Programming the Lenze Variable Frequency Drive

Using the Control Panel

Product: Lenze 8200 VFD

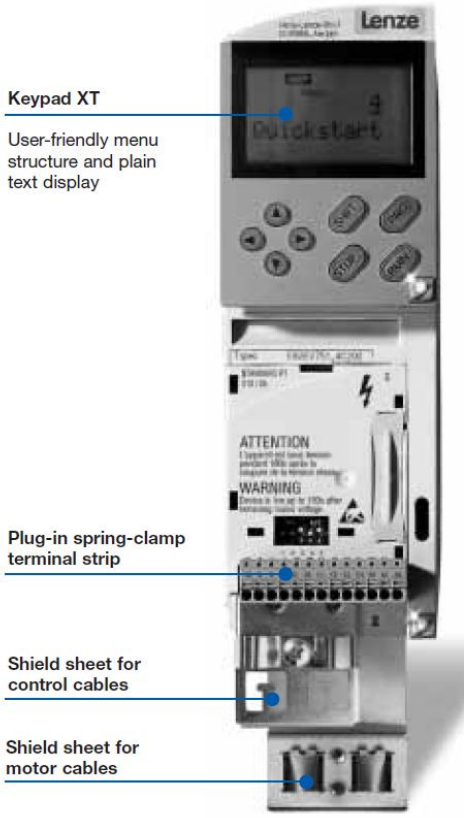
Responsibility: Maintenance	**Revision: 2.0 (08-06-2013)**	**Verified:** MJP/KLB
Tools required: None		**Time Required: 30 min**

1.0 Purpose: To provide the proper instruction to set up the drive parameters through the control panel (Keypad) on the Lenze Variable Frequency Drive (VFD)

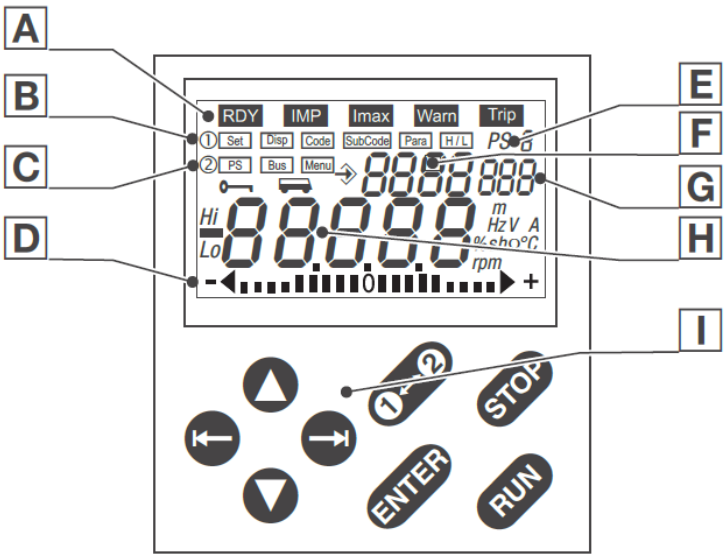
2.0 Scope: This Work Instruction is applicable to Lenze V8200 FD.

3.0 Safety: Follow all existing plant safety procedures.

4.0 Component identification



5.0 LCP Display Overview



Displays

Display		Meaning	Explanation
A	Status displays		
	RDY	Ready for operation	
	IMP	Pulse inhibit active	Power outputs are inhibited
	Imax	Set current limit exceeded in motor or generator mode	C0022 (in motor mode) or C0023 (in generator mode)
		Warning active	
		Fault active	
B	Function bar 1		
		Setpoint selection via 00	Not possible if password protection is active (display = "loC")
		Display function: - Display user menu, memory location 1 (C0517/1) - Display active parameter set	Active after every mains connection
		Select codes	Four−digit display of the active code CE
		Select subcodes	Three−digit display of the active subcode [g]
		Change parameter value of a code/subcode	Five−digit display of the actual value [H
		Display values which have more than 5 digits	
		H: higher−order digits	Display of "HI"
		L: lower−order digits	Display of"lo"

	Function bar 2		
C		Select parameter set 1 ... 4 for changing	- Display of e.g. PS 2 (□) - The parameter sets can only be activated via digital signals (configuration with C0410)
		Select node of the system bus (CAN)	The selected node can be parameterised from the current drive **iii** = Function is active
		Select menu The user menu is active after every mains switching	user List of the codes in the user menu all List of all codes funCi Only specific codes for bus function modules, e.g. INTERBUS, PROFIBUS–DP, LECOM-B, ...

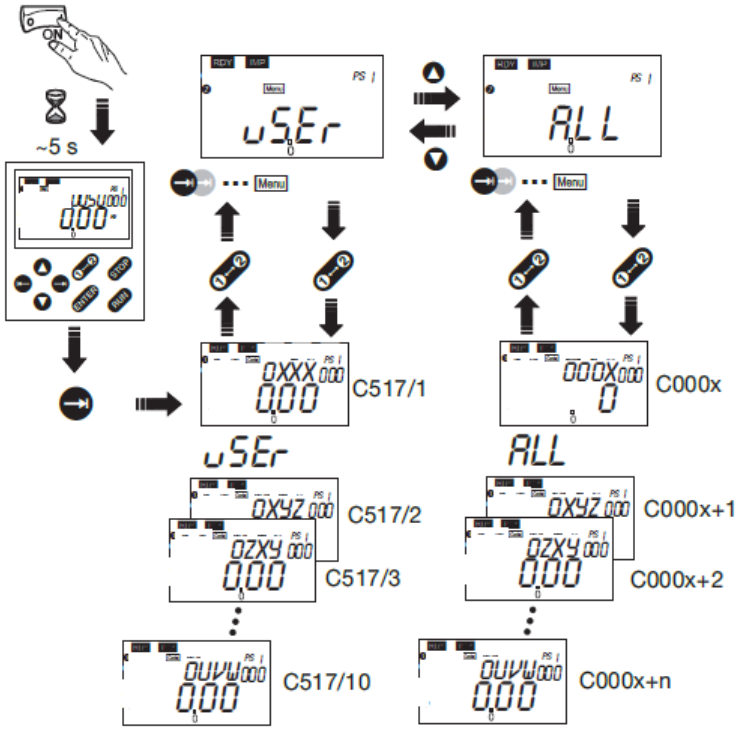
Display	Meaning	Explanation
D	Bar graph display	
	Value set in C0004 in % (Lenze setting: Device utilisation C0056)	Display range: – 180 % ... + 180 % (1 mark = 20 %)
E	Parameter set display	
	In the ▮ mode: Display of the parameter set activated via digital signal	
	Otherwise: Display of the parameter set active for changing	Select the individual parameter sets in the [£[mode in the function bar 2
F	Code number display	
G	Subcode number display	
H	Display of parameter value or fault message	

6.0 Programing the Lenze VFD using the Control Panel

6.1 Remove Profibus module, if equipped, and install the Lenze LCP

6.2 Press the (1>2) button
- a. Press the (▶) button to "Menu"
- b. Press the (▲) button to "All" to view/modify all parameters
- c. Press the (1>2) button to return to the parameters

6.3 Press the (▶) button to "Code"
- a. Press the (▲ or ▼) button and navigate to the proper code
- b. Once at the code that needs modified press the (▶) to "Para"
- c. Press the (▲ or ▼) to modify the setting
- d. Press the (◀) to return to the "Code" to navigate to another code



6.4 Save/Load:

a. Set C0002 to **20** to save parameters from the VFD to the keypad
b. Set C0002 to **10** to load parameters from the keyboard into the VFD
c. Press enter to save parameters in C0002

Code	Designation	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	0.00 Hz				
C0011	Maximum output	50.00 Hz				
C0012	Acceleration time of main setpoint	5.00 s				
C0013	Deceleration time main of setpoint	5.00 s				
C0015	V/f rated frequency	50.00 Hz				
C0016	V_{min} boost	Device–dependent				
C0002	Parameter set management		Re–establish delivery status; transfer parameter sets with the keypad; save, load, or copy own basic settings			

7.0 Removing Fault

7.1 In order to remove a fault if one should occur, remove the 480 VAC power by turning off the correct circuit breaker.
Set C0310=177 if you want to latch the last motor fault. Previous motor faults can now be viewed with parameters C0161-C163, with C0161 being the latest fault.

*C0038 is the sorter jog speed parameter on the sorter motor VFDs (can be adjusted anytime)

You will get an error "OH3" after you hit the enter button while programming code C0119 if the motor thermals are not wired to the Lenze drive.

7.2 (See Chart)

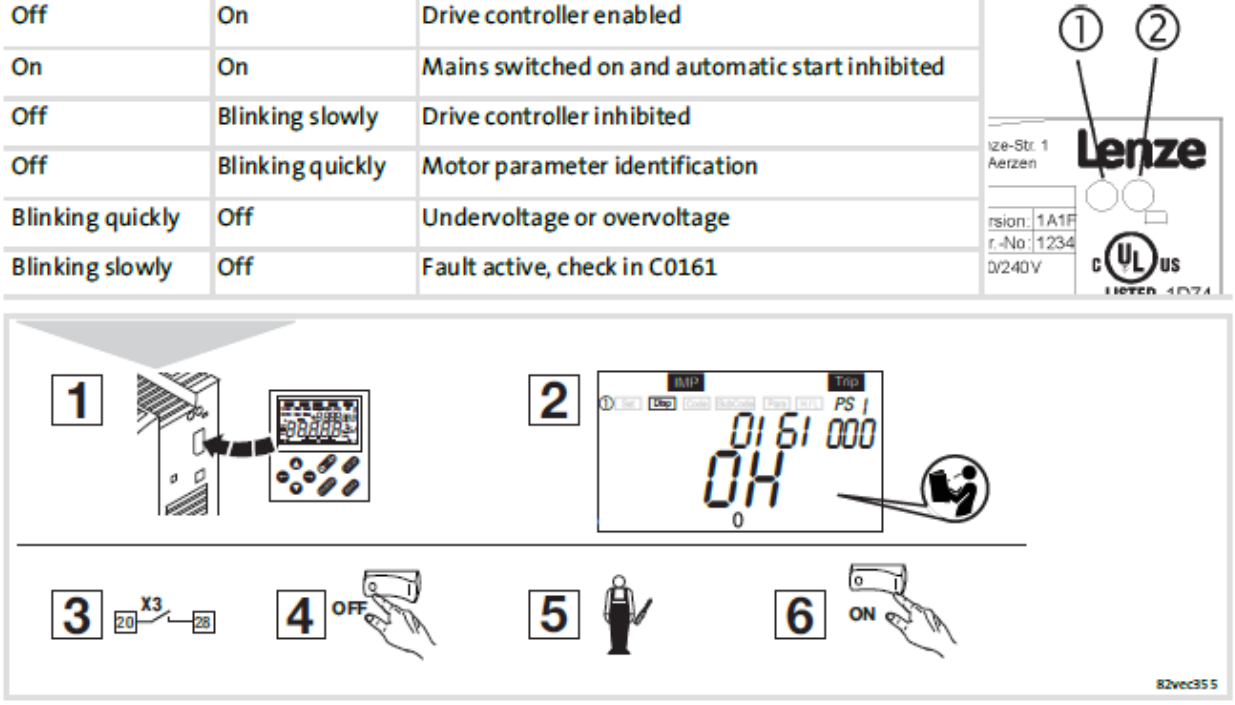
8.0 Test Mode

8.1 In order to test the motors in manual mode set code C0140 to "30" and use the Run/Stop button on the LCP to control the motor.

8.2 <u>This setting will have to be returned to "0" to run in the automatic mode or else this value will be added to the speed reference sent across the Profibus!</u>

8.0 Troubleshooting

LED red ①	LED green ②	Operating status
Off	On	Drive controller enabled
On	On	Mains switched on and automatic start inhibited
Off	Blinking slowly	Drive controller inhibited
Off	Blinking quickly	Motor parameter identification
Blinking quickly	Off	Undervoltage or overvoltage
Blinking slowly	Off	Fault active, check in C0161



8.1 Reset the drive controller in this way if a fault occurs (TRIP reset)

1. Plug the keypad onto the AIF interface during operation.
2. Read and take down fault message on the keypad display.
3. Inhibit controller.
4. Disconnect controller from the mains.
5. Carry out a fault analysis and eliminate the faults.
6. Restart the controller.

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

Keypad	PC [1]	Fault	Cause	Remedy
noEr	0	No fault	-	-
CCr Trip	71	System failure	Strong interference injections on the control cables	Shield control cable
			Earth loops in the wiring	
CE0 Trip	61	Communication error on AIF (configurable in C0126)	Faulty transmission of control commands via AIF	Insert the communication module properly into the diagnosis terminal
CE1 Trip	62	Communication error on CAN-IN1 with sync control	CAN-IN1 object receives faulty data or communication is interrupted	• Check plug connection of bus module ⇔ FIF • Check sender • Increase monitoring time in C0357/1, if necessary
CE2 Trip	63	Communication error on CAN-IN2	CAN-IN2 object receives faulty data or communication is interrupted	• Check plug connection of bus module ⇔ FIF • Check sender • Increase monitoring time in C0357/2, if necessary
CE3 Trip	64	Communication error on CAN-IN1 with event or time control	CAN-IN1 object receives faulty data or communication is interrupted	• Check plug connection of bus module ⇔ FIF • Check sender • Increase monitoring time in C0357/3, if necessary
CE4 Trip	65	BUS-OFF (many communication errors occurred)	Controller has received too many faulty telegrams via the system bus and has been disconnected from the bus	• Check whether bus termination is available • Check shield connection of the cables • Check PE connection • Check bus load, reduce the baud rate, if necessary
CE5 Trip	66	CAN time-out (configurable in C0126)	In case of remote parameterisation via the system bus (C0370): Slave does not respond. Communication monitoring time has been exceeded	• Check wiring of the system bus • Check system bus configuration
			When operating with Application I/O: Parameter set change-over has been parameterised incorrectly	In all parameter sets, the ”change parameter set” signal (C0410/13, C0410/14) must be connected with the same source
			When operating with module on FIF: Internal error	Contact Lenze
CE6 Trip	67	System bus (CAN) function module on FIF has the ”Warning” or ”BUS-OFF” status (configurable in C0126)	CAN controller signals ”Warning” or ”BUS-OFF” status	• Check whether bus termination is available • Check shield connection of the cables • Check PE connection • Check bus load, reduce the baud rate, if necessary
CE7 Trip	68	Communication error in case of remote parameterisation via the system bus (C0370) (configurable in C0126)	Node does not respond or is not available	• Check whether bus termination is available • Check shield connection of the cables • Check PE connection • Check bus load, reduce the baud rate, if necessary
			When operating with Application I/O: Parameter set change-over has been parameterised incorrectly	In all parameter sets, the ”change parameter set” signal (C0410/13, C0410/14) must be connected with the same source
EEr Trip	91	External fault (TRIP-SET)	A digital signal assigned to the TRIP-SET function is activated	Check external encoder

Keypad	PC [1]	Fault	Cause	Remedy
ErP0 ... ErP19 Trip	-	Communication interruption between keypad and standard device	Various	Contact Lenze
FAn1 Trip	95	Fan failure (only 8200 motec 3 ... 7.5 kW) TRIP or warning configurable in C0608	Fan is defective	Replace fan
FAn1	-		Fan is not connected	Connect fan Check wiring
H05 Trip	105	Internal fault		Contact Lenze
Id1 Trip	140	Faulty parameter identification	Motor is not connected	Connect motor
LP1 Trip	32	Error in motor phase (Display when C0597 = 1)	• Failure of one/several motor phase(s) • Motor current too low	• Check motor supply cables • Check V_{min} boost, • Connect motor with a corresponding power or adapt motor with C0599
LP1	182	Error in motor phase (Display when C0597 = 2)		
LU IMP	-	DC bus undervoltage	Mains voltage too low	Check mains voltage
			Voltage in DC-bus connection too low	Check power supply module
			400 V controller is connected to 240 V mains	Connect controller to correct mains voltage
OC1 Trip	11	Short circuit	Short circuit	• Search for cause of short circuit; check motor cable • Check brake resistor and cable to brake resistor
			Capacitive charging current of the motor cable too high	Use shorter/low-capacitance motor cable
OC2 Trip	12	Earth fault	Earthed motor phase	Check motor; check motor cable
			Capacitive charging current of the motor cable too high	Use shorter/low-capacitance motor cable
				Deactivate earth-fault detection for test purposes
OC3 Trip	13	Controller overload during acceleration or short circuit	Acceleration time set is too short (C0012)	• Increase acceleration time • Check drive dimensioning
			Defective motor cable	Check wiring
			Interturn fault in the motor	Check motor
OC4 Trip	14	Controller overload during deceleration	Deceleration time set is too short (C0013)	• Increase deceleration time • Check dimensioning of the external brake resistor
OC5 Trip	15	Controller overload during steady-state operation	Frequent and too long overload	Check drive dimensioning
OC6 Trip	16	Motor overload (I^2 x t overload)	Motor is thermally overloaded by e.g. • impermissible continuous current • frequent or too long acceleration processes	• Check drive dimensioning • Check setting of C0120
OH Trip	50	Heatsink temperature > +85 °C	Ambient temperature is too high	Allow controller to cool and provide better ventilation
OH Warn	-	Heatsink temperature > +80 °C	Heatsink is very dirty	Clean heatsink
			Impermissibly high currents or frequent and too long acceleration processes	• Check drive dimensioning • Check load, exchange tight, defective bearings if necessary

Keypad	PC [1]	Fault	Cause	Remedy
OH3 Trip	53	PTC monitoring (TRIP) (Display when C0119 = 1 or 4)	Motor too hot due to impermissibly high currents or frequent and too long acceleration processes	Check drive dimensioning
			No PTC connected	Connect PTC or switch off monitoring
OH4 Trip	54	Controller overtemperature	Controller too hot inside	• Reduce controller load • Improve cooling • Check fan in the controller
OH5I	203	PTC monitoring (Display when C0119 = 2 or 5)	Motor too hot due to impermissibly high currents or frequent and too long acceleration processes	Check drive dimensioning
			No PTC connected	Connect PTC or switch off monitoring
OU IMP	-	DC bus overvoltage (Message or TRIP configurable in C0310)	Mains voltage too high	Check supply voltage
OUE Trip	22		Braking operation	• Increase deceleration times • When operating with an external brake resistor: – Check dimensioning, connection and supply cable of the brake resistor – Increase deceleration times
			Earth leakage on the motor side	Check motor supply cable and motor for earth fault (disconnect motor from the inverter)
Pr Trip	75	Faulty parameter transfer with the keypad	All parameter sets are defective	Before enabling the controller, repeat the data transfer or load the Lenze setting
Pr1 Trip	72	Faulty PAR1 transfer with keypad	Parameter set 1 is defective	
Pr2 Trip	73	Faulty PAR2 transfer with keypad	Parameter set 2 is defective	
Pr3 Trip	77	Faulty PAR3 transfer with keypad	Parameter set 3 is defective	
Pr4 Trip	78	Faulty PAR4 transfer with keypad	Parameter set 4 is defective	
Pr5 Trip	79	Internal fault	EEPROM is defective	Contact Lenze
PTS Trip	81	Time error during parameter set transfer	Data flow from keypad or PC interrupted, e.g. because keypad was disconnected during transfer	Before enabling the controller, repeat the data transfer or load the Lenze setting.
rST Trip	76	Error during auto TRIP reset	More than 8 error messages within 10 minutes	Depends on the error message
Sd5 Trip	85	Open circuit - analog input 1	Current at analog input < 4 mA at setpoint range 4 ... 20 mA	Close circuit at analog input
Sd7 Trip	87	Open circuit - analog input 2		

[1] LECOM error number, display in Global Drive Control (GDC) parameter setting program