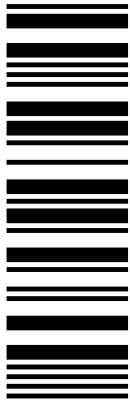
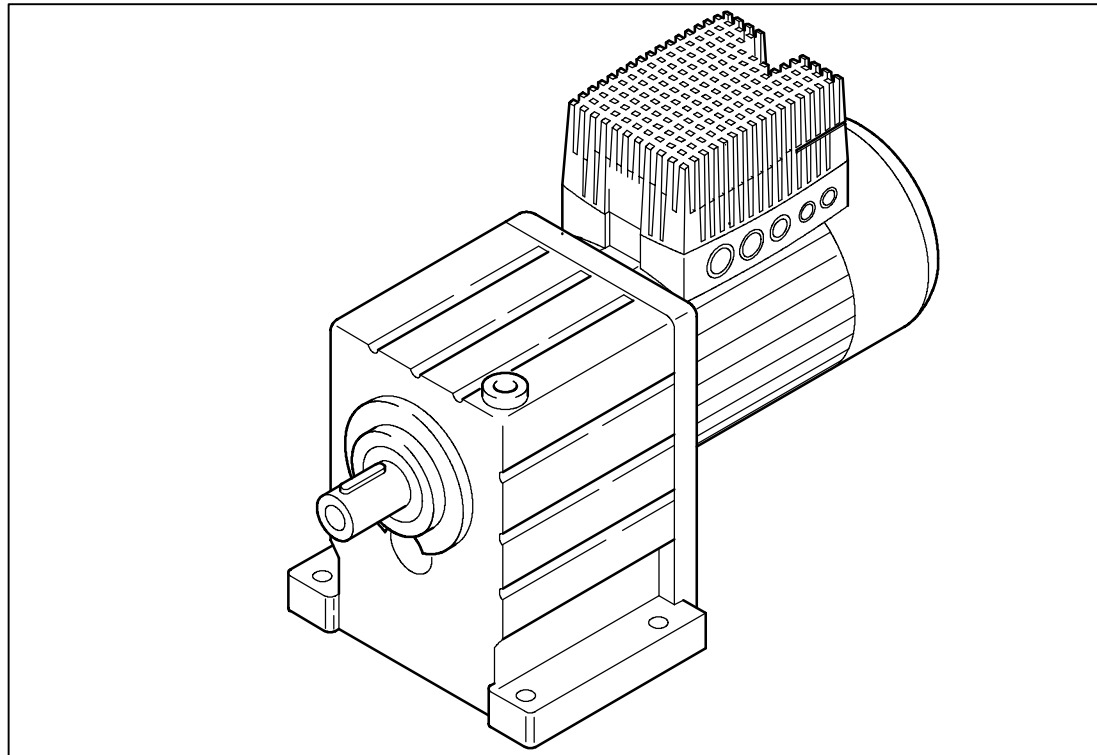


EDK82MVXX
00452611



Lenze

Information for the operator of the machine/system



Global Drive

8200 motec

Frequency inverter

0.25 ... 7.5 kW



This documentation applies to 8200 motec inverters as of version

	E82MV	xxx	_	x	B001	XX	Vx	2x
Type								
Power (e. g. 551 = $55 \times 10^1 \text{ W} = 0,55 \text{ kW}$) (e. g. 752 = $75 \times 10^2 \text{ W} = 7,5 \text{ kW}$)								
Voltage class 2 = 230 V 4 = 400 V/500 V								
Hardware version								
Software version								



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This documentation contains all information the machine operator require in order to operate the drive controller of the 8200 motec series installed in your machine/system.

If you do not change the content, you are allowed to use the information in this documentation for your purposes without contacting Lenze.

The information necessary for the project planning of a machine/system can be found in the Mounting Instructions and Operating Instructions for the 8200 motec frequency inverters. The Mounting Instructions are included in the scope of delivery, the Operating Instructions can be ordered at your Lenze representative.

The downloading of the Lenze documentation can be made in the internet as an Adobe Acrobat[®] file:

<http://www.lenze.de>



1 Safety information

1.1 General safety and application notes for Lenze controllers

(according to Low-Voltage Directive 73/23/EEC)

1. General

Lenze controllers (frequency inverters, servo inverters, DC controllers) can carry a voltage or parts of the controllers can rotate during operation. Surfaces can be hot. If the required cover is removed, the controllers are used inappropriately or installed or operated incorrectly, severe damage to persons or material assets can occur. For more information please see the documentation.

All operations concerning transport, installation, and commissioning as well as maintenance must be carried out by qualified, skilled personnel (IEC 364 and CENELEC HD 384 or DIN VDE 0100 and IEC report 664 or DIN VDE 0110 and national regulations for the prevention of accidents must be observed).

According to this basic safety information qualified, skilled personnel are persons who are familiar with the assembly, installation, commissioning, and operation of the product and who have the qualifications necessary for their occupation.

2. Intended use

Drive controllers are components which are designed for the installation into electrical systems or machinery. They are not to be used as domestic appliances, but only for industrial purposes according to EN 61000-3-2. The documentation contains information about the compliance of the limit values with EN 61000-3-2.

When installing controllers into machines, commissioning of the drive controllers (i.e. the starting of operation as directed) is prohibited until it is proven that the machine corresponds to the regulations of the EC Directive 98/37/EG (Machinery Directive); EN 60204 (VDE 0113) must be observed.

Commissioning (i.e. starting of operation as directed) is only allowed when there is compliance with the EMC Directive (89/336/EEC).

The drive controllers meet the requirements of the Low-Voltage Directive 73/23/EEC. The harmonised standards EN 50178/DIN VDE 0160 apply to the controllers.

The technical data as well as the connection conditions can be obtained from the nameplate and the documentation. The instructions given must be strictly observed.

Warning: Controllers are products with restricted availability according to EN 61800-3. These products can cause interferences in residential premises. If controllers are used in residential premises, corresponding measures are required.

3. Transport, storage

The notes on transport, storage and appropriate handling must be observed.

Climatic conditions according to EN 50178 apply.

4. Installation

The controllers must be installed and cooled according to the regulations given in the corresponding Instructions.

Ensure careful handling and avoid mechanical overload. Do not bend any components and do not change the insulation distances during transport and storage. Electronic components and contacts must not be touched.

Controllers contain electrostatically sensitive components which can easily be damaged by inappropriate handling. Do not damage or destroy any electrical components since this could mean hazards for your health!

5. Electrical connection

When working on live controllers, the valid national regulations for the prevention of accidents (e. g. VBG 4) must be observed.

The electrical installation must be carried out in compliance with the corresponding regulations (e.g. cable cross-sections, fuses, PE connection). Additional notes and information can be obtained from the corresponding Instructions.

The Instructions contain notes concerning wiring according to EMC regulations (shielding, earthing, filters and cable routing). These notes must also be observed when using CE-marked controllers. The compliance with limit values required by the EMC legislation is the responsibility of the manufacturer of the machine or system.

6. Operation

If necessary, systems including controllers must be equipped with additional monitoring and protection devices according to the applying safety regulations (e.g. regulation for technical equipment, regulation for the prevention of accidents). The controller can be adapted to your application. Please observe the corresponding information given in the Instructions.

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

All protection covers and doors must be shut during operation.

Note for UL-approved systems with integrated controllers: UL warnings are notes which only apply to UL systems. The Instructions give UL-related information.

7. Safe standstill

The variant V004 of 9300 and 9300 vector, the variant Bx4x of 8200 vector controller and the axis controller ECSXA064 support the function "Safe standstill", protection against unexpected start, according to the requirements of Annex I No. 1.2.7 of the EC Directive "Machinery" 98/37/EG, DIN EN 954-1 category 3 and DIN EN 1037. Please observe the notes on the function "Safe standstill" given in the corresponding Instructions.

8. Maintenance and service

Please observe the Instructions given by the manufacturer.

Please observe the product-specific safety and application notes in these Instructions.



Safety information

Lenze low-voltage machinery

1.2 General safety and application notes for Lenze low-voltage machinery

(in conformity with the Low-Voltage Directive 73/23/EEC)

1. General

Low-voltage machines have dangerous, live and rotating parts as well as possibly hot surfaces. All operations serving transport, connection, commissioning and maintenance are to be carried out by skilled, responsible technical personnel (observe EN 50110-1 (VDE 0105-100); IEC 60364). Improper handling can cause severe injuries or damages.

Synchronous machines induce voltages at open terminals during operation.

2. Application as directed

These low-voltage machines are intended for industrial and commercial installations. They comply with the harmonized standards of the series EN 60034 (VDE 0530). Their use in hazardous areas is prohibited unless they are expressly intended for such use (follow additional instructions).

The enclosures \leq IP23 are by no means intended for outdoor use. Air-cooled designs are rated for ambient temperatures between $-15\text{ }^{\circ}\text{C}$ and $-10\text{ }^{\circ}\text{C}$ and $+40\text{ }^{\circ}\text{C}$ and altitudes \leq 1000 m a.m.s.l., from $-20\text{ }^{\circ}\text{C}$ to $+40\text{ }^{\circ}\text{C}$ without brake or with spring-operated brake, with separate ventilation or self ventilation, from $-15\text{ }^{\circ}\text{C}$ to $+40\text{ }^{\circ}\text{C}$ with permanent magnet brake and from $-10\text{ }^{\circ}\text{C}$ to $+40\text{ }^{\circ}\text{C}$ with separate fan. Check indications on the nameplate and if they are different, observe them. The conditions on site must correspond to all nameplate data.

Low-voltage machines are components for the installation into machines as defined in the Machinery Directive 98/37/EC. Commissioning is prohibited until the conformity of the end product with this Directive has been established (follow a.o. EN 60204-1).

The integrated brakes cannot be used as safety brakes. It cannot be ruled out that factors which cannot be influenced, such as oil ingress because of a defective A-side shaft seal, cause a torque reduction.

3. Transport, storage

The forwarder must be informed directly after receipt of the goods about all damages or deficiencies; if necessary, commissioning must be stopped. Tighten screwed-in ring bolts before transport. They are designed for the weight of the low-voltage machine, do not apply extra loads. If necessary, use suitable and adequately dimensioned means of transport (e.g. rope guides).

Remove the shipping brace before commissioning. Reuse it for further transports. For storage of low-voltage machines ensure a dry, dust-free and low-vibration ($v_{\text{rms}} \leq 0.2\text{ mm/s}$) environment (danger of bearing damage at rest). Measure the insulation resistance before commissioning. If the values are $\leq 1\text{ k}\Omega$ per volt of rated voltage, dry the winding.

4. Installation

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 mains frequency which may be caused by the assembly. Turn rotor by hand, listen for unusual slipping noises. Check the direction of rotation when the clutch is not active (observe section 5).

Use appropriate tools to mount or remove belt pulleys and clutches (heat generation!) and cover them with a touch guard. Impermissible belt tensions must be avoided (technical list).

The machines are half-key balanced. The clutch must be half-key balanced, too. The visibly protruding part of the key must be removed.

If required, provide pipe connections. Mounting positions with shaft end at top must be protected with a cover which avoids the ingress of foreign particles into the fan. Free circulation of the cooling air must be ensured. The exhaust air - also the exhaust air of other machines next to the drive system - must not be immediately taken in again.

5. Electrical connection

All operations must be carried out only by qualified and skilled personnel when the low-voltage machine is at standstill and when the machine is de-energized and protected against unintentional restart. This also applies to auxiliary circuits (e.g. brake, encoder, separate fan).

Check safe isolation from the supply!

If the tolerances in EN 60034-1; IEC 34 (VDE 0530-1) - voltage $\pm 5\%$, frequency $\pm 2\%$, waveform, symmetry - are exceeded, more heat will be generated and the electromagnetic compatibility will be influenced.

Observe the indications on the nameplate, operating notes, and the connection diagram in the terminal box.

The connection must ensure a continuous and safe electrical supply (no loose wire ends); use appropriate cable terminals. The connection to the PE conductor must be safe. The plug-in connector must be screwed up tightly (to stop).

The clearances between bare, live parts and earth must not fall below: 8 mm at $V_{\text{rated}} \leq 550\text{ V}$, 10 mm at $V_{\text{rated}} \leq 725\text{ V}$, 14 mm at $V_{\text{rated}} \leq 1000\text{ V}$.

The terminal box must be clean and dry; foreign particles, dirt and moisture affect operation. All unused cable entries and the box itself must be sealed against dust and water. For the trial run without output elements, lock the key. Check brake operation before the commissioning of low-voltage machines with brakes.

6. Operation

Vibration severities $v_{\text{rms}} \leq 3.5\text{ mm/s}$ ($P_{\text{rated}} \leq 15\text{ kW}$) or 4.5 mm/s ($P_{\text{rated}} > 15\text{ kW}$) are acceptable when the clutch is activated. If deviations from normal operation occur, e.g. increased temperature, noise, vibration, find the cause and, if necessary, contact the manufacturer. Switch-off the machine in problematic situations.

If the drive is exposed to dirt, clean it regularly.

Do not switch-off the protection devices, not even for trial runs.

Integrated temperature sensors do not provide full protection. If necessary, limit the maximum current. Connect the function blocks to the option switch-off after several seconds of operation at $I > I_{\text{rated}}$, especially if blocking may occur.

Shaft seals and bearings have a limited service life.

Regrease the bearings using the relubrication facility while the low-voltage machine is running. Observe the saponification number. If the grease drain hole is sealed with a plug (IP54 drive end; IP23 drive end and non-drive end), remove the plug before commissioning. Seal the bore holes with grease. Replace the prelubricated bearings (ZZ-bearings) after approx. 10.000 h - 20.000 h, at the latest however after 3 - 4 years. Observe the manufacturer's instructions.

Safety information

Residual hazards, Layout of the safety instructions



1.3 Residual hazards

Protection of persons	<ul style="list-style-type: none"> • Before working on the motec or opening the housing, check that no voltage is applied. Wait for at least 3 minutes, since after mains switch-off the power terminals U, V, W; BR0, BR1, BR2 and the pins of the FIF interface remain live. <ul style="list-style-type: none"> – After you have opened the motec check whether the power terminals L1, L2, L3; U, V, W; BR0, BR1, BR2, relay outputs K11, K12, K14 and pins of the FIF interface are not live any more. – Even if the motec is separated from the mains, the relay outputs K11, K12, K14 can remain live! • If you use the not fail-safe function "Selection of direction of rotation" via the digital signal DCTRL1-CW/CCW (C0007 = -0- ... -13-, C0410/3 ≠ 255): <ul style="list-style-type: none"> – In the event of an open circuit or failure of the control voltage, the drive can change its direction of rotation. • If you use the function "Flying-restart circuit" (C0142 = -2-, -3-) with machines with a low moment of inertia and a minimum friction: <ul style="list-style-type: none"> – After controller enable in standstill, the motor can start for a short time or change its direction of rotation for a short time. • The motec heatsink temperature is > 60 °C: <ul style="list-style-type: none"> – Direct skin contact with the heatsink results in burnings.
Controller protection	<ul style="list-style-type: none"> • 8200 motec 3 ... 7,5 kW (E82MV302_4B, E82MV402_4B, E82MV552_4B, E82MV752_4B): <ul style="list-style-type: none"> – Cyclic connection and disconnection of the controller supply voltage at L1, L2, L3 can exceed and destroy the input current limit! – In case of cyclic mains switching over a longer period of time three minutes have to pass between two starting operations! • Depending on the controller settings, the connected motor can be overheated: <ul style="list-style-type: none"> – at, for instance, longer DC-braking operations. – at longer operation of self-ventilated motors at low speed.
Overspeeds	<ul style="list-style-type: none"> • Drives can reach dangerous overspeeds (e.g. setting of inappropriately high field frequencies): <ul style="list-style-type: none"> – The controllers do not offer any protection against these operating conditions. For this, use additional components.

1.4 Layout of the safety information

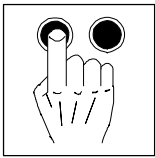
All safety information given in these Operating Instructions have the same layout:



Signal word (characterises the severity of danger)

Note (describes the danger and gives information how to avoid it)

	Icons used		Signal words	
Warning of danger to persons		Warning of hazardous electrical voltage	Danger!	Warns of impending danger . Consequences if disregarded: Death or most severe injuries
		Warning of a general danger	Warning!	Warns of potential, very hazardous situations . Possible consequences if disregarded: Death or most severe injuries
Warning of damage to material			Caution!	Warns of potential, hazardous situations . Possible consequences if disregarded: Light or minor injuries
			Stop!	Warns of potential damage to material . Possible consequences if disregarded: Damage of the controller/drive system or its environment
More information			Tip!	Designates a general, useful note. If you observe it, handling of the controller/drive system is made easier.



Parameter setting

Parameter setting using the keypad

2 Parameter setting

2.1 Parameter setting using the keypad

The keypad is available as accessory. A full description can be obtained from the information included in the keypad delivery.

	A	Function keys		
	B	Status display		
	C	Bargraph display		
	D	Function bar 1		
	E	Function bar 2		
	F	Parameter set		
	G	Code number		Changes possible when lamp is blinking
	H	Subcode number		
	I	Parameter value with unit		

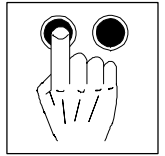
2.1.1 Menu structure

All parameters for controller setting or monitoring are saved in codes under the menus *USER* and *ALL*. The codes have numbers \square and are abbreviated in the text with a "C" before the number. Some codes store the parameters in numerical "subcodes" \square to ensure that parameter setting is clearly structured (example: C0517 menu *USER*).

- The menu *USER*
 - is active after every mains switching or keypad attachment during operation.
 - contains all codes for a standard application with linear V/f characteristic control (Lenze setting).
 - can be modified as required under C0517.
- The menu *ALL*
 - contains all codes.
 - shows a list of all codes in ascending order.
- The change between *USER* and *ALL* and how to change parameters in the codes is described on the following pages.

Parameter setting

Parameter setting using the keypad



2.1.2 The menu *USE_r* - The 10 most important drive parameters

After mains switching or plugging in the keypad during operation, the 10 codes defined to be the most important in the user menu *USE_r* (Code C0517) are available immediately.

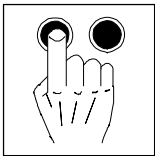
In default setting the menu contains *USE_r* all codes required for a standard application with linear V/f characteristic control.

Code	Name	Lenze setting				
C0050	Output frequency		Display: Output frequency without slip compensation			
C0034	Setpoint selection range	-0-	Standard I/O X3/8: 0 ... 5 V / 0 ... 10 V / 0 ... 20 mA			
			Application I/O X3/1U: 0 ... 5 V / 0 ... 10 V X3/2U: 0 ... 5 V / 0 ... 10 V			
C0007	Fixed configuration of digital inputs	-0-	E4	E3	E2	E1
			CW/CCW	DCB	JOG2/3	JOG1/3
			CW/CCW rotation	DC-injection brake	Selection of fixed setpoints	
C0010	Minimum output frequency	0.00 Hz				
C0011	Maximum output frequency	50.00 Hz				
C0012	Acceleration time main setpoint	5.00 sec				
C0013	Deceleration time main setpoint	5.00 sec				
C0015	V/f rated frequency	50.00 Hz				
C0016	U _{min} boost	depending on the inverter type				
C0002	Parameter set transfer/reset	see code table				



Tip!

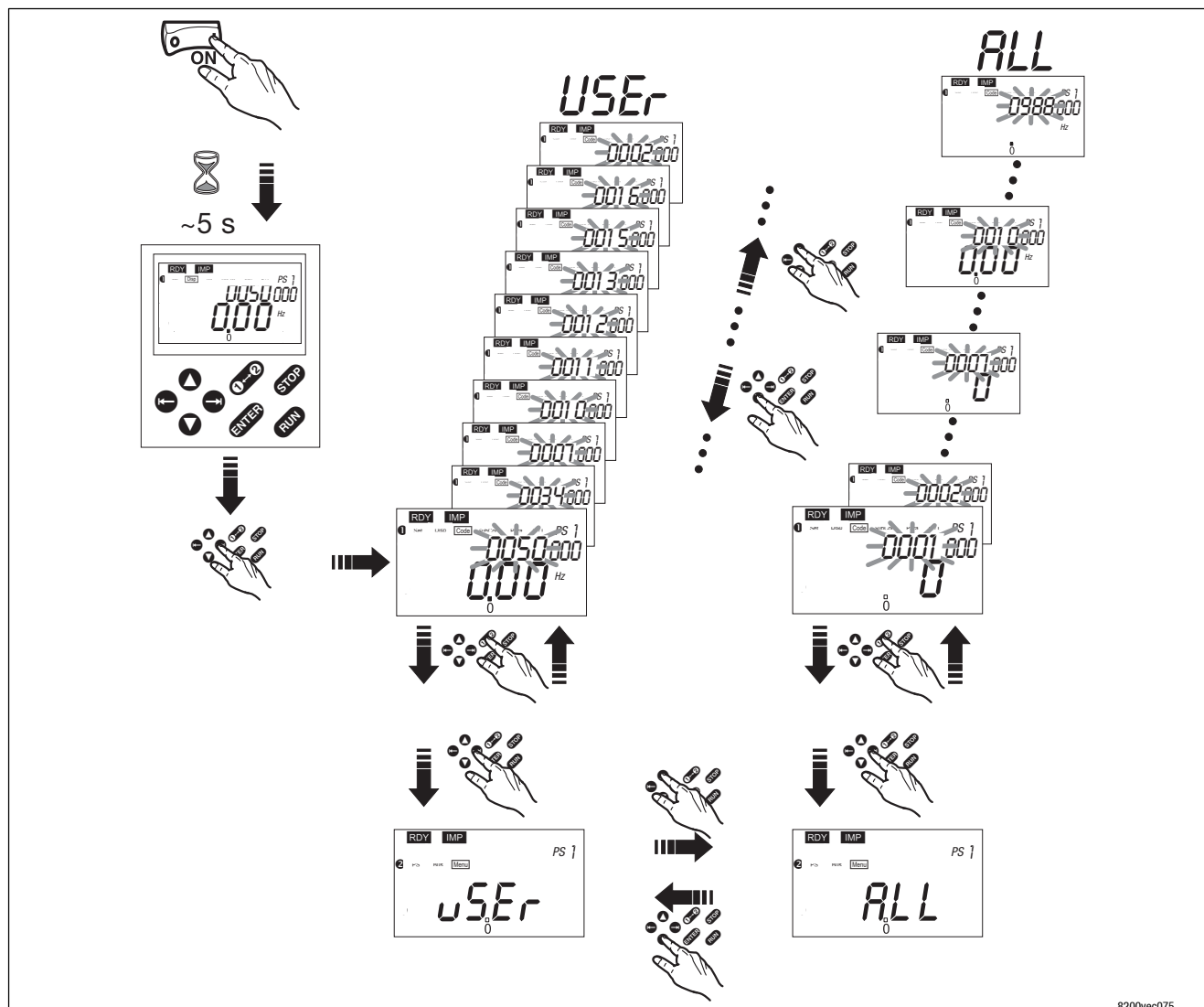
Use C0002 "Parameter set transfer" to easily transfer configurations from one controller to the other or to reset the controller to Lenze settings.



Parameter setting

Parameter setting using the keypad

2.1.3 Change between the menus *USER* and *ALL*



8200vec075

2.1.4 Parameter change in menus

Step	Keys	Display	Note	Example
1.	Controller inhibit STOP	RDY IMP	Only necessary if you want to change codes marked with “[]” in the code table, e. g. [C0002]. All other parameters can be changed during operation.	
2.	Set parameters ← →	[Code]		
3.	▲	XXXX	Select code	0012
4.	●	[SubCode] 001	For codes without subcodes: Jump to [Para] (and then 6.)	
5.	▼ ▲	XXX	Select subcode	
6.	←	[Para]		5.00 s
7.	▼ ▲	XXXXX	Set parameters	1.00 s
8.	ENTER	STOr-E	Acknowledge entry if → blinking Acknowledge entry if → is not blinking; ENTER is not active	
9.	←		Restart the “loop” at 2. to set other parameters.	

Troubleshooting and fault elimination

Maloperation of the drive



3 Troubleshooting and fault elimination

3.1 Maloperation of the drive

Fault	Cause	Remedy
Motor does not rotate	DC-bus voltage too low (Red LED is blinking every 0.4 s; keypad display <i>LL</i>)	Check mains voltage
	Controller inhibited (Green LED is blinking, keypad display: IMP)	Remove the controller inhibit, controller inhibit can be set through several sources
	Automatic start inhibited (C0142 = 0 or 2)	LOW-HIGH edge at X3/28 If necessary, correct start condition (C0142)
	DC injection brake active (DCB)	Deactivate DC-injection brake
	Mechanical motor brake is not released	Manual or electrical release of mechanical motor brake
	Quick stop (QSP) active (keypad display: IMP)	Remove quick stop
	Setpoint = 0	Setpoint selection
	JOG setpoint activated and JOG frequency = 0	JOG setpoint selection (C0037 ... C0039)
	Active fault	Eliminate fault
	Wrong parameter set active	Change to correct parameter set via terminal
	Control mode C0014 = -4-, -5-, but no motor parameter identification	Motor parameter identification (C0148)
	Under C0410 several functions, which exclude each other, are assigned to the same signal source.	Correct configuration in C0410
	Use internal voltage source X3/20 for function modules Standard-I/O, INTERBUS, PROFIBUS-DP or LECOM-B (RS485): Bridge between X3/7 and X3/39 is missing	Jumper terminals
	Motor does not rotate smoothly	Defective motor cable
Maximum current too low (C0022, C0023)		Adaptation to application
Motor underexcited or overexcited		Check parameter setting (C0015, C0016, C0014)
C0084, C0087, C0088, C0089, C0090, C0091 and/or C0092 are not adapted to the motor data		Manual adaptation or identification of motor parameters (C0148)
Current consumption of motor too high	Setting of C0016 too high	Correct setting
	Setting of C0015 too low	Correct setting
	C0084, C0087, C0088, C0089, C0090, C0091 and/or C0092 are not adapted to the motor data	Manual adaptation or identification of motor parameters (C0148)
Motor rotates, setpoints are "0"	With the function Set of the keypad a setpoint has been selected.	Set the setpoint to "0" by C0140 = 0
Motor parameter identification stops with error LP1	Motor too small compared with rated power	
	DC brake active via terminal	
Unacceptable drive response with vector control	various	Vector control optimisation



Troubleshooting and fault elimination

Error messages

3.2 LEDs at the controller (operating status display)

LED		Operating status
green	red	
on	off	Controller enabled
on	on	Mains switched on and automatic start inhibited
blinking	off	Controller inhibited
off	blinking every second	Fault active, check under C0161
off	blinking every 0.4 seconds	Undervoltage switch-off
fast blinking	off	Motor parameter identification

3.3 Fault messages at the keypad or in the parameter setting program Global Drive Control

Display Keypad	PC 1)	Fault	Cause	Remedy
$nDEr$	0	No fault	-	-
ccr Trip	71	System fault	Strong interferences on control cables Ground or earth loops in the wiring	Shield control cables
cEO Trip	61	Communication error to AIF	Transmission of control commands via AIF is interfered	Plug the communication module firmly into the hand terminal
$cE1$ Trip	62	Communication error at CAN-IN1 with sync control	CAN-IN1 object receives faulty data or communication interrupted	<ul style="list-style-type: none"> Plug-in connection for bus module ⇔ Check FIF Check transmitter Increase monitoring time under C0357/1 if necessary
$cE2$ Trip	63	Communication error to CAN-IN2	CAN-IN2 object receives faulty data or communication is interrupted	<ul style="list-style-type: none"> Plug-in connection for bus module ⇔ Check FIF Check transmitter Increase monitoring time under C0357/2 if necessary
$cE3$ Trip	64	Communication error to CAN-IN1 with event or time control	CAN-IN1 object receives faulty data or communication interrupted	<ul style="list-style-type: none"> Plug-in connection for bus module ⇔ Check FIF Check transmitter Increase monitoring time under C0357/3 if necessary
$cE4$ Trip	65	BUS-OFF (many communication errors occurred)	Controller has received too many faulty telegrams via system bus and has been disconnected from the bus	<ul style="list-style-type: none"> Check whether the bus terminator is available Check screen contact of the cables Check PE connection Check the bus load, if necessary, reduce the baud rate
$cE5$ Trip	66	CAN Time-Out	With remote parameter setting via system bus (C0370): Slave does not respond. Communication monitoring time exceeded	<ul style="list-style-type: none"> Check wiring of the system bus Check system bus configuration
			Operation with module on FIF: Internal error	Contact Lenze
$cE6$ Trip	67	Function module system bus (CAN) is set to "Warning" or "BUS-OFF" (only generated if C0128 = 1)	CAN controller sends "Warning" or "BUS-OFF"	<ul style="list-style-type: none"> Check whether the bus is terminated Check screen contact of the cables Check PE connection Check the bus load, if necessary, reduce the baud rate
EEr Trip	91	External error (TRIP-SET)	A digital signal used for the function TRIP set has been activated.	Check external encoder
HDS Trip	105	Internal fault		Contact Lenze
$Id1$ Trip	140	Faulty parameter identification	Motor not connected	Connect motor
$LP1$ Trip	32	Error in motor phase (only generated if C0597 = 1)	<ul style="list-style-type: none"> Failure of one/several motor phase(s) Motor current too low 	<ul style="list-style-type: none"> Check motor cables V_{min} boost Connect motor with corresponding power or adapt motor under C0599
$LP1$	182	Error in motor phase (only generated if C0597 = 2)		
LU IMP	1030	DC-bus undervoltage	Mains voltage too low	Check mains voltage
			DC-bus voltage too low	Check supply module
			400 V controller connected to 240 V mains	Connect the controller to the appropriate mains voltage

Troubleshooting and fault elimination

Error messages



Display Keypad	PC ¹⁾	Fault	Cause	Remedy
OC1 Trip	11	short-circuit	short-circuit	<ul style="list-style-type: none"> Find reason for short circuit; check motor cables Check brake resistor
			Excessive capacitive charging current of the motor cable	Use shorter/low-capacity motor cables
OC2 Trip	12	Earth fault	Grounded motor phase	Check motor, check motor cable
			Excessive capacitive charging current of the motor cable	Use shorter/low-capacity motor cables
				Earth fault detection can be deactivated for checking
OC3 Trip	13	Overload inverter during acceleration or short circuit	Acceleration time (C0012) too short	<ul style="list-style-type: none"> Increase acceleration time Check drive selection
			Defective motor cable	Check wiring
			Interturn fault in the motor	Check motor
OC4 Trip	14	Overload controller during deceleration	Deceleration time too short (C0013)	<ul style="list-style-type: none"> Allow longer deceleration time Check the external brake resistor selection
OC5 Trip	15	Controller overload in stationary operation	Long and frequent overload periods	Check drive selection
OC6 Trip	16	Motor overload ($I^2 \times t$ overload)	Motor thermally overloaded by for instance <ul style="list-style-type: none"> impermissible continuous current frequent or too long acceleration processes 	<ul style="list-style-type: none"> Check drive selection Check setting under C0120
OH Trip	50	Heatsink temperature > +85 °C	Ambient temperature $T_{amb} > +60$ °C	<ul style="list-style-type: none"> Allow controller to cool down and ensure better ventilation Check ambient temperature
			Heat sink very dirty	Clean heat sink
			Impermissible high current or frequent and long acceleration processes	<ul style="list-style-type: none"> Check drive selection Check load, if necessary replace sluggish, defective bearings
OH Warn	-	Heatsink temperature > +80 °C		
OH3 Trip	53	PTC monitoring (TRIP) (only generated if C0119 = 1 or 4)	Motor too hot because of impermissibly high current or frequent and long acceleration processes	Check drive selection
			PTC not connected	Connect PTC or switch-off monitoring (C0585=3)
OH4 Trip	54	Controller overtemperature	Controller inside too hot	<ul style="list-style-type: none"> Reduce controller load Improve cooling Check fan in the controller
OHS1	203	PTC monitoring (only generated if C0119 = 2 or 5)	Motor too hot because of impermissibly high current or frequent and long acceleration processes	Check drive selection
			PTC not connected	Connect PTC or switch-off monitoring (C0585=3)
OU IMP	1020	DC-bus overvoltage	Mains voltage too high	Check voltage supply
			Braking operation	<ul style="list-style-type: none"> Prolong deceleration times. For operation with external brake resistor: <ul style="list-style-type: none"> Check dimensioning, supply and connection of brake resistor Increase the deceleration times
			Earth leakage on the motor side	Check motor cable and motor for earth fault (disconnect motor from inverter)
Pr Trip	75	Faulty parameter transfer when using the keypad	All parameter sets are faulty	It is absolutely necessary to repeat the data transfer or load the factory setting before the controller is enabled.
Pr1 Trip	72	Faulty transmission of PAR1 when using the keypad	PAR1 is faulty.	
Pr2 Trip	73	Faulty transmission of PAR2 when using the keypad	PAR2 is faulty.	
Pr3 Trip	77	Faulty transmission of PAR3 when using the keypad	PAR3 is faulty.	
Pr4 Trip	78	Faulty transmission of PAR4 when using the keypad	PAR4 is faulty.	
Pr5 Trip	79	Internal fault		
Pt5 Trip	81	Time error during parameter set transfer	Data flow interrupted by keypad or PC, e. g. keypad disconnected during data transmission.	It is absolutely necessary to repeat the data transfer or load the factory setting before the controller is enabled.



Troubleshooting and fault elimination

Error messages

Display Keypad	PC ¹⁾	Fault	Cause	Remedy
rSt Trip	76	Faulty auto-TRIP reset	More than 8 fault messages in 10 minutes	Depends on the fault message
SdS Trip	85	Open wire at analog input (setpoint range 4 ... 20 mA)	Current at analog input < 4 mA	Close circuit at analog input

¹⁾ LECOM error number