubt.
- ▶ Vorhandene Steuerfunktionen sinnvoll einsetzen, z. B.
 - Reglerfreigabe sperren
 - Geschwindigkeitseinstellung auf minimal einstellen
 - Sicherheitseinrichtung aktivieren
- ▶ Der Einsatz eines Bremswiderstandes wurde geprüft.
 - Bei dynamischen Belastungen oder schwierigen Regelverhältnissen wird für die Geräte E84DGDVB4024 ... 7524 (4 ... 7.5 kW) immer der Einsatz des internen Bremswiderstandes E84DZEW47R0001 empfohlen.



Gefahr!

Hohes Gefahrenpotential während der Inbetriebnahme

Durch fehlerhafte Einstellungen kann es zu unerwarteten und gefährlichen Motor- und Anlagenbewegungen kommen.

Mögliche Folgen:

- ▶ Sachschäden
- ▶ Personenschäden

Schutzmaßnahmen:

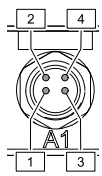
- ▶ Gefahrenbereich räumen
- ▶ Sicherheitsvorschriften und Sicherheitsabstände einhalten

6.2 Inbetriebnahmeschritte

Gehen Sie schrittweise vor:

- ▶ Netz einschalten
- ▶ Statusanzeige beobachten
 - Nach kurzer Initialisierungszeit muss die Anzeige grün blinken.
- ▶ Anforderungen der Sicherheitsfunktion deaktivieren
- ▶ Reglerfreigabe setzen
 - Der Motor muss nach der eingestellten Anlaufzeit mit der eingestellten Geschwindigkeit drehen.
- ▶ Erste Prüfung des erwartungsgemäßen Verhaltens:
 - Drehrichtung?
 - Anlaufzeit?
 - Geschwindigkeit?
 - Geschwindigkeitsregelung?
- ▶ Prüfung optionaler Steuerungsfunktionen:
 - Funktioniert die analoge Sollwertvorgabe?
 - Funktionieren digitale Steuersignale, z. B. Endschalter?
 - Funktioniert die angeschlossene Motorhaltebremse?
 - Funktioniert die Drehrichtungsumschaltung?
 - Funktioniert die Anforderung der Sicherheitsfunktion?
 - Funktionieren Steuersignale über Feldbus?
- ▶ Antrieb abschalten
 - Geschwindigkeit reduzieren
 - Reglerfreigabe sperren
 - Netz ausschalten

Abhängig vom Bussystem der Communication Unit werden Zustände mit einer LED-Anzeige signalisiert. Ausführliche Informationen enthält das Kommunikationshandbuch zum verwendeten Bussystem.

LED	1 (green)		2 (green)	3 (red)	4 (red)
 E84DG056_b	PROFIBUS	BUS STATE	MODULE STATE	BUS ERROR	MODULE ERROR
	AS-i	SLAVE 1 READY	SLAVE 2 READY	SLAVE 1 ERROR	SLAVE 2 ERROR
	EtherCAT	RUN	LINK/ACTIVITY	ERROR	LINK/ACTIVITY (green)
	PROFINET	BUS READY	LINK/ACTIVITY 1 (yellow)	BUS ERROR	LINK/ACTIVITY 2 (yellow)
	EtherNet/IP	MODULE STATE		NETWORK STATE	
			(red)	(green)	

6.3 Inbetriebnahme mit Handterminal

Mit dem Handterminal X400 können Sie schnell und einfach Parameter einstellen und sich aktuelle Istwerte und Gerätezustände über die entsprechenden Anzeigeparameter anzeigen lassen. Das Handterminal ist hierzu auf die Diagnoseschnittstelle X70 auf der Geräteoberseite aufzustecken.



Gefahr!

Unkontrollierte Motorbewegung möglich

Die Veränderung eines Parameters hat im Allgemeinen eine sofortige Reaktion des Antriebsreglers zur Folge.

Mögliche Folgen:

- ▶ Bei freigegebenem Antriebsregler kann dies zu unerwünschtem Verhalten an der Motorwelle führen.

Schutzmaßnahmen:

- ▶ Veränderungen in kleinen Schritten vornehmen und Reaktion abwarten.
- ▶ Ausnahmen bilden bestimmte Gerätebefehle oder Einstellungen, die das Antriebsverhalten in einen kritischen Zustand bringen könnten. Solche Parameteränderungen sind nur bei gesperrtem Antriebsregler möglich, andernfalls erfolgt eine entsprechende Fehlermeldung.



Hinweis!

Das Handterminal darf während des Betriebs aufgesteckt und abgezogen werden.



Weitere Informationen

Ausführliche Informationen zum Handterminal finden Sie in der Betriebsanleitung zum Keypad & Handterminal X400.

6.3.1

Menüstruktur

Das Hauptmenü des Handterminals enthält folgende Einträge:

Menüeintrag	Funktion	
User Menu	Anzeige einer Auswahl häufig benötigter Parameter	
Code List	Anzeige der Parameterliste mit allen Parametern	
Go To Parameter	Direkt einen bestimmten Parameter aufrufen	
Parameter Transfer		
User Menu Configuration		
Keypad		

6.3.2 User Menü

Das User menu ist in C00517 frei konfigurierbar und enthält in der Lenze-Einstellung folgende Parameter:

Parameter	Name	Info	Lenze-Einstellung
C00011	Appl.: Bezugsdrehzahl	Einstellung der Bezugsdrehzahl	1500 min-1
C00012	Hochlaufzeit Hauptsollw.	FB L_NSet_1: Hochlaufzeit des Rampengenerators für den Drehzahl-Hauptsollwert	2.0 s
C00013	Ablaufzeit Hauptsollw.	FB L_NSet_1: Ablaufzeit des Rampengenerators für den Drehzahl-Hauptsollwert	2.0 s
C00015	VFC: U/f-Eckfrequenz	U/f-Eckfrequenz für Motorregelung VFCplus	50 Hz
C00016	VFC: Umin-Anhebung	Anhebung der U/f-Spannungskennlinie im Bereich kleiner Drehzahlen bzw. Frequenzen für Motorregelung VFCplus	2.6 %
C00022	Imax motorisch	Maximaler motorischer Strom für alle Motorregelungsarten	5.8 A
C00039/1	Festsollwert 1 (L_NSet_1 n-Fix)	FB L_NSet_1: Drehzahl-Festsollwerte (Jog-Werte) für den Sollwertgenerator Festsollwert 1	40.0 %
C00039/2	Festsollwert 2	Festsollwert 2	60.0 %
C00051	MCTRL: Drehzahlstwert	Drehzahlstwert der Motorwelle	–
C00053	Zwischenkreisspannung	Aktuelle Zwischenkreisspannung	–
C00054	Motorstrom	Aktueller Motorstroms/Ausgangsstroms des Umrichters	–
C00061	Kühlkörpertemperatur	Aktuelle Kühlkörpertemperatur	–
C00087	Motor-Bemessungsdrehzahl	Dieser Wert ist dem Motor-Typenschild zu entnehmen. Nach Auswahl des verwendeten Motors aus dem Motorkatalog kann der passende Wert automatisch eingetragen werden.	1320 min-1
C00099	Firmware-Version	Firmware-Version des Geräts als Zeichenfolge	–
C00105	Ablaufzeit Schnellhalt	Die eingestellte Ablaufzeit bestimmt die Rampensteilheit beim Schnellhalt	5.0 s
C00120	Schwelle Motorüberlast (I ² xt)	Ansprechschwelle für die Fehlermeldung "OC6: Motorüberlast (I ² xt)"	100 %
C00137	Gerätezustand	Aktueller Gerätezustand	–
C00166/3	Meld.Zust.Fehler	Textuelle Meldung des aktuell anstehenden Fehlers	–
C00173	Netzspannung	Auswahl der verwendeten Netzspannung, mit der das Gerät betrieben wird.	0: "3ph 400V"
C00200	Firmware-Produkttyp		–

– Nur Anzeige

6.3.3

Inbetriebnahmeschritte**Hinweis!**

An der Diagnoseschnittstelle X70 sind anschließbar:

- ▶ USB Diagnoseadapter (E94AZCUS)
- ▶ Handterminal X400 (EZAEBK200x)
 - Die Funktionen von Handterminal und Keypad X400 (EZAEBK100x) sind identisch.

Für den Antrieb müssen nur einige Parameter angepasst werden. Danach lässt sich die Antriebsapplikation im voreingestellten Steuermodus "Klemmen 0" sofort über die digitalen und analogen Eingänge steuern. Im Steuermodus "Keypad" lässt sich alternativ das Keypad für die Vorgabe der erforderlichen Sollwerte und Steuersignale verwenden.

So gehen Sie vor:

1. Leistunganschlüsse verdrahten.
 - Nehmen Sie die dem Antriebsregler beiliegende Montageanleitung zu Hilfe, um die Leistungsanschlüsse entsprechend den Erfordernissen Ihres Gerätes richtig auszuführen.
2. Steueranschlüsse verdrahten.
 - Die vorkonfigurierte I/O-Anbindung lässt sich über Konfigurationsparameter ändern. Siehe Kapitel "Anwenderdefinierte Klemmenbelegung".
 - Belegung im voreingestellten Steuermodus "Klemmen 0":

Klemme	Funktion		Info
A1U	Sollwertvorgabe		10 V ≙ 1500 min ⁻¹ (bei 4-poligem Motor) generell: 10 V ≙ 100 % Bezugsdrehzahl (C00011)
DI1	JOG 1	JOG 3	Auswahl Festsollwerte 1 ... 3 ● Liegen beide Eingänge auf LOW-Pegel, ist die Sollwertvorgabe über den analogen Eingang A1U aktiv.
DI2	JOG 2		
DI3	DCB		Manuelle Gleichstrombremsung (DCB) ● Bei HIGH-aktiven Eingängen ist die Gleichstrombremsung aktiv, solange DI3 auf HIGH-Pegel liegt. ● Nach Ablauf der Haltezeit (C00107) setzt der Regler Impulssperre (CINH). Gleichstrombremsung (► i 110)
DI4	R/L		LOW-Pegel: Rechtslauf HIGH-Pegel: Linkslauf
DI5	Haltebremse		Haltebremse öffnen/schließen ● Bremsmodi C02580

3. Schalter auf Unterseite der Drive Unit kontrollieren:
DIP1/1 muss in Stellung "OFF" sein (Lenze-Einstellung), damit ein Überschreiben der Parameter mittels »Engineer«, per Keypad oder über Feldbus möglich ist.
4. Für Feldbuskommunikation ggf. erforderliche Kommunikationseinstellungen über den DIP-Schalter auf der Communication Unit vornehmen.
Die Kommunikationseinstellungen sind abhängig vom verwendeten Feldbus.
5. Antriebsregler mittels der 4 Schrauben befestigen.
6. Spannungsversorgung des Antriebsreglers einschalten.
7. Keypad anschliessen.
 - Abdeckkappe der Diagnoseschnittstelle auf der Geräteoberseite entfernen und Keypad an die Diagnoseschnittstelle anschliessen.
 - Nach dem Aufstecken des Keypads erfolgt der Verbindungsaufbau mit dem Antriebsregler. Der Vorgang ist abgeschlossen, wenn C00051 im Display erscheint.

Keypad-Anzeige	Aktion
MCTRL: Act speed val. C00051 0 rpm	Mit linker Funktionstaste  in das Hauptmenü wechseln.

8. Lenze-Einstellung in den Antriebsregler laden.
 - Hierzu steht der Gerätebefehl "Lenze-Einstellung laden" zur Verfügung, der sich über die Codestelle C00002/1 mit dem Keypad ausführen lässt:



Hinweis!

Mit dem Befehl "Lenze-Einstellungen laden" werden zuvor geänderte Werte überschrieben. Voreinstellungen für einen spezifischen Motor, z. B. durch Lenze für ein Drive Package, werden zurückgesetzt.

Keypad-Anzeige	Aktion
Par1 8400 motec User-Menu	A Mit Navigationstaste  im Hauptmenü das Menü auswählen. B Mit Navigationstaste  in das Menü wechseln.
Load Lenze setting C00002/1	A Mit linker Funktionstaste EDIT in den Editiermodus für C00002/1 wechseln. B Mit Navigationstaste  in der Auswahlliste den Eintrag "1: On/Start" auswählen. C Mit rechter Funktionstaste OK die durchgeführte Änderung übernehmen und den Editiermodus verlassen. – Der Ladevorgang kann einige Sekunden dauern.

9. Antriebsregler freigeben: Klemme RFR auf HIGH legen.
- Bei Auslieferung ist die Klemme RFR gebrückt (Reglerfreigabe).
 - Ist in C00142 die Autostart-Option "Sperrung bei Gerät ein" aktiviert und bei Netzeinschalten liegt Reglerfreigabe vor, bleibt der Antriebsregler im Zustand "ReadyToSwitchOn" stehen. Für einen Wechsel in den Zustand "SwitchedOn" muss die Reglerfreigabe zunächst aufgehoben werden. Erst mit anschließender Reglerfreigabe wird in den Zustand "OperationEnabled" gewechselt.
 - Ist in C00142 die Autostart-Option "Sperrung bei Gerät ein" deaktiviert, wird nach Netzeinschalten bei vorliegender Reglerfreigabe direkt vom Zustand "ReadyToSwitchOn" in den Zustand "SwitchedOn" und weiter in den Zustand "OperationEnabled" gewechselt.

**Gefahr!**

Ist die Autostart-Option "Sperrung bei Gerät ein" deaktiviert, kann der Motor bei vorliegender Reglerfreigabe nach Netzeinschalten direkt loslaufen!

10. Drehzahl geben:
- Im Steuermodus "Klemmen 0" durch Vorgabe einer Spannung am analogen Eingang oder durch Auswahl eines Festsollwertes über die digitalen Eingänge DI1/DI2.
 - Im Steuermodus "Keypad" erfolgt die Vorgabe des Drehzahl-Hauptsollwertes und der Steuersignale über folgende Parameter:

Parameter	Name	Info	Lenze-Einstellung
C00728/3	nMainSetValue_a	Hauptsollwert für die Applikation 100 % = Bezugsdrehzahl (C00011)	0.00 %
C00727/3	bSetSpeedCcw	Drehrichtungswechsel "0": Rechtslauf "1": Linkslauf	0
C00727/4	bJogSpeed1	Auswahl Festsollwert 1 "0": Hauptsollwert (C00728/3) aktiv. "1": Festsollwert 1 (C00039/1) aktiv.	0

11. Ggf. weitere Parameter anpassen.
12. Parametereinstellungen mit Funktionstaste **SAVE** netzausfallsicher im Speichermodul speichern.

6.3.4 SET-Modus

Im SET-Modus wird der Antriebsregler über das Handterminal gesteuert. Sie können den Drehzahlsollwert ändern und den Antriebsregler freigeben oder sperren (RFR/run). Andere Sollwertquellen werden ignoriert.

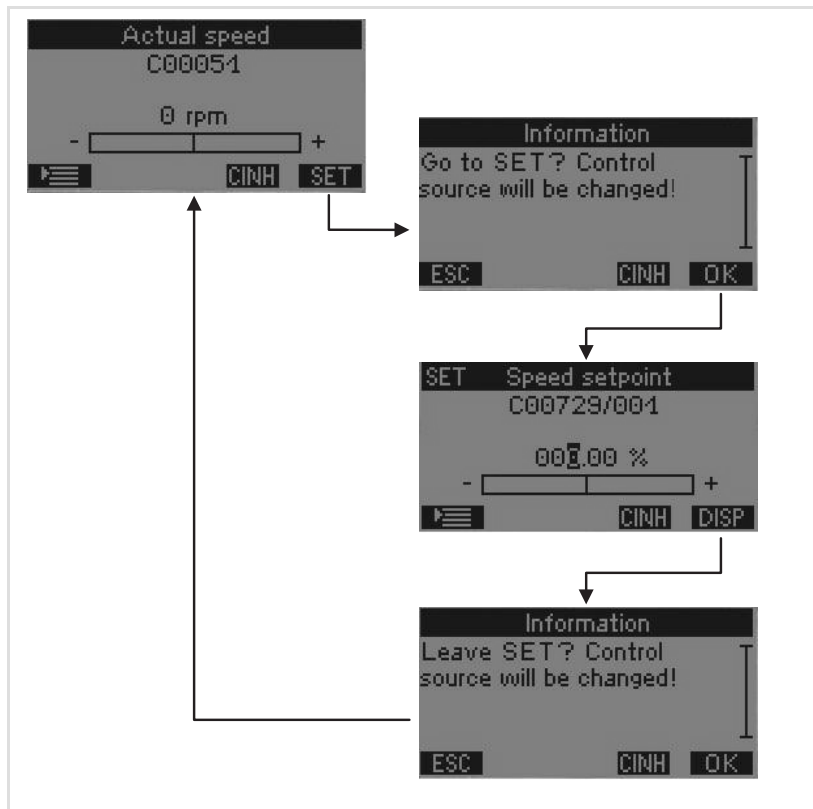
- ▶ SET-Modus aktivieren: Softkey-Taste "DISP" betätigen und mit Softkey-Taste "OK" bestätigen.
- ▶ SET-Modus verlassen: Softkey-Taste "DISP" betätigen und mit Softkey-Taste "OK" bestätigen.



Hinweis!

Der SET-Modus lässt sich nur im Gerätezustand "OperationEnabled" aktivieren (Reglersperre ist aufgehoben, grüne LED am Antriebsregler ist dauerhaft an).

- ▶ Die Reglersperre wird im Keypad nur signalisiert. In C00158 wird die Ursache für die Reglersperre detailliert angezeigt (📖 Referenzhandbuch 8400 motec).



7 Parametrierung

Durch Parametrierung können Sie den Antriebsregler auf verschiedene Anforderungen von Anwendungen optimal einstellen.

Die Parametrierung kann auf folgende Arten erfolgen:

Parametrierung mit L-force »Engineer«

- ▶ Umfangreiche Einstellungen Online per Software
 - Die sichere Parametrierung wird unterstützt durch die Lenze PC-Software »Engineer«, ab Version 02.23.
 - Die Parametrierung ist im Softwarehandbuch zum Sicherheitsmodul SM302 beschrieben.
 - Erfordert Software und USB-Diagnoseadapter.

Parametrierung mit Handterminal/Keypad

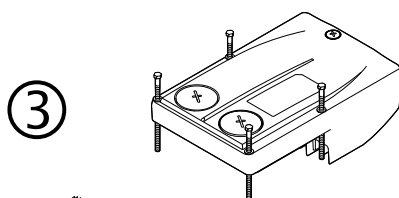
- ▶ Einstellung bestimmter Parameter durch erfahrene Anwender
 - Erfordert ein für 8400 motec geeignetes Handterminal
 - Die Parametrierung ist in der Betriebsanleitung EZAEBK000X zum Keypad 400 beschrieben.



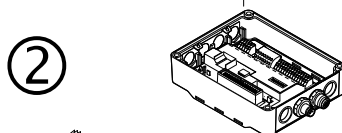
Hinweis!

Parametereinstellungen netzausfallsicher speichern

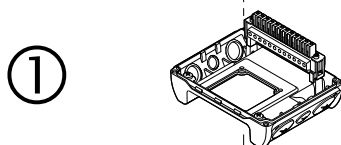
Damit im Gerät vorgenommene Parametereinstellungen nicht durch ein Netzschalten verloren gehen, müssen Sie den Parametersatz explizit im Gerät netzausfallsicher speichern.



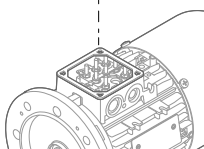
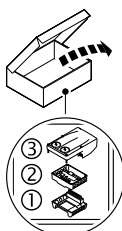
③ EDK84DGDVBxxx4



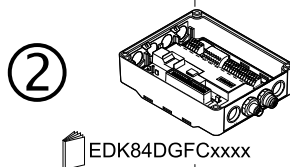
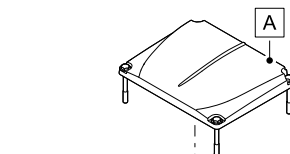
② EDK84DGFCxxxx



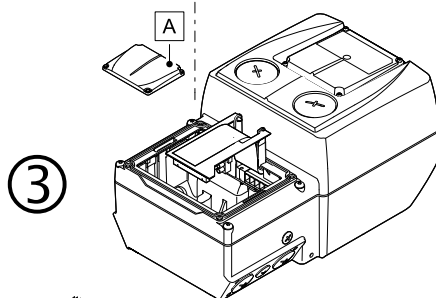
① EDK84DGVNxE



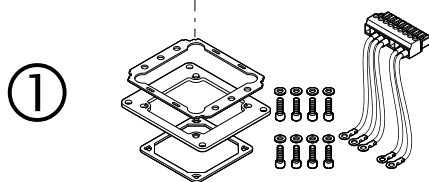
E84DG023a



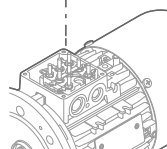
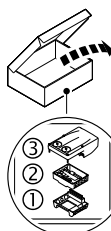
② EDK84DGFCxxxx



③ EDK84DGDVBxxx4



① EDK84DGVN4E



E84DG023b

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1 About this documentation

1.1 Document history

Material number	Version			Description
13523272	7.1	12/2016	TD29	DE/EN/FR/ES/IT (only PDF)
13523101	7.0	11/2016	TD15	Supplement of functional descriptions, error corrections, revision of the document structure
13478084	6.1	02/2015	TD15	DE/EN/FR/ES/IT (only PDF)
13478084	6.0	12/2014	TD15	UL corrections
13410321	5.3	07/2014	TD15	DE/EN/FR/ES/IT (only PDF)
13410320	5.2	07/2014	TD15	UL notes in French for Canada EAC conformity
13410321	5.1	06/2012	TD15	General corrections, DE/EN/FR/ES/IT (only PDF)
13410320	5.0	06/2012	TD15	General corrections
13392616	4.1	12/2011	TD15	Extension 4 ... 7.5 kW, DE/EN/FR/ES/IT (only PDF)
13392614	4.0	11/2011	TD15	Extension 4 ... 7.5 kW
13373549	3.0	04/2011	TD15	Extension 2.2 ... 3 kW, PROFINET, EtherCAT
13371646	2.0	02/2011	TD15	General corrections
13336813	1.5	09/2010	TD15	First edition DE/EN/FR/ES/IT (only PDF)
13336813	1.0	08/2010	TD15	First edition DE/EN



Tip!

Information and tools concerning the Lenze products can be found in the download area at

www.lenze.com

1.2 Target group

This documentation is directed at qualified skilled personnel according to IEC 60364.

Qualified skilled personnel are persons who have the required qualifications to carry out all activities involved in installing, mounting, commissioning, and operating the product.

1.3

Validity information

These instructions apply to 8400 motec inverters with the following type designation:

Type designation	From HW	From SW
E84DGDVBxxx4	VA	01.00

More information on the type code can be found in the "Product description" chapter in the 8400 motec hardware manual. (📖 EDS84DG752)

1.4

Conventions used

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

Type of information	Identification	Examples/notes
Spelling of numbers		
Decimal separator	Point	In general, the decimal point is used. For instance: 1234.56
Warnings		
UL warnings	⚠	Given in English and French
UR warnings	⚡	
Text		
Program name	» «	PC software For example: »Engineer«, »Global Drive Control« (GDC)
Icons		
Page reference	📖	Reference to another page with additional information For instance: 📖 16 = see page 16
Documentation reference	🔗	Reference to another documentation with additional information For example: 🔗 EDKxxx = see documentation EDKxxx

1.5 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.

Application notes

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

Special safety instructions and application notes

Pictograph and signal word	Meaning
 Warnings!	Safety note or application note for the operation according to UL or CSA requirements.
 Warnings!	The measures are required to meet the requirements according to UL or CSA.

2 Safety instructions



Danger!

Dangerous voltage

- ▶ The power terminals carry dangerous voltages for up to 3 minutes after mains disconnection.

Possible consequences:

- ▶ Death or severe injury if the power terminals are touched.

Protective measures:

- ▶ Switch off the mains voltage and wait at least 3 minutes before starting to work on the device.
- ▶ Check that all power terminals are deenergised.

Warning by symbols

Icon	Description
	Long discharge time: All power terminals remain live for up to 3 minutes after mains disconnection!
	High leakage current: Carry out fixed installation and PE connection in accordance with EN 61800-5-1!
	Electrostatic sensitive devices: Before working on the device, the staff must ensure to be free of electrostatic charge!
	Hot surface: Use personal protective equipment or wait until devices have cooled down!

Please also observe more important information on device and safety technology provided on the enclosed CD-ROM!

Original - English

**Warnings!**

- ▶ These devices are suitable for field wiring.
- ▶ Intended for use with 75 °C wire.
- ▶ Intended for use with copper conductors only.
- ▶ Suitable for use in a surrounding air temperature of 45 °C, and
 - additionally 60 °C when de-rating rules are followed.
- ▶ Hot surface. Risk of burn.
- ▶ Should this device be mounted on a motor, the combination needs to be suitable for the type rating.
- ▶ The supply terminals are to be tightened to:
 - For model suffix's 371, 551, 751, 112, 152 tighten to 4.4 - 5.3 lb-in.
 - For model suffix's 222, and 302, tighten to 7 lb-in.
- ▶ These devices are suitable for use on a circuit capable of delivering not more than 200 000 rms Symmetrical Amperes, 480 V maximum
 - When protected by CC, R, T, or J class fuses or
 - When protected by a circuit breaker having an interrupting rating not less than 200 000 rms symmetrical amperes, 480 V maximum.
- ▶ Use fuses and circuit breakers only.
- ▶ Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code and any additional local codes.
- ▶ The opening of branch circuit protective devices may be an indication that a fault current has been interrupted. To reduce the risk of fire or electric shock, current carrying parts and other components, the controller should be examined and replaced if damaged.
- ▶ These devices provide overload protection rated for 125 % of the rated FLA.

CAUTION!

- ▶ Risk of electric shock. Please allow 180 s for the internal capacitors to discharge.

Original - French

**Avertissements !**

- ▶ Ces équipements sont adaptés à un câblage à pied d'oeuvre.
- ▶ Utiliser des conducteurs 75 °C.
- ▶ Utiliser exclusivement des conducteurs en cuivre.
- ▶ Convient à une utilisation à une température ambiante maximale de 45 °C ainsi que
 - 60 °C en cas d'application des règles de réduction de puissance.
- ▶ Température élevée en surface. Risque de brûlure.
- ▶ En cas de montage de l'équipement sur le moteur, la combinaison doit être conforme à la qualification du type.
- ▶ Couples de serrage des bornes réseau :
 - Pour les types contenant le suffixe 371, 551, 751, 112, 152 : 0,5 à 0,6 Nm.
 - Pour les types contenant le suffixe 222 et 302 : 0,8 Nm.
- ▶ Convient aux circuits non susceptibles de délivrer plus de 200 000 ampères symétriques eff., maximum 480 V
 - Protection par des fusibles CC de calibre R, T ou J ; ou
 - Protection par disjoncteur à pouvoir de coupure nominal d'au moins 200 000 ampères symétriques eff., maximum 480 V.
- ▶ Utiliser exclusivement des fusibles et des disjoncteurs.
- ▶ La protection statique intégrée n'offre pas la même protection qu'un disjoncteur. Une protection par disjoncteur externe doit être fournie, conformément au National Electrical Code et aux autres dispositions applicables au niveau local.
- ▶ Le déclenchement des dispositifs de protection du circuit de dérivation peut être dû à une coupure qui résulte d'un courant de défaut. Pour limiter le risque d'incendie ou de choc électrique, examiner les pièces porteuses de courant et les autres éléments du contrôleur ; les remplacer s'ils sont endommagés.
- ▶ Ces équipements intègrent une protection contre les surcharges conçue pour se déclencher à 125 % de l'intensité assignée à pleine charge.

ATTENTION !

- ▶ Risque de choc électrique. Patientez 180 s pour permettre aux condensateurs internes de se décharger.

3

Technical data

3.1

General data and operating conditions

Conformity and approval			
Conformity			
CE	2006/95/EC	LowVoltage Directive	
EAC	TP TC 004/2011 (TR CU 004/2011)	On safety of low voltage equipment	Eurasian Conformity TR CU: Technical Regulation of Customs Union
EAC	TP TC 020/2011 (TR CU 020/2011)	Electromagnetic compatibility of technical means	Eurasian Conformity TR CU: Technical Regulation of Customs Union
Approval			
UR	UL 508C	Power Conversion Equipment, File No. E170350	
cUR	C22.2 No 274-13		
Field Package approval			
cUL _{US}	UL 508C C22.2 No 274-13	Power Conversion Equipment, File No. E132659	

Protection of persons and equipment			
Enclosure		- Close unused bores for cable glands with blanking plugs! - Close unused connectors with protection covers or blanking plugs!	
	EN 60529	8400 motec set:	IP65
		Frame Unit with service switch / with service switch and control elements	IP54
		Frame Unit with service switch and protective function	IP64
	NEMA 250	8400 motec set:	Type 4
		Field Package without switch	
		0.37 ... 3.0 kW	Type 1
		4.0 ... 7.5 kW	Type 4X (interior)
(Earth) leakage current	EN 61800-5-1	> 3.5 mA AC, > 10 mA DC	Observe the regulations and safety instructions!
		In TN systems the following earth-leakage circuit breakers can be used:	
Motor mounting		0.37 ... 3.0 kW	30 mA, type B
		4.0 ... 7.5 kW, $f_{ch} = 8/16$ kHz	30 mA, type B
		4.0 ... 7.5 kW, $f_{ch} = 4$ kHz	300 mA, type B
Wall mounting and Lenze system cable ≤ 3 m		0.37 ... 3.0 kW	30 mA, type B
		4.0 ... 7.5 kW, $f_{ch} = 8/16$ kHz	30 mA, type B
		4.0 ... 7.5 kW, $f_{ch} = 4$ kHz	300 mA, type B
Wall mounting and Lenze system cable > 3 m		0.37 ... 7.5 kW	300 mA, type B
Additional equipotential bonding		M5 thread with terminal in the WU for connection of a 16 mm ² PE cable	
Protective insulation of control circuits	EN 61800-5-1	Safe isolation from mains by double (reinforced) insulation	
Insulation resistance	EN 61800-5-1	<2000 m amsl: overvoltage category III	
		>2000 m amsl: overvoltage category II	

Protection of persons and equipment			
Short-circuit strength	EN 61800-5-1	Connection:	
		Motor	To a limited extent, the controller is inhibited, error acknowledgement required
		Motor holding brake, brake resistor	No
		PTC, control terminals	Full
Earth-fault strength	EN 61800-5-1	Connection:	
		Motor (at controller enable)	To a limited extent, the controller is inhibited, error acknowledgement required
		Motor (during operation)	No
		Brake resistor, PTC	No
Protective measures against		• Short circuit on the motor side at switch-on and during operation • Motor stalling • Motor overtemperature – Input for PTC or thermal contact – I²t monitoring	
Cyclic mains switching		• Switchings/minute	3
		• Switchings/hour	Max. 20
		• Switching pause	After switching the mains 3 times in one minute, there must be a switching pause of 9 minutes.
Starting current		$\leq 2 \times I_N$	

Supply conditions

Mains connection

Power system

TT, TN (with an earthed neutral)		Operation permitted without restrictions.
IT		Implement the measure described for IT systems (remove IT screw). The machine/system manufacturer is responsible for compliance with EMC requirements for noise emission (EN 61800-3) for the machine/plant! Operation with an integrated safety system is not permissible.

Motor connection

Motors	EN 60034	Only use motors suitable for inverter operation. Insulation resistance: at least $\hat{u} \geq 1.5$ kV, at least $du/dt \geq 5$ kV/ μ s
Length of the motor cable		< 20 m (Lenze system cable, shielded)

Ambient conditions

Climatic

Storage	IEC/EN 60721-3-1	1K3 (-30 ... +60 °C)
Transport	IEC/EN 60721-3-2	2K3 (-30 ... +75 °C)
Operation	IEC/EN 60721-3-3	3K3 (-30 ... +55 °C) Operation at 4 kHz: > +45 °C: Reduce the rated output current by 2.5 %/°C. Operation at 8/16 kHz: > +40 °C: Reduce the rated output current by 2.5 %/°C.
Site altitude		< 4000 m amsl Above 1000 m amsl reduce the rated output current by 5 %/ 1000 m.
Pollution	IEC/EN 61800-5-1	Degree of pollution 2

Mechanical

Vibration resistance (9.81 m/s² = 1 g)

Motor mounting	Germanischer Lloyd	General conditions: Acceleration resistant up to 2 g	
	IEC/EN 60721-3-3	3M6	
Wall mounting with E84DZMAWE1	Germanischer Lloyd	General conditions: Acceleration resistant up to 2 g	
	IEC/EN 60721-3-3	3M6	

Mounting conditions			
Mounting place			
Motor mounting		Standard	
Wall mounting		With optional wall adapter	Ensure convection cooling in the niches!
Mounting position			
Wall mounting			
0.37 ... 3.0 kW		Vertically with cooling ribs at the top, rotated, horizontally	• Observe derating, see Instruction manual 8400 motec (📖 EDS84DG752) • Arrangement of several devices only to the sides, so that the convection cooling remains ensured!
4.0 ... 7.5 kW		Optional	
Control			
Control modes			
	VFCplus: • V/f control (linear or square-law) • Feedback system required SLVC: • Sensorless vector control (speed) VFCplus eco: • V/f control, energetically optimised SLPSM: • Sensorless control for synchronous motors		
Switching frequency			
	4 kHz, 8 kHz, 16 kHz		

3.2 Rated data

Input data

Mains	Voltage U_{Rated} [V]	Voltage range U_{Rated} [V]	Frequency range f [Hz]
3/PE AC	400	320 - 0 % ... 440 + 0 %	45 - 0 % ... 65 + 0 %
3/PE AC	480	432 - 0 % ... 528 + 0 %	45 - 0 % ... 65 + 0 %

	Voltage [V]	Frequency [Hz]	Rated current [A]		Number of phases
			up to +45 °C ①	up to +55 °C ①	
E84DGDVB3714	400/480	50/60	1.3/1.1	1.0/0.8	3
E84DGDVB5514	400/480	50/60	1.8/1.5	1.4/1.1	3
E84DGDVB7514	400/480	50/60	2.4/2.0	1.8/1.5	3
E84DGDVB1124	400/480	50/60	3.2/2.7	2.4/2.0	3
E84DGDVB1524	400/480	50/60	3.8/3.1	2.9/2.3	3
E84DGDVB2224	400/480	50/60	5.6/4.6	4.2/3.5	3
E84DGDVB3024	400/480	50/60	7.2/5.9	5.4/4.4	3
E84DGDVB4024	400/480	50/60	9.3/7.7	7.0/5.8	3
E84DGDVB5524	400/480	50/60	12.8/10.6	9.6/8.0	3
E84DGDVB7524	400/480	50/60	16.3/13.5	12.3/10.1	3

① Ambient temperature, switching frequency 4 kHz

Output data

	Voltage [V]	Frequency [Hz]	Rated current [A]		Number of phases
			up to +45 °C ①	up to +55 °C ①	
E84DGDVB3714	0 ... 400/480	0 ... 300	1.3/1.1	1.0/0.8	3
E84DGDVB5514	0 ... 400/480	0 ... 300	1.8/1.5	1.4/1.1	3
E84DGDVB7514	0 ... 400/480	0 ... 300	2.4/2.0	1.8/1.5	3
E84DGDVB1124	0 ... 400/480	0 ... 300	3.2/2.7	2.4/2.0	3
E84DGDVB1524	0 ... 400/480	0 ... 300	3.9/3.2	2.9/2.4	3
E84DGDVB2224	0 ... 400/480	0 ... 300	5.6/4.7	4.2/3.5	3
E84DGDVB3024	0 ... 400/480	0 ... 300	7.3/6.0	5.4/4.5	3
E84DGDVB4024	0 ... 400/480	0 ... 300	9.5/7.9	7.1/5.9	3
E84DGDVB5524	0 ... 400/480	0 ... 300	13.0/10.8	9.8/8.1	3
E84DGDVB7524	0 ... 400/480	0 ... 300	16.5/13.7	12.4/10.3	3

① Ambient temperature, switching frequency 4 kHz

4 Mechanical installation

4.1 Preparation

The installation and wiring of the Wiring Unit and Communication Unit in compliance with the mounting instructions must have been completed.



Tip!

Before you are able to continue and complete the installation of 8400 motec, you have to take some decisions regarding the parameter setting and commissioning.

Is the inverter to be preset with DIP1, DIP2, P2, or P3?

- ▶ Carry out settings as specified.
 - The "Settings" chapter contains the necessary information. (📖 67)
- ▶ Mount Drive Unit. (📖 63)

Is the inverter to be parameterised with L-Force »Engineer« or using a diagnosis terminal?

- ▶ Mount Drive Unit. (📖 63)

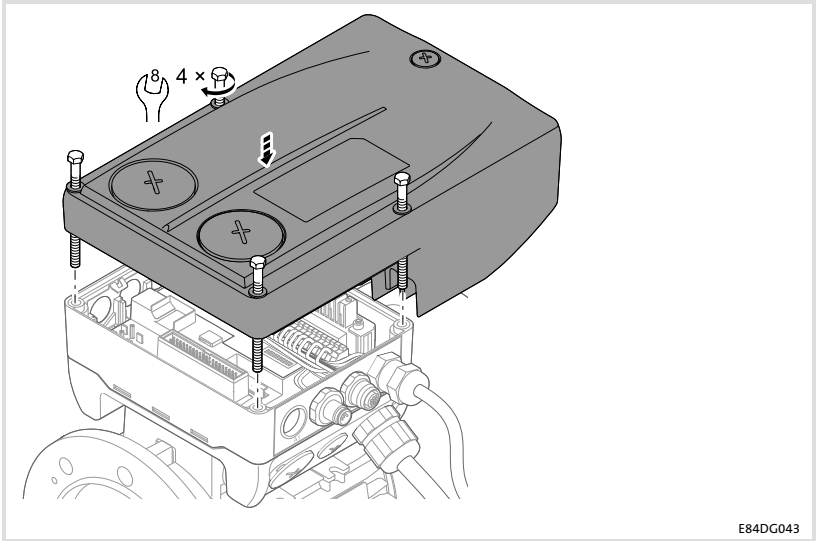
Is the inverter part of a Drive Package?

- ▶ The inverter is set by the factory, complying with the motor and gearbox.
 - Do not change factory settings!
- ▶ Mount Drive Unit. (📖 63)

4.2 Mounting

0.37 ... 3 kW

Position the drive unit exactly onto the previously mounted communication unit. Fasten the drive unit with the four provided screws (torque: 5.0 Nm/44 lb-in).



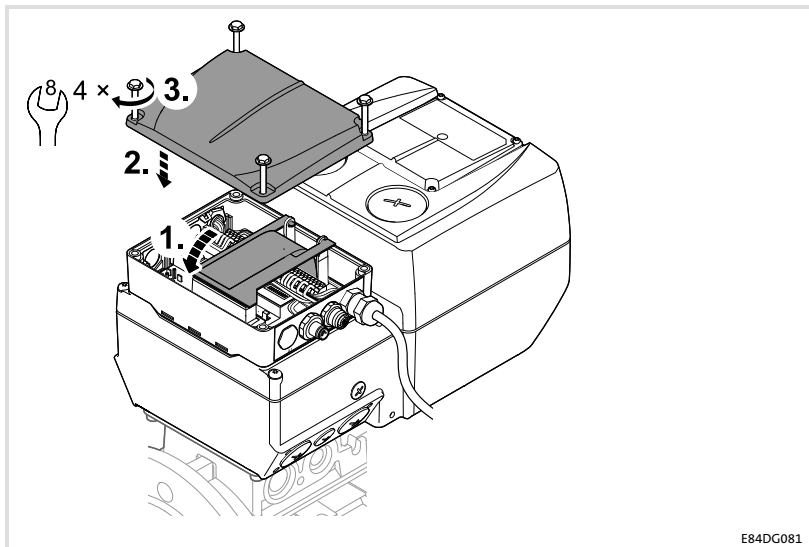
E84DG043

4 ... 7.5 kW

The drive unit has already been mounted with the wiring unit.

How to complete the mounting procedure:

1. Turn the hinged socket connector towards the CU and carefully insert it into the counter plug.
2. Place the cover of the DU on the communication unit and
3. Fit it using the four screws (torque: 1.5 Nm/14 lb-in).



E84DG081

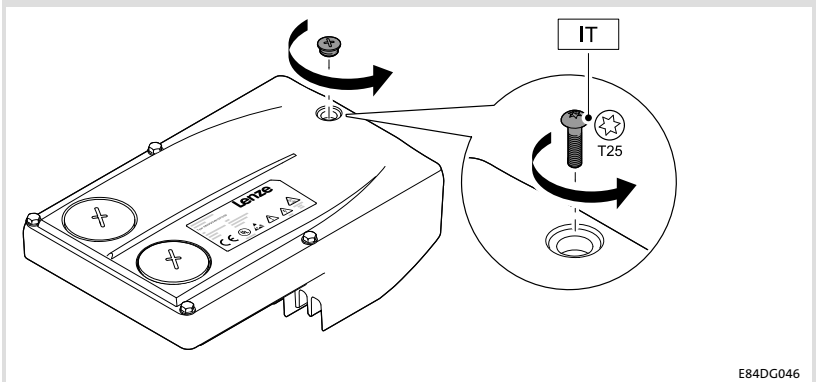
4.3 Measures when drive is used in IT systems

If the drive is mounted within an IT system, internal filters must be separated from the PE conductor.

How to proceed:

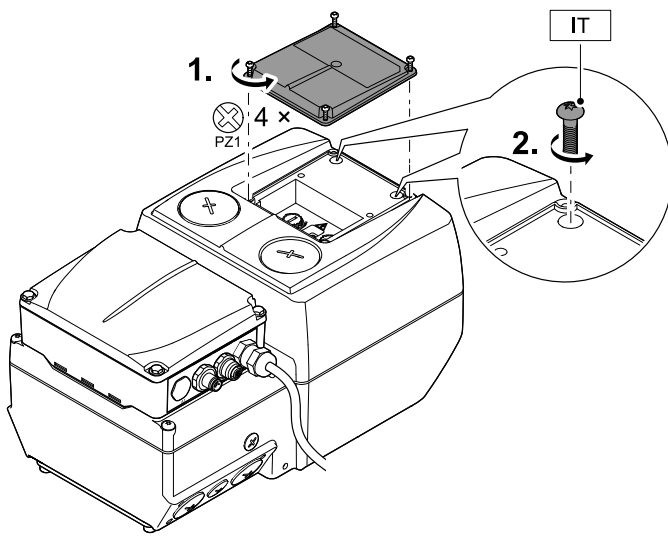
1. If the controller has already been mounted: switch off mains voltage!
2. Make IT screw accessible.
 - Devices up to 3 kW: unscrew small cap on the top.
 - Devices from 4 kW: remove small cover on the top.
3. Unscrew and remove the screw(s).
4. Screw the cap on or fit the cover.

0.37 ... 3 kW



E84DG046

4 ... 7.5 kW



E84DG084

5 Settings



Stop!

Automatic motor start

In "Local mode" The auto-start option "Inhibit at power-on" is not set. When the mains is connected, the motor starts if the controller enable RFR is bridged or set.

("Local mode" => DIP1/1 = ON and DIP2/5-7 = OFF)

Possible consequences:

- ▶ Danger or damages through unexpected motor start.

Protective measures:

- ▶ Decouple the motor from the drive train during commissioning phase.
- ▶ Replace the factory-set bridge at RFR by an NO contact.
- ▶ Do not set controller enable.

For initial commissioning, settings can be made via DIP switch and potentiometer. The settings must be made before mounting the drive unit since the setting elements cannot be accessed from the outside.

From software version 07.00.00 onwards, you can use DIP2/8 to set two different pre-assignments of DIP1, DIP2, P1, P2, and P3:

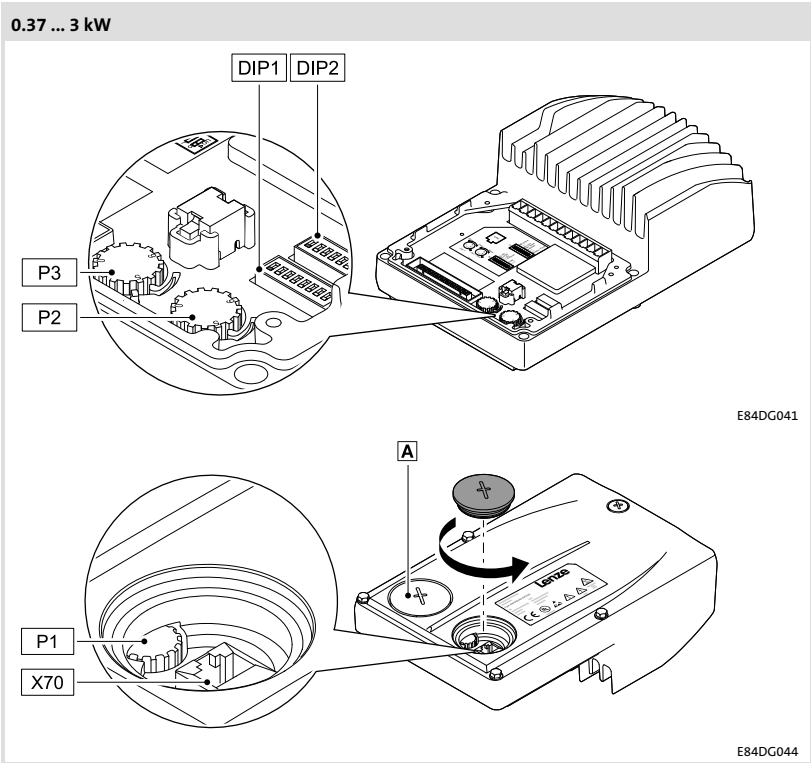
- ▶ DIP2/8 = OFF: DIP switch/ potentiometer assignment 0
- ▶ DIP2/8 = ON: DIP switch/ potentiometer assignment 1

Up to software version 07.00.00, only DIP switch/ potentiometer assignment 0 is available.

Setting elements 0.37 ... 3 kW

The setting elements are located on the inner side of the drive unit.

Settings carried out via DIP1, DIP2, P2, P3, and P1 must be activated with DIP1/1. The settings are accepted again at every mains connection. Thus, changes on parameters made in the meantime may be overwritten.



	Name
DIP1	DIP switch for commissioning
DIP2	
P1	Setting "Top Cover: Speed ... %"
P2	Setting "Speed ... %", (speed)
P3	Setting "Ramp ... s", (acceleration/deceleration time)
X70	Connection for E94AZCUS USB diagnostic adapter or diagnosis terminal
A	LED status display

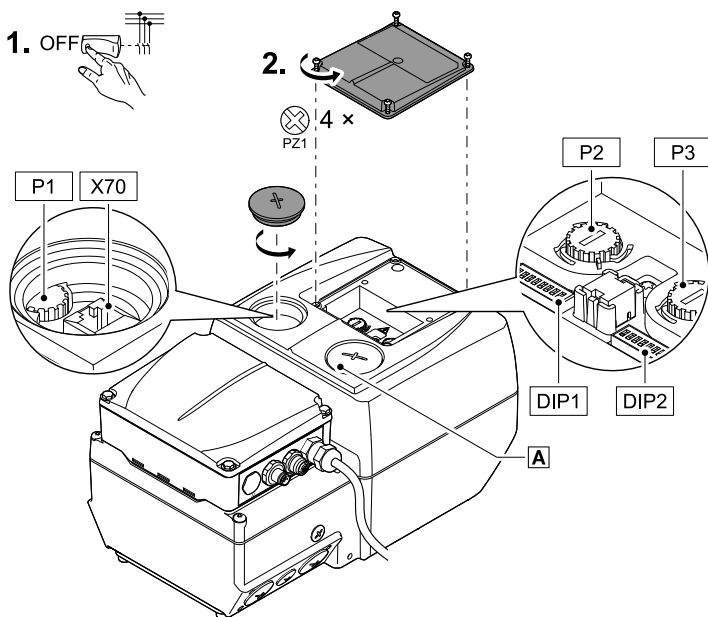
Setting elements 4 ... 7.5 kW

The setting elements are located on the top of the drive unit.

- Provide for isolation from supply and secure to prevent a restart.
- Remove small cover on the top.

Settings carried out via DIP1, DIP2, P2, P3, and P1 must be activated with DIP1/1. The settings are accepted again at every mains connection. Thus, changes on parameters made in the meantime may be overwritten.

4 ... 7.5 kW



E84DG083

	Name
DIP1	DIP switch for commissioning
DIP2	
P1	Setting "Top Cover: Speed ... %"
P2	Setting "Speed ... %", (speed)
P3	Setting "Ramp ... s", (acceleration/deceleration time)
X70	Connection for E94AZCUS USB diagnostic adapter or diagnosis terminal
A	LED status display

5.1

DIP switch / potentiometer assignment 0

Settings with DIP1

(Lenze setting **bold**)

DIP1		Switch							
Description		1	2	3	4	5	6	7	8
DIP1, DIP2, P1, P2, and P3 active	Active	ON							
	Inactive	OFF							
Direction of rotation	left		ON						
	right		OFF						
Control	square-law			ON					
	linear			OFF					
Flying restart circuit	active				ON				
	inactive				OFF				
Reserved	-					OFF	OFF	OFF	
Device status	Drive Ready: NO/COM = Closed								ON
	Drive Fail: DO1 = HIGH								
Device status	Drive Ready: DO1 = HIGH								OFF
	Drive Fail: NO/COM = Closed								

Settings with DIP2 (Lenze setting **bold**)

DIP2		Switch							
Description		1	2	3	4	5	6	7	8
Rated motor frequency / reference speed	50 Hz Υ / 1500 rpm	OFF	OFF						
	60 Hz Υ / 1800 rpm	ON	OFF						
	87 Hz Δ / 2610 rpm	OFF	ON						
	120 Hz Υ / 3600 rpm	ON	ON						
Analog input mode	0 ... 10 V			OFF	OFF				
	0 ... 20 mA			ON	OFF				
	4 ... 20 mA			OFF	ON				
	Not permissible			ON	ON				
Control mode - technology application	9 (Local mode)					OFF	OFF	OFF	
	10 (terminals 0)					ON	OFF	OFF	
	12 (terminals 2)					OFF	ON	OFF	
	14 (terminals 11)					ON	ON	OFF	
	16 (terminals 16)					OFF	OFF	ON	
	Reserved					ON	OFF	ON	
	Reserved					OFF	ON	ON	
	40 (MCI)					ON	ON	ON	
Reserved	-								OFF

Control modes DIP2/5-7	Description (Dlx → High)															
9 (local mode)	The technology application is controlled locally via elements on the inverter and the digital input terminals:  At mains connection the motor starts up automatically if RFR is bridged or set! <table><tr><td>DI1</td><td>Setpoint of P2 (speed)</td><td rowspan="2">Preset setpoint 3</td></tr><tr><td>DI2</td><td>Preset setpoint 2</td></tr><tr><td>DI3</td><td colspan="2">Activate DC injection brake</td></tr><tr><td>DI4</td><td colspan="2">Change of direction of rotation (not possible if DIP1/2 = on (set to the left))</td></tr><tr><td>DI5</td><td colspan="2">Release holding brake manually (operating mode after setting C02580)</td></tr></table>	DI1	Setpoint of P2 (speed)	Preset setpoint 3	DI2	Preset setpoint 2	DI3	Activate DC injection brake		DI4	Change of direction of rotation (not possible if DIP1/2 = on (set to the left))		DI5	Release holding brake manually (operating mode after setting C02580)		
DI1	Setpoint of P2 (speed)	Preset setpoint 3														
DI2	Preset setpoint 2															
DI3	Activate DC injection brake															
DI4	Change of direction of rotation (not possible if DIP1/2 = on (set to the left))															
DI5	Release holding brake manually (operating mode after setting C02580)															
10 (terminals 0)	The technology application is controlled via the digital input terminals of the inverter: <table><tr><td>DI1</td><td>Preset setpoint 1</td><td rowspan="2">Preset setpoint 3</td></tr><tr><td>DI2</td><td>Preset setpoint 2</td></tr><tr><td>DI3</td><td colspan="2">Activate DC injection brake</td></tr><tr><td>DI4</td><td colspan="2">Change of direction of rotation</td></tr><tr><td>DI5</td><td colspan="2">Release holding brake manually (operating mode after setting C02580)</td></tr></table>	DI1	Preset setpoint 1	Preset setpoint 3	DI2	Preset setpoint 2	DI3	Activate DC injection brake		DI4	Change of direction of rotation		DI5	Release holding brake manually (operating mode after setting C02580)		
DI1	Preset setpoint 1	Preset setpoint 3														
DI2	Preset setpoint 2															
DI3	Activate DC injection brake															
DI4	Change of direction of rotation															
DI5	Release holding brake manually (operating mode after setting C02580)															
12 (terminals 2)	The technology application is controlled via the digital input terminals of the inverter: <table><tr><td>DI1</td><td>Preset setpoint 1</td><td rowspan="2">Preset setpoint 3</td></tr><tr><td>DI2</td><td>Preset setpoint 2</td></tr><tr><td>DI3</td><td colspan="2">Quick stop</td></tr><tr><td>DI4</td><td colspan="2">Change of direction of rotation</td></tr><tr><td>DI5</td><td colspan="2">Release holding brake manually (operating mode after setting C02580)</td></tr></table>	DI1	Preset setpoint 1	Preset setpoint 3	DI2	Preset setpoint 2	DI3	Quick stop		DI4	Change of direction of rotation		DI5	Release holding brake manually (operating mode after setting C02580)		
DI1	Preset setpoint 1	Preset setpoint 3														
DI2	Preset setpoint 2															
DI3	Quick stop															
DI4	Change of direction of rotation															
DI5	Release holding brake manually (operating mode after setting C02580)															
14 (terminals 11)	The technology application is controlled via the digital input terminals of the inverter: <table><tr><td>DI1</td><td colspan="2">Change of direction of rotation</td></tr><tr><td>DI2</td><td colspan="2">Activate DC injection brake</td></tr><tr><td>DI3</td><td colspan="2">Motor potentiometer: speed higher</td></tr><tr><td>DI4</td><td colspan="2">Motor potentiometer: speed lower</td></tr><tr><td>DI5</td><td colspan="2">Release holding brake manually (operating mode after setting C02580)</td></tr></table>	DI1	Change of direction of rotation		DI2	Activate DC injection brake		DI3	Motor potentiometer: speed higher		DI4	Motor potentiometer: speed lower		DI5	Release holding brake manually (operating mode after setting C02580)	
DI1	Change of direction of rotation															
DI2	Activate DC injection brake															
DI3	Motor potentiometer: speed higher															
DI4	Motor potentiometer: speed lower															
DI5	Release holding brake manually (operating mode after setting C02580)															
16 (terminals 16)	The technology application is controlled via the digital input terminals of the inverter: <table><tr><td>DI1</td><td>Preset setpoint 1</td><td rowspan="2">Preset setpoint 3</td></tr><tr><td>DI2</td><td>Preset setpoint 2</td></tr><tr><td>DI3</td><td colspan="2">CW rotation/quick stop</td></tr><tr><td>DI4</td><td colspan="2">CCW rotation/quick stop</td></tr><tr><td>DI5</td><td colspan="2">Release holding brake manually (operating mode after setting C02580)</td></tr></table>	DI1	Preset setpoint 1	Preset setpoint 3	DI2	Preset setpoint 2	DI3	CW rotation/quick stop		DI4	CCW rotation/quick stop		DI5	Release holding brake manually (operating mode after setting C02580)		
DI1	Preset setpoint 1	Preset setpoint 3														
DI2	Preset setpoint 2															
DI3	CW rotation/quick stop															
DI4	CCW rotation/quick stop															
DI5	Release holding brake manually (operating mode after setting C02580)															
40 (MCI)	The technology application is controlled via fieldbus communication. Depending on the Communication Unit available															

Settings with P2

(Lenze setting **bold**)

With P2 you set the motor setpoint speed as a percentage of the rated speed in C00011 in 10 steps (preset speed setpoint). The preset setpoint is only activated if the DI1 input is set in "Local mode".

P2		Setting									
Description		0	1	2	3	4	5	6	7	8	9
Motor speed in percent of the rated speed setting C00011	[%]	0	11	22	33	44	55	66	77	88	100

Settings with P3

(Lenze setting **bold**)

Use P3 to set the acceleration and deceleration time of the motor.

P3		Setting									
Description		0	1	2	3	4	5	6	7	8	9
Acceleration and deceleration time of the motor in seconds	[s]	0.1	0.5	1	2	5	10	20	30	60	120

Settings with P1

(Lenze setting **bold**)

During operation you can use P1 to steplessly set the motor speed as a percentage of the rated speed in C00011 if no preset speed setpoint P2 is active via DI1.

Remove cap in order to be able to set potentiometer P1.

- Screw cap on again after the setting process, in order to ensure that the degree of protection of the inverter is provided.

P1		Setting		
Description		0	...	9
Motor speed in percent of the rated speed C00011	[%]	0	...	100

5.2

DIP switch / potentiometer assignment 1

(from software version 07.00.00 onwards)

Settings with DIP1

(Lenze setting **bold**)

DIP1		Switch							
Description		1	2	3	4	5	6	7	8
DIP1, DIP2, P1, P2, P3	Active	ON							
	Inactive	OFF							
Motor power	Motor power > inverter power		ON						
	Motor power = inverter power		OFF						
Control	VFCplus ECO			ON					
	VFCplus linear			OFF					
Brake control / restart on the fly	Brake control off, restart on the fly off				OFF	OFF			
	Brake control off, restart on the fly on				ON	OFF			
	Brake control automatically horizontally, restart on the fly off				OFF	ON			
	Brake control automatically vertically, restart on the fly off				ON	ON			
Motor mounting direction	Inverted						ON		
	Not inverted						OFF		
Function P1	Preset setpoint 3 is always written to with P1							ON	
	Preset setpoint 3 is written to once at mains connection with P1							OFF	
Load parameters after mains connection	Load parameters from memory module								ON
	Load parameters from the Lenze setting								OFF

Settings with DIP2 (Lenze setting bold)

DIP2		Switch							
Description		1	2	3	4	5	6	7	8
Rated motor frequency / reference speed	50 Hz Υ / 1500 rpm	OFF	OFF						
	60 Hz Υ / 1800 rpm	ON	OFF						
	87 Hz Δ / 2610 rpm	OFF	ON						
	120 Hz Υ / 3600 rpm	ON	ON						
Configuration of application	Speed actuating drive (1000)			OFF	OFF				
	AC Drive Profile (1100)			ON	OFF				
	Switch-off positioning (3000)			OFF	ON				
	Reserved			ON	ON				
Control mode - technology application	9 (Local mode)					OFF	OFF	OFF	
	10 (terminals 0)					ON	OFF	OFF	
	12 (terminals 2)					OFF	ON	OFF	
	14 (terminals 11)					ON	ON	OFF	
	16 (terminals 16)					OFF	OFF	ON	
	Reserved					ON	OFF	ON	
	41 (AS-Interface)					OFF	ON	ON	
	40 (MCI/CAN)					ON	ON	ON	
Selection of DIP switch / potentiometer assignment	DIP switch / potentiometer assignment 0								OFF
	DIP switch / potentiometer assignment 1								ON

Control modes DIP2/5-7	Description (Dlx → High)															
9 (local mode)	The technology application is controlled locally via elements on the inverter and the digital input terminals:  At mains connection the motor starts up automatically if RFR is bridged or set! <table><tr><td>DI1</td><td>Setpoint of P2 (speed)</td><td rowspan="2">Preset setpoint 3</td></tr><tr><td>DI2</td><td>Preset setpoint 2</td></tr><tr><td>DI3</td><td colspan="2">Activate DC injection brake</td></tr><tr><td>DI4</td><td colspan="2">Change of direction of rotation (not possible if DIP1/2 = on (set to the left))</td></tr><tr><td>DI5</td><td colspan="2">Release holding brake manually (operating mode after setting C02580)</td></tr></table>	DI1	Setpoint of P2 (speed)	Preset setpoint 3	DI2	Preset setpoint 2	DI3	Activate DC injection brake		DI4	Change of direction of rotation (not possible if DIP1/2 = on (set to the left))		DI5	Release holding brake manually (operating mode after setting C02580)		
DI1	Setpoint of P2 (speed)	Preset setpoint 3														
DI2	Preset setpoint 2															
DI3	Activate DC injection brake															
DI4	Change of direction of rotation (not possible if DIP1/2 = on (set to the left))															
DI5	Release holding brake manually (operating mode after setting C02580)															
10 (terminals 0)	The technology application is controlled via the digital input terminals of the inverter: <table><tr><td>DI1</td><td>Preset setpoint 1</td><td rowspan="2">Preset setpoint 3</td></tr><tr><td>DI2</td><td>Preset setpoint 2</td></tr><tr><td>DI3</td><td colspan="2">Activate DC injection brake</td></tr><tr><td>DI4</td><td colspan="2">Change of direction of rotation</td></tr><tr><td>DI5</td><td colspan="2">Release holding brake manually (operating mode after setting C02580)</td></tr></table>	DI1	Preset setpoint 1	Preset setpoint 3	DI2	Preset setpoint 2	DI3	Activate DC injection brake		DI4	Change of direction of rotation		DI5	Release holding brake manually (operating mode after setting C02580)		
DI1	Preset setpoint 1	Preset setpoint 3														
DI2	Preset setpoint 2															
DI3	Activate DC injection brake															
DI4	Change of direction of rotation															
DI5	Release holding brake manually (operating mode after setting C02580)															
12 (terminals 2)	The technology application is controlled via the digital input terminals of the inverter: <table><tr><td>DI1</td><td>Preset setpoint 1</td><td rowspan="2">Preset setpoint 3</td></tr><tr><td>DI2</td><td>Preset setpoint 2</td></tr><tr><td>DI3</td><td colspan="2">Quick stop</td></tr><tr><td>DI4</td><td colspan="2">Change of direction of rotation</td></tr><tr><td>DI5</td><td colspan="2">Release holding brake manually (operating mode after setting C02580)</td></tr></table>	DI1	Preset setpoint 1	Preset setpoint 3	DI2	Preset setpoint 2	DI3	Quick stop		DI4	Change of direction of rotation		DI5	Release holding brake manually (operating mode after setting C02580)		
DI1	Preset setpoint 1	Preset setpoint 3														
DI2	Preset setpoint 2															
DI3	Quick stop															
DI4	Change of direction of rotation															
DI5	Release holding brake manually (operating mode after setting C02580)															
14 (terminals 11)	The technology application is controlled via the digital input terminals of the inverter: <table><tr><td>DI1</td><td colspan="2">Change of direction of rotation</td></tr><tr><td>DI2</td><td colspan="2">Activate DC injection brake</td></tr><tr><td>DI3</td><td colspan="2">Motor potentiometer: speed higher</td></tr><tr><td>DI4</td><td colspan="2">Motor potentiometer: speed lower</td></tr><tr><td>DI5</td><td colspan="2">Release holding brake manually (operating mode after setting C02580)</td></tr></table>	DI1	Change of direction of rotation		DI2	Activate DC injection brake		DI3	Motor potentiometer: speed higher		DI4	Motor potentiometer: speed lower		DI5	Release holding brake manually (operating mode after setting C02580)	
DI1	Change of direction of rotation															
DI2	Activate DC injection brake															
DI3	Motor potentiometer: speed higher															
DI4	Motor potentiometer: speed lower															
DI5	Release holding brake manually (operating mode after setting C02580)															
16 (terminals 16)	The technology application is controlled via the digital input terminals of the inverter: <table><tr><td>DI1</td><td>Preset setpoint 1</td><td rowspan="2">Preset setpoint 3</td></tr><tr><td>DI2</td><td>Preset setpoint 2</td></tr><tr><td>DI3</td><td colspan="2">CW rotation/quick stop</td></tr><tr><td>DI4</td><td colspan="2">CCW rotation/quick stop</td></tr><tr><td>DI5</td><td colspan="2">Release holding brake manually (operating mode after setting C02580)</td></tr></table>	DI1	Preset setpoint 1	Preset setpoint 3	DI2	Preset setpoint 2	DI3	CW rotation/quick stop		DI4	CCW rotation/quick stop		DI5	Release holding brake manually (operating mode after setting C02580)		
DI1	Preset setpoint 1	Preset setpoint 3														
DI2	Preset setpoint 2															
DI3	CW rotation/quick stop															
DI4	CCW rotation/quick stop															
DI5	Release holding brake manually (operating mode after setting C02580)															

Control modes DIP2/5-7	Description (Dlx → High)
40 (MCI)	The technology application is controlled via fieldbus communication. Depending on the Communication Unit available

Settings with P2

(Lenze setting **bold**)

Use P2 to write different preset setpoints to C00039/1 and C00039/2.

P2		Setting									
Description		0	1	2	3	4	5	6	7	8	9
Write preset setpoint 1 to C00039/1	[%]	5	10	15	20	25	30	35	40	45	50
Write preset setpoint 2 to C00039/2	[%]	10	20	30	40	50	60	70	80	90	100

Settings with P3

(Lenze setting **bold**)

Use P3 to write different acceleration/deceleration times to C00012/C00013 including different deceleration times for quick stop to C00105.

P3		Setting									
Description		0	1	2	3	4	5	6	7	8	9
Write acceleration/deceleration time to C00012/C00013	[s]	0.1	0.5	0.7	1	1.5	2	5	10	30	60
Write deceleration time for quick stop to C00105	[s]	0.1	0.2	0.5	0.7	1	1.5	2	5	10	30

Settings with P1

(Lenze setting **bold**)

Use P1 to write a preset speed setpoint to C00039/3. Depending on the switch position of DIP1/7, C00039/3 is written to once or permanently at mains connection.

Remove cap in order to be able to set the P1 potentiometer.

- Screw cap on again after the setting process, in order to ensure the degree of protection of the inverter.

P1		Setting		
Description		0	...	9
Write preset setpoint 3 to C00039/3	[%]	0	...	100

6 **Commissioning**

6.1 **Before switching on**

- ▶ The wiring unit is mounted and wired as described in the instructions,
 - directly on a motor clamping flange or
 - with the wall adapter on a suitable surface near the motor.
- ▶ Connections with the mains, motor, holding brakes, etc. have been established.
- ▶ The communication unit has been mounted and wired according to the scheduled application.
 - Input and output signals
 - Safe input
 - Fieldbus(depending on the version, only optionally available)
- ▶ If required, the basic settings for "local mode" have been carried out.
 - DIP switch
 - Potentiometer
- ▶ The drive unit has been mounted and screwed together.
- ▶ Use available control functions reasonably, e.g.
 - Inhibit controller enable
 - Set speed adjustment to the minimum setting
 - Activate safety system
- ▶ The use of a brake resistor has been checked.
 - In the case of dynamic loads or difficult control conditions, the use of the internal E84DZEW47R0001 brake resistor is always recommended for devices E84DGDVB4024 ... 7524 (4 ... 7.5 kW).



Danger!

Great hazard potential during commissioning

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

Possible consequences:

- ▶ Damage to material assets
- ▶ Injury to persons

Protective measures:

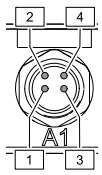
- ▶ Clear hazardous area
- ▶ Observe safety instructions and safety clearances

6.2 Commissioning steps

Proceed step by step:

- ▶ Switch on the mains
- ▶ Monitor status display
 - After a short initialisation time, the display must be blinking green.
- ▶ Deactivate requirements of the safety function
- ▶ Set controller enable
 - After the set starting time, the motor must rotate with the speed set.
- ▶ Initial check of the expected behaviour:
 - Direction of rotation?
 - Starting time?
 - Speed?
 - Speed control?
- ▶ Check of optional control functions:
 - Is the analog setpoint selection working?
 - Are the digital control signals, e.g. limit switches, working?
 - Is the connected motor holding brake working?
 - Is the function for changing over the rotating direction working?
 - Is the requirement with regard to the safety function working?
 - Are the control signals via fieldbus working?
- ▶ Switch off drive
 - Reduce speed
 - Inhibit controller enable
 - Switch off mains

Depending on the bus system of the communication unit, statuses are indicated by means of an LED display. Detailed information can be found in the communication manual for the bus system used.

LED	1 (green)	2 (green)	3 (red)	4 (red)
 E84DG056_b	PROFIBUS	BUS STATE	MODULE STATE	BUS ERROR
	AS-i	SLAVE 1 READY	SLAVE 2 READY	SLAVE 1 ERROR
	EtherCAT	RUN	LINK/ACTIVITY	ERROR
	PROFINET	BUS READY	LINK/ACTIVITY 1 (yellow)	BUS ERROR
	EtherNet/IP	MODULE STATE		NETWORK STATE
			(red)	(green)

6.3 Commissioning via the diagnosis terminal

The X400 diagnosis terminal serves to quickly and easily set parameters and display current actual values and device states by means of the corresponding display parameters. For this purpose, the diagnosis terminal must be plugged onto the X70 diagnostic interface on the top of the device.



Danger!

Uncontrolled motor movement possible

In general, changing a parameter causes an immediate response in the inverter.

Possible consequences:

- ▶ This may lead to undesirable behaviour on the motor shaft if the inverter has been enabled.

Protective measures:

- ▶ Make changes in small steps and wait for response.
- ▶ Certain device commands or settings which may cause critical states of drive behaviour constitute exceptions. Such parameter changes are only possible if the inverter is inhibited. Otherwise, a corresponding error message will be issued.



Note!

Plugging and unplugging the diagnosis terminal during operation is permissible.



More information

Detailed information regarding the diagnosis terminal can be found in the operating instructions for the X400 keypad & diagnosis terminal.

6.3.1

Menu structure

The main menu of the diagnosis terminal contains the following entries:

Menu item	Function
User menu	Display of a selection of frequently required parameters
Code list	Display of the parameter list with all parameters
Go to parameter	Directly calls a certain parameter
Parameter transfer	
User menu configuration	
Keypad	

6.3.2 User menu

The user menu can be freely configured in C00517 and contains the following parameters in the Lenze setting:

Parameters	Name	Info	Lenze setting
C00011	Appl.: Reference speed	Setting the reference speed	1500 rpm
C00012	Accel. time - main setpoint	FB L_NSet_1: Acceleration time of the ramp generator for the main speed setpoint	2.0 s
C00013	Decel. time - main setpoint	FB L_NSet_1: Deceleration time of the ramp generator for the main speed setpoint	2.0 s
C00015	VFC: V/f base frequency	V/f base frequency for VFCplus motor control	50 Hz
C00016	VFC: Vmin boost	Boost of the V/f voltage characteristic within the range of low speed or frequency values for the VFCplus motor control.	2.6 %
C00022	Imax in motor mode	Maximum current in motor mode for all motor control modes	5.8 A
C00039/1	Preset setpoint 1 (L_NSet_1 n-Fix)	FB L_NSet_1: Fixed speed setpoints (JOG values) for the setpoint generator Fixed setpoint 1	40.0 %
C00039/2	Fixed setpoint 2	Fixed setpoint 2	60.0 %
C00051	MCTRL: Actual speed value	Actual speed value of the motor shaft	—
C00053	DC-bus voltage	Actual DC-bus voltage	—
C00054	Motor current	Current motor current/output current of the inverter	—
C00061	Heatsink temperature	Current heatsink temperature	—
C00087	Rated motor speed	This value can be obtained from the motor nameplate. After the motor to be used has been selected from the motor catalogue, the suitable value can be entered automatically.	1320 rpm
C00099	Firmware version	Firmware version of the device as string	—
C00105	Decel. time - quick stop	The set deceleration time determines the ramp slope at quick stop	5.0 s
C00120	Motor overload threshold (I ² xt)	Operating threshold for the error message "OC6: Motor overload (I ² xt)"	100 %
C00137	Device status	Current device state	—
C00166/3	Mess. - status det. error	Textual message of the currently pending error	—
C00173	Mains voltage	Selection of the mains voltage for operating the device.	0: "3ph 400V"
C00200	Firmware product type		—

— Read only

6.3.3

Commissioning steps

**Note!**

The following can be connected to the X70 diagnostic interface:

- ▶ USB diagnostic adapter (E94AZCUS)
- ▶ X400 diagnosis terminal (EZAEBK200x)
 - The functions of the X400 diagnosis terminal and keypad (EZAEBK100x) are identical.

Only some parameters must be adapted for the drive. Then the drive application can be controlled immediately in the preset "Terminals 0" control mode via the digital and analog inputs. Alternatively, the keypad can be used for defining the required setpoints and control signals in the "Keypad" control mode.

How to proceed:

1. Wiring of power terminals
 - Make use of the mounting instructions supplied with the inverter to wire the power terminals according to the requirements of your device.
2. Wiring of control terminals.
 - The preconfigured I/O connection can be changed via configuration parameters. See the "User-defined terminal assignment" chapter.
 - Assignment in the preset "Terminals 0" control mode:

Terminal	Function		Info
A1U	Setpoint selection		10 V ≡ 1500 rpm (with 4-pole motor) general: 10 V ≡ 100 % reference speed (C00011)
DI1	JOG 1	JOG 3	Selection of preset setpoints 1 ... 3 ● If both inputs are on LOW level, the setpoint selection via the analog input A1U is active.
DI2	JOG 2		
DI3	DCB		Manual DC-injection braking (DCB) ● For HIGH-active inputs, DC-injection braking is active as long as DI3 is at HIGH level. ● After the hold time (C00107) has expired, the inverter sets pulse inhibit (CINH). DC-injection braking (▶ 110)
DI4	R/L		LOW level: CW rotation HIGH level: CCW rotation
DI5	Holding brake		Open/close holding brake ● Braking modes C02580

3. Check switch at the bottom of the drive unit:
DIP1/1 must be "OFF" (Lenze setting) in order that the parameters can be overwritten via »Engineer«, keypad, or fieldbus.
4. If required, carry out communication settings via the DIP switch on the Communication Unit for fieldbus communication.
The communication settings depend on the fieldbus used.
5. Fasten the controller by means of the 4 screws.
6. Switch on voltage supply of the inverter.
7. Connect keypad.
 - Remove the cover of the diagnostic interface on the top of the device and connect the keypad to the diagnostic interface.
 - When the keypad has been connected, the connection to the inverter is established. This process is completed when C00051 is shown in the display.

Keypad display	Action
MCTRL: Act speed val. C00051 0 rpm	Use left function key  to change to main menu.

8. Load Lenze setting to inverter.
 - For this purpose, the device command "Load Lenze setting" is available which can be executed via code C00002/1 with the keypad:



Note!

With the "Load Lenze settings" command, values that have been changed previously are overwritten. Default settings for a specific motor, e.g. by Lenze for a Drive Package, are reset.

Keypad display	Action
Par1 8400 motec User menu	A Select the menu in the main menu using the  navigation key. B Change to the menu using the  navigation key.
Load Lenze setting C00002/1	A Use the left function key  to change to the editing mode for C00002/1. B Use navigation key  to select the "1: On/Start" entry in the selection list. C Use the right function key  to accept the executed change and quit the editing mode. – The load process may take a couple of seconds.

9. Enable inverter: Set RFR to HIGH potential.
 - By default, the RFR terminal is bridged (controller enable).
 - If the auto-start option "Inhibit at power-on" is activated in C00142 and the controller is enabled at mains connection, the controller remains in the "ReadyToSwitchOn" status. For changing to the "SwitchedOn" status, controller enable must first be deactivated. Only when the controller is enabled again afterwards, the status changes to "OperationEnabled":
 - If the autostart option "Inhibit at power-on" is deactivated in C00142, the status directly changes from "ReadyToSwitchOn" to the "SwitchedOn" state and to the "OperationEnabled" state after mains connection when the controller is enabled.

**Danger!**

When the auto-start option "Inhibit at power-on" is deactivated, the motor can directly start after power-on if the controller is enabled!

10. Select speed:
 - In the "Terminals 0" by selecting a voltage at the analog input or by selecting a fixed setpoint via the digital inputs DI1/DI2.
 - In the "Keypad" control mode, the main speed setpoint and the control signals are predefined via the following parameters:

Parameters	Name	Info	Lenze setting
C00728/3	nMainSetValue_a	Main setpoint for the application 100 % = reference speed (C00011)	0.00 %
C00727/3	bSetSpeedCcw	Change of direction of rotation "0": CW rotation "1": CCW rotation	0
C00727/4	bJogSpeed1	Selection of fixed setpoint 1 "0": Main setpoint (C00728/3) active. "1": Fixed setpoint 1 (C00039/1) active.	0

11. If required, adapt further parameters.
12. Save parameter settings with function key **SAVE** safe against mains failure in the memory module.

6.3.4 SET mode

In SET mode, the inverter is controlled via the diagnosis terminal. You can change the speed setpoint and enable or inhibit the inverter (RFR/run). Other setpoint sources are ignored.

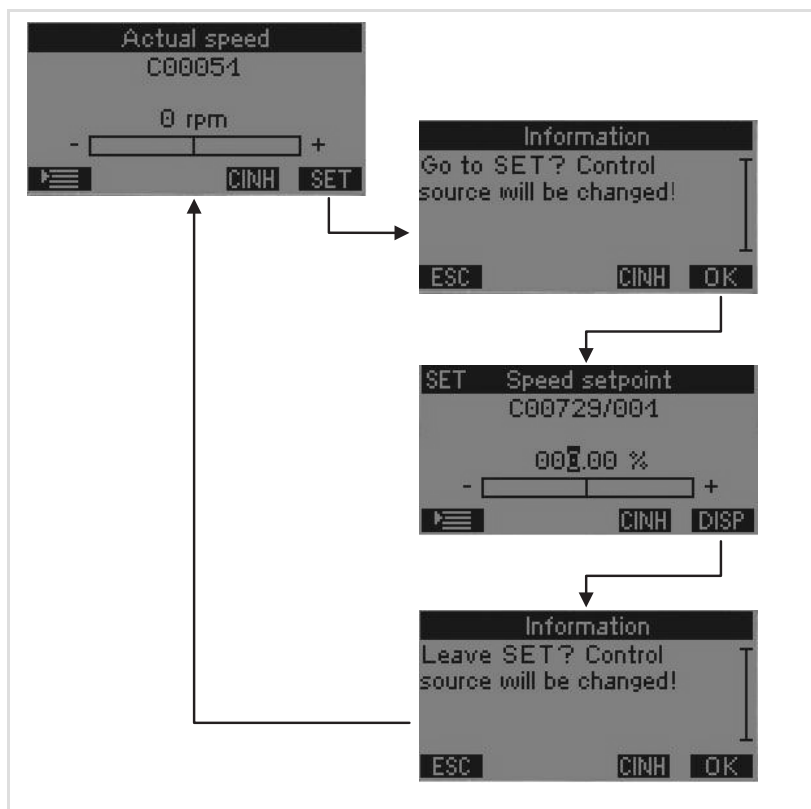
- ▶ Activate SET mode: press "DISP" softkey button and confirm with "OK" softkey button.
- ▶ Exit SET mode: press "DISP" softkey button and confirm with "OK" softkey button.



Note!

SET mode can only be activated in the "OperationEnabled" device state (controller inhibit is deactivated, green LED on the inverter is lit permanently).

- ▶ Controller inhibit is only indicated in the keypad. The cause of controller inhibit is shown in detail in C00158 ( 8400 motec reference manual).



7 Parameter setting

By means of the parameterisation process you can provide the inverter with optimum settings meeting various requirements for different applications. The parameterisation can be performed in the following ways:

Parameterisation with L-force »Engineer«

- ▶ Comprehensive settings made online by the use of software
 - Safe parameter setting is supported by the »Engineer« Lenze PC software, starting from version 02.23.
 - The parameterisation process is described in the software manual for the SM302 safety module.
 - Requires software and a USB diagnostic adapter.

Parameter setting using a diagnosis terminal/keypad

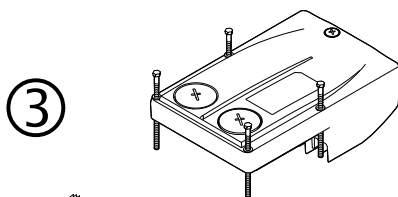
- ▶ Setting of specific parameters by experienced users
 - Requires a diagnosis terminal that is suitable for 8400 motec
 - The parameter setting procedure is described in the EZAEBK000X operating instructions for the 400 keypad.



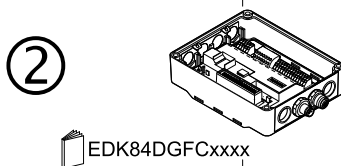
Note!

Save parameter settings safe against mains failure

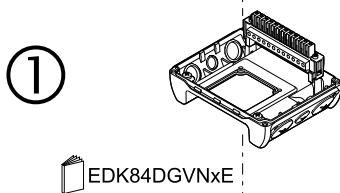
In order to prevent parameter settings carried out in the device from being lost by mains switching, you have to explicitly save the parameter set with mains failure protection in the device.



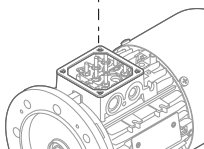
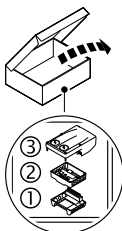
EDK84DGDVBxxx4



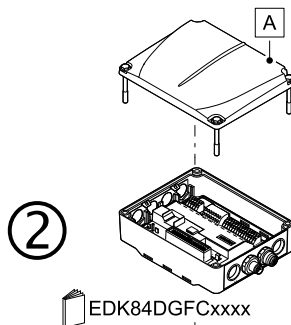
EDK84DGFCxxxx



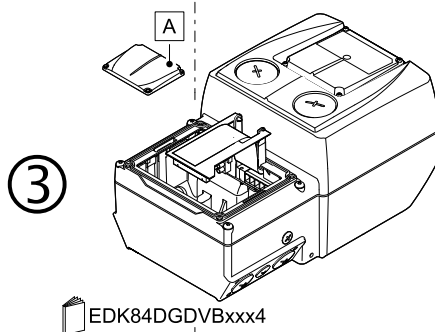
EDK84DGVNxE



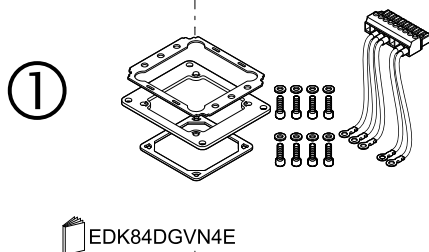
E84DG023a



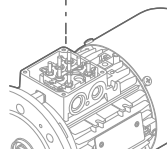
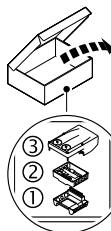
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EDK84DGDVBxxx4



EDK84DGVN4E



E84DG023b

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1 Présentation du document

1.1 Historique du document

N° de document	Version			Description
13523272	7.1	12/2016	TD29	DE/EN/FR/ES/IT (au format PDF uniquement)
13523101	7.0	11/2016	TD15	Ajout de descriptions de fonctions, correction d'erreurs, révision de la composition du document
13478084	6.1	02/2015	TD15	DE/EN/FR/ES/IT (au format PDF uniquement)
13478084	6.0	12/2014	TD15	Corrections UL
13410321	5.3	07/2014	TD15	DE/EN/FR/ES/IT (au format PDF uniquement)
13410320	5.2	07/2014	TD15	Remarques UL en langue française pour le Canada Conformité eurasiennne
13410321	5.1	06/2012	TD15	Corrections générales, DE/EN/FR/ES/IT (au format PDF uniquement)
13410320	5.0	06/2012	TD15	Corrections générales
13392616	4.1	12/2011	TD15	Extension 4 ... 7.5 kW, DE/EN/FR/ES/IT (au format PDF uniquement)
13392614	4.0	11/2011	TD15	Extension 4 à 7,5 kW
13373549	3.0	04/2011	TD15	Extension de la plage de puissance : 2.2 ... 3 kW, intégration de PROFINET et de EtherCAT
13371646	2.0	02/2011	TD15	Corrections générales
13336813	1.5	09/2010	TD15	Première édition DE/EN/FR/ES/IT (au format PDF uniquement)
13336813	1.0	08/2010	TD15	Première édition DE/EN



Conseil !

Toutes les informations relatives aux produits Lenze peuvent être téléchargées sur notre site à l'adresse suivante :

www.Lenze.com

1.2 Public visé

Cette documentation s'adresse à un personnel qualifié et habilité conformément à la norme CEI 60364.

On entend par "personnel qualifié et habilité" des personnes compétentes en matière d'installation, de montage, de mise en service et de fonctionnement du produit et possédant les qualifications correspondant à leurs activités.

1.3

Validité

Le présent document s’applique aux variateurs 8400 motec suivants :

Référence de commande	A partir de la version matérielle (HW)	A partir de la version logicielle (SW)
E84DGDVBxxx4	VA	01.00

Pour plus d’informations sur la codification des types, consulter le chapitre Description du produit dans le manuel de l’appareil 8400 motec. (📖 EDS84DG752)

1.4

Conventions utilisées

Pour distinguer les différents types d’information, cette documentation utilise les conventions suivantes :

Type d'information	Aperçu	Exemples/remarques
Représentation des chiffres		
Séparateur décimal	Point	Le point décimal est généralement utilisé. Exemple : 1234.56
Consignes préventives		
Consignes préventives UL	Ⓛ	En anglais et en français
Consignes préventives UR	Ⓡ	
Mise en évidence de textes spéciaux		
Nom de programme	» «	Logiciel pour PC Exemple : »Engineer«, »Global Drive Control« (GDC)
Pictogrammes		
Renvoi à la page	📖	Renvoi à une autre page contenant des informations supplémentaires. Exemple : 📖 16 = voir page 16
Renvoi à une documentation	🔗	Renvoi à une autre documentation contenant des informations supplémentaires. Exemple : 🔗 EDKxxx = voir la documentation EDKxxx

1.5 Consignes utilisées

Pour indiquer des risques et des informations importantes, la présente documentation utilise les mots et pictogrammes suivants :

Consignes de sécurité

Présentation des consignes de sécurité



Danger !

(Le pictogramme indique le type de risque.)

Explication

(L'explication décrit le risque et les moyens de l'éviter.)

Pictogramme et mot associé	Explication
 Danger !	Situation dangereuse pour les personnes en raison d'une tension électrique élevée Indication d'un danger imminent qui peut avoir pour conséquences des blessures mortelles ou très graves en cas de non-respect des consignes de sécurité correspondantes
 Danger !	Situation dangereuse pour les personnes en raison d'un danger d'ordre général Indication d'un danger imminent qui peut avoir pour conséquences des blessures mortelles ou très graves en cas de non-respect des consignes de sécurité correspondantes
 Stop !	Risques de dégâts matériels Indication d'un risque potentiel qui peut avoir pour conséquences des dégâts matériels en cas de non-respect des consignes de sécurité correspondantes

Consignes d'utilisation

Pictogramme et mot associé	Explication
 Remarque importante !	Remarque importante pour assurer un fonctionnement correct
 Conseil !	Conseil utile pour faciliter la mise en œuvre
	Renvoi à une autre documentation

Consignes de sécurité et d'utilisation spéciales

Pictogramme et mot associé	Description
 Avertissements !	Consigne de sécurité ou d'utilisation pour le fonctionnement selon les normes UL ou CSA.
 Avertissements !	Les mesures sont requises pour répondre aux exigences des normes UL ou CSA.

2 Consignes de sécurité



Danger !

Tension électrique dangereuse

- Les raccordements de puissance sont susceptibles de véhiculer une tension dangereuse jusqu'à 3 minutes après une coupure réseau.

Risques encourus :

- Mort ou blessures graves en cas de contact avec les raccordements de puissance

Mesures de protection :

- Avant toute manipulation de l'appareil, couper la tension réseau et attendre 3 minutes au minimum.
- S'assurer que tous les raccordements de puissance sont hors tension.

Pictogrammes d'avertissement

Symbole	Description
	Temps de décharge prolongé : toutes les bornes de puissance sont sous tension jusqu'à 3 minutes après la coupure réseau !
	Courant de fuite important : prévoir une installation fixe et un raccordement PE selon EN 61800-5-1 !
	Composants sensibles aux décharges électrostatiques : toute personne manipulant l'appareil doit au préalable se débarrasser des décharges électrostatiques !
	Surface brûlante : utiliser votre équipement de protection personnelle ou attendre le refroidissement de l'appareil !

Veuillez également tenir compte des consignes importantes sur la technologie des appareils et les fonctions de sécurité comprises sur le cédérom joint !

Original - Anglais

**Warnings!**

- ▶ These devices are suitable for field wiring.
- ▶ Intended for use with 75 °C wire.
- ▶ Intended for use with copper conductors only.
- ▶ Suitable for use in a surrounding air temperature of 45 °C, and
 - additionally 60 °C when de-rating rules are followed.
- ▶ Hot surface. Risk of burn.
- ▶ Should this device be mounted on a motor, the combination needs to be suitable for the type rating.
- ▶ The supply terminals are to be tightened to:
 - For model suffix's 371, 551, 751, 112, 152 tighten to 4.4 - 5.3 lb-in.
 - For model suffix's 222, and 302, tighten to 7 lb-in.
- ▶ These devices are suitable for use on a circuit capable of delivering not more than 200 000 rms Symmetrical Amperes, 480 V maximum
 - When protected by CC, R, T, or J class fuses or
 - When protected by a circuit breaker having an interrupting rating not less than 200 000 rms symmetrical amperes, 480 V maximum.
- ▶ Use fuses and circuit breakers only.
- ▶ Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code and any additional local codes.
- ▶ The opening of branch circuit protective devices may be an indication that a fault current has been interrupted. To reduce the risk of fire or electric shock, current carrying parts and other components, the controller should be examined and replaced if damaged.
- ▶ These devices provide overload protection rated for 125 % of the rated FLA.

CAUTION!

- ▶ Risk of electric shock. Please allow 180 s for the internal capacitors to discharge.

Original - Français

**Avertissements !**

- ▶ Ces équipements sont adaptés à un câblage à pied d'oeuvre.
- ▶ Utiliser des conducteurs 75 °C.
- ▶ Utiliser exclusivement des conducteurs en cuivre.
- ▶ Convient à une utilisation à une température ambiante maximale de 45 °C ainsi que
 - 60 °C en cas d'application des règles de réduction de puissance.
- ▶ Température élevée en surface. Risque de brûlure.
- ▶ En cas de montage de l'équipement sur le moteur, la combinaison doit être conforme à la qualification du type.
- ▶ Couples de serrage des bornes réseau :
 - Pour les types contenant le suffixe 371, 551, 751, 112, 152 : 0,5 à 0,6 Nm.
 - Pour les types contenant le suffixe 222 et 302 : 0,8 Nm.
- ▶ Convient aux circuits non susceptibles de délivrer plus de 200 000 ampères symétriques eff., maximum 480 V
 - Protection par des fusibles CC de calibre R, T ou J ; ou
 - Protection par disjoncteur à pouvoir de coupure nominal d'au moins 200 000 ampères symétriques eff., maximum 480 V.
- ▶ Utiliser exclusivement des fusibles et des disjoncteurs.
- ▶ La protection statique intégrée n'offre pas la même protection qu'un disjoncteur. Une protection par disjoncteur externe doit être fournie, conformément au National Electrical Code et aux autres dispositions applicables au niveau local.
- ▶ Le déclenchement des dispositifs de protection du circuit de dérivation peut être dû à une coupure qui résulte d'un courant de défaut. Pour limiter le risque d'incendie ou de choc électrique, examiner les pièces porteuses de courant et les autres éléments du contrôleur ; les remplacer s'ils sont endommagés.
- ▶ Ces équipements intègrent une protection contre les surcharges conçue pour se déclencher à 125 % de l'intensité assignée à pleine charge.

ATTENTION !

- ▶ Risque de choc électrique. Patientez 180 s pour permettre aux condensateurs internes de se décharger.

3

Spécifications techniques

3.1

Caractéristiques générales et conditions d'utilisation

Conformité et homologation				
Conformité				
CE	2006/95/CE	Directive Basse Tension		
EAC	TP TC 004/2011 (RT UD 004/2011)	Sécurité des équipements à basse tension	Conformité eurasienne RT UD : Règlement technique de l'Union Douanière	
EAC	TP TC 020/2011 (RT UD 020/2011)	Compatibilité électromagnétique des équipements	Conformité eurasienne RT UD : Règlement technique de l'Union Douanière	
Homologation				
UR	UL 508C	Power Conversion Equipment, dossier n° E170350		
cUR	C22.2 No 274-13			
Approval Field Package				
cULus	UL 508C C22.2 No 274-13	Power Conversion Equipment, dossier n°E132659		

Protection des personnes et protection de l'appareil

Indice de protection		• Les trous inutilisés destinés aux presse-étoupes à vis doivent être obturés par des tampons borgnes ! • Les connecteurs à fiches inutilisés doivent être obturés à l'aide de caches ou de fiches borgnes !	
	EN 60529	Kit 8400 motec :	IP65
		Cadre avec commutateur de service / avec commutateur de service et éléments de commande	IP54
		Cadre avec commutateur de service et fonction de protection	IP64
	NEMA 250	Kit 8400 motec :	Type 4
		Field Package sans commutateur	
		0,37 ... 3,0 kW 4,0 ... 7,5 kW	Type 1 Type 4X (intérieur)
Field Package avec commutateur 0,37 ... 3,0 kW		Type 1	
Courant de fuite (sur PE)	EN 61800-5-1	> 3.5 mA CA, > 10 mA CC	Tenir compte des prescriptions et des consignes de sécurité !
Courant de défaut total		Les disjoncteurs différentiels suivants peuvent être utilisés dans les réseaux TN :	
Montage sur le moteur		0,37 ... 3,0 kW	30 mA, type B
		4,0 ... 7,5 kW, $f_{ch} = 8/16$ kHz	30 mA, type B
		4,0 ... 7,5 kW, $f_{ch} = 4$ kHz	300 mA, type B
Fixation murale câble système Lenze ≤ 3 m		0,37 ... 3,0 kW	30 mA, type B
		4,0 ... 7,5 kW, $f_{ch} = 8/16$ kHz	30 mA, type B
		4,0 ... 7,5 kW, $f_{ch} = 4$ kHz	300 mA, type B
Fixation murale et câble système Lenze > 3 m		0,37 ... 7,5 kW	300 mA, type B
Equilibrage de potentiel supplémentaire		Filetage M5 avec borne dans le module de câblage (Wiring Unit) pour le raccordement d'un câble PE 16 mm ²	
Isolement des circuits de commande	EN 61800-5-1	Séparation sûre du réseau grâce à l'isolement double (isolement renforcé)	

Protection des personnes et protection de l'appareil			
Résistance d'isolement	EN 61800-5-1	Altitude d'implantation < 2000 m : catégorie de surtension III	
		Altitude d'implantation > 2000 m : catégorie de surtension II	
Protection contre les courts-circuits	EN 61800-5-1	Raccordement :	
		Moteur	Protection conditionnée. Le variateur est bloqué. Un acquittement de défaut est nécessaire.
		Frein de parking, résistance de freinage	Non
		PTC, raccordements de commande	Protection complète
Protection contre les défauts de mise à la terre	EN 61800-5-1	Raccordement :	
		Moteur (au déblocage variateur)	Protection conditionnée. Le variateur est bloqué. Un acquittement de défaut est nécessaire.
		Moteur (pendant le fonctionnement)	Non
		Résistance de freinage, PTC	Non
Mesures de protection contre les phénomènes suivants :		• Court-circuit côté moteur à la mise sous tension et lors du fonctionnement • Décrochage moteur • Surtempérature du moteur – Entrée pour thermistor PTC ou contact thermique – Surveillance I²t	
Mises sous tension répétées		• Manœuvres/minute	3
		• Manœuvres/heure	max. 20
		• Pause	Après 3 mises sous tension en une minute, prévoir une pause de 9 minutes.
Courant d'enclenchement		$\leq 2 \times I_N$	

Conditions électriques

Alimentation réseau

Type de réseau

TT, TN (avec point neutre mis à la terre)		Utilisation autorisée sans restriction
IT		Appliquer la mesure requise décrite pour les réseaux IT (retirer la vis IT). La responsabilité du respect des exigences de CEM relatives aux perturbations radioélectriques (EN 61800-3) incombe au constructeur de la machine / l'installation ! Le fonctionnement avec système de sécurité intégré n'est pas autorisé.

Raccordement du moteur

Moteurs	EN 60034	Utiliser impérativement des moteurs adaptés à une alimentation par le convertisseur. Résistance d'isolement : $\dot{U} \geq 1.5 \text{ kV min.}, du/dt \geq 5 \text{ kV}/\mu\text{s min.}$
Longueur du câble moteur		< 20 m (câble système Lenze blindé)

Conditions ambiantes

Conditions climatiques

Stockage	CEI/EN 60721-3-1	1K3 (-30 ... +60 °C)
Transport	CEI/EN 60721-3-2	2K3 (-30 ... +75 °C)
Fonctionnement	CEI/EN 60721-3-3	3K3 (-30 ... +55 °C) Fonctionnement avec 4 kHz : avec des températures > +45 °C, réduire le courant assigné de sortie de 2.5 %/°C. Fonctionnement avec 8/16 kHz : avec des températures > +40 °C, réduire le courant assigné de sortie de 2.5 %/°C.
Altitude d'implantation		< 4000 m au-dessus du niveau de la mer > 1000 m au-dessus du niveau de la mer : réduire le courant assigné de sortie de 5 %/1000 m.
Pollution ambiante admissible	CEI/EN 61800-5-1	Degré de pollution 2

Conditions mécaniques

Résistance aux chocs ($9.81 \text{ m/s}^2 = 1 \text{ g}$)

Montage sur le moteur	Germanischer Lloyd	Conditions générales : résistance à l'accélération jusqu'à 2 g	
	CEI/EN 60721-3-3	3M6	
Fixation murale avec E84DZMAWE1	Germanischer Lloyd	Conditions générales : résistance à l'accélération jusqu'à 2 g	
	CEI/EN 60721-3-3	3M6	

Conditions de montage			
Emplacement de montage			
Montage sur le moteur		Standard	
Fixation murale		Avec un adaptateur mural (en option)	Assurer le refroidissement par convection dans les niches !
Position de montage			
Fixation murale			
0,37 ... 3,0 kW		vertical avec nervures de refroidissement en haut, tourné, horizontal	• Tenir compte de la réduction de puissance, voir Manuel 8400 motec (□ EDS84DG752) • Ne prévoir qu'une juxtaposition latérale de plusieurs appareils afin de garantir le refroidissement par convection !
4,0 ... 7,5 kW		quelconque	
Commande			
Mode de commande			
	VFCplus : • pilotage en U/f (linéaire ou quadratique) • Système de bouclage nécessaire SLVC : • Régulation vectorielle sans bouclage (vitesse) VFCplus eco: • Pilotage en U/f, optimisé sur le plan énergétique SLPSM: • Régulation sans bouclage pour moteurs synchrones		
Fréquence de découpage			
	4 kHz, 8 kHz, 16 kHz		

3.2 Caractéristiques assignées

Données d'entrée

Réseau	Tension U_{LN} [V]	Plage de tension U_{LN} [V]	Plage de fréquence f [Hz]
3/PE CA	400	320 - 0 % ... 440 + 0 %	45 - 0 % ... 65 + 0 %
3/PE CA	480	432 - 0 % ... 528 + 0 %	45 - 0 % ... 65 + 0 %

	Tension [V]	Fréquence [Hz]	Courant assigné [A]		Nombre de phases
			+45 °C max. ①	+55 °C max. ①	
E84DGDVB3714	400/480	50/60	1.3/1.1	1.0/0.8	3
E84DGDVB5514	400/480	50/60	1.8/1.5	1.4/1.1	3
E84DGDVB7514	400/480	50/60	2.4/2.0	1.8/1.5	3
E84DGDVB1124	400/480	50/60	3.2/2.7	2.4/2.0	3
E84DGDVB1524	400/480	50/60	3.8/3.1	2.9/2.3	3
E84DGDVB2224	400/480	50/60	5.6/4.6	4.2/3.5	3
E84DGDVB3024	400/480	50/60	7.2/5.9	5.4/4.4	3
E84DGDVB4024	400/480	50/60	9.3/7.7	7.0/5.8	3
E84DGDVB5524	400/480	50/60	12.8/10.6	9.6/8.0	3
E84DGDVB7524	400/480	50/60	16.3/13.5	12.3/10.1	3

① Température ambiante, fréquence de découpage 4 kHz

Données de sortie

	Tension [V]	Fréquence [Hz]	Courant assigné [A]		Nombre de phases
			+45 °C max. ①	+55 °C max. ①	
E84DGDVB3714	0 ... 400/480	0 ... 300	1.3/1.1	1.0/0.8	3
E84DGDVB5514	0 ... 400/480	0 ... 300	1.8/1.5	1.4/1.1	3
E84DGDVB7514	0 ... 400/480	0 ... 300	2.4/2.0	1.8/1.5	3
E84DGDVB1124	0 ... 400/480	0 ... 300	3.2/2.7	2.4/2.0	3
E84DGDVB1524	0 ... 400/480	0 ... 300	3.9/3.2	2.9/2.4	3
E84DGDVB2224	0 ... 400/480	0 ... 300	5.6/4.7	4.2/3.5	3
E84DGDVB3024	0 ... 400/480	0 ... 300	7.3/6.0	5.4/4.5	3
E84DGDVB4024	0 ... 400/480	0 ... 300	9.5/7.9	7.1/5.9	3
E84DGDVB5524	0 ... 400/480	0 ... 300	13.0/10.8	9.8/8.1	3
E84DGDVB7524	0 ... 400/480	0 ... 300	16.5/13.7	12.4/10.3	3

① Température ambiante, fréquence de découpage 4 kHz

4 Installation mécanique

4.1 Préparation

Le montage et le câblage du module de câblage (Wiring Unit) et du module de communication (Communication Unit) conformément aux instructions de montage doivent être achevés.



Conseil !

Avant de poursuivre et de terminer le montage du 8400 motec, des décisions sur le paramétrage et la mise en service doivent être prises.

Préréglage du variateur à l'aide de DIP1, DIP2, P2 ou P3 ?

- ▶ Procéder aux réglages conformément aux exigences à remplir.
 - Le chapitre Réglages contient les renseignements nécessaires. (📖 111)
- ▶ Monter l'appareil de base (Drive Unit). (📖 107)

Paramétrage du variateur à l'aide du logiciel L-Force »Engineer« ou du clavier de commande avec support ?

- ▶ Monter l'appareil de base (Drive Unit). (📖 107)

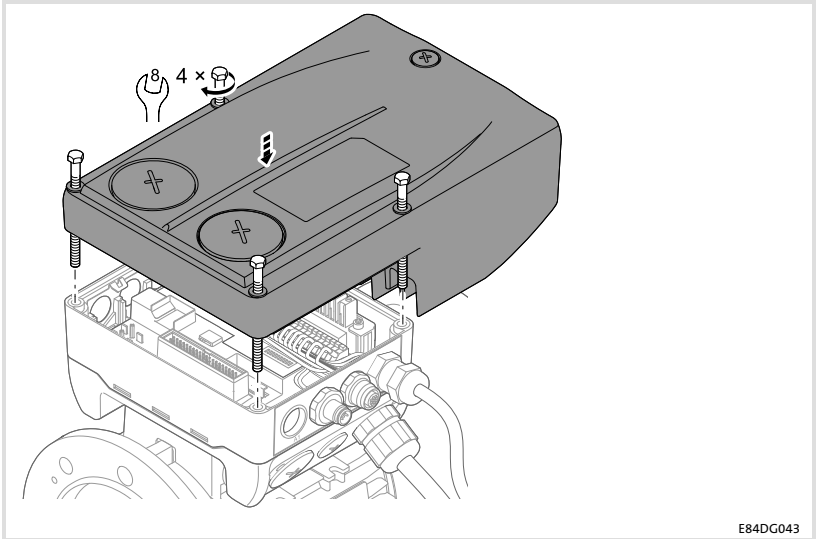
Variateur compris dans le système d'entraînement complet Drive Package ?

- ▶ Le réglage du variateur réalisé à l'usine est adapté au moteur et au réducteur.
 - Ne pas modifier les réglages usine !
- ▶ Monter l'appareil de base (Drive Unit). (📖 107)

4.2 Montage

0.37 ... 3 kW

Positionner l'appareil de base (Drive Unit) sans le coincer sur le module de communication (Communication Unit) déjà montée. Fixer l'appareil de base (Drive Unit) à l'aide des quatre vis comprises dans l'emballage (couple : 5.0 Nm/44 lb-in).

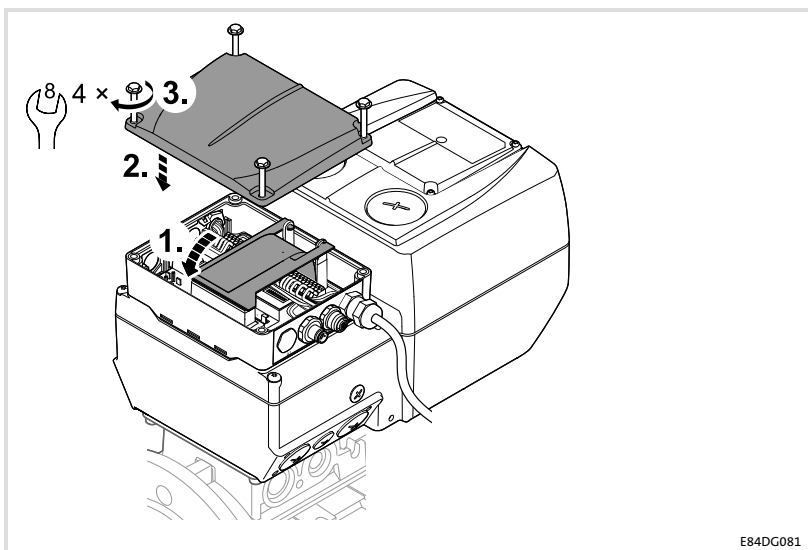


4 ... 7.5 kW

Le module de base (Drive Unit) a été monté avec le module de câblage (Wiring Unit).

Pour terminer le montage :

1. Saisir le connecteur femelle côté CU et l'enficher délicatement dans la prise prévue à cet effet.
2. Mettre le couvercle du module de base (DU) sur le module de communication (CU) et
3. le fixer à l'aide des quatre vis (couple : 1.5 Nm / 14 lb-in).



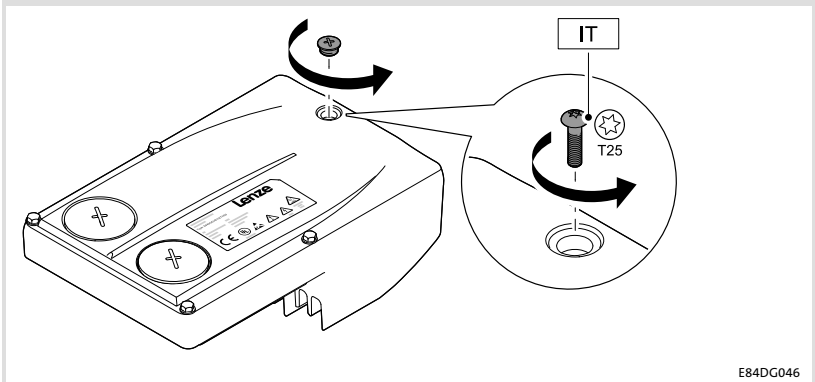
4.3 Mesure à prévoir lors de l'utilisation dans des réseaux IT

Lorsque le variateur est installé dans un réseau IT, les filtres internes doivent être séparés du conducteur de protection.

Procéder de la façon suivante :

1. Si le variateur est déjà monté : couper la tension réseau !
2. Dégager la vis IT.
 - Appareils jusqu'à 3 kW : retirer le petit obturateur situé sur la face avant.
 - Appareils à partir de 4 kW : ôter le couvercle de la face avant.
3. Dévisser et ôter la/les vis.
4. Remettre l'obturateur ou le couvercle en place.

0.37 ... 3 kW

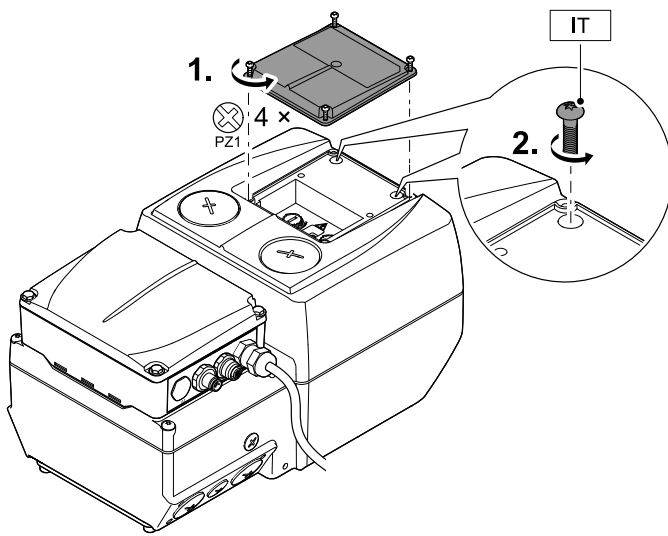


E84DG046

4 Installation mécanique

Mesure à prévoir lors de l'utilisation dans des réseaux IT

4 ... 7.5 kW



E84DG084

5 Réglages



Stop !

Démarrage moteur automatique

En mode "Local mode", l'option de démarrage automatique "Blocage en cas de réseau ON" n'est pas activée. A la mise sous tension, le moteur démarre si le déblocage variateur RFR est ponté ou activé.

("Local mode" => DIP1/1 = ON et DIP2/5-7 = OFF)

Risques encourus :

- Dangers ou endommagements dûs au démarrage moteur inopiné

Mesures de protection :

- Lors de la mise en service, découpler le moteur du système d'entraînement complet.
- Remplacer le pont installé par l'usine sur RFR par un contact à fermeture.
- Ne pas activer le déblocage variateur.

Lors de la première mise en service, les réglages peuvent être réalisés à l'aide des interrupteurs DIP et des potentiomètres. Les réglages doivent être effectués avant le montage de l'appareil de base (Drive Unit) puisque les éléments de réglages ne sont pas accessibles de l'extérieur.

À partir de la version logicielle 07.00.00, vous pouvez, avec DIP2/8, régler deux pré-affectations différentes de DIP1, DIP2, P1, P2 et P3 :

- DIP2/8 = OFF : affectation commutateur DIP/ potentiomètre 0
- DIP2/8 = ON : affectation commutateur DIP/ potentiomètre 1

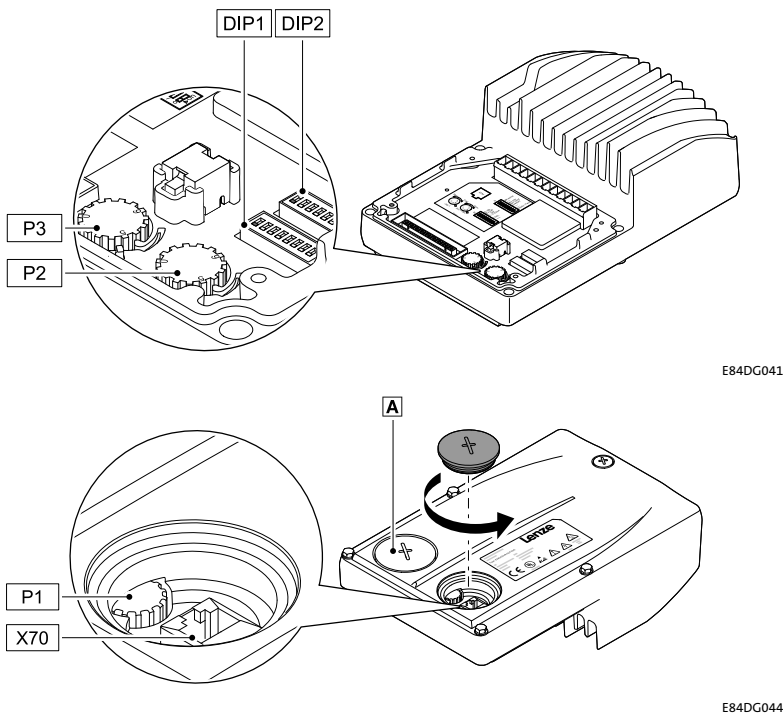
Jusqu'à la version logicielle 07.00.00, seule l'affectation de commutateur DIP / potentiomètre 0 est disponible.

Éléments de réglage 0.37 ... 3 kW

Les éléments de réglage se situent à l'intérieur de l'appareil de base (Drive Unit).

Les réglages réalisés à l'aide de DIP1, DIP2, P2, P3 et P1 doivent être activés via DIP1/1. Les réglages sont appliqués à chaque nouvelle mise sous tension. Les modifications des paramètres apportées entre-temps peuvent alors être remplacées.

0.37 ... 3 kW



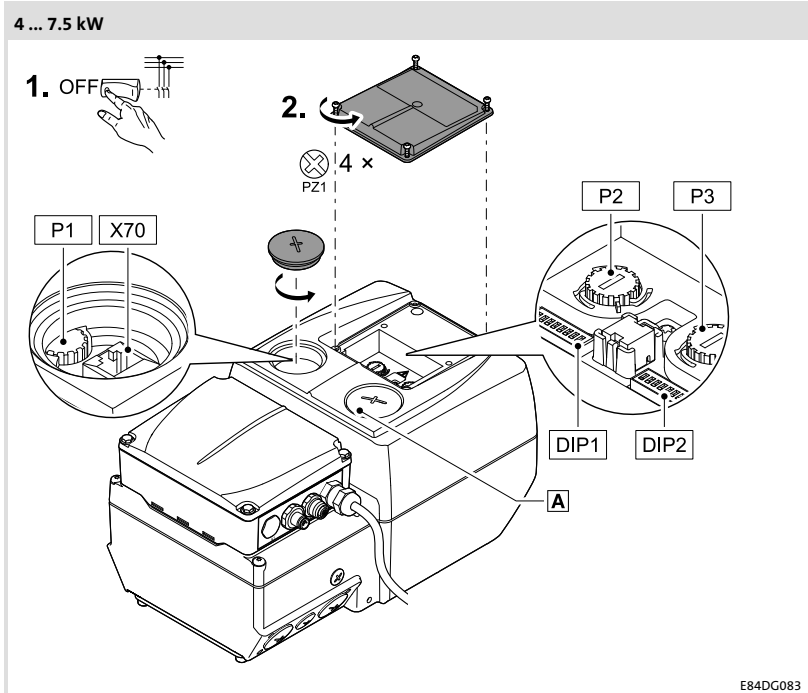
	Désignation
DIP1	Commutateur DIP pour la mise en service
DIP2	
P1	Réglage "Top Cover: Speed ... %" (couvercle supérieur: vitesse)
P2	Réglage "Speed ... %", (vitesse)
P3	Réglage "Ramp ... s", (temps d'accélération/de décélération)
X70	Raccordement pour adaptateur de diagnostic USB E94AZCUS ou clavier de commande avec support
	Affichage d'état par LED

Éléments de réglage 4 ... 7.5 kW

Les éléments de réglage se situent sur la face avant du module de base (Drive Unit).

- S'assurer que la tension est coupée et qu'aucune mise sous tension impromptue n'est possible.
- Oter le petit couvercle sur la face avant.

Les réglages réalisés à l'aide de DIP1, DIP2, P2, P3 et P1 doivent être activés via DIP1/1. Les réglages sont appliqués à chaque nouvelle mise sous tension. Les modifications des paramètres apportées entre-temps peuvent alors être remplacées.



	Désignation
DIP1	Commutateur DIP pour la mise en service
DIP2	
P1	Réglage "Top Cover: Speed ... %" (couvercle supérieur: vitesse)
P2	Réglage "Speed ... %", (vitesse)
P3	Réglage "Ramp ... s", (temps d'accélération/de décélération)
X70	Raccordement pour adaptateur de diagnostic USB E94AZCUS ou clavier de commande avec support
A	Affichage d'état par LED

5.1

Affectation du commutateur DIP / potentiomètre 0

Réglages avec DIP1

(Réglage Lenze en gras)

DIP1		Commutateur							
Description		1	2	3	4	5	6	7	8
DIP1, DIP2, P1, P2 et P3 activés	Activés	ON							
	Désactivés	OFF							
Sens de rotation	antihoraire		ON						
	horaire		OFF						
Régulation	quadratique			ON					
	linéaire			OFF					
Redémarrage à la volée	Activés				ON				
	Désactivés				OFF				
Réservé	-					OFF	OFF	OFF	
État de l'appareil	Drive Ready: NO/COM = Closed								ON
	Drive Fail: DO1 = HIGH								
État de l'appareil	Drive Ready: DO1 = HIGH								OFF
	Drive Fail: NO/COM = Closed								

Réglages avec DIP2

(Réglage Lenze **en gras**)

DIP2		Commutateur							
Description		1	2	3	4	5	6	7	8
Fréquence assignée du moteur / vitesse de référence	50 Hz Υ / 1500 min-1	OFF	OFF						
	60 Hz Υ / 1800 min-1	ON	OFF						
	87 Hz Δ / 2610 min-1	OFF	ON						
	120 Hz Υ / 3600 min-1	ON	ON						
Mode entrée analogique	0 ... 10 V			OFF	OFF				
	0 ... 20 mA			ON	OFF				
	4 ... 20 mA			OFF	ON				
	non autorisé			ON	ON				
Mode de commande "Application technologique"	9 (Local mode)					OFF	OFF	OFF	
	10 (bornier 0)					ON	OFF	OFF	
	12 (bornier 2)					OFF	ON	OFF	
	14 (bornier 11)					ON	ON	OFF	
	16 (bornier 16)					OFF	OFF	ON	
	Réservé					ON	OFF	ON	
	Réservé					OFF	ON	ON	
	40 (MCI)					ON	ON	ON	
Réservé	-								OFF

Modes de commande DIP2/5-7	Description (Dlx → HAUT)															
9 (Local mode)	L'application technologique est pilotée via les éléments de commande situés directement sur le variateur et via les bornes d'entrée numériques. ⚠ Après la mise sous tension, le moteur démarre automatiquement si RFR est ponté ou activé ! <table><tr><td>DI1</td><td>Consigne de P2 (Speed)</td><td rowspan="2">Consigne fixe 3</td></tr><tr><td>DI2</td><td>Consigne fixe 2</td></tr><tr><td>DI3</td><td colspan="2">Activer le frein CC</td></tr><tr><td>DI4</td><td colspan="2">Inversion du sens de rotation (non réalisable lorsque DIP1/2 = ON (sens antihoraire))</td></tr><tr><td>DI5</td><td colspan="2">Déblocage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)</td></tr></table>	DI1	Consigne de P2 (Speed)	Consigne fixe 3	DI2	Consigne fixe 2	DI3	Activer le frein CC		DI4	Inversion du sens de rotation (non réalisable lorsque DIP1/2 = ON (sens antihoraire))		DI5	Déblocage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)		
DI1	Consigne de P2 (Speed)	Consigne fixe 3														
DI2	Consigne fixe 2															
DI3	Activer le frein CC															
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DI5	Déblocage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)															
10 (bornier 0)	L'application technologique est pilotée via les bornes d'entrée numériques du variateur. <table><tr><td>DI1</td><td>Consigne fixe 1</td><td rowspan="2">Consigne fixe 3</td></tr><tr><td>DI2</td><td>Consigne fixe 2</td></tr><tr><td>DI3</td><td colspan="2">Activer le frein CC</td></tr><tr><td>DI4</td><td colspan="2">Inversion du sens de rotation</td></tr><tr><td>DI5</td><td colspan="2">Déblocage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)</td></tr></table>	DI1	Consigne fixe 1	Consigne fixe 3	DI2	Consigne fixe 2	DI3	Activer le frein CC		DI4	Inversion du sens de rotation		DI5	Déblocage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)		
DI1	Consigne fixe 1	Consigne fixe 3														
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DI4	Inversion du sens de rotation															
DI5	Déblocage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)															
12 (bornier 2)	L'application technologique est pilotée via les bornes d'entrée numériques du variateur. <table><tr><td>DI1</td><td>Consigne fixe 1</td><td rowspan="2">Consigne fixe 3</td></tr><tr><td>DI2</td><td>Consigne fixe 2</td></tr><tr><td>DI3</td><td colspan="2">Arrêt rapide</td></tr><tr><td>DI4</td><td colspan="2">Inversion du sens de rotation</td></tr><tr><td>DI5</td><td colspan="2">Déblocage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)</td></tr></table>	DI1	Consigne fixe 1	Consigne fixe 3	DI2	Consigne fixe 2	DI3	Arrêt rapide		DI4	Inversion du sens de rotation		DI5	Déblocage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)		
DI1	Consigne fixe 1	Consigne fixe 3														
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DI3	Arrêt rapide															
DI4	Inversion du sens de rotation															
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DI1	Inversion du sens de rotation															
DI2	Activer le frein CC															
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DI4	Potentiomètre motorisé : réduire la vitesse															
DI5	Déblocage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)															

Modes de commande DIP2/5-7	Description (Dix → HAUT)														
16 (bornier 16)	L'application technologique est pilotée via les bornes d'entrée numériques du variateur. <table><tr><td>DI1</td><td>Consigne fixe 1</td><td rowspan="2">Consigne fixe 3</td></tr><tr><td>DI2</td><td>Consigne fixe 2</td></tr><tr><td>DI3</td><td colspan="2">Sens horaire/arrêt rapide</td></tr><tr><td>DI4</td><td colspan="2">Sens antihoraire/arrêt rapide</td></tr><tr><td>DI5</td><td colspan="2">Débloccage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)</td></tr></table>	DI1	Consigne fixe 1	Consigne fixe 3	DI2	Consigne fixe 2	DI3	Sens horaire/arrêt rapide		DI4	Sens antihoraire/arrêt rapide		DI5	Débloccage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)	
DI1	Consigne fixe 1	Consigne fixe 3													
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DI5	Débloccage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)														
40 (MCI)	L'application technologique est pilotée via communication par bus de terrain. (en fonction du module de communication (Communication Unit) utilisé)														

Réglages avec P2

(Réglage Lenze **en gras**)

Avec P2, vous réglez en 10 étapes la vitesse de consigne du moteur en pourcentage de la vitesse assignée dans C00011 (consigne fixe de la vitesse). La consigne fixe est uniquement activée lorsque l'entrée DI1 est activée dans le mode « Local mode ».

P2	Position									
Description	0	1	2	3	4	5	6	7	8	9
Vitesse moteur en pourcentage de la vitesse assignée réglée C00011	0	11	22	33	44	55	66	77	88	100

Réglages avec P3

(Réglage Lenze **en gras**)

Avec P3, vous réglez le temps d'accélération et de décélération du moteur.

P3	Position									
Description	0	1	2	3	4	5	6	7	8	9
Temps d'accélération et de décélération du moteur en secondes [s]	0.1	0.5	1	2	5	10	20	30	60	120

Réglages avec P1

(Réglage Lenze **en gras**)

Pendant le fonctionnement, vous pouvez avec P1 régler en continu dans C00011 la vitesse moteur en pourcentage de la vitesse assignée, dans la mesure où aucune consigne fixe de vitesse P2 n'est activée sur DI1.

Retirer le couvercle afin de pouvoir régler le potentiomètre P1.

- Une fois le réglage effectué, revisser le couvercle afin de garantir l'indice de protection du variateur.

P1		Position		
Description		0	...	9
Vitesse moteur en pourcentage de la vitesse nominale réglée en C00011	[%]	0	...	100

5.2 Affectation du commutateur DIP / potentiomètre 1

(À partir de la version logicielle 07.00.00)

Réglages avec DIP1

(Réglage Lenze **en gras**)

DIP1		Commutateur							
Description		1	2	3	4	5	6	7	8
DIP1, DIP2, P1, P2, P3	Activés	ON							
	Désactivés	OFF							
Puissance moteur	Puissance moteur > puissance du variateur		ON						
	Puissance moteur = puissance du variateur		OFF						
Régulation	VFCplus ECO			ON					
	VFCplus linear			OFF					
Module de pilotage du frein/redémarrage à la volée	Module de pilotage du frein désactivé, redémarrage à la volée désactivé				OFF	OFF			
	Module de pilotage du frein désactivé, redémarrage à la volée activé				ON	OFF			
	Module de pilotage du frein automatiquement horizontal, redémarrage à la volée désactivé				OFF	ON			
	Module de pilotage du frein automatiquement vertical, redémarrage à la volée désactivé				ON	ON			
Sens de montage moteur	inversé						ON		
	non inversé						OFF		
Fonction P1	La consigne fixe 3 est toujours affectée avec P1							ON	
	La consigne fixe 3 est affectée une fois avec P1 après la mise sous tension							OFF	
Charger les paramètres après la mise sous tension	Charger les paramètres du module mémoire								ON
	Charger les paramètres du réglage Lenze								OFF

Réglages avec DIP2

(Réglage Lenze **en gras**)

DIP2		Commutateur							
Description		1	2	3	4	5	6	7	8
Fréquence assignée du moteur / vitesse de référence	50 Hz Υ / 1500 min-1	OFF	OFF						
	60 Hz Υ / 1800 min-1	ON	OFF						
	87 Hz Δ / 2610 min-1	OFF	ON						
	120 Hz Υ / 3600 min-1	ON	ON						
Configuration application	Actionneur - vitesse (1000)			OFF	OFF				
	AC-Drive Profil (1100)			ON	OFF				
	Positionnement par décélération anticipée (3000)			OFF	ON				
	Réservé			ON	ON				
Mode de commande "Application technologique"	9 (Local mode)					OFF	OFF	OFF	
	10 (bornier 0)					ON	OFF	OFF	
	12 (bornier 2)					OFF	ON	OFF	
	14 (bornier 11)					ON	ON	OFF	
	16 (bornier 16)					OFF	OFF	ON	
	Réservé					ON	OFF	ON	
	41 (module AS-Interface)					OFF	ON	ON	
	40 (MCI/CAN)					ON	ON	ON	
Sélection de l'affectation du commutateur DIP / potentiomètre	Affectation du commutateur DIP / potentiomètre 0								OFF
	Affectation du commutateur DIP / potentiomètre 1								ON

Modes de commande DIP2/5-7	Description (Dlx → HAUT)															
9 (Local mode)	L'application technologique est pilotée via les éléments de commande situés directement sur le variateur et via les bornes d'entrée numériques.  Après la mise sous tension, le moteur démarre automatiquement si RFR est ponté ou activé ! <table><tr><td>DI1</td><td>Consigne de P2 (Speed)</td><td rowspan="2">Consigne fixe 3</td></tr><tr><td>DI2</td><td>Consigne fixe 2</td></tr><tr><td>DI3</td><td colspan="2">Activer le frein CC</td></tr><tr><td>DI4</td><td colspan="2">Inversion du sens de rotation (non réalisable lorsque DIP1/2 = ON (sens antihoraire))</td></tr><tr><td>DI5</td><td colspan="2">Déblocage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)</td></tr></table>	DI1	Consigne de P2 (Speed)	Consigne fixe 3	DI2	Consigne fixe 2	DI3	Activer le frein CC		DI4	Inversion du sens de rotation (non réalisable lorsque DIP1/2 = ON (sens antihoraire))		DI5	Déblocage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)		
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12 (bornier 2)	L'application technologique est pilotée via les bornes d'entrée numériques du variateur. <table><tr><td>DI1</td><td>Consigne fixe 1</td><td rowspan="2">Consigne fixe 3</td></tr><tr><td>DI2</td><td>Consigne fixe 2</td></tr><tr><td>DI3</td><td colspan="2">Arrêt rapide</td></tr><tr><td>DI4</td><td colspan="2">Inversion du sens de rotation</td></tr><tr><td>DI5</td><td colspan="2">Déblocage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)</td></tr></table>	DI1	Consigne fixe 1	Consigne fixe 3	DI2	Consigne fixe 2	DI3	Arrêt rapide		DI4	Inversion du sens de rotation		DI5	Déblocage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)		
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DI5	Déblocage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)															

Modes de commande DIP2/5-7	Description (Dlx → HAUT)														
16 (bornier 16)	L'application technologique est pilotée via les bornes d'entrée numériques du variateur. <table><tr><td>DI1</td><td>Consigne fixe 1</td><td rowspan="2">Consigne fixe 3</td></tr><tr><td>DI2</td><td>Consigne fixe 2</td></tr><tr><td>DI3</td><td colspan="2">Sens horaire/arrêt rapide</td></tr><tr><td>DI4</td><td colspan="2">Sens antihoraire/arrêt rapide</td></tr><tr><td>DI5</td><td colspan="2">Déblocage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)</td></tr></table>	DI1	Consigne fixe 1	Consigne fixe 3	DI2	Consigne fixe 2	DI3	Sens horaire/arrêt rapide		DI4	Sens antihoraire/arrêt rapide		DI5	Déblocage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)	
DI1	Consigne fixe 1	Consigne fixe 3													
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DI5	Déblocage manuel du frein de parking (mode de fonctionnement selon le réglage en C02580)														
40 (MCI)	L'application technologique est pilotée via communication par bus de terrain. (en fonction du module de communication (Communication Unit) utilisé)														

Réglages avec P2

(Réglage Lenze **en gras**)

Avec P2, vous pouvez affecter différentes consignes fixes dans C00039/1 et C00039/2.

P2		Position									
Description		0	1	2	3	4	5	6	7	8	9
Affecter la consigne fixe 1 dans C00039/1	[%]	5	10	15	20	25	30	35	40	45	50
Affecter la consigne fixe 2 dans C00039/2	[%]	10	20	30	40	50	60	70	80	90	100

Réglages avec P3

(Réglage Lenze **en gras**)

Avec P3, vous pouvez affecter différents temps d'accélération et de décélération dans C00012/C00013 et affecter différents temps de décélération pour l'arrêt rapide dans C00105.

P3		Position									
Description		0	1	2	3	4	5	6	7	8	9
Affecter le temps d'accélération/de décélération dans C00012/C00013	[s]	0.1	0.5	0.7	1	1.5	2	5	10	30	60
Affecter le temps de décélération pour arrêt rapide dans C00105	[s]	0.1	0.2	0.5	0.7	1	1.5	2	5	10	30

Réglages avec P1

(Réglage Lenze **en gras**)

Avec P1, vous affectez une vitesse de consigne fixe dans C00039/3. En fonction de la position du commutateur DIP1/7, C00039/3 sera affecté de manière unique lors de la mise sous tension ou de manière permanente.

Retirer le couvercle afin de pouvoir régler le potentiomètre P1.

- Une fois le réglage effectué, revisser le couvercle afin de garantir l'indice de protection du variateur.

P1		Position		
Description		0	...	9
Affecter la consigne fixe 3 dans C00039/3	[%]	0	...	100

6**Mise en service****6.1****Avant la première mise sous tension**

- ▶ Le module de câblage (Wiring Unit) est monté et câblé selon les indications fournies, soit
 - directement sur la bride de serrage moteur soit,
 - avec un adaptateur mural, sur une surface appropriée à proximité du moteur.
- ▶ Les raccordements au réseau, au moteur, aux freins de parking etc. sont établis.
- ▶ Le module de communication (Communication Unit) est monté et câblé conformément à l'application prévue.
 - Signaux d'entrée et de sortie
 - Entrée sûre
 - Bus de terrain
 (Uniquement disponible en option, selon la version.)
- ▶ Le cas échéant, les réglages de base du mode "Local mode" ont été réalisés.
 - Commutateurs DIP
 - Potentiomètres
- ▶ L'appareil de base (Drive Unit) est monté et câblé.
- ▶ Utiliser les fonctions de commande de façon appropriée. Exemples :
 - Activer le blocage variateur.
 - Régler la vitesse au minimum.
 - Activer le système de sécurité.
- ▶ Le fonctionnement avec résistance de freinage a été testé.
 - En cas de charges dynamiques ou de conditions de régulation difficiles, il est recommandé d'utiliser systématiquement la résistance de freinage intégrée E84DZEW47R0001 pour les appareils E84DGDVB4024 ... 7524 (4 ... 7,5 kW).



Danger !

Potentiel de danger accru pendant la mise en service

Des réglages erronés risquent de provoquer des mouvements inopinés et dangereux du moteur et de l'installation.

Risques encourus :

- ▶ Dommages matériels
- ▶ Dommages corporels

Mesures de protection :

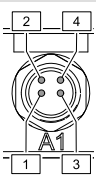
- ▶ Évacuer la zone de danger.
- ▶ Respecter les consignes et les distances de sécurité.

6.2**Étapes de mise en service**

Effectuer les étapes suivantes :

- ▶ Mettre l'appareil sous tension.
- ▶ Observer l'affichage d'état.
 - Après un temps d'initialisation minimum, l'affichage vert doit clignoter.
- ▶ Désactiver les requêtes de la fonction de sécurité.
- ▶ Activer le déblocage variateur.
 - Après expiration du temps de démarrage réglé, le moteur doit tourner à la vitesse réglée.
- ▶ Premier contrôle du comportement attendu :
 - Sens de rotation ?
 - Temps de démarrage ?
 - Vitesse ?
 - Régulation de vitesse ?
- ▶ Contrôle des fonctions de commande en option :
 - Fonctionnalité correcte du réglage de la consigne analogique
 - Fonctionnalité correcte des signaux de commande numériques (exemple : fins de course)
 - Fonctionnalité correcte du frein de parking raccordé
 - Fonctionnalité correcte de l'inversion du sens de rotation
 - Fonctionnalité correcte de la requête de la fonction de sécurité
 - Fonctionnalité correcte des signaux de commande via bus de terrain
- ▶ Couper l'entraînement
 - Réduire la vitesse.
 - Activer le blocage variateur.
 - Couper le réseau.

L'affichage par LED permet de signaler des états en fonction du bus de l'unité de communication (Communication Unit). Pour des informations détaillées, consulter le manuel de communication du bus utilisé.

LED	1 (green)	2 (green)	3 (red)	4 (red)
	PROFIBUS	BUS STATE	MODULE STATE	BUS ERROR
	AS-i	SLAVE 1 READY	SLAVE 2 READY	SLAVE 1 ERROR
	EtherCAT	RUN	LINK/ACTIVITY	ERROR
	PROFINET	BUS READY	LINK/ACTIVITY 1 (yellow)	BUS ERROR
	EtherNet/ IP	MODULE STATE (red)		NETWORK STATE (green)

E84DG056_b

6.3 Mise en service avec clavier de commande avec support

Avec le clavier de commande avec support X400, vous pouvez régler des paramètres rapidement et facilement et afficher les valeurs réelles en cours ainsi que les états actuels de l'appareil via les paramètres d'affichage correspondants. Pour ce faire, brancher le clavier de commande avec support à l'interface de diagnostic X70 sur le haut de l'appareil.



Danger !

Mouvement incontrôlé du moteur possible

En règle générale, toute modification d'un paramètre entraîne une réaction immédiate du variateur.

Risques encourus :

- Si le variateur est débloqué, ceci peut entraîner des effets indésirables au niveau de l'arbre moteur.

Mesures de protection :

- Effectuer les modifications par petites étapes et attendre la réaction.
- Certaines commandes appareil ou des paramètres susceptibles d'entraîner un comportement critique de l'entraînement font exception. De telles modifications de paramètres ne sont prises en compte que si le variateur est bloqué, faute de quoi un message d'erreur s'affiche.



Remarque importante !

Le clavier de commande avec support peut être branché et retiré pendant le fonctionnement.



Informations complémentaires

Des informations complètes sur le clavier de commande avec support figurent dans les instructions de mise en service du clavier de commande et du clavier de commande avec support X400.

6.3.1 Navigation facilitée par menus

Le menu principal du clavier de commande avec support contient les commandes suivantes:

commande de menu	Fonction
User Menu (Menu utilisateur)	Affichage d'une sélection des paramètres souvent nécessaires
Code List (Liste de code)	Affichage de la liste de tous les paramètres
Go To Parameter (Accéder au paramètre)	Afficher directement un paramètre donné
Parameter Transfer (Transfert de paramètres)	
User Menu Configuration (Configuration menu utilisateur)	
Clavier de commande	

6.3.2 Menu utilisateur

Le menu utilisateur peut être librement configuré dans C00517 et contient les paramètres suivants dans la partie Réglage Lenze:

Paramètres	Désignation	Information	Réglage Lenze
C00011	Appl.: Vitesse de référence	Réglage de la vitesse de référence	1500 min-1
C00012	Tps accél. consigne principale	Bloc fonction L_NSet_1: temps d'accélération du générateur de rampes de la consigne de vitesse principale	2.0 s
C00013	Tps décél. consigne principale	Bloc fonction L_NSet_1: Temps de décélération du générateur de rampes de la consigne de vitesse principale	2.0 s
C00015	VFC: fréquence nominale U/f	fréquence nominale U/f pour régulation moteur VFCplus	50 Hz
C00016	VFC: Augmentation Umin	Augmentation de la courbe de tension U/f dans la plage des vitesses et/ou fréquences faibles pour la régulation moteur VFCplus	2.6 %
C00022	Imax (moteur)	Courant maximal (en mode moteur) pour tous les modes de régulation moteur	5,8 A
C00039/1	Consigne fixe 1 (L_NSet_1 n-Fix)	Bloc fonction L_NSet_1: Consignes de vitesse fixes (UOG) pour le générateur de consigne Consigne fixe 1	40.0 %
C00039/2	Consigne fixe 2	Consigne fixe 2	60.0 %
C00051	MCTRL: Vitesse réelle	Signal de vitesse réelle de l'arbre moteur	—
C00053	Tension du bus CC	Tension actuelle du bus CC	—

6 Mise en service

Mise en service avec clavier de commande avec support

Menu utilisateur

Paramètres	Désignation	Information	Réglage Lenze
C00054	Courant moteur	Courant de sortie/courant moteur actuel du variateur	–
C00061	Température radiateur	Température actuelle du radiateur	–
C00087	Vitesse moteur assignée	Cette valeur est indiquée sur la plaque signalétique moteur. Après sélection du moteur utilisé dans le catalogue de moteurs, la valeur adaptée peut être saisie automatiquement.	1320 min-1
C00099	Firmware: Version	Version Firmware de l'appareil sous la forme d'une suite de caractères	–
C00105	Temps d'arrêt rapide	Le temps de décélération réglé détermine la pente de la rampe d'arrêt rapide.	5.0 s
C00120	Seuil surcharge moteur (I ² xt)	Seuil de réponse du message d'erreur «OC6 : Surcharge moteur (I ² xt)»	100 %
C00137	État de l'appareil	État actuel de l'appareil	–
C00166/3	Mess.état.erreur	Message textuel de l'erreur actuellement activée	–
C00173	Tension réseau	Sélection de la tension réseau utilisée pour alimenter l'appareil	0: "3ph 400V"
C00200	Firmware: Type produit		–

– seulement en affichage

6.3.3 Opérations de mise en service



Remarque importante !

Vous pouvez raccorder les équipements suivants à l'interface de diagnostic X70 :

- ▶ adaptateur de diagnostic USB (E94AZCUS)
- ▶ clavier de commande avec support X400 (EZAEBK200x)
 - Les fonctions du clavier de commande avec support et du clavier de commande X400 (EZAEBK100x) sont identiques.

Pour l'entraînement, seuls quelques paramètres doivent être adaptés. Ensuite, l'application d'entraînement peut immédiatement être pilotée dans le mode de commande préréglé "Bornes 0" via les entrées numériques et analogiques. Dans le mode de commande "Clavier de commande", vous pouvez utiliser le clavier de commande pour sélectionner les consignes fixes et les signaux de commande nécessaires.

Procéder de la façon suivante :

1. câbler les raccordements de puissance.
 - Réaliser les raccordements de puissance conformément aux instructions de montage comprises dans l'emballage du variateur afin de les adapter correctement aux exigences de l'appareil.
2. Réaliser les raccordements de commande.
 - Le raccordement E/S préconfiguré peut être modifié via les paramètres de configuration. Voir le chapitre "Affectation des bornes spécifique à l'application".
 - Affectation dans le mode de commande préréglé "Bornes 0" :

Borne	Fonction	Information
A1U	Réglage de la consigne	10 V $\equiv$ 1500 min-1 (pour moteur 4 pôles) en général : 10 V $\equiv$ 100 % de la vitesse de référence (C00011)
DI1	JOG 1	JOG 3 Sélection des consignes fixes 1 ... 3 • Si les deux entrées sont sur le niveau BAS, le réglage de la consigne est activé via l'entrée analogique A1U.
DI2	JOG 2	
DI3	Freinage CC (DCB)	Freinage CC manuel (DCB) • Avec des entrées activées au niveau HAUT, le freinage CC est activé tant que DI3 se trouve au niveau HAUT. • Dès que le temps de mise à l'arrêt (C00107) est écoulé, le variateur déclenche le blocage des impulsions (CINH). Freinage CC (► I 110)
DI4	R/L	Niveau BAS : rotation horaire Niveau HAUT : rotation antihoraire
DI5	Frein de parking	ouverture/fermeture du frein de parking • modes de freinage C02580

3. contrôler le commutateur sur la partie inférieure du module de base Drive Unit:
DIP1/1 doit être en position "OFF" (réglage Lenze) pour permettre l'écrasement des paramètres via »Engineer«, via le clavier de commande ou via bus de terrain.
4. Pour la communication par bus de terrain, effectuer si nécessaire les paramètres de communication nécessaire sur le module de communication (Communication Unit) via le commutateur DIP.
Les paramètres de communication sont fonction du bus de terrain utilisé.
5. Fixer le variateur au moyen des 4 vis.
6. Mettre le variateur sous tension.
7. Raccorder le clavier de commande.
 - Retirer le couvercle de l'interface de diagnostic sur la partie supérieure de l'appareil et raccorder le clavier de commande à l'interface de diagnostic.
 - Une fois le clavier de commande branché, la liaison avec le variateur est établie. Le processus est terminé lorsque C00051 apparaît à l'écran.

Affichage clavier de commande	Opération
MCTRL: Act speed val. C00051 0 rpm	Passer au menu principal avec la touche de fonction  .

8. Chargement du réglage Lenze sur le variateur
 - Pour ce faire, vous disposez de la commande appareil "Charger réglage Lenze" qui peut être exécutée via le code C00002/1 avec le clavier de commande :



Remarque importante !

Avec la commande « Charger les réglages Lenze», les valeurs modifiées précédemment sont écrasées. Les préréglages se rapportant à un moteur spécifique, p. ex. des préréglages Lenze pour un pack d'entraînement (Drive Package), sont réinitialisés.

Affichage clavier de commande	Opération
Par1 8400 motec User Menu (Menu utilisateur)	A Avec la touche de navigation , sélectionner le menu dans le menu principal. B Avec la touche de navigation , passer au menu.
Load Lenze setting C00002/1	A Avec la touche de fonction gauche EDIT, passer au mode édition pour C00002/1. B Avec la touche de fonction  dans la liste de sélection, sélectionner la commande "1: On/Start". C Avec la touche de fonction droite OK, valider la modification effectuée et quitter le mode édition. – Le processus de chargement peut prendre quelques secondes.

9. Valider le variateur : régler la borne RFR (déblocage variateur) sur HAUT.
 - Lors de la livraison, la borne RFR (déblocage variateur) est pontée (déblocage variateur).
 - Si, à la mise sous tension, le déblocage variateur est activé et l'option de démarrage automatique "Blocage en cas d'appareil ON" est activée dans C00142, le variateur reste à l'état "ReadyToSwitchOn". Pour permettre le passage à l'état "SwitchedOn", le déblocage variateur doit d'abord être annulé puis activé pour que l'appareil puisse passer à l'état "OperationEnabled".
 - Si l'option de démarrage automatique "Blocage en cas d'appareil ON" est activée dans C00142 et lorsque le déblocage variateur est activé après la mise sous tension, l'appareil passe directement de l'état "ReadyToSwitchOn" à l'état "SwitchedOn" puis à l'état "OperationEnabled".



Danger !

Quand l'option de démarrage automatique "Blocage en cas d'appareil ON" est désactivée, le moteur peut démarrer directement si à la mise sous tension le blocage variateur est activé !

10. Régler la vitesse :
- en mode de commande "Bornier 0", en réglant une tension à l'entrée analogique ou en sélectionnant une consigne fixe via les entrées numériques DI1/DI2.
 - Dans le mode de commande "Clavier de commande", la consigne de vitesse principale et les signaux de commande sont définis via les paramètres suivants:

Paramètres	Désignation	Information	Réglage Lenze
C00728/3	nMainSetValue_A	Consigne principale pour l'application 100 % ≡ vitesse de référence (C00011)	0.00 %
C00727/3	bSetSpeedCcw	Inversion du sens de rotation "0": rotation horaire "1": rotation antihoraire	0
C00727/4	bJogSpeed1	Sélection consigne fixe 1 "0": consigne principale (C00728/3) activée. "1": consigne fixe 1 (C00039/1) activée.	0

11. Le cas échéant, adapter d'autres paramètres.
12. Enregistrer les réglages des paramètres avec la touche de fonction **SAVE** dans le module mémoire. Les données seront sauvegardées même en cas de coupure réseau.

6.3.4 Mode SET

Dans le mode SET, le variateur est piloté par le clavier de commande avec support. Vous pouvez modifier la consigne de vitesse et valider le variateur ou le bloquer (RFR/run). Les autres sources de la consigne sont ignorées.

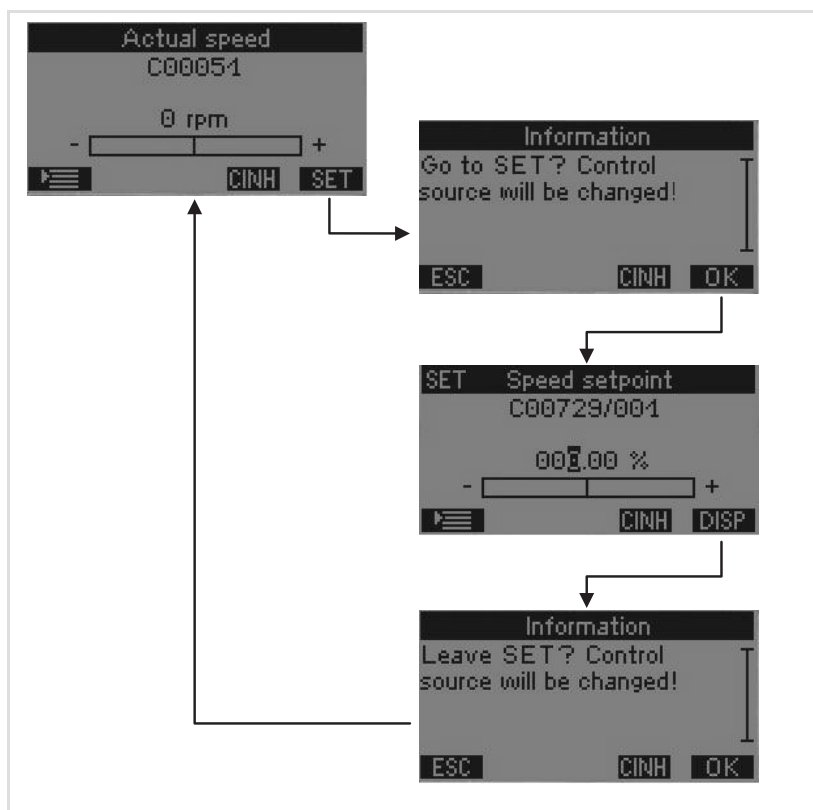
- Activer le mode SET : actionner la touche logicielle "DISP" et confirmer avec la touche logicielle "OK".
- Quitter le mode SET : actionner la touche logicielle "DISP" et confirmer avec la touche logicielle "OK".



Remarque importante !

Le mode SET peut être activé uniquement lorsque l'appareil se trouve dans l'état «OperationEnabled» (le blocage variateur est levé, la LED verte est allumée en permanence sur le variateur).

- Le blocage variateur est uniquement signalé dans le clavier de commande. Dans C00158, la cause du blocage variateur est affichée de manière détaillée (📖 Manuel de référence 8400 motec).



7 Paramétrage

Le paramétrage permet d'adapter le variateur de vitesse de manière optimale aux exigences spécifiques de l'application.

Il peut être réalisé de différentes manières :

Paramétrage à l'aide du logiciel L-force »Engineer«

- ▶ Réglages complexes via logiciel en mode en ligne
 - Le paramétrage sûr est pris en charge par le logiciel pour PC « Engineer », à partir de la version 02.23.
 - Le paramétrage est décrit dans le manuel du logiciel du module de sécurité SM302.
 - Réglages nécessitant le logiciel et l'adaptateur de diagnostic.

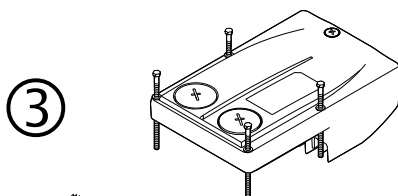
Paramétrage à l'aide du clavier de commande avec support de protection

- ▶ Réglages d'un certain nombre de paramètres par l'utilisateur expérimenté
 - Réglages nécessitant un clavier avec support adapté au variateur 8400 motec
 - Le paramétrage est décrit dans les instructions de mise en service EZAEBK000X sur le clavier de commande 400.

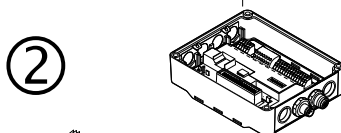
**Remarque importante !**

Sauvegarder les réglages de paramètres de manière persistante en cas de coupure réseau.

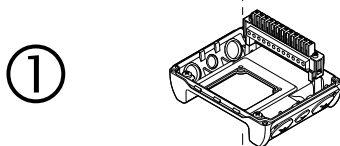
Pour que les réglages de paramètres effectués dans l'appareil ne soient pas perdus suite à une remise sous tension, le jeu de paramètres doit être explicitement sauvegardé de manière persistante en cas de coupure réseau.



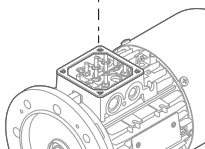
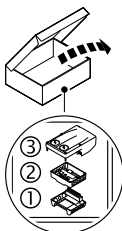
EDK84DGDVBxxx4



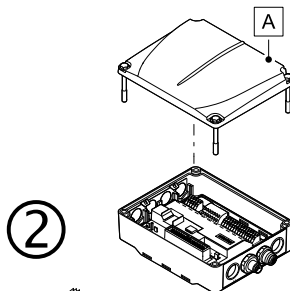
EDK84DGFCxxx



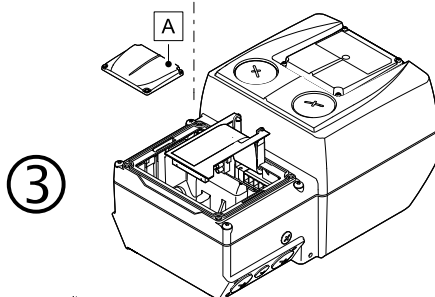
EDK84DGVNxE



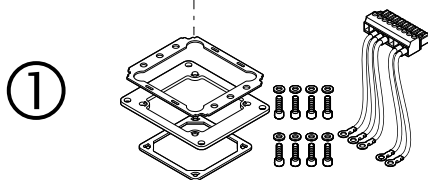
E84DG023a



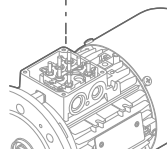
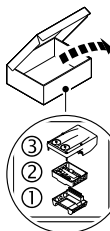
EDK84DGFCxxx



EDK84DGDVBxxx4



EDK84DGVN4E



E84DG023b

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1 Acerca de esta documentación

1.1 Historia del documento

Número de material	Versión			Descripción
13523272	7.1	12/2016	TD29	DE/EN/FR/ES/IT (solo PDF)
13523101	7.0	11/2016	TD15	Suplmento de descripciones de funcionamiento, corrección de errores, revisión de la estructura de documentos
13478084	6.0	12/2014	TD15	Correcciones UL
13410321	5.3	07/2014	TD15	DE/EN/FR/ES/IT (solo PDF)
13410320	5.2	07/2014	TD15	Indicaciones UL en francés de Canadá Conformidad EAC
13410321	5.1	06/2012	TD15	Correcciones generales, DE/EN/FR/ES/IT (solo PDF)
13410320	5.0	06/2012	TD15	Correcciones generales
13392616	4.1	12/2011	TD15	Ampliación 4 ... 7,5 kW, DE/EN/FR/ES/IT (solo PDF)
13392614	4.0	11/2011	TD15	Ampliación 4 ... 7.5 kW
13373549	3.0	04/2011	TD15	Ampliación 2.2 ... 3 kW, PROFINET, EtherCAT
13371646	2.0	02/2011	TD15	Correcciones generales
13336813	1.5	09/2010	TD15	Primera edición DE/EN/FR/ES/IT (sólo PDF)
13336813	1.0	08/2010	TD15	Primera edición DE/EN



¡Sugerencia!

Encontrará información y consejos sobre los productos de Lenze en el área de descargas en

www.lenze.com

1.2 Grupo objetivo

Esta documentación va dirigida a personal experto y cualificado según IEC 60364.

Personal experto cualificado son aquellas personas que disponen de las cualificaciones adecuadas para realizar los trabajos necesarios para la instalación, montaje, puesta en marcha y operación del producto.

1.3

Información sobre la validez

Estas instrucciones son válidas para el convertidor 8400 motec con denominación de tipo:

Denominación de tipo	a partir de HW	a partir de SW
E84DGDVBxxx4	VA	01.00

Puede consultar más información sobre la designación de tipo en el capítulo Descripción de producto del manual del equipo 8400 motec. (📖 EDS84DG752)

1.4

Convenciones utilizadas

Esta documentación utiliza las siguientes convenciones para distinguir diferentes tipos de información:

Tipo de información	Marcación	Ejemplos/indicaciones
Escritura de números		
Separación de decimales	Punto	Por norma general se utiliza el punto para los decimales. Por ejemplo: 1234.56
Advertencias		
Advertencias UL		Se utilizan en Inglés y Francés.
Advertencias UR		
Resalte del texto		
Nombre del programa	» «	Software para PC Por ejemplo: »Engineer«, »Global Drive Control« (GDC)
Símbolos		
Referencia a páginas		Referencia a otra página con información adicional Por ejemplo:  16 = véase la página 16
Referencia a otra documentación		Referencia a otra documentación con información adicional Por ejemplo:  EDKxxx = véase la documentación EDKxxx

1.5 Indicaciones utilizadas

Para indicar peligros e información importante, se utilizan en esta documentación los siguientes términos indicativos y símbolos:

Instrucciones de seguridad

Estructura de las instrucciones de seguridad:

**¡Peligro!**
(indican el tipo y la gravedad del peligro)
Texto indicativo
(describe el peligro y da instrucciones para evitarlo)

Pictograma y término indicativo	Significado
 ¡Peligro!	Riesgo de daños personales por voltaje eléctrico Indica un peligro inminente que puede causar la muerte o lesiones graves si no se toman las medidas adecuadas.
 ¡Peligro!	Riesgo de daños personales por una fuente de riesgo general Indica un peligro inminente que puede causar la muerte o lesiones graves si no se toman las medidas adecuadas.
 ¡Alto!	Peligro de daños materiales Indica un posible riesgo que puede ocasionar daños materiales si no se toman las medidas adecuadas.

Instrucciones de uso

Pictograma y término indicativo	Significado
 ¡Aviso!	Nota importante para el funcionamiento sin fallos
 ¡Sugerencia!	Sugerencia útil para facilitar la operación
	Referencia a otra documentación

Instrucciones especiales de seguridad y uso

Pictograma y término indicativo	Significado
 Warnings!	Instrucción de seguridad o de uso para la utilización de un equipo con certificación UL o CSA.
 Warnings!	Estas medidas son necesarias para cumplir con los requisitos UL o CSA.

2

Instrucciones de seguridad



¡Peligro!

Voltaje eléctrico peligroso

- Las conexiones de potencia siguen vivas hasta 3 minutos después de la desconexión de red.

Posibles consecuencias:

- Muerte o serias lesiones al tocar las conexiones de potencia.

Medidas de protección:

- Antes de trabajar en el equipo, desconectar la alimentación de red y esperar por lo menos 3 minutos.
- Comprobar, si todas las conexiones de potencia están libres de voltaje.

Advertencia mediante símbolos

Símbolo	Descripción
	Largo tiempo de descarga: ¡Todos los bornes de potencia siguen estando peligrosamente vivos hasta 3 minutos después de la desconexión de la red!
	Alta corriente de fuga: Ejecutar la instalación fija y la conexión a PE según EN 61800-5-1!
	Elementos sensibles a la electrostática: ¡Antes de realizar trabajos en el equipo, el personal debe liberarse de toda carga electrostática!
	Superficie caliente: ¡Utilice equipo de protección personal o espere a que se enfríe!

Observe también la información importante sobre aspectos relativos a la técnica del dispositivo y de seguridad incluida en el CD-ROM adjunto!

Original - Inglés

**Warnings!**

- ▶ These devices are suitable for field wiring.
- ▶ Intended for use with 75 °C wire.
- ▶ Intended for use with copper conductors only.
- ▶ Suitable for use in a surrounding air temperature of 45 °C, and – additionally 60 °C when de-rating rules are followed.
- ▶ Hot surface. Risk of burn.
- ▶ Should this device be mounted on a motor, the combination needs to be suitable for the type rating.
- ▶ The supply terminals are to be tightened to:
 - For model suffix's 371, 551, 751, 112, 152 tighten to 4.4 - 5.3 lb-in.
 - For model suffix's 222, and 302, tighten to 7 lb-in.
- ▶ These devices are suitable for use on a circuit capable of delivering not more than 200 000 rms Symmetrical Amperes, 480 V maximum
 - When protected by CC, R, T, or J class fuses or
 - When protected by a circuit breaker having an interrupting rating not less than 200 000 rms symmetrical amperes, 480 V maximum.
- ▶ Use fuses and circuit breakers only.
- ▶ Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code and any additional local codes.
- ▶ The opening of branch circuit protective devices may be an indication that a fault current has been interrupted. To reduce the risk of fire or electric shock, current carrying parts and other components, the controller should be examined and replaced if damaged.
- ▶ These devices provide overload protection rated for 125 % of the rated FLA.

CAUTION!

- ▶ Risk of electric shock. Please allow 180 s for the internal capacitors to discharge.

Original - Francés

**Avertissements !**

- ▶ Ces équipements sont adaptés à un câblage à pied d'oeuvre.
- ▶ Utiliser des conducteurs 75 °C.
- ▶ Utiliser exclusivement des conducteurs en cuivre.
- ▶ Convient à une utilisation à une température ambiante maximale de 45 °C ainsi que
 - 60 °C en cas d'application des règles de réduction de puissance.
- ▶ Température élevée en surface. Risque de brûlure.
- ▶ En cas de montage de l'équipement sur le moteur, la combinaison doit être conforme à la qualification du type.
- ▶ Couples de serrage des bornes réseau :
 - Pour les types contenant le suffixe 371, 551, 751, 112, 152 : 0,5 à 0,6 Nm.
 - Pour les types contenant le suffixe 222 et 302 : 0,8 Nm.
- ▶ Convient aux circuits non susceptibles de délivrer plus de 200 000 ampères symétriques eff., maximum 480 V
 - Protection par des fusibles CC de calibre R, T ou J ; ou
 - Protection par disjoncteur à pouvoir de coupure nominal d'au moins 200 000 ampères symétriques eff., maximum 480 V.
- ▶ Utiliser exclusivement des fusibles et des disjoncteurs.
- ▶ La protection statique intégrée n'offre pas la même protection qu'un disjoncteur. Une protection par disjoncteur externe doit être fournie, conformément au National Electrical Code et aux autres dispositions applicables au niveau local.
- ▶ Le déclenchement des dispositifs de protection du circuit de dérivation peut être dû à une coupure qui résulte d'un courant de défaut. Pour limiter le risque d'incendie ou de choc électrique, examiner les pièces porteuses de courant et les autres éléments du contrôleur ; les remplacer s'ils sont endommagés.
- ▶ Ces équipements intègrent une protection contre les surcharges conçue pour se déclencher à 125 % de l'intensité assignée à pleine charge.

ATTENTION !

- ▶ Risque de choc électrique. Patientez 180 s pour permettre aux condensateurs internes de se décharger.

3 Datos técnicos

3.1 Datos generales y condiciones de uso

Conformidad y aprobaciones

Conformidad

CE	2006/95/CE	Directiva de bajo voltaje	
EAC	TP TC 004/2011 (TR TS 004/2011)	Acerca de la seguridad de equipos de bajo voltaje	Conformidad Eurasiática TR TS: Reglamento Técnico de la Unión Aduanera
EAC	TP TC 020/2011 (TR TS 020/2011)	Compatibilidad electromagnética de productos técnicos	Conformidad Eurasiática TR TS: Reglamento Técnico de la Unión Aduanera

Aprobación

UR	UL 508C	Power Conversion Equipment, File No. E170350	
çUR	C22.2 No 274-13		

Approbation Field Package

cULus	UL 508C C22.2 No 274-13	Power Conversion Equipment, File No. E132659	
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Protección personal y de equipos

Tipo de protección		¡Cerrar los taladros para prensaestopas que no se utilicen con tapones ciegos! ¡Cerrar conectores enchufables que no se utilicen con tapas protectoras o conectores ciegos!	
	EN 60529	Set 8400 motec:	IP65
		Unidad de marco con interruptor de servicio/con interruptor de servicios y elementos de manejo	IP54
		Unidad de marco con interruptor de servicio y función de protección	IP64
	NEMA 250	Set 8400 motec:	Tipo 4
		Paquete de campo sin interruptor 0,37 ... 3,0 kW 4,0 ... 7,5 kW	Tipo 1 Tipo 4X (interior)
		Paquete de campo con interruptor 0,37 ... 3,0 kW	Tipo 1

Protección personal y de equipos			
Corriente de fuga (a tierra)	EN 61800-5-1	> 3.5 mA AC, > 10 mA DC	¡Observar disposiciones e instrucciones de seguridad!
Corriente de defecto acumulada		En redes IT se pueden utilizar los siguientes interruptores de corriente de defecto:	
Montaje en el motor		0,37 ... 3,0 kW	30 mA, tipo B
		4,0 ... 7,5 kW, f _{ch} = 8/16 kHz	30 mA, tipo B
		4,0 ... 7,5 kW, f _{ch} = 4 kHz	300 mA, tipo B
Montaje en la pared y sistema de cableado de Lenze≤ 3 m		0,37 ... 3,0 kW	30 mA, tipo B
		4,0 ... 7,5 kW, f _{ch} = 8/16 kHz	30 mA, tipo B
		4,0 ... 7,5 kW, f _{ch} = 4 kHz	300 mA, tipo B
Montaje en la pared y sistema de cableado de Lenze> 3 m		0,37 ... 7,5 kW	300 mA, tipo B
Compensación de potencial adicional		Rosca M5 con borne en la unidad de cableado carcasa para conectar un cable PE de 16 mm ²	
Aislamiento de circuitos de conmutación de control	EN 61800-5-1	Separación segura de la red a través de aislamiento doble (reforzado).	
Resistencia de aislamiento	EN 61800-5-1	<2000 m sobre el nivel cero: categoría de sobretensión III	
		>2000 m sobre el nivel cero: categoría de sobretensión II	
Resistencia al cortocircuito	EN 61800-5-1	Conexión:	
		Motor	condicionada, el convertidor es inhibido, es necesario cancelar el error
		Freno de motor, resistencia de frenado	no
		PTC, conexiones de control	total
Resistencia al contacto a tierra	EN 61800-5-1	Conexión:	
		Motor (con convertidor habilitado)	condicionada, el convertidor es inhibido, es necesario cancelar el error
		Motor (en funcionamiento)	no
		Resistencia de frenado, PTC	no

Protección personal y de equipos

Medidas de protección contra		• cortocircuito del lado motor en el encendido y durante el funcionamiento • Inclínación del motor • Sobrecalentamiento del motor – Entrada para PTC o contacto térmico – Monitorización I²t	
Conexión de red cíclica		• Conmutaciones/minuto	3
		• Conmutaciones/hora	máx. 20
		• Pausa de conmutación	A una red de conmutación de 3 veces por minuto, debe seguirle una pausa de conmutación de 9 min.
Corriente de conexión		$\leq 2 \times I_N$	

Condiciones para la conexión

Conexión a red

Sistema de red

TT, TN (con punto estrella puesto a tierra)		Funcionamiento permitido sin restricciones.
IT		Utilizar la medida descrita para redes IT (retirar tornillo IT). ¡El cumplimiento de los requisitos relativos a la compatibilidad electromagnética para la emisión de interferencias (EN 61800-3) de la máquina/instalación es responsabilidad del fabricante de la máquina/instalación! No está permitido el funcionamiento con tecnología de seguridad integrada.

Conexión del motor

Motores	EN 60034	Sólo utilizar motores adecuados para el funcionamiento con convertidor. Resistencia al aislamiento: min. $\hat{u} \geq 1.5 \text{ kV}$, min. $du/dt \geq 5 \text{ kV}/\mu\text{s}$
Longitud del cable de motor		< 20 m (cable de sistema Lenze, apantallado)

Condiciones ambientales			
Climática			
Almacenaje	IEC/EN 60721-3-1	1K3 (-30 ... +60 °C)	
Transporte	IEC/EN 60721-3-2	2K3 (-30 ... +75 °C)	
Funcionamiento	IEC/EN 60721-3-3	3K3 (-30 ... +55 °C)	
		Funcionamiento con 4 kHz: > +45 °C reducir la corriente nominal de salida en 2,5 %/°C. Funcionamiento con 8/16 kHz: > +40 °C reducir la corriente nominal de salida en 2,5 %/°C.	
Altura de montaje		< 4000 m snm > 1.000 m snm reducir la corriente nominal de salida en 5% / 1.000 m.	
Polución	IEC/EN 61800-5-1	Grado de polución 2	
Mecánica			
Resistencia a las sacudidas (9.81 m/s² = 1 g)			
Montaje en el motor	Germanischer Lloyd	Condiciones generales: resistente a la aceleración hasta 2 g	
	IEC/EN 60721-3-3	3M6	
Montaje en la pared con E84DZMAWE1	Germanischer Lloyd	Condiciones generales: resistente a la aceleración hasta 2 g	
	IEC/EN 60721-3-3	3M6	
Condiciones de montaje			
Lugar de montaje			
Montaje en el motor		Estándar	
Montaje en la pared		con adaptadores de pared opcionales	Garantizar la refrigeración por convección en nichos.
Posición de montaje			
Montaje en la pared			
0,37 ... 3,0 kW		vertical con aletas de refrigeración superiores, girado, horizontal	- Respetar la deriva, consulte el manual 8400 motec (E84DZMAWE1) - Colocar varios equipos uno al lado del otro para garantizar que se conserve la refrigeración por convección.
4,0 ... 7,5 kW		aleatorio	

Control	
Procedimientos de control	
	VFCplus: • Control U/f (linear o cuadrático), • Sistema de retroalimentación requerido RVSS: • Regulación vectorial sin sensor (velocidad) VFCplus eco: • Control U/f, optimizado energéticamente RSSMS: • Regulación sin sensor para motores síncronos
Frecuencia de chopeado	
	4 kHz, 8 kHz, 16 kHz

3.2

Datos nominales

Datos de entrada

Red	Tensión U_{LN} [V]	Rango de tensión U_{LN} [V]	Rango de frecuencia f [Hz]
3/PE AC	400	320 - 0 % ... 440 + 0 %	45 - 0 % ... 65 + 0 %
3/PE AC	480	432 - 0 % ... 528 + 0 %	45 - 0 % ... 65 + 0 %

	Voltaje [V]	Frecuencia [Hz]	Corriente nominal [A]		Número de fases
			hasta +45 °C ①	hasta +55 °C ①	
E84DGDVB3714	400/480	50/60	1.3/1.1	1.0/0.8	3
E84DGDVB5514	400/480	50/60	1.8/1.5	1.4/1.1	3
E84DGDVB7514	400/480	50/60	2.4/2.0	1.8/1.5	3
E84DGDVB1124	400/480	50/60	3.2/2.7	2.4/2.0	3
E84DGDVB1524	400/480	50/60	3.8/3.1	2.9/2.3	3
E84DGDVB2224	400/480	50/60	5.6/4.6	4.2/3.5	3
E84DGDVB3024	400/480	50/60	7.2/5.9	5.4/4.4	3
E84DGDVB4024	400/480	50/60	9.3/7.7	7.0/5.8	3
E84DGDVB5524	400/480	50/60	12.8/10.6	9.6/8.0	3
E84DGDVB7524	400/480	50/60	16.3/13.5	12.3/10.1	3

① Temperatura ambiente, frecuencia de chopeado 4 kHz

Datos de salida

	Voltaje [V]	Frecuencia [Hz]	Corriente nominal [A]		Número de fases
			hasta +45 °C ①	hasta +55 °C ①	
E84DGDVB3714	0 ... 400/480	0 ... 300	1.3/1.1	1.0/0.8	3
E84DGDVB5514	0 ... 400/480	0 ... 300	1.8/1.5	1.4/1.1	3
E84DGDVB7514	0 ... 400/480	0 ... 300	2.4/2.0	1.8/1.5	3
E84DGDVB1124	0 ... 400/480	0 ... 300	3.2/2.7	2.4/2.0	3
E84DGDVB1524	0 ... 400/480	0 ... 300	3.9/3.2	2.9/2.4	3
E84DGDVB2224	0 ... 400/480	0 ... 300	5.6/4.7	4.2/3.5	3
E84DGDVB3024	0 ... 400/480	0 ... 300	7.3/6.0	5.4/4.5	3
E84DGDVB4024	0 ... 400/480	0 ... 300	9.5/7.9	7.1/5.9	3
E84DGDVB5524	0 ... 400/480	0 ... 300	13.0/10.8	9.8/8.1	3
E84DGDVB7524	0 ... 400/480	0 ... 300	16.5/13.7	12.4/10.3	3

① Temperatura ambiente, frecuencia de chopeado 4 kHz

4 Instalación mecánica

4.1 Preparación

El montaje y el cableado de la unidad de cableado y la unidad de comunicación deben corresponderse con las instrucciones para el montaje.



¡Sugerencia!

Antes de que se pueda continuar y finalizar el montaje del 8400 motec, deben tomarse decisiones sobre la configuración de parámetros y sobre la puesta en marcha.

¿Debe preinstalarse el convertidor con DIP1, DIP2, P2 o P3?

- ▶ Efectuar los ajustes según los requisitos.
 - El capítulo Ajustes contiene la información necesaria. (📖 158)
- ▶ Montar la unidad de accionamiento. (📖 154)

¿Deben configurarse los parámetros del convertidor con L-Force "Engineer" o con un terminal manual?

- ▶ Montar la unidad de accionamiento. (📖 154)

¿El convertidor es un componente del paquete de accionamiento?

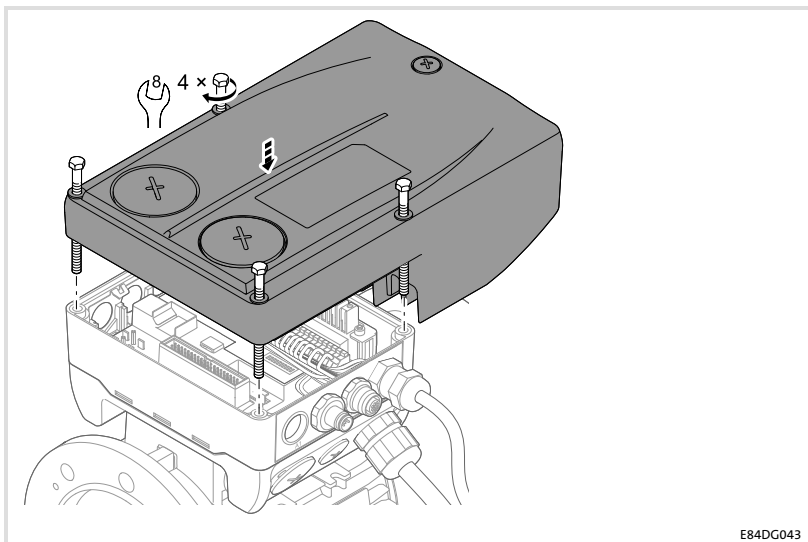
- ▶ El convertidor debe ajustarse de acuerdo con el motor y el engranaje instalados en fábrica.
 - No modificar los ajustes de fábrica.
- ▶ Montar la unidad de accionamiento. (📖 154)

4.2

Montaje

0.37 ... 3 kW

Coloque la unidad de accionamiento, sin que se ladee, sobre la unidad de comunicación que se ha montado primero. Sujete la unidad de accionamiento con los cuatro tornillos adjuntos (par de apriete: 5.0 Nm/44 lb-in).

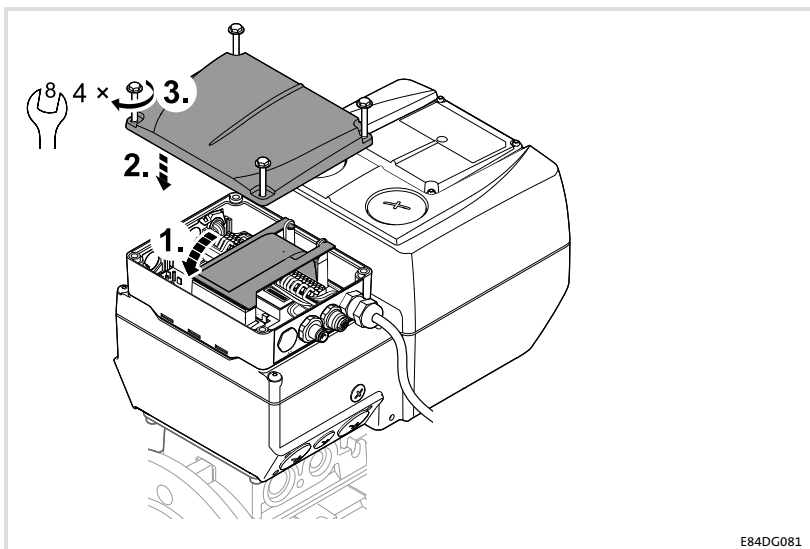


4 ... 7.5 kW

La Drive Unit (unidad de accionamiento) ya ha sido montada con la Wiring Unit (unidad de cableado).

Para finalizar el montaje, proceda de la siguiente manera:

1. Girar la regleta de conectores hembra hacia la Communication Unit (unidad de comunicación) e insertarla con cuidado en el conector macho.
2. Colocar la tapa de la DU sobre la CU y
3. fijarla con los cuatro tornillos (par de apriete: 1.5 Nm/14 lb-in).



E84DG081

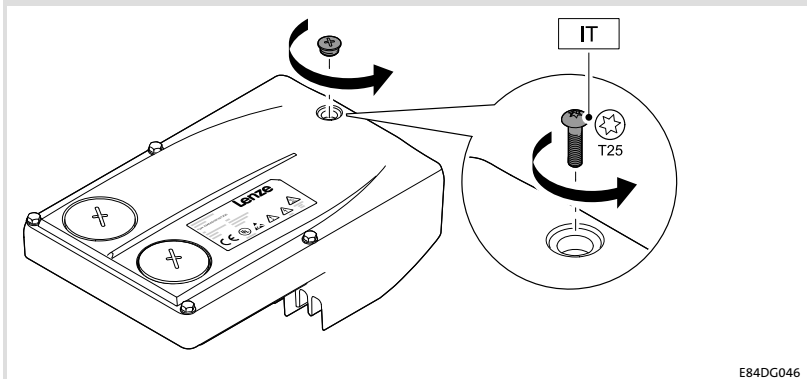
4.3 Medida de la aplicación en redes de TI

Si el accionamiento se instala en una red IT, los filtros internos deberán separarse del conductor protector.

Proceda de la siguiente manera:

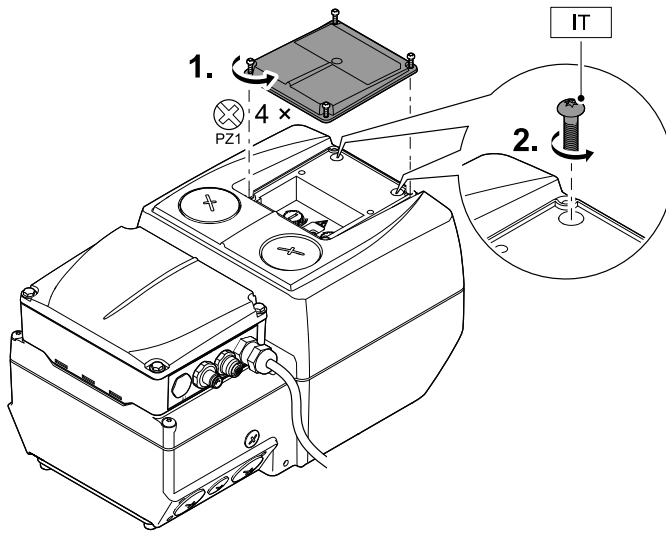
1. En convertidores ya montados: ¡Desconectar el voltaje de red!
2. Acceder al tornillo IT.
 - Equipos hasta 3 kW: Desenroscar el pequeño capuchón en la parte superior.
 - Equipos a partir de 4 kW: Retirar la pequeña tapa en la parte superior.
3. Desenroscar y extraer el(los) tornillo(s).
4. Enroscar el capuchón o colocar la tapa.

0.37 ... 3 kW



E84DG046

4 ... 7.5 kW



E84DG084

5 Configuraciones



¡Alto!

Arranque automático del motor

En "Local mode" la opción de arranque automático "Inhibir al conectar a red" no está activada. El motor arranca al conectar a red cuando la habilitación de convertidor RFR está puenteada o activada.

("Local mode" => DIP1/1 = ON y DIP2/5-7 = OFF)

Posibles consecuencias:

- Peligros o daños debido al arranque inesperado del motor.

Medidas de protección:

- Desacoplar el motor del circuito de accionamiento durante la puesta en marcha.
- Sustituir el puente de fábrica en RFR con un contacto NO.
- No activar la habilitación del convertidor.

Para la primera puesta en marcha se pueden realizar las configuraciones a través de interruptor DIP y potenciómetro. Las configuraciones deben realizarse antes del montaje de la unidad de accionamiento, ya que los elementos de configuración no son accesibles desde el exterior.

A partir de la versión de software 07.00.00 puede ajustar con DIP2/8 dos asignaciones previas diferentes de DIP1, DIP2, P1, P2 y P3:

- DIP2/8 = OFF: interruptor DIP / asignación Poti 0
- DIP2/8 = ON: interruptor DIP / asignación Poti 1

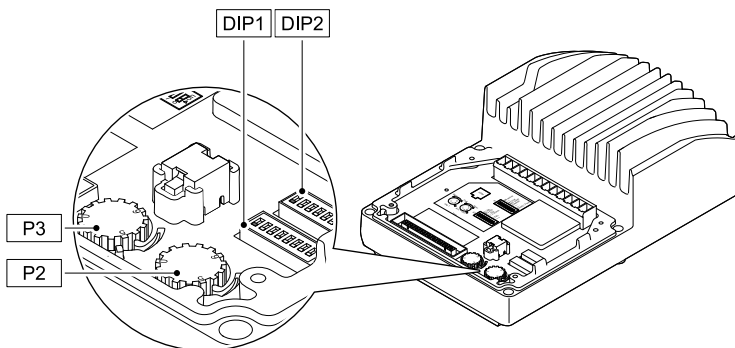
Hasta la versión de software 07.00.00 solo estaba disponible el interruptor DIP / la asignación Poti 0.

Elementos de configuración 0.37 ... 3 kW

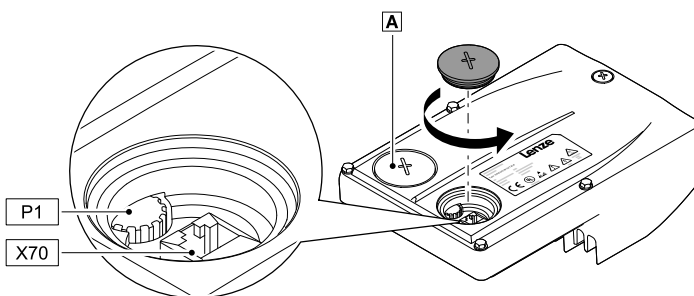
En el lado interior de la unidad de accionamiento se encuentran los elementos de configuración.

Las configuraciones realizadas mediante DIP1, DIP2, P2, P3 y P1 deben activarse con DIP1/1. Las configuraciones se asumen con cada conexión a red. De esta manera se pueden sobrescribir modificaciones realizadas en parámetros.

0.37 ... 3 kW



E84DG041



E84DG044

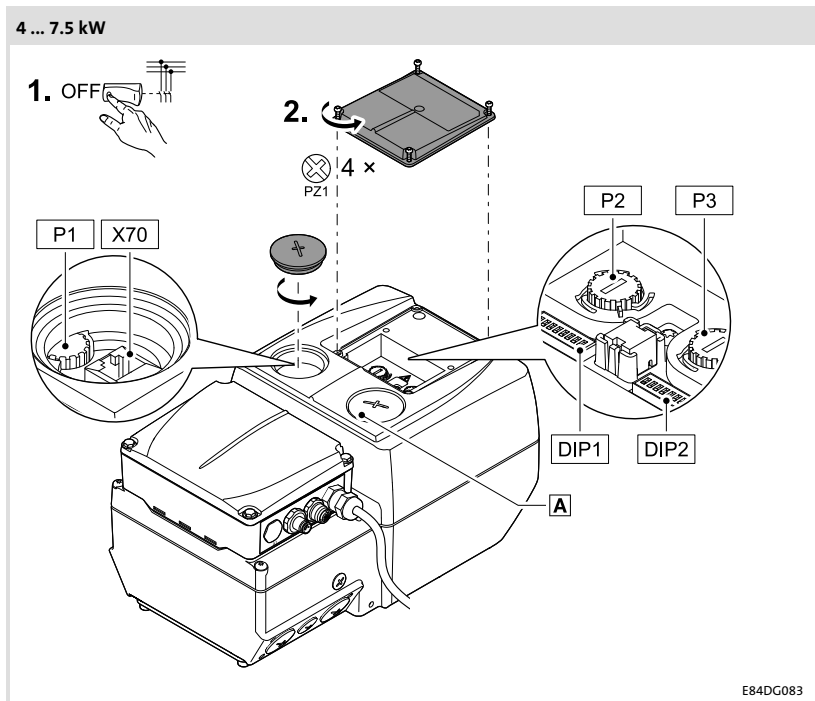
	Denominación
DIP1	Interruptor DIP para la puesta en marcha
DIP2	
P1	Ajuste "Top Cover: Speed ... %"
P2	Ajuste "Speed ... %", (velocidad)
P3	Ajuste "Ramp ... s", (tiempo de arranque/tiempo de vencimiento)
X70	Conexión para adaptador de diagnóstico USB E94AZCUS o terminal manual
A	Visualización de estado LED

Elementos de configuración 4 ... 7.5 kW

En la parte superior de la Drive Unit (unidad de accionamiento), se encuentran los elementos de configuración.

- ▶ Confirmar que esté libre de tensión y asegurar contra el encendido involuntario.
- ▶ Retirar la pequeña tapa de la parte superior.

Las configuraciones realizadas mediante DIP1, DIP2, P2, P3 y P1 deben activarse con DIP1/1. Las configuraciones se asumen con cada conexión a red. De esta manera se pueden sobrescribir modificaciones realizadas en parámetros.



	Denominación
DIP1	Interruptor DIP para la puesta en marcha
DIP2	
P1	Ajuste "Top Cover: Speed ... %"
P2	Ajuste "Speed ... %", (velocidad)
P3	Ajuste "Ramp ... s", (tiempo de arranque/tiempo de vencimiento)
X70	Conexión para adaptador de diagnóstico USB E94AZCUS o terminal manual
	Visualización de estado LED

5.1

Interrupor DIP / asignación Poti 0

Ajustes con DIP1

(Ajuste de Lenze **negrita**)

DIP1			Interrupor							
Descripción			1	2	3	4	5	6	7	8
DIP1, DIP2, P1, P2 y P3 activo		activo	ON							
		inactivo	OFF							
Dirección de giro		izquierda		ON						
		derecha		OFF						
Regulación		cuadrático			ON					
		lineal			OFF					
Rearranque al vuelo		activo				ON				
		inactivo				OFF				
reservado		-					OFF	OFF	OFF	
Estado del equipo	Accionamien to listo:	NO/COM = cerrado								
	Fallo en el accionamien to:	DO1 = HIGH								ON
Estado del equipo	Accionamien to listo:	DO1 = HIGH								
	Fallo en el accionamien to:	NO/COM = cerrado								OFF

Ajustes con DIP2
(Ajuste de Lenze **negrita**)

DIP2		Interrupor							
Descripción		1	2	3	4	5	6	7	8
Velocidad de referencia del motor / velocidad de referencia	50 Hz ∇ / 1500 min-1	OFF	OFF						
	60 Hz ∇ / 1800 min-1	ON	OFF						
	87 Hz Δ / 2610 min-1	OFF	ON						
	120 Hz ∇ / 3600 min-1	ON	ON						
Modo de entrada analógica	0 ... 10 V			OFF	OFF				
	0 ... 20 mA			ON	OFF				
	4 ... 20 mA			OFF	ON				
	no admitido			ON	ON				
Modo de control de la aplicación tecnológica	0 (modo local)					OFF	OFF	OFF	
	10 (Bornes 0)					ON	OFF	OFF	
	12 (Bornes 2)					OFF	ON	OFF	
	14 (Bornes 11)					ON	ON	OFF	
	16 (Bornes 16)					OFF	OFF	ON	
	reservado					ON	OFF	ON	
	reservado					OFF	ON	ON	
	40 (MCI)					ON	ON	ON	
<i>reservado</i>	-								OFF

Modos de control DIP2/5-7	Descripción (Dlx → High)																
9 (Modo local)	El control de la aplicación tecnológica se efectúa localmente a través de elementos del convertidor y de bornes de entrada digitales:  Al activar la red, el motor arranca automáticamente si el RFR está puenteado o puesto. <table><tr><td>DI1</td><td>Valor de preajuste de P2 (velocidad)</td><td rowspan="2">Valor de preajuste fijo 3</td></tr><tr><td>DI2</td><td>Valor de preajuste fijo 2</td></tr><tr><td>DI3</td><td colspan="2">Activar el freno por inyección continua</td></tr><tr><td>DI4</td><td colspan="2">Cambio de dirección de giro (no permitida, si DIP1/2 = está encendido (izquierda))</td></tr><tr><td>DI5</td><td colspan="2">Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)</td></tr></table>		DI1	Valor de preajuste de P2 (velocidad)	Valor de preajuste fijo 3	DI2	Valor de preajuste fijo 2	DI3	Activar el freno por inyección continua		DI4	Cambio de dirección de giro (no permitida, si DIP1/2 = está encendido (izquierda))		DI5	Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)		
DI1	Valor de preajuste de P2 (velocidad)	Valor de preajuste fijo 3															
DI2	Valor de preajuste fijo 2																
DI3	Activar el freno por inyección continua																
DI4	Cambio de dirección de giro (no permitida, si DIP1/2 = está encendido (izquierda))																
DI5	Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)																
10 (Bornes 0)	El control de la aplicación tecnológica se efectúa a través de bornes de entrada digitales del convertidor: <table><tr><td>DI1</td><td>Valor de preajuste fijo 1</td><td rowspan="2">Valor de preajuste fijo 3</td></tr><tr><td>DI2</td><td>Valor de preajuste fijo 2</td></tr><tr><td>DI3</td><td colspan="2">Activar el freno por inyección continua</td></tr><tr><td>DI4</td><td colspan="2">Cambio de dirección de giro</td></tr><tr><td>DI5</td><td colspan="2">Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)</td></tr></table>		DI1	Valor de preajuste fijo 1	Valor de preajuste fijo 3	DI2	Valor de preajuste fijo 2	DI3	Activar el freno por inyección continua		DI4	Cambio de dirección de giro		DI5	Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)		
DI1	Valor de preajuste fijo 1	Valor de preajuste fijo 3															
DI2	Valor de preajuste fijo 2																
DI3	Activar el freno por inyección continua																
DI4	Cambio de dirección de giro																
DI5	Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)																
12 (Bornes 2)	El control de la aplicación tecnológica se efectúa a través de bornes de entrada digitales del convertidor: <table><tr><td>DI1</td><td>Valor de preajuste fijo 1</td><td rowspan="2">Valor de preajuste fijo 3</td></tr><tr><td>DI2</td><td>Valor de preajuste fijo 2</td></tr><tr><td>DI3</td><td colspan="2">Parada rápida</td></tr><tr><td>DI4</td><td colspan="2">Cambio de dirección de giro</td></tr><tr><td>DI5</td><td colspan="2">Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)</td></tr></table>		DI1	Valor de preajuste fijo 1	Valor de preajuste fijo 3	DI2	Valor de preajuste fijo 2	DI3	Parada rápida		DI4	Cambio de dirección de giro		DI5	Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)		
DI1	Valor de preajuste fijo 1	Valor de preajuste fijo 3															
DI2	Valor de preajuste fijo 2																
DI3	Parada rápida																
DI4	Cambio de dirección de giro																
DI5	Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)																
14 (Bornes 11)	El control de la aplicación tecnológica se efectúa a través de bornes de entrada digitales del convertidor: <table><tr><td>DI1</td><td colspan="2">Cambio de dirección de giro</td></tr><tr><td>DI2</td><td colspan="2">Activar el freno por inyección continua</td></tr><tr><td>DI3</td><td colspan="2">Potenciómetro del motor: velocidad superior</td></tr><tr><td>DI4</td><td colspan="2">Potenciómetro del motor: velocidad inferior</td></tr><tr><td>DI5</td><td colspan="2">Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)</td></tr></table>		DI1	Cambio de dirección de giro		DI2	Activar el freno por inyección continua		DI3	Potenciómetro del motor: velocidad superior		DI4	Potenciómetro del motor: velocidad inferior		DI5	Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)	
DI1	Cambio de dirección de giro																
DI2	Activar el freno por inyección continua																
DI3	Potenciómetro del motor: velocidad superior																
DI4	Potenciómetro del motor: velocidad inferior																
DI5	Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)																

Modos de control DIP2/5-7	Descripción (Dlx → High)	
16 (Bornes 16)	El control de la aplicación tecnológica se efectúa a través de bornes de entrada digitales del convertidor:	
	DI1	Valor de preajuste fijo 1
	DI2	Valor de preajuste fijo 2
	Valor de preajuste fijo 3	
	DI3	Giro a la derecha/parada rápida
	DI4	Giro a la izquierda/parada rápida
40 (MCI)	DI5	Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)
	El control de la aplicación tecnológica se efectúa por comunicación de bus de campo:	
	En función de la unidad de comunicación existente	

Ajustes con P2

(Ajuste de Lenze **negrita**)

Con P2 se ajusta en 10 niveles la velocidad nominal del motor porcentual a la velocidad de referencia en C00011 (valor de preajuste fijo de velocidad). El valor de preajuste fijo solo se activa si la entrada DI1 se ajusta en "Local mode" (modo local).

P2	Ajuste									
Descripción	0	1	2	3	4	5	6	7	8	9
Velocidad del motor en porcentaje de ajuste de la velocidad de referencia C00011 [%]	0	11	22	33	44	55	66	77	88	100

Ajustes con P3

(Ajuste de Lenze **negrita**)

Con P3 se ajusta el tiempo de arranque y de vencimiento del motor.

P3	Ajuste									
Descripción	0	1	2	3	4	5	6	7	8	9
Tiempo de arranque y de vencimiento del motor en segundos [s]	0.1	0.5	1	2	5	10	20	30	60	120

Ajustes con P1

(Ajuste de Lenze **negrita**)

Durante el funcionamiento puede ajustar la velocidad del motor con progresión continua porcentual a la velocidad de referencia en C00011, siempre que no haya ningún valor de preajuste fijo de velocidad P2 activo a través de DI1.

Retirar la tapa para poder ajustar el potenciómetro P1.

- Volver atornillar la tapa después del ajuste para garantizar el grado de protección del convertidor.

P1	Ajuste		
	Descripción	0	9
	Velocidad del motor en porcentaje de velocidad nominal C00011 [%]	0	100

5.2 Interrupor DIP / asignación Poti 1

(a partir de la versión de software 07.00.00)

Ajustes con DIP1

(Ajuste de Lenze **negrita**)

DIP1		Interrupor							
Descripción		1	2	3	4	5	6	7	8
DIP1, DIP2, P1, P2, P3	activo	ON							
	inactivo	OFF							
Potencia del motor	Potencia del motor > potencia del inversor		ON						
	Potencia del motor = potencia del inversor		OFF						
Regulación	VFCplus eco:			ON					
	VFCplus linear:			OFF					
Control del freno / agarre	Control del freno desactivado, agarre desactivado				OFF	OFF			
	Control del freno desactivado, agarre activado				ON	OFF			
	Control del freno automático horizontal, agarre desactivado				OFF	ON			
	Control del freno automático vertical, agarre desactivado				ON	ON			
Dirección de montaje del motor	invertido						ON		
	no invertido						OFF		
Función P1	Valor de preajuste fijo 3 siempre se describe con P1							ON	
	Valor de preajuste fijo 3 se describe una vez al activar la red con P1							OFF	
Cargar los parámetros tras la activación de la red	Cargar los parámetros del módulo de memoria								ON
	Cargar los parámetros del ajuste de Lenze								OFF

Ajustes con DIP2

(Ajuste de Lenze **negrita**)

DIP2		Interrupitor							
Descripción		1	2	3	4	5	6	7	8
Velocidad de referencia del motor / velocidad de referencia	50 Hz Υ / 1500 min-1	OFF	OFF						
	60 Hz Υ / 1800 min-1	ON	OFF						
	87 Hz Δ / 2610 min-1	OFF	ON						
	120 Hz Υ / 3600 min-1	ON	ON						
Configuración de la aplicación	Velocidad del mando de accionamiento (1000)			OFF	OFF				
	Perfil AC-Drive (1100)			ON	OFF				
	Posicionamiento de desconexión (3000)			OFF	ON				
	reservado			ON	ON				
Modo de control de la aplicación tecnológica	0 (modo local)					OFF	OFF	OFF	
	10 (Bornes 0)					ON	OFF	OFF	
	12 (Bornes 2)					OFF	ON	OFF	
	14 (Bornes 11)					ON	ON	OFF	
	16 (Bornes 16)					OFF	OFF	ON	
	reservado					ON	OFF	ON	
	41 (interfaz AS)					OFF	ON	ON	
	40 (MCI/CAN)					ON	ON	ON	
Selección del interruptor DIP / asignación Poti	Interruptor DIP / asignación Poti 0								OFF
	Interruptor DIP / asignación Poti 1								ON

Modos de control DIP2/5-7	Descripción (Dlx → High)	
9 (Modo local)	El control de la aplicación tecnológica se efectúa localmente a través de elementos del convertidor y de bornes de entrada digitales:  Al activar la red, el motor arranca automáticamente si el RFR está puenteado o puesto. DI1 Valor de preajuste de P2 (velocidad) DI2 Valor de preajuste fijo 2 Valor de preajuste fijo 3 DI3 Activar el freno por inyección continua DI4 Cambio de dirección de giro (no permitida, si DIP1/2 = está encendido (izquierda)) DI5 Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)	
10 (Bornes 0)	El control de la aplicación tecnológica se efectúa a través de bornes de entrada digitales del convertidor: DI1 Valor de preajuste fijo 1 DI2 Valor de preajuste fijo 2 Valor de preajuste fijo 3 DI3 Activar el freno por inyección continua DI4 Cambio de dirección de giro DI5 Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)	
12 (Bornes 2)	El control de la aplicación tecnológica se efectúa a través de bornes de entrada digitales del convertidor: DI1 Valor de preajuste fijo 1 DI2 Valor de preajuste fijo 2 Valor de preajuste fijo 3 DI3 Parada rápida DI4 Cambio de dirección de giro DI5 Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)	
14 (Bornes 11)	El control de la aplicación tecnológica se efectúa a través de bornes de entrada digitales del convertidor: DI1 Cambio de dirección de giro DI2 Activar el freno por inyección continua DI3 Potenciómetro del motor: velocidad superior DI4 Potenciómetro del motor: velocidad inferior DI5 Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)	

Modos de control DIP2/5-7	Descripción (Dlx → High)	
16 (Bornes 16)	El control de la aplicación tecnológica se efectúa a través de bornes de entrada digitales del convertidor:	
	DI1	Valor de preajuste fijo 1
	DI2	Valor de preajuste fijo 2
	Valor de preajuste fijo 3	
	DI3	Giro a la derecha/parada rápida
	DI4	Giro a la izquierda/parada rápida
40 (MCI)	DI5	Desbloquear manualmente el freno de parada (modo de funcionamiento según ajuste C02580)
	El control de la aplicación tecnológica se efectúa por comunicación de bus de campo:	
En función de la unidad de comunicación existente		

Ajustes con P2

(Ajuste de Lenze **negrita**)

Con P2 se pueden registrar distintos valores de preajuste fijos en C00039/1 y C00039/2.

P2		Ajuste									
Descripción		0	1	2	3	4	5	6	7	8	9
Valor de preajuste fijo 1 registrado en C00039/1	[%]	5	10	15	20	25	30	35	40	45	50
Valor de preajuste fijo 2 registrado en C00039/2	[%]	10	20	30	40	50	60	70	80	90	100

Ajustes con P3

(Ajuste de Lenze **negrita**)

Con P3 puede registrar diferentes tiempos de arranque/vencimiento en C00012/C00013 con distintos tiempos de vencimiento para la parada rápida en C00105.

P3		Ajuste									
Descripción		0	1	2	3	4	5	6	7	8	9
Registrar tiempo de arranque/vencimiento en C00012/C00013	[s]	0.1	0.5	0.7	1	1.5	2	5	10	30	60
Parada rápida del tiempo de vencimiento registrado en C00105	[s]	0.1	0.2	0.5	0.7	1	1.5	2	5	10	30

Ajustes con P1

(Ajuste de Lenze **negrita**)

Con P1 registra un valor de preajuste fijo de velocidad en C00039/3. En función de la posición del interruptor DIP1/7 se describe C00039/3 una vez al activar la red o de forma permanente.

Retirar la tapa para poder ajustar el potenciómetro P1.

- Volver atornillar la tapa después del ajuste para garantizar el grado de protección del convertidor.

P1		Ajuste		
Descripción		0	...	9
Valor de preajuste fijo 3 registrado en C00039/3	[%]	0	...	100

6 Puesta en marcha

6.1 Antes de la primera conexión

- ▶ La unidad de cableado está montada y cableada según las instrucciones,
 - directamente en la brida de apriete del motor o
 - con el adaptador para pared en una superficie adecuada cerca del motor.
- ▶ Las conexiones con la red, el motor, los frenos de parada, etc. están establecidas.
- ▶ La unidad de comunicación está montada y cableada según la aplicación prevista.
 - Señales de entrada y salida
 - Entrada segura
 - Bus de campo(dependiendo de la versión puede que solo sea opcional)
- ▶ En caso de ser necesario, se han realizado las configuraciones básicas para el "Modo local".
 - Interruptor DIP
 - Potenciómetro
- ▶ La unidad de accionamiento está montada y atornillada.
- ▶ Utilizar las funciones de control disponibles de manera adecuada, p.e.
 - Inhibir la habilitación del convertidor
 - Configurar la velocidad a un mínimo
 - Activar configuración de seguridad
- ▶ El uso de una resistencia de frenado ha sido comprobado.
 - Para los equipos E84DGDVB4024 ... 7524 (4 ... 7,5 kW) con cargas dinámicas o en condiciones de regulación difíciles, se recomienda utilizar siempre una resistencia de frenado interna E84DZEW47R0001.



¡Peligro!

Mayor potencial de peligro durante la puesta en marcha

Configuraciones incorrectas pueden causar movimientos inesperados y peligrosos del motor y la instalación.

Posibles consecuencias:

- ▶ Daños materiales
- ▶ Daños personales

Medidas de protección:

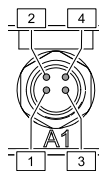
- ▶ Abandonar la zona de peligro
- ▶ Respetar todas las normas y distancias de seguridad

6.2 Pasos de la puesta en marcha

Proceda paso a paso:

- ▶ Conectar la red
- ▶ Supervisar la visualización de estado
 - Una vez transcurrido un breve período de inicialización, la visualización debe parpadear en verde.
- ▶ Desactivar los requisitos de la función de seguridad
- ▶ Aplicar la habilitación del convertidor
 - El motor debe girar a la velocidad ajustada una vez transcurrido el período de arranque configurado.
- ▶ Primera comprobación del comportamiento específico esperado:
 - ¿Dirección de giro?
 - ¿Período de arranque?
 - ¿Velocidad?
 - ¿Regulación de velocidad?
- ▶ Comprobación de funciones de control opcionales:
 - ¿Funciona la especificación análoga del valor de preajuste?
 - ¿Funcionan las señales digitales, p. ej., el indicador de final de carrera?
 - ¿Funciona el freno de parada del motor conectado?
 - ¿Funciona el cambio de dirección de giro?
 - ¿Funcionan los requisitos de la función de seguridad?
 - ¿Funcionan las señales de control a través del bus de campo?
- ▶ Apagar el accionamiento
 - Reducir la velocidad
 - Inhibir la habilitación del convertidor
 - Desconectar la red

Dependiendo del sistema de bus de la unidad de comunicación, los estados son señalizados mediante LEDs. Encontrará información detallada en el manual de comunicaciones del sistema de bus utilizado.

LED		1 (green)	2 (green)	3 (red)	4 (red)
	PROFIBUS	BUS STATE	MODULE STATE	BUS ERROR	MODULE ERROR
	AS-i	SLAVE 1 READY	SLAVE 2 READY	SLAVE 1 ERROR	SLAVE 2 ERROR
	EtherCAT	RUN	LINK/ACTIVITY	ERROR	LINK/ACTIVITY (green)
	PROFINET	BUS READY	LINK/ACTIVITY 1 (yellow)	BUS ERROR	LINK/ACTIVITY 2 (yellow)
	EtherNet/IP	MODULE STATE (red)		NETWORK STATE (green)	
E84DG056_b					

6.3**Puesta en marcha con terminal manual**

Con el terminal manual X400 puede ajustar rápida y fácilmente los parámetros y hacer que se muestren los valores reales actuales y los estados del equipo a través de los parámetros de visualización correspondientes. El terminal manual debe introducirse a la interfaz de diagnóstico X70 por la parte superior del equipo.

**¡Peligro!****Posibles movimientos de motor no controlados**

Generalmente, la modificación de los parámetros conlleva una reacción inmediata del convertidor.

Posibles consecuencias:

- En caso de que el convertidor esté habilitado, se pueden producir comportamientos inesperados del eje del motor.

Medidas de protección:

- Efectuar las modificaciones en pequeños pasos y esperar para comprobar cómo reaccionan.
- Se producen excepciones en ciertos comandos del equipo o en la configuración que podrían llevar el comportamiento de accionamiento a un estado crítico. Tales modificaciones de parámetros se permiten únicamente con el convertidor bloqueado, de lo contrario aparecerá un mensaje de error apropiado.

**¡Aviso!**

El terminal manual debe conectarse y desconectarse durante el funcionamiento.



Para obtener más información...

Puede obtener información detallada sobre el terminal manual en las instrucciones de funcionamiento del teclado y del terminal manual X400.

6.3.1 Estructura de menú

El menú principal del terminal manual contiene los elementos siguientes:

Elemento de menú	Función
Menú de usuario	Visualización de una selección de parámetros necesarios de uso frecuente
Lista de código	Visualización de la lista de parámetros con todos los parámetros
Ir a parámetro	Activa un parámetro concreto directamente
Transferencia de parámetro	
Configuración del menú de usuario	
Teclado	

6.3.2 Menú de usuario

El menú de usuario se puede configurar en C00517 libremente y contiene los siguientes parámetros en los ajustes de Lenze:

Parámetro	Nombre	Información	Ajuste de Lenze
C00011	Apl.: velocidad de referencia	Ajuste de la velocidad de referencia	1500 min-1
C00012	Valores de preajuste principal del tiempo de arranque	Bloque de funciones L_NSet_1: tiempo de arranque del generador de rampa del valor de preajuste principal de velocidad	2,0 s
C00013	Valores de preajuste principal del tiempo de vencimiento	Bloque de funciones L_NSet_1: tiempo de vencimiento del generador de rampa del valor de preajuste principal de velocidad	2,0 s
C00015	VFC: Frecuencia nominal U/f	Frecuencia nominal U/f para la regulación del motor VFCplus	50 Hz
C00016	VFC: Aumento U _{min}	Aumento de la línea característica de tensión U/f del área de velocidades reducidas o de frecuencias para la regulación del motor VFCplus	2,6 %
C00022	I _{max} motriz	Corriente motriz máxima para todo tipo de regulaciones de motor	5,8 A
C00039/1	Valor de preajuste fijo 1 (L_NSet_1 n-Fix)	Bloque de funciones L_NSet_1: valor de preajuste fijo de velocidad (valores jog) para el generador de preajuste Valor de preajuste fijo 1	40,0 %
C00039/2	Valor de preajuste fijo 2	Valor de preajuste fijo 2	60,0 %
C00051	MCTRL: valor real de velocidad	Valor real de velocidad del motor	—
C00053	Voltaje del DC bus	Voltaje actual del DC bus	—

Parámetro	Nombre	Información	Ajuste de Lenze
C00054	Corriente del motor	Corriente actual del motor o corriente de salida del convertidor	–
C00061	Temperatura del radiador	Temperatura del radiador actual	–
C00087	Velocidad nominal del motor	Este valor debe tomarse de las características técnicas del motor. Una vez seleccionado el motor utilizado del catálogo de motores se puede introducir el valor adecuado automáticamente.	1320 min-1
C00099	Versión de firmware	Versión de firmware del equipo como cadena de caracteres	–
C00105	Parada rápida del tiempo de vencimiento	El tiempo de vencimiento ajustado determina la conductancia de la rampa en la parada rápida	5,0 s
C00120	Umbral de sobrecarga del motor (I^2_{xt})	Umbral de respuesta para el mensaje de error "OC6: sobrecarga del motor (I^2_{xt})"	100 %
C00137	Estado del equipo	Estado actual del equipo	–
C00166/3	Meld.Zust.Fehler	Mensaje de texto del próximo error	–
C00173	Voltaje de red	Selección del voltaje de red utilizado con el que opera el equipo.	0: "3ph 400 V"
C00200	Tipo de producto de firmware		–

– Solo visualización

6.3.3 Pasos para la puesta en marcha

**¡Aviso!**

En la interfaz de diagnóstico X70 se pueden conectar:

- ▶ Adaptador de diagnóstico USB (E94AZCUS)
- ▶ Terminal manual X400 (EZAEBK200x)
 - Las funciones del terminal manual y del teclado X400 (EZAEBK100x) son idénticas.

Para el accionamiento, solo es preciso ajustar unos cuantos parámetros. Posteriormente, se puede controlar de forma inmediata la aplicación de accionamiento en el modo de control preestablecido "Bornes 0" a través de las entradas analógicas y digitales. En el modo de control "teclado" puede utilizarse de forma alternativa el teclado para especificar los valores de preajuste necesarios y las señales de control.

Proceda de la manera siguiente:

1. Conectar las conexiones de potencia.
 - Siga las instrucciones para el montaje del convertidor adjuntas para ayudarle a efectuar correctamente las conexiones de potencia de acuerdo con los requisitos de su equipo.
2. Conectar las conexiones de control.
 - La conexión preconfigurada I/O se puede modificar a través de los parámetros de configuración. Consulte el capítulo «Conexión de los terminales definida por el usuario».
 - Asignación en el modo de control preajustado "Bornes 0":

Borne	Función	Información
A1U	Especificación de valor de preajuste	10 V $\equiv$ 1500 min-1 (en motor de 4 polos) general: 10 V $\equiv$ 100 % de la velocidad de referencia (C00011)
DI1	JOG 1	Selección de valores de preajuste fijos 1... 3 • Si ambas entradas se encuentran a nivel LOW, el valor de preajuste está activo mediante la entrada analógica A1U.
DI2	JOG 2	
DI3	FICC	Frenado por inyección de corriente continua manual (FICC) • En caso de entradas de nivel HIGH activas, el frenado por inyección de corriente continua está activo siempre que el DI3 se encuentre en nivel HIGH. • Después del tiempo de espera (C00107), el inhibidor de impulsos del regulador (IIR). frenado por inyección de corriente continua(▶Í 110)
DI4	D/I	Nivel LOW: giro a la derecha Nivel HIGH: giro a la izquierda
DI5	Freno de parada	Abrir/cerrar freno de parada • Modos de frenado C02580

3. Controlar el interruptor de la parte inferior de la unidad de accionamiento: DIP1/1 debe estar en posición "OFF" (ajuste de Lenze), para que así sea posible sobrescribir los parámetros mediante la función "Engineer", a través del teclado o del bus de campo.
4. Para la comunicación del bus de campo se toman los ajustes de comunicación necesarios, en su caso, con el interruptor DIP en la unidad de comunicación.
Los ajustes de comunicación dependen del bus de campo utilizado.
5. Fijar el convertidor con cuatro tornillos.
6. Encender el voltaje de alimentación del convertidor.
7. Conectar el teclado.
 - Retirar la tapa de la interfaz de diagnóstico de la parte superior del equipo y conectar el teclado a la interfaz de diagnóstico.
 - Después de fijar el teclado se establece la conexión con el convertidor. El proceso se completa cuando C00051 aparece en la pantalla.

Visualización del teclado	Acción
MCTRL: Act speed val. C00051 0 rpm	Cambiar con el botón de función izquierdo  del menú principal.

8. Cargar el ajuste del convertidor.
 - Para ello, dispone del comando de equipo "Cargar configuración Lenze" que se puede ejecutar a través del código C00002/1 con el teclado:

 **¡Aviso!**

Con "Cargar configuración Lenze" se sobrescriben los valores modificados anteriormente. Los preajustes de un motor específico, p.e., se restablecen los de Lenze para un paquete de accionamiento.

Visualización del teclado	Acción
Par1 8400 motec Menú de usuario	A Elegir el menú con el botón de navegación  del menú principal. B Cambiar con el botón de navegación  del menú.
Cargar ajuste de Lenze C00002/1	A Cambiar a C00002/1 con el botón de función izquierdo  del menú de edición. B Con el botón de navegación  seleccione el registro "1: On/Start" de la lista de selección. C Con el botón de función  acepte la modificación efectuada y abandone el modo de edición. – El proceso de carga puede durar unos segundos.

9. Habilitar el convertidor: ponga el borne RFR en la posición HIGH.
 - En el momento de la entrega, el borne RFR está puenteado (convertidor habilitado).
 - Si la opción autoinicio en C00142 "Bloqueo en el equipo" está activa y el convertidor se encuentra habilitado al activar la red, el convertidor permanece en el estado "ReadyToSwitchOn". Para efectuar un cambio en el estado "SwitchedOn" primero se debe inhabilitar el convertidor. Solo se debe cambiar posteriormente volviendo a habilitar el convertidor en el estado "OperationEnabled".
 - Si en el C00142 la opción de autoinicio "Bloqueo en el equipo" está desactivada, una vez activada la red y directamente con el convertidor habilitado, se cambiará del estado "ReadyToSwitchOn" al estado "SwitchedOn" y posteriormente a "OperationEnabled".



¡Peligro!

Si la opción de autoinicio "Bloqueo en el equipo" está desactivada, el motor puede ponerse en marcha directamente con el convertidor habilitado una vez activada la red.

10. Especificar la velocidad:
 - En el modo de control "Bornes 0" especificando una tensión en la entrada análoga o seleccionando el valor de preajuste fijo a través de las entradas digitales DI1/DI2.
 - En el modo de control "Teclado" se efectúa la especificación del valor de preajuste principal de la velocidad y las señales de control a través de los parámetros siguientes:

Parámetro	Nombre	Información	Ajuste de Lenze
C00728/3	nMainSetValue_a	Valor de preajuste principal para la aplicación 100 % = Velocidad de referencia (C00011)	0,00 %
C00727/3	bSetSpeedCcw	Cambio de dirección de giro "0": giro a la derecha "1": giro a la izquierda	0
C00727/4	bJogSpeed1	Selección valor de preajuste fijo 1 "0": valor de preajuste principal (C00728/3) activo. "1": valor de preajuste fijo 1 (C00039/1) activo.	0

11. Ajustar los parámetros en caso necesario.
12. Guardar los ajustes de parámetros con el botón de función **SAVE** a prueba de fallo de corriente en el módulo de memoria.

6.3.4 Modo SET

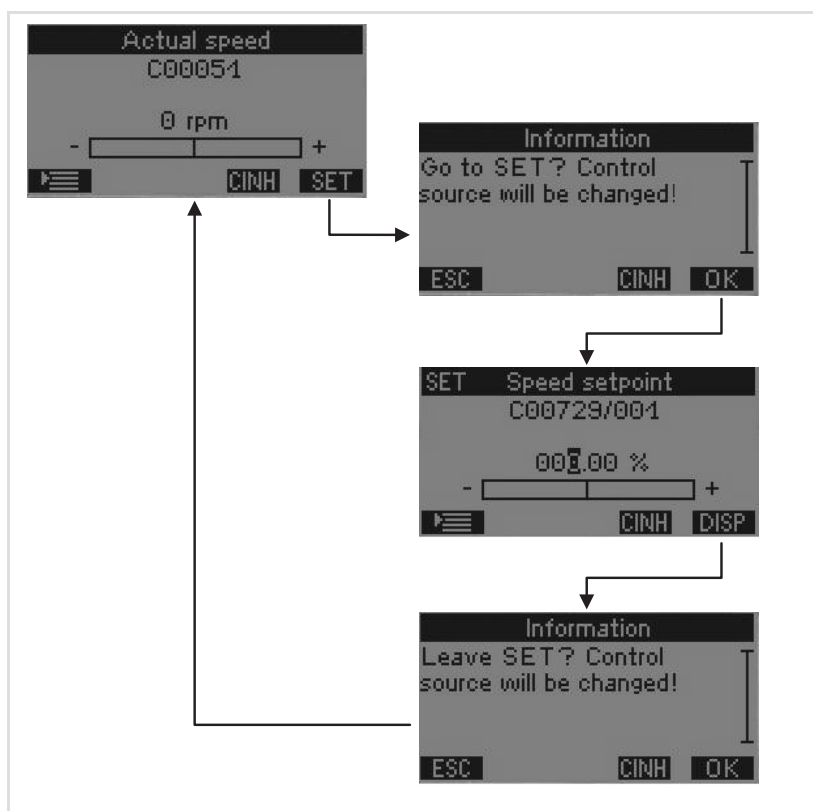
En el modo SET se controla el convertidor a través del terminal manual. Puede modificar el valor de preajuste de velocidad y habilitar el convertidor o bloquearlo (RFR/run). Se ignorarán otras fuentes de valor de preajuste.

- ▶ Activar el modo SET: pulsar la tecla programable "DISP" y confirmar con la tecla programable "Aceptar".
- ▶ Abandonar el modo SET: pulsar la tecla programable "DISP" y confirmar con la tecla programable "Aceptar".

**¡Aviso!**

El modo SET solo se puede activar en el estado de equipo "OperationEnabled" (el bloqueo del regulador está desactivado, el LED verde del convertidor está activo de forma permanente).

- ▶ El bloqueo del regulador solo se señala en el teclado. En C00158 se muestra la causa del bloqueo del regulador en detalle ( Manual de referencia 8400 motec).



7 Parametrización

Con la configuración de parámetros se pueden ajustar diferentes requisitos de aplicaciones del convertidor de forma óptima.

La configuración de parámetros se puede efectuar de los modos siguientes:

Configuración de parámetros con L-force "Engineer"

- ▶ Ajustes detallados en línea a través del software
 - La configuración segura de parámetros es compatible con el software para PC de Lenze "Engineer", a partir de la versión 02.23.
 - La configuración de parámetros se describe en el manual del software del módulo de seguridad SM302.
 - Software requerido y adaptador de diagnóstico USB.

Configuración de parámetros con terminal manual/teclado

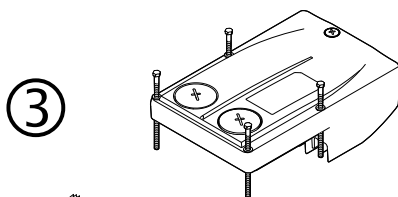
- ▶ Ajuste de parámetros concretos por usuarios experimentados
 - Requiere un terminal manual adecuado para 8400 motec
 - La configuración de parámetros se describe en las instrucciones de funcionamiento EZAEBK000X del teclado 400.



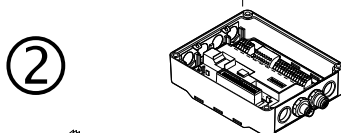
¡Aviso!

Guardar la configuración de parámetros de manera remanente

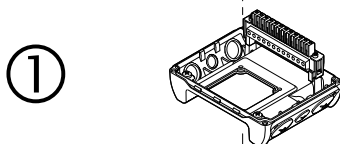
Para que las configuraciones realizadas en los parámetros no se pierdan en caso de un fallo de red, el registro de parámetros deberá guardarse en el equipo explícitamente de manera remanente.



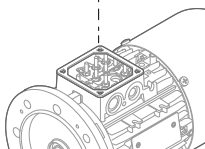
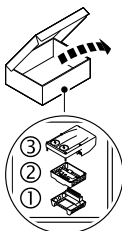
EDK84DGDVBxxx4



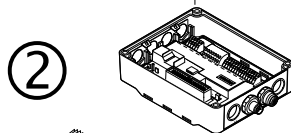
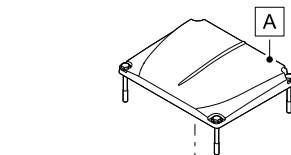
EDK84DGFCxxxx



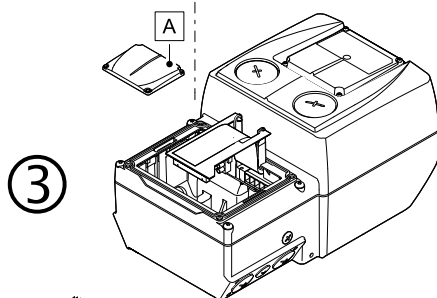
EDK84DGVNxE



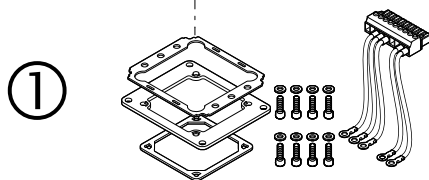
E84DG023a



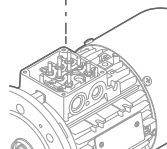
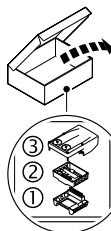
EDK84DGFCxxxx



EDK84DGDVBxxx4



EDK84DGVN4E



E84DG023b

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1 Informazioni sul manuale

1.1 Cronologia del documento

Numero documento	Versione			Descrizione
13523272	7.1	12/2016	TD29	DE/EN/FR/ES/IT (solo PDF)
13523101	7.0	11/2016	TD15	Integrazione delle descrizioni della funzione, correzioni errori, revisione della struttura dle documento
13478084	6.1	02/2015	TD15	DE/EN/FR/ES/IT (solo PDF)
13478084	6.0	12/2014	TD15	Correzioni UL
13410321	5.3	07/2014	TD15	DE/EN/FR/ES/IT (solo PDF)
13410320	5.2	07/2014	TD15	Avvertenze UL in lingua francese per il Canada Conformità EAC
13410321	5.1	06/2012	TD15	correzioni generali DE/EN/FR/ES/IT (solo PDF)
13410320	5.0	06/2012	TD15	Correzioni generali
13392616	4.1	12/2011	TD15	Espansione 4 ... 7.5 kW, DE/EN/FR/ES/IT (solo PDF)
13392614	4.0	11/2011	TD15	Espansione 4 ... 7.5 kW
13373549	3.0	04/2011	TD15	Espansione 2.2 ... 3 kW, PROFINET, EtherCAT
13371646	2.0	02/2011	TD15	Correzioni generali
13336813	1.5	09/2010	TD15	Prima edizione DE/EN/FR/ES/IT (solo PDF)
13336813	1.0	08/2010	TD15	Prima edizione DE/EN



Suggerimento:

Per informazioni e ausili sui prodotti Lenz, consultare l'area Download all'indirizzo

www.lenze.com

1.2 A chi è rivolto

La presente documentazione si rivolge al personale tecnico specializzato secondo la norma IEC 60364.

Per personale tecnico qualificato si intendono persone dotate delle necessarie qualifiche per lo svolgimento delle attività di preparazione, montaggio, messa in servizio e funzionamento del prodotto.

1.3

Informazioni sulla validità

Queste istruzioni sono valide per unità di controllo 8400 motec con il codice di identificazione:

Codice di identificazione	a partire da HW	a partire da SW
E84DGDVBxxx4	VA	01.00

Maggiori informazioni sul codice di identificazione sono a disposizione nel capitolo descrizione prodotto nel manuale hardware 8400 motec. (📖 EDS84DG752)

1.4

Convenzioni utilizzate

La presente documentazione utilizza le seguenti convenzioni tipografiche per distinguere i diversi tipi di informazioni:

Tipo di informazione	Convenzione tipografica	Esempi/Note
Modalità di scrittura dei numeri		
Separatore decimali	Punto	Si utilizza in generale il punto come separatore dei decimali. Esempio: 1234.56
Avvertenze		
Avvertenze UL		Vengono riportate in inglese e francese.
Avvertenze UR		
Evidenziazioni nel testo		
Nome di programma	» «	Software per PC Ad esempio: »Engineer«, »Global Drive Control« (GDC)
Simboli		
Riferimento a una pagina		Riferimento ad un'altra pagina contenente informazioni aggiuntive Ad esempio:  16 = vedere pagina 16
Riferimento ad altra documentazione		Riferimento ad altra documentazione contenente informazioni aggiuntive Ad esempio:  EDKxxx = vedere il documento EDKxxx

1.5 Avvertenze utilizzate

Per segnalare pericoli ed informazioni importanti, nella presente documentazione sono riportati i seguenti simboli e parole di segnalazione:

Note di sicurezza

Struttura delle note di sicurezza:

**Pericolo!**
(indica il tipo e la gravità del pericolo)
Testo della nota
(descrive il pericolo e fornisce indicazioni su come può essere evitato)

Simbolo e parola di segnalazione	Significato
 Pericolo!	Pericolo di danni alle persone dovuti a tensione elettrica Segnala una situazione di pericolo che può provocare morte o gravi lesioni se non vengono osservate le necessarie misure precauzionali.
 Pericolo!	Pericolo di danni alle persone dovuti a una fonte generica di pericolo Segnala una situazione di pericolo che può provocare morte o gravi lesioni se non vengono osservate le necessarie misure precauzionali.
 Stop!	Pericolo di danni materiali Segnala un possibile pericolo che può provocare danni materiali se non vengono osservate le necessarie misure precauzionali.

Note di utilizzo

Simbolo e parola di segnalazione	Significato
 Avvertenza:	Avvertenza importante per assicurare un corretto funzionamento dell'apparecchiatura
 Suggerimento:	Utile suggerimento per un più semplice utilizzo
	Rimando ad altra documentazione

Note di sicurezza e istruzioni d'uso speciali

Simbolo e parola di segnalazione	Significato
 Warnings!	Nota di sicurezza o istruzioni d'uso per il funzionamento secondo i requisiti UL o CSA.
 Warnings!	Le misure sono necessarie per soddisfare i requisiti della normativa UL o CSA.

2 Istruzioni di sicurezza



Pericolo!

Tensione elettrica pericolosa

- I collegamenti di potenza presentano una tensione elettrica pericolosa fino a 3 minuti dopo la disinserzione della rete.

Possibili conseguenze:

- Morte o gravi lesioni in caso di contatto con i collegamenti di potenza.

Misure di protezione:

- Attendere almeno 3 minuti prima di eseguire qualsiasi intervento sui collegamenti di potenza.
- Controllare tutti i collegamenti di potenza per accertare l'assenza di tensione.

Simboli di avvertenza

Simbolo	Descrizione
	Tempo di scaricamento prolungato: Fino a 3 minuti dopo la disinserzione della rete, tutti i morsetti di potenza conducono ancora una tensione pericolosa.
	Alta corrente dispersa: Eseguire una installazione fissa e il collegamento PE secondo EN 61800-5-1.
	Componenti sensibili a cariche elettrostatiche: Prima di eseguire interventi sul dispositivo, il personale deve adottare le necessarie misure per liberarsi dalle cariche elettrostatiche.
	Superficie ustionante: Indossare l'equipaggiamento di protezione personale o attendere il raffreddamento della superficie.

Osservare anche le ulteriori informazioni importanti relative a installazione e sicurezza incluse nel CD-ROM allegato!

Originale - Inglese

**Warnings!**

- ▶ These devices are suitable for field wiring.
- ▶ Intended for use with 75 °C wire.
- ▶ Intended for use with copper conductors only.
- ▶ Suitable for use in a surrounding air temperature of 45 °C, and
 - additionally 60 °C when de-rating rules are followed.
- ▶ Hot surface. Risk of burn.
- ▶ Should this device be mounted on a motor, the combination needs to be suitable for the type rating.
- ▶ The supply terminals are to be tightened to:
 - For model suffix's 371, 551, 751, 112, 152 tighten to 4.4 - 5.3 lb-in.
 - For model suffix's 222, and 302, tighten to 7 lb-in.
- ▶ These devices are suitable for use on a circuit capable of delivering not more than 200 000 rms Symmetrical Amperes, 480 V maximum
 - When protected by CC, R, T, or J class fuses or
 - When protected by a circuit breaker having an interrupting rating not less than 200 000 rms symmetrical amperes, 480 V maximum.
- ▶ Use fuses and circuit breakers only.
- ▶ Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code and any additional local codes.
- ▶ The opening of branch circuit protective devices may be an indication that a fault current has been interrupted. To reduce the risk of fire or electric shock, current carrying parts and other components, the controller should be examined and replaced if damaged.
- ▶ These devices provide overload protection rated for 125 % of the rated FLA.

CAUTION!

- ▶ Risk of electric shock. Please allow 180 s for the internal capacitors to discharge.

Original - Francese

**Avertissements !**

- ▶ Ces équipements sont adaptés à un câblage à pied d'oeuvre.
- ▶ Utiliser des conducteurs 75 °C.
- ▶ Utiliser exclusivement des conducteurs en cuivre.
- ▶ Convient à une utilisation à une température ambiante maximale de 45 °C ainsi que
 - 60 °C en cas d'application des règles de réduction de puissance.
- ▶ Température élevée en surface. Risque de brûlure.
- ▶ En cas de montage de l'équipement sur le moteur, la combinaison doit être conforme à la qualification du type.
- ▶ Couples de serrage des bornes réseau :
 - Pour les types contenant le suffixe 371, 551, 751, 112, 152 : 0,5 à 0,6 Nm.
 - Pour les types contenant le suffixe 222 et 302 : 0,8 Nm.
- ▶ Convient aux circuits non susceptibles de délivrer plus de 200 000 ampères symétriques eff., maximum 480 V
 - Protection par des fusibles CC de calibre R, T ou J ; ou
 - Protection par disjoncteur à pouvoir de coupure nominal d'au moins 200 000 ampères symétriques eff., maximum 480 V.
- ▶ Utiliser exclusivement des fusibles et des disjoncteurs.
- ▶ La protection statique intégrée n'offre pas la même protection qu'un disjoncteur. Une protection par disjoncteur externe doit être fournie, conformément au National Electrical Code et aux autres dispositions applicables au niveau local.
- ▶ Le déclenchement des dispositifs de protection du circuit de dérivation peut être dû à une coupure qui résulte d'un courant de défaut. Pour limiter le risque d'incendie ou de choc électrique, examiner les pièces porteuses de courant et les autres éléments du contrôleur ; les remplacer s'ils sont endommagés.
- ▶ Ces équipements intègrent une protection contre les surcharges conçue pour se déclencher à 125 % de l'intensité assignée à pleine charge.

ATTENTION !

- ▶ Risque de choc électrique. Patientez 180 s pour permettre aux condensateurs internes de se décharger.

3

Dati tecnici

3.1

Dati generali e condizioni di impiego

Conformità e omologazione			
Conformità			
CE	2006/95/CE	Direttiva Bassa Tensione	
EAC	TP TC 004/2011 (TR ZU 004/2011)	Informazioni sulla sicurezza dei dispositivi a bassa tensione	Conformità euroasiatica TR ZU: Regolamento tecnico dell'unione doganale
EAC	TP TC 020/2011 (TR ZU 020/2011)	Compatibilità elettromagnetica degli apparecchi tecnici	Conformità euroasiatica TR ZU: Regolamento tecnico dell'unione doganale
Omologazione			
UR	UL 508C	Power Conversion Equipment, File No. E170350	
cUR	C22.2 No 274-13		
Omologazione Field Package			
cUL _{US}	UL 508C C22.2 No 274-13	Power Conversion Equipment, File No. E132659	
Protezione delle persone e protezione del dispositivo			
Grado di protezione		• Chiudere tutti i fori per pressacavo non utilizzati con tappi ciechi. • Chiudere tutti i connettori a innesto non utilizzati con calotte di protezione o connettori ciechi.	
	EN 60529	8400 motec Set:	IP65
		Frame Unit con interruttore servizio / con interruttore servizio ed elementi di comando	IP54
		Frame Unit con interruttore servizio e funzione di protezione	IP64
	NEMA 250	8400 motec Set:	Tipo 4
		Field Package senza switch	
		0.37 ... 3.0 kW	Tipo 1
		4.0 ... 7.5 kW	Tipo 4X (campo interno)
		Field Package con switch	
		0.37 ... 3.0 kW	Tipo 1

Protezione delle persone e protezione del dispositivo			
Corrente di dispersione (a terra)	EN 61800-5-1	> 3,5 mA AC, > 10 mA DC	Rispettare le disposizioni e le informazioni sulla sicurezza.
Corrente di guasto complessiva		In reti TN possono essere impiegati i seguenti interruttori differenziali:	
Montaggio a motore		0.37 ... 3.0 kW	30 mA, tipo B
		4.0 ... 7.5 kW, $f_{ch} = 8/16$ kHz	30 mA, tipo B
		4.0 ... 7.5 kW, $f_{ch} = 4$ kHz	300 mA, tipo B
montaggio a parete e cavo di sistema Lenze ≤ 3 m		0.37 ... 3.0 kW	30 mA, tipo B
		4.0 ... 7.5 kW, $f_{ch} = 8/16$ kHz	30 mA, tipo B
		4.0 ... 7.5 kW, $f_{ch} = 4$ kHz	300 mA, tipo B
montaggio a parete e cavo di sistema Lenze > 3 m		0.37 ... 7.5 kW	300 mA, tipo B
Collegamento equipotenziale aggiuntivo		Filettatura M5 con morsetto nella WU per il collegamento di un cavo PE da 16 mm ²	
Isolamento dei circuiti di controllo	EN 61800-5-1	Separazione sicura dalla rete con isolamento doppio (rinforzato).	
Resistenza di isolamento	EN 61800-5-1	<2000 m sopra il livello del mare: categoria di sovratensione III	
		<2000 m sopra il livello del mare: categoria di sovratensione II	
Resistenza a cortocircuiti	EN 61800-5-1	Collegamento:	
		Motore	limitata, il controllo viene inibito, è richiesta la tacitazione dell'errore
		Freno di stazionamento del motore, resistenza di frenatura	no
		PTC, collegamenti di controllo	piena
Resistenza a dispersioni a terra	EN 61800-5-1	Collegamento:	
		Motore (con abilitazione controllo)	limitata, il controllo viene inibito, è richiesta la tacitazione dell'errore
		Motore (in funzione)	no
		Resistenza di frenatura, PTC	no

Protezione delle persone e protezione del dispositivo			
misure di protezione contro		• cortocircuito lato motore durante l'inserzione e durante il funzionamento • stallo del motore • sovratemperatura motore – ingresso per PTC o termocontatto – I²funzione di sorveglianza t	
	riavvio ciclico	• Circuiti / minuti • circuiti / ora • pausa circuito	3 max. 20 Ad un collegamento della rete per tre volte in un minuto deve seguire una pausa circuito di 9 minuti.
Corrente d'inserzione		≤ 2 x I _N	

Condizioni di collegamento		
Collegamento rete		
Tipo di rete		
TT, TN (con punto neutro isolato)		Funzionamento consentito senza limitazioni.
IT		Utilizzare le misure descritte per le reti IT (rimozione della vite IT). Spetta al costruttore della macchina/dell'impianto garantire la conformità ai requisiti EMC per l'emissione di disturbi (EN 61800-3) per la macchina/l'impianto. Non è consentito il funzionamento con tecnologia di sicurezza integrata.
Collegamento motore		
Motori	EN 60034	Utilizzare solo motori idonei per il funzionamento con inverter. Resistenza di isolamento: min. $\hat{u} \geq 1.5 \text{ kV}$, min. $du/dt \geq 5 \text{ kV}/\mu\text{s}$
Lunghezza del cavo motore		< 20 m (cavo di sistema Lenze, schermato)

Condizioni ambientali

Climatiche

Stoccaggio	IEC/EN 60721-3-1	1K3 (-30 ... +60 °C)
Trasporto	IEC/EN 60721-3-2	2K3 (-30 ... +75 °C)
Funzionamento	IEC/EN 60721-3-3	3K3 (-30 ... +55 °C) Funzionamento a 4 kHz: > +45 °C con riduzione della corrente nominale in uscita di 2,5 %/°C. Funzionamento a 8/16 kHz: > +40 °C con riduzione della corrente nominale in uscita di 2,5 %/°C.
Altitudine di installazione		< 4000 m s.l.m. > 1000 m s.l.m.: ridurre la corrente nominale in uscita del 5 %/ 1000 m.
Inquinamento	IEC/EN 61800-5-1	Grado di inquinamento 2

Meccaniche

Resistenza alle vibrazioni (9.81 m/s² = 1 g)

Montaggio a motore	Germanischer Lloyd	Condizioni generali: resistente all'accelerazione fino a 2 g	
	IEC/EN 60721-3-3	3M6	
Montaggio a parete con E84DZMAWE1	Germanischer Lloyd	Condizioni generali: resistente all'accelerazione fino a 2 g	
	IEC/EN 60721-3-3	3M6	

Condizioni di montaggio

luogo di installazione

Montaggio a motore		Standard	
Montaggio a parete		con adattatore parete opzionale	Assicurare in nicchie del raffreddamento in convezione naturale!

posizione di montaggio

Montaggio a parete			
0.37 ... 3.0 kW		verticale con alette di raffreddamento verso l'alto, girato, orizzontale	• Osservare il derating, vedere il manuale 8400 motec (EDS84DG752) • Allineamento di diversi dispositivi solo a lato, affinché rimanga garantito il raffreddamento in convezione naturale!
4.0 ... 7.5 kW		a piacere	

Controllo	
Procedimento di comando	
	VFCplus: • Controllo V/f (lineare o quadrato), • Necessario Sistema di retroazione SLVC: • Controllo vettoriale sensorless (Numero di giri) VFCplus eco: • Controllo V/f, ottimizzato energeticamente SLPSM: • controllo sensorless per motori sincroni
frequenza di commutazione	
	4 kHz, 8 kHz, 16 kHz

3.2 Dati nominali

Dati in ingresso

Rete	Tensione U _{LN} [V]	Campo di tensione U _{LN} [V]	Campo di frequenza f [Hz]
3/PE AC	400	320 - 0 % ... 440 + 0 %	45 - 0 % ... 65 + 0 %
3/PE AC	480	432 - 0 % ... 528 + 0 %	45 - 0 % ... 65 + 0 %

	Tensione [V]	Frequenza [Hz]	Corrente nominale [A]		Numero di fasi
			fino a +45 °C ①	fino a +55 °C ①	
E84DGDVB3714	400/480	50/60	1.3/1.1	1.0/0.8	3
E84DGDVB5514	400/480	50/60	1.8/1.5	1.4/1.1	3
E84DGDVB7514	400/480	50/60	2.4/2.0	1.8/1.5	3
E84DGDVB1124	400/480	50/60	3.2/2.7	2.4/2.0	3
E84DGDVB1524	400/480	50/60	3.8/3.1	2.9/2.3	3
E84DGDVB2224	400/480	50/60	5.6/4.6	4.2/3.5	3
E84DGDVB3024	400/480	50/60	7.2/5.9	5.4/4.4	3
E84DGDVB4024	400/480	50/60	9.3/7.7	7.0/5.8	3
E84DGDVB5524	400/480	50/60	12.8/10.6	9.6/8.0	3
E84DGDVB7524	400/480	50/60	16.3/13.5	12.3/10.1	3

① Temperatura ambiente, frequenza di commutazione 4 kHz

Dati in uscita

	Tensione [V]	Frequenza [Hz]	Corrente nominale [A]		Numero di fasi
			fino a +45 °C ①	fino a +55 °C ①	
E84DGDVB3714	0 ... 400/480	0 ... 300	1.3/1.1	1.0/0.8	3
E84DGDVB5514	0 ... 400/480	0 ... 300	1.8/1.5	1.4/1.1	3
E84DGDVB7514	0 ... 400/480	0 ... 300	2.4/2.0	1.8/1.5	3
E84DGDVB1124	0 ... 400/480	0 ... 300	3.2/2.7	2.4/2.0	3
E84DGDVB1524	0 ... 400/480	0 ... 300	3.9/3.2	2.9/2.4	3
E84DGDVB2224	0 ... 400/480	0 ... 300	5.6/4.7	4.2/3.5	3
E84DGDVB3024	0 ... 400/480	0 ... 300	7.3/6.0	5.4/4.5	3
E84DGDVB4024	0 ... 400/480	0 ... 300	9.5/7.9	7.1/5.9	3
E84DGDVB5524	0 ... 400/480	0 ... 300	13.0/10.8	9.8/8.1	3
E84DGDVB7524	0 ... 400/480	0 ... 300	16.5/13.7	12.4/10.3	3

① Temperatura ambiente, frequenza di commutazione 4 kHz

4 Installazione meccanica

4.1 Preparazione

Il montaggio e il cablaggio della Wiring Unit e della Communication Unit devono essere effettuati in base alle Istruzioni di montaggio.



Suggerimento:

Prima di poter proseguire con il montaggio di 8400 e di concludere, si devono prendere delle decisioni per la parametrizzazione e la messa in servizio.

L'unità di controllo con DIP1, DIP2, P2 o P3 deve essere preimpostata?

- ▶ Applicare le impostazioni in base ai requisiti.
 - Il capitolo impostazioni contiene le informazioni necessarie. (📖 205)
- ▶ Montare la Drive Unit. (📖 201)

L'unità di controllo deve essere parametrizzata con L-Force »Engineer« o con un terminale palmare?

- ▶ Montare la Drive Unit. (📖 201)

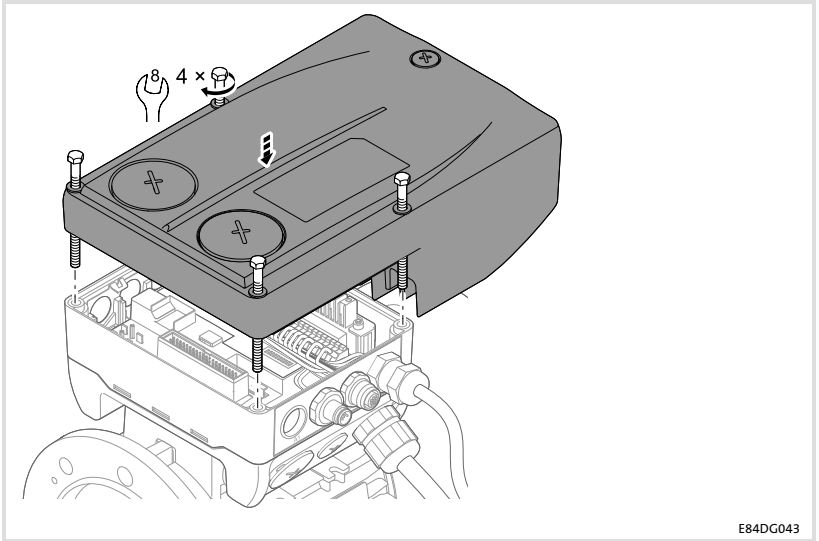
L'unità di controllo è parte di un Drive Package?

- ▶ L'unità di controllo è impostata in fabbrica in sintonia con motore e riduttore.
 - Non cambiare le impostazioni di fabbrica!
- ▶ Montare la Drive Unit. (📖 201)

4.2 Montaggio

0.37 ... 3 kW

Posizionare la Drive Unit - senza inclinarla - sulla Communication Unit precedentemente montata. Fissare la Drive Unit con le quattro viti fornite in dotazione (coppia di serraggio: 5.0 Nm/44 lb-in).

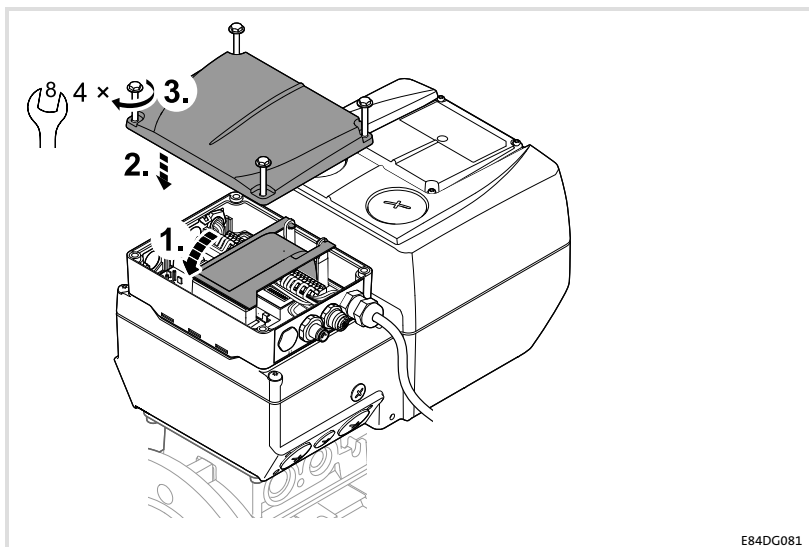


4 ... 7.5 kW

La Drive Unit è già stata preassemblata con la Wiring Unit.

Per completare il montaggio, procedere come segue:

1. Girare il connettore femmina ripiegabile verso la CU e inserirlo nel controconnettore esercitando una lieve pressione.
2. Posizionare il coperchio della DU sulla Communication Unit e
3. fissarlo con le quattro viti (coppia di serraggio: 1.5 Nm/14 lb-in).



E84DG081

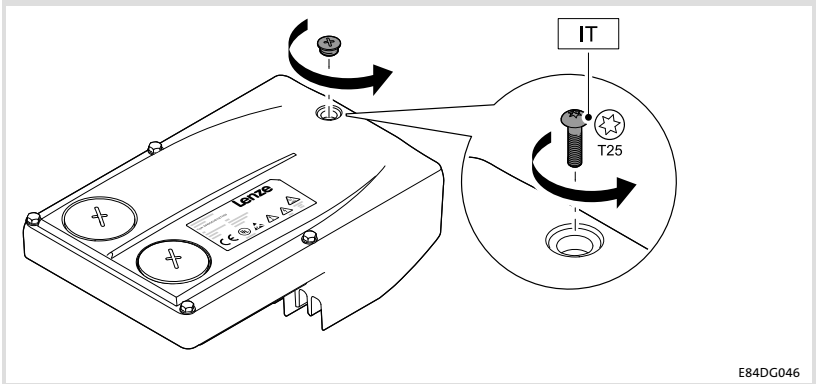
4.3 Misure nell'impiego in reti IT

Se l'azionamento viene installato in una rete IT, è necessario isolare i filtri interni dal conduttore di protezione.

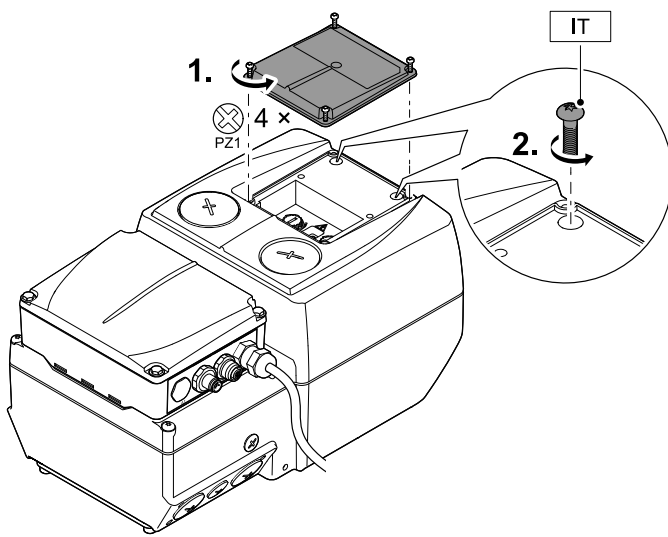
Procedere nel seguente modo:

1. In caso di unità di controllo già montate: disinserire la tensione di rete.
2. Rendere accessibile la vite IT.
 - Dispositivi fino a 3 kW: svitare il piccolo tappo di chiusura sul lato superiore.
 - Dispositivi da 4 kW: rimuovere il piccolo coperchio sul lato superiore.
3. Svitare la/le vite/i e asportarla/e.
4. Riavvitare il tappo o ricollocare il coperchio.

0.37 ... 3 kW



4 ... 7.5 kW



E84DG084

5 Impostazioni



Stop!

Avvio motore automatico

In "Local mode" l'opzione di autoavvio "Blocco all'inserzione della rete" non è impostata. Il motore si avvia all'accensione quando l'abilitazione controllo RFR è ponticellata o impostata.

("Local mode" => DIP1/1 = ON e DIP2/5-7 = OFF)

Possibili conseguenze:

- ▶ Pericoli o danni dovuti all'avvio improvviso del motore.

Misure di protezione:

- ▶ Alla messa in servizio, disaccoppiare il motore dalla catena cinematica.
- ▶ Sostituire il ponticello applicato in fabbrica in RFR con un contatto NA.
- ▶ Non impostare l'abilitazione controllo.

Per la prima messa in servizio è possibile eseguire le impostazioni tramite DIP switch e potenziometro. Tali impostazioni devono essere eseguite prima del montaggio della Drive Unit, poiché gli elementi di impostazione non sono accessibili dall'esterno.

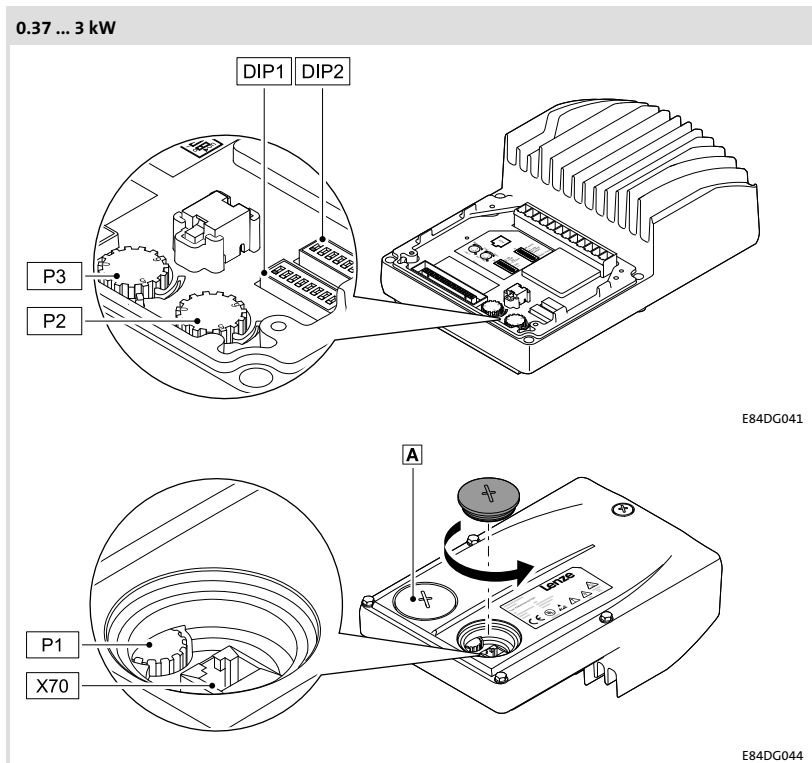
A partire dalla versione software 07.00.00 potete impostare con DIP2/8 due diverse preassegnazioni di DIP1, DIP2, P1, P2 e P3:

- ▶ DIP2/8 = OFF: DIP switch-/ occupazione potenziometro 0
- ▶ DIP2/8 = OFF: DIP switch-/ occupazione potenziometro 1

Fino alla versione software 07.00.00 è disponibile solo DIP switch-/ occupazione potenziometro 0.

Elementi per l'impostazione - 0.37 ... 3 kW

Gli elementi per l'impostazione si trovano nella parte interna della Drive Unit. Le impostazioni eseguite tramite DIP1, DIP2, P2, P3 e P1 devono essere attivate con DIP1/1. Ad ogni accensione le impostazioni vengono nuovamente caricate. Eventuali modifiche eseguite nel frattempo ai parametri possono essere in tal modo sovrascritte.



	designazione
DIP1	DIP switch per le messa in servizio
DIP2	
P1	impostazione "Top Cover: Speed ... %"
P2	impostazione "Speed ... %", (numero di giri)
P3	impostazione "Ramp ... s", (tempo di accelerazione e decelerazione)
X70	collegamento per adattatore per diagnostica USB E94AZCUS o terminale palmare
A	visualizzazione di stato LED

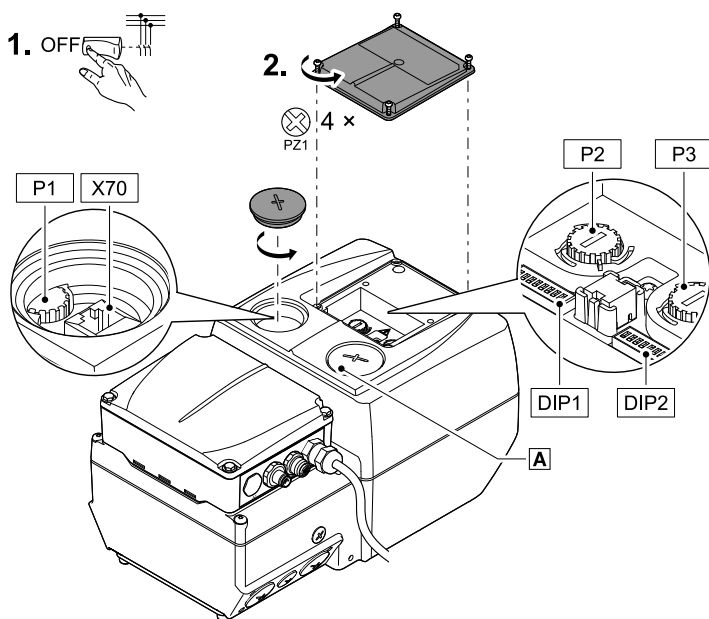
Elementi per l'impostazione - 4 ... 7.5 kW

Gli elementi per l'impostazione si trovano sul lato superiore della Drive Unit.

- Assicurare l'assenza di tensione e la protezione da riaccensione accidentale.
- Rimuovere il piccolo coperchio sul lato superiore.

Le impostazioni eseguite tramite DIP1, DIP2, P2, P3 e P1 devono essere attivate con DIP1/1. Ad ogni accensione le impostazioni vengono nuovamente caricate. Eventuali modifiche eseguite nel frattempo ai parametri possono essere in tal modo sovrascritte.

4 ... 7.5 kW



E84DG083

	designazione
DIP1	DIP switch per le messa in servizio
DIP2	
P1	impostazione "Top Cover: Speed ... %"
P2	impostazione "Speed ... %", (numero di giri)
P3	impostazione "Ramp ... s", (tempo di accelerazione e decelerazione)
X70	collegamento per adattatore per diagnostica USB E94AZCUS o terminale palmare
A	visualizzazione di stato LED

5.1

DIP switch / occupazione potenziometro 0

Impostazioni con DIP1

(Impostazione Lenze grassetto)

DIP1		Switch							
Descrizione		1	2	3	4	5	6	7	8
DIP1, DIP2, P1, P2 e P3 attivi	attivo	ON							
	disattivato	OFF							
Senso di rotazione	sinistra		ON						
	destra		OFF						
Controllo	quadrato			ON					
	lineare			OFF					
Flying-restart	attivo				ON				
	disattivato				OFF				
riservato	-					OFF	OFF	OFF	
Stato del dispositivo	Drive Ready: NO/COM = Closed								ON
	Drive Fail: DO1 = HIGH								
Stato del dispositivo	Drive Ready: DO1 = HIGH								OFF
	Drive Fail: NO/COM = Closed								

Impostazioni con DIP2

(Impostazione Lenzette grassetto)

DIP2		switch							
Descrizione		1	2	3	4	5	6	7	8
Frequenza di misurazione motore / velocità di riferimento	50 Hz ∇ / 1500 min-1	OFF	OFF						
	60 Hz ∇ / 1800 min-1	ON	OFF						
	87 Hz Δ / 2610 min-1	OFF	ON						
	120 Hz ∇ / 3600 min-1	ON	ON						
Modalità ingresso analogico	0 ... 10 V			OFF	OFF				
	0 ... 20 mA			ON	OFF				
	4 ... 20 mA			OFF	ON				
	non ammissibile			ON	ON				
Modalità di comando Applicazione tecnologica	9 (Local mode)					OFF	OFF	OFF	
	10 (morsetti 0)					ON	OFF	OFF	
	12 (morsetti 2)					OFF	ON	OFF	
	14 (morsetti 11)					ON	ON	OFF	
	16 (morsetti 16)					OFF	OFF	ON	
	riservato					ON	OFF	ON	
	riservato					OFF	ON	ON	
	40 (MCI)					ON	ON	ON	
riservato	-								OFF

Modalità di controllo DIP2/5-7	Descrizione (Dlx → High)															
9 (Local mode)	Il controllo dell'applicazione tecnologica avviene localmente tramite elementi sull'unità di controllo e i morsetti di ingresso digitali:  Con l'inserzione della rete il motore si accende automaticamente se l'abilitazione controllo è provvista di ponticello o è attivata! <table><tr><td>DI1</td><td>valore di riferimento di P2 (Speed)</td><td rowspan="2">valore di riferimento fisso 3</td></tr><tr><td>DI2</td><td>valore di riferimento fisso 2</td></tr><tr><td colspan="3">DI3 attivare frenatura DC</td></tr><tr><td colspan="3">DI4 cambio del senso di rotazione (non possibile, se è DIP1/2 = on (sinistra))</td></tr><tr><td colspan="3">DI5 rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)</td></tr></table>		DI1	valore di riferimento di P2 (Speed)	valore di riferimento fisso 3	DI2	valore di riferimento fisso 2	DI3 attivare frenatura DC			DI4 cambio del senso di rotazione (non possibile, se è DIP1/2 = on (sinistra))			DI5 rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)		
DI1	valore di riferimento di P2 (Speed)	valore di riferimento fisso 3														
DI2	valore di riferimento fisso 2															
DI3 attivare frenatura DC																
DI4 cambio del senso di rotazione (non possibile, se è DIP1/2 = on (sinistra))																
DI5 rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)																
10 (morsetti 0)	il comando dell'applicazione tecnologica avviene per mezzo dei morsetti digitali d'ingresso dell'unità di controllo: <table><tr><td>DI1</td><td>valore di riferimento fisso 1</td><td rowspan="2">valore di riferimento fisso 3</td></tr><tr><td>DI2</td><td>valore di riferimento fisso 2</td></tr><tr><td colspan="3">DI3 attivare frenatura DC</td></tr><tr><td colspan="3">DI4 cambio del senso di rotazione</td></tr><tr><td colspan="3">DI5 rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)</td></tr></table>		DI1	valore di riferimento fisso 1	valore di riferimento fisso 3	DI2	valore di riferimento fisso 2	DI3 attivare frenatura DC			DI4 cambio del senso di rotazione			DI5 rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)		
DI1	valore di riferimento fisso 1	valore di riferimento fisso 3														
DI2	valore di riferimento fisso 2															
DI3 attivare frenatura DC																
DI4 cambio del senso di rotazione																
DI5 rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)																
12 (morsetti 2)	il comando dell'applicazione tecnologica avviene per mezzo dei morsetti digitali d'ingresso dell'unità di controllo: <table><tr><td>DI1</td><td>valore di riferimento fisso 1</td><td rowspan="2">valore di riferimento fisso 3</td></tr><tr><td>DI2</td><td>valore di riferimento fisso 2</td></tr><tr><td colspan="3">DI3 arresto rapido</td></tr><tr><td colspan="3">DI4 cambio del senso di rotazione</td></tr><tr><td colspan="3">DI5 rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)</td></tr></table>		DI1	valore di riferimento fisso 1	valore di riferimento fisso 3	DI2	valore di riferimento fisso 2	DI3 arresto rapido			DI4 cambio del senso di rotazione			DI5 rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)		
DI1	valore di riferimento fisso 1	valore di riferimento fisso 3														
DI2	valore di riferimento fisso 2															
DI3 arresto rapido																
DI4 cambio del senso di rotazione																
DI5 rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)																
14 (morsetti 11)	il comando dell'applicazione tecnologica avviene per mezzo dei morsetti digitali d'ingresso dell'unità di controllo: <table><tr><td colspan="2">DI1 cambio del senso di rotazione</td></tr><tr><td colspan="2">DI2 attivare frenatura DC</td></tr><tr><td colspan="2">DI3 motopotenziometro: numero di giri superiore</td></tr><tr><td colspan="2">DI4 motopotenziometro: numero di giri inferiore</td></tr><tr><td colspan="2">DI5 rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)</td></tr></table>		DI1 cambio del senso di rotazione		DI2 attivare frenatura DC		DI3 motopotenziometro: numero di giri superiore		DI4 motopotenziometro: numero di giri inferiore		DI5 rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)					
DI1 cambio del senso di rotazione																
DI2 attivare frenatura DC																
DI3 motopotenziometro: numero di giri superiore																
DI4 motopotenziometro: numero di giri inferiore																
DI5 rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)																

Modalità di controllo DIP2/5-7	Descrizione (Dlx → High)	
16 (morsetti 16)	il comando dell'applicazione tecnologica avviene per mezzo dei morsetti digitali d'ingresso dell'unità di controllo:	
	DI1	valore di riferimento fisso 1
	DI2	valore di riferimento fisso 2
		valore di riferimento fisso 3
	DI3	rotazione oraria / arresto rapido
	DI4	rotazione antioraria / arresto rapido
40 (MCI)	DI5	rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)
	Il controllo dell'applicazione tecnologica avviene tramite comunicazione bus di campo. in funzione della Communication Unit esistente	

Impostazioni con P2

(Impostazione Lenze **grassetto**)

Con P2 impostate in 10 gradini la velocità nominale del motore in percentuale alla velocità nominale in C00011 (valore di riferimento fisso numero di giri). Il valore di riferimento fisso viene attivato solo se nel "Local mode" viene messo l'ingresso DI1.

P2	Impostazione									
Descrizione	0	1	2	3	4	5	6	7	8	9
Velocità motore in percentuale dell'impostazione velocità nominale C00011 [%]	0	11	22	33	44	55	66	77	88	100

Impostazioni con P3

(Impostazione Lenze **grassetto**)

Con P3 impostate il tempo di accelerazione e decelerazione del motore.

P3	Impostazione									
Descrizione	0	1	2	3	4	5	6	7	8	9
tempo di accelerazione e decelerazione del motore in secondi [s]	0.1	0.5	1	2	5	10	20	30	60	120

Impostazioni con P1

(Impostazione Lenze **grassetto**)

Durante il funzionamento potete impostare in modo continuo con P1 la velocità motore in modo percentuale alla velocità nominale in C00011 fintanto che nessun valore di riferimento fisso del numero di giri P2 sia attivo su DI1.

Rimuovere il coperchio di chiusura per poter impostare il potenziometro P1.

- Avvitare di nuovo il coperchio di chiusura dopo l'impostazione per garantire il grado di protezione dell'unità di controllo.

P1	Impostazione		
Descrizione	0	...	9
Velocità motore in percentuale del numero di giri nominale C00011 [%]	0	...	100

5.2 DIP switch / occupazione potenziometro 1

(a partire dalla versione software 07.00.00)

Impostazioni con DIP1

(Impostazione Lenze **grassetto**)

DIP1		Switch							
Descrizione		1	2	3	4	5	6	7	8
DIP1, DIP2, P1, P2, P3	attivo	ON							
	disattivato	OFF							
potenza motore	potenza motore > potenza inverter		ON						
	potenza motore = potenza inverter		OFF						
Controllo	VFCplus ECO			ON					
	VFCplus lineare			OFF					
comando freno / flying-restart	comando freno spento, flying-restart spento				OFF	OFF			
	comando freno spento, flying-restart spento				ON	OFF			
	comando freno automaticamente orizzontale, flying-restart spento				OFF	ON			
	comando freno automaticamente verticale, flying-restart spento				ON	ON			
direzione di montaggio motore	invertito						ON		
	non invertito						OFF		
Funzione P1	Il valore nominale fisso 3 viene descritto sempre con P1							ON	
	Il valore nominale 3 viene descritto nell'inserzione della rete una volta con P1							OFF	
Caricare i parametri secondo inserzione della rete	Caricare i parametri dal modulo Memory								ON
	Caricare i parametri dell'impostazione Lenze								OFF

Impostazioni con DIP2

(Impostazione Lenze grassetto)

DIP2		switch							
Descrizione		1	2	3	4	5	6	7	8
Frequenza di misurazione motore / velocità di riferimento	50 Hz Υ / 1500 min-1	OFF	OFF						
	60 Hz Υ / 1800 min-1	ON	OFF						
	87 Hz Δ / 2610 min-1	OFF	ON						
	120 Hz Υ / 3600 min-1	ON	ON						
Configurazione applicazione	Attuatore di velocità (1000)			OFF	OFF				
	Profilo AC-Drive (1100)			ON	OFF				
	posizionamento su finecorsa (3000)			OFF	ON				
	riservato			ON	ON				
Modalità di comando Applicazione tecnologica	9 (Local mode)					OFF	OFF	OFF	
	10 (morsetti 0)					ON	OFF	OFF	
	12 (morsetti 2)					OFF	ON	OFF	
	14 (morsetti 11)					ON	ON	OFF	
	16 (morsetti 16)					OFF	OFF	ON	
	riservato					ON	OFF	ON	
	41 (AS-Interface)					OFF	ON	ON	
	40 (MCI/CAN)					ON	ON	ON	
selezione DIP switch / occupazione potenziometro	selezione DIP switch / occupazione potenziometro								OFF
	selezione DIP switch / occupazione potenziometro 1								ON

Modalità di controllo DIP2/5-7	Descrizione (Dlx → High)															
9 (Local mode)	Il controllo dell'applicazione tecnologica avviene localmente tramite elementi sull'unità di controllo e i morsetti di ingresso digitali:  Con l'inserzione della rete il motore si accende automaticamente se l'abilitazione controllo è provvista di ponticello o è attivata! <table><tr><td>DI1</td><td>valore di riferimento di P2 (Speed)</td><td rowspan="2">valore di riferimento fisso 3</td></tr><tr><td>DI2</td><td>valore di riferimento fisso 2</td></tr><tr><td>DI3</td><td colspan="2">attivare frenatura DC</td></tr><tr><td>DI4</td><td colspan="2">cambio del senso di rotazione (non possibile, se è DIP1/2 = on (sinistra))</td></tr><tr><td>DI5</td><td colspan="2">rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)</td></tr></table>	DI1	valore di riferimento di P2 (Speed)	valore di riferimento fisso 3	DI2	valore di riferimento fisso 2	DI3	attivare frenatura DC		DI4	cambio del senso di rotazione (non possibile, se è DIP1/2 = on (sinistra))		DI5	rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)		
DI1	valore di riferimento di P2 (Speed)	valore di riferimento fisso 3														
DI2	valore di riferimento fisso 2															
DI3	attivare frenatura DC															
DI4	cambio del senso di rotazione (non possibile, se è DIP1/2 = on (sinistra))															
DI5	rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)															
10 (morsetti 0)	il comando dell'applicazione tecnologica avviene per mezzo dei morsetti digitali d'ingresso dell'unità di controllo: <table><tr><td>DI1</td><td>valore di riferimento fisso 1</td><td rowspan="2">valore di riferimento fisso 3</td></tr><tr><td>DI2</td><td>valore di riferimento fisso 2</td></tr><tr><td>DI3</td><td colspan="2">attivare frenatura DC</td></tr><tr><td>DI4</td><td colspan="2">cambio del senso di rotazione</td></tr><tr><td>DI5</td><td colspan="2">rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)</td></tr></table>	DI1	valore di riferimento fisso 1	valore di riferimento fisso 3	DI2	valore di riferimento fisso 2	DI3	attivare frenatura DC		DI4	cambio del senso di rotazione		DI5	rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)		
DI1	valore di riferimento fisso 1	valore di riferimento fisso 3														
DI2	valore di riferimento fisso 2															
DI3	attivare frenatura DC															
DI4	cambio del senso di rotazione															
DI5	rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)															
12 (morsetti 2)	il comando dell'applicazione tecnologica avviene per mezzo dei morsetti digitali d'ingresso dell'unità di controllo: <table><tr><td>DI1</td><td>valore di riferimento fisso 1</td><td rowspan="2">valore di riferimento fisso 3</td></tr><tr><td>DI2</td><td>valore di riferimento fisso 2</td></tr><tr><td>DI3</td><td colspan="2">arresto rapido</td></tr><tr><td>DI4</td><td colspan="2">cambio del senso di rotazione</td></tr><tr><td>DI5</td><td colspan="2">rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)</td></tr></table>	DI1	valore di riferimento fisso 1	valore di riferimento fisso 3	DI2	valore di riferimento fisso 2	DI3	arresto rapido		DI4	cambio del senso di rotazione		DI5	rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)		
DI1	valore di riferimento fisso 1	valore di riferimento fisso 3														
DI2	valore di riferimento fisso 2															
DI3	arresto rapido															
DI4	cambio del senso di rotazione															
DI5	rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)															
14 (morsetti 11)	il comando dell'applicazione tecnologica avviene per mezzo dei morsetti digitali d'ingresso dell'unità di controllo: <table><tr><td>DI1</td><td colspan="2">cambio del senso di rotazione</td></tr><tr><td>DI2</td><td colspan="2">attivare frenatura DC</td></tr><tr><td>DI3</td><td colspan="2">motopotenziometro: numero di giri superiore</td></tr><tr><td>DI4</td><td colspan="2">motopotenziometro: numero di giri inferiore</td></tr><tr><td>DI5</td><td colspan="2">rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)</td></tr></table>	DI1	cambio del senso di rotazione		DI2	attivare frenatura DC		DI3	motopotenziometro: numero di giri superiore		DI4	motopotenziometro: numero di giri inferiore		DI5	rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)	
DI1	cambio del senso di rotazione															
DI2	attivare frenatura DC															
DI3	motopotenziometro: numero di giri superiore															
DI4	motopotenziometro: numero di giri inferiore															
DI5	rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)															

Modalità di controllo DIP2/5-7	Descrizione (Dlx → High)	
16 (morsetti 16)	il comando dell'applicazione tecnologica avviene per mezzo dei morsetti digitali d'ingresso dell'unità di controllo:	
	DI1 valore di riferimento fisso 1	valore di riferimento fisso 3
	DI2 valore di riferimento fisso 2	
	DI3 rotazione oraria / arresto rapido	
	DI4 rotazione antioraria / arresto rapido	
	DI5 rilasciare il freno di stazionamento manualmente (modo operativo secondo impostazione C02580)	
40 (MCI)	Il controllo dell'applicazione tecnologica avviene tramite comunicazione bus di campo.	
	in funzione della Communication Unit esistente	

Impostazioni con P2
(Impostazione Lenze **grassetto**)

Con P2 potete scrivere diversi valore di riferimento fisso in C00039/1 e C00039/2.

P2		Impostazione									
Descrizione		0	1	2	3	4	5	6	7	8	9
Scrivere il valore nominale in C00039/1	[%]	5	10	15	20	25	30	35	40	45	50
Scrivere il valore nominale in C00039/2	[%]	10	20	30	40	50	60	70	80	90	100

Impostazioni con P3
(Impostazione Lenze **grassetto**)

Con P3 potete scrivere i diversi tempi di accelerazione / decelerazione in C00012/C00013 con diversi tempi di decelerazione per l'arresto rapido in C00105.

P3		Impostazione									
Descrizione		0	1	2	3	4	5	6	7	8	9
scrivere tempo di accelerazione / decelerazione in C00012/C00013	[s]	0.1	0.5	0.7	1	1.5	2	5	10	30	60
scrivere tempo di decelerazione arresto rapido in C00105	[s]	0.1	0.2	0.5	0.7	1	1.5	2	5	10	30

Impostazioni con P1
(Impostazione Lenze **grassetto**)

Con P1 scrivete un valore di riferimento fisso del numero di giri in C00039/3. In funzione della posizione switch DIP1/7, C00039/3 viene descritto una volta o in mod permanente nell'inserzione della rete.

Rimuovere il coperchio di chiusura per poter impostare il potenziometro P1.

- Avvitare di nuovo il coperchio di chiusura dopo l'impostazione per garantire il grado di protezione dell'unità di controllo.

P1		Impostazione		
Descrizione		0	...	9
Scrivere il valore nominale fisso 3 in C00039/3	[%]	0	...	100

6 **Messa in servizio**

6.1 **Prima dell'accensione**

- ▶ La Wiring Unit è montata e cablata secondo le istruzioni fornite,
 - direttamente su una flangia di bloccaggio del motore oppure
 - con un adattatore per montaggio a parete, su una superficie idonea nelle vicinanze del motore.
- ▶ I collegamenti con rete, motore, freni di stazionamento, ecc. sono stati eseguiti correttamente.
- ▶ La Communication Unit è stata montata e cablata conformemente all'applicazione pianificata.
 - Segnali di ingresso e uscita
 - Ingresso sicuro
 - Bus di campo(a seconda dell'esecuzione, disponibile solo come opzione)
- ▶ Se necessarie, le impostazioni di base per "Local mode" sono già state eseguite.
 - DIP switch
 - Potenzziometro
- ▶ La Drive Unit è stata montata e avvitata.
- ▶ Impostare in modo adeguato le funzioni di controllo presenti, ad esempio
 - Inibire l'unità di controllo (blocco dell'abilitazione controllo)
 - Impostare la velocità al minimo
 - Attivare i dispositivi di sicurezza
- ▶ È stato testato l'impiego di una resistenza di frenatura.
 - Con carichi dinamici o condizioni di controllo difficili si consiglia sempre l'impiego della resistenza interna di frenatura E84DZEW47R0001 per i dispositivi E84DGDVB4024 ... 7524 (4 ... 7.5 kW).



Pericolo!

Elevato potenziale di pericolo durante la messa in servizio

Eventuali impostazioni errate possono determinare movimenti inattesi e pericolosi del motore e dell'impianto.

Possibili conseguenze:

- ▶ Danni materiali
- ▶ Danni alle persone

Misure di protezione:

- ▶ Allontanarsi dalla zona di pericolo
- ▶ Osservare le norme di sicurezza e le distanze di sicurezza

6.2 Procedura di messa in servizio

Procedete passaggio dopo passaggio:

- ▶ Attivare la rete
- ▶ Osservare l'indicatore di stato
 - Dopo un breve tempo d'installazione, la visualizzazione deve lampeggiare in verde.
- ▶ Disattivare i requisiti della funzione di sicurezza
- ▶ Impostare l'abilitazione controllo
 - Il motore deve girare secondo il tempo di risposta impostato con la velocità impostata.
- ▶ Prima verifica del comportamento secondo le aspettative:
 - Senso di rotazione?
 - Tempo di risposta?
 - Velocità?
 - Controllo della velocità?
- ▶ Verifica delle funzione opzionali di comando:
 - Funziona l'impostazione del valore di riferimento?
 - Funzionano i segnali di controllo digitali ad es. i finecorsa?
 - Funziona il freno di stazionamento del motore collegato?
 - Funziona la commutazione del senso di rotazione?
 - Funziona il requisito della funzione di sicurezza?
 - Funzionano i segnali di controllo attraverso il bus di campo?
- ▶ Spegnere azionamento
 - Ridurre la velocità
 - Inibire l'unità di controllo (blocco dell'abilitazione controllo)
 - Disinserizione rete

A seconda del sistema bus della Communication Unit gli stati vengono segnalati con un indicatore a LED. Per informazioni dettagliate, vedere il Manuale di comunicazione del sistema bus in uso.

LED	1 (green)	2 (green)	3 (red)	4 (red)
 E84DG056_b	PROFIBUS	BUS STATE	MODULE STATE	BUS ERROR
	AS-i	SLAVE 1 READY	SLAVE 2 READY	SLAVE 1 ERROR
	EtherCAT	RUN	LINK/ACTIVITY	ERROR
	PROFINET	BUS READY	LINK/ACTIVITY 1 (yellow)	BUS ERROR
	EtherNet/ IP	MODULE STATE (red)		NETWORK STATE (green)
				LINK/ACTIVITY 2 (yellow)

6.3

Messa in servizio con terminale palmare

Con il terminale palmare X400 potete impostare i parametri in modo facile e veloce e far visualizzare i valori istantanei aggiornati e gli stati dei dispositivi per mezzo dei relativi parametri di visualizzazione. Per questo è necessario inserire il terminale palmare sull'interfaccia diagnostica X70 sulla parte superiore del dispositivo.

**Pericolo!****Possibili movimenti del motore non controllati**

La modifica di un parametro ha come conseguenza di solito una reazione istantanea dell'unità di controllo.

Possibili conseguenze:

- Con unità di controllo abilitata, questo può provocare un comportamento indesiderato sull'albero motore.

Misure di protezione:

- Effettuare modifiche in piccoli passaggi e aspettare la reazione.
- Eccezioni sono determinati comandi dispositivi o impostazioni che potrebbero portare il comportamento dell'unità in uno stato critico. Queste modifiche dei parametri sono possibili solo con unità di controllo bloccata, altrimenti si verifica il relativo messaggio di errore.

**Avvertenza:**

Il terminale palmare può essere inserito e disinserito durante il funzionamento.



Maggiori informazioni.

Informazioni complete sul terminale palmare sono a disposizione nelle istruzioni operative per la tastiera & il terminale palmare X400.

6.3.1 Struttura dei menu

Il menu principale del terminale palmare contiene le seguenti voci:

Voce di menu	Funzione
Menu utente	Visualizzazione di una selezione di parametri spesso necessari
Lista codici	visualizzazione della lista parametri con tutti i parametri
Go To parametri	Richiamare direttamente un determinato parametro
Trasferimento parametri	
User Menu Configuration	
tastiera	

6.3.2 Menu utente

Il menù utente è configurabile liberamente e contiene nell'impostazione Lenze i seguenti parametri:

Parametri	Nome	Informazioni	Impostazione Lenze
C00011	Appl.: velocità di riferimento	Impostazione della velocità di riferimento	1500 min-1
C00012	Tempo di accelerazione valore di riferimento principale.	FB L_NSet_1: tempo di accelerazione del generatore di rampa per valore di riferimento principale del numero di giri	2.0 s
C00013	Tempo di decelerazione valore nominale principale	FB L_NSet_1: tempo di decelerazione del generatore di rampa per valore di riferimento principale numero di giri	2.0 s
C00015	VFC: U/f-frequenza di cut-off	U/f-frequenza di cut-off per controllo motore	50 Hz
C00016	VFC: sollevamento giri al min	Boost giri/ caratteristica di tensione nel campo del numero di giri ovvero frequenze per controllo motore VFCplus	2.6 %
C00022	Modo motore lmax	Corrente massima del motore per tutti i tipi di regolazione motore	5.8 A
C00039/1	Valore di riferimento fisso 1 (L_NSet_1 n-Fix)	FB L_NSet_1: valori di riferimento fissi numero di giri (valori jog) per generatore di valore di riferimento Valore di riferimento fisso 1	40.0 %
C00039/2	Valore di riferimento fisso 2	Valore di riferimento fisso 2	60.0 %
C00051	MCTRL: valore istantaneo velocità	Valore effettivo numero di giri dell'albero motore	—
C00053	Tensione DC bus	Tensione DC bus aggiornata	—
C00054	Corrente motore	Corrente motore/corrente in uscita aggiornate dell'inverter	—

Parametri	Nome	Informazioni	Impostazione Lenze
C00061	temperatura del dissipatore di calore	Temperatura aggiornata del dissipatore di calore	–
C00087	Velocità nominale motore	Questo valore si trova nella targhetta tipo motore. In base alla selezione del motore usato dal catalogo motore, il valore adeguato può essere inserito automaticamente.	1320 min-
C00099	Versione Firmware	versione Firmware del dispositivo come stringa di caratetri	–
C00105	Tempo di decelerazione arresto rapido	Il tempo di accelerazione impostato determina la ripidezza della rampa nell'arresto rapido	5.0 s
C00120	Soglia sovraccarico motore (I ² xt)	Sglia di risposta per il messaggio di errore "OC6: sovraccarico motore (I ² xt)"	100 %
C00137	Sato del dispositivo	Stato del dispositivo aggiornato	–
C00166/3	Mess. errore di aliment	Messaggio di testo dell'errore stabilito allo stato attuale	–
C00173	Tensione di rete	selezione della tensione di rete utilizzata con cui il dispositivo viene azionato.	0: "3ph 400V"
C00200	Tipo prodotto Firmware		–

– Solo visualizzazione

6.3.3 Procedura di messa in servizio

**Avvertenza:**

Sull'interfaccia diagnostica X70 sono collegabili:

- ▶ adattatore USB per diagnostica (E94AZCUS)
- ▶ terminale palmare X400 (EZAEBK200x)
 - Le funzioni del terminale palmare e la tastiera X400 (EZAEBK100x) sono identici.

Per l'azionamento devono essere adattati solo alcuni parametri. Dopo di che è possibile comandare l'applicazione di azionamento nella modalità di controllo preimpostata "morsetti 0" subito attraverso ingressi digitali e analogici. Nella modalità di controllo "tastiera" è possibile in alternativa utilizzare la tastiera per l'impostazione dei valori di riferimento necessari e dei segnali di controllo.

Procedere nel seguente modo:

1. cablaggio dei collegamenti di potenza.
 - Servitevi delle istruzioni di montaggio allegate all'unità di controllo come aiuto per eseguire i collegamenti di potenza nel modo relativo alle esigenze del vostro dispositivo.
2. Cablaggio dei collegamenti di controllo.
 - È possibile cambiare la connessione I/O preconfigurata attraverso i parametri di configurazione. Vedi capitolo "Assegnazione dei morsetti definito dall'utente".
 - Assegnazione nella modalità di controllo preimpostata "morsetti 0":

Morsetto	Funzione		Informazioni
A1U	impostazione del valore di riferimento		10 V ≡ 1500 min-1 (con motore a 4 poli) generale: 10 V ≡ 100 % velocità di riferimento (C00011)
DI1	JOG 1	JOG 3	selezione valore di riferimento fisso 1 ... 3 Se entrambi gli ingressi si trovano su livello LOW, l'impostazione del valore di riferimento è attiva attraverso l'ingresso analogico A1U.
DI2	JOG 2		
DI3	DCB		Frenatura manuale DC (DCB) - Con ingressi attivi HIGH la frenatura DC è attiva fintanto che DI3 si trova su livello HIGH. - Dopo il termine del tempo di arresto (C00107) il controllo predispone un'inibizione impulsi (CINH). Frenatura DC (▶ I 110)
DI4	R/L		livello LOW: rotazione oraria livello HIGH: rotazione antioraria
DI5	freno di stazionamento		aprire / chiudere freno di stazionamento modalità di frenatura C02580

3. controllare switch su parte inferiore del Drive Unit:
DIP1/1 deve essere in impostazione "OFF" (impostazione Lenze), affinché sia possibile sovrascrivere i parametri per mezzo di »Engineer«, tramite tastiera o bus di campo.
4. Per la comunicazione bus di campo eventualmente effettuare le impostazioni necessarie di comunicazione tramite il DIP switch su Communication Unit.
Le impostazioni di comunicazione dipendono dal bus di campo utilizzato.
5. Fissare l'unità di controllo con 4 viti.
6. Attivare l'alimentazione dell'unità di controllo.
7. Collegare tastiera.
 - Rimuovere la copertura dell'interfaccia diagnostica sulla parte superiore del dispositivo e collegare la tastiera all'interfaccia diagnostica.
 - Dopo il collegamento della tastiera avviene la configurazione con l'unità di controllo. La procedura è conclusa quando compare nel display C00051.

Visualizzazione tastiera	Azione
MCTRL: Act speed val. C00051 0 rpm	Con pulsante di funzione sinistro spostarsi sul menu principale  .

8. Caricare impostazione Lenze nell'unità di controllo.
 - Per questo è a disposizione l'ordine del dispositivo "impostazione Lenze" che si può eseguire attraverso il codice C00002/1 con la tastiera:

**Avvertenza:**

Con il comando "caricare impostazione Lenze" vengono inizialmente sovrascritti i valori modificati. Vengono resettate preimpostazioni per un motore specifico, ad es. da parte di Lenze per und Drive Package.

Visualizzazione tastiera	Azione
Par1 8400 motec Menu utente	A Con il tasto di navigazione selezionare il menu  nel menu principale. B Con il tasto di navigazione spostarsi nel menu  .
Load Lenze setting C00002/1	A Con tasto sinistro di funzione spostarsi nella modalità edit per C00002/1 EDIT . B Con tasto di navigazione selezionare la voce "1: On/Start"  nella lista di selezione. C Con tasto destro di funzione OK accettare la modifica eseguita e lasciare la modalità edit. – La procedura di caricamento può durare alcuni secondi.

9. Autorizzare l'unità di controllo: mettere il morsetto RFR su HIGH.
 - Al momento della consegna il morsetto abilitazione controllo è dotato di ponticello (abilitazione controllo).
 - Se in C00142 è attiva l'opzione autostart "blocco con dispositivo acceso" e con inserzione della rete c'è abilitazione controllo, l'unità di controllo rimane ferma nello stato "ReadyToSwitchOn". Per un spostamento nello stato "SwitchedOn" deve essere prima di tutto rimossa l'abilitazione controllo. Spostarsi quindi nello stato "OperationEnabled" con abilitazione controllo collegata.
 - Se in C00142 è disattivata l'opzione autostart "blocco con dispositivo acceso", avviene lo spostamento, dopo l'inserzione della rete con abilitazione controllo attiva, direttamente dallo stato "ReadyToSwitchOn" allo stato "SwitchedOn" e quindi nello stato "OperationEnabled".



Pericolo!

Se l'opzione autostart "blocco con dispositivo acceso" è disattiva, il motore con abilitazione controllo attiva dopo inserzione della rete può direttamente partire!

10. Indicare il numero di giri:
 - Nella modalità di controllo "morsetti 0" con impostazione di una tensione sull'ingresso analogico o con la selezione di un valore di riferimento fisso attraverso gli ingressi digitali DI1/DI2.
 - Nella modalità di controllo "tastiera" avviene l'impostazione del valore di riferimento principale della velocità dei segnali di controllo per mezzo dei seguenti parametri:

Parametri	Nome	Informazioni	Impostazione Lenze
C00728/3	nMainSetValue_a	valore di riferimento principale per l'applicazione 100 % = velocità di riferimento (C00011)	0.00 %
C00727/3	bSetSpeedCcw	cambio del senso di rotazione "0": rotazione oraria "1": rotazione antioraria	0
C00727/4	bJogSpeed1	Selezione valore di riferimento fisso 1 "0": valore di riferimento principale (C00728/3) attivo. "1": valore di riferimento fisso 1 (C00039/1) attivo.	0

11. Event. adeguare gli altri parametri.
12. Salvare impostazione parametri con tasto di funzione **SAVE** in modo fail-safe nel Modulo di memoria.

6.3.4 Modalità SET

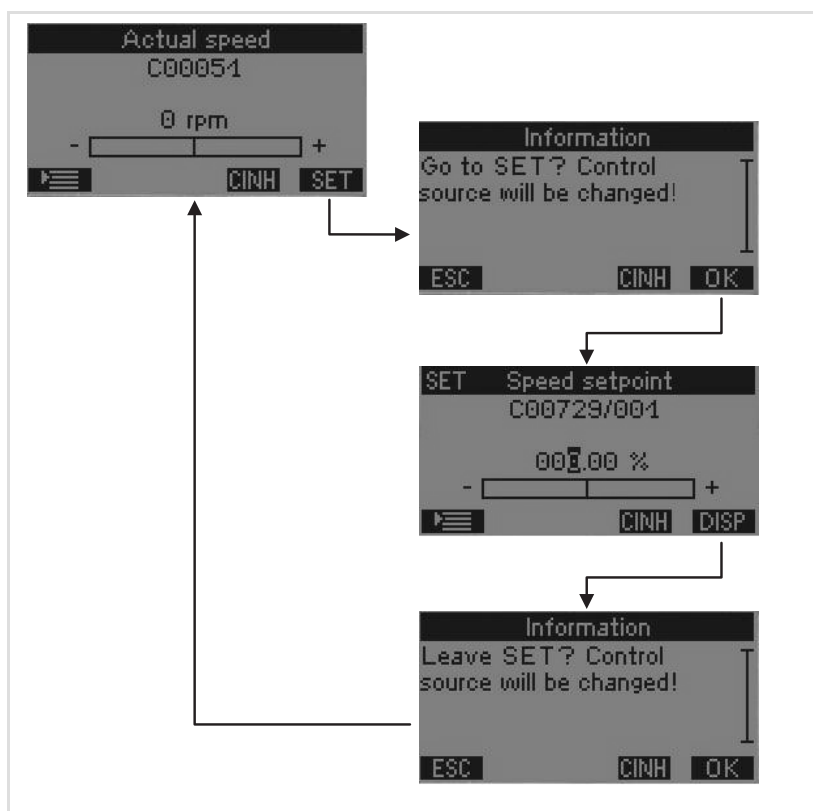
Nella modalità SET l'unità di controllo viene controllata tramite il terminale palmare. Potete modificare il valore di riferimento velocità e abilitare o bloccare l'unità di controllo (Abilitazione controllo/run). Altre fonti di valori di riferimento vengono ignorate.

- ▶ Attivare modalità SET: attivare Softkey-Taste "DISP" e confermare con Softkey-Taste "OK".
- ▶ Lasciare modalità SET: attivare Softkey-Taste "DISP" e confermare con Softkey-Taste "OK".

**Avvertenza:**

Si riesce ad attivare la modalità SET solo nello stato del dispositivo "OperationEnabled" (inibizione controllo è rimossa, LED verde sull'unità di controllo è continuamente acceso).

- ▶ L'inibizione controllo nella tastiera viene solo segnalata. In C00158 viene visualizzata dettagliatamente la causa per l'inibizione controllo (📖 Manuale di riferimento 8400 motec).



7 Parametrizzazione

Attraverso la parametrizzazione potete impostare l'unità di controllo in modo ottimale su diversi requisiti di applicazioni.

La parametrizzazione può avvenire nei seguenti modi:

Parametrizzazione con L-force »Engineer«

- ▶ Ampie impostazioni online tramite software
 - La parametrizzazione sicura viene supportata tramite il Software per PC Lenze »Engineer«, a partire dalla versione 02.23.
 - La parametrizzazione è descritta nel manuale del software per il modulo di sicurezza SM302.
 - Richiede software e adattatore per diagnostica USB.

Parametrizzazione con terminale palmare/tastiera

- ▶ Impostazione di determinati parametri per mezzo di utenti esperti
 - Richiede un terminale palmare adatto per 8400 motec
 - La parametrizzazione è descritta nelle istruzioni operative EZAEBK000X per la tastiera 400.

**Avvertenza:****Salvataggio delle parametrizzazioni in modo fail-safe**

Affinché le parametrizzazioni eseguite nel dispositivo non vadano perse in caso di disinserzione della rete, è necessario salvarle esplicitamente in modo fail-safe nel dispositivo.

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EDK84DGDVBxxx4 ■ 13523272 ■ DE/EN/FR/ES/IT ■ 7.1 ■ TD29

10 9 8 7 6 5 4 3 2 1

EDK84DGVNxE
13523379



L-force *Drives*

Montageanleitung

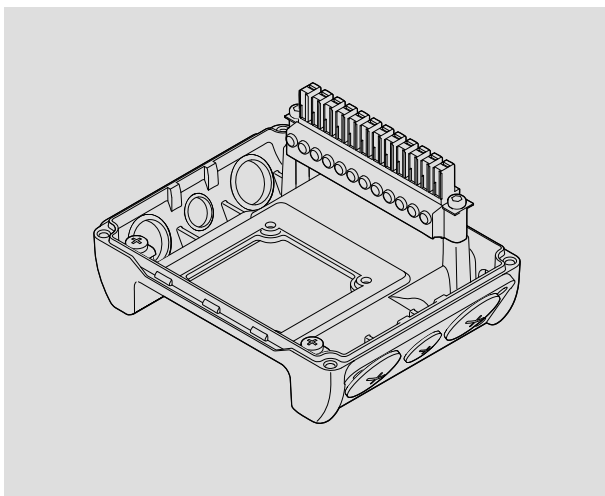
Mounting Instructions

Instructions de montage

Instrucciones para el montaje

Istruzioni per il montaggio

8400 motec

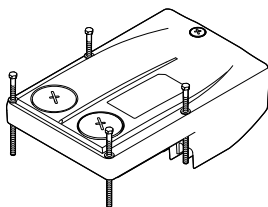


E84DGVN1E, E84DGVN2E, E84DGVN3E

Wiring unit

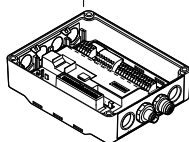
Lenze

③



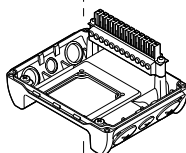
EDK84DGDVBxxx4

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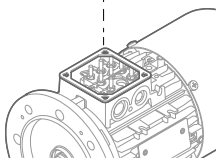
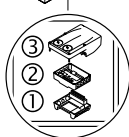
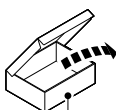


EDK84DGFCxxx

①



EDK84DGVNx



E84DG023a



Warnings!

Operation of this equipment requires detailed installation and operation instructions provided in the Hardware manual intended for use with this product. This information is provided on the CD-ROM included in the container this device was packaged in. It should be retained with this device at all times. A hard copy of this information may be ordered by phone or e-mail, printed on the back of this document.



Gefahr!

Gefährliche elektrische Spannung

- ▶ Die Leistungsanschlüsse führen bis zu 3 Minuten nach Netz-Ausschalten gefährliche elektrische Spannung.

Mögliche Folgen:

- ▶ Tod oder schwere Verletzungen beim Berühren der Leistungsanschlüsse.

Schutzmaßnahmen:

- ▶ Vor Arbeiten am Gerät Netzspannung ausschalten und mindestens 3 Minuten warten.
- ▶ Prüfen, ob alle Leistungsanschlüsse spannungsfrei sind.

Beachten Sie auch weitere wichtige Informationen zur Geräte- und Sicherheitstechnik auf der beiliegenden CD-ROM!



Danger!

Dangerous voltage

- ▶ The power terminals carry dangerous voltages for up to 3 minutes after mains disconnection.

Possible consequences:

- ▶ Death or severe injury if the power terminals are touched.

Protective measures:

- ▶ Switch off the mains voltage and wait at least 3 minutes before starting to work on the device.
- ▶ Check that all power terminals are deenergised.

Please also observe more important information on device and safety technology provided on the enclosed CD-ROM!



Danger !

Tension électrique dangereuse

- Les raccordements de puissance sont susceptibles de véhiculer une tension dangereuse jusqu'à 3 minutes après une coupure réseau.

Risques encourus :

- Mort ou blessures graves en cas de contact avec les raccordements de puissance

Mesures de protection :

- Avant toute manipulation de l'appareil, couper la tension réseau et attendre 3 minutes au minimum.
- S'assurer que tous les raccordements de puissance sont hors tension.

Veillez également tenir compte des consignes importantes sur la technologie des appareils et les fonctions de sécurité comprises sur le cd-rom joint !



¡Peligro!

Voltaje eléctrico peligroso

- Las conexiones de potencia siguen vivas hasta 3 minutos después de la desconexión de red.

Posibles consecuencias:

- Muerte o serias lesiones al tocar las conexiones de potencia.

Medidas de protección:

- Antes de trabajar en el equipo, desconectar la alimentación de red y esperar por lo menos 3 minutos.
- Comprobar, si todas las conexiones de potencia están libres de voltaje.

Observe también la información importante sobre aspectos relativos a la técnica del dispositivo y de seguridad incluida en el CD-ROM adjunto!



Pericolo!

Tensione elettrica pericolosa

- I collegamenti di potenza presentano una tensione elettrica pericolosa fino a 3 minuti dopo la disinserzione della rete.

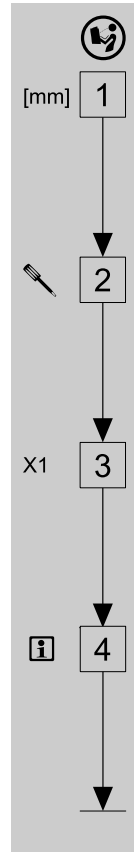
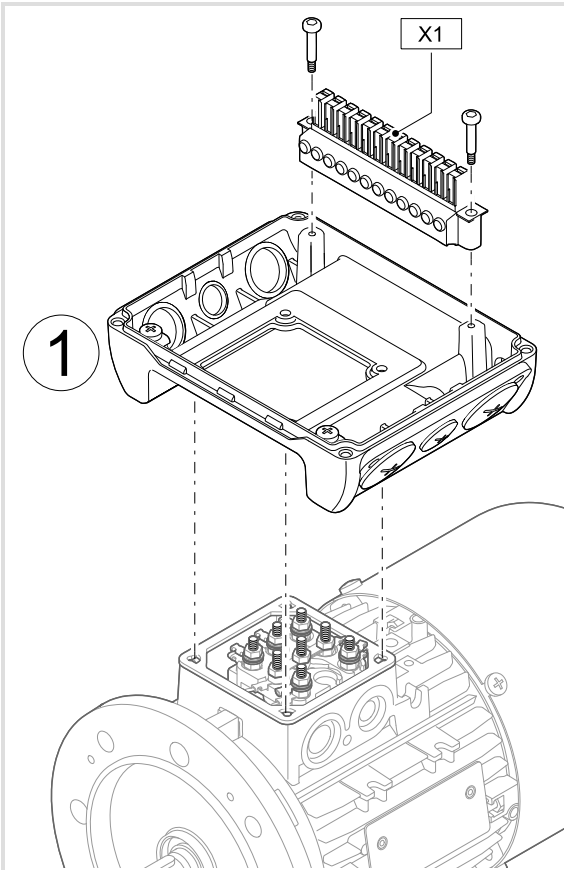
Possibili conseguenze:

- Morte o gravi lesioni in caso di contatto con i collegamenti di potenza.

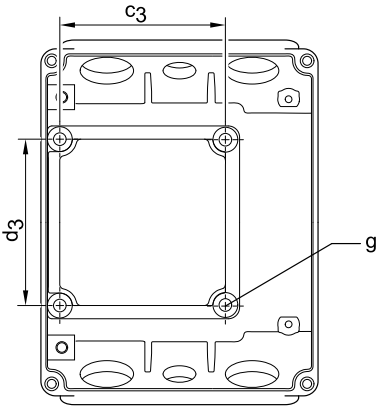
Misure di protezione:

- Attendere almeno 3 minuti prima di eseguire qualsiasi intervento sui collegamenti di potenza.
- Controllare tutti i collegamenti di potenza per accertare l'assenza di tensione.

Osservare anche le ulteriori informazioni importanti relative a installazione e sicurezza incluse nel CD-ROM allegato!



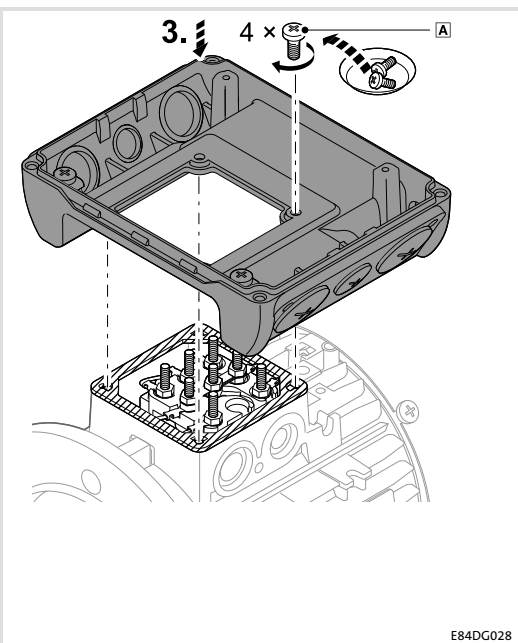
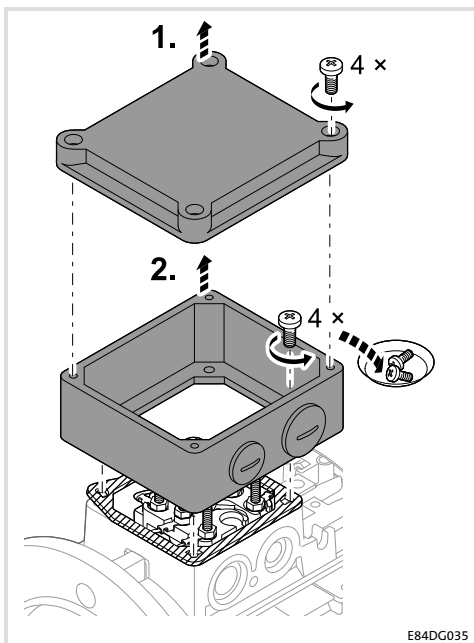
E84DG036



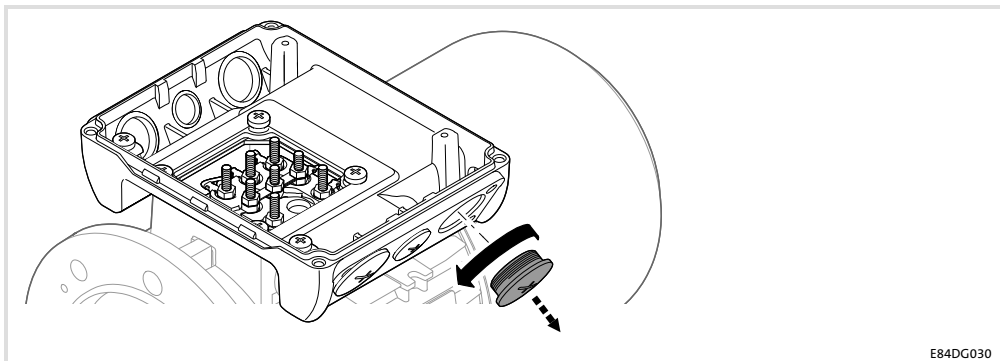
E84DG038



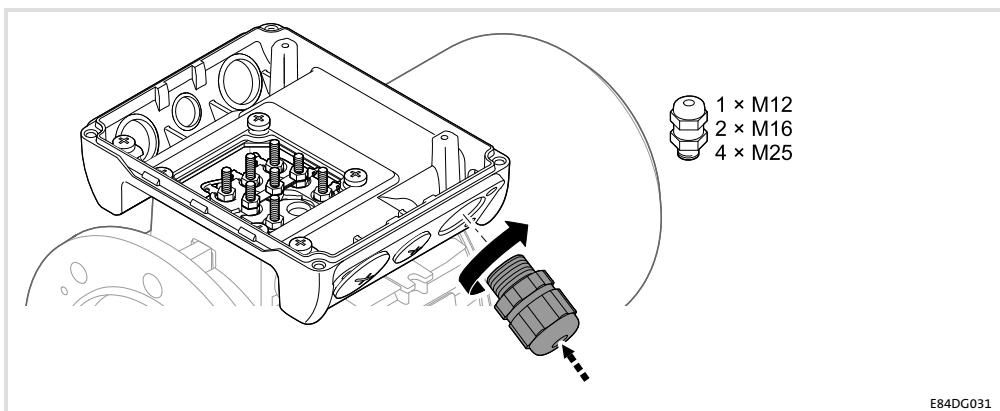
	c_3 [mm]	d_3 [mm]	g [mm]	 P_N / f_N
E84DGVN1E	60	60	Ø 4.5	0.37 ... 0.75 kW / 50 Hz
E84DGVN2E	73	73	Ø 5.5	1.1 ... 1.5 kW / 50 Hz
E84DGVN3E	73	73	Ø 5.5	2.2 ... 3 kW / 50 Hz



 	 Nm / [lb-in]
M4	3.4 / 30
M5	3.4 / 30

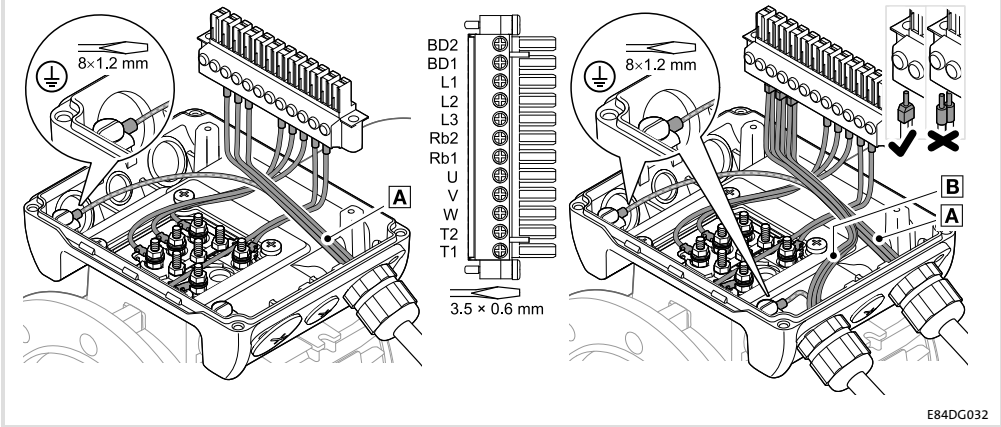


E84DG030



E84DG031

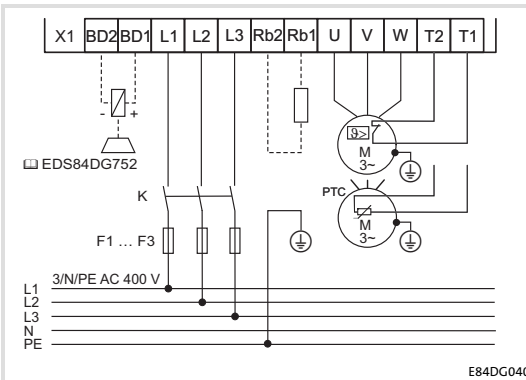
X1



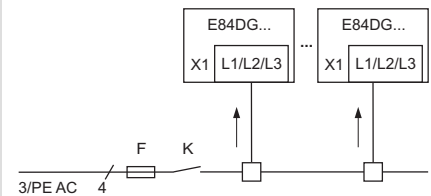
E84DG032

A 120 mm

B 180 mm

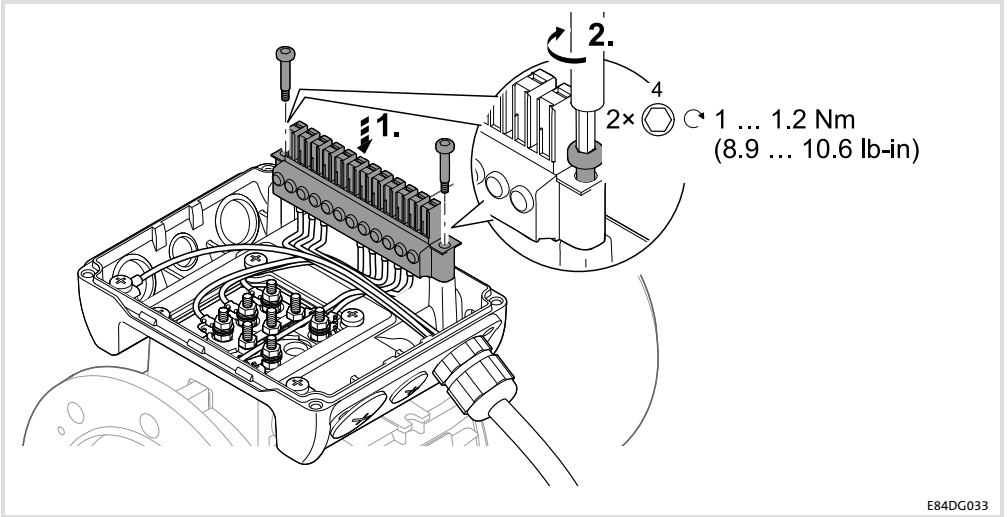


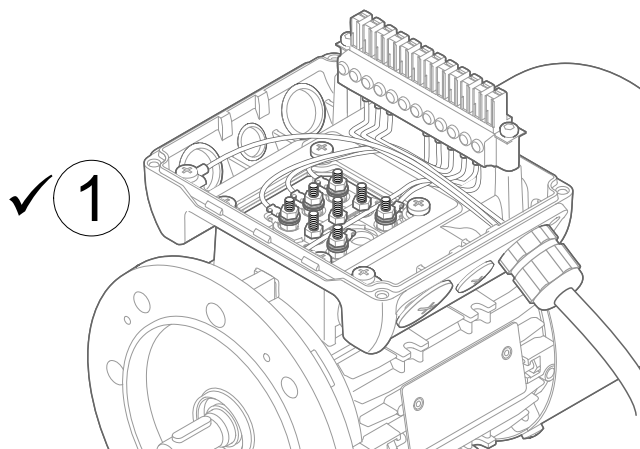
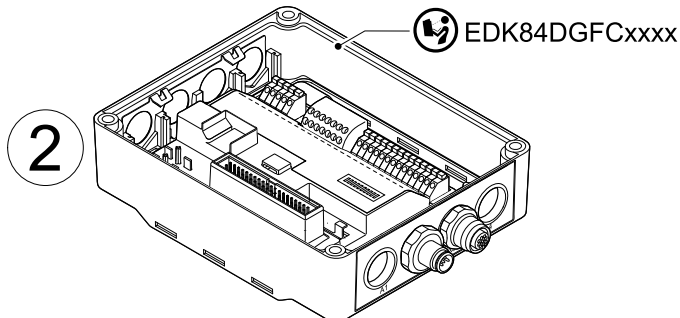
E84DG040



E84DG034

	F			L1, L2, L3 / U, V, W			PE			T1, T2		
	EN 60204		UL									
	[A]		[A]	[mm ²] [AWG]	[mm]	[Nm] [lb-in]	[mm ²] [AWG]	[mm]	[Nm] [lb-in]	[mm ²] [AWG]	[mm]	[Nm] [lb-in]
E84DGDVB3714 ... E84DGDVB1524	16	C16	15	1 ... 4.0 18 ... 10	10	0.5 4.4	1 ... 4.0 18 ... 10	10	1.7 15	1.5 16	10	0.5 4.4
E84DGDVB2224 E84DGDVB3024	32	C32	25	1 ... 6.0 18 ... 8	10	0.8 7.0	1 ... 16 18 ... 8	10	1.7 15	1 ... 6 18 ... 8	10	0.8 7.0





E84DG037

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L-force *Drives*

Montageanleitung

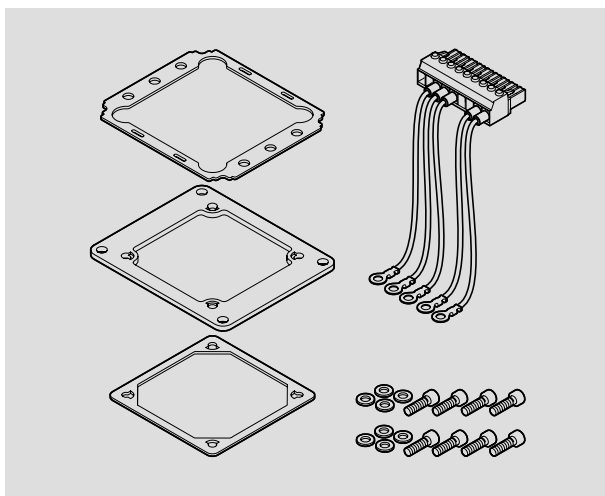
Mounting Instructions

Instructions de montage

Instrucciones para el montaje

Istruzioni per il montaggio

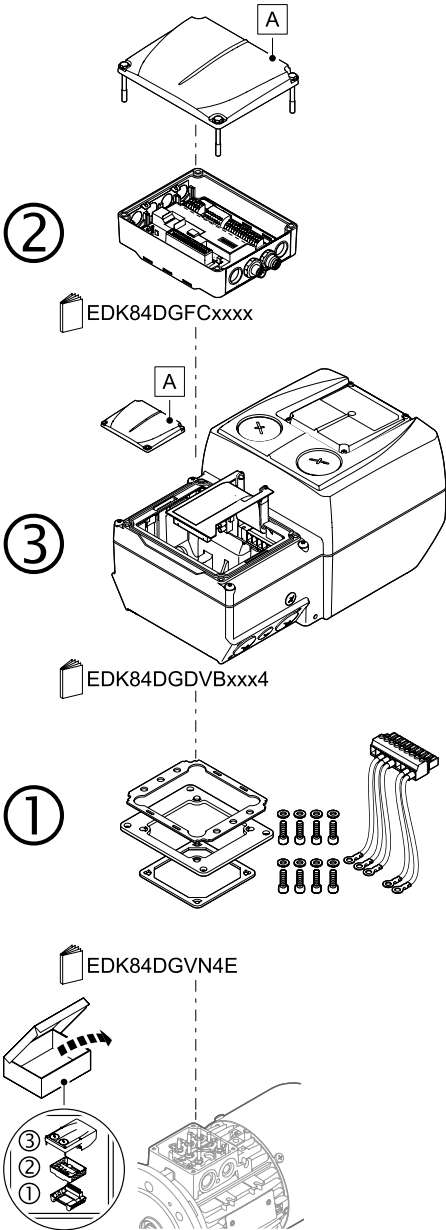
8400 motec



E84DGVN4E, E84DGVN5E

Wiring unit

Lenze



E84DG023b



Warnings!

Operation of this equipment requires detailed installation and operation instructions provided in the Hardware manual intended for use with this product. This information is provided on the CD-ROM included in the container this device was packaged in. It should be retained with this device at all times. A hard copy of this information may be ordered by phone or e-mail, printed on the back of this document.



Gefahr!

Gefährliche elektrische Spannung

- ▶ Die Leistungsanschlüsse führen bis zu 3 Minuten nach Netz-Ausschalten gefährliche elektrische Spannung.

Mögliche Folgen:

- ▶ Tod oder schwere Verletzungen beim Berühren der Leistungsanschlüsse.

Schutzmaßnahmen:

- ▶ Vor Arbeiten am Gerät Netzspannung ausschalten und mindestens 3 Minuten warten.
- ▶ Prüfen, ob alle Leistungsanschlüsse spannungsfrei sind.

Beachten Sie auch weitere wichtige Informationen zur Geräte- und Sicherheitstechnik auf der beiliegenden CD-ROM!



Danger!

Dangerous voltage

- ▶ The power terminals carry dangerous voltages for up to 3 minutes after mains disconnection.

Possible consequences:

- ▶ Death or severe injury if the power terminals are touched.

Protective measures:

- ▶ Switch off the mains voltage and wait at least 3 minutes before starting to work on the device.
- ▶ Check that all power terminals are deenergised.

Please also observe more important information on device and safety technology provided on the enclosed CD-ROM!



Danger !

Tension électrique dangereuse

- ▶ Les raccordements de puissance sont susceptibles de véhiculer une tension dangereuse jusqu'à 3 minutes après une coupure réseau.

Risques encourus :

- ▶ Mort ou blessures graves en cas de contact avec les raccordements de puissance

Mesures de protection :

- ▶ Avant toute manipulation de l'appareil, couper la tension réseau et attendre 3 minutes au minimum.
- ▶ S'assurer que tous les raccordements de puissance sont hors tension.

Veuillez également tenir compte des consignes importantes sur la technologie des appareils et les fonctions de sécurité comprises sur le CD-ROM joint !



¡Peligro!

Voltaje eléctrico peligroso

- ▶ Las conexiones de potencia siguen vivas hasta 3 minutos después de la desconexión de red.

Posibles consecuencias:

- ▶ Muerte o serias lesiones al tocar las conexiones de potencia.

Medidas de protección:

- ▶ Antes de trabajar en el equipo, desconectar la alimentación de red y esperar por lo menos 3 minutos.
- ▶ Comprobar, si todas las conexiones de potencia están libres de voltaje.

Observe también la información importante sobre aspectos relativos a la técnica del dispositivo y de seguridad incluida en el CD-ROM adjunto!



Pericolo!

Tensione elettrica pericolosa

- ▶ I collegamenti di potenza presentano una tensione elettrica pericolosa fino a 3 minuti dopo la disinserzione della rete.

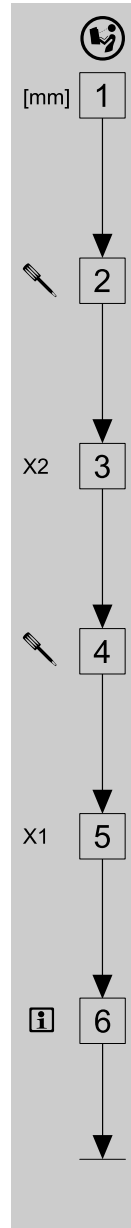
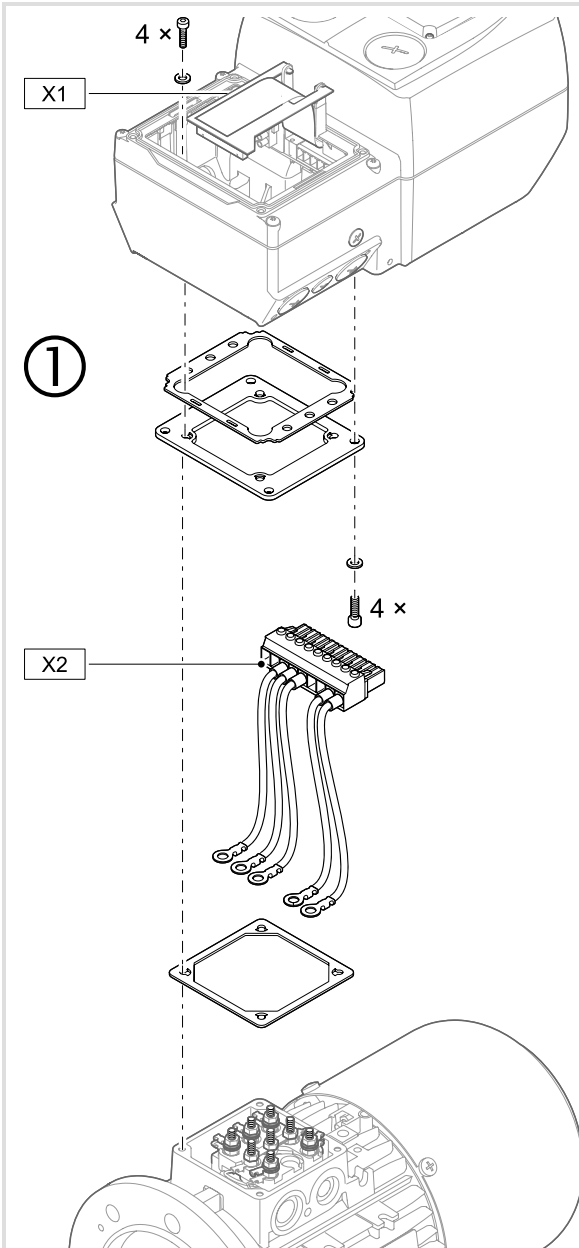
Possibili conseguenze:

- ▶ Morte o gravi lesioni in caso di contatto con i collegamenti di potenza.

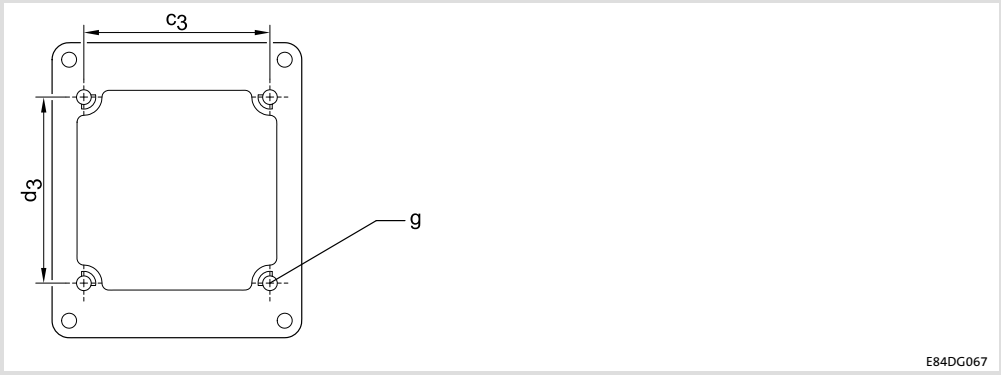
Misure di protezione:

- ▶ Attendere almeno 3 minuti prima di eseguire qualsiasi intervento sui collegamenti di potenza.
- ▶ Controllare tutti i collegamenti di potenza per accertare l'assenza di tensione.

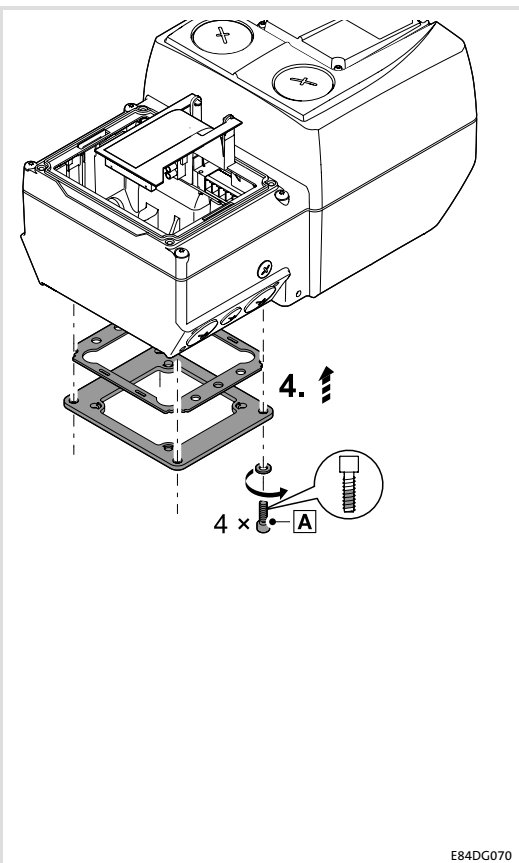
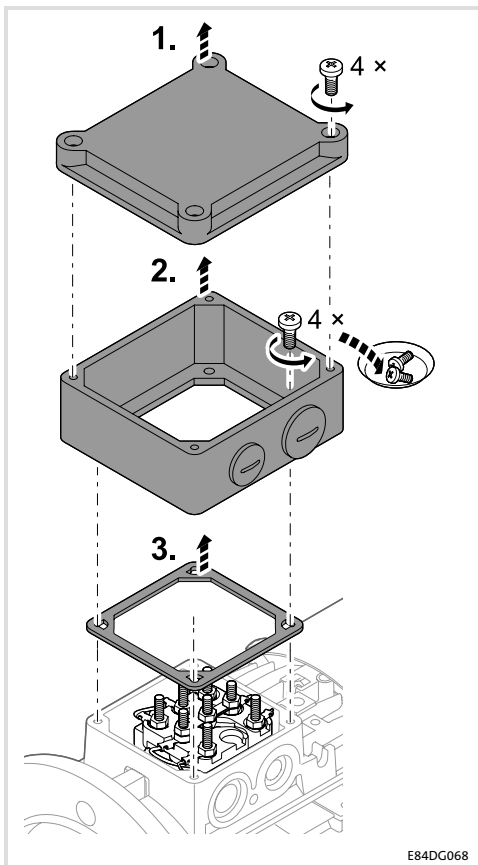
Osservare anche le ulteriori informazioni importanti relative a installazione e sicurezza incluse nel CD-ROM allegato!



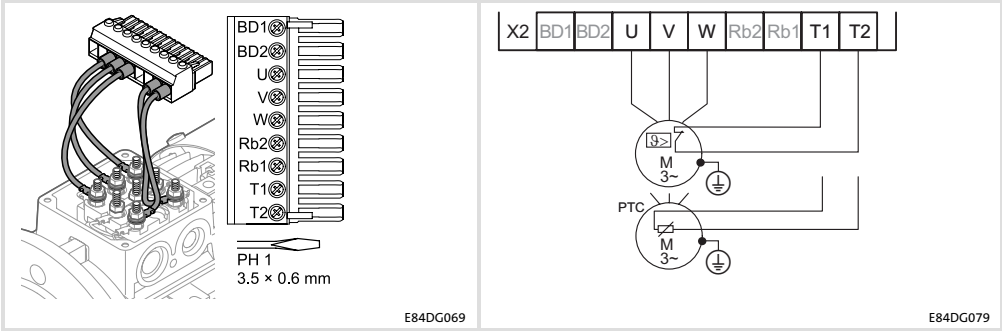
E84DG066



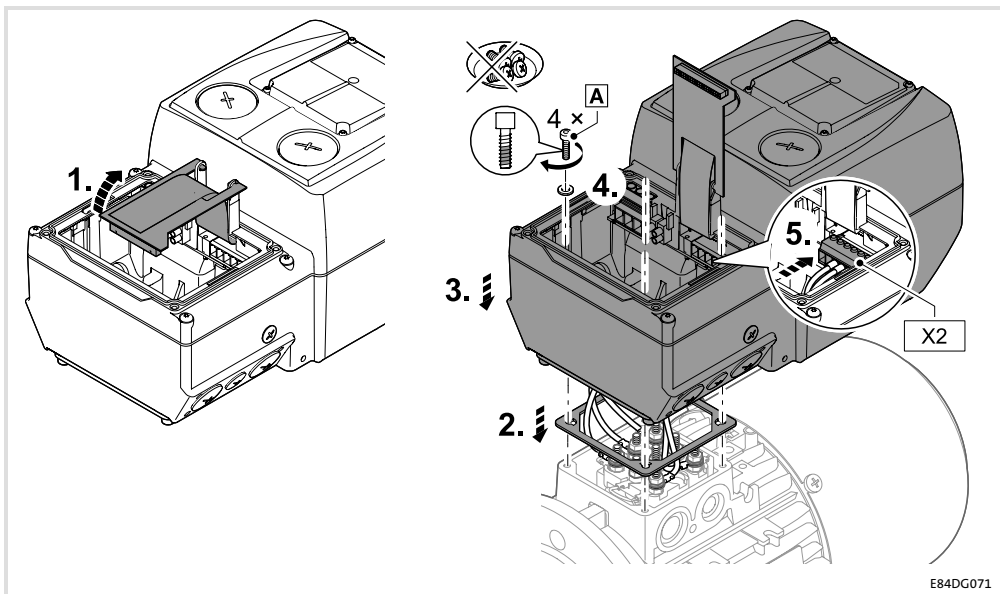
	c_3 [mm]	d_3 [mm]	g [mm]	 P_N / f_N
E84DGVN4E	73	73	$\varnothing 5.5$	4 ... 5.5 kW / 50 Hz
E84DGVN5E	82	82	$\varnothing 6.5$	7.5 kW / 50 Hz



 		
M6 × 16 mm	5	Nm / lb-in
		9 / 80



			
	[mm ²] [AWG]	[mm]	[Nm] [lb-in]
E84DGDDBV4024	1 ... 6	10	0.8
E84DGDDBV5524	18 ... 8		7
E84DGDDBV7524			

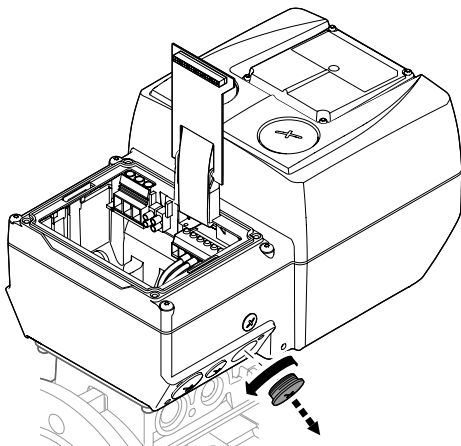


E84DG071

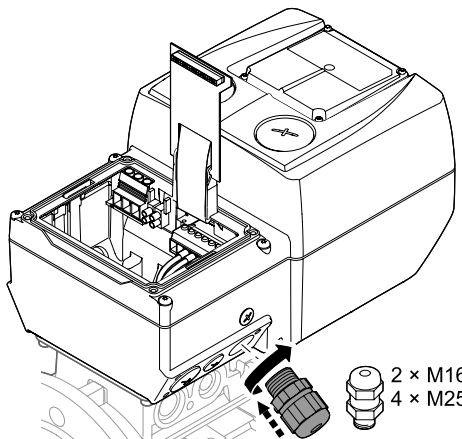
				
			Nm / lb-in	
M5 × 16 mm	4		5.5 / 49	
M6 × 16 mm	5		9 / 80	



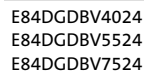
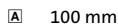
4

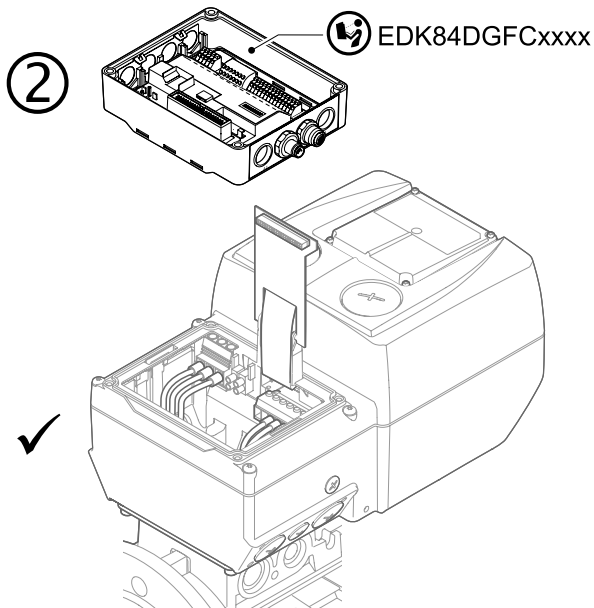


E84DG073



E84DG074





E84DG077



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